State of Alaska
Department of Fish and Game

Environmental Review

Unimak Caribou Herd Management Options

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Executive Summary

At one time, all caribou on the Alaska Peninsula south to, and including, Unimak Island were considered one herd. During the 1980s, the Alaska Department of Fish and Game (Department) began differentiating between the caribou living north of Port Moller and those occupying the Alaska Peninsula and Unimak Island south of Port Moller, and since the mid-1990s, the caribou on Unimak Island have been considered a separate herd because of their geographic isolation and lack of interaction with mainland caribou.

Unimak Island is the only island in the Aleutian chain to have native caribou. It is separated from the Alaska Peninsula by a narrow (1 km) ocean passage (Isanotski Straight) that has strong tidal currents. Caribou have occasionally been observed swimming across Isanotski Straight, but there have been no records of more than a few animals making the movement more recently. The most recent substantial migration occurred during the 1970s when the population on Unimak Island reached 5,000 caribou. This movement was an exodus from Unimak Island presumably due to nutritional limitations. By 1976 the caribou population on Unimak was reduced to 300 animals.

The Unimak Caribou Herd (UCH) on Unimak Island has recently dropped to very low population levels. The Alaska Department of Fish and Game (Department) conducted a composition survey in October 2009 of 221 caribou of the approximately 400 caribou on the island. Significantly, only ten of the caribou could be identified as adult bulls (4.9 bulls to 100 cows). This composition count also showed only seven calves survived into recruitment (3.4 calves per 100 cows). Wolves and bears are common on the island, and wolves are frequently observed during caribou surveys. There is no official estimate of wolf numbers but bear numbers on the island are approximately 250-300. Based on areas of similar size, habitat, and ungulate prey base biomass on the neighboring Alaska Peninsula, 20-30 wolves are estimated to occupy the island in 2-5 packs.

The Commissioner of the Department shall "*manage, protect, maintain, improve, and extend the fish, game and aquatic plant resources of the state in the interest of the economy and general well-being of the state*." The Department and the Board of Game are responsible for the sustainability of fish and wildlife in the State of Alaska, regardless of land ownership, and are the primary management authorities for fish and wildlife, which includes determining healthy populations and allocating fish and wildlife – including for subsistence purposes – unless specifically preempted by federal law.

The Department proposes to transplant additional caribou bulls and conduct a wolf population reduction in Unit 10, Unimak Island, targeting wolves on the caribou calving grounds, in order to increase pregnancy rates and calf survival. Most of the details of this action appear in Proposal 132, which was presented and approved by the Alaska Board of Game in February 2010. Although the Service has recently conducted several predator control programs to protect and enhance bird populations on refuge administered lands, no recent predator control programs have been conducted to protect ungulates on national wildlife refuges in Alaska. The current situation on Unimak Island risks being unsustainable and quick action is critical to reverse the downward trend in breeding success and calf survival in order to assure the sustainability of the Unimak

Caribou Herd. Action must be taken to prevent extirpation of the caribou herd while also assuring conservation of wolves and subsistence uses of caribou for Alaska residents, consistent with federal law, including ANILCA, and state law.

Background

> *"Previously, all caribou on the Alaska Peninsula south to, and including, Unimak Island were considered 1 herd…. During the 1980s,* [*the Alaska Department of Fish and Game*] *began differentiating between the caribou living north of Port Moller and those occupying the Alaska Peninsula and Unimak Island south of Port Moller, and since the mid-1990s, the caribou on Unimak Island have been considered a separate herd because of their geographic isolation and lack of interaction with* [*Southern Alaska Peninsula*] *caribou*."[1]

> *"Unimak Island is the only island in the Aleutian chain to have native caribou. It is separated from the Alaska Peninsula by a narrow (1 km) ocean passage (Isanotski Straight) that has strong tidal currents. During 1900-1925 caribou were occasionally observed swimming across Isanotski Straight, but there have been no records of more than a few animals making the movement more recently…."*[2]

Unimak Island is located in the Aleutian Islands Unit of the Alaska Maritime National Wildlife Refuge (Refuge). The Refuge was established and redesignated under provisions of the Alaska National Interest Lands Conservation Act of 1980, Public Law 96-487 (ANILCA). The U. S. Fish and Wildlife Service (Service) administers the federal public land, which comprises most of Unimak Island, as part of the national refuge system. (See Exhibit A, land status map)

The purposes of the Refuge include: "*i) to conserve fish and wildlife populations and habitats in their natural diversity, including . . . caribou*." Another purpose of the Refuge is: "*(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents*."[3] About 93 percent of the public land on Unimak Island is congressionally designated Wilderness. According to ANILCA Section 1314, nothing in ANILCA changes the State of Alaska's authority and responsibility for the management of fish and wildlife on refuge lands, including assuring the conservation and sustainability of all fish and wildlife except as provided in Title VIII of ANILCA.

The Unimak Caribou Herd (UCH) on Unimak Island has recently dropped to very low population levels. In 2002, the UCH contained 1,260 caribou. By 2010 the population had been reduced to approximately 400 caribou based on a partial survey conducted by Izembek National Wildlife Refuge Staff. The decline is believed to have been caused by a prolonged period of chronic poor calf recruitment. While it is not uncommon for caribou populations to fluctuate over time, the primary concern for the UCH is that the decline has been accompanied by a concurrent decline in the bull:cow ratio that may be limiting caribou pregnancy rates and calf production. The Alaska Department of Fish and Game (Department) conducted a composition survey of 221 UCH caribou in October 2009. Significantly, only ten of the caribou could be identified as adult bulls (4.9 bulls to 100 cows). This composition count also showed only seven calves survived into recruitment (3.4 calves per 100 cows). This low calf recruitment is not sufficient to replenish the bull population and a continued decline in the bull ratio is expected if

[1] Valkenburg (2003) at page 134
[2] Id. at page 136
[3] ANILCA Title III

calf recruitment does not improve. Bull caribou have lower survival rates and shorter lifespans than cow caribou. Because of this difference, bulls numbers decline quickly in a population that does not have sufficient calf recruitment to offset the loss of adult animals. As bull numbers decrease it becomes increasingly difficult for reproductive cows to find bulls during the rut and pregnancy rates can decline at very low bull numbers. This appears to be the case in the UCH. With a decrease in pregnancy rates and calf production, calf recruitment is further compromised creating a negative feedback that further limits calf recruitment.

Wolves and bears are common on the island, and wolves are frequently observed during caribou surveys. There is no official estimate of wolf numbers, but Department biologist believe that there are between 15-30 wolves on Unimak based on an extrapolation made from studies of similar populations and prey base. Based on areas of similar size, habitat, and ungulate prey base biomass on the neighboring Alaska Peninsula, 20-30 wolves are estimated to occupy the island in 2-5 packs. Brown bears are common on Unimak Island. During the spring of 2002 a line-transect survey was conducted that estimate the population size to include approximately 300 bears.

If current trends in the UCH continue, the population will experience a prolonged population low and may be extirpated from the island. Either outcome would result in the loss of opportunity for people to utilize caribou (consumptive, including subsistence use, and non-consumptive use) and would have consequences for the ecosystem on Unimak Island, particularly in regarding the wolf population.

The Department proposes to transplant additional caribou bulls and conduct a wolf population reduction in Unit 10, Unimak Island, targeting wolves on the caribou calving grounds, in order to increase pregnancy rates and calf survival. Most of the details of this action appear in Proposal 132, which was presented and approved by the Alaska Board of Game in February 2010. Although the Service has recently conducted several predator control programs to protect and enhance bird populations on refuge administered lands, no recent predator control programs have been conducted to protect ungulates on national wildlife refuges in Alaska. The current situation on Unimak Island risks being unsustainable and quick action is critical to reverse the downward trend in breeding success and calf survival in order to assure the sustainability of the UCH.

Need

The UCH has recently undergone a significant decline in key population parameters that may affect the long-term viability of the population. The UCH is experiencing similar population effects predicted for the Southern Alaska Peninsula Caribou Herd (SAP) in 2007. Similar to other caribou herds in Southwest Alaska, predation has limited caribou calf recruitment, which in turn has decreased the bull:cow ratio as female caribou have a longer lifespan than males. In the case of the UCH, the reduction in bull numbers may have been sufficient to decrease pregnancy rates, therefore reducing overall productivity in addition to low levels of calf survival. Action must be taken to prevent extirpation of the caribou herd while also assuring conservation of wolves and subsistence uses of caribou for Alaska residents, consistent with federal law, including ANILCA, and state law.

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Purpose

Conduct management actions to increase both calf survival and recruitment to achieve a sex and age structure that will sustain the population, which will prevent its expiration from Unimak Island.

Law and Policy

State

<u>The Constitution of the State of Alaska</u>

The Alaska Constitution requires that "[*w*]*herever occurring in their natural state, fish, wildlife, and waters are reserved to the people for common use*"[4] and "[*f*]*ish, forests, wildlife, grasslands, and all other replenishable resources belonging to the State shall be utilized, developed, and maintained on the sustained yield principle, subject to preferences among beneficial uses*."[5]

<u>Alaska Statute and Administrative Code</u>

The Commissioner of the Department shall "*manage, protect, maintain, improve, and extend the fish, game and aquatic plant resources of the state in the interest of the economy and general well-being of the state*."[6] The Department and the Alaska Board of Game (state Board) are responsible for the sustainability of fish and wildlife in the State of Alaska, regardless of land ownership, and are the primary management authorities for fish and wildlife, which includes determining healthy populations and allocating fish and wildlife – including for subsistence purposes – unless specifically preempted by federal law.

The Mission of the Department is to "*administer the state program for the conservation and development of the state's… game… animals*."[7] The Department manages fish and wildlife in accordance with recognized scientific principles, which assure the health, continued viability, and conservation of fish and wildlife populations. The Department management program is extensive, with staff experienced in evaluating the health and sustainable harvests of fish and wildlife populations.

The state Board is responsible for the conservation and development of the state's wildlife resources. Codified at AS 16.05.255, the state Board's authorities include establishing open and closed seasons and areas for the taking of game; establishing means and methods employed in pursuit, capture, taking, and transport of game, including regulations that are consistent with resource conservation and development goals; and regulating sport hunting and subsistence hunting as needed for the conservation, development, and utilization of game. When reviewing proposals, the state Board is not limited by the specific language or confines of the actual proposals that have been submitted by the public or Department staff.

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[4] Office of the Lieutenant Governor at page 26
[5] Id. at 26
[6] AS 16.05.020
[7] AS 44.39.020

Federal

Alaska National Interest Lands Conservation Act of 1980, PL 96-487 (ANILCA)

ANILCA expanded seven national wildlife refuges in Alaska, including the Alaska Maritime National Wildlife Refuge, as well as established nine others. The Act outlined refuge purposes and provided additional direction for special provisions regarding access and subsistence uses, among others. Section 303(1)(B) [*t*]*he purposes for which the Alaska Maritime National Wildlife Refuge is established and shall be managed include – (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to*…, *caribou*…; *(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents*…." The UCH is the only naturally occurring caribou herd within the exterior boundary of the Refuge.

ANILCA also specified that "*consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for which each conservation system unit is established*"[8] it is the intent of Congress "*to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so*."[9]

Congress further intended that traditional roles regarding fish and wildlife were to remain static. Throughout the legislative history of ANILCA, Congress recognized the State of Alaska as a world-respected fish and wildlife management agency. ANILCA Section 1314 states:

> (a) N*othing in this Act is intended to enlarge or diminish the responsibility and authority of the State of Alaska for management of fish and wildlife on the public lands except as may be provided in title VIII of this Act, or to amend the Alaska constitution*.
> (b) *Except as specifically provided otherwise by this Act, nothing in this Act is intended to enlarge or diminish the responsibility and authority of the Secretary over the management of the public lands*.
> (c) *The taking of fish and wildlife in all conservation system units… shall be carried out in accordance with the provisions of this Act and other applicable State and Federal law*.[10]

National Wildlife Refuge Administration Act of 1966 (as amended)

> "*The National Wildlife Refuge System comprises more than 93.8 million acres of Federal lands that are incorporated within more the 540 refuges, 3,000 waterfowl production areas, and 50 coordination areas located in all 50 states and the territories of the United States. The System was created to conserve fish, wildlife, plants, and their habitat, while at the same time providing opportunities for Americans to participate in compatible wildlife-dependent recreation.*

[8] ANILCA Section 101(c)
[9] Id.
[10] Id. at Title XIII

There are 16 national wildlife refuges in Alaska. They are made up of a wide range of habitats with varied terrain that includes mountains, glaciers, tundra, grasslands, wetlands, lakes, woodlands, and rivers. Together, the 16 refuges span nearly 83 million acres and make up more than 82 percent of the National Wildlife Refuge System.

Certain basic principles are fundamental to the management of national wildlife refuges. The missions of the U.S. Fish and Wildlife Service and the National Wildlife Refuge System are the cornerstones of these principles. The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people."[11]

"*The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans*."[12]

"*The National Wildlife Refuge System Administration Act, as amended, states that each refuge shall be managed to fulfill both the mission of the Refuge System and the purposes for which the individual refuge was established*.[[13]] *It also requires that any use of a refuge be compatible with refuge purposes*.[[14]]"[15]

Defined, compatible use "*means a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge*"[16] and does not apply to overflights.[17] The legislative history describing this definition states "[*n*]*ew Section 5(1) defines the term 'compatible use.' The standard here is the same as the definition that the* [*Service*] *has used for over a decade. It specifies that these are uses that do not have a tangible adverse impact on Refuge System resources*." State fish and game management activities are routinely conducted and "do not have a tangible adverse impact" on the resource or do they "materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge." Despite the above compatibility requirement, the Secretary "[*n*]*otwithstanding any other provision of this Act… may temporarily suspend, allow, or initiate any activity in a refuge in the System if the Secretary determines it is necessary to protect the health and safety of the public or any fish or wildlife population*."[18]

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[11] U.S. Fish and Wildlife Service (2010) at page 1-3
[12] 16 U.S.C. § 668dd(a)(2)
[13] See Id. at § 668dd(a)(3)(A) – each refuge shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established
[14] See Id. at § 668dd(d)(1)(A) – The Secretary is authorized… to… permit the use of any area within the System for any purpose, including but not limited to hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which such areas were established…
[15] US Fish and Wildlife Service (2010) at page 1-4
[16] 16 U.S.C. § 668ee(1)
[17] Id. at § 668dd(d)(4)(A)
[18] Id. at § 668dd(k)

"*The 1997 amendments to the National Wildlife Refuge System Administration act identified a number of principles to guide management of the Refuge System. They include the following*:

- *Conserve fish, wildlife, and plants, and their habitats within the System*
- *Maintain the biological integrity, diversity, and environmental health of the System*[19]
- *Coordinate, interact, and cooperate with adjacent landowners and state fish and wildlife agencies*…[20][21]

In order to maintain the health of individual refuges and the National Wildlife Refuge System as a whole, managers must anticipate future conditions. Managers must endeavor to avoid adverse impacts and take positive actions to conserve and protect refuge resources. National wildlife refuges exist within larger ecological systems and land-ownership patterns. Effective management depends on acknowledging these larger systems and resource relationships. Refuge managers will work together with partners – including other refuges, Federal and state agencies, tribal and other governments, Native organizations and entities, and nongovernmental organizations and groups – to protect, conserve, enhance, or restore all native fish, wildlife (including invertebrates), plants, and their habitats whenever possible."[22]

When administering the System, it is the duty of the Secretary to

"ensure that the mission of the System… and the purposes of each refuge are carried out, except that if a conflict exists between the purposes of a refuge and the mission of the System, the conflict shall be resolved in a manner that first protects the purposes of the refuge, and, to the extent practicable, that also achieves the mission of the System."[23]

"*ensure effective coordination, interaction, and cooperation with…the fish and wildlife agency of the States in which the units of the System are located*."[24]

Similar to ANILCA, the Administration Act's "savings clause" states

"[*n*]*othing in this Act shall be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate fish and resident wildlife under State law or regulations in any area within the System*."[25]

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[19] See 16 U.S.C. § 668dd(a)(4)(B) – ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans
[20] See Id. at § 668dd(a)(4)(C) – plan and direct the continued growth of the System in a manner that it is best designed to… complement the efforts of States and other Federal agencies to conserve fish and wildlife…
[21] See Id. § 668dd(a)(4)(E) – ensure effective coordination, interaction, and cooperation with… the fish and wildlife agency of the States in which the units of the System are located
[22] US Fish and Wildlife Service (2010) at page 1-7
[23] 16 U.S.C. § 668dd(a)(4)(D)
[24] Id. at § 668dd(a)(4)(E)
[25] Id. at § 668dd(m)

> "…*Congress did not intend to displace entirely state regulation and management of wildlife on federal public lands, especially where such regulation and management bears directly upon the well being of state interests arising outside those public lands. In other words, Congress rejected complete preemption of state wildlife regulation within the* [*National Wildlife Refuge System*]."[26]

The Act further reiterates that if there is any conflict between provisions of ANILCA and Administration Act, ANILCA prevails.[27]

National Wildlife Refuge System Biological Integrity, Diversity, and Environmental Health

This Policy serves as direction to Service personnel. "*It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuges and associated ecosystems*"[28] and "*provides guidelines for maintaining existing levels of biological integrity, diversity, and environmental health*."[29] Biological integrity is the "*biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions*[[30]], *including the natural biological processes that shape genomes, organisms and communities*."[31] The Service considers "*biological integrity, diversity, and environmental health* [*as*] *critical components of wildlife conservation*."[32]

In regard to maintaining and restoring biological integrity, diversity, and environmental health the Service will maintain current levels at the individual refuge and will "*restore lost or severely degraded elements of integrity, diversity, environmental health at the refuge scale and other appropriate landscape scales where it is feasible and supports achievement of refuge purpose(s) and System mission*."[33]

Currently, the UCH is not at historic conditions and is a key element of biological integrity and a refuge purpose. The Service recognizes that absolute biological integrity is not possible; however, they "*strive to prevent the further loss of natural biological features and process; i.e., biological integrity*."[34] As a key element of the Unimak Island ecosystem, restoring the UCH[35] is in line with the policy. Wildlife and habitat management, "*ranging from preservation to active manipulation of habitats and populations, is necessary to maintain biological integrity,*

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[26] State of Wyoming v United States (2002)
[27] See National Wildlife Refuge System Improvement Act at Section 9(b) – If any conflict arises between any provision of this Act and any provision of the Alaska National Interest Lands Conservation Act, then the provision in the Alaska National Interest Lands Conservation Act shall prevail.
[28] National Wildlife Refuge System Biological Integrity, Diversity, and Environmental Health (2001) at 3.3
[29] Id. at 3.4
[30] See Id. – Historic Conditions: Composition, structure, and functioning of ecosystems resulting from natural processes that [the Service] believe[s], based on sound professional judgment, were present prior to substantial human related changes to the landscape.
[31] Id. at 3.6
[32] Id. at 3.7(A)
[33] Id. at 3.7(D)
[34] Id. at 3.10(A)(2)
[35] See Id. at 3.14(C)The Service "…*manages populations for natural densities and levels of variation*… [*and*] …*consider*[*s*] *population parameters such as sex ratios and age class distributions when managing population to maintain and restore where appropriate biological integrity*…."

diversity, and environmental health. [*The Service*] *favor*[*s*] *management that restores or mimics natural ecosystem processes in order to meet refuge purpose(s).*"[36]

National Wildlife Refuge System Wilderness Stewardship Policy

> *1.11 How does the Service coordinate wilderness stewardship with State fish and wildlife agencies?*
>
> *Both the Service and State fish and wildlife agencies have authorities and responsibilities for management of fish and wildlife on refuges as described in 43 CFR part 24.*
>
> *A. Consistent with the Administration Act, as amended by the Improvement Act, the Director:*
>
> > *(1) Must interact, coordinate, cooperate, and collaborate with the State fish and wildlife agencies in a timely and effective manner on the acquisition and management of refuges, and appurtenant wilderness areas.*
>
> *2.7 May the Service allow use of motorized vehicles, motorized equipment, and mechanical transport in wilderness?*
>
> *The Wilderness Act generally prohibits the use of motorized vehicles, motorized equipment (including motorized portable tools), and mechanical transport in wilderness.*
>
> *A. We generally prohibit these uses for refuge management activities in wilderness (see 610 FW 1.16.) unless:*
>
> > *(1) We determine they are:*
> >
> > > *(a) The minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including Wilderness Act purposes,*
>
> *2.8 May the Service manage aircraft use in and over wilderness?*
>
> *A. The Wilderness Act generally prohibits landing aircraft in refuge wilderness.*
>
> *B. The Wilderness Act also generally prohibits landing aircraft in wilderness for refuge management activities (see 610 FW 1.16) unless:*
>
> > *(1) We determine such use to be the minimum requirement for administering the area as wilderness, and the use is necessary to accomplish the purposes of the refuge, including Wilderness Act purposes;*

[36] National Wildlife Refuge System Biological Integrity, Diversity, and Environmental Health (2001) at 3.7(E)

C. The Wilderness Act and the Administration Act do not prohibit the use of aircraft over a wilderness area. The Federal Aviation Administration (FAA) is responsible for managing commercial and private air space. The FAA has established 2,000 feet (600 meters) above ground level as the minimum altitude advisory for refuges, including designated wilderness areas (see FAA Advisory Circular 91-36c). Other Federal laws (e.g., Airborne Hunting Act, Endangered Species Act, Bald Eagle Protection Act) may govern overflights above a refuge.

D. We may use aircraft over wilderness for refuge management activities, such as wildlife surveys, if we determine it is the minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including Wilderness Act purposes, or if we are responding to an emergency involving the health and safety of people. We may conduct such flights at levels low enough to achieve refuge management objectives….

E. Other Federal, State, or tribal agencies may use airspace above refuge wilderness as necessary to fulfill their responsibilities consistent with applicable FAA and other laws, regulations and advisories (e.g., by the Department of Defense and the National Aeronautics and Space Administration). We will consult with other agencies using airspace above refuge wilderness to minimize adverse impacts on wilderness character.

2.16 How does the Service conserve wildlife and habitat in wilderness?

A. . . . Both the Service and State fish and wildlife agencies have authorities and responsibilities for management of fish and wildlife on refuges as described in 43 CFR part 24. We work cooperatively with State fish and wildlife agencies to conserve fish, wildlife, and plant resources and their habitats (including water resources).

B. Major ecosystem processes including wildfire, drought, flooding, windstorms, pest and disease outbreaks, and predator/prey fluctuations may be natural ecological and evolutionary processes.

> *(1) We will not interfere with these processes or the wilderness ecosystem's response to such natural events unless necessary to accomplish refuge purposes, including Wilderness Act purposes, or in cases where these processes become unnatural….*
> *(2) In such cases, we encourage the restoration and maintenance of biological integrity and wilderness character.*
>
> *(3) All decisions and actions to modify ecosystems, species population levels, or natural processes must be:*
>
> > *(a) Required to respond to a human emergency, or*

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(b) The minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including Wilderness Act purposes. In addition, such decisions and actions must:

(i) Maintain or restore the biological integrity, diversity, or environmental health of the wilderness area . . . .

2.20 May the Service control predation in wilderness?

Predation is an essential and integral process in the wilderness ecosystem. We will initiate actions intended to alter natural predator/prey relationships only when compelling evidence exists that the proposed action will correct or alleviate identified impacts on native fish, wildlife, plants, or their habitats and would be in compliance with section 2.16. We will direct control at the individual animal(s) causing the problem using the method least likely to adversely impact nontarget species and wilderness visitors. We will not manage predation solely to protect livestock, wilderness visitors, or other users.

5.9 What special provisions apply to helicopter access in Alaska wilderness areas?

Subject to an [*minimum requirements analysis*]*, we may permit the use of helicopters at designated landing areas through a special use permit or memorandum of understanding… for… wildlife management activities….*

Designated Wilderness – Purpose

Wilderness is defined, for legal purposes, as "*undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation…*[37] *and which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable….*"[38] "Primeval character" should not be confused with "primeval condition." As defined, character refers to the main or essential nature[39] that distinguishes one from another. In contrast, condition is "*the equivalent of 'requisite' or 'requirement.'*"[40] In addition, the qualifications (generally appears, primarily, substantially) in the Act indicate Congress intended these areas need not be pristine.[41]

It is known *a priori*, and reaffirmed by scientists and scholars alike, that fish and wildlife posses wilderness value. Fish and wildlife are fundamental, if not necessary, components of wilderness.[42] Etymologically, 'wilderness' literally means the habitat of wild creatures.[43] Biologically, "[*w*]*ildlife directly* [*affect*] *the soil and vegetation mantle in key ways: dispersal, planting, and germination of seeds; fertilization; conversion of dead plants into organic matter*

[37] 16 U.S.C. § 1131(c)
[38] Id. at § 1131(c)(1)
[39] Merrian-Webster (n.d.)
[40] Gifis (2003) at 95
[41] For further discussion on these qualifications see McCloskey (1966) at page 307
[42] See discussion Schoenfeld (1980) at pages 20-41
[43] Nash (1982), Schoenfeld (1980)

more usable by living plants; pollination; and modification of vegetation and soil."[44] Additionally, wildlife populations can provide a measure to identify overall ecosystem health.[45] The Act reflects this importance and defines wilderness, in the ideal, as an "*area where the earth and its community of life*."[46] It follows that fish and wildlife are an integral part of wilderness character.

The general directive of the Wilderness Act calls for preservation of wilderness character and the purposes of the Wilderness Act are "*within and supplemental to the purposes for which… units of the… national wildlife refuge systems are established and administered*."[47] Therefore the purposes of the Aleutian Islands Wilderness include conserving fish and wildlife populations and habitats in their natural diversity, including caribou, and to provide for continued subsistence uses. As applied to fish and wildlife, this constitutes protecting ecosystems;[48] however, simply designating an area is not enough to protect these ecosystems. It is impossible to view a wilderness ecosystem as an independent system, devoid of human influence. Further, ecosystems do not follow lines drawn on a jurisdictional map.[49] Aldo Leopold argued that nature does not heal all and "[i]*n order to maintain highest biological quality in wilderness areas, especially those involving unstable communities, active management definitely is required*."[50]

Management actions taken in regard to fish and wildlife are consistent with the Wilderness Act and, more specifically, the preservation directive because (a) the purposes of the Wilderness Act are "*within and supplemental to the purposes for which units of the… national wildlife refuge system*"[51] are administered and (b) fish and wildlife are an integral part of wilderness character. Thus, because the UCH is the only natural caribou herd occurring within the Refuge, and caribou are a purpose of the refuge, it is essential that active management occur to protect the purposes of the refuge.

Section 2(a) states that in order to "*secure for the American people of present and future generations the benefits of an enduring resource of wilderness….*

> [*Wilderness areas*] *shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment….*"[52]

The Act continues at 4(b): "*…wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use*."[53]

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[44] Schoenfeld (1980)
[45] Id.
[46] 16 U.S.C. §1133(c)
[47] Id. at §1133(a)
[48] See Rohlf (1988) at page 271
[49] Id. at page 272
[50] Id. at page 271
[51] 16 U.S.C. §1133(a)
[52] Id. at §1131(a)
[53] Id. at §1133(b)

Designated Wilderness – Access

> "*Under Section 4(c) of the Wilderness Act, certain activities and methods of access are prohibited in designated Wilderness; however, administering agencies may conduct or authorize certain activities that are normally prohibited in the activities are "necessary to meet mini mum requirements for the administration of the area for the purpose of* [*the Wilderness*] *Act. Federal agencies conduct a minimum requirements analysis to make this determination*."[54]

This determination generally involves two distinct steps, which identify if the action is necessary and, if so, identify the minimum tool necessary to complete the proposed project. "*If approved,* [*National Environmental Policy Act*] *review of the proposed project begins, as appropriate*."[55]

Thus a minimum requirements analysis would occur prior to an agency making a proposal for action, to inform the question whether to propose action in the first place. If it is done pre-proposal, it would exist outside the National Environmental Policy Act (NEPA) process since the NEPA process does not start until there is a proposal for Federal action. It could also occur simultaneously with the NEPA process and become an embedded portion of the NEPA document to inform the choices to be made about what the minimum requirements may be or should be. In any case the minimum requirements analysis would inform the federal decision maker but would not itself be a decision, an exercise of federal power, or constitute federal approval or disapproval in regard to NEPA.

Section 1110(a) of ANILCA provides that

> "[*n*]*otwithstanding any other provision of this Act or other law, the Secretary shall permit, on conservation system units*[[56]]*… the use of snowmachines…, motorboats, airplanes, and non-motorized surface transportation methods for traditional activities… and for travel to and from villages and homesites. Such use shall be subject to reasonable regulations by the Secretary to protect the natural and other values of the conservation system units… and shall not be prohibited unless, after notice and hearing in the vicinity of the affected unit or area, the Secretary finds that such use would be detrimental to the resource values of the unit or area*."

Since snowmobiles, airplanes, motorboats, and non-motorized surface transportation are allowed by the public in conservation system units, which includes designated wilderness, these transportation methods are acceptable methods of access by the Department and do not trigger a minimum requirement analysis. Department actions within designated wilderness utilizing a method of access other than those provided in Section 1110(a), e.g., helicopters, may require a minimum requirements analysis.

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[54] Expectation Regarding State of Alaska Administrative Activities in Forest Service Wilderness
[55] Id.
[56] See ANILCA Section 102(4) "*The term 'conservation system unit' means any unit in Alaska of the… National Wildlife Refuge System…* [*or*] *National Wilderness Preservation System… including existing units, units established, designated, or expanded by or under the provisions of this Act, additions to such units, and any such unit established, designated, or expanded hereafter*."

National Environmental Policy Act (NEPA)

We approach NEPA as being applicable unless an exception can be found.

> *The language of NEPA itself contains exceptions to the requirement for an EIS that goes beyond the EA/FONSI and categorical exclusions provided by CEQ. Paraphrased, the procedural provisions of NEPA can be read this way: (1) to the fullest extent possible (2) Federal (3) proposals (4) for plans, functions, programs, and resources (5) significantly affecting (6) the quality of the human environment — require an EIS — unless (7) Congress changes the rules or (8) impacts are outside the United States.*[57]

Exceptions 5, 6, 7, and 8 can be easily dismissed from providing an exception to conduct a NEPA review. The lack of "significant" environmental consequences is a reason not to prepare an Environmental Impact Statement (EIS), but not a reason to skip the Environmental Assessment (EA) or Categorical Exclusion (CE) process (exception 5). The action of reducing a wolf population would be categorized fairly as an action affecting the "human environment" (exception 6). Human environment means "*the natural and physical environment and the relationship of people with that environment*."[58] Given the relationship between wolves, caribou, subsistence, and other uses on Unimak Island, this would be an action that affects the human environment. There is no evidence of a Congressional exemption (exception 7) and the project is not extraterritorial (exception 8).

Exceptions 1, 2, 3, and 4 merit additional review.

Exception 1. If it is "not possible" for an agency to comply with NEPA in order to also comply with other mandatory statutes, then NEPA gives way because it is written to apply "*to the fullest extent possible*."[59] There are very few successful applications of this exception.[60] We are not aware of any statute that is administered by the Service that makes compliance with NEPA "not possible" in this case, but if there is such a statute then the Service might regard that as creating an exception to NEPA.

Exception 2. There is no evidence as to how the Service regards their role in this matter.[61] Since this action is proposed on federally administered lands and the Property Clause of the United States Constitution "*gives Congress the power to protect wildlife on the public lands, state law notwithstanding*"[62] it is almost certain that the Service has the power of control such that the Service can "federalize" the Department's action. It is this "power to control the nonfederal activity" that brings nonfederal action under NEPA. The 2009 case, *Save Strawberry Canyon*, cites the Ninth Circuit for one relevant test:

[57] Schmidt (2009) at page 173
[58] 40 CFR 1508.14
[59] 42 U.S.C. § 4332
[60] See NEPA 1 in Appendix
[61] See NEPA 2 in Appendix
[62] Kleppe v. New Mexico (1979)

> . . . [*t*]*here are no clear standards for defining the point at which federal participation transforms a state or local project into a major federal action .... The matter is simply one of degree.... "Marginal" federal action will not render otherwise local action federal. To make this determination, [courts] look to the nature of the federal funds used and the extent of federal involvement .... While "significant federal funding" can turn "what would otherwise be" a state or local project into a "major federal action," consideration must be given to a "great disparity in the expenditures forecast for the state* [*and county*] *and federal portions of the entire program*.[63]

Strawberry Canyon turned on the relative amount of federal funding. There is no evidence as to how much, if any, federal funding would be involved in the Unimak Island project. At this time the Department has not requested any type of federal assistance. The larger question is how much federal control is to be exercised. If the Service exercises "actual power" [64] over the project, then the project is almost certainly federalized and NEPA applies.

Exception 3. If the Service does not propose to take some overt act in connection with a project, NEPA does not apply.[65] For example, if the Department requests the Service's coordination and/or approval but the Service in turn does not propose to take any overt act, there is no "proposal" for federal action and thus there is no trigger for the application of NEPA. That was the situation for two other cases from Alaska – *Defenders of Wildlife v. Andrus* and *State of Alaska v. Andrus*.[66]

Exception 4. 5 AAC 92.110(j) states

> "[*a*]*n activity involving a wolf population reduction or wolf population regulation program potentially involving federal lands will not apply to lands managed and administered by the National Park Service or United States Fish and Wildlife Service unless approved by the applicable agency and, to the maximum extent possible, must be coordinated with all appropriate federal agencies*."

In February 2010, the Alaska Board of Game modified and adopted Proposal 131, which struck Section (j) from 5 AAC 92.110. The regulation change is scheduled to officially take effect May 20, 2010. Until that time, 5 AAC 92.110(j) is binding to the Department.

Pre-Proposal 131. Federal "approval" of actions that may affect the human environment are Federal "plans, functions, programs" as defined in NEPA regulations. It appears that much or all of the Department's action would occur on lands administered by the Service and, thus, "involve" federal lands. A wolf population reduction action that involves Federal lands, because of 5 AAC 92.110(j), would require approval of the "applicable agency" – in this case, the Service. Service "approval" may constitute a federal action for purposes of NEPA in this instance.

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[63] See NEPA 2 in Appendix
[64] In short, any time a Federal agency exercises legislated "power" it is exercising "actual power."
[65] See NEPA 3 in Appendix
[66] Id.

"Major Federal action" is defined at 40 CFR 1508.18. The adjective "major" does not inform us on the question of whether NEPA applies to any particular action because NEPA applies to federal actions whether they are major or not. "*Major reinforces but does not have a meaning independent of significantly*."[67] The key to understanding the application of NEPA is whether any good legal reason exists for exempting an action from NEPA analysis.

As a general rule, NEPA applies to any affirmative act proposed by a Federal agency. "*Actions include new and continuing activities, including projects and programs entirely or partly… approved by federal agencies*…."[68] "*Federal actions tend to fall within one of the following categories: … Approval of specific projects, such as construction or management activities located in a defined geographic area*."[69]

NEPA may well apply to Service approval of a Department action, given the definition of federal action in NEPA regulation.

Post-Proposal 131. If the Department moves forward with a wolf reduction program without seeking federal approval while 5 AAC 92.110(j) is current, it may create an issue of compliance with Alaska Code. Removing 5 AAC 92.110(j) eliminates the requirement for the Department to seek approval from the Service but the Service still has the power to "federalize" the project if that is their choice. Additionally, other considerations are still applicable.

In the Master Memorandum of Understanding (MMOU) the agencies agreed to coordinate and cooperate. This gives the Service early notice of the Department's proposal and every opportunity to exercise whatever jurisdiction and powers it chooses. However, we are unaware of Service intentions.

Additionally, there is still the inherent jurisdiction and power the Service has over its lands, and the conservation and protection of the resources on its lands – including wildlife of all species. Again, we are unaware of Service intentions.

Conclusion

It appears that the need to conduct a NEPA review would come down to what, if anything, the Service chooses to do with their jurisdiction and powers. It almost certainly has the power to "federalize" the Department's action by assuming the necessary degree of control. By proposing to take action and, therefore, preparing a NEPA document ending with a "decision" by the Service, it has likely taken the necessary control even if the decision is to completely agree with the Department and "approve" the project. In other words, if the Service prepares a NEPA document, that is the very proof they should have prepared a NEPA document.

In sum, 3 of the 8 possible exceptions to the NEPA requirement for an EIS may provide an exception to conduct a NEPA review, not including exception 4. To the extent the facts have been developed it appears possible – though not highly probable – the Service will not have a

[67] See 40 CFR 1508.18
[68] See 40 CFR 1508.18(a)
[69] See 40 CFR 1508.18(b)

duty to prepare a CE, EA, or EIS under NEPA. The emergence of additional facts will determine the outcome.

<u>43 CFR Part 24</u>

> *§ 24.1(c) It is the intent of the Secretary to strengthen and support, to the maximum legal extent possible, the missions of the States and the Department of the Interior to conserve and manage effectively the nation's fish and wildlife. It is, therefore, important that a Department of the Interior Fish and Wildlife Policy be implemented to coordinate and facilitate the efforts of Federal and State agencies in the attainment of this objective.*
>
> *§ 24.2(a) The purpose of the Department of the Interior Fish and Wildlife Policy is to clarify and support the broad authorities and responsibilities of Federal and State agencies responsible for the management of the nation's fish and wildlife and to identify and promote cooperative agency management relationships which advance scientifically-based resource management programs. This policy is intended to reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility, and to foster improved conservation of fish and wildlife.*
>
> *§ 24.3(a) In general the States possess broad trustee and police powers over fish and wildlife within their borders, including fish and wildlife found on Federal lands within a State . . . (b) The exercise of Congressional power through the enactment of Federal fish and wildlife conservation statutes has generally been associated with the establishment of regulations more restrictive than those of State law. The power of Congress respecting the taking of fish and wildlife has been exercised as a restrictive regulatory power, except in those situations where the taking of these resources is necessary to protect Federal property. With these exceptions, and despite the existence of constitutional power respecting fish and wildlife on Federally owned lands, Congress has, in fact, reaffirmed the basic responsibility and authority of the States to manage fish and resident wildlife on Federal lands.*
>
> *§ 24.4(e) . . . In contrast to multiple use public lands, the conservation, enhancement and perpetuation of fish and wildlife is almost invariably the principal reason for the establishment of a unit of the National Wildlife Refuge System. . . . [I]n recognition of the existing jurisdictional relationship between the States and the Federal Government, Congress, in the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd), has explicitly stated that nothing therein shall be construed as affecting the authority of the several States to manage fish and resident wildlife found on units of the system. Thus, Congress has directed that, to the maximum extent practicable, such public uses shall be consistent with State laws and regulations….*

DRAFT

Cooperative Agreement

Master Memorandum of Understanding between the Alaska Department of Fish and Game and the United States Fish and Wildlife Service

In March 1982 the State of Alaska, Department of Fish and Game, and the U.S. Fish and Wildlife Service, Alaska Region, entered into a MMOU "*within which the two agencies agree to operate*."[70] It is recognized that the Department, "*under the Constitution, laws, and regulations of the State of Alaska, is responsible for the management, protection, maintenance, enhancement, rehabilitation, and extension of the fish and wildlife resources of the State on the sustained yield principle, subject to preferences among beneficial uses*…."[71]

Under this agreement, the Department will "*manage fish and resident wildlife populations in their natural species diversity on Service lands*."[72] The Service will "*recognize the Department as the agency with the primary responsibility to manage fish and resident wildlife within the State of Alaska*"[73] and "*recognize the right of the Department to enter onto Service lands at any time to conduct routine management activities which do not involve construction, disturbance to the lands, or alterations of ecosystems*."[74] It is mutually agreed to "*coordinate planning for management of fish and wildlife resources on Service lands so that conflicts arising from differing legal mandates, objectives, and policies do not arise or are minimized*."[75]

The Department has coordinated with Refuge staff, in so much as conducting joint projects to collect data and continue monitoring the UCH. These actions are common management practices throughout the state and are not directly related to the proposed action. As such, this coordination unlikely constitutes an "overt act" as discussed by the Court in Defender of Wildlife v. Andrus. "[*I*]*n no published opinion of which* [*the United States Court of Appeals, District of Columbia Circuit (DC Circuit)*] *have been made aware has a court held that there is 'federal action' where an agency has done nothing more than fail to prevent the other party's action from occurring*." The Court states that "…*federal 'approval' of another party's action does not make that action federal unless the federal government undertakes some 'overt act' in furtherance of that other party's project*."[76]

Permits and Approvals

In accordance with the MMOU the Department would inform the Service it will be conducting activities on refuge lands but no concurrence or approval is required.

Unless an activity or method of access is specifically prohibited by the Wilderness Act, the Department does not need federal authorization. This "approval" may or may not federalize the proposed action.

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[70] See Master Memorandum of Understanding Between the Department and the Service
[71] Id.
[72] Id.
[73] Id.
[74] Id.
[75] Id.
[76] Defenders of Wildlife v Andrus (1980)

A minimum requirements analysis would occur prior to the Department's action. This analysis exists outside the NEPA process to inform the choices to be made about what the minimum requirements may be or should be in regard to the Wilderness Act. In any case this analysis would inform the Federal decision maker but would not itself be a decision, an exercise of Federal power, or constitute Federal approval or disapproval.

Management Options

No action

The Department would not conduct any routine management actions to increase calf recruitment or survival but would continue to monitor the UCH using standard monitoring techniques such as population counts, composition, parturition, and calf survival surveys. The Department would maintain radio collars on select individuals to aid in locating the population, improve survey results, and evaluate the importance of nutritional limitations in regulating population growth. Nutritional limitations will be evaluated using recognized indices for caribou populations such as body condition and weight, blood analysis, and herd health. This action would be the least expensive and would require less staff time than any other management option.

Actions common to all management options

The Department will continue to conduct routine monitoring of mammal populations on Unimak Island. The Department will monitor changes in population size and status utilizing standardized survey methods combined with deploying radio collars on individual animals. The information collected will be used to advise regulatory committees and the public on the current status of each population on Unimak Island and used to craft the Department's management strategy with the goal of reaching population objectives established for each species to the extent possible given the limitations of authorized management options.

The Department will maintain a wolf population of at least 2 breeding pairs on Unimak Island. The caribou population objective on Unimak Island is to maintain a population of 1,000 caribou with a bull:cow ratio of at least 35 bulls:100 cows and to provide opportunities for harvest. The caribou harvest necessary for subsistence (Amount Necessary for subsistence) is a combined harvest of 100-150 caribou from the UCH and the Southern Alaska Peninsula Caribou herd (SAP). The brown bear population objective is to maintain a high density bear population with a sex and age structure that will sustain a harvest composed of 60% males.

Actions to improve breeding success

Bull Translocation

The Department will verify pregnancy rates in 2010 by conducting a parturition survey of animals 2 years old or older. If pregnancy rates remain less than seventy-five percent, the Department would translocate twenty 1-2 year-old bull caribou from the SAP to Unimak Island to increase the bull:cow ratio. This action could be repeated as needed to maintain a minimum bull:cow ratio of 10 bulls:100 cows.

The bull translocation would occur during August and involve three pilots, one veterinarian, and two biologists. Field operations would be based out of the Department cabin on the Sapsuk River. During each translocation event, caribou groups would be located using a spotter plane (Piper PA-18 Super Cub) flying at low altitude. Selected bulls will be immobilized by darting them from a Robertson R-44 helicopter and then airlifted via sling, one caribou at a time to an adjacent runway. Veterinary staff and experienced animal handlers would keep the animals in an immobilized state and continually monitor their condition until they arrive on Unimak Island. The bulls would be fitted with VHF collars and transported in a DeHavilland Beaver (3-4 caribou per flight) from a runway on the mainland to a runway near Cape Sarichef on Unimak Island where the immobilization would be reversed and then, when determined fit, released. The project is expected to last 3 days (4 caribou per flight, 2 flights per day, total of 20 bulls translocated) barring unforeseen delays such as weather.

The bulls would be immobilized using a standard caribou immobilization drug combination (3.75mg Carfeninil and 50 mg Xylazine). This immobilization can be quickly reversed by administering reversal drugs (400mg Naltrexone and 20 mg Yohimbine). During transit the bulls will be administered additional Xylazine as required to maintain sedation.

Actions to improve calf survival

Immunocontraception or surgical sterilization

The Department would capture and treat adult pairs of wolves to prevent pregnancy. To be effective, subordinate wolves would be translocated or removed to reduce predation on caribou. Currently there is no known demand for wolves by zoo's or by approved conservation research centers for wolves from the wild. Because Unit 10 is a rabies enzootic area, wolves not euthanized would need to be translocated to other rabies enzootic areas. However, there are currently no areas in the State that fit these criteria that need additional wolves. Therefore, if this option is applied it is anticipated that up to 26 subordinate wolves would have to be culled. Without translocation or culling of wolves whose reproductive potential has not been removed, this action has generally no affect.

The capture crew would be composed of 5 pilots and 1 biologist and the field camp would be based in Cold Bay. Each day 3 fixed-wing pilots flying small aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) would search for wolf packs on Unimak Island at low altitudes. Once located the helicopter capture crew (Robertson R-44 helicopter with pilot and biologist) would capture all of the wolves using standard immobilization techniques. A dart containing 500mg of Telazol would be used to immobilize each wolf. After each wolf has been immobilized, the helicopter would transport each wolf to the nearest landing area where they would be examined for age, sex, injury, or abnormality. The oldest male and female would be fitted with VHF collars and released near the capture area after the female has been given an immunocontraceptive drug that will be prescribed by a veterinarian. If an area that meets the criteria in the ADFG transplant policy is identified, young animals would be transported to the mainland via a suitable fixed-wing aircraft (Cessna C-206 or Dehavilland DC-2 Beaver) and treleased. Wolves will be administered 200mg of Telazol as needed to maintain an

immobilized state until they have arrived at the release site. If suitable areas for translocation cannot be found, remaining wolves will be chemically euthanized using approved methods.

This treatment is not as effective in reducing calf mortality as targeted removal because small numbers of wolves can kill large numbers of calves resulting in a protracted period of treatment of wolves and recovery of caribou populations.

Targeted Wolf Removal

Aerial with helicopters. The Department would conduct a caribou calf mortality study and concurrently identify specific wolves killing calves in the calving areas. The wolves identified would then be killed using a shotgun fired from a helicopter.

The capture team would be composed of four pilots and two biologists. The crew would be based in Cold Bay, Alaska for the duration of the 3 week project. The project would begin in late May and conclude by June 20.

Each day three fixed-wing aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) flying low level would search for caribou calves that are less than 2 days of age. Upon locating a calf, the helicopter capture team (pilot and biologist in a Robertson R-44 helicopter) would hand-capture each calf and fit it with a VHF radio collar. Processing time for each calf is expected to last thirty to sixty seconds from the time the biologist exits the aircraft to the time the biologist is in the helicopter departing the capture site. This fast handling results in low abandonment rates (<1% based on the capture of 250 caribou calves in adjacent caribou herds). Calf capture efforts would continue through the duration of calving (approximately 2 weeks) with up to 50 calves captured during this period.

Following collar deployment, the calves would be monitored daily for mortality. Upon locating a dead calf, the helicopter team would visit the mortality site to determine cause of death. Wolf-caused mortalities would be used to pattern the activities of wolves killing calves in calving areas. The Department would direct intensive aerial search efforts to identify the wolf or wolves responsible for the mortalities.

The primary search for wolves would be conducted by the fixed-wing aircraft flying at low level. After the wolf or wolves are located the helicopter team would kill the animal utilizing a shotgun. After the wolf is killed the helicopter team would land to collect biological samples and inspect the reproductive condition of each wolf. If a lactating female is killed, an intensive search for a den would be initiated. Wolf pups would be euthanized in the den by directing CO gas into the den entrance.

This method of removing wolves from the population that prey on calves has proven successful when utilized under similar circumstances in the SAP. Utilizing this method requires that the least possible number of wolves be removed with actions limited to calving areas during the calving period only. This method is a highly effective and efficient process for culling select wolves in a quick and humane manner. Helicopters also allow rapid recovery of wolf carcasses

for biological specimens and facilitate the discovery and elimination of wolf pups in dens when necessary.

The practice of euthanizing pups in dens is highly controversial but unavoidable when the reproductive condition of the female wolf cannot be identified. While euthanizing wolf pups in the den is controversial, this practice is more humane than leaving the orphaned pups to starve in the den over a period of days. Translocation and adoption alternatives have been investigated, but no feasible alternatives have been found primarily due to concerns associated with the potential spread of rabies and human safety concerns associated with removing the pups from dens.

Aerial with fixed-wing aircraft. This action is similar to the use of helicopters except that without the use of a helicopter calves cannot be collared and, therefore, monitored to identify specific wolves killing calves. This reduces the probability of finding the wolves that kill calves. Wolves would be killed in a less discriminate manner over a larger area and the action would likely result in a lower rate of calf survival as compared to similar actions that utilize a helicopter.

This method requires three teams composed of a pilot and gunner each utilizing a fixed-wing aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) flying low-level when searching for wolves. The teams would be based in Cold Bay, Alaska and would make daily flights to Unimak Island in search of wolves. Search efforts would be concentrated near calving areas but would cover a larger area in an attempt to locate wolves traveling to and from the calving grounds. Upon locating a wolf or wolves, the pilot would make a low pass adjacent to the wolf and the gunner would attempt to kill the wolf by shooting it with a shotgun. Additional attempts to kill the wolf would be repeated until the wolf is killed or until it escapes. Wolves that escape will be more difficult to locate and kill during future attempts. Collection of biological information would be limited under this alternative to areas with suitable landing sites. Based on the limited availability of suitable landing sites, some biological information would likely not be collected.

The identification of specific wolves that are killing calves will be more difficult but may be be accomplished in some cases. Higher rates of calf mortality are expected, which will result in reduced calf recruitment when compared to the use of a helicopter. Because annual calf recruitment will be reduced, the duration of this action would be protracted to achieve similar results. Additionally the recovery of wolf carcasses for biological sampling would be reduced since suitable areas for landings are limited. Locating and accessing den sites and euthanizing pups would also be limited due to lack of suitable landing sites.

Ground Based with fixed wing support. Remove wolves by shooting and trapping during calving period and post-calving on calving grounds.

The crew would consist of two pilots and eight field staff. A base camp would be established on Unimak Island at False Pass, Alaska or Cape Sarichef. Fixed-wing aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) would be used to distribute hunters working in two person teams throughout the range of the UCH. Low-level

reconnaissance flights would be flown each day to locate wolves and to search for wolf den sites. The pilots would assist the ground teams by providing logistical support, supplies, and provide information regarding wolf activities.

Four ground-based teams would be assigned areas to search for wolves near caribou and would be deployed in the field from May 1 to June 20. Each team would be equipped with long range rifles, shotguns, air-to-ground radios, binoculars, spotting scopes, and field camp provisions. Teams would select field camp locations that provide a strategic vantage point to locate wolves and access to their assigned search area. Once located the team would move into position (by foot or with the assistance of aircraft) and attempt to kill the wolf or wolves. If areas with repeated wolf activity can be identified (den site, mammal carcass, or natural travel corridor), the team would relocate their camp to that area and focus activities there.

This option does not require the use of helicopters or aerial shooting; however, its effectiveness is expected to be lower than options that use aircraft to cull wolves. Ground based teams are inherently limited in their ability to quickly get within shooting range of wolves after they have been located. Wolves that elude field staff would be able to kill caribou until they are removed. In addition, similar to the targeted wolf removal from fixed –wing aircraft, without use of a helicopter, calves cannot be collared. Therefore more wolves would be removed from a larger area for a longer period than options that utilize a more targeted and efficient approach.

Ground-based efforts have been attempted to increase caribou calf survival in the Delta herd and proved unsuccessful even though helicopters were used for transportation in that effort. An independent review by the Audubon Society regarding a similar project also concluded that ground-based efforts were an ineffective method.[77]

Broad Scale Wolf Removal

Aerial. The National Research Council (1997) concluded in a report commissioned by the State of Alaska that wolf reduction was most likely to succeed if wolf numbers are seriously reduced (>55%) for 4 or more years over a broad area (10,000km^2) after reviewing predator management techniques in Alaska. This option would require the initial removal of more than 80% of the wolf population on Unimak Island. The large number of wolves and area of reduction ensures that immigration and reproduction of wolves does not offset the initial removal. Under this management option, wolves would be killed using a shotgun fired from a helicopter during winter months.

This action is similar to the use of fixed-wing aircraft (Targeted Removal: Fixed Wing) except that it allows the use of a helicopter to kill wolves and wolves are removed from a larger area compared to other aerial options considered. Wolves would be killed in a less discriminate manner over a larger area, and the action would likely result in a lower rate of calf survival as compared to similar actions that utilize a helicopter and radio collars to monitor calf survival.

The crew would consist of three pilots and one gunner. The crew would be based in Cold Bay, Alaska during the winter to take advantage of snow conditions that allow wolves to be tracked

[77] Audubon Society (1985)

and located from the air. Each day two fixed wing aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) and a helicopter (Robertson R-44 helicopter) would conduct a low-level search for wolves or wolf tracks in the snow. During the first four days the project crew would locate and count wolves to determine how many wolves are on the island. After determining this number, the fixed-wing would search the island for wolves a second time and direct the helicopter to wolves that are to be removed. This process of locating and killing wolves would continue until the wolf population has been reduced by 80%. These activities would be repeated each winter to maintain the wolf population at objectives (20 percent of initial population size) for at least four years or until the caribou population objectives have been met.

This option does not eliminate the controversy associated with the using aircraft to locate and remove wolves. The method has been applied in several areas in Alaska and has proven effective in increasing ungulate populations. It is the most common method of reducing wolf predation on ungulates in Alaska and reported as having the highest probability of success by the National Research Council (1997) as the most proven method. This technique has the added benefit of increasing overwinter caribou survival and avoids controversy associated with euthanizing wolf pups.

However, because this action does not occur during the calving period the wolf population must be reduced to lower numbers (i.e. more wolves must be killed) for the program to be successful. Broad scale efforts have been attempted to increase caribou calf survival with mixed results in the Delta Caribou herd and the Fortymile Caribou herd. Much of the success depends on the extent to which caribou use the area where the wolves have been removed. Higher rates of calf mortality are expected because no action will be taken to prevent the remaining wolves from killing caribou calves. As a result, calf recruitment will be reduced when compared to options that remove wolves from calving grounds during calving periods. As annual calf recruitment is reduced, the duration of this action would have to be protracted to achieve similar results.

Wolves are also at risk of being extirpated from Unimak Island by this action. While this outcome would not be intentional, this wolf population would be reduced to a very small size and there is an increased risk of removing all males or all females with this action. Wolves have a naturally high rate of mortality. Given that the population will be small there is an increased probability of losing a segment of the population (males or females) through natural processes even if both sexes remain in the population post-treatment.

Actions considered but dismissed

<u>Broad scale wolf removal – ground based.</u> This action is similar to “Broad Scale Removal of Wolves”, but it does not allow for the use of a helicopter to cull wolves. Wolves would be removed from a larger area than the targeted ground-based option. Wolves would be killed in a less discriminate manner over a larger area, and would not be expected to achieve similar results in increasing caribou calf survival and recruitment. Ground-based teams require the use of aircraft for logistical support, so they would benefit from aerial observations of wolf activities.

The crew would be based on Unimak Island at False Pass, Alaska or Cape Sarichef, for at least one month during the winter to take advantage of snow conditions that allow wolves to be tracked and located from the air. Each day 2 fixed wing aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) would conduct a low-level search for wolves or wolf tracks in the snow. During the first 4 days of the project the crew would locate and count wolves to determine how many wolves are on the island. After determining this number, a ground based crew would be deployed to remove wolves from Unimak Island.

The ground based crew would consist of eight field staff. Fixed-wing aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) would be used to distribute hunters working in two person teams throughout the range of the UCH. Low-level reconnaissance flights would be flown each day to locate wolves and wolf tracks. The pilots would assist the ground-based teams by providing logistical support, supplies, and provide information regarding wolf activities.

The four ground-based teams would be assigned areas to search for wolves near caribou and would be deployed in the field for at least one month. Each team would be equipped with long range rifles, shotguns, air-to-ground radios, binoculars, spotting scopes, traps, baits, and field camp provisions. Teams would select field camp locations that provide a strategic vantage point to locate wolves and access to their assigned search area. Once located the team would move into position (by foot or with the assistance of aircraft) and attempt to kill the wolf or wolves. If areas with repeated wolf activity can be identified (mammal carcass or natural travel corridor), the team would relocate their camp to that area and focus activities in that location.

This process of locating and culling wolves would continue until the wolf population has been reduced by eighty percent. These activities would be repeated each winter for at least four years or until the caribou population objectives have been met.

Although this option does not require the use of helicopters or aerial shooting, its effectiveness is expected to be lower than options that use aircraft to kill wolves. Due to poor winter travel conditions, ground based teams are limited in their ability to quickly get within shooting range of wolves after they have been located. Wolves that elude ground efforts would be able to kill caribou until they are removed. This option would require the removal of more wolves to be effective than other options that utilize a more targeted approach.

Broad scale efforts have been attempted to increase caribou calf survival with mixed results in the Delta Caribou Herd and the Fortymile Caribou Herd. Much of the success depends on the extent to which caribou use the area where the wolves have been removed. An independent review by the Audubon Society for a similar activity concluded that ground-based efforts were an ineffective method.[78]

However, because this action does not occur during the calving period the wolf population would have to be reduced to lower numbers (i.e. more wolves must be killed) for the program to be successful. Higher rates of calf mortality are expected because no action will be taken to prevent the remaining wolves from killing caribou calves. As a result calf recruitment will be reduced

[78] National Audubon Society (1985)

when compared to options that remove wolves from calving grounds during calving periods. Because annual calf recruitment is reduced, the duration of this action will be protracted to achieve similar results.

Wolves would also be at risk of being extirpated from the island by these actions. While this outcome would not be intentional, the wolf population on Unimak Island would be reduced to a very small size and there is an increased risk of removing all males or all females with this action. Wolves have a naturally high rate of mortality. Given that the population will be small there is an increased probability of losing a segment of the population (males or females) through natural processes even if both sexes remain in the population post-treatment.

This option would require a wolf survey to determine the number of wolves to be removed. Following the survey a large ground effort (nine crews of two, operating for several weeks) would attempt to remove eighty percent of the wolf population in a single year. Winter wolf reduction would entail difficult access, hazardous weather, and poor trapping conditions. Summer reduction efforts would be logistically more feasible and essentially the same task as the targeted ground-based option; however, if ground-based methods are preferred, the targeted ground based effort would be logistically more feasible and likely more effective.

Bear and wolf removal. The Department would translocate or remove brown bears from Unimak Island in addition to wolf removal from calving ground (Targeted Removal: Aerial with Fixed Wing or Aerial with Helicopter options) or broad scale (Broad Scale: Aerial). This option utilizes methods described previously but attempts to increase calf recruitment by reducing bear predation on caribou calves while simultaneously reducing wolf predation.

Brown bear translocation is not feasible in this area. Adult brown bears are large animals that can weigh over 1000 pounds. Tranquilizing small adults (400 pounds) and placing them in an aircraft for transportation requires the use of heavy equipment that would not be available at capture locations. Moving heavy equipment to capture sites would take significant periods of time and would result in significant effects to wilderness areas. The majority of bears could die during prolonged periods of immobilization while waiting for heavy equipment to arrive on site. Bears that did survive could not be transported safely in available aircraft due to airplane specifications identified by airplane manufacturers and regulated by the Federal Aviation Administration. Additionally no suitable release sites have been identified. Given these constraints, lethal removal of bears would be the only feasible option available.

Although removing bears in addition to wolves may increase calf recruitment, the increase would likely be insignificant. Calf mortality studies in an adjacent caribou herd (Southern Alaska Peninsula Caribou herd, SAP) found few cases of bear-caused calf mortality (5 to 8% of the calves monitored were killed by brown bears during a 2-year study in 2008 and 2009). Fall calf recruitment in the SAP was very good (39 calves:100 cows and 42 calves:100 cows in 2008 and 2009 respectively) following the removal of wolves only (Targeted Removal: Aerial with Helicopter). Additionally there is little evidence that individual bears specialize in killing caribou calves in this region of Alaska. Brown bears kill caribou calves opportunistically as they move through calving grounds. As a result this option would require the removal of any bear that moves through the calving area to be successful to achieve a minor increase in calf survival.

Lethal removal of bears would require the same crew and techniques employed in other options. The capture team would be composed of four pilots and four biologists. The crew would be based in Cold Bay, Alaska for the duration of the 3 week project. The project would begin in late May and conclude by June 20. All bears located during reconnaissance flights would be killed by a shotgun fired from a helicopter.

Each day three fixed-wing aircraft (Aviat Husky, Piper PA-18 Super Cub, Bellanca 8GCBC Scout, or similar aircraft) flying low level would search for caribou calves that are less than 2 days of age. Upon locating a calf, the helicopter capture team (pilot and biologist in a Robertson R-44 helicopter) would hand-capture each calf and fit it with a VHF radio collar. Processing time for each calf is expected to last 30 seconds from the time the biologist exits the aircraft to the time the biologist is in the helicopter departing the capture site. This fast handling results in low abandonment rates (<1% based on the capture of 250 caribou calves in adjacent caribou herds). Calf capture efforts would continue through the duration of calving (approximately 2 weeks) with up to 50 calves captured during this period.

Following collar deployment, the calves would be monitored daily for mortality. Upon locating a dead calf, the helicopter team would visit the mortality site to determine cause of death. Wolf-caused mortalities would be used to pattern the activities of wolves killing calves in calving areas. The Department would direct intensive search efforts to identify the wolf or wolves responsible for the mortality.

The primary search for wolves would be conducted by the fixed-wing aircraft flying at low level. After the wolf or wolves are located the helicopter team would kill the animal utilizing a shotgun. After the wolf is killed the helicopter team would land to collect biological samples and inspect the reproductive condition of each wolf. If a lactating female is killed, an intensive search for a den would be initiated. Wolf pups would be euthanized in the den by directing CO gas into the den entrance.

Any bear discovered on the calving grounds poses a potential threat to caribou calves as brown bears take caribou calves opportunistically as they move through calving grounds. All bears discovered on the calving grounds would be killed. Many bears would be killed that likely would never killed a caribou calf if the individual had remained in the area.

Monitoring, assessment, future decision points

Management population objectives for the UCH are to maintain a population of 1,000 caribou with a bull:cow ratio of at least 35 bulls per 100 cows. The harvest objective for subsistence purposes is to provide 100 – 150 caribou annually, including caribou harvested from the SAP in Game Management Unit 9D. This subsistence objective has not been met for eighteen years. These management objectives were established based on historical information regarding population numbers, habitat limitations, human use, and sustainable harvest.

Management objectives for the wolf population are to maintain a population of eight to fifteen wolves, including at least two breeding pairs. These objectives are currently being met and will

continue to be met. The sustainability of the wolf population is a critical management factor and the Department will ensure that wolves meeting the objectives remain on Unimak Island at the end of each treatment.

Brown bear population objectives for Unit 10 are to maintain a high population density and sex and age structure that can sustain a harvest composed of at least sixty percent males. These objectives are currently being met on Unimak Island.

> *The commissioner will suspend the wolf reduction program if the following conditions are observed pending further review by the Board:*
>
> - *caribou nutritional indices such as pregnancy rates, calf and adult body mass, or other condition indices exhibit a declining trend from current values and the bull:cow ratio is greater than 20 bulls:100 cows; or*
> - *fall caribou calf ratios remain below 20 calves per 100 cows following three consecutive years of wolf removal from the Unimak Wolf Management Area; or*
> - *the bull ratio remains below the caribou population objectives and does not increase following three consecutive years of wolf removal from the Unimak Wolf Management Area;*
> - *the wolf population is reduced to 2 breeding pairs*[79]

For additional information see "Alaska Board of Game Regulations" in Appendix.

Affected Environment

Physical Environment

Geography

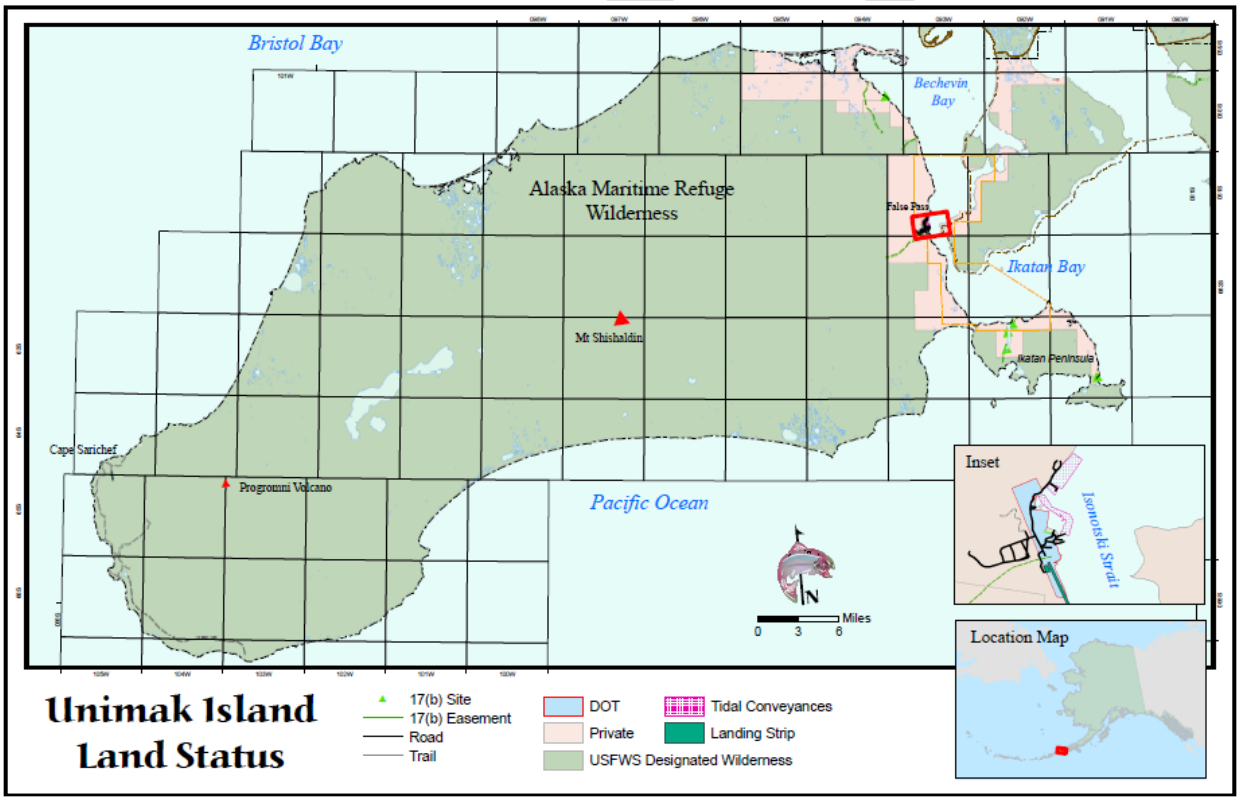
> "*Bounded by the Pacific Ocean to the south and the Bering Sea to the north, the [Aleutian Islands] unit includes over 200 mostly treeless named islands, islets, and rocks. The Aleutian Trench, 50-100 miles wide and over 25,000 feet deep, borders the Pacific side of the unit. The Bering Sea, shallow at the east end of the Aleutian Chain, is deep at the west end of the unit. These surrounding oceans affect the climate and weather, and provide habitat and migrational pathways for fish, bird and mammals….*
>
> *Some islands are wave-cut platforms, less than 600 feet above sea level, bordered by low sea cliffs. Other islands are intensely glaciated mountainous islands, 600-3,000 feet above sea level, indented with fjords and bordered by cliffs as high as 2,000 feet. Broad, level, intertidal platforms border some islands….*
>
> *Most of the unit is accessible by boat but on most islands access can be difficult due to the rocky, rugged shoreline. Amphibious planes can provide access in some areas.*"[80]

[79] Alaska Board of Game Regulations in Appendix
[80] US Fish and Wildlife Service (1988) at page II-137

"*Unimak Island… is the largest island in the Aleutian Islands chain of… Alaska. It is the easternmost island in the Aleutians and, with an area of 4,069.9 km² (1,571.41 mi²), the ninth largest island in the United States and the 134th largest island in the world. It is home to Mount Shishaldin, one of the ten most active volcanoes in the world. According to the United States Census Bureau, there were 64 people living on Unimak as of the 2000 census, all of them in the city of False Pass at the eastern end of the island. Cape Lutke is a landhead on the island.*

An interesting physical feature is Fisher Caldera, a volcanic crater in the west-central part of Unimak. Some characteristics include many volcanic cones and undrained lakes. It is named for Bernard Fisher, a U.S. Geological Survey geologist who was killed in Umnak Pass."[81]

Land Status



Climate

"*The Aleutian Islands have a maritime climate which is characterized by persistently overcast skies, frequent, often violent, cyclonic storms, and high winds. Weather can be very local, with conditions of fog, low ceilings, precipitation, and clear weather all encountered in a short distance. Year-round temperatures are cold but not normally*

[81] See http://en.wikipedia.org/wiki/Unimak_Island retrieved 3/29/2010

severe, with a mean annual temperature of 40 degrees F…. Strong winds, sometimes approaching 100 mph, can induce very cold chill factors.

The summer months are affected by the Pacific high pressure system which is located south of the Aleutian Chain. During these months air has a cooling effect on ocean surfaces and results in the formation of widespread fog and low stratus clouds. Over 50 inches of precipitation occurs in most areas during this period but storm frequency is higher during the winter season.

During the winter months air reaching the Aleutian Chain normally flows from the Siberian high pressure system. After flowing across the colder areas to the north, the air reaches slightly warmer open water areas in the vicinity of the chain, causing frequent, severe storms. Winter storms are characterized by gusty winds, rain and snow, or rain mixed with snow. Precipitation over 70 inches is common. Winter lasts six to nine months and frost can be expected every month except possibly July and August."[82]

Vegetation

"*The vegetation of the Aleutian Islands… is similar to alpine types and is classified as maritime tundra…. The high uplands and mountain slopes support a variety of lichens, mosses, and low-growing alpine plants. The lowlands are covered with tall herbaceous meadows*."[83] A herbaceous meadow "*has less than 50% shrub cover and almost permanent year-round water saturation*."[84] "*With the exception of a few trees which were planted in the Aleutians during the early 1800's and World War II, the islands are treeless. Portions of the eastern part of the Aleutians Islands have traces of subalpine plant communities with medium to tall shrubs….*"[85]

Biological Environment

Wildlife

<u>Caribou</u>

Caribou (Rangifer tarandus) live in the arctic tundra, mountain tundra, and northern forests of North America, Russia, and Scandinavia. The world population is about 5 million. Caribou in Alaska are distributed in 32 herds. A herd uses a calving area that is separate from the calving areas of other herds; however, different herds may mix together on winter ranges.

In Europe, caribou are called reindeer, but in Alaska and Canada only the domestic forms are called reindeer. All caribou and reindeer throughout the world are considered to be the same species, but there are 7 subspecies: barrenground (Rangifer tarandus

[82] US Fish and Wildlife Service (1988) at page II-138
[83] Id. at page II-157
[84] See http://www.museevirtuel-virtualmuseum.ca/index-eng.jsp retrieved 3/29/2010
[85] US Fish and Wildlife Service (1988) at page II-138 – II-139

*granti), Svalbard (*R.t platyrhynchus*), European (*R.t. tarandus*), Finnish forest reindeer (*R.t. fennicus*), Greenland (*R.t. groenlandicus*), woodland (*R.t. caribou*) and Peary (*R.t. pearyi*). Alaska has only the barren-ground subspecies, but in Canada the barren-ground, woodland, and Peary subspecies are found.*

Caribou have large, concave hoofs that spread widely to support the animal in snow and soft tundra. The feet also function as paddles when caribou swim. Caribou are the only member of the deer family (Cervidae) in which both sexes grow antlers. Antlers of adult bulls are large and massive; those of adult cows are much shorter and are usually more slender and irregular. In late fall, caribou are clove-brown with a white neck, rump, and feet and often have a white flank stripe. The hair of newborn calves is generally reddish-brown. Newborn calves weigh an average of 13 pounds (6 kg) and grow very quickly. They may double their weight in 10-15 days. Weights of adult bulls average 350-400 pounds (159-182 kg). However, weights of 700 pounds (318 kg) have been recorded. Mature females average 175-225 pounds (80-120 kg). Caribou in northern and southwestern Alaska are generally smaller than caribou in the Interior and in southern parts of the state.

Calving occurs in mid-late May in Interior Alaska and in early June in northern and southwestern Alaska. If females are in very good condition they can breed when they are 16 months old, but in most herds they do not breed until they are 28 months old. Most adult cows are pregnant every year and give birth to one calf — twins are very rare. In some areas, wolves, grizzly bears, and golden eagles kill large numbers of newborn calves. After calving, caribou collect in large "postcalving aggregations" to avoid predators and escape mosquitoes and warble flies. These large groups of caribou stay together in the high mountains and along seacoasts where wind and cool temperatures protect them from summer heat and insects. After insect numbers decline in August, caribou scatter out and feed heavily on willow leaves and mushrooms to regain body weight.

The shedding of velvet (the fur covering on antlers) in late August and early September by large bulls marks the approach of the rutting (breeding) season and the start of fall migration. Mature bulls frequently have more than three inches of fat on the back and rump, which is used to provide energy needed during the rut. The necks of adult bull caribou swell enormously in September due to the natural production of steroid hormones like testosterone. Fighting begins in early September and becomes more frequent as the rut approaches at the end of the month. Most fights between bulls are brief bouts, but violent fights occur, and many bulls are seriously injured or killed during the rut. Many injured or exhausted bulls are killed by wolves and bears after the rut. Unlike many other members of the deer family, bull caribou do not control a harem of cows. Instead, they control a space around themselves, and prevent other bulls from breeding females within their space. The largest bulls shed their antlers in late October, but small bulls and non-pregnant cows do not shed their antlers until April. Pregnant females usually retain their antlers until calves are born in late May or early June.

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Like most herd animals, the caribou must keep moving to find adequate food. Large herds often migrate long distances (up to 400 miles/640 km) between summer and winter ranges. Smaller herds may not migrate at all. In summer (May-September), caribou eat the leaves of willows, sedges, flowering tundra plants, and mushrooms. They switch to lichens (reindeer moss), dried sedges (grasslike plants), and small shrubs (like blueberry) in September.

In Alaska, caribou prefer treeless tundra and mountains during all seasons, but many herds winter in the boreal forest (taiga). Calving areas are usually located in mountains or on open, coastal tundra. Caribou tend to calve in the same general areas year after year, but migration routes used for many years may suddenly be abandoned in favor of movements to new areas with more food.

Caribou movements are probably triggered by changing weather conditions, such as the onset of cold weather or snowstorms. Once they decide to migrate, caribou can travel up to 50 miles a day. Caribou apparently have a built in compass, like migratory birds, and can travel through areas that are unfamiliar to them to reach their calving grounds.[86]

Wolves

*The wolf (*Canis lupus*) occurs throughout mainland Alaska, on Unimak Island in the Aleutians, and on all of the major islands in Southeast except Admiralty, Baranof, and Chichagof. This range includes about 85 percent of Alaska's 586,000 square-mile area. Wolves are adaptable and exist in a wide variety of habitats extending from the rain forests of the Southeast Panhandle to the arctic tundra along the Beaufort Sea. Presently wolves are common over much of the state with densities as high as about one wolf per 25 square miles in favorable habitats. Densities are lower in the coastal portions of western and northern Alaska. Although the distribution of wolves has remained relatively constant in recent times, their abundance has varied considerably as prey availability, diseases, and harvests have influenced their numbers.*

Wolves are members of the family Canidae. Early taxonomists recognized about 24 New World and eight Old World subspecies of Canis lupus*, with four subspecies thought to occur in Alaska. Recent studies of skull characteristics, body size, and color suggest that differences are slight with considerable overlap in the characteristics of wolves from various areas. Only two Alaska subspecies are now recognized. Wolves in Southeast Alaska tend to be darker and somewhat smaller than those in northern parts of the state. The pelt color of wolves living in Alaska ranges from black to nearly white, with every shade of gray and tan between these extremes. Gray or black wolves are most common, and the relative abundance of each color phase varies over time and from place to place. Most adult male wolves in Alaska weigh from 85 to 115 pounds (38.6-52.3 kg), but they occasionally reach 145 pounds (65.3 kg). Females average 5 to 10 pounds (2-5 kg) lighter than males and rarely weigh more than 110 pounds (50 kg). Wolves reach adult*

[86] See Alaska Department of Fish and Game Wildlife Notebook Series at http://www.adfg.alaska.gov/pubs/notebook/biggame/caribou.php retrieved 3/29/2010

size by about 1 year of age, and the largest wolves occur where prey is abundant year round.

Wolves are highly social animals and usually live in packs that include parents and pups of the year. Larger packs may have two or three litters of pups from more than one female. Some yearlings may stay with the pack. The social order in the pack is characterized by a dominance hierarchy with a separate rank order among females and males. Fighting is uncommon within packs except during periods of stress, with the dominance order being maintained largely through ritualized behavior. Although pack size usually ranges from 2 to 12 animals, packs of as many as 20 to 30 wolves sometimes occur. The average size pack is 6 or 7 animals. In most areas wolf packs tend to remain within a territory used almost exclusively by pack members, with only occasional overlap in the ranges of neighboring packs. Wolves that are primarily dependent on migratory caribou may, however, temporarily abandon their territory and travel long distances if necessary. In Alaska the territory of a pack often includes from 300 to 1,000 square miles of habitat with the average being about 600 square miles.

Wolves normally breed in February and March, and litters averaging about five pups are born in May or early June. Litters may include from 2 to 10 pups, but most often 4 to 7 pups are born. Most female wolves first breed when 22 months old but usually have fewer pups than older females. Pups are usually born in a den excavated as much as 10 feet into well-drained soil, and most adult wolves center their activities around dens while traveling as far as 20 miles away in search of food, which is regularly brought back to the den. Wolf pups are weaned gradually during midsummer. In mid- or late summer, pups are usually moved some distance away from the den and by early winter are capable of traveling and hunting with adult pack members. Wolves are great travelers, and packs often travel 10 to 30 or more miles in a day during winter. Dispersing wolves have been known to move from 100 to 700 miles from their original range.
In spite of a generally high birth rate, wolves rarely become abundant because mortality is high. In much of Alaska, hunting and trapping are the major sources of mortality, although diseases, malnutrition, accidents, and particularly intraspecific strife act to regulate wolf numbers.

Wolves are carnivores, and in most of mainland Alaska moose and/or caribou are their primary food, with Dall sheep being important in limited areas. In Southeast Alaska, Sitka black-tailed deer, mountain goats, and beaver are the most important sources of food. During summer, small mammals including voles, lemmings, ground squirrels, snowshoe hares, beaver, and occasionally birds and fish are supplements in the diet. The rate at which wolves kill large mammals varies with prey availability and environmental conditions. A pack may kill a deer or moose every few days during the winter. At other times, they may go for several days with almost no food. Since wolves are opportunistic, very young, old, or diseased animals are preyed upon more heavily than other age classes. Under some circumstances, however, such as when snow is unusually deep, even animals in their prime may be vulnerable to wolves.[87]

[87] See Alaska Department of Fish and Game Wildlife Notebook Series at http://www.adfg.alaska.gov/pubs/notebook/furbear/wolf.php retrieved 3/29/2010

Brown Bear

Brown bears (Ursus arctos), also known as grizzlies, occur throughout Alaska except on islands south of Frederick Sound in southeast Alaska, west of Unimak in the Aleutian Chain, and Bering Sea islands. They also occur in Russia, northern China, northern Japan, Europe, western Canada, and in limited portions of the northwestern United States. Brown bears symbolize Alaska as depicted on the back of the state quarter and on the state flag (Ursa Major – The Big Dipper). They are also important to Native Alaskans, local residents, hunters, fishers, photographers, and hikers.

Brown and grizzly bears are classified as the same species even though there are notable differences between them. Kodiak bears (brown bears from the Kodiak Archipelago) are classified as a distinct subspecies (U. a. middendorffi) from those on the mainland (U. a. horribilis) because they have been isolated from other bears since the last ice age about 12,000 years ago. "Brown bears" typically live along the southern coast of the state where they have access to seasonally abundant spawning salmon. The coastal areas also provide a rich array of vegetation they can use as food as well as a milder climate. This allows them to grow larger and live in higher densities than their "grizzly" cousins in the northern and interior parts of the state. To minimize confusion, this report uses the term "brown bear" to refer to all members of Ursus arctos.

The brown bear resembles its close relatives the black bear (U. americanus) and the polar bear (U. maritimus). Brown bears are usually larger than black bears, have a more prominent shoulder hump, less prominent ears, and longer, straighter claws. Polar bears are similar in size to coastal brown bears, but are more streamlined, lacking the hump. The varying shapes of these bears are adaptations to their particular life styles. Long claws are useful in digging roots or excavating small mammals, but are not efficient for climbing trees. The musculature and bone structure of the hump are adaptations for digging and for attaining bursts of speed necessary for capture of moose or caribou. Color is not a reliable key in differentiating these bears because black and brown bears have many color phases and polar bears may have stained fur. For example, black bear fur may be black, brown, reddish or even shades of grey and white, while brown bear colors range from dark brown through very light blond.

Brown bear weights vary by age, gender, location, and time of year. Bears weigh about one pound (0.5 kg) at birth and attain adult size by age 6. Adult males tend to be 30-50% larger than females. A large male may weigh up to 1,500 lbs (680 kg) in coastal areas or up to 500 lbs (227 kg) in interior areas. Bears weigh the least when they emerge from their dens in the spring, and can increase their weight by over 50% during late summer and fall. The largest brown bear ever killed had a skull that was 17.9" (46 cm) and 12.8" wide (33 cm). Such a bear, when standing on its hind feet, would be over 10' (3.0 m) tall.

Brown bears have an exceptionally acute sense of smell, exceeding that of dogs. Contrary to popular belief, bears are not nearsighted. Their eyesight and hearing are comparable to humans. They can run in short bursts up to 40 mph (64 kph) and are excellent

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swimmers. By all indications, bears are extremely intelligent and most have individual personalities.

Cubs are born in the den during January and February. Twins are most common, but litter sizes can range from 1 to 4. When the cubs emerge in June, they may weigh up to 15 lbs (7 kg) and they actively explore their world under the constant supervision of their mothers. Mothers can be furiously protective of cubs, however less than half of the cubs survive. Families typically stay together for 2 or 3 years and after separation female cubs tend to stay near where they were raised while males go farther afield. Most brown bears are sexually mature at 5 years old; however females often do not successfully produce a litter until later. The mating season is in the spring (May to July) and they are serial monogamous (have one mate at a time, but several each year). The oldest brown bear in Alaska was a 39 year old female, while the oldest male was 38.
Bear populations in Alaska are healthy and productive. Densities vary depending on the quality of the environment. In areas of low productivity, such as on Alaska's North Slope, studies have revealed bear densities as low as one bear per 300 mi2 (777 km2). In areas abundant food, such as the Alaska Peninsula, Kodiak and Admiralty Island, densities as high as one bear per square mile (2.6 km2) have been found. In central Alaska, both north and south of the Alaska Range, bear densities tend to be intermediate, about one bear per 15-25 mi2 (39-65 km2). These figures do not mean that each bear has this much territory for its exclusive use. The area occupied by any individual bear overlaps those used by many other bears.

Brown bears are very adaptable and like humans, they consume a wide variety of foods. Common foods include salmon, berries, grasses, sedges, cow parsnip, ground squirrels, carrion, and roots. In many parts of Alaska, brown bears are capable predators of moose and caribou, especially newborns. Bears may also be attracted to human camps and homes by improperly stored food and garbage as well as domestic animals.

Although generally solitary in nature, brown bears often occur in large groups in concentrated feeding areas such as salmon spawning streams, sedge flats, open garbage dumps or on whale carcasses. Because of this, they have developed a complex language and social structure to express their feelings and minimize serious fights These feeding concentration areas also provide opportunities for people to watch bears.

In the winter when food is unavailable or scarce, most brown bears enter dens and sleep through the winter. Although this is not true hibernation, their body temperatures, heart rate, and other metabolic rates are drastically reduced. While in the den they do not eat, drink, urinate or defecate. Pregnant females are usually the first to enter dens in the fall. These females, with their newborn cubs, are the last to exit dens. Adult males, on the other hand, enter dens later and emerge earlier than most other bears. In northern areas, bears may spend up to 8 months in dens, while in areas with relatively mild winters, such as Kodiak, some male bears stay active all winter.[88]

[88] See Alaska Department of Fish and Game Wildlife Notebook Series at http://www.adfg.alaska.gov/pubs/notebook/biggame/brnbear.php retrieved 3/29/2010

Birds

> *Aleutian Islands Unit provides unique nesting habitat for several million seabirds…, and other waterfowl. It is also an important migration and staging area for a wide variety of waterfowl, shorebirds and passerines and provides wintering habitat for the emperor goose and other waterfowl. The refuge is one of the few places in North America where Asiatic bird species can be observed on a regular basis in the spring and fall. Fully 35 percent of all bird species observed in the Aleutians breed only in Asia; most of these are seen at the western end of the chain. Nineteen percent of Aleutian species breed only in North America, and 55 percent breed on both continents. An additional 4 percent (mostly marsh and waterbirds rather than seabirds) visit from Hawaii, and the south Pacific (Australia, New Zealand, and the sub-Antarctic)….*[89]

Human Environment

Cultural Resources

> "*The Aleutian Islands, as well as parts of the adjacent mainland, were occupied at the time of contact by the Aleuts, a group related to the Eskimos. The subsistence base of the Aleuts was virtually entirely maritime, with extensive exploitation of almost all local whale species, sea mammals, fish, invertebrates, seabirds (including eggs), and, to a limited extent, plants….*"[90] Land mammals were also available on Unimak Island. "*Due to the weather, even the smaller camps of the Aleuts tended to have large semisubterranean houses, each housing several families…. Each village would generally have a recognized leader, but beyond the village or small island there was no particular organization. Leadership was frequently hereditary, and leaders were often whaling captains as well as the heads of the strongest family in the village.*
>
> *The Russian fur trade, along with the Russian Orthodox Church, dominated Aleutian life from the 1850's until the American purchase of Alaska. The early years, before the founding of the Russian-American Company, saw considerable loss of population from epidemic and other causes…. The Russians also caused a relocation and consolidation of the population for better control. Aleut hunters were used elsewhere by the Russians (some reportedly traveled as far as Fort Ross in California), and whole villages were moved, even to previously uninhabited territory (the Pribilof Islands).*
>
> *The later history of the Aleutians was marked by a continuation of fur trapping, the introduction of fox farming, and the development of commercial fishing. The twentieth century history of the area was dominated by World War II, including the only battle of the war fought on United States soil. Military uses of islands in the Aleutians continues to be present.*
>
> *Some areas of the Aleutians are known very well archaeologically; these tend to be on those islands where there are now permanent villages (Atka, Unalaska), or where*

[89] US Fish and Wildlife Service (1988) at page II-163
[90] Id. at page II-170

government projects have generated substantial archaeological effort, such as Amchitka (McCartney 1977). Other islands no doubt have similar numbers of sites waiting to be discovered. One particularly significant site is the Anangula Site on a small island off the coast of Umnak. Materials at Anangula date to about 6,000 B.C."[91]

Subsistence Uses

Approximately forty percent of Game Management Unit 9(D) and over 90% of Unit 10 (Unimak Island) are federal public lands administered by the Fish and Wildlife Service as the Izembek and Alaska Maritime National Wildlife Refuges. Both refuges were established or re-designated by ANILCA with purposes to protect populations of wildlife and the opportunity to provide continued subsistence uses by rural residents on federal public lands.

Under federal regulations, all residents of Unit 9(D), False Pass, and Akutan have a positive customary and traditional use determination for caribou in Unit 9(D). For Unit 10 (Unimak Island), the customary and traditional use determination for caribou includes residents of False Pass, King Cove, Akutan, and Sand Point. The Alaska Board of Game established a positive customary and traditional finding of the amount reasonably necessary for subsistence between 100 and 150 caribou from the UCH and SAP combined.

False Pass is the only community that is located on Unimak Island, so the marked decline in caribou population and calf recruitment is of significant importance to residents of False Pass as the impacts on subsistence are issues for this community, in particular. As estimated in pounds usable weight, caribou made a larger contribution to False Pass's 1987/88 subsistence harvest than any other resource. Hunters from 35% of the households harvested an estimated 34 caribou during the study year for a mean household harvest of 232.5 pounds or 73.8 pounds per capita (Fall et. al. 1996).

In 1975, the Unimak Island Herd peaked at an estimated population of 5,000 animals, then decreased to 300 animals by the early 1980s. In response to this rapid decline, the Federal Subsistence Board closed caribou harvest in Unit 10 (Unimak Island) to non-Federally qualified subsistence users in 1991. As the herd continued to decline, in 1993 the Alaska Department of Fish and Game closed State harvest by Emergency Order and the Federal Subsistence Board issued a Special Action to close Units 9D and 10 (Unimak Island) to all federal harvest of caribou.

The results of population composition surveys from 2005-2008 show the Unimak Island Caribou Herd population continued to decline and a decreasing proportion of bulls. Specific limiting factors causing the low calf recruitment and subsequent population decline are not known, but predation is a likely cause (Butler 2007; and Butler 2009, pers. comm.). Valkenburg et al. (2001) noted that lichen biomass is low on the Alaska Peninsula due to historically sustained grazing by caribou, although (Butler 2007) acknowledged that habitat assessment data have not been available in recent years. However, the pregnancy rate for Unimak caribou indicates that the herd is in good nutritional condition in this area, but calf recruitment still remains very low (Butler 2008; Butler 2009, pers. comm.). This suggests that predation is the key limiting factor.

[91] US Fish and Wildlife Service (1988) at page II-170

Calf recruitment is critical for population growth to keep pace with the mortality rate of adults. Caribou have a low reproductive potential due to females not typically producing young until over two years of age and then having only one calf per year.

The Alaska Board of Game permanently closed all hunting for caribou on Unimak Island (Unit 10) at its February 27 – March 9, 2009, meeting (State Proposal 54). The Federal Subsistence Board authorized Emergency Special Action WSA09-06 on July 1, 2009, closing the fall caribou season (August 1 through September 29) and authorized Temporary Special Action WSA09-07 on November 10, 2009, to close the remainder of the season. The Federal Subsistence Board will be acting on proposal WP10-42 at its May 2010 meeting, submitted jointly by the Izembek National Wildlife Refuge Manager and State, which requests that the federal season for caribou in Unit 10 (Unimak Island) be permanently closed to the taking of caribou during the fall and winter seasons due to decreased population and low productivity of the caribou herd. This proposal adopts into federal regulation the actions taken in Emergency Special Action WSA09-06 and Temporary Special Action WSA 09-07 to close all opportunity for take of the caribou population until a harvestable surplus allows the federal and state seasons to be reopened.

Two Subsistence Division technical reports have information about the historical use of this herd by local residents. The harvest and use of fish, wildlife, and plant resources in False Pass, Unimak Island, published in 1996 provides an overview of contemporary subsistence uses of fish and wildlife in the village of False Pass. The primary source of information is a household survey conducted in November 1988 with 20 of the 22 year-round households in the community. The report contains information on harvest levels, levels of participation in harvest activities, the seasonal round of harvest activities, and harvest methods. Maps of subsistence use areas are included. The research report documented a relatively high level of subsistence production in the village in 1987-88. (TP191) Subsistence use of the southern Alaska Peninsula caribou herd published in 1990 provides historical information about the Unimak Island herd and Board of Game actions. The latter study shows the importance of caribou (about 60% of the food is caribou)

Recreational Uses

> "*Most recreational use [within the Aleutian Islands Unit] occurs by military personnel and their families adjacent to the bases, by local residents near the villages in the eastern part of the chain, or by commercial fishing crews who occasionally come ashore to beachcomb or sport fish. There is very little use of the Aleutian chain by nonlocal people due to the difficulties of access, both in terms of logistics and expense. At least on adventure cruise ship a year, carrying about 150 people, visits the Aleutians…. Bird watching groups of about 65 people also visit Attu every spring. Aleutian Experiences tour company operates out of Unalaska, and Akutan. Some sightseeing is done from the state ferry which runs to Unalaska from Seward once a month from May to October. Approximately 600 passengers took this ferry to or from Unalaska in the year ending October 1987…. Other adventure travelers have been known to visit the Aleutians by sailboat, yacht, or sea kayak. No visitor use data is available except for the military bases and the commercial groups who must apply for permits.*"[92]

[92] US Fish and Wildlife Service at pages II-170 – II-171

Wilderness

> *The Alaska* [*National Interest*] *Lands* [*Conservation*] *Act designated 93 percent, 910,000 acres, of Unimak Island as wilderness in 1980….*
>
> *Unimak* [*Island*] *has outstanding examples of volcanic activity including the nearly perfect cone of Shishaldin Volcano, at 9,372 feet the highest cone in the Aleutians. Shishaldin is a National Historic Landmark because it served as a navigational aid for seaman since at least the days of Russian explorers and undoubtedly was used by the Aleuts as well. Three volcanoes including Shishaldin are active. Perpetual snowfields and glaciers surround the five highest peaks. Other features include Fisher caldera, which contains a large lake, extensive lave flows of varying ages, and bare ash fields.*
>
> *Extensive wetlands provide nesting, feeding, and resting, habitat for waterfowl and shorebirds in summer. Principle species include whistling swan, Canada and emperor gees, black brant, sea duck, mallard, pintail, gadwall, green-winged and common teal, widgeon, bufflehead, common goldeneye, and great scaup. Upland habitat is utilized by brown bear, caribou, wolves, wolverine, bald eagles, and short-eared owls. Most of the coast is steep and the bluffs, headlands, and off-shore sea stacks provide seabird and marine mammal habitat.*
>
> . . .
>
> - *Apparent naturalness – No signs of human activity on the parcels being considered.*
> - *Outstanding opportunities for solitude – Unimak [Island] is very large and remote. Although False Pass is on the east end of Unimak, it is surrounded by private land; the villagers rarely use the federal lands. Solitude opportunities are outstanding.*
> - *Outstanding opportunities for primitive recreation – Camping, backpacking, hunting, photography, fishing, climbing, and wildlife observation are all outstanding activities on this island.*
> - *Special or unique features – Include active volcanoes, Shishaldin Cone, Fisher caldera, glaciers, brown bear.*
> - *Outstanding resource values – Unimak has outstanding wilderness qualities, wildlife habitats, and geologic features. Resource values are outstanding….*[93]

Environmental Affects

The effects of each issue are described below.

> *The impacts for each issue are based on the intensity, duration, and context of the impact. Summary impact levels (negligible, minor, moderate, or major) are given for each issue.*

[93] Id. at page II-191

<u>Intensity</u>

Low — *A change in a resource condition is perceptible, but it does not noticeably alter the resource's function in the… ecosystem, cultural context, or visitor experience.*

Medium — *A change in a resource condition is measurable or observable, and an alteration to the resource's function in the… ecosystem, cultural context, or visitor experience is detectable.*

High — *A change in a resource condition is measurable or observable, and an alteration to the resource's function in the… ecosystem, cultural context, or visitor experience is clearly and consistently observable.*

<u>Duration</u>

Temporary — *Impacts would last only a single visitor season or for the duration* [*of the activity*].

[*Short-term* — *Impacts would extend for up to 5 years*.]

Long-term — *Impacts would extend from* [*five years up to fifteen years*.]

Permanent — *Impacts are a permanent change in the resource that would last beyond the life of the* [*project*] *even if the actions that caused the impacts were to cease.*

<u>Context</u>

Common — *The affected resource is not identified in enabling legislation and is not rare….*

Important — *The affected resource is identified by enabling legislation or is rare either within or outside the* [*refuge*].

Unique — *The affected resource is identified by enabling legislation and the portion of the resource affected uniquely fills a role within the* [*refuge*] *or it region of the* [*refuge*].

Summaries [*positive or negative*] *about the overall impacts on the resource synthesize information…, which are weighed against each other to produce a final assessment. While each summary reflects* [*the Department's best professional judgment*] *about the relative importance of the various factors involved, the following descriptors provide a general guide for how summaries are reached.*

- *Negligible:* *Impacts are generally extremely low in intensity (often they cannot be measured or observed), are temporary, and do not affect unique resources.*

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- *Minor:* *Impacts tend to be low intensity or of a short duration, although common resources may have more intense, longer-term impacts.*

- *Moderate:* *Impacts can be of any intensity or duration, although common resources are affected by higher intensity, longer impacts while unique resources are affected by medium or low intensity, shorter-duration impacts.*

- *Major:* *Impacts are generally medium or high intensity, long-term or permanent in duration, and affect important or unique resources.*[94]

Dismissed from further review

Endangered Species Act

Threatened and endangered species whose range includes lands or waters adjacent to Unimak Island include Northern sea otter, Steller's eider, spectacled eider, and Steller sea lion. Several listed whale species also occur in waters off Unimak and include humpback whale, sei whale, blue whale, fin whale, sperm whale, and North Pacific right whale. Kittlitz's murrelet, a candidate for listing, may be present on or near Unimak Island. Critical habitat has been designated for the Northern sea otter and Steller sea lion on or adjacent to Unimak Island. Critical habitat for the North Pacific right whale critical habitat is directly north, but not adjacent to, of Unimak Island. Although never observed, listed sea turtles (leatherback, loggerhead, and green) could potentially be in the waters Unimak Island. It is not expected that the proposed action will have an adverse impact on any of these listed species or any designated critical habitat for listed species.

Climate Change

The proposed actions will be *de minimus* in terms of creating any noticeable increase to the overall level of greenhouse gasses and will not create any documentable effect to global climate change.

Cultural Resources

It is not expected that any of the proposed action would have an adverse impact on cultural resources on Unimak Island. Cultural resources are mostly composed of pit houses which are easily discernable from the air and can be avoided. If cultural resources are discovered during the project the field crew will record the location and report it to the State Historic Preservation Office and the Refuge.

[94] National Park Service (2009) at page 33

Reviewed in detail

Birds

No Action. Under this management option the Department would not take action. Birds would not be affected by any low level flight operations. It is possible that without action birds may experience some increased predation by wolves as they seek to replace caribou as a food source. This could lead to a medium to high intensity impact on individual ground nesting birds and could be of a long term duration as wolves seek alternate food sources.

Bull Translocation. Some low, temporary adverse effects due to low flying aircraft transiting the area or conducting low level operations may be expected for some individual birds as caribou or wolves are tracked (singly or in groups). However the effects will be temporary in duration as the aircraft quickly pass through the area. Sea bird rookeries are present along the coast, however operations will take place inland of those locations and they will not be affected. Overall effects are expected to be negligible.

Immunocontraception or surgical sterilization. Under this management option effects to birds will be low, temporary adverse on the individual level and temporary, negligible to populations on Unimak Island. Some low, temporary adverse effects due to low flying aircraft transiting the area or conducting low level operations may be expected for some individual birds as caribou or wolves are tracked (singularly or in groups) or individual animals are investigated during landings by helicopters. However the effects will be temporary in duration as the aircraft quickly pass through the area. Aircraft engaged in radio-tracking flights or search flights move quickly spending little time in any one location and are typically above 300 feet AGL. Low level flights close to the ground that may occasionally disturb individual birds are brief lasting for only a few minutes (typically one to three minutes) and landings of helicopters will likely be less than ½ hour in duration in any one location. Sea bird rookeries are present along the coast, however operations will take place inland of those locations and they will not be affected. Overall effects are expected to be negligible.

Targeted wolf removal – Helicopter. Under this management option effect to birds will be low, temporary adverse on the individual level and temporary, negligible to populations on Unimak Island. Some low, temporary adverse effects due to low flying aircraft transiting the area or conducting low level operations may be expected for some individual birds as caribou or wolves are tracked (singularly or in groups) or individual animals are investigated during landings by helicopters. However the effects will be temporary in duration as the aircraft quickly pass through the area. Aircraft engaged in radio-tracking flights or search flights move quickly spending little time in any one location and are typically above 300 feet AGL. Low level flights close to the ground that may occasionally disturb individual birds are brief lasting for only a few minutes (typically one to three minutes) and landings of helicopters will likely be less than ½ hour in duration in any one location. Sea bird rookeries are present along the coast, however operations will take place inland of those locations and they will not be affected. Overall effects are expected to be negligible.

Targeted wolf removal – Fixed Wing. Under this management option effects to birds will be low, temporary adverse on the individual level and temporary, negligible to populations on Unimak Island. Some low, temporary adverse effects due to low flying aircraft transiting the area or conducting low level operations may be expected for some individual birds as caribou or wolves are tracked (singly or in groups). However the effects will be temporary in duration as the aircraft quickly pass through the area. Aircraft engaged in radio-tracking flights or search flights move quickly spending little time in any one location and are typically above 300 feet AGL. Low level flights close to the ground that may occasionally disturb individual birds are brief lasting for only a few minutes (typically one to three minutes) and landings of helicopters will likely be less than ½ hour in duration in any one location. Sea bird rookeries are present along the coast, however operations will take place inland of those locations and they will not be affected. Overall effects are expected to be negligible.

Targeted wolf removal – Ground Based. Under this management option effects to birds will be low, temporary adverse on the individual level and temporary, negligible to populations on Unimak Island. Some low, temporary adverse effects due to low flying aircraft transiting the area or conducting low level operations may be expected for some individual birds as caribou or wolves are tracked (singly or in groups). However the effects will be temporary in duration as the aircraft quickly pass through the area. Aircraft engaged in radio-tracking flights or search flights move quickly spending little time in any one location and are typically above 300 feet AGL. Low level flights close to the ground that may occasionally disturb individual birds are brief lasting for only a few minutes (typically one to three minutes) and landings of helicopters will likely be less than ½ hour in duration in any one location. Sea bird rookeries are present along the coast, however operations will take place inland of those locations and they will not be affected. Overall effects are expected to be negligible.

Broad scale wolf removal. Under this management options effects to birds will be low, temporary adverse on the individual level and temporary, negligible to populations on Unimak Island. Some low, temporary adverse effects due to low flying aircraft transiting the area or conducting low level operations may be expected for some individual birds as caribou or wolves are tracked (singly or in groups) or individual animals are investigated during landings by helicopters. However the effects will be temporary in duration as the aircraft quickly pass through the area. Aircraft engaged in radio-tracking flights or search flights move quickly spending little time in any one location and are typically above 300 feet AGL. Low level flights close to the ground that may occasionally disturb individual birds are brief lasting for only a few minutes (typically one to three minutes) and landings of helicopters will likely be less than ½ hour in duration in any one location. Sea bird rookeries are present along the coast, however operations will take place inland of those locations and they will not be affected. Overall effects are expected to be negligible.

Caribou

No Action. Under this management option the Department would not take action.
There would be a prolonged period (maybe decades) of low abundance of caribou and wolves with many years of no harvest for subsistence or other uses (e.g. Mentasta Herd). If the current trends continue (i.e. reduced pregnancy rate, low calf survival, low recruitment, and declining

bull:cow ratio), bulls may be lost from the UCH population. Lacking the ability to reproduce cows, with a longer life span, will remain for a short period of time, but the herd will be completely extirpated several years after the bulls are lost. This condition was observed in a reindeer population on St. Matthew Island. Wolves concurrently decline in abundance as well and may disappear as large ungulates (i.e. caribou) are no longer available.

Bull Translocation. This management option would have *negligible* adverse effects on the caribou population. Conversely, the action would have significant positive effects. This is the only ungulate population inhabiting the island and this would help ensure the persistence and abundance of caribou and species that rely on caribou. The reduced rate of decline expected of the herd resulting from this option would not affect the herds function in the ecosystem or resources important to that population.

The action of translocating bulls would be *temporary* and *low inten*sity occurring over 2-3 days and consisting of a few landings on an established airfield each day and releasing cpatured bulls. The adverse effects of translocating bulls to the herd are *negligible*. SAP animals are the original source for the herd so they share similar genetics and the two herds are considered continuous in terms of disease and parasite profiles. Any subtle changes in population genetics would be greatly reduced if actions are also taken to increase recruitment of UCH bulls.

This action should increase pregnancy rates for up to 5 years based on the projected life-span of the bulls from time of relocation. However, absent coordinated removal of predators, low recruitment and abundance will continue with no harvestable surplus for subsistence or other uses available and a very likely continued decline (albeit slower) in abundance. If recruitment does not increase, translocation from the SAP will need to be repeated at continued cost to the overall recovery of the SAP and its ability to provide for subsistence or other uses.

Immunocontraception or surgical sterilization. This management option would have *negligible* impacts on the caribou population. Conversely, the action would have significant positive impacts. This is the only ungulate population inhabiting the island and this would help ensure the persistence and abundance of caribou and species that rely on caribou. The stabilization and possible slow growth expected of the herd resulting from this option would not affect the herds function in the ecosystem or resources important to that population.

The action of handling and removing wolves would have *negligible* affects on the caribou population as the associated helicopter and fixed wing activities would consist of only a few days activities each year for 1 to several years depending on immigration rates and the number and persistence of untreated (fertile) wolves. The amount of disturbance from this action would be similar to that resulting from the capture and handling of wolves for routine wolf research or monitoring that has been conducted in numerous wolf-caribou systems in wilderness areas across the state. These activities report no adverse effects to component ungulate populations and are not expected to have affects on Unimak.

Monitoring the results of this program would likely have *negligible* effects on the caribou population. Collaring adult and neonate caribou to evaluate survival and facilitate associated surveys would have very *temporary duration* (a few hours to a few days) and *low intensity*

effects on a small number of individuals. These actions are routinely conducted on caribou populations in wilderness areas throughout the state.

Targeted wolf removal – Helicopter. This management option would have *negligible* effects on the caribou population. Conversely, the action would have significant positive effects . This is the only ungulate population inhabiting the island and this would help ensure the persistence and abundance of caribou and species that rely on caribou. The stabilization and possible slow to moderate growth expected of the herd resulting from this option would not impact the herds function in the ecosystem or resources important to that population.

The action of removing wolves would have *negligible* impacts on the caribou population as the associated fixed wing activities would consist of a few day's activities each year for 1 to several years depending on immigration rates and the number and persistence of wolves outside the wolf reduction area. The amount of disturbance from this action would be similar to that resulting from wolf reductions that have been conducted in numerous wolf-caribou systems across the state. These activities report no adverse effects to component ungulate populations and are not expected to have affects on Unimak caribou.

Monitoring the results of this program would likely have negligible effects on the caribou population. Collaring adult and neonate caribou to evaluate survival and facilitate associated surveys would have very *temporary duration* (a few hours to a few days) and *low intensity* effects on a small number of individuals. These actions are routinely conducted on caribou populations in wilderness areas throughout the state.

Targeted wolf removal – Fixed Wing. This management option would have *negligible* adverse effects on the caribou population. Conversely, the action would have significant positive effects. This is the only ungulate population inhabiting the island and this would help ensure the persistence and abundance of caribou and species that rely on caribou. The stabilization and possible slow growth expected of the herd resulting from this option would not affect the herds function in the ecosystem or resources important to that population.

The action of removing wolves would have *negligible* effects on the caribou population as the associated fixed wing activities would consist of a few week's activities each year for 1 to several years depending on immigration rates and the number and persistence of wolves outside the wolf reduction area. The amount of disturbance from this action would be similar to that resulting from wolf reductions that have been conducted in numerous wolf-caribou systems across the state. These activities report no adverse effects to component ungulate populations and are not expected to have affects on Unimak caribou.

Monitoring the results of this program would likely have *negligible* effects on the caribou population. Collaring adult and neonate caribou to evaluate survival and facilitate associated surveys would require and may not be considered. If conducted, monitoring would have very *temporary duration* (a few hours to a few days) and *low intensity* effects on a small number of individuals. These actions are routinely conducted on caribou populations in wilderness areas throughout the state.

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Targeted wolf removal – Ground based. This management option would have *negligible* adverse effects on the caribou population. Conversely, the action would have positive effects. This is the only ungulate population inhabiting the island and this would help ensure the persistence and abundance of caribou and species that rely on caribou. The stabilization and possible slow growth expected of the herd resulting from this option would not affect the herds function in the ecosystem or resources important to that population.

The action of removing wolves would have *negligible* effects on the caribou population as the ground based activities would consist of a few weeks activities each year for 1 to several years depending on immigration rates and the number and persistence of wolves outside the wolf reduction area. The amount of disturbance from this action would be similar to that resulting from hiking and other outdoor activities occurring on or near calving areas across the state. To our knowledge, there is not a single calving area closed to ground based activities or associated fixed wing access in wilderness or other areas of the state for the purpose of protecting caribou calving grounds.

Monitoring the results of this program would likely have *negligible* effects on the caribou population. Collaring adult and neonate caribou to evaluate survival and facilitate associated surveys would require and may not be considered. If conducted, monitoring would have very *temporary duration* (a few hours to a few days) and *low intensity* effects on a small number of individuals. These actions are routinely conducted on caribou populations in wilderness areas throughout the state.

Broad scale wolf removal. This management option would have *negligible* adverse effects on the caribou population. Conversely, the action would have positive effects. This is the only ungulate population inhabiting the island and this would help ensure the persistence and abundance of caribou and species that rely on caribou. The stabilization and possible slow to moderate growth expected of the herd resulting from this option would not affect the herds function in the ecosystem or resources important to that population.

The action of removing wolves would have *negligible* effects on the caribou population as the associated fixed wing activities would consist of a few days activities each year for 1 to several years depending on immigration rates and the number and persistence of wolves remaining on the island. The amount of disturbance from this action would be similar to that resulting from wolf reductions that have been conducted in wolf-caribou systems across the state and the Yukon Territory. These activities report no adverse effects to component ungulate populations and are not expected to have effects on Unimak caribou.

Monitoring the results of this program would have negligible effects on the caribou population. Collaring adult and neonate caribou to evaluate survival and facilitate associated surveys would have very *temporary duration* (a few hours to a few days) and *low intensity* effects on a small number of individuals. These actions are routinely conducted on caribou populations in wilderness areas throughout the state.

Bears

No Action. Under this management option the Department would not take action. The UCH would continue to decline affecting the overall productivity of the Unimak Island ecosystem. Bears would continue to lose a food source.

Bull translocation. This management action would have positive effects on bears as it would serve to increase pregnancy in caribou which would serve to maintain caribou as a food source in the near term. There would be negligible adverse affects as the action of translocating bulls would be very *temporary* and *low inte*nsity occurring over 2-3 days and consisting of a few landings on an established airfield each day and releasing the bulls.

Immunocontraception or surgical sterilization. Under this management option, the UCH would continue to provide a food resource for bears. It is not expected that this action would have an adverse effect on the bear population on Unimak Island.

Targeted wolf removal – Helicopter. Under this management option, the UCH would continue to provide a food resource for bears. It is not expected that this action would have an adverse effect on the bear population on Unimak Island.

Targeted wolf removal – Fixed Wing. Under this management option, the UCH would continue to provide a food resource for bears. It is not expected that this action would have an adverse effect on the bear population on Unimak Island.

Targeted wolf removal – Ground based. Under this management option, the UCH would continue to provide a food resource for bears. It is not expected that this action would have an adverse effect on the bear population on Unimak Island.

Broad scale wolf removal. Under this management option, the UCH would continue to provide a food resource for bears. It is not expected that this action would have an adverse effect on the bear population on Unimak Island.

Wolves

No Action. Under this management option the Department would not take action. The UCH would continue to decline affecting the overall productivity of the Unimak Island ecosystem. Wolves would continue to lose an important food source. If caribou become extirpated from Unimak, wolves would likely become extirpated as well.

Bull translocation. This management action would have positive effects on wolves as it would serve to increase pregnancy in caribou which would serve to maintain caribou as a food source for wolves in the near term. There would be negligible adverse effects as the action of translocating bulls would be very *temporary* and *low inte*nsity occurring over 2-3 days and consisting of a few landings on an established airfield each day and releasing the bulls.

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Immunocontraception or surgical sterilization. This management option would have *minor to moderate* adverse effects to the wolf population – a *common* species. The intensity would be *high* because all wolves would have to be treated or removed from a large portion of - or even the entire - island. This would result in a measurable and observable change in the function and numbers of wolves on the island. Sterilization would have a *long-term duration* because immigration or translocation would be required to return reproductive function to wolves on the island. Immunocontraception or surgical sterilization would have a *shorter duration.*

If subordinate wolves can be translocated, this would be a nonlethal method of reducing their predation (e.g. Forty-mile and Aisihik caribou herds) on caribou. However, the survival rates of the wolves released in the new area is undetermined. Some wolves are expected to be killed in conflicts with other wolves that have already established territories in the release area. Wolves are very territorial and will not tolerate other wolves within the boundaries of their territory if the translocated wolves are discovered. Other wolves may perish if they are unable to acquire sufficient prey in the area of release. These concerns are moot, as translocation is not an option and this management option would require killing all subordinate wolves by following the recommendations of the American Veterinarian Society.

The wolves that remain on Unimak Island should be minimally affected by the relocation of other pack members. The decrease in pack size may make it more difficult to kill prey and defend the existing territory from other wolves. Since caribou are the only large terrestrial prey species on Unimak Island and wolf pack territories that encompass caribou range are valuable to other wolves, it is anticipated that treated packs (now composed of only 2 wolves) will not be able to defend their territories from larger untreated wolf packs. Therefore, the most probable scenario would require all wolf packs on Unimak Island to undergo treatment (sterilization of the alpha pair and the removal of all subordinate wolves).

The sterilized pair will be negligibly affected by the immobilization and the sterilization process. Immunocontraception is temporary and wolves will become fertile after treatment is suspended. If the wolves are neutered or spayed, an operation would be needed to reverse the sterilization. If all of the wolves on Unimak are neutered or spayed and the procedure to reverse the sterilization is not an option, the viability of the wolf population would rely on immigration of unsterilized wolves from the mainland or a planned effort to translocate wolves to the island. Little is currently known about immigration rates of wolves to Unimak Island. Isanotski Strait may not provide a significant barrier to the return of untreated wolves or the immigration of other wolves. Any increase in wolf abundance would reduce the success of the program by failing to reduce predator-prey ratios to target levels.

Targeted wolf removal – Helicopter. This management option would have *minor* adverse effects on the wolf population. The *intensity would be low to moderate* as only wolves actively hunting calves on the calving grounds would be removed. In the adjacent and very similar SAP targeted wolf reduction, only about 10-25% of the wolf population was reduced in each of the first two years. This level of reduction in not thought to have measurable effects on wolf population size (Adams et al. 2009) however, a change in wolf numbers would be observable on frequently used calving areas. The duration of the action would be *temporary to short* with active removal occurring during the first 2-3 years then only as needed in subsequent years.

Targeted wolf removal – Fixed Wing. This management option would have *minor* adverse effects on the wolf population. The *intensity would be moderate* as wolves found anywhere in the wolf reduction area would be removed. However, because a helicopter would not be available to collar caribou neonates to locate wolves hunting calves, the wolf removal would be less selective and result in up to a 50% reduction in wolf numbers across the island during the course of the action. The duration of the action would be *short to long* with active removal occurring during the first 2-3 years then only as needed in subsequent years, however it would take 2-3 years for the wolf population to recover following termination of wolf reduction.

Targeted wolf removal – Ground based. This management option would have *minor* adverse impacts on the wolf population. The *intensity would be moderate* as wolves found anywhere in the wolf reduction area would be removed. However, because a helicopter would not be available to collar caribou neonates to locate wolves hunting calves, the wolf removal would be less selective and result in up to a 50% reduction in wolf numbers across the island during the course of the action. The duration of the action would be *short to long* with active removal occurring during the first 2-3 years then only as needed in subsequent years, however it would take 2-3 years for the wolf population to recover following termination of wolf reduction.

Broad scale wolf removal. This management option would have *moderate* adverse effects on the wolf population. Intensity would be *high* as the wolf population would be reduced to eighty percent of pre-action numbers. The duration of these actions would be *short to long* with active removal occurring during the first two to three years then only as needed in subsequent years, however it would take two to three years for the wolf population to recover following termination of wolf reduction.

Subsistence Uses

No Action. Under this management option the Department would not take action. Caribou abundance would continue to decline with reduced opportunities for subsistence harvest in the long term, a state which could persist for many years, potentially generational in duration. Local area residents would need to continue to obtain alternate sources of red meat, which is not readily available, and, where commercially available, at great monetary expense due to associated shipping and storage costs. The effect on subsistence would be long term to permanent, major negative effects.

Bull Translocation. This option would help ensure the persistence and abundance of caribou for subsistence users that rely on caribou. The reduced rate of decline expected of the herd resulting from this option would not affect the herds function in the ecosystem or resources important to that population. This would be a temporary to short term with minor positive effects, but is not expected to assist in increasing the abundance of caribou to the point where there is a surplus for subsistence harvest in the long term, a state which could persist for many years, potentially generational in extant. Local area residents would need to continue to obtain alternate sources of red meat, which is not readily available, and, where commercially available, at great monetary expense due to associated shipping and storage costs. The effect on subsistence would be long term to permanent, major negative effects.

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Immunocontraception or surgical sterilization. This management option would have low effects on subsistence. The UCH may stabilize or grow, but at a low rate that is not expected to provide any reasonable opportunities for subsistence use in the near term. Local area residents would need to continue to obtain alternate sources of red meat, which is not readily available, and, where commercially available, at great monetary expense due to associated shipping and storage costs. The effect on subsistence would be long term with minor positive effects.

Targeted wolf removal – Helicopter. This management option would have significant positive effects on subsistence. The stabilization and possible slow to moderate growth expected of the herd resulting from this option would have a medium to high positive effect for a long term basis on subsistence. Local area residents would be able to utilize the UCH as a source of red meat, reducing reliance on commercially obtained foods.

Targeted wolf removal – Fixed Wing. This management option would have significant, positive effects on subsistence. The stabilization and possible slow to moderate growth expected of the herd resulting from this option would have a medium positive effect for a long term on subsistence. Local area residents would be able to utilize the UCH as a source of red meat, reducing reliance on commercially obtained foods.

Targeted wolf removal – Ground based. This management option would have significant, positive effects on subsistence. The stabilization and possible slow to moderate growth expected of the herd resulting from this option would have a medium positive effect for a long term basis on subsistence. Local area residents would be able to utilize the UCH as a source of red meat, reducing reliance on commercially obtained foods.

Broad scale wolf removal. This management option would have significant, positive effects on subsistence. The stabilization and possible slow to moderate growth expected of the herd resulting from this option would have a medium positive effect for a long term to permanent basis on subsistence. Local area residents would be able to utilize the UCH as a source of red meat, reducing reliance on commercially obtained foods.

Recreational Uses

No Action. Under this management option the Department would not take action. The state authorized general caribou hunts would remain closed for an extended period of time. Impacts to caribou hunters are expected to be high and long term as no harvestable surplus of caribou would be available for many years. Affects of the no action would be negligible for brown bear hunters since brown bears experience only minor change from variations in caribou abundance by utilizing other food sources. Hunters would not be disturbed in the field by aircraft conducting field operations related tracking wolves or caribou or landings near animals.

Bull Translocation. There would be negligible adverse effects as the action of translocating bulls would be very *temporary* and *low inten*sity occurring over 2-3 days and consisting of a few landings on an established airfield each day and releasing the bulls which would be accomplished when few, if any visitors are present.

Brown bear hunters would find low, temporary effects to the action as brown bear hunters would not be in the field when the action took place. The long term effects of the action for brown bear hunters would be negligible.

Immunocontraception or surgical sterilization. This management option would have medium to high adverse effects on activities related to hunting wolves since all wolves would need to be treated or removed from the Island. This would result in a measurable and observable change in the function and numbers of wolves on the island, reducing opportunities for hunting them. Sterilization would have a *long-term duration* because immigration or translocation would be required to return reproductive function to wolves on the island. Immunocontraception would have a shorter duration and would be considered a short term effect. Neither action is expected to have more than a negligible effect on brown bear hunting but may have a medium positive effect on caribou hunting if recruitment of caribou into the population improves to the point where a surplus for general hunting is achieved.

Targeted wolf removal – Helicopter. Under this management option, proposed field operations will occur outside of scheduled hunting and trapping seasons. Hunters would not be disturbed in the field by aircraft conducting field operations related to tracking wolves or caribou or landings near animals, so there will be no direct impact on currently authorized hunting and trapping opportunity. The state authorized general caribou hunts would remain closed until a sustainable harvest of caribou can be achieved. Impacts to caribou hunters are expected to be very short in duration compared to the no action alternative.

Targeted wolf removal – Fixed Wing. Under this management option, proposed field operations will occur outside of scheduled hunting and trapping seasons. Hunters would not be disturbed in the field by aircraft conducting field operations related to tracking wolves or caribou or landings near animals, so there will be no direct impact on currently authorized hunting and trapping opportunity. The state authorized general caribou hunts would remain closed until a sustainable harvest of caribou can be achieved. Impacts to caribou hunters are expected to be short in duration compared to the no action alternative.

Targeted wolf removal – ground based. Under this management option brown bear hunters may experience medium, temporary adverse affects of short duration. During proposed field operations in May, the general season for brown bear hunting will be open (May 10 to May 25 annually) with a total of seven permits being issued. Some brown bear hunters may observe ground crews in the field or may observe aircraft flying in the distance. Affects to brown bear hunters is expected to be temporary as field operations will be of short duration and will be focused in the caribou calving area and on wolves and caribou and not brown bears. Brown bear hunters may view the intended field activity as a disturbance to their hunt and will have a poor experience as a result.

Broad scale wolf removal. Under this management option, proposed field operations will occur outside of scheduled hunting and trapping seasons. Hunters would not be disturbed in the field by aircraft conducting field operations related to tracking wolves or caribou or landings near animals, so there will be no direct impact on currently authorized hunting and trapping opportunity. The state authorized general caribou hunts would remain closed until a sustainable

harvest of caribou can be achieved. Impacts to caribou hunters are expected to be very short in duration compared to the no action alternative.

Wilderness Character

No Action. Under this management option the Department would not take action. Components and processes of ecological systems are not intentionally controlled or manipulated. The imprint of man's work will remain substantially unnoticeable and wilderness will continue to be in contrast to other areas of "growing mechanization." There would be no effects of the use of any motorized equipment, mechanical transport, structures or installations on maintaining the undeveloped quality of wilderness character. Visitors would continue to experience solitude. Primitive and unconfined types of recreation will be protected. The potential for impairment of wildlife and ecosystems exists if the Department takes no action. Caribou are an important resource utilized for subsistence purposes on Unimak Island and necessary for proper ecosystem function. This option would have a long-term, major negative effect on wilderness values.

However, other routine management actions would continue to have temporary, minor negative effects on wilderness character.

Bull translocation. There are no changes to the natural environment proposed. No disturbance of soil or vegetation would likely occur. No modification to natural terrain will be made. Bull translocation would have short term, moderate positive effect on the wilderness ecosystem by increasing the number of bulls, which should increase pregnancy. The duration of plane landings on a pre-existing airstrip would have a temporary, negligible negative impact to wilderness character; however, these landing are authorized by ANILCA. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. No modification to natural terrain will be made.

Immunocontraception or surgical sterilization. The duration of helicopter landings is short and will have no lasting effect on any physical attributes of wilderness. Capturing, collaring, and releasing wolves puts a short duration impact on their natural behaviors. This has been shown to have no documentable long term effect. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. If the helicopter were to land on vegetation the effect is temporary and inconsequential. Any landing sites would be unnoticeable within a few hours. No modification to natural terrain will be made. Occasional observation of helicopters may shrink the feeling of remoteness and the knowledge of other people working in the wilderness can lower the feeling of solitude and self-reliance. This option would have a short-term, minor positive affect to wilderness character by taking measures to increase calf production.

Targeted wolf removal – Helicopter. The duration of helicopter landings is short and will have no lasting effect on any physical attributes of wilderness. Capturing, collaring, and releasing caribou calves puts a short duration impact on their natural behaviors. This has been shown to have no noticeable long term effect. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. If the helicopter were to land on vegetation the effect is temporary and inconsequential. Any landing sites would be unnoticeable

within a few hours. No modification to natural terrain will be made. Occasional observation of helicopters and/or collars may shrink the feeling of remoteness and the knowledge of other people working in the wilderness can lower the feeling of solitude and self-reliance. This option would have a long-term, major positive affect to wilderness character by taking effective measures to increase calf survival.

Targeted wolf removal – Fixed Wing. The duration of fixed-wing aircraft landings is short and would have little lasting effect on any physical attributes of wilderness. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. No modification to natural terrain will be made. Occasional observation of fixed-wing aircraft may shrink the feeling of remoteness and the knowledge of other people working in the wilderness can lower the feeling of solitude and self-reliance. This type of access is allowed, subject to reasonable regulation, in wilderness areas in Alaska. This option would have a long-term, moderate positive affect to wilderness character by taking measures to increase calf survival.

Targeted wolf removal – Ground. The duration of fixed-wing aircraft landings is short and would have little lasting effect on any physical attributes of wilderness. There are no changes to the natural environment proposed. Field crews would cause disturbance of soil or vegetation; however, this effect would be minor. No modification to natural terrain will be made. Occasional observation of fixed-wing aircraft and field crews may shrink the feeling of remoteness and the knowledge of other people working in the wilderness can lower the feeling of solitude and self-reliance. This type of access is allowed, subject to reasonable regulation, in wilderness areas in Alaska. This option would have a long-term, minor positive affect to wilderness character by taking measures to increase calf survival.

Broad scale wolf removal. Survey activities would have a temporary negligible negative effect on wilderness character due to fixed-wing aircraft overflights. However, this activity (overflights) is outside of the designated wilderness area.

The duration of helicopter landings is short and will have no lasting effect on any physical attributes of wilderness. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. If the helicopter were to land on vegetation the effect is temporary and inconsequential. Any landing sites would be unnoticeable within a few hours. No modification to natural terrain will be made. Occasional observation of fixed-wing aircraft and helicopters may shrink the feeling of remoteness and the knowledge of other people working in the wilderness can lower the feeling of solitude and self-reliance. This option would have a long-term, minor positive affect to wilderness character by taking measures to increase calf survival.

Vegetation

No Action. Under this management option the Department would not take action. The biomass of individual forage plants currently being utilized by caribou may increase with cessation or low levels of grazing, with expected low effects to the plant community as caribou are extirpated or found in low densities over the long term. However, forage species probably will not increase

within plant communities as a result of reduction in grazing, since the UCH has been at relatively low densities in recent years and the principal vascular forages are well adapted to moderate levels of utilization, which also present a low level of effect. The action will have negligible effect in the structure and function of the ecological community.

Bull Translocation. Little disturbance of soil or vegetation would likely occur. The biomass of individual forage plants currently being utilized by caribou may increase with cessation or low levels of grazing, with expected low effects to the plant community as caribou are extirpated or found in low densities over the long term. However, forage species probably will not increase within plant communities as a result of reduction in grazing, since the UCH has been at relatively low densities in recent years and the principal vascular forages are well adapted to moderate levels of utilization, which also present a low level of effect. The action will have negligible effect in the structure and function of the ecological community.

Immunocontraception or surgical sterilization. The duration of helicopter landings is short and will have no lasting effect on any physical attributes of wilderness. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. If the helicopter were to land on vegetation the effect is temporary and inconsequential. Any landing sites would be unnoticeable within a few hours. No modification to natural terrain will be made. The biomass of individual forage plants currently being utilized by caribou may increase with cessation or low levels of grazing, with expected low effects to the plant community as caribou are extirpated or found in low densities over the long term. However, forage species probably will not increase within plant communities as a result of reduction in grazing, since the UCH has been at relatively low densities in recent years and the principal vascular forages are well adapted to moderate levels of utilization, which also present a low level of effect. The action will have negligible effect in the structure and function of the ecological community.

Targeted wolf removal – Helicopter. The duration of helicopter landings is short and will have no lasting effect on any physical attributes of wilderness. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. If the helicopter were to land on vegetation the effect is temporary and inconsequential. Any landing sites would be unnoticeable within a few hours. No modification to natural terrain will be made. This option would have a negligible, temporary negative impact on vegetation.

Targeted wolf removal – Fixed Wing. The duration of fixed-wing aircraft landings is short and would have little lasting effect on any physical attributes of wilderness. Landing on vegetation is not anticipated and generally not preferred by most pilots. The majority of landings will occur on non-vegetated landing sites where the landings can be accomplished in a safer manner. This option would have no impact or short-term, negligible negative impact on vegetation.

Targeted wolf removal – Ground based. Ground crews will maintain temporary camp sites in vegetated areas that will be moved periodically by fixed-wing aircraft during the project. Fixed-wing landings on vegetation is not anticipated and generally not preferred by most pilots. The majority of landings will occur on non-vegetated landing sites where the landings can be accomplished in a safer manner. The duration of fixed-wing aircraft landings is short and would have little lasting effect on vegetation. There are no changes to the natural environment

proposed. Field crews would cause disturbance of soil or vegetation; however, this effect would be minor. No modification to natural terrain will be made. This option would have a short-term, negligible negative impact on vegetation.

Broad scale wolf removal. The duration of helicopter landings is short and will have no lasting effect on any physical attributes of wilderness. There are no changes to the natural environment proposed. Little disturbance of soil or vegetation would likely occur. If the helicopter were to land on vegetation the effect is temporary and inconsequential. Any landing sites would be unnoticeable within a few hours. No modification to natural terrain will be made. This option would have a negligible, temporary negative impact on vegetation.

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Appendix

Alaska Board of Game Regulations

MEMORANDUM

State of Alaska
Department of Law

TO: The Honorable Denby Lloyd
Commissioner
Department of Fish and Game

DATE: April 14, 2010

FILE NO.: JU2009200750 (Part 1)

TELEPHONE NO.: 465-3600

FROM: Deborah E. Behr
Chief Assistant Attorney General
and Regulations Attorney
Legislation/Regulations Section - Juneau

SUBJECT: Bd. of Game Regulations re:
Spring 2010 Meeting
Interior Region: Predation Control
Bears and Wolves; Unimak Wolf
Management Area (Unit 10)
(5 AAC 92.110(j); 5 AAC 92.115(h)
and 5 AAC 92.125*(l)*)

Under AS 44.62.060, we have reviewed the Board of Game's changes to these regulations and approve the changes for filing by the lieutenant governor. A duplicate original of this memorandum is being furnished to the lieutenant governor, along with the 10 page of regulation changes and related documents.

You might wish to contact the lieutenant governor's office to confirm the filing date and effective date of the regulation changes.

The January 22, 2010 public notice and the April 13, 2010 certification of adoption order both state that this action is not expected to require an increased appropriation. Therefore, AS 44.62.195 does not require a fiscal note.

Finally, we have made some technical corrections to the regulations in accordance with AS 44.62.125. The corrections are shown on the attached copy of the regulations.

DEB:KJM:kjm

cc w/ enc.: Kerri Tonkin, Regulations Program Coordinator
AAC Contact
Department of Fish and Game

Kristy Tibbles, Executive Director
Board of Game
Department of Fish and Game

Suzan Bowen, Program Coordinator
Division of Wildlife Conservation
Department of Fish and Game

Enforcement Commander
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Division of Wildlife Troopers
5700 E. Tudor Road
Anchorage, Alaska 99507-1225

Kevin Saxby, Assistant Attorney General - Anchorage

MEMORANDUM

State of Alaska
Department of Law

TO: The Honorable Craig E. Campbell
Lieutenant Governor

DATE: April 14, 2010

FILE NO.: JU2009200750 (Part 1)

TELEPHONE NO.: 465-3600

FROM: Deborah E. Behr
Chief Assistant Attorney General
and Regulations Attorney
Legislation/Regulations Section - Juneau

SUBJECT: Bd. of Game Regulations re:
Spring 2010 Meeting
Interior Region: Predation Control
Bears and Wolves; Unimak Wolf
Management Area (Unit 10)
(5 AAC 92.110(j); 5 AAC 92.115(h)
and 5 AAC 92.125*(l)*)

We have reviewed the attached Board of Game (board) regulations. A duplicate of this memorandum is being furnished to Commissioner Lloyd, along with a copy of the regulations.

The Department of Law has reviewed the attached regulations against the statutory standards of the Administrative Procedure Act. Based upon our review, we find no legal problems. This memorandum and the attached duplicate original memorandum dated April 14, 2010 constitute the written statement of approval under AS 44.62.060(b) and (c) that authorizes your office to file the attached regulations.

The regulation changes were adopted by board after the close of the public comment period and oral hearing. The regulation changes are regarding standards related to predation control for bears and wolves, including the establishment of standards for a wolf population reduction or wolf population regulation program in the Unimak Wolf Management Area in Unit 10.

The January 22, 2010 public notice and the April 13, 2010 certification of adoption order both state that this action is not expected to require an increased appropriation. Therefore, AS 44.62.195 does not require a fiscal note.

Finally, we have made some technical corrections to the regulations in accordance with AS 44.62.125. The corrections are shown on the attached copy of the regulations.

DEB:KJM:kjm

cc: Hon. Denby Lloyd, Commissioner
Department of Fish and Game

Note to Publisher: When a subsection, paragraph, subparagraph, etc. is indicated by the appropriate number or letter and no text follows that symbol, then the omitted text is the same as that set out in the previous register containing the section. Amended text to be added is bolded and underlined. Amended text to be deleted is capitalized and enclosed in brackets.

Title 5. Fish and Game.

Part 3. Game.

Chapter 92. Statewide Provisions.

Article 5. Intensive Management.

5 AAC 92.110(j) is repealed:

(j) Repealed ___/___/2010.

(Eff. 7/5/85, Register 95; am 7/1/92, Register 122; am 5/5/93, Register 126; am 10/1/93, Register 127; am 7/1/2004, Register 170; am 1/1/2005, Register 172; am 7/1/2005, Register 174; am 3/10/2006, Register 177; am 7/1/2009, Register 190; am ____/____/2010, Register ____)

Authority: AS 16.05.255 AS 16.05.270 AS 16.05.783

5 AAC 92.115(h) is repealed:

(h) Repealed ___/___/2010.

(Eff. 7/1/2004, Register 170; am 7/1/2005, Register 174; am 3/10/2006, Register 177; am 7/1/2009, Register 190; am ____/____/2010, Register ____)

Authority: AS 16.05.255 AS 16.05.270

5 AAC 92.125 is amended by adding a subsection to read:

ital.

(l) ~~The~~ **Unimak Wolf Management Area**. Notwithstanding any other provisions in this title, and based on the following information contained in this subsection, the commissioner or the commissioner's designee may conduct a wolf population reduction or wolf population regulation program on Unimak Island in Unit 10:

(1) the Unimak Wolf Management Area is established to reverse the population decline and facilitate population growth of the Unimak caribou herd (UCH) on Unimak Island in Unit 10; the UCH has been identified as an important resource for subsistence and other uses; the Unimak Wolf Management Area includes all of Unimak Island, encompassing approximately 1,571 square miles; active control will be confined to an area that is approximately 900 square miles and includes 57 percent of the lands within the management area;

(2) the discussion of wildlife populations and human use information is as follows:

(A) the UCH population information is as follows:

(i) the UCH has occupied Unimak Island throughout recorded history and was estimated at 5,000 caribou in 1975; the UCH population size was estimated to include 1,200 caribou in 2002 before entering a population decline; the most recent estimate of herd size was 400 caribou based on surveys conducted by Izembek National Wildlife Refuge staff in February 2010;

(ii) the cause of the UCH population decline was not investigated initially; however, low caribou calf survival is the primary cause of the decline currently;

(iii) calf ratios in October averaged 5.5 calves per 100 cows during the period of 2005 - 2009 (range 3 – 7 calves);

(iv) bull ratios declined from 45 bulls per 100 cows to 5 bulls per 100 cows during the period of 2005 - 2009; the decreased bull ratio is attributed to the lack of calf recruitment and cannot be explained by caribou harvests;

(v) pregnancy rates of cows that were 24 months of age or older decreased from 85 percent in 2008 (n=113) to 68 percent in 2009 (n=40); the decreased pregnancy rate is attributed to the inability of some reproductive females to find mates for breeding, which is caused by the low bull ratio;

(vi) adult female caribou in the UCH have excellent body condition based on a study conducted in 2009; nutrition and range conditions are not limiting reproduction or caribou survival;

(vii) harvestable surplus is estimated to be 0 caribou based on chronic poor calf recruitment and reduced bull ratio;

(viii) state and federal caribou hunts were closed in 2009 due to the continued population decline and low calf recruitment; the closure remains in place as of 2010;

(B) the predator population and human use information is as follows:

(i) wolves are a major predator of caribou on Unimak Island;

(ii) research into the causes of caribou calf mortality indicates that wolf predation is a major cause of caribou calf deaths during the first two weeks of life and wolves continue to be a major predator throughout the year; wolf predation was the primary cause of calf deaths in the adjacent Southern Alaska

Peninsula caribou herd in Unit 9(D); the removal of 20 adult wolves from caribou calving grounds in Unit 9(D) during two years of a wolf predation management program increased caribou calf survival from one percent to 71 percent;

(iii) wolf density on the Alaska Peninsula is estimated at seven wolves per 1,000 square kilometers; wolf densities in the Unimak Wolf Management Area is thought to be similar based on observations made by biologists during caribou surveys; anecdotal evidence obtained from pilots, hunters, and local residents indicates that wolves are abundant throughout the area;

(iv) no wolf surveys have been conducted in the Unimak Wolf Management Area; wolves are frequently observed in the UCH calving ground; the Unimak Wolf Management Area is thought to include 15 - 30 wolves in two to five packs based on ungulate biomass and densities of nearby populations;

(v) an average of two wolves (range of 0 - 4 wolves) have been harvested annually in the Unimak Wolf Management Area;

(vi) brown bears are considered to be an important predator of caribou on the Alaska Peninsula and on Unimak Island; while brown bears have been known to kill adult caribou opportunistically, brown bears are regarded as an effective predator of calves during the first 10 days of life;

(vii) research into the causes of caribou calf mortality indicates that brown bears can be an important predator of caribou calves during the first two weeks of life; brown bear predation was a less important cause of caribou calf mortality than wolf predation in the adjacent Northern Alaska Peninsula

caribou herd in Units 9(C) and 9(E) and Southern Alaska Peninsula caribou herd in Unit 9(D), which have similar ecosystems;

(viii) brown bears are considered abundant on Unimak Island; the brown bear density is 100 bears per 1,000 square kilometers in the Unimak Wolf Management Area;

(ix) brown bear harvests in the Unimak Wolf Management Area have averaged 10 brown bear annually from 2000 - 2008;

(3) predator and prey population levels and objectives and the basis for those objectives are as follows:

(A) the management population objective for the UCH is to maintain a population of 1,000 caribou with a bull ratio of at least 35 bulls:100 cows; the amount necessary for subsistence is 100 - 150 caribou annually and includes caribou harvested from the Southern Alaska Peninsula caribou herd in Unit 9(D); the caribou harvest objective required to meet the amount necessary for subsistence has not been met for 18 years; management objectives were established based on historic information regarding population numbers, habitat limitations, human use, and sustainable harvests; hunting seasons for the UCH were closed in March 2009; the UCH population contained a minimum of 400 caribou in February 2010;

(B) the wolf population objective for Unimak Island is to maintain a population of 8 - 15 wolves;

(C) the brown bear population objective for Unit 10 is to maintain a high density bear population with a sex and age structure that can sustain a harvest composed

of at least 60 percent males; the brown bear population objective for Unit 10 is currently being met;

(4) justification, objectives, and thresholds for the predator management implementation plan are as follows:

(A) justification for the Unimak Wolf Management Area is based on the board's recognition of the UCH as being important for providing caribou for human consumptive use including subsistence; the board established objectives for population size and composition in Unit 10 consistent with multiple use and principles of sound conservation and management of habitat and all wildlife species in the area;

(B) the objectives of the program are to halt the decline of the UCH and to achieve a sex and age structure that will sustain the population; the goal of this program is to reduce the number of wolves in a specified control area that demonstrates a history of repeated use by caribou; the control area includes all lands on Unimak Island that are west of the 164 degree West line of longitude; the control area includes 900 square miles and includes approximately 57 percent of the lands within the Unimak Wolf Management Area; the department and the United States Fish and Wildlife Service are exploring the possibility of transplanting caribou bulls onto the island in order to improve the bull to cow ratio; wolf predation control is likely to be necessary in order to afford additional protection to these bulls and resulting calves;

(C) the commissioner may initiate the reduction of wolf numbers in the Unimak Wolf Management Area according to the following thresholds:

(i) the caribou population is below management objectives established by the board;

(ii) nutrition is not considered to be the primary factor limiting caribou population growth;

(iii) calf recruitment is an important factor limiting population growth and calf survival during the first four weeks of life is less than 50 percent;

(D) the commissioner may continue to reduce wolf numbers in the Unimak Wolf Management Area until the following thresholds can be met without the benefit of wolf reduction:

(i) the bull ratio can be sustained within management objectives and the fall calf ratio can be sustained above 25 calves per hundred cows;

(ii) the population can grow at a sustained rate of ~~5~~ five percent annually;

(iii) harvest objectives can be met;

(E) the commissioner will suspend the wolf reduction program if the following conditions are observed pending further review by the board to determine if the program can be modified to achieve the objectives of this program before reinstating the program, except that hunting and trapping by the public specified in other sections of this title may continue and are not subject to this subparagraph:

(i) caribou nutritional indices such as pregnancy rates, calf and adult body mass, or other condition indices exhibit a declining trend from current values and the bull ratio is greater than 20 bulls:100 cows;

(ii) fall caribou calf ratios remain below 20 calves per 100 cows for three consecutive years of wolf removal from the Unimak Wolf Management Area;

(iii) the bull ratio remains below the caribou population objectives and does not increase for three consecutive years of wolf removal from the Unimak Wolf Management Area;

(iv) the wolf population is reduced to two breeding pairs;

(F) the wolf population objective for the Unimak Wolf Management Area is to reduce wolf numbers in the control area on Unimak Island in Unit 10 to the wolf population objective while maintaining at least two breeding pairs; wolves will not be removed from 43 percent of the lands within the management area that are outside the boundaries of the control area; because wolves will not be removed from all lands within the management area, logistic limitations prohibit public access to the majority of lands within the management area, wolf harvest by the public is low, and only wolves thought to be killing caribou calves will be removed, only a portion of the wolf population on Unimak Island will be affected by the management activities authorized by this plan; if the wolf population inadvertently declines to fewer than two breeding pairs, wolves may be translocated to the island from an adjacent population;

(G) reduction of predators by humans is necessary to stop the caribou population decline and to promote population recovery;

(H) reduction of wolf numbers in the prescribed control area is expected to increase caribou calf survival and recruitment and increase the caribou bull ratio to management objectives;

(I) reduction of bear numbers remains problematic due to the high density of brown bears in Unit 10, logistical limitations, and competing management priorities;

(5) the authorized methods and means used to take wolves are as follows:

(A) hunting and trapping of wolves by the public in treatment areas during the term of the management program may occur as provided in the hunting and trapping regulations set out elsewhere in this title;

(B) the commissioner may issue public aerial shooting permits, public land and shoot permits, or ground-based shooting permits, or allow agents of the state, or department employees to conduct aerial, land and shoot, or ground-based shooting as a method of wolf removal under AS 16.05.783, including the use of any type of aircraft;

(C) the commissioner may authorize the use of state employees or agents or state owned, privately owned, or charter equipment, including helicopters, as a method of wolf removal under AS 16.05.783;

(6) the anticipated time frame and schedule for update and reevaluation are as follows:

(A) for up to 10 years beginning _____, 2010 {effective date of regulations} ~~/2010~~, the commissioner may reduce the wolf populations in the Unimak Wolf Management Area;

(B) annually the department shall, to the extent practicable, provide to the board a report of program activities conducted during the preceding 12 months, including implementation activities, the status of caribou and wolf populations, and recommendations for changes, if necessary to achieve the objectives of the plan;

(7) other specifications that the board considers necessary:

(A) the commissioner shall suspend wolf control activities

(i) when prey population management objectives are obtained;

(ii) predation management objectives are met;

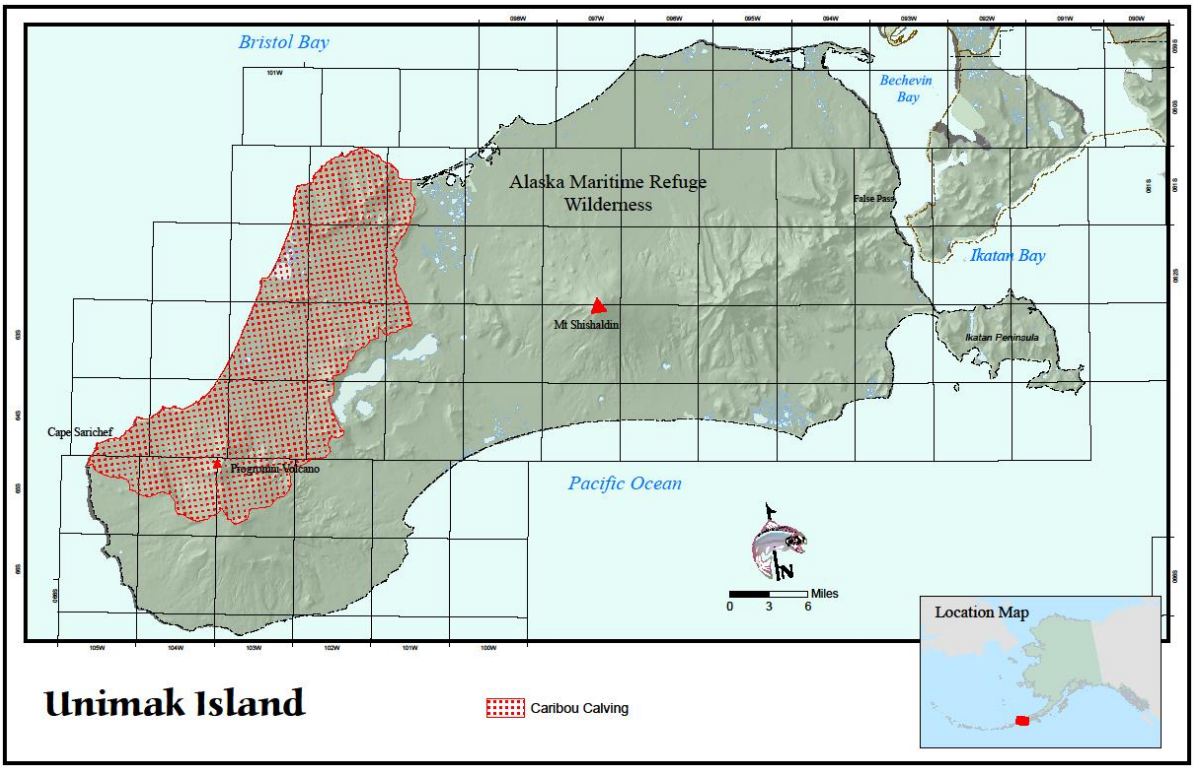
(iii) upon expiration of the period during which the commissioner is authorized to reduce predator numbers in the predator control plan area;

(B) the commissioner shall annually close wolf hunting and trapping seasons as appropriate to ensure that the minimum wolf population objectives are met.

(Eff. 10/1/93, Register 127; am 8/18/95, Register 135; am 7/1/96, Register 138; add'l am 7/1/96, Register 138; am 7/27/97, Register 143; am 2/22/2000, Register 153; am 7/1/2000, Register 154; am 7/19/2000, Register 155; am 1/3/2001, Register 156; am 7/1/2001, Register 158; am 8/22/2001, Register 159; am 7/26/2003, Register 167; am 7/1/2004, Register 170; am 1/1/2005, Register 172; am 7/1/2005, Register 174; am 1/26/2006, Register 177; am 6/24/2006, Register 178; am 9/1/2006, Register 179; am 7/1/2007, Register 182; am 3/21/2008, Register 186; am 5/20/2008, Register 186; am 5/21/2009, Register 190; am 7/1/2009, Register 190; am ____/____/2010, Register _____)

Authority: AS 16.05.255 AS 16.05.270 AS 16.05.783

Caribou Calving Area



Map of calving area

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NEPA 1

Flint Ridge Development Co. v. Scenic Rivers Association of Oklahoma, 426 U.S. 776 (1976) (Interstate Land Sales Full Disclosure Act requires statements to become effective within 30 days of filing).

National Association of Property Owners v. U.S., 499 F.Supp. 1223, 1267-68 (D. Minn. 1980) (no EIS necessary for Forest Service implementation of the Boundary Waters Canoe Area Wilderness Act because of a conflict between NEPA and the BWCAWA). "The instant case presents this conflict: the BWCAW Act mandates that the Secretary of Agriculture administer the Boundary Waters Wilderness in accordance with the provisions in the Act. *** Likewise, the other provisions of the Act are mandated to take effect at the time of the statute's enactment. If this Court were to legislate into the BWCAW Act the additional requirement that the motorized use proscriptions could not be enforced until an EIS was filed or, for that matter, any other of the mandatory provisions in the Act, then it would create a clear conflict in statutory authority. *See Alaska v. Carter*, 462 F.Supp. 1155, 1161 (D. Alaska 1978). Accordingly, NEPA does not compel the Secretary to prepare an EIS in the instant case."

Douglas County v. Babbitt, 48 F.3d 1495, 1503 (9th Cir. 1995) (NEPA does not apply to FWS designation of critical habitat for the Northern Spotted Owl where "Congress intended that the ESA procedures for designating a critical habitat replace the NEPA requirements," ESA procedures make NEPA procedures superfluous, and the procedures of NEPA would only hinder the Secretary's efforts under the ESA; rev'g *Douglas County v. Lujan*, 810 F.Supp. 1470 (D. Or. 1992).

Voyageurs National Park Ass'n. v. Norton, 381 F.3d 759, 764 (8th Cir. 2004) (Park Service's decision to open eleven bays of the Voyageurs National Park to recreational snowmobile use) (action is exempt from NEPA because it is impractical to prepare NEPA process on annual decision):

Our court has twice reviewed the Park Service's decisions regarding the use of snowmobiles at Voyageurs-first considering the Park Service's decision to allow snowmobile use, then considering its decision to suspend their use. In each of these decisions, we were satisfied that the Park Service could limit or expand the scope of permissible snowmobile activity without a full-blown NEPA review. Now, after reviewing the instant appeal we are satisfied that the Park Service has complied with its obligations under the law. The opening and closing of the bays are temporary measures, which must be renewed annually. It is impractical to require full NEPA review each year. Rather, we conclude that the opening and closing of the bays is a discretionary Park Service decision that is subject only to the Park Service's obligation (as well-stated by the district court) to be a "faithful steward of national resources" and its own procedural rules and regulations as set forth at 36 C.F.R. §1.5.

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NEPA 2

Rattlesnake Coalition v. U.S. Environmental Protection Agency, 509 F.3d 1095, 1101-02 (9th Cir. 2007) (affirming dismissal of case for lack of subject matter jurisdiction and lack of standing) (EA/FONSI for wastewater treatment plant upgrade and a sewer project) (Missoula Wastewater Facilities Plan Update is not Federalized where "there is insufficient federal control over MWFPU to make it a major federal action under NEPA" and where there is only a "small proportion of federal funding") (footnote 1 omitted):

The creation of MWFPU was not a federal action. No federal funds were used in MWFPU's creation, and it is uncontested that the Wastewater Advisory Group, solely comprised of representatives from city and county departments, led efforts to develop the MWFPU. The creation of MWFPU was not a major federal action and does not establish subject matter jurisdiction in this case.

Nor was the implementation of MWFPU a major federal action. We have found that federal funding amounting to just 10% of total estimated expenditures does not federalize a project for purposes of NEPA application. *Friends of the Earth, Inc. v. Coleman*, 518 F.2d 323, 329 (9th Cir.1975). Missoula officials estimated that the cost to complete all of the planned improvements detailed in the MWFPU would total over $88 million. To date, only $5 million in federal funds have been awarded by the EPA. That $5 million federal grant was used in the construction of the WTPU, a project that cost just under $15 million to complete. While Congress has also earmarked $500,000 for the RSP, the EPA has yet to grant those funds to Missoula. As the district court found, the total federal funds awarded to Missoula comprises just under 6% of the estimated implementation budget. The Coalition stresses that the 6% calculation misrepresents the financial involvement of the United States because federal funds will no doubt be awarded in the future for the purpose of implementing other projects under the MWFPU. However, we cannot base our evaluation of the federal nature of the MWFPU on speculation about the future federal funding of its constituent projects. If Missoula determines to seek federal funding, it must apply to the EPA for federal funding for each constituent project of the MWFPU, and we cannot predict Missoula's action, or if funds are sought whether the EPA will fund these future projects, and, if so, to what degree. The small proportion of federal funding currently supporting the projects of the MWFPU does not federalize the implementation of the entire MWFPU.

Moreover, a local plan does not become a major federal action subject to NEPA regulations merely upon its approval by a federal agency. *See Friends of the Earth*, 518 F.2d at 328-29. The development and improvement of sewage treatment by a municipality is intrinsically a local matter under the responsibility of local government. NEPA does not apply to an agency's approval of a local government's development program comprised of "distinct projects with separate functions and independent justifications," even if some of the constituent projects are entirely funded by the federal government. *See id.* The United States must maintain decisionmaking authority over the local plan in order for it to become a major federal action. *See Ka Makani*, 295 F.3d at 960-61. The Coalition has neither demonstrated that the WTPU is inextricably linked to the other projects proposed by MWFPU nor shown that the United States maintains control over the implementation of MWFPU. Absent a

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showing of federal control of MWFPU, the EPA's approval of MWFPU and subsequent grant of $5 million to support the WTPU does not elevate the entire MWFPU to the status of a major federal action. The district court correctly evaluated the Coalition's complaint as containing two distinct NEPA claims.

Center for Biological Diversity v. U.S. Dept. of Housing and Urban Development, 541 F.Supp.2d 1091, 1099-1100 (D. Ariz. 2008) (no NEPA process necessary for loan guarantees for residential and commercial developments, which pumped groundwater from an aquifer that supplied water to a river which was home to 2 endangered species, the Hauchuca Water Umbel and the Southwest Willow Flycatcher) (loan guarantees are not "Federal action" for purposes of NEPA where the Federal agencies did not have "actual power to control the nonfederal activity") (footnote 5 omitted):

Moreover, the actions of the Defendants do not change the existing state and local restrictions on development. The actions of the Defendants in this case are distinguishable from federal action in cases such as *Lane County Audubon Soc. v. Jamison*, 958 F.2d 290, 293 (9th Cir.1992), in which the federal defendants set annual timber harvests and also determined land use allocation.

The Defendants argue that because the lenders are nonfederal actors NEPA should not apply. Nonfederal actors can be involved in a major federal action. The "agency[ ] [must have] the authority to influence significant nonfederal activity. This influence must be more than the power to give nonbinding advice to the nonfederal actor ... Rather, the federal agency must possess actual power to control the nonfederal activity." *Village of Los Ranchos de Albuquerque v. Barnhart*, 906 F.2d 1477, 1482 (10th Cir.1990) (internal quotation marks and citations omitted). In the present case, the federal Defendants' actual involvement and control stops once the financial assistance is approved.

The Court finds the case of *Ka Makani 'O Kohala Ohana Inc. v. Water Supply*, 295 F.3d 955 (9th Cir.2002), to be instructive. In *Ka Makani* the federal agencies, including HUD, funded preliminary studies in the construction of a water transmission system on the Big Island of Hawaii. *Id* at 958. The federal agencies invested $1.3 million in the project but the federal involvement was restricted to preliminary studies and assistance. *Id* at 961. The Ninth Circuit Court of Appeals found that HUD, in particular, did not have discretionary control over "the entire [ ] Project, and therefore [it] was not 'major federal action'." *Id.*In the present case, the federal agencies are involved with guaranteeing loans for individuals and small businesses, yet after the financial assistance is approved their involvement ceases. The federal agencies are not involved in choosing the home for the homeowner or advising the business on which structure to purchase and/or renovate. This Court finds the federal involvement by the Defendant agencies in Sierra Vista development to be marginal. "Marginal federal action will not render otherwise local action federal." *Almond Hill Sch. v. United States Dep't of Agric.*, 768 F.2d 1030, 1039 (9th Cir.1985) (internal quotations and citations omitted).

Save Strawberry Canyon v. Department of Energy, 613 F.Supp.2d 1177, 1181-82 (N.D.Cal. 2009) (no steps to comply with NEPA for Computational Research and Theory Facility (CRT, or "supercomputers") planned by the University of California and the Lawrence

Berkeley National Laboratory in Strawberry Canyon, which is located in the hills above the city of Berkeley) ("plaintiff has created a substantial question regarding whether the federal government exercised decisionmaking authority and control over the project;" plaintiff has identified "serious questions" as to whether or not the CRT project is a federal action):

> As the Ninth Circuit has explained,
> [t]here are no clear standards for defining the point at which federal participation transforms a state or local project into a major federal action .... The matter is simply one of degree .... "Marginal" federal action will not render otherwise local action federal. To make this determination, [courts] look to the nature of the federal funds used and the extent of federal involvement .... While "significant federal funding" can turn "what would otherwise be" a state or local project into a "major federal action," consideration must be given to a "great disparity in the expenditures forecast for the state [and county] and federal portions of the entire program."

Ka Makani 'O Kohala Ohana Inc. v. Water Supply, 295 F.3d 955, 959-60 (9th Cir.2002) (citations omitted). Moreover, "a local plan does not become a major federal action subject to NEPA regulations merely upon its approval by a federal agency .... The United States must maintain decisionmaking authority over the local plan in order for it to become a major federal action." *Rattlesnake Coalition*, 509 F.3d. at 1102 (citations omitted). This is because "[t]he purpose of NEPA is to bring environmental considerations to the attention of federal decisionmakers. This presupposes that [the federal agency] has judgment to exercise." *Ka Makani 'O Kohala Ohana,* 295 F.3d at 960-61. *See also* 40 C.F.R. 1500.1(c).

In sum, courts look to the degree of federal funding and to indicia of federal involvement and control.

San Luis Valley Ecosystem Council v. U.S. Fish and Wildlife Service, 657 F.Supp.2d 1233, 1243-44 (D.Colo. 2009) (preliminary injunction granted against US Fish and Wildlife Service management duties over oil and gas activities on the Baca National Wildlife Refuge located in Saguache and Alamosa counties in the San Luis Valley of south-central Colorado) (sufficient Federal control exists where United States has surface rights and granted access to surface estate to mineral rights owner (Lexam)):

The first issue is whether the USFWS should have conducted a NEPA analysis in the early stages of the proposal, including before permitting Lexam to conduct seismic testing. Before litigation, the USFWS apparently took the position that Lexam's activities did not amount to a "federal action," which is the trigger for a federal agency to use the NEPA procedures.

Plaintiffs have provided persuasive authority that the government's actions in granting access to the surface estate for the purpose of exploiting the mineral estate is a federal action under NEPA. *Sierra Club v. United States Dep't of Energy*, 255 F.Supp.2d 1177 (D.Colo.2002). *Sierra Club* involved a split estate, with the DOE owning the surface estate. My colleague former Chief Judge Babcock ruled that the DOE's granting of an easement to permit a mining company to build a road to access a gravel mining site did not fall under any of the relevant exclusions for NEPA review, particularly where access roads had no independent purpose or

utility apart from the overall project. 255 F.Supp.2d at 1183-84. Chief Judge Babcock also ruled that the review needed to consider the impact of both the mining operation as well as the ancillary road construction activities. *Id.* at 1185. The case also cites Colorado law for the proposition that a surface owner has the legal right to "determine how, where, and when mining can occur and ensure that the surface use is reasonable." *Id.* at 1186 (citing *Gerrity Oil & Gas Corp. v. Magness,* 946 P.2d 913, 933-34 (Colo.1997)). Therefore, "[a]rmed with discretionary authority to determine reasonable use of the surface estate, which is a National Wildlife Refuge, DOE must comply with NEPA concerning the development of the mining operation." *Id.; see also*50 C.F.R. § 29.32 (where mineral rights on National Refuge property are owned by third parties, the owner "shall, *to the greatest extent practicable,* conduct all ... operations in such a manner as to prevent damage, erosion, pollution, or contamination to the lands, waters, facilities and vegetation of the area.") (emphasis added). Accordingly, there is some likelihood of success in showing that the agency acted arbitrarily and capriciously in refusing to apply NEPA before this litigation was initiated.

Marbled Murrelet v. Babbitt, 83 F.3d 1068, 1075 (9th Cir. 1996) (USFWS consultation with lumber companies on how to avoid a "take" under the ESA is not enough control over the timber harvest to constitute Federal action):

Nor is there a serious question whether the USFWS engaged in a "major federal action" under NEPA. NEPA requires federal agencies taking "major federal action significantly affecting the quality of the human environment" to assess the nature and extent of the action's environmental effects by preparing an Environmental Assessment and or an Environmental Impact Statement. 42 U.S.C. §4332(2)(C); 40 C.F.R. §§1501.3, 1501.4, and 1502.4. "Major federal action" under NEPA includes activities "entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies." 40 C.F.R. §1508.18(a).

The standards for "major federal action" under NEPA and "agency action" under the ESA are much the same. If there is any difference, case law indicates "major federal action" is the more exclusive standard. *Babbitt, Seneca,* 65 F.3d at 1512. Where, as here, there is no "agency action" under what is probably the more liberal standard of the ESA, there is no "major federal action" under the more exclusive standard of NEPA.

Ka Makani 'O Kohala Ohana v. Water Supply, 295 F.3d 955, 960-61 (9th Cir. 2002) (Department of Water Supply's Kohala Project, a trans-basin water diversion system on the Big Island of Hawaii that would transfer up to 20 million gallons of groundwater per day) ((1) federal funding contribution alone could not trigger NEPA requirement for EIS; (2) involvement of United States Geological Survey (USGS) and Department of Housing and Urban Development (HUD) was not sufficiently major to transform project into a "major Federal action" requiring preparation of EIS; and (3) HUD regulations did not require federal EIS for entire project):

The USGS and HUD also lacked the degree of decision-making power, authority, or control over the Kohala Project needed to render it a major federal action. The purpose of NEPA is to "bring environmental considerations to the attention of *federal* decision-makers." *Friends of the Earth,* 518 F.2d at 329 (emphasis added); *see also Atlanta Coalition on Transp. Crisis,*

Inc. v. Atlanta Reg'l Comm'n, 599 F.2d 1333, 1344 (5th Cir.1979) (noting that "Congress did not intend NEPA to apply to state, local, or private actions"). "This pre-supposes that [the federal agency] has judgment to exercise." *Village of Los Ranchos,* 906 F.2d at 1482 (citations omitted).

Although the USGS played an advisory role in the planning of the Kohala Project because of the agency's expertise and participation in the preliminary research studies, the USGS was not "placed in a decisionmaking role." *See Almond Hill Sch.,* 768 F.2d at 1039 (stating that federal officials sitting on a State advisory panel which offered recommendations to the Director of the Calif. Dep't of Food and Agric. were not in decision-making roles). Because the final decision-making power remained at all times with DWS, we conclude that the USGS involvement was not sufficient to constitute "major federal action." *See Village of Los Ranchos,* 906 F.2d at 1482 (stating that in order to have "major federal action," a federal agency's authority to influence "must be more than the power to give nonbinding advice to the nonfederal actor ... the federal agency must possess actual power to control the nonfederal activity") (internal quotation marks and citations omitted).

Greater Yellowstone Coalition v. Tidwell, 572 F.3d 1115, 1125 n. 4 (10th Cir. 2009) (request to Forest Service and BLM to undertake environmental analyses of winter feeding of 13,000 Wyoming elk at 22 designated feedgrounds located on federal land) (no NEPA process necessary where Wyoming is the only actor):

GYC's citation to a 2005 email indicating the Forest Service approved a request from Wyoming to build a small holding pen on the Dell Creek feedground does not change this analysis. This was a minor change initiated by Wyoming and merely approved by the Forest Service. There is no evidence the permit was formally amended. Nor was it a situation where the Forest Service attempted to influence the project in any material manner pursuant to the discretion given by the permit. Finally, there is no assertion that the approval of the holding pen itself was a major federal action. *See Citizens Organized to Defend the Env't, Inc. v. Volpe,* 353 F.Supp. 520, 541 (S.D.Ohio 1972) (concluding no continuing federal activity existed for NEPA purposes for tasks undertaken by the federal agency in relation to the project that do not require substantial planning, time, or resources).

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NEPA 3

U.S. v. Southern Florida Water Management Dist., 28 F.3d 1563, 1573 (11th Cir. 1994) (settlement agreement between local water district and U.S. for restoration and preservation of Loxahatchee National Wildlife Refuge and Everglades National Park is not under Federal control and thus not Federal action; Federal proposal for action may arise at a future date):

It would be premature and serve no useful purpose to now require the preparation of an EIS when no specific federal action has been proposed. *See Environmental Defense Fund v. Marsh*, 651 F.2d 983, 999 (5th Cir. Unit A July 1981) (preparatory designs and studies not completed); *Kleppe v. Sierra Club*, 427 U.S. 390, 399-402, 96 S.Ct. 2718, 2725-27, 49 L.Ed.2d 576 (1976) (no factual predicate for EIS without a proposed plan). NEPA does not require evaluation of hypothetical proposals, impacts and alternatives concerning a nonexistent federal proposal. This would seem to be an impossible task. If and when such activities are actually proposed, the responsible agency will have to comply with NEPA requirements, and the question of whether an EIS is required will then be addressed. Now, none of these types of federal action has yet been performed.

Mountain States Legal Foundation v. Glickman, 92 F.3d 1228, 1239 (D.C. Cir. 1996) (alleged failure to prepare EIS on grizzly bear recovery plan fails in court where plaintiffs did not identify plan). "But plaintiffs have neither identified this alleged plan, nor shown what role it may have played in the framing of the Biological Opinion or any other agency decision. Accordingly, we have no basis for saying that creation of the 'Plan,' if indeed it ever was created, required the preparation of an EIS."

Miccosukee Tribe of Indians of Florida v. U.S., 6 F.Supp.2d 1346, 1349 (S.D. Fla. 1998) (NEPA does not apply to an agreement between the United States and Flo-Sun, where the U.S. agrees not to sue for 10 years if Flo-Sun complies with Everglades phosphorus removal program):

No specific "major federal action" has been proposed in the Flo-Sun Agreement. Indeed, the United States has pledged a degree of inaction dependent upon compliance by Flo-Sun. If and when specific federal action is proposed, the responsible agency will have to comply with NEPA requirements. However, at the pertinent time, no federal action had yet been performed which constituted "major federal action" and, thus, the preparation of an EIS was not required. This Court finds that NEPA obligations do not arise as a result of the Flo-Sun Agreement. As additional support, the Court observes that entry into this Agreement may also fall within the statutory exception for activities related to enforcement actions.

Hill v. Norton, 275 F.3d 98, 106-07 (D.C. Cir. 2001) (NEPA claims dismissed where uncontroverted evidence shows there is no proposal for the alleged action):

Before the District Court, however, Hill only argued that the Secretary was required to conduct an EIS under the NEPA "for the trumpeter swan, before massive reintroduction efforts on a national level began" and before the "massive killing and mutilation of mute swans" began. Amended Complaint at 4-5. The District Court found, and Hill does not now

dispute, that the "Federal Defendants have submitted uncontroverted declarations which indicate none of them has engaged in an ongoing or proposed program to reintroduce trumpeter swans to the Atlantic Flyway or to exterminate mute swans." Hill v. *Babbitt*, slip op. at 6 n. 15. Because the two grounds for invocation of the NEPA raised below were dismissed without a dispute of material fact below, Hill cannot now identify any "major Federal actions" properly before this court that would require the preparation of an EIS. Accordingly, the District Court committed no error in dismissing Hill's NEPA claims.

Common Sense Salmon Recovery v. Evans, 329 F.Supp.2d 96, 105 (D.C. D.C. 2004) (Commerce Department's National Marine Fisheries Service (NMFS) listing of 4 types of West Coast Chinook salmon as threatened or as endangered; harvest and bycatch of salmon listed for protection under the ESA) (plaintiffs did not allege any "major Federal action" by NMFS that might be subject to NEPA:

Here, plaintiffs have failed to identify any specific action, to say nothing of a "major Federal action," that has been taken by the defendants to authorize the harvest or bycatch of listed salmon. Nor have plaintiffs offered any evidence to show that they alerted the defendants to their position and contentions regarding a proposed major Federal action such that the defendants could be said to have failed to properly consider alternatives to that action that would mitigate the environmental impact on listed salmon. Both parties submitted materials outside the pleadings. After a thorough review of those materials, I find that there is no genuine issue of material fact and, because plaintiffs have failed to state a claim as to this cause of action, that defendants are entitled to judgment as a matter of law. *See Fraternal Order of Police Dep't of Corr. Labor Comm. v. Williams,* 375 F.3d 1141 (D.C. Cir.2004) (converting motion to dismiss to a summary judgment motion, where both parties submitted materials outside the pleadings and the district court relied on those materials in concluding that the plaintiff had failed to state a claim).

Theodore Roosevelt Conservation Partnership v. Salazar, 605 F.Supp.2d 263, 281 n. 16 (D.D.C. 2009) (EA tiered to EIS is adequate for BLM decision to grant drilling permits in the Atlantic Rim area of Wyoming) (future possibility of waiver for wildlife restrictions is "crystal ball inquiry" where no such waivers have yet been requested):

TRCP briefly argues that even assuming the EIS is lawful, the Catalina and Sun Dog projects are unlawful because they allow the operators to request exemptions and waivers, when the possibility of exemptions and waivers was not considered in the EIS. Thus, BLM never analyzed the environmental effects of exemptions and waivers. This cursory, unsupported argument fails. The Catalina and Sun Dog EAs merely note that "[i]n some instances, the proponent may request consideration of a temporary exception to wildlife seasonal restrictions. Such an exception may not be granted if a determination is made that the wildlife resource will not be adversely impacted." (Sun Dog EA at 9 (AR 74071); Catalina EA at 9 (AR 73500).) The plaintiffs assert BLM should have analyzed the environmental effects of granting an exemption or waiver request despite not knowing what, if any, exemptions or waivers might be requested. As such, the plaintiffs are demanding exactly the sort of "crystal ball" inquiry NEPA clearly does not require. *Vt. Yankee Nuclear Power Corp. v. NRDC*, 435

U.S. 519, 534, 98 S.Ct. 1197, 55 L.Ed.2d 460 (1978) ("NEPA does not require a 'crystal ball' inquiry." (internal quotation omitted)).

State of Alaska v. Andrus, 591 F.2d 537, 541-42 (9th Cir. 1979) (NEPA does not apply where Secretary of Interior has power to close Federal lands to Alaska wolf-killing program, but "stayed his hand") ("No federal funds are to be spent, nor federal agents employed, in the wolf-kill program. The Secretary's nonexercise of any authorities and duties he may possess in the field of wildlife management was, at most, a nonuse of a power of supervision …. We hold that the district court was correct in declaring that no environmental impact statement was necessary before the Secretary could stay his hand and allow the State of Alaska to manage its own wildlife.")

Defenders of Wildlife v. Andrus, 627 F.2d 1238, 1246 (D.C. Cir. 1980). The Secretary of Interior's failure to prevent the State of Alaska from carrying out a wolf kill program on Federal land did not trigger NEPA; an "overt act" is needed to trigger NEPA. "[I]f the agency decides not to act, and thus not to present a proposal to act, the agency never reaches a point at which it need prepare an impact statement. *** No agency could meet its NEPA obligations if it had to prepare an environmental impact statement every time the agency had power to act but did not do so." 627 F.2d 1244, 1246.

International Center for Technology Assessment v. Thompson, 421 F.Supp.2d 1, 9 (D.C. D.C. 2006) (Department of Health and Human Services and the Food and Drug Administration (FDA) decision not to regulate the commercialization of a genetically engineered ornamental fish, GloFish, a bright red fluorescent zebra fish that contains inserted genetic constructs from a sea coral which cause the fish to glow under certain kinds of light —— did not constitute a "major federal action" triggering NEPA requirements) ("The FDA's decision not to regulate GloFish is not an agency action, but rather, an agency inaction.") (plaintiffs' motion for relief from judgment pursuant to Federal Rule of Civil Procedure 60(b)(2), on claim of newly discovered evidence is denied at 468 F.Supp.2d 200):

NEPA requires federal agencies to prepare an EIS if the agency plans to undertake a "major" federal action "significantly affecting the quality of the human environment." 42 U.S.C. §4332(C). If the agency has not engaged in a major federal action, NEPA requirements do not apply. *Macht v. Skinner,* 916 F.2d 13, 16 (D.C. Cir.1990). To trigger NEPA's requirement that an agency prepare an EIS, the agency must undertake an "irreversible and irretrievable commitment of resources to an action that will affect the environment." *Alliance for Bio-Integrity v. Shalala,* 116 F.Supp.2d 166, 174 (D.D.C.2000) (quoting *Wyoming Outdoor Council v. U.S. Forest Serv.,* 165 F.3d 43, 49 (D.C. Cir.1999)). Agency decisions that maintain the status quo do not constitute major federal actions. *Id.* Moreover, "NEPA applies only to agency actions 'even if inaction has environmental consequences,'" *id.* at 174-75 (quoting *Defenders of Wildlife v. Andrus,* 627 F.2d 1238, 1243 (D.C. Cir.1980)), because "[n]o agency could meet its NEPA obligations if it had to prepare an environmental impact statement every time the agency had power to act but did not do so," *Defenders of Wildlife,* 627 F.2d at 1246.

Department Action Plan

Recommended Actions for Conservation of the Unimak Caribou Herd

The Alaska Department of Fish and Game (ADF&G) recommends taking immediate action to stabilize and initiate the recovery of the Unimak Caribou Herd (UCH) in GMU 10. The following action plan includes translocating bull caribou to Unimak Island and removing wolves from the herd's calving grounds. Based on recent work conducted by ADF&G on the neighboring Southern Alaska Peninsula Herd (SAP), there is a high probability of success if the project on Unimak Island is successfully executed soon. If the project is successful, the extirpation of the caribou herd and wolves that the herd supports will be prevented. If the project is delayed or is unsuccessful, it is possible that both caribou and wolves will disappear from the island for many years.

Background:

ADF&G routinely monitors population size, harvest, indices of nutrition, bull:cow ratio, and recruitment (calf:cow ratio) in most of the states 32 recognized caribou herds. In autumn 2007, ADF&G biologists verified that the Southern Alaska Peninsula Caribou Herd was in rapid decline, had very low bull:cow ratios, and virtually no calf recruitment despite apparently good body condition, reproductive performance and general good health. The adjacent UCH exhibited somewhat better bull:cow and calf: cow ratios.

Biologists concluded that the SAP required immediate attention to prevent a population decline to extremely low levels or possibly even extirpation. Staff believed the old age structure of females would cause the population to continue to decline to very low levels. If the bull cow ratio declined further, pregnancy could decline to low levels due to lack of breeding opportunities and further impede recruitment of young animals into the population. In the worst case, without increased recruitment, ageing bulls would eventually die off resulting in eventual extirpation of the herd as was the case with reindeer on St. Matthew Island in the late 1960s.

At this juncture, it is clear that that the UCH is experiencing exactly the same population effects predicted for the SAP in 2007 (see table). Staff observed 221 caribou in October 2009 despite good conditions for the composition survey. This tally included only 11 bulls and 7 calves, 2 of which were male.

Table. Unimak caribou herd composition surveys and population estimates, 2000-2009.

Regulatory year	Bulls: 100 cows	Calves: 100 cows	Small bulls (% of bulls)	Medium bulls (% of bulls)	Large bulls (% of bulls)	sample size	Population counts
2000	40	21	34	32	33	406	983[a]
2002	54	31	50	22	29	392	1,262[b]
2004							1,006[b]
2005	45	7	24	37	39	730	1,009[b]
2006							806[b]
2007	31	6	28	34	38	433	
2008	9	6	33	33	33	260	

2009	5	3	30	30	40	221	400[b]

[a] Count by Rod Schuh, registered guide, in May
[b] Winter count by Izembek National Wildlife Refuge staff
[c] Best guess based on recent observations. This is not an official population estimate.

A parturition survey in June 2009 indicated that pregnancy rates were low (68%) despite good body condition. Staff believe that the low bull:cow ratio caused low pregnancy due to reduced breeding opportunities for females. Pregnancy had been high (85%) prior to the bull:cow ratio declining to less than 10:100 by autumn 2008. There was no concurrent drop in pregnancy in the adjacent SAP that would indicate that stochastic weather events caused the low UCH pregnancy.

A local, focused wolf reduction on the SAP calving grounds in 2008 and 2009 not only stabilized the population, but increased caribou numbers and improved the bull:cow ratio. During those 2 calving periods, only 20 adult wolves and the pups from 4 dens were killed on the calving area of the SAP. After wolves were removed, autumn calf:cow ratios increased from near zero in 2007 to 39:100 calves:100 cows in 2008 and 43:100 calves:100 cows in 2009, and improved calf survival continued over the following winters. The SAP management program has worked so well that wolf reduction efforts will only be conducted on an as needed basis after 2010. If these improving trends continue, harvest will be reinstated in the next few years.

The UCH served as a comparison herd for evaluating the effects of wolf reduction on the SAP. However, it is now clear that the UCH would benefit from the same treatment that worked so well in the SAP, as well as immediate action to increase the bull:cow ratio. These actions will serve to ensure the perpetuation of caribou on the island, as well as other wildlife, such as wolves, that depend on caribou for survival and provide for human uses.

The management objective for the UCH is to maintain a population of 1,000 caribou with a bull:cow ratio of at least 35 bulls:100 cows that can sustain a harvest of 100-150 caribou from the UCH and SAP combined. As per 5AAC 92.125 the objective of the wolf reduction program is to halt the decline of the UCH and to achieve a sex and age structure that will sustain the population and provide for human harvest.

UCH Wolf Reduction: We plan to concurrently conduct calf mortality studies and selective wolf removal on the UCH and SAP calving areas in late May and early June, 2010. Based on the distribution of caribou during calving in previous years, wolf reduction on Unimak will primarily occur on the western half of the island.

On Unimak, we will fit approximately 40 newborn caribou calves with radio-collars. We will search for wolves in the calving areas with fixed-wing aircraft and focus wolf removal efforts in areas where wolves are killing radio-collared caribou calves. Wolves will be killed by ADF&G biologists by shooting from a helicopter. Biological samples will be collected from wolves for studies of disease, parasites, diet composition, and genetics.

If lactating females are killed, we will search for dens and euthanize pups in the den with carbon monoxide as recommended by the American Veterinary Medical Association. Translocating adult or young wolves is not possible due to logistics and the potential for transferring rabies to

other animals or people. Conducting wolf removal during the denning period has several advantages over winter removals. Winter wolf removals are difficult due to weather and poor snow cover; earlier efforts to remove wolves in winter from the SAP range were unsuccessful. Moreover, using calf mortalities to locate wolves helps target only those wolves that are killing calves. Using the targeted approach, fewer wolves are taken over a smaller area while producing better results than by taking wolves over a broader area in winter.

After 2010, wolf reduction on Unimak will occur only as needed until the herd has stabilized, the bull:cow ratio increased to objectives, and age structure of females in the population has improved. To the degree possible, efforts on UCH will be synchronized with SAP efforts. After 2010, wolf reduction on the SAP calving grounds will only be conducted if calf:cow ratios decline below 20:100.

The commissioner will suspend wolf reduction efforts to benefit the UCH if caribou condition indices such as pregnancy rates, body condition, calf and adult body mass, or other condition indices exhibit a declining trend from current values and the bull:cow ratio is greater than 20 bulls:100 cows, if fall calf:cow ratios remain below 20 calves:100 cows for 3 consecutive years of wolf removal, if the bull ratio remains below population objectives for 3 consecutive years and does not increase, or if the wolf population is reduced to 2 breeding pairs. These parameters will be compared to the performance of adjacent herds.

Augmenting UCH bulls: To provide near-term mitigation of the effects of low bull:cow ratios on pregnancy, we will capture and radio-collar twenty 1- and 2-year-old bulls from the SAP, transport them to Unimak via fixed-wing aircraft, and release them at Cape Sarichef on the western end of the island. Many of the 2 year-old bulls should be reproductively mature during the October 2010 rut. This will help ensure high pregnancy until more young bulls are recruited to breeding age as a result of wolf reductions. The translocation of bulls will occur in August of 2010.

Summary: The low bull:cow ratio, low pregnancy, and low calf survival require immediate mitigation to ensure conservation and sustainability of the UCH. In very similar circumstances, a local, focused wolf reduction effort resulted in an increased bull:cow ratio, increased calf survival and recruitment, and increased population size in the adjacent SAP. ADF&G biologists believe that combining temporary wolf population reduction with translocation of young bull caribou from the SAP in August 2010 will provide calf recruitment that will stabilize the herd, improve the bull:cow ratio, and allow the UCH to eventually recover to harvestable levels. Delaying these actions will greatly increase costs and reduce the likelihood of succeeding with the program.

DRAFT

Department Study Plan

Management and Monitoring the Unimak Caribou Herd

Project Coordinator: Lem Butler (907-246-3340)

The proposed work is an ongoing project to monitor and manage the Unimak Caribou Herd (UCH) in GMU 10 and is required for the Alaska Department of Fish and Game (ADFG) to fulfill legal mandates. ADFG biologists have utilized these standard techniques proposed to monitor and survey the UCH since 1999. These techniques include the use of surveys designed to enumerate the herd and evaluate vital parameters, the use of collars to locate and monitor the herd, the assessment of body condition to evaluate nutritional stress, and the collection of biological samples to evaluate the health of the population.

Survey data indicates that the population is undergoing a rapid decline due to chronic poor calf recruitment. Population size decreased from 1,200 caribou in 2002 to approximately 400 caribou in 2010. As with other caribou herds that experience a prolonged period of poor calf recruitment, the bull:cow ratio has declined below management objectives and may be below a threshold necessary for all reproductive females to become pregnant. In addition, recent work with nuclear DNA on the adjacent Southern Alaska Peninsula Caribou Herd indicates that a decline to about 600 caribou has resulted in measureable loss of genetic diversity. We expect that the current decline of the UCH below 500 caribou is also resulting in loss of genetic diversity. Loss of genetic diversity is normal among depressed populations of this size.

As the population size declines it has become increasingly difficult to locate caribou on Unimak Island. ADFG biologists will maintain 15 active radio collars on adult female caribou to aid in locating the herd during surveys and to assess nutritional limitation. The use of radio collars will increase survey accuracy and efficiency and minimize risk to personnel working in a remote part of Alaska. Surveys that will be improved by this work include population counts; spring, summer, and fall composition surveys; and surveys to estimate pregnancy rates. The importance of nutritional limitations in regulating the UCH will be assessed by evaluating the physical condition of the caribou captured and through the analysis of blood samples. Blood sampling also provides ADF&G a way to monitor changes in genetic diversity and the relatedness of adjacent caribou herds.

Wolves are a primary predator of caribou throughout the year, and given the absence of other large ungulates on Unimak, it is reasonable to conclude that wolf population dynamics play an important role in influencing the UCH and vice versa. In spite of this widely recognized ecological link, there is limited information available about the wolf population on Unimak Island. Weather and survey logistics preclude the use of standard aerial survey techniques to monitor the wolf population. Our current knowledge is based on periodic sightings of wolves on Unimak Island and extrapolations made from similar wolf populations on the Alaska Peninsula. To improve our understanding of wolves on Unimak Island ADFG biologists will deploy up to 10 collars on wolves. The collars will be used to estimate the number and size of wolf packs and provide insight into population size and movements. Biological samples will also be collected to evaluate population health and the contribution of marine resources to the wolf's diet.

The Department's statewide caribou management program is based on 50 years of research on caribou and range relationships, body condition monitoring, predator-prey relationships, development of monitoring techniques for population size and composition, and development of techniques for monitoring genetic diversity. This work is part of the statewide caribou monitoring program and is scheduled to be conducted in early April 2010. ADFG staff conducting this work will be Bruce Dale (Caribou Research Biologist) and Lem Butler (Area Management Biologist). These biologists have the combined experience of capturing over 3,000 caribou and 1,000 wolves successfully, fitting each with radio collars, assessing body condition, and collecting biological samples and have 20 years of experience conducting research, monitoring surveys, and management of caribou populations. Funding for the UCH project in the amount of $15,000 has been acquired from ADFG.