

Helicopter Supported Guided Activities on Godwin Glacier

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Lead Agency

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Helicopter Supported Guided Activities on Godwin Glacier Environmental Assessment Summary

What action is proposed?	The Forest Service proposes to issue a five year special use permit for summer helicopter supported guided activities on Godwin Glacier near Seward, Alaska. The special use permit would allow 1,500 helicopter landings and 4,000 client days.
Why?	Forest planning identified a desired condition to provide helicopter assisted recreation opportunities on the Chugach National Forest, specifically the Kenai Peninsula near Seward. The issuance of this special use permit will satisfy some of the demand for helicopter assisted recreation opportunities which would not be available in a non-guided environment.
What other action would meet the same need?	The issuance of special use permit with fewer client days and helicopter landings will provide helicopter assisted recreation near Seward.
What would it mean to not meet the need?	Helicopter assisted recreation opportunities on the Chugach National Forest near Seward would not exist during the summer.
What factors will be used when making the decision between alternatives?	This EA identified three primary resources affected by the proposed action and alternatives; wildlife, recreation, and soundscape. The responsible official will consider the tradeoffs between these resources in making the decision.
Are there any ways to mitigate adverse effects?	Mitigation was developed to address the three resources affected by the proposed action. A helicopter flight path and altitude restriction will reduce helicopter noise to area residents and other land users. The altitude restriction will reduce impacts to area wildlife to a negligible level.
What monitoring is required?	Forest Service employees inspect the base camp seasonally. The permit holder is required to submit wildlife sighting information in areas surrounding the base camp and flight path. This information and other aspects of permit administration provide information used to determine compliance with the terms of the special use permit and to monitor wildlife populations in the area.

Context	Intensity	Reason not Significant
Disturbance to wildlife from helicopter flights from the Seward airport to the base camp.	Up to 1,500 helicopter flights per season (12 per day) to and from the base camp.	<p>Mitigation measures (1,500 AGL and a flight path that avoids wildlife habitat) were developed to minimize the effects of helicopter flights on wildlife.</p> <p>The effects of helicopter flights, with mitigation, on the wildlife resource are negligible with no secondary or long-term population effects. This decision is not expected to affect the continued existence of any wildlife species in the area.</p>
Disturbance to wolverines from the presence of the base camp.	The base camp is in operation from early May through the end of August. The base camp is removed at the end of each season.	The presence of the base camp has the potential to alter normal wolverine travel routes; however, other travel routes exist, and the presence of the base camp is not expected to affect the continued existence of the wolverine in the area.
Disturbance to recreation from helicopter flights from the Seward airport to the base camp.	Up to 1,500 helicopter flights per season (12 per day) to and from the base camp.	<p>Mitigation measures (1/2 mile separation between helicopters and observed recreation and the Mt. Alice and Iditarod Trail) were developed to minimize the effects of helicopter flights on recreation.</p> <p>The separation distance from the flight path and recreation use, the low to moderate level of recreation use on the Mt. Alice and Iditarod Trail (6 to 15 parties per day), and the short duration (less than three minutes) of the helicopter disturbance indicate that recreation will not be substantially altered. Recreation use and recreation experiences are not expected to decline.</p>
Disturbance to area residents from helicopter flights from the Seward airport to the base camp.	Up to 1,500 helicopter flights per season (12 per day) to and from the base camp.	Mitigation measures were developed to minimize the sound effects of helicopter flights on area residents. The helicopter is generally heard for less than three minutes and the flight path avoids area

		residences. The additional sound from helicopter operations will not substantially increase the amount of existing aircraft noise heard by area residents.
Issuance of a special use permit for helicopter supported guided activities on Godwin Glacier.	Five-year special use permit allowing 1,500 helicopter landings per season and 4,000 client days.	<p>The issuance of this special use permit will not create exclusive or perpetual use.</p> <p>The duration and level of use authorized by this special use permit will allow the permit holder to make longer term business decisions and will increase the opportunities for helicopter supported guided activities near Seward, Alaska on Godwin Glacier</p>

Purpose and Need for Action

Introduction

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and any alternatives. It also provides the supporting information for a determination to prepare a Finding of No Significant Impact (FONSI).

Additional documentation, including more detailed analyses of project-area resources, can be found in the project planning record located at the Seward Ranger District, Chugach National Forest in Seward, Alaska.

Background

Location

Godwin Glacier is the southern end of a larger glacial system encompassing 20,285 acres. Godwin Glacier is located approximately 7 ½ miles east of the city of Seward, feeding Fourth of July Creek. Godwin Glacier is approximately 3 miles at its widest and extends 6 miles northeast where it connects with Bear Glacier and is part of a larger glacial system. Godwin Glacier offers spectacular views of wildlife, mountain, and glacial scenery. The year-round snowfield offers the opportunity to experience winter recreation opportunities, such as, dogsledding, skiing, and ski touring during the summer season.

Special Uses

Commercially guided helicopter supported dogsledding on Forest Service land on Godwin Glacier was first authorized under special use permit in 1999. One-year temporary use special use permits have been authorized by the Seward District Ranger in each subsequent year. The Forest Service has issued the one-year temporary use special use permits from 1999-2004 under categorical exclusion (CE) Forest Service Handbook 1905.15 Sec. 31.1(b)(8).

The one-year permit authorizes helicopter supported dogsledding to occur on Godwin Glacier. This includes, establishing a base camp on the southern end of Godwin Glacier near the Chugach National Forest and State of Alaska land boundary and conducting dogsledding, hiking, and overnight stays. Clients are ferried by helicopter from the Seward Airport to the base camp. Clients then participate in a guided dogsled tour of Godwin Glacier and are ferried back to the Seward Airport. The special use permit in previous years authorized 1,200 helicopter landings with clients. The number of landings to set up and remove the base camp was not specified.

In addition, the State of Alaska issued a five year permit for helicopter supported activities on Godwin Glacier to ERA Aviation. Since 2004, ERA Aviation has ceased operations on Godwin Glacier due to company restructuring.

Operations

The Forest Service permit holder's operation consists of establishing a base camp, shuttling passengers, and providing a guided dogsled tour during the summer season. The permit holder assembles a temporary camp on the southern end of Godwin Glacier to house staff, dogs, and supplies. Clients are shuttled from the Seward Airport to the base camp on Godwin Glacier, where they participate in dogsledding, ski touring, hiking, and overnight stays. The base camp is removed from the glacier at the end of each season.

Other Uses

There is little to no other use on Godwin Glacier due to inaccessible terrain for non-aircraft supported users. The Mount Alice Trail near Godwin Glacier provides road accessible hiking opportunities which overlook Godwin Glacier and Resurrection Bay.

Proposed Action

The proposed action requested by Godwin Glacier Dogsled Tours and being considered by the Forest Service is issuance of a five-year special use permit allowing commercially guided helicopter supported activities on Godwin Glacier. The five-year special use permit would be authorized for the 2006 through 2010 seasons and would allocate up to 1,500 helicopter landings with clients and up to 4000 client days. The permit would also allow the permit holder to establish a temporary base camp from which to conduct operations.

Purpose and Need

The objective of the proposed action is to provide the public with guided recreation opportunities on the Chugach National Forest that would otherwise not be available. The demand for guided helicopter supported recreation near Seward is increasing. The number of client days and helicopter landings in the proposed action seeks to meet this demand over the next five years.

The Chugach National Forest Revised Forest Plan (Forest Plan) provides the overall management direction, and is used for integrating resource planning for the Chugach National Forest. This proposed action responds to the *Desired Condition* for the *Kenai Peninsula* (Forest Plan p. 3-15) by further providing that "opportunities will exist for helicopter-assisted recreation to access remote recreation areas from Girdwood, Seward, and other locations."

The proposed action will also provide a five-year permit, which will allow the permit holder to make the business decisions and investments necessary to sustain their operation and create a business plan for the future. Issuance of one-year temporary use special use permits cannot achieve this objective.

Forest Plan Direction

The management area prescription for the project area is 210 Backcountry (Forest Plan pp. 4-34 through 4-36). The Backcountry Management Area prescription is managed to emphasize a variety of recreational opportunities for backcountry activities in natural

appearing landscapes. In addition, the project area is open to winter and summer motorized use.

The Forest Plan includes both forest wide goals and objectives, and area specific (land use designation) goals, objectives, and desired conditions. The desired condition for the Kenai Geographic Area provides that “opportunities will exist for helicopter-assisted recreation to access remote recreation areas from Girdwood, Seward and other locations.” (Forest Plan p. 3-15). The proposed action responds to the goals and objectives of the Forest Plan and will move the project area toward desired conditions for recreation.

Decision Framework

Given the purpose and need, the Seward District Ranger will review the proposed action and the other alternatives and make the following decision:

- *Whether to issue a five-year permit for helicopter supported guided activities on Godwin Glacier?*

If a determination is made that a five-year permit is appropriate, the Seward District Ranger will also decide:

- *The number of client days and landings that will be allocated under the special use permit.*
- *Types of activities permitted*
- *Project-specific mitigation measures and permit stipulations and monitoring requirements.*

Public Involvement

This project has been listed on the Chugach National Forest Schedule of Proposed Actions (SOPA) since October 2003. To date, the public has been invited to participate in the project in the following ways:

Public Mailing

In January 2004, a letter providing information and seeking public comment was mailed to 523 individuals and groups that had previously shown interest in Forest Service projects on the Kenai Peninsula. This included federal and State agencies, Alaska Native groups, municipal offices, businesses, interest groups, and individuals. A total of 28 responses were received.

Public Meeting

A public meeting was held in Seward on March 4, 2004 to provide project area information, present the proposed action, and discuss local concerns and interests that should be addressed in this environmental assessment.

Issues

Issues for this project were identified through public and internal scoping and public meetings. We have separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: (1) outside the scope of the proposed action; (2) already decided by law, regulation, Forest Plan, or other higher level decision; (3) irrelevant to the decision to be made; or (4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, “. . . identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review . . .” A list of non-significant issues and reasons regarding their categorization as non-significant may be found in the project record.

Substantive Issues

Three interrelated issues were determined to be substantive and within the scope of the project decision. Mitigation measures were developed to address these issues.

Issue 1: Recreation Disturbance

Some commenters expressed concern that the sound and visual effects of helicopters traveling between the base camp on Godwin Glacier and the Seward Airport may degrade the recreation experience in the project area; specifically the Mount Alice area. Concern was expressed that the proposed action will increase the frequency of helicopter flights in the project area and thus further detract from the recreation experiences in and adjacent to the project area.

Issue 2: Sound Impacts to Residents

Some commenters noted that the sound of helicopters traveling between the base camp on Godwin Glacier and the Seward Airport can be annoying to area residents. Concern was expressed that the proposed action will increase the frequency of helicopter flights and resulting annoyance to area residences. Commenters suggested that the flight path to and from the glacier avoid area residences.

Issue 3: Impacts to Wildlife

Some commenters expressed concern regarding helicopter impacts to wildlife. Specifically, comments felt the presence of helicopters in the project area has the potential to disturb and adversely affect wildlife. Concern was expressed that wildlife, including goats, eagles, and other migratory birds may abandon or relocate if helicopters enter their habitat.

Other Issues

Other questions, opinions, or concerns identified by the public during the scoping process are discussed below. These items did not lead to the formulation of individual alternatives, but if within the scope of this project, were incorporated into one or more

alternatives or mitigation measures and are addressed when describing the effects of various alternatives. These other issues include:

- *Additional Impacts*: The environmental analysis should consider the impacts from other helicopter operations in and adjacent to the project area. Other helicopter operations include a State of Alaska administered five-year permit for helicopter supported dogsledding on State of Alaska lands on Godwin Glacier, search and rescue, and military aircraft operations. Concern was raised that wildlife impacts from other helicopter operations would be additive to the proposed action.
- *Dog Care*: The decision to permit helicopter supported dogsledding should ensure that dogs are maintained in a healthy and safe manner.
- *Forest Service Jurisdiction Over Flight Paths*: Concern was expressed regarding the enforcement of a Forest Service recommended flight path to and from Godwin Glacier. Commenters felt that the Forest Service lacks the jurisdiction to enforce a recommended flight path.
- *Monitoring*: Some commenters stated that regardless of the alternative chosen, the Forest Service should monitor for impacts, including wildlife, recreation, and sound, and review the permit annually.

Alternatives

This section describes and compares the alternatives considered for the Helicopter Supported Dogsledding on Godwin Glacier project. All alternatives are consistent with the Forest Plan and will not require a Forest Plan amendment. In addition, all applicable standards and guidelines, public scoping, and Best Management Practices have been incorporated in the design of these alternatives.

Alternative 1 - No Action

Under the No Action Alternative helicopter supported guided activities would not occur on Godwin Glacier. The Forest Service would not issue a special use permit to any outfitter guide and there would be no opportunity for dogsledding on the Chugach National Forest portion of Godwin Glacier.

Alternative 2 - Proposed Action

The Proposed Action is to issue a 5-year special use permit for helicopter supported guided activities on Godwin Glacier, including dogsledding, hiking, and overnight stays. The 5-year special use permit would allow 4,000 client days and 1,500 helicopter landings each year with clients (a maximum average of 12 flights per day). The Proposed Action would add 800 additional client days and 300 additional helicopter landings from the level permitted in 2005 (3,200 client days and 1,200 helicopter landings).

The terms of the special use permit also authorize the set up of a temporary base camp on Godwin Glacier. The base camp is located on the southwester portion of Godwin Glacier.

Alternative 3 - 2005 Permitted Level

Alternative 3 would authorize a 5-year special use permit for helicopter supported guided activities on Godwin Glacier. The 5-year special use permit would allow 3,200 client days and 1,200 helicopter landings per year (a maximum average of 10 flights per day). The client day allocation and number of permitted helicopter landings under Alternative 3 would be identical to the allocation authorized under a 1-year special use permit in 2005.

Alternative 3 would also authorize a temporary base camp on Godwin Glacier, identical to the proposed action.

Comparison of Alternatives

	Number of Helicopter Landings	Number of Client Days
Alternative 1	0	0
Alternative 2	1,500	4,000
Alternative 3	1,200	3,200

Mitigation Measures and Permit Stipulations Common to All Action Alternatives

The following items are listed as mitigation measures or permit stipulations which were developed to address potential adverse impacts associated with the action alternatives or adopted as Forest Plan direction in the form of Forest-wide standards and guidelines. The following mitigation measures and permit stipulations are applicable to all action alternatives and are incorporated into the terms and conditions of any resulting special use permit.

Helicopter Use

- The Fourth of July Creek drainage up to the glacier will be followed, when possible, to maximize the distance between the helicopter and animals on the slopes.¹
- Helicopter activity associated with Godwin Glacier Dog Sled Tours shall not commence before 8:00 a.m. from the Seward Airstrip unless agreed to in advance by the Forest Service and the permit holder.
- Flying over residential areas will be avoided.
- A ½ mile distance will be maintained from popular hiking trails (Mt. Alice trail or Iditarod National Historic Trail) and any observed recreation use.
- Helicopter flight path will stay as close as possible to the south side of Fourth of July Creek drainage to avoid flying over or near Spring Creek Correctional Center.

Wildlife Habitat Protection

- Pilots will follow flight path that avoids mountain goats and their habitat as much as possible. This flight path generally avoids ridge tops. The same flight path to and from the glacier will be maintained, if possible, to allow animals to become habituated to the standardized movement and noise.
- Except for takeoffs and landings, maintain a minimum of 1500-foot minimum vertical and horizontal distance from ground when traveling to and from Godwin Glacier.
- Hovering, circling, or harassing wildlife in any way is not permitted and is a violation of State and Federal regulations.

¹ This flight path is generally outside the Chugach National Forest boundary. Since the Forest Service does not have the authority issue citations for aircraft activities, the flight path will be incorporated into the terms and conditions of the special use permit..

Deviation from this flight path is not allowed under the permit except for weather or emergency circumstances.

- Permit holder will provide written goat and other wildlife sighting information (species, numbers of animals, locations, dates) to the Forest Service when conducting helicopter operations.
- Permit holder will provide logistical support for the collection of goat data, by the State of Alaska Department of Fish and Game and the Forest Service.
- Flight patterns to and from the Seward Airport will follow pre-established landing patterns utilizing routine downwind, base and final approaches to the airport. This is required for bald eagle habitat protection near runway.

Camp Operations

- The permit holder will be bonded to ensure complete removal of all camp facilities at the end of the season.
- Dogs must be under physical or voice control at all times while on glacier.
- Each dog must pass a health check by a State certified veterinarian prior to transport to the glacier and be subject to on-site health checks.
- All dogs on the glacier must have a current, veterinarian certified rabies vaccination record.
- A report summarizing the veterinary inspections must be provided to the Forest Service and any recommendations as a result of these health checks acted upon immediately.
- All dog feces must be picked up daily from the kennel area and dogsled routes. All camp waste, human waste and dog feces must be containerized in leak proof containers and removed from the glacier at least twice a week.
- All human and dog food must be containerized during transport and storage.
- All garbage and dog waste, including used bedding, must be removed from the glacier at least twice weekly.
- Human and dog waste must be disposed of according to Federal, State, Borough, and municipal regulations.
- All trash and camp waste (including cooking water), and human waste will be removed from the site regularly throughout the season.
- Motorized equipment such as a generator and snowmachine may be utilized. All precautions will be taken to prevent any hazardous waste contamination (oil spills) of the glacier and surrounding area. All hazardous waste materials will be

transported off of the glacier and disposed of according to applicable laws and regulations.

- Camp stoves and fuels will transported and stored appropriately to prevent any hazardous waste contamination of the glacier and surrounding area.
- Permit holder must provide the Forest Service the opportunity to inspect operations at any time during the operating season to ensure compliance with camp operation mitigation and to ensure the base camp has been properly removed.

Environmental Consequences

This section provides a summary of the environmental impacts under each alternative. It discusses the effects relative to the three key issues as well as the applicable physical, biological, and social environments within the project area. To address cumulative effects, the Forest Service examined the environmental impacts of each alternative in conjunction with past, present, and reasonably foreseeable future actions. The discussions of resources and potential effects incorporate existing information included in the Revised Forest Plan Final Environmental Impact Statement (Forest Plan EIS), project specific resource reports and related information, and other sources as indicated. The planning record for this analysis contains these resource sources of information as well as results of field investigations and public involvement efforts. The planning record is located at the Seward Ranger District in Seward, Alaska, and is available for review during regular business hours. Information from the planning record is available upon request.

Environmental Consequences by Resource Area

Wildlife

Introduction

The project area contains habitat for a variety of wildlife species. Among the species that occur in the project area are Forest Plan management indicator species (MIS), threatened and endangered species (TES), and Forest Service species of special interest (SSI). These species are generally chosen for environmental analysis because they are indicative of project effects on other species with similar habitat (MIS), have specialized habitat (SSI), or for legal and regulatory reasons (TES). Below is a table that summarizes the species that have habitat within the project area or are required for regulatory reasons and whether they are discussed further in this environmental analysis.

The helicopter flight path to the Godwin Glacier base camp is from the Seward airport, along the east side of Resurrection Bay, and then north up Fourth of July Creek. The predominate adverse impacts to wildlife from the action alternatives are caused from the effects of helicopter flights to and from the Godwin Glacier base camp as opposed to dogsledding and base camp activities.

Wildlife Species within the Project Area

SPECIES	MIS	TES	SSI	ANALYZED FURTHER?	RATIONALE FOR NO FURTHER ANALYSIS
Humpbacked Whale (Endangered)		X		No	Not under flight path
Steller's Eider (Threatened)		X		No	Does not breed on SRD. May occur during

					migration.
Montague Island Tundra Vole (Sensitive)		X		No	Not expected on Kenai Peninsula.
Osprey (Sensitive)		X		No	Only occurs during migration
Peale's Peregrine Falcon (Sensitive)		X		No	Does not breed on FS lands. May occur during migration.
Steller Sea Lion (Endangered)		X		Yes	
Kittlitz Murrelet (Candidate)		X		No	Does not occur on FS lands, does occur in Resurrection Bay, within the project area.
Cook Inlet Beluga Whale (Candidate)		X		No	Does not occur on FS lands, does occur in Resurrection Bay, within the project area.
Brown Bear	X			Yes	
Moose	X			Yes	
Mountain Goat	X			Yes	
Gray Wolf			X	Yes	
Lynx			X	Yes	
Marbled Murrelet			X	Yes	
River Otter			X	Yes	
Townsend's Warbler			X	Yes	
Wolverine			X	Yes	
Bald Eagle			X	Yes	
Northern Goshawk			X	Yes	

Helicopter Effects on Wildlife

Over 200 published and unpublished reports can be found on the subject of aircraft overflights on wildlife. In general, wildlife does respond to low-altitude (300-800 feet) aircraft overflights (USDI 1994). Aircraft overflights can affect the physiology and behavior of wildlife, and if the stress becomes chronic, can negatively affect an animal's fitness and long-term survival (USDI 1994).

Both sound and visual stimuli can cause stress. The manner and degree in which overflights influence wildlife depends on life history of the species, characteristics of the aircraft and flight activities, and other factors including habitat, season, activity at time of exposure, sex, age, health, and previous experience with aircraft (USDI 1994). Forested habitat generally reduces noise and visual stimuli because trees provide cover and muffle sound.

The relationship between overflights and impacts to wildlife is complex, but it is clear that the closer the aircraft, the more likely an animal will be stressed, and that helicopter overflights are more stressful than fixed-wing overflights (USDI 1994). Review of the literature shows that aircraft overflights may cause flushing of birds from feeding or nesting areas, alteration of movement or activity patterns, decreased foraging efficiency, panic running of big game animals, decreased young survival, and increased heart rates in big game animals. (USDA 1999).

It is unlikely that one overflight altitude exists that is sufficient for avoiding disturbance to all animals. It is not possible to specifically evaluate the after effects of overflights because in most cases, animal responses fall across a spectrum so that the question of whether or not a disturbance occurs cannot be answered with a yes or no. For example, an overflight generally causes some animals to panic, some to be mildly disturbed, and some animals to ignore the aircraft. At a lower altitude, the overflight causes more to panic and fewer to be mildly disturbed. At what degree of disturbance in what percentage of animals should overflights be considered detrimental or otherwise unacceptable? At present, these questions have only largely subjective answers.” (USDI 1994). There is no consensus in public or scientific communities regarding impact definition. (USDI 1994).

The list below summarizes the specific actions that cause wildlife effects from helicopters and factors that affect the impacts (USDA 1999).

- Helicopter fly by or over
- Helicopter landings and take-offs (including the take-off sequence)
- Approach and take-off patterns (to and from landings)
- Hovering
- Sitting with engine operating on the ground
- Varying levels and types of sounds created by blade pitch
- Different noise levels associated with cruising, landing, and flying in head and tail winds
- Elevation and distance of helicopters from the organism reacting to it.

Estimating Effects of the Alternatives

For this permit, the following criteria are used to categorize impacts to wildlife from helicopter use and associated recreational activities. These criteria are modifications of those found in a 1994 Report to Congress, Report on effects of aircraft overflights on the National Park System (USDI 1994).

Negligible Impacts

- No species of concern are present or no/minor impacts expected
- Minor impacts that do occur have no secondary (long-term or population) effects

Low Impacts

- Animals of concern present in low numbers

- Habitat is not critical for survival; not limited to the area targeted for overflights, etc.
- No serious concerns expressed by State or Federal fish and wildlife officials

Low to Moderate Impacts

- Habitat is not critical for survival; not limited to the area targeted for overflights, etc.
- No serious concerns expressed by State or Federal fish and wildlife officials
- Breeding animals of concern may be present/present for critical life stages
- Mortality/interference with activities necessary for survival is likely to occur occasionally.
- Mortality/interference are not expected to threaten the continued existence of species in the area

Moderate Impacts

- Breeding animals of concern are present/present for critical life stages
- Mortality/interference with activities necessary for survival is likely to occur occasionally.
- Mortality/interference are not expected to threaten the continued existence of species in the area
- State and Federal officials express some concern

High Impacts

- Breeding animals present in high numbers and/or during critical life stages
- Overflight areas have history of use during critical life stages during critical periods
Habitat is limited and animals cannot relocate to avoid impacts
- Mortality or other effects (injury, physiological stress, effects on reproduction and young raising) are expected on a regular basis; these effects threaten the continued survival of the species
- State or federal officials express serious concern

The higher the frequency of helicopter flights, the greater the potential for adverse effects to occur. Alternative 2 would allow 1,500 helicopter landings with clients each year and Alternative 3 would allow 1,200 helicopter landings with clients. Because Alternative 2 allows more helicopter flights than Alternative 3, the potential effect to individual animals is greater in Alternative 2 than Alternative 3. However, the effects of Alternative 2 and Alternative 3 are discussed together because, despite the 300 additional helicopter landings, their effects fall into the same USDI categories of impacts for each alternative.

Cumulative effects for all species consist of other aircraft assisted recreation, such as flight-seeing from the Seward Airport. However, these effects are not predicted to be important or create population viability concerns, because of the limited area of affected habitat and the low incremental impact to wildlife species from this project.

Mitigation Measures

In order to accommodate some of the uncertainty on the specific effects of aircraft overflights to wildlife species, mitigation measures were developed to reduce adverse impacts. The primary mitigation measure to reduce the possibility of adverse impacts from helicopter flights to Godwin Glacier is a requirement in the special use permit to maintain 1,500 ft. above ground level (AGL) except for takeoffs and landings.

Maintaining a 1,500 ft. AGL should reduce or eliminate direct effects to most wildlife because, in general, wildlife does respond to low-altitude (300-800 feet) aircraft overflights (USDI 1994), and 1,500 ft. AGL is substantially over this level.

Existing Condition and Environmental Effects for No Action Alternative

The No Action Alternative would not issue any permit for helicopter supported guided activities on Godwin Glacier. Therefore, there would be no adverse direct, indirect, or cumulative effects on wildlife species resulting from the No Action Alternative.

Existing Condition and Environmental Effects for Action Alternatives

Habitat in the project area consists of Sitka Spruce or Lutz Spruce and marine habitat at the lowest elevations. As elevation rises habitat changes into hemlock, alder, grass and alpine, and rock and ice. There are a total of 12 species that occupy these habitat(s) that are potentially affected by this project. The effects analysis for these species assumes a 1,500 ft. AGL helicopter flight path.

Stellar Sea Lion

Stellar Sea Lions are a marine mammal that is associated with rocky coasts, sheltered inshore waters, or beach habitats. Although no precise estimate of Stellar Sea Lions in Resurrection Bay has been determined, Stellar Sea Lions have been reported to forage in Resurrection Bay underneath the helicopter flight path to Godwin Glacier.

Data is unavailable on whether Stellar Sea Lions are affected by helicopters. Born et al. (1999) noted a greater response of ringed seals to low-flying (150m) helicopter than fixed-wing. They found 6% of seals escaped less than about 1800 ft., from the fixed-wing; 49% of seals escaped about 3750 ft. from the helicopter.

The action alternatives can cause short term escape responses in Stellar Sea Lions if they are foraging under the flight path. Escape responses are not predicted to have long term or population effects and the impact is considered negligible.

Moose

Moose are known to occur in the lowland forested areas and upland alpine areas adjacent to Fourth of July Creek. During fall and winter, moose consume large quantities of willow, birch, and aspen twigs. Moose eat a variety of foods, particularly sedges,

equisetum (horsetail), pondweeds, and grasses. During summer, moose feed on vegetation in shallow ponds, forbs, and the leaves of birch, willow, and aspen. Most moose make seasonal movements for calving, rutting, and wintering areas. They travel anywhere from only a few miles to as many as 60 miles during these transitions.

Very few studies reporting the effects of helicopter overflights on moose exist. One study reports on the effects of military activity, including helicopters, on moose in the summer (Andersen et al. 1996). Disturbance in the study by military activity resulted in short-term increases in heart rate and increases in home range size. Despite these effects, the results of this study indicated that military activity in the area should have no dramatic effects on the population.

The action alternatives can cause short term increases in heart rates of moose that are browsing or foraging under the flight path. These responses (increased heart rate) are short term and are not predicted to have long term or population effects and are considered negligible

Brown Bears

Brown bears have been observed foraging along the south facing slopes above Godwin Glacier, digging out marmots on the hill across from the base camp, and traveling through the area between Day Harbor and Bear Glacier. They likely forage or travel throughout the permit area and under the primary flight path and areas of flight seeing. The glacier is surrounded by habitat considered to have a medium probability of use by female brown bears (calculated from physical characteristics such as vegetation and road densities, and known locations of collared bears- from Farley et. al 2001).

Studies on the effects of aircraft, including fixed-wing planes and helicopters, report both behavioral (Harding & Nagy 1980; McClellan 1990; McClellan & Shackleton 1989; Schallenberger 1980) and physiological (Reynolds et al. 1986) responses of brown bears to overflights. Overt behavioral responses such as running and hiding typically occur when bears are active (Reynolds et al. 1986).

Consequences of long-term exposure to stress have not been documented in brown bears, but have been demonstrated to cause long-term negative effects on metabolism and hormone balance of ungulates (USDI 1994). Physiological responses, such as chronic stress, brought on by repeated and excessive stimulation of the nervous system can cause harm to overall health, growth rates and reproductive success of animals such as brown bears (USDI 1994). Helicopter traffic to and from Godwin Glacier is a short-term activity consisting of multiple short duration (less than 10 minutes) trips from the Seward Airport and is not expected to create long term exposures to stress in Brown Bears.

The action alternatives can cause short term escape type responses from brown bears under the flight path. These responses are not predicted to have long term or population effects and are considered negligible.

Mountain Goats

Mountain goat populations can be found from near sea level to over 10,000 feet in cliffs, alpine, sub alpine and old-growth habitats. Mountain goats are both grazing and browsing animals, depending on the particular habitat and season of the year. Mountain goats normally spend summers in high alpine meadows where they graze on grasses, herbs, and low-growing shrubs. Most goats migrate from alpine summer ranges to winter at or below tree line, but some may remain on windswept ridges (ADF&G 1994). The quantity and quality of the winter habitat is thought to be the most limiting factor for mountain goats in South-central Alaska.

Mountain goats have been sighted in the project area by Forest Service wildlife biologists and Godwin Glacier Dogsled Tour pilots since the permit was first issued in 1999 on the majority of slopes north and south of Godwin Glacier on both Chugach National Forest Service and State lands (see Appendix B). Pilots report goats moving from west to east on the south facing slopes of Mount Alice as the summer progresses. Goats may also move from south facing to north facing slopes during some of the hotter days of summer (Shuster and Wilson 2002, pers. comm.).

Goats have been reported to occur in the past by Godwin Glacier and other local pilots on the mountain just south of Fourth of July Creek adjacent to the bay, and north of Godwin Glacier farther to the northeast (See Appendix B). Although these areas were identified, point locations were unavailable and not shown on the map. Goats are known to occur on both Forest Service land and State land under the normal flight path. Reports from Godwin Glacier pilots indicated sightings, in 2002, of between 4-32 animals per season, in 2003 20-35 animals per season, and in 2005, 4-18 animals per season. Goats likely move across the State and Federal land boundaries during the summer, and potentially during other times of the year.

Goats are sensitive to human disturbance, which can cause abandonment of habitat, increased and continuing stress, and potentially excess energy expenditure (Olliff et al. 1999). Mountain goats respond to helicopter and aircraft over flights based on type of aircraft, aircraft distance from goats, angle of aircraft approach, topography, and habitat (Côté 1996; Foster and Rahe 1983; Joslin 1986; USDA Forest Service 2003). Behavioral responses included alert, interruptions from rest, increased foraging, and escape behavior (fleeing or hiding). Closer and more direct flight paths elicited the strongest responses (Côté 1996; Foster and Rahe 1983; Joslin 1986; USDA Forest Service 2003). It is unknown how these behavioral responses correlate with physiological stress or population viability (Goldstein et. al 2004).

The selection of the helicopter flight path and wildlife specific mitigation measures (1,500 AGL) was developed, in large part, to minimize the adverse impacts to mountain goats. The flight path generally avoids mountain goat habitat and the 1,500 AGL will reduce the likelihood of adverse impacts. The action alternatives can cause short term escape responses in some individual mountain goats. Escape responses are not predicted to have long term or population effects and are considered negligible.

Gray Wolf

Wolves are highly social animals and usually live in packs that include parents and pups of the year. There are approximately 10-11 packs on the Seward District. 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. 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.

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. In addition, diseases, malnutrition, accidents, and particularly intra-specific strife, where due to social interactions, wolf densities do not exceed certain levels even when prey abundance is high, act to regulate wolf numbers. Wolves are carnivores, and in most of mainland Alaska moose and/or caribou is their primary food, with Dall sheep being important in limited areas. Wolves are known to occur in the project area, and have been sighted near the base camp, and under the flight path.

Wolves and other carnivores can also be impacted if prey species, such as mountain goats or moose, alter their behavior because of helicopter presence. There could be a positive result for predators if their prey becomes more susceptible to predation. The effects on prey species as mountain goats and moose are expected to be low or negligible (see above).

Individual wolves may be disturbed or frightened by helicopter overflights, because generally wildlife does respond in some manner to low-altitude (300-800 feet) aircraft overflights (USDI 1994). The habitat under the flight path, however, although potentially used for reproduction, is not critical for survival, and not limited to the area targeted for overflights, etc. In addition, maintaining 1,500 ft. AGL will reduce the likelihood of wolves being disturbed. Any responses are not predicted to have long term or population effects and are considered negligible.

Lynx

Lynx inhabit much of Alaska's forested terrain and use a variety of habitats, including spruce and hardwood forests, and both sub alpine and successional communities. The best habitat occurs where there is a diversity of vegetation types with an abundance of early successional growth, which provides habitat for snowshoe hare and other small prey species. Hares also like dense conifer thickets of seedlings and saplings for food and cover. Lynx may use forested and sub alpine areas under the flight path below the glacier, but do not likely use the area surrounding the base camp or the glacier.

Individuals may be disturbed or frightened by helicopter over flights, because in general, wildlife responds to low-altitude (300-800 feet) aircraft overflights. In addition, the habitat under the flight path, although potentially used for reproduction, is not critical for survival, and not limited to the area targeted for overflights, etc. In addition, maintaining

1,500 ft. AGL will reduce the likelihood of lynx being disturbed. Any responses are not predicted to have long term or population effects and are considered negligible.

River Otters

River otters are associated with coastal and fresh water environments and the immediately adjacent (within 100-500 feet) upland habitats. Beach characteristics affect the availability of food and cover, and adjacent upland vegetation also provides cover. Old-growth forests have the highest habitat value, providing canopy cover, large-diameter trees and snags, and burrow and den sites. Younger successional stages provide lower quality habitat.

River otters in Alaska hunt on land and in fresh and salt water. They eat snails, mussels, clams, sea urchins, insects, crabs, shrimp, octopi, frogs, a variety of fish, and occasionally birds, mammals, and vegetable matter. Habitat for river otters exists adjacent to Resurrection Bay and Fourth of July Creek, under the flight path below the glacier.

Individuals may be disturbed or frightened by helicopter over flights, because in general, wildlife responds to low-altitude (300-800 feet) aircraft overflights. In addition, the habitat under the flight path, although potentially used for reproduction, is not critical for survival, and not limited to the area targeted for overflights, etc. In addition, maintaining 1,500 ft. AGL will reduce the likelihood of river otters being disturbed. Any responses are not predicted to have long term or population effects and are considered negligible.

Wolverine

The wolverine is an animal of montane forest, tundra, and taiga. Several factors appear to influence wolverine habitat selection at the landscape and stand levels. The distribution and density of large mammal carrion is a primary factor along with the level of human disturbance.

Wolverines are thought to occur in low densities on the Kenai Peninsula, an estimated 5.2 per 1000 km² in 1996 (Golden 1996), and 2.95/1000 km² in 2004, stated to be a more precise estimate (Golden 2004 unpublished). Maintaining habitat for large animals such as moose, sheep, goats, and caribou, and identifying and reducing human disturbance to potential denning sites will be important to maintaining populations.

Wolverines may use the high rocky habitat adjacent to the glacier (goat habitat) for foraging in summer, and some potential denning habitat may exist to the east and southeast of the base camp. Lucky Wilson, a helicopter pilot for Godwin Glacier Tours sighted a wolverine 0.5 miles south of the flight path in 2002.

The potential exists for helicopter flights to occasionally disturb or frighten foraging wolverines. Increasing human access to remote areas such as the Godwin Glacier has the potential to displace wolverines from the permit area, or disrupt foraging or traveling patterns if wolverines avoid the base camp area or flight path of the helicopter.

With mitigation measures, disturbance under the flight path should be reduced, yet animals may still avoid foraging in or traveling through the area around the base camp due to human activity. For this reason, low to moderate effects are likely for wolverines as wolverines will likely avoid the base camp during the four month season. However, the continued existence of the wolverine in the area will not be threatened.

Bald Eagle

Bald Eagles are more abundant in Alaska than anywhere else in the United States where they often use and rebuild the same nest each year. Nest trees are usually close to water, afford a clear view of the surrounding area, and often provide sparse cover above the nest. Eagles in South-central Alaska generally nest in old growth cottonwood trees near water.

Existing habitat occurs at and adjacent to the Seward Airport, where there are 5 known nests. Nesting habitat also may occur adjacent to Resurrection Bay and Fourth of July Creek adjacent or under the helicopter flight path.

Helicopter flights to and from the glacier increase the potential to affect nesting or foraging eagles in the vicinity of the airport or along the flight path. The Forest Service has an MOU (memorandum of understanding) with the USDI Fish and Wildlife Service on measures to protect active bald eagle nests. This MOU states that repeated helicopter flights within ¼ mile of active nests should be avoided. Flights within this distance (1,320 feet) have the potential to disturb nesting birds.

The helicopter flight path and 1,500 ft. AGL will ensure that helicopters do not enter within ¼ mile of any active bald eagle nests. For this reason, any responses are not predicted to have long term or population effects and are considered negligible.

Goshawk

The northern goshawk is a low density, forest raptor that feeds in the under story on squirrels, birds and snowshoe hares. The amount and combination of feeding and nesting habitat appears to be the primary limiting factors (Iverson et. al. 1996). Thirteen of seventeen goshawk nests on the SRD are in old growth hemlock-spruce stands characterized by a closed canopy, large average diameter, gap regeneration and an open under story.

Goshawks have been seen foraging around Seward, and are known to nest on the west side of Resurrection Bay. Nesting habitat also likely exists on the east side of the bay in mature Sitka spruce habitat.

The potential exists to disturb nesting goshawks during the breeding season by helicopter over flights. Studies or observations from numerous wildlife refuges noted disturbance to a variety of birds at a variety of flight levels (Gladwin et al. 1987).

Maintaining 1,500 ft. AGL will reduce the likelihood of goshawks being disturbed. Any responses are not predicted to have long term or population effects and are considered negligible.

Summary

The wildlife impacts are primarily associated with the noise and visual disturbance created by the helicopter. The impacts to all species, except wolverines, is negligible with either no species of concern present or no/minor impacts expected and minor impacts that do occur have no secondary (long-term or population) effects. Wolverines will experience low to moderate effects due to the presence of the base camp near travel routes across the glacier, however, their continued existence in the area will not be compromised by the any of the alternatives.

Recreation

Existing Condition

A number of recreation activities occur within or adjacent to the project area. Recreation activities potentially affected by helicopter noise consist of hiking, blueberry picking, skiing, boating, and fishing. The level of recreation use occurring near the project area varies by season. The majority of recreation use occurs during the summer season (May 1-October 1).

Helicopter Activities on Godwin Glacier

Guided helicopter supported dogsledding on Godwin Glacier has been authorized by the Forest Service since 1999. The season can run from May until late August. In addition, the State of Alaska also authorized a five year permit to Era Aviation for guided helicopter supported dogsledding on the State land portion of Godwin Glacier in 2003. Generally, the project area has seen increasing recreation from guided helicopter supported dogsledding outfitters.

The table below displays the actual use occurring on Forest Service lands on Godwin Glacier:

Year	Permitted Use (client days)	Actual Use (client days)	Number of Helicopters	Average Number of Landings per Season*	Number of Authorized Landings
1999	5700	175	1	47	Not specified in permit
2000	1850	1109	1	277	Not specified in permit
2001	2200	1937	1	484	Not specified in permit
2002	2200	2354	1	588	1200
2003	3200	1395	1	349	1200
2004	3200	920	1	230	1200
2005	3200	1265	1	316	1200

*Assumes four clients per trip

The table below displays the actual use occurring on State of Alaska lands on Godwin Glacier:

Year	Permitted Use (client days)	Actual Use (client days)	Number of Helicopters	Number of Authorized Landings
2003	Not specified in permit	544	1	Not specified in permit
2004	Not specified in permit	600	1	Not specified in permit
2005	Not specified in permit	0	0	Not specified in permit

Since 2004, Era Aviation has ceased operations on Godwin Glacier. For this reason, the State of Alaska helicopter supported dogsledding on Godwin Glacier permit to Era Aviation is not likely to be used beyond 2004, and no actual use occurred during the summer of 2005.

Areas potentially affected include the following recreation trails and places where helicopter noise may adversely affect recreationists:

Mount Alice Trail

The Mount Alice Trail is located approximately three road miles from the Nash Road and Seward Highway junction along Nash Road. The majority of summer recreation taking place near the project area occurs on or around the Mount Alice Trail. The Mount Alice Trail is a user developed steeply graded trail which is not maintained by the Forest Service. This trail is mostly used by local seasonal and year round residents. Formal recreation use data on the Mount Alice Trail is not available. However, informal Forest Service monitoring and anecdotal information indicates that the trail use is low (less than six parties per day during the summer season).

Iditarod National Historic Trail (INHT)

The INHT is designated as a historic trail under the National Trails System Act. The INHT follows the historic dog mushing route from Seward to Nome and crosses federal, State, municipal, and private lands. One of the accesses to the INHT is located approximately two road miles from the Nash Road and the Seward Highway junction.

The INHT accommodates both summer and winter recreation. Activities taking place on the INHT consists primarily of snowmobiling, skiing, hiking, and heritage resource interpretation. The portion of the INHT from Seward to Girdwood is tentatively scheduled to be completed by 2010. As the trail nears completion, recreation is expected to increase above current levels. Current use is low to moderate (between 6 and 15 parties per day) during the summer.

Resurrection Bay

Fishing during the salmon run, typically August through early September, occurs near the shore of Resurrection Bay southwest of the highway. In addition, boating and sailing occurs throughout the summer. Recreation use in Resurrection Bay is not monitored by the Forest Service.

Recreation and Scenic Management Area Direction

The project area consists entirely of lands with a high Scenic Integrity Objective (SIO) rating. Although in close proximity to the city of Seward, the project area has spectacular views of glaciers, alpine settings, mountains, and wildlife.

The Recreational Opportunity Spectrum (ROS) class for the project area is Semi-Primitive Motorized (SPM). The SPM class is used to describe areas with low

interaction between users, where nearby sights and sounds of human activity are rare, and visitor impacts are noticeable but not degrading to resources or backcountry setting (See Forest Plan EIS 3-296). The SPM class manages for moderate (less than 15 parties per day) trail use (Forest Plan 3-39).

Effects

Alternative 1 (No Action)

Existing patterns of use would generally remain the same. However, no opportunities for guided helicopter supported dogsledding on National Forest System land on Godwin Glacier would be available. Opportunities for helicopter supported dogsledding on the State of Alaska land on Godwin Glacier will remain. However, no guided activities are occurring at this time.

Recreationists in or adjacent to the project area would be exposed to less frequent helicopter traffic and sounds as the number of helicopter flights to and from Godwin Glacier would be reduced by up to 588 flights per season. Recreationists will potentially be exposed to helicopter flights to Godwin Glacier from the State of Alaska permitted operation and will still be exposed to other flights from military, search and rescue, and private and commercial airplanes.

Alternative 2 (Proposed Action)

The proposed alternative would impact existing recreation in the project area by increasing opportunities to participate in helicopter supported dogsledding. Increasing the number of authorized landings from 1,200 to 1,500 could increase the frequency of helicopter flights to and from the glacier. The Forest Service has observed that the sound from helicopters shuttling supplies and clients to and from the Godwin Glacier base camp has the potential to annoy other recreationists in the project area for short periods of time (less than three minutes). Increasing the number of landings could further exacerbate this effect by authorizing an additional 300 helicopter landings.

The mitigation measures described above will help minimize helicopter sound to recreationists in the project area. Under the annual operating plan, helicopters must maintain a ½ mile distance from the Mount Alice Trail, Iditarod National Historic Trail, and any other observed recreation. A ½ mile separation will ensure that noise impacts will be reduced by separating helicopter traffic from other recreation use. Consequently, user conflicts under the proposed action would be low due to the separation distance from the flight path and any observed recreation, the low to moderate level of recreation use on the Mount Alice trail and the INHT (6 to 15 parties per day), and the short duration (less than three minutes) of the disturbance.

The opportunities to engage in helicopter supported dogsledding will increase under the Proposed Action because the Forest Service would authorize an additional 300 landings and an additional 800 client days from 2005 permitted levels and increase the term of the special use permit from one to five years. Those individuals wishing to participate in this recreation activity will have more opportunities to do so.

Alternative 3 (2005 Permitted Level)

Alternative 3 would authorize the same number of helicopter landings and client days as permitted during the 2005 season. Any existing impacts to other recreationists in the project area would continue at the level permitted in 2005. The mitigation measures pertaining to recreation (the ½ mile separation between any observed recreation and the Mount Alice Trail) would remain a part of the annual operating plan and would continue to reduce helicopter overflight disturbance to recreationists. Potential for user conflicts would continue to be low due to the separation distance from the flight path and any observed recreation, the low to moderate level of recreation use on the Mount Alice and INHT, and the short duration of the disturbance.

The opportunities to engage in helicopter supported dogsledding would remain at the level and term permitted in 2005 with 1,200 landings and 3,200 client days under a one-year special use permit.

Cumulative Effects

The recreation resource in the project area is affected by many activities in and around the City of Seward. Activities that can impact the recreation experience in the project area include helicopter flights from search and rescue, military, and the State of Alaska permitted dogsled operation. The project area also receives some fixed wing and commercial airplane traffic. In addition, traffic from Nash Road can be heard from the Mount Alice trail and Iditarod National Historic Trail on the portions of the trails nearest the road.

Fixed wing and additional helicopter traffic in the project area is moderate (average 5,387 aircraft operations per year) and is generally seen and heard regularly during the summer. The additional noise from helicopter operations authorized under Alternatives 2 and 3 would not substantially affect the recreation resource because existing levels of fixed wing, helicopter traffic, and road traffic would continue in the project area.

Disturbance to Area Residents

Existing Condition

Seward is situated on Resurrection Bay on the east coast of the Kenai Peninsula. The population of Seward in 2002 was estimated to be 2,794. Alaska Pacific University surveys of community attitudes conducted in 1998 and 1999 generally indicate that residents of Seward are not generally opposed to commercial tourism and commercial outfitting and guiding.

In the summer the Seward Airstrip receives moderate use (5,387 aircraft operations per year). Commercial aircraft, one helicopter operator, and private and commercial fixed wing aircraft use the Seward Airstrip. The sound from these activities is primarily heard by those residents living near the Seward Airstrip. The helicopter use on the flight path to and from the Seward Airstrip to Godwin Glacier is heard by residents living on Nash

Road. Forest Service observations indicate that the helicopter has the potential to be heard for up to three minutes.

Effects

Alternative 1 (No Action)

Under the No Action Alternative, no special use permit would be issued for helicopter supported dogsledding on Godwin Glacier. The State of Alaska would continue to administer a permit for helicopter supported dogsledding on the State of Alaska land on Godwin Glacier, although use of this permit is not likely. In addition, other helicopter activities will continue along with commercial and fixed wing flights.

The disturbance to residents near the Seward Airstrip and along the recommended flight path would decrease under the No Action Alternative, because no special use permit would be authorized by the Forest Service. The magnitude of the reduction in noise to residents near the Seward Airstrip is not predicted to be substantial because of the short duration of the disturbance (less than three minutes), the use of a flight path that avoids area residences, and the continuing use of the Seward Airstrip by commercial and private operations.

Alternative 2 (Proposed Action)

The Preferred Alternative has the potential to increase the disturbance to residents near the Seward Airstrip and along the flight path. Increasing the number of helicopter landings and client days would increase the frequency of flights by 300 flights per season (May through August) to and from Godwin Glacier and increase noise impacts to area residents.

The flight path recommended by the Forest Service and incorporated into the annual operating plan avoids area residences and will help minimize to the extent practicable the noise impacts to area residents.

Alternative 3 (2005 Permitted Level)

Alternative 3 would authorize the same number of helicopter landings and client days as permitted during the 2005 season. Impacts to area residents from helicopter activities would remain the same as the 2005 season (May through August).

The flight path recommended by the Forest Service and incorporated into the annual operating plan would continue to help minimize impacts to area residents.

Cumulative Effects

Other activities that could impact residents consist of additional helicopter and fixed wing activities in the project area. In 2003, Seward Airport traffic consisted of 2,912 commercial aircraft operations, including helicopter tours, and 2,475 other traffic operations, including military and local traffic. Air traffic, including fixed wing, commercial, and helicopter traffic, is expected to moderately increase (1.2 percent per year) in the future. There is potential that noise from this additional traffic could be

additive to the noise generated under the action alternatives, especially when this traffic enters the project area airspace.

The additional noise from helicopter operations authorized under Alternatives 2 and 3 would not substantially increase the amount of existing aircraft noise heard by area residents, because existing levels of fixed wing, helicopter traffic, and road traffic would continue and the flight path avoids area residences.

Heritage Resources

Existing Condition and Environmental Effects

The project area contains no known heritage or cultural sites and all activities take place on glacial ice or permanent snow fields

Under all action alternatives, activities would be limited to glacial ice or permanent snowfields. These areas typically do not contain heritage resources. The activities proposed in any of the action alternatives have no potential to effect heritage resources.

Sensitive or Rare Plant Species

Existing Condition and Environmental Effects

There are no known or suspected sensitive or rare plants in the vicinity of the operation; therefore, there are no environmental consequences to this resource.

Fisheries

Existing Condition and Environmental Effects

There are no fish bearing streams in the project area; therefore there are no environmental consequences to this resource.

Consistency

National Forest Management Act - The Action Alternatives comply with the Forest Plan. If an amendment were required, agency procedures would be followed. The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27).

Endangered Species Act – Biological evaluations were completed for threatened, endangered, proposed, and sensitive plant and animal species. No threatened and endangered plant or animal species would be affected by any of the action alternatives.

Bald Eagle Protection Act – Management activities within bald eagle habitat will be in accordance to a Memorandum of Understanding between the Forest Service and the U.S. Fish and Wildlife Service.

ANILCA Section 810, Subsistence Evaluation and Finding – The effects of the alternatives have been evaluated to determine potential effects on subsistence opportunities and resources. There is no documented or reported subsistence use that would be restricted by any of the action alternatives. For this reason, none of the alternatives would result in a significant possibility of a significant restriction of subsistence use of wildlife, fish, or other foods.

Coastal Zone Management Act of 1972, as amended – The alternatives do not affect to coastal zone uses or resources and therefore, do not require a coastal zone consistency determination.

National Historic Preservation Act of 1966 – Section 106 of the National Historic Preservation Act requires that all federal undertakings follow the regulations found at 36 CFR 800 to identify and protect cultural resources that are within the project areas and which may be effected by projects. The Chugach National Forest will follow the procedures in the Programmatic Agreement amount the Chugach National Forest, the Advisory Council on Historic Preservation, and the Alaska State Historic Preservation Officer regarding management of the project area. No cultural resources are present in the project area.

Executive Order 12898 – Environmental Justice – Implementation of this project is not anticipated to cause disproportionate adverse human health or environmental effect to minority or low-income populations.

Clean Air Act – Emissions anticipated from the implementation of the Action Alternaties would be of short duration and would not be expected to exceed State of Alaska ambient air quality standards (18 AAC 50).

Executive Order 13112 – Invasive Species – Invasive species populations have little potential to spread in the project area. Measures, such as cleaning equipment prior to entering NFS lands and use of weed free materials would be taken to minimize the spread of invasive species in accordance with E.O. 13112.

Agencies and Persons Consulted

The Forest Service mailed copies of a scoping letter to the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Federal Agencies, State, and Tribal Organizations

Div. of Governmental Coordination
National Marine Fisheries Services
State of Alaska, Dept of Fish & Game,
Habitat & Restoration Div.
US Fish & Wildlife Services
ADF&G
ADF&G Advisory Committee
Ahtna, Inc
AK Region, NPS
Alaska Department of Natural Resources
Div of Parks & Rec
Alaska Dept. of Natural Resources,
Division of Mining, Land and Water
Alaska Dept. of Natural Resources,
Forestry Division
Alaska DOT
Alaska State Government
Alaska State Legislature
Alaska State Troopers
Aleut Corporation
Arctic Slope Regional Corporation
Army Corps of Engineers
Bering Straits Native Corporation
BIA Anca Office, Kenai NWR
BLM
Bristol Bay Native Corporation
Chugach Alaska Corporation
CIRI
City of Seward
Cook Inlet Region, Inc.
Division of Governmental Coordination
DNR Mining
DOI-Bureau of Indian Affairs, West
Central Alaska Field Office

Doyon LTD
Environmental Protection Agency
Kenai Fjords National Park
Kenai National Wildlife Refuge
Kenai Peninsula Borough
Kenai Peninsula Borough Assembly
Kenai Peninsula Borough Planning
Commission
Kenai River Center
Koniag, Inc
Nana Regional Corporation, Inc
National Park Service Concessions
Postmaster: Cooper Landing
Postmaster:Girdwood
Postmaster:Hope
Postmaster:Kenai
Postmaster:Moose Pass
Postmaster:Nikiski
Postmaster:Seward
Postmaster:Soldotna
Postmaster:Sterling
Qutekeak
Sealaska Corporation
Seward Elementary School
State of Alaska Div of Park & Rec
State of Alaska, Dept. of Fish and Game
U.S. Army Corps of Engineers,
Regulatory Branch
UFWS, Kenai FRO
University of Alaska
US Army Seward Resort
US Congress
USDA-SCS
White River National Forest

Organizations

A.P.C. Outdoor Studies
Afognak Logging
Alaska ATV Adventures
Alaska Backcountry Bike Tour
Alaska Center for the Environment

Alaska Center for the Environment
Alaska Driftboaters
Alaska Fishfinders
Alaska Forest Association
Alaska Horsemen Trail
Alaska Miner's Association
Alaska Mining & Diving

Alaska Mountain and Wilderness Hut Association
 Alaska Quiet Rights Coalition
 Alaska Rain Forest Campaign
 Alaska Recreation Management
 Alaska River Adventures
 Alaska Rivers Company
 Alaska Sportfishing Association
 Alaska Troutfitters
 Alaska Two Wheel Tours
 Alaska Wildland Adventures
 Alaska's Bear Paw Lodge
 Alaska's Finest Guided Fishing
 Anchorage Daily News
 Angle 45 Adventure
 Audubon Society
 Austin-Lehman Adventures, LLC
 Backcountry Safaris
 Bear Creek Fire District
 Big Sky Charter & Fishing
 Bob's Walkabout Fly Fishing
 Bonnie & Clyde Wildlife Escapes
 Bruce Nelson's Float Fishing Service
 Center for Biological Diversity
 Chugach Electric
 Chugach Outdoor Center, Inc.
 Class V Whitewater
 Coastal Coalition
 Colorado Outward Bound School
 Conrad Contracting
 Cooper Landing Advisory Planning Commission
 Cooper Landing Fish Camp
 Cooper Landing Floating & Fishing
 D&L Construction
 DeGraffenried Construction
 Discovery Café
 EKPEAA
 Foster Construction
 Gardner's Sport Fishing
 Girdwood Ski & Cyclery
 Glacier Quest Eco-Tours
 Glacier Rivers Guide Service
 Godwin Glacier Sled Dog Tours
 Gray Video Productions
 Gwin's Lodge
 Hope Enterprises
 Hope Fishing Charters
 Hope Mining Company
 Hope Sunrise Historical Society
 Hope Trading Post
 Ingram's Sport Fishing Cabins
 Jaffa Construction
 Kenai Bicycle Society
 Kenai Cache Guiding
 Kenai Lake Cabins & Tackleshop
 Kenai Peninsula Historical Society
 Kenai Princess Lodge
 Kenai River Sportfishing, Assoc
 Kenaitze Indian Tribe
 Ketchikan Pulp Co
 K-F Construction Service
 Law Office of Pope & Katcher
 Legends Lodge Inc
 Llamas of the Midnight Sun
 Llamas Trek Alaska
 Mountain Biking Alaska, Inc.
 Mystic Water
 Nana Colt Engineering
 National Marine Fisheries Services
 Native Forest Council
 Nature Alaska Tours
 Nordic Skiing Ass. of Anchorage
 Norris & Son's Contractors
 North American Skijors & Ski Pull Assoc.
 NOVA Riverrunners of Alaska
 Peninsula Excavating
 Quality Asphalt Paving
 Rainbow Valley Homeowners Assoc
 REI
 Remote Alaska Fishing Tours
 Resource Development Council
 Resurrection Bay Historical Society
 Resurrection Flyfishing
 Resurrection Trail Resort
 Robertson, Monagle & Estaugh
 Rock Creek Mining Company
 Russian River Fly Fishers
 Seward Chamber of Commerce
 Seward Iditarod Trail Blazers
 Seward Nordic Ski Club

Sierra Club
Silent Run Drift Boat Guide Service
South Coast Construction
Spectrum Recording Studios
Spencer Rock Products
Summit Lake Lodge
Sunrise Campground
Sunrise Inn
Susitna Valley River Guides
The Fly Guy's Urban Angler
The Wilderness Society
The Wilderness Society
The Wilderness Society
Trout Unlimited
Turnagain Arm Conservation League
Turnagain Trails
Upper Russian Lake Lodge
Victor Emanuel Nature Tours
Whitewater Expeditions of Alaska
Wilderness Ventures
Zubeck, Inc
Zuni's Guide Service

Individuals

Jason Aigeldinger
E. Albert
Warren Albertson
Irene Alexakos
Greg Allen
Brandon Anderson
Mike Mark Anthony
Bob Applebee
Karl Arpel
JM Austin
Bill & June Babcock
Lori Bartlett
Ralph Basner
Elizabeth Bella
Evelyn Berllo
Matt Berman
Kim Blommel
James Boley
Cynthia Bonney
Elizabeth A. Booth

Boulden Family
Clifford Bove
Randy Boyer
Ron Bradley
Mike & Janis Bronson
Gerald R. Brookman
Shannon Brunner
Jeff & Wendy Bryden
Lynn Bucaheit
Raymond Burger
Jim Bush
Matthew Bushue
Butts Family
Scott Byrne
Janette Cadieux
Ray Cammia
Tara Campbell
David Carley
Jennifer Carrick
David M. Chambers
Kate Chandler
Ray Chiodo
Mandy Chu
Kathleen Claiborne
Jo Clark
Chris Clem
Mark Clemens
Jeffery Clemmer
James & Lee Cloud
R. A. Coatney
Florence Collins
Joesph Cook
Mike & Iva Cooney
Curtis & Nina Cornett
Jason Cowemoyer
Thomas Crowley
Terry L. Cummings
Dave & Marcie Curry
Kris D'Alessandro
William E. Dam Jr.
Patrick & Lydia Darby
Mary Ann Davies
John Davis
John Delong
Joe Demaree
James Denison

Carmine Dessantolo
Virginia Devries
Jim Diehl
Elsie Dillewaard
Dixon Family
John C. Dodge
Gregory Drais
Lana Duncan
Larry Duncan
Teresa Dunham
Willard Dunham
Joy Eastman
Michael & Jean Eaton
Constantina Economey
Kristin Erchinger
Connie Faipeas
Melford Fitzgerald
Peter Fitzmaurice
Myerl Flint, Jr.
Karen Fogas
Flip Foldager
Ken Follet
Mike & Diane Frank
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John Galazia
Dale Gardner
Allen George
Ann Ghicadus
Tom Gillespie
John Graham
Chuck Graham
Carol Griswold
Melissa Guernsey
Frank Gwartney
Amy Haddow
J.D. Hahn
Andy Hall
Matt Hall
Keith Ham
Kristin Hanson
Eric & Arsenia Hanson
Marty Hapeman
John Harper
Jeff Hetrick
Kevin Hite
Norman & Sallie Hogg

Daryl & Dori Hollingsworth
Laurie Holt
Gretchen Hopkins
Richard Houghton
Marilyn Houser
Chance Humphrey
Gleo & Pam Huyck
Bobby Ingram
David Inman
Bilbo Ivey
Bruce Jaffa
Mark E. Johnson
Lewis H. Johnston
Perley Jones
Stephen Jones
Sally Kabisch
George Kaminsky
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Kevin Knotek
Robert Komarek
Michael Kothe
Mary Kozelke
Ray Kreig
Jan & Annie Kristenson
Mark & Karen Kromrey
Raymond Laabs
Al Lamberson
Jason Lange
Mary Ann Lemme
Jerry Lemmon
Kirstie Leslie
Tony Lester
Duanne and Sanna Levan
Tony Lindow
Steve Livingston
Daniel and Kathryn Logan
Ellin London
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Becky Long
Warren Lowry
Beth Lowthian
Shawn Lyons
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Russ Maddox
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Kerry Martin
C. James Mathis
Debby Matulis
Shawn Mc Donald
Kyle Mc Donald
Michael & Diane McBride
Pam McDonald
Charles McEldowney
Scott McElhone
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Paul & Bonnie McKeown
Liz McNeil
Teresa Mercurio
William & Judy Merritt
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Bill Ostrand
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Clinton Paul
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Linda Pohle
Roger Pollard
Keith Possee
Marianne Profita
Virginia Purdy
Michael Purtzer
Jim Ramsdell
David Rankin
Tom and Elaine Reale
Steve Reidsma
Skip Reiersen
David Rhode
Jim Richardson
James H. Richardson
Jim Ricks
Theresa Rodgers
Marshall Ronne
Pat Rowe
Priscilla Russell
Dave Scarbrough
R.A.M. Schmidt
Jim Scott
Mitch Seavey
Camilla Seifert
John Shank
Pat Shea
Tom Shea
Ruth Sheridan
James V. Sheridan
Dan Sieminski
Dennis Siler
Charles Siler
Bernadine Silva
C. Silva
Frank Simon
Jim Skogstad
George & Trina Smallwood
Rick Smeriglio
Sherman "Red" Smith
Paul Smith
Nathan Smith
Kristin T. Smith
Don Soileau
Sam Sollie

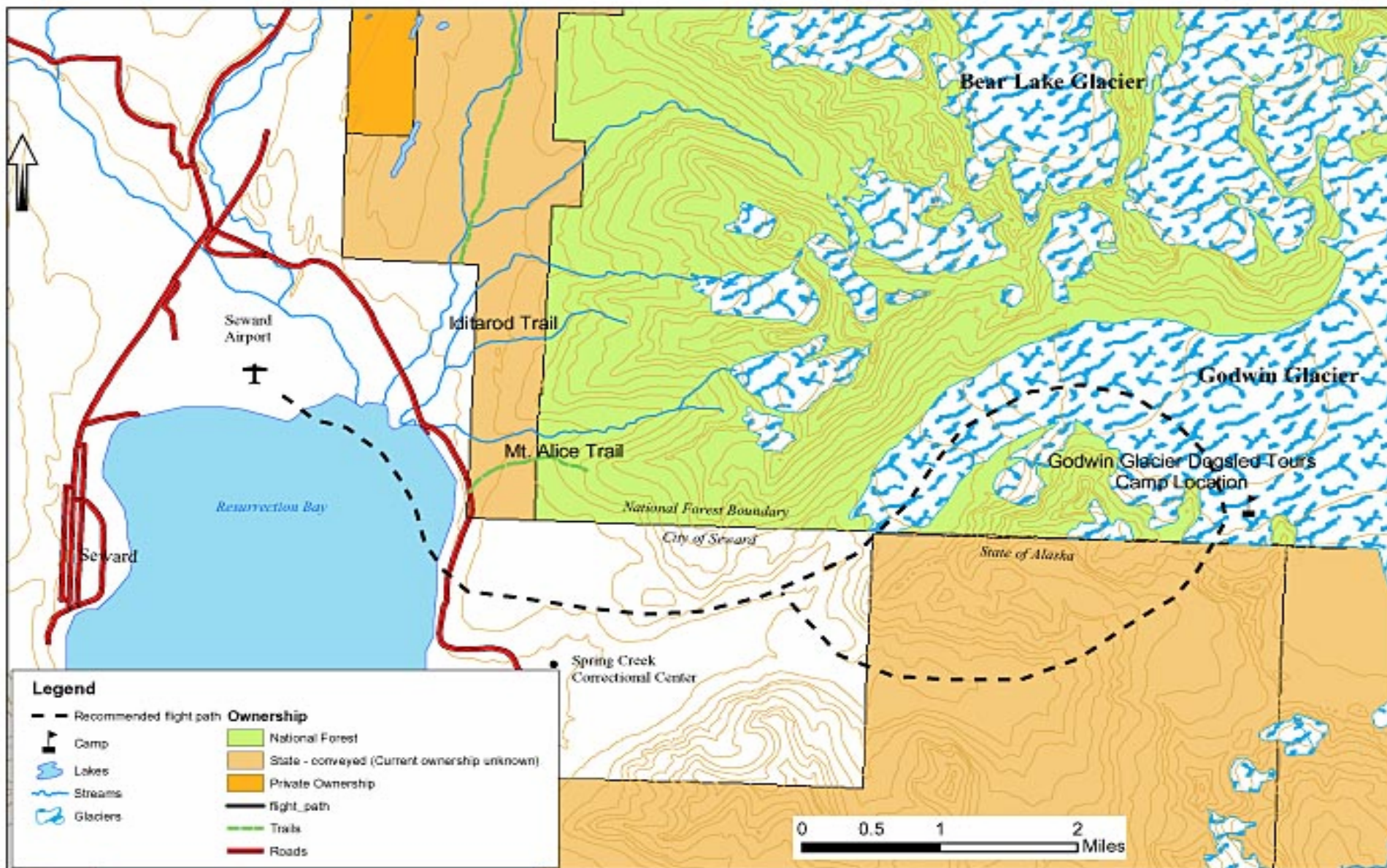
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Godwin Glacier Dogsled Tours Flight Path

Seward Ranger District, Chugach National Forest



Appendix B

Godwin Glacier Dogsled Tours Flight Path and Observed Goat Locations Seward Ranger District, Chugach National Forest

