

## Final Legislative Environmental Impact Statement

### Harvest of Glaucous-Winged Gull Eggs by the Huna Tlingit in Glacier Bay National Park Alaska

Lead Agency: National Park Service

This final legislative environmental impact statement (LEIS) responds to legislation enacted in 2000 (P.L. 106-455) which directs the Secretary of Interior, in consultation with local residents, to "...undertake a study of sea gulls living within the park to assess whether sea gull eggs can be collected on a limited basis without impairing the biological sustainability of the sea gull population in the park." The LEIS describes three alternatives for managing a traditional harvest.

Glacier Bay National Park is the traditional homeland of the Huna Tlingit who traditionally harvested eggs at gull rookeries in Glacier Bay prior to, and following, park establishment in 1925. Egg collection was curtailed in Glacier Bay in the 1960s as both the Migratory Bird Treaty Act and NPS regulations prohibited the activity. The loss of legal access to gull eggs in Glacier Bay has affected the physical, cultural and spiritual well being of the Huna Tlingit.

Alternative 1 (No Action) would not propose legislation to authorize gull egg harvest in Glacier Bay National Park. Alternative 2 would propose legislation to authorize harvest of glaucous-winged gull eggs at two designated locations on a single date. Alternative 3 would propose legislation to authorize harvest of glaucous-winged gull eggs at up to five designated locations in Glacier Bay National Park on two separate dates. The NPS and the Hoonah Indian Association (HIA) would prepare an annual harvest plan to ensure that park resources and values were protected.

Alternative 1 (No Action) would result in continued negative impacts to the culture and life ways of the Huna Tlingit. Alternatives 2 and 3 would result in some reduction in the number of glaucous-winged gull eggs hatched in the park. None of the alternatives would impact other colonial nesting birds, harbor seals, or Steller sea lions using areas near gull colonies or the wilderness values of the park.

This Final Legislative Environmental Impact Statement can be viewed on the internet at <http://parkplanning.nps.gov>.

## **CHANGES BETWEEN THE DRAFT AND FINAL LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT**

The final legislative environmental impact statement (FLEIS) was revised from the draft LEIS (DLEIS) based on responses to public comments and on internal discussions within the National Park Services. Per the National Environmental Policy Act (NEPA) section 1503.4, regarding responses to comments, agencies preparing final environmental impact statements can respond to comments in a number of ways. These ways are listed below, along with some of the major areas where comments resulted in changes in the FLEIS.

### **MODIFY ALTERNATIVES INCLUDING THE PROPOSED ACTION OR DEVELOP AND EVALUATE ALTERNATIVES NOT PREVIOUSLY GIVEN SERIOUS CONSIDERATION BY THE AGENCY**

The FLEIS does not consider any new alternatives. However, the document does include revisions to Alternative 3, the preferred alternative. Many public comments suggested that harvest activities should occur earlier in the breeding season and that monitoring plans should be more detailed. Some public comments expressed concern that the hatching success estimated to result should the preferred alternative be implemented was too low. Last, a number of Huna Tlingit tribal members noted that their families had traditionally harvested only from nests with one or two eggs and several public comments noted that this practice was cited in the published literature as a frequently employed harvest strategy. Many tribal members also requested that more than one group be authorized to harvest. Alternative 3, the Preferred Alternative, was revised to incorporate these and other comments in the following ways:

- The revised preferred alternative (Alternative 3) would authorize harvest at up to five locations on two separate dates whereas the DLEIS preferred alternative left the number of harvest sites open ended.
- The revised preferred alternative ties timing of the first harvest to onset of laying (on or before the 5<sup>th</sup> day following onset of laying as determined by NPS staff monitoring a reference site) whereas the DLEIS Alternative 3 established a specific date for the first harvest (on or before June 9). Alternative 3 in both the DLEIS and the FLEIS would authorize a second harvest at the same sites within nine days of the first harvest.
- The revised preferred alternative notes that if inclement weather, logistics or other issues prevented a first harvest visit within five days of onset of laying, only one harvest would be authorized in that year and would not allow harvest to occur after June 15 of any year.
- Potential harvest sites identified in the FLEIS are the same as those presented in the DLEIS.
- The requirement for a harvest plan would remain the same as that presented in the DLEIS.

- As in the DLEIS preferred alternative, the revised preferred alternative would authorize harvesters to collect eggs from nests with one, two, three or four eggs. However, the revised preferred alternative would allow harvesters to only harvest from nests with one or two eggs, leaving nests with three or four eggs undisturbed if they chose. Both the DLEIS and FLEIS require that harvesters remove all eggs from nests that are harvested from to induce relaying and both preclude harvesters from removing eggs that are star fractured or pipping.
- Similar to the draft preferred alternative, the revised preferred alternative would not limit the total number of eggs harvested in a particular location, on a particular day, or in a particular year.
- The harvest group would be comprised of up to twelve tribal members and one official representative from the NPS and/or the HIA as in the draft preferred alternative.
- Harvest data would be collected in a manner similar to that described in the draft LEIS.
- The revised preferred alternative includes a more detailed monitoring plan to include annual monitoring of glaucous-winged gulls as follows:
  - Identify onset of laying as determined by monitoring a reference site at South Marble Island or other sentinel location.
  - Conduct a mid season adult count by circumnavigating harvested nesting islands at high tide during acceptable weather.
  - Conduct nest counts of nests with zero, one, two, three, four eggs during harvest.
  - Conduct a complete survey just before hatch of all harvested islands.

## **SUPPLEMENT, IMPROVE OR MODIFY LEIS ANALYSES**

Each impact topic was reviewed and revised as necessary to ensure that each action being considered was evaluated adequately and accurately. In addition, sections were edited to improve clarity and remove unnecessary or repetitive text.

The analysis of Alternative 3, the preferred alternative, was revised considerably based on substantial changes to the alternative. Specifically, the predictive mathematical model developed by Zador et al. 2006 was used to estimate the total number of eggs laid, number of eggs harvested, and hatching success of the revised alternative. Table 4-2 was updated to include these newly calculated figures. Because fewer eggs would be harvested in the revised alternative 3, fewer eggs would be relaid, and hatching success would be much higher, the effects of the revised alternative 3 on glaucous-winged gulls changed from moderate (in the DLEIS) to minor (in the FLEIS). In addition, the sections describing the predictive model were edited to more clearly describe how the model was used to estimate the effects of harvest as many public comments suggested that the technical aspects of the mathematical model were unclear or difficult to understand.

The biological analysis was also revised to more clearly describe the potential effects of harvest on glaucous-winged gulls. Specifically, the revised analysis better describes the effects of

predation on glaucous-winged gull populations and more clearly states the potential benefits of synchronized replacement laying that might result from harvest. In addition, the revised analysis of the effects of harvest on glaucous-winged gulls includes a section on the survivability of chicks hatching from replacement eggs.

The effects on cultural resources was modified to incorporate the concept that individual groups of harvesters could be authorized to harvest at different locations under both action alternatives (Alternatives 2 and 3). Although the DLEIS action alternatives allowed for this possibility, the DLEIS analysis of effects on cultural resources failed to consider that multiple groups could conduct harvest activities at separate locations. In the revised analysis of Alternative 2, for example, the effects section states that one group of up to 12 harvesters could harvest at one location while a second group of up to 12 could harvest at another location. Likewise, under the preferred alternative, the revised effects sections notes that 5 groups of up to 12 individuals could harvest from 5 separate locations in desired.

The biological opinion issued by National Marine Fisheries Service based on the biological assessment and interagency consultation is included in the FLEIS as Appendix 5. The biological opinion documents NPS compliance with the Endangered Species Act for protection of the Steller sea lion. The opinion makes a no jeopardy finding for the species.

#### **MAKE FACTUAL CORRECTIONS**

A number of public comments noted factual errors in the DLEIS and/or National Park Service staff reviewing the DLEIS noted errors. These were evaluated and, where appropriate, the text was revised for accuracy. Several typographical errors were also fixed.

Sections on Steller sea lions and harbor seals in Chapters 2 and 3 were updated to incorporate new information about population status in Glacier Bay and throughout the species' ranges.

#### **OTHER CHANGES BETWEEN THE DLEIS AND FLEIS**

##### Consultation and Coordination

This section was updated to include descriptions of the public meetings that occurred after the DLEIS was published and to incorporate additional consultation that occurred including formal consultation with the National Marine Fisheries Service (NMFS) and the State Historical Preservation Office.

##### Chapter 6: Public Comment Responses

A new chapter was added to display substantive public comments and indicate how the NPS responded to each comment.

##### Appendices

Appendix 5 was added to display the Endangered Species Act section 7 consultation documents.

## **EXECUTIVE SUMMARY**

The National Park Service (NPS) proposes to authorize the limited collection of glaucous-winged gull eggs in Glacier Bay National Park by Huna Tlingit tribal members. This Legislative Environmental Impact Statement (LEIS) was prepared as required by the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council of Environmental Quality (CEQ; 40 Code of Federal Regulations [CFR] 1500). It describes a reasonable range of alternatives, the existing conditions, and contains a detailed analysis of environmental consequences of the alternatives.

### **PURPOSE AND NEED FOR ACTION**

Glacier Bay National Park is the traditional homeland of the Huna Tlingit who traditionally harvested eggs at gull rookeries in Glacier Bay prior to, and following, park establishment in 1925. Egg collection was curtailed in Glacier Bay in the 1960s as both the Migratory Bird Treaty Act and NPS regulations prohibited the activity. The loss of legal access to gull eggs in Glacier Bay has negatively affected the physical, cultural and spiritual well being of the Huna Tlingit.

In the late 1990s, the NPS agreed to explore ways to authorize the traditional collection of gull eggs within Glacier Bay. Legislation enacted in 2000 (P.L. 106-455; Appendix 1) further directed the NPS to undertake a study of sea gulls living within the park to assess whether sea gull eggs could be collected on a limited basis without impairing the biological sustainability of the gull population in the park. The purpose of this LEIS is to respond to Section 4 of P.L. 106-455 and to propose a traditional harvest strategy, cooperatively produced by the NPS and the Hoonah Indian Association (HIA).

### **THE ALTERNATIVES**

The NPS is considering three alternatives designed to achieve the objectives and needs described in the previous section, a No-Action Alternative and two alternatives which would authorize limited traditional harvest of glaucous-winged gull eggs.

#### **Alternative 1: No Action**

Under Alternative 1 (No-Action), the harvest of glaucous-winged gull eggs in Glacier Bay National Park would not be authorized. The No-Action Alternative provides a baseline for evaluating the impacts to park resources that would result from the action alternatives.

#### **2.1.2 Alternative 2 (One Annual Harvest Visit to Two Locations)**

Alternative 2 would propose legislation to authorize the annual harvest of glaucous-winged gull eggs at up to two designated locations on a single pre-selected date on or before June 9.

The NPS and the HIA would prepare an annual harvest plan each year which would identify up to two sites open to harvest based on annual monitoring and harvest history. One harvest visit to

these sites would be authorized to occur on or before June 9th of that year. If inclement weather, logistics or other issues prevented a harvest on or before June 9, no harvest would be authorized in that year.

### **Alternative 3: Two Annual Visits to Up to Five Locations (NPS Preferred Alternative and Environmentally Preferred Alternative)**

Alternative 3 would propose legislation to authorize the annual harvest of glaucous-winged gull eggs at up to five designated locations in Glacier Bay National Park on two separate dates.

The NPS and the HIA would prepare an annual harvest plan which would identify those sites open to harvest based on annual monitoring and harvest history. A first harvest visit would be authorized to occur at each of the open sites on or before the 5<sup>th</sup> day following onset of laying as determined by NPS staff monitoring a reference site at South Marble Island. A second harvest at the same sites would be authorized to occur within nine days of the first harvest. If inclement weather, logistics or other issues prevented a first harvest visit within 5 days of onset of laying, only one harvest would be authorized in that year. No harvest visits would occur after June 15 of any year. Although site selection would occur each year during the preparation of the annual harvest plan, it is likely that harvest would occur at most at the 5 most productive sites.

### **Actions Common to all Action Alternatives**

Harvest locations, method of harvesting, group size, and monitoring activities would be similar for both alternatives.

*Harvest Location:* The Superintendent could identify any of the following sites for harvest: Boulder Island, Flapjack Island, Lone Island, Geikie Rock, Graves Island (Outer Coast), Hugh Miller islet, Margerie Glacier, Mt. Wright, Muir Inlet cliffs, Muir Inlet shoreline (between Riggs and Muir glaciers), Sealers Island, Sebree Island, South Marble Island, Sturgess Island, and Tlingit Point islet. The list above may be added to as information on new colonies becomes available. If vegetational succession in nesting areas diminishes nesting populations, the Superintendent could remove such sites from the list of potential harvest locations.

In general, harvest sites would be selected based on:

1. Size of colony: Larger colonies are preferred both in terms of maximizing potential harvest as well as in terms of maintaining gull reproductive biology.
2. Gull population parameters: Data on these parameters would be acquired through the annual monitoring program.
  - Productivity: Sites with high productivity (producing, on average, more than 2 eggs per nest) are preferred.
  - Gull population status: Sites with larger gull populations are preferred.
  - Recent egg harvest or disturbance: Sites that have not been harvested from or disturbed recently are preferred.

- Age of colony: Older colonies are preferred; egg laying must be documented for at least 6 years prior to a colony being opened to harvest.
- 3. Other species present, potential for disturbance: Sites that support no, or few other nesting birds and/or do not serve as marine mammal haul outs are preferred.
- 4. Distance from Hoonah: Sites closer to Hoonah are preferred.
- 5. Accessibility by vessel: Sites that can be easily and safely accessed by vessel without disturbing other wildlife are preferred.
- 6. Safety: Sites that are less steep and provide easier foot access are preferred.
- 7. Visitor use: Sites with lower levels of visitor use are preferred

*Annual Harvest Plan, Harvest Methods, Group Composition and Size:* Each year, the NPS and the HIA would jointly prepare a harvest plan. The plan would identify suitable harvest sites and would include, at a minimum, the proposed date(s) of harvest, vessel(s) to be used to access harvest sites, tentative itinerary for harvest date(s), harvest locations, and names of harvesters. Information in this plan would be used to prepare any necessary park permits including regulatory exemptions to CFR 36 13.1178.

The HIA would assign harvesters to search sections in each colony open to harvest. Harvest locations and access pathways would be delineated to minimize contact with other bird colonies and to ensure that harvesters moving through a colony would not disturb hauled out marine mammals. Harvesters would be authorized to collect eggs from nests with one, two, three or four eggs; however, harvesters could choose to not harvest from nests with three or four eggs according to their families tradition. Regardless of the clutch size or harvest strategy selected, harvesters would be required to remove all eggs from harvested nests. Harvesters would tally the number of nests located and harvested from (the number of nests with zero, one, two, three or four eggs). No eggs would be taken from nests with pipping or star-fractured eggs. Harvesters would make only one pass through each colony and would move steadily through nesting areas to reduce disturbance. No time limit in the colony would be imposed on harvesters. Resting, eating, etc., would take place on beaches or outside nesting areas to reduce disturbance.

Each harvest group would include up to twelve tribal members identified by the HIA. In addition, one official representative (from the NPS and/or the HIA) would accompany the group to collect data. This individual would serve as the logistics coordinator, maintaining contact as necessary with harvesters. The Superintendent may authorize additional participants/observers to join the group, but these individuals would remain on the beach and/or on the vessel(s) to minimize disturbance in the breeding colonies. Harvesters would abide by the requirements of the Wilderness Visitor Use Management Plan as well as the Park's annual compendium.

*Monitoring:* Monitoring protocols would be established to help the NPS determine population and harvest trends and identify impacts to park resources. Monitoring would occur before, during and after harvest activities. On-site activities would be documented in an annual report prepared by the HIA and submitted to the Superintendent following the close of the harvest season. The annual report would include:

- Date of site visits, harvest locations, and number of harvesters/site
- Number of eggs taken from nests with one, two, three and four eggs as well as number of nests with no eggs located at each site per visit
- Number of pipped, star-fractured, or predated eggs and number of hatched chicks in nests located at each site per visit
- Number of marine mammals hauled out at harvest location; number of animals leaving the haul out and entering the water before, during or immediately after harvest activities; behavioral changes including increased alertness or increased aggressive interactions at each site per visit
- Other species present at each site per visit
- Visitor interactions at each site per visit

In addition to monitoring that would take place during the harvest, annual monitoring would assist the Superintendent in making annual decisions regarding harvest locations and would ensure that harvest activities are not impacting park purposes and values. The monitoring plan would include, but not be limited to:

- Glaucous-winged gulls:
  1. Identify onset of laying as determined by monitoring a reference site at South Marble Island
  2. Conduct a mid season adult count by circumnavigating harvested nesting islands at high tide during acceptable weather.
  3. Conduct nest counts of nests with 0, 1, 2, 3, 4 eggs during harvest.
  4. Conduct a complete survey just before hatch of all harvested islands.
- Sea lions and harbor seals: Conduct visual counts of the number of marine mammals hauled out at South Marble Island and other potential egg harvest sites.
- All avian species: Prior to harvest, conduct a vessel-based survey of potential egg harvest sites to tally numbers of all bird species seen.
- Visitor Experience: Monitor the number of positive and negative comments to NPS staff about egg harvest activities.
- Cultural: Monitor the number of individuals participating in egg harvest and how eggs are used (consumed at home, at celebrations, distributed in community, distributed outside of community).

In addition to annual monitoring, a three-year study is highly recommended following the first year of harvest to identify potential causes of change in park glaucous-winged gull population levels. The study would include an assessment of egg laying phenology, predation pressure, and reproductive success in a subset of the South Marble Island colony (or other location). This would be accomplished by stationing a biologist(s) on South Marble Island for one to two weeks in mid- to late May to follow study protocols described in Zador (2001) or modified as new

protocols are developed. This study would assist NPS in comparing the effects of harvest and environmental factors on glaucous-winged gull populations.

## **AFFECTED ENVIRONMENT**

### **Physical Environment**

Glacier Bay National Park encompasses a recently deglaciated fjord surrounded by vegetated upland habitat as well as glaciers, ice fields, and recently exposed barren rock. With the exception of some lowlands in Glacier Bay's southeastern and southwestern margins, much of the entire area was under ice or ice-generated outwash about 250 years ago. The outer coast of the park extends 100 miles along the Pacific Coast and is exposed to rough seas and frequent Pacific storms.

Numerous islands dot the Bay, many of which consist largely of barren rock with occasional clumps of herbaceous vegetation; such islands provide suitable nesting habitat for glaucous-winged gulls and other cliff and ground nesting birds. South Marble Island, located in the central portion of Glacier Bay, is dominated by dense spruce forest in the western half of the island and grassy rounded hilltops and steeply sloped cliffs in the eastern half. A small, partially vegetated islet connected only at low tide extends from the southern end of the island.

### **Biological Environment**

*Glaucous-winged Gull Population:* Glaucous-winged gulls are colonial nesters, nesting on cliffs, grassy slopes, and bare flats often on small islands. They are "indeterminate layers," responding to the loss of eggs by laying more. However, because egg production is energetically costly for both females and males (who feed females during laying and incubation), relaying may affect egg quality, chick survival, productivity rates, and adult fitness.

*Other Cliff/Ground Nesting Bird Populations:* Glacier Bay supports a number of other cliff/ground nesting bird species that often nest near glaucous-winged gull colonies including black oystercatchers, black-legged kittiwakes, common murre, horned and tufted puffins, pelagic and double-crested cormorants, and pigeon guillemots.

*Steller Sea Lion Population:* The western stock of Steller sea lions is listed as "endangered" and the eastern stock is listed as threatened. Sea lions from the eastern U.S. stock are most likely to enter Glacier Bay, although members of the western stock have been observed within Glacier Bay. Steller sea lion numbers have been increasing in Glacier Bay since formal monitoring began in 1989. Sea lions haul out on South Marble Island and near other glaucous-winged gull nesting areas.

*Harbor Seal Population:* Although harbor seal numbers have been stable or increasing throughout much of Southeast Alaska, the Glacier Bay population has declined by as much as 75 percent from 1992-2002. Harbor seals haul out on or near islands which also support glaucous-winged gull colonies.

## Human Environment

*Wilderness:* Under the Alaska National Interest Lands Conservation Act (ANILCA), 2,658,186 acres (1,075,730 hectares) of the park's total 3,283,168 acres (1,328,651 hectares) are congressionally designated as part of the National Wilderness Preservation System. All of the potential gull egg harvest sites, including South Marble Island, lie within designated wilderness.

There is little evidence of human settlement or activity in Glacier Bay wilderness. Importantly, Glacier Bay wilderness provides unique opportunities for visitors to experience solitude and unconfined recreation in a largely pristine environment. With the exception of commercial and sport fishing effects, ecological processes proceed, for the most part, without interference from humans.

*Ethnographic Resource (Huna Tlingit Gull Egg Harvest Practice):* The Huna Tlingit have gathered gull eggs in their traditional homeland of Glacier Bay since glacial retreat exposed suitable nesting habitat for gulls. Within the larger context of their traditional seasonal round of food harvest, the collection and consumption of gull eggs holds significance for a variety of reasons. The harvesting of eggs signaled the start of a new year; provided opportunities for families to bond; served as a context in which Tlingit values, morals and ethics could be passed down to youth; tied the Huna Tlingit to their beloved homeland of Glacier Bay; and served as a unique element in the Huna tribes' identity.

## ENVIRONMENTAL CONSEQUENCES

### Direct, Indirect and Cumulative Effects

This LEIS considers direct, indirect, and cumulative effects.

- Direct effects are those that result from the action and occur at the same time and place.
- Indirect effects are those reasonably foreseeable effects that are caused by the action but that may occur later and not at the location of the direct effect.
- Cumulative effects are the incremental effects of an action when added to the effects of past, other present, or reasonably foreseeable future actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over time.

The effects of each action alternative were evaluated against the No-Action Alternative.

### Effects Threshold

Thresholds provide a measurement of how an action would influence the existing environment. Thresholds consider the geographic area of effect, the severity of the effect, and the duration of the effect. Each resource topic discussion includes a threshold effects determination. In general:

- Negligible effects may or may not cause observable changes to natural conditions; regardless, they do not reduce the integrity of a resource.

- Minor effects cause observable and short-term changes to natural conditions, but they do not reduce the integrity of a resource.
- Moderate effects cause observable and short-term changes to natural conditions, and/or they reduce the integrity of a resource.
- Major effects cause observable and long-term changes to natural conditions, and they reduce the integrity of a resource.

## **Biological Environment**

*Glaucous-winged Gull Population:* The analysis of effects of harvest on glaucous-winged gull reproductive success uses a mathematical model developed by Stephani Zador following two years of data collection on gull reproduction on South Marble Island. Data from Zador (2001) and Zador et al. (2006) were used to calculate the number of nesting pairs (expressed as the number of nests), number of eggs harvested, total numbers of eggs laid (including first and second clutches) and hatching success.

Alternative 1 (No-Action) would not authorize gull egg harvest and would have no direct, indirect, or cumulative effects on glaucous-winged gulls and would not contribute to cumulative effects on the species.

Alternative 2 would authorize one harvest visit to two locations. The model predicts that as many as 278 eggs would be harvested; 1,280 eggs are expected to hatch throughout Glacier Bay, female gulls would lay approximately 105 more eggs than in Alternative 1 (No Action), and approximately 41 fewer chicks would be hatched than in Alternative 1 (No Action). Across all nesting areas, the model predicts that this alternative would yield 4 percent fewer chicks than Alternative 1 (No Action). This alternative is not expected to have measurable effects on the reproduction of glaucous-winged gulls. Some portion of adult gulls would expend energy in protracted laying but would not be physiologically affected. Limited human disturbance associated with foot and vessel traffic would not affect gull populations.

Alternative 3 would authorize harvest at up to five colonies on two separate dates. The model predicts that this alternative would yield as many as 444 eggs to harvesters, 1,014 eggs would hatch throughout Glacier Bay, female gulls would lay approximately 175 more eggs than in Alternative 1 (No Action), and approximately 68 fewer chicks would be hatched than in Alternative 1 (No Action). Across all nesting areas, this alternative would yield 6 percent fewer chicks than Alternative 1 (No Action). Alternative 3 is expected to have minor effects on the reproduction of glaucous-winged gulls. Adult gulls would expend energy in protracted laying but would not be physiologically affected. Limited human disturbance associated with foot and vessel traffic would not affect gull populations.

*Other Cliff and Ground Nesting Bird Populations:* Ground nesting marine birds are vulnerable to human disturbance; repeated disturbance can result in reduced productivity or total abandonment of nest. Glaucous-winged gull colonies are frequently adjacent to other cliff and ground nesting birds.

Because Alternative 1 (No Action) would not authorize harvest activities, there would be no direct, indirect or cumulative effects on cliff and ground nesting birds. Because gull nesting habitat is typically separated from the nesting areas of other cliff and ground nesting birds and human presence in any one area would be limited in each of the action alternatives, Alternatives 2 and 3 would have negligible direct, indirect, and cumulative effects on cliff and ground nesting bird populations.

*Steller Sea Lion Population:* Steller sea lions are susceptible to human disturbance associated with foot and vessel traffic. Human disturbance can disrupt daily activities and redistribute animals within and among haul out sites. Severe, consistent disturbance could result in reduced reproductive success and increased stress and vigilance levels.

Because Alternative 1 (No Action) would not authorize harvest activities, there would be no direct, indirect or cumulative effects on Steller sea lions. Because vessels associated with harvest activities would not be permitted to approach hauled out marine mammals closer than 100 yards and harvesters would be required to follow delineated paths, the direct, indirect and cumulative effects of Alternatives 2 and 3 on Steller sea lions are expected to be negligible.

*Harbor Seal Population:* Studies in Glacier Bay have shown that harbor seals can be disturbed off haul outs by commercial and private vessels and their wakes.

Because Alternative 1 (No Action) would not authorize harvest activities, there would be no direct, indirect or cumulative effects on harbor seal populations in Glacier Bay. Because vessels associated with harvest activities would not be permitted to approach hauled out marine mammals closer than 100 yards and harvesters would be required to follow delineated paths, the direct, indirect and cumulative effects of Alternatives 2 and 3 on harbor seals are expected to be negligible.

## **Human Environment**

*Wilderness:* Alternative 1 (No Action) would have no direct, indirect or cumulative effects on wilderness in Glacier Bay as harvest activities would not be authorized. Because harvest would not involve any permanent structures, would not result in any lasting or visible human impacts, would not alter the natural processes in Glacier Bay, and would not affect opportunities for solitude and unconfined recreation, the effects of Alternatives 2 and 3 would be negligible.

*Ethnographic Resource (Huna Tlingit Gull Egg Harvest Practices):* Alternative 1 (No Action) would continue to deny the Huna Tlingit access to, and use of, an ethnographic resource important to the survival of the communities' cultural system. The alternative would preclude an important opportunity to participate in a meaningful relationship with their homeland, would prevent young people from learning about this important cultural tradition as well as other Tlingit stories, ethics and morals typically conveyed on egg harvesting trips, and would ultimately result in the loss of the practice as no young people would have the knowledge or interest in egg harvest practices. This alternative would have moderate to major negative effects on the ethnographic resource associated with traditional egg harvesting practices.

Alternative 2 would allow a small number of tribal members the opportunity to gather gull eggs in Glacier Bay using traditional harvest methods. This alternative would restore an essential phase in the traditional seasonal rounds, would allow a small number of tribal members to interact in a meaningful way with their traditional homeland, and would provide the opportunity for a small number of young people to spend time with elders learning about traditional egg harvest practices as well as other Tlingit cultural life ways, stories, and ethics. However, over time the positive effects of the alternative would diminish as only a few young people could participate in egg harvest and consumption. In the short term, this alternative would restore and protect an ethnographic resource with moderate positive effect on the resource. However, over a 20-year time period, the positive effects of the alternative are expected to diminish and would ultimately result in a minor positive effect when combined with the negative effects of other prohibitions on cultural activities.

Alternative 3 would authorize harvest of gull eggs at up to five locations on two separate days in Glacier Bay, allowing many tribal members to gather gull eggs using traditional harvest methods. The alternative would restore an essential phase in the traditional seasonal rounds, would allow a great number of tribal members to interact in a meaningful way with their traditional homeland, and would provide opportunities for a great number of young people to spend time with elders learning about traditional egg harvest practices as well as other Tlingit cultural life ways, stories, and ethics. Because as many as twelve young people each year could participate, the positive effects of the alternative would be sustained over time. This alternative would restore and protect an ethnographic resource in both the short and long term, having a moderate to major positive effect on the ethnographic resource.

## TABLE OF CONTENTS

### CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 Introduction.....	1-1
1.2 Purpose.....	1-1
1.3 Need.....	1-2
1.4 Planning Background.....	1-3
1.4.1 Glacier Bay National Park and Preserve Specific Mandates.....	1-3
1.4.2 Related Legal Mandates.....	1-4
1.5 Issues and Impact Topics.....	1-9
1.5.1 Issues Selected for Detailed Analysis.....	1-9
1.5.2 Impact Topics Dismissed from Further Evaluation.....	1-11
1.5.3 Possible Conflicts Between the Proposal and Land Use Plans, Policies, or Controls for the Area Concerned.....	1-13
1.6 Permits and Approval Necessary to Implement.....	1-14
1.6.1 Migratory Bird Treaty Act.....	1-14

### CHAPTER 2: ALTERNATIVES

2.1 Alternatives Considered in Detail.....	2-1
2.1.1 Alternative 1: No Action.....	2-1
2.1.2 Alternative 2: One Harvest Trip, Two Locations.....	2-1
2.1.3 Alternative 3: Two Harvest Trips, Several Locations.....	2-1
2.2 Actions Common to Alternatives 2 and 3.....	2-2
2.2.1 Potential Harvest Locations.....	2-2
2.2.2 Annual Harvest Plan.....	2-4
2.2.3 Harvest Visits.....	2-4
2.2.4 Harvest Methods.....	2-4
2.2.5 Harvest Limits.....	2-5
2.2.6 Harvest Group/Group Size.....	2-5
2.2.7 Accessing Sites.....	2-5
2.2.8 Harvest Data.....	2-10
2.2.9 Monitoring Program.....	2-10
2.3 Mitigation Measures.....	2-11
2.3.1 Biological Environment.....	2-11
2.3.2 Human Environment.....	2-11
2.4 The NPS Preferred Alternative.....	2-12

2.5	The Environmentally Preferred Alternative.....	2-12
2.6	Actions or Alternatives Considered but Eliminated from Detailed Analysis in this LEIS .....	2-12
2.6.1	Harvest of Other Cliff/Ground Nesting Species .....	2-13
2.6.2	Vegetation Manipulation to Maintain Gull Nesting Habitat.....	2-13
2.6.3	Unregulated Harvest of Gull Eggs.....	2-13
2.6.4	Other Harvest Strategies .....	2-13
2.6.5	Facilitating Harvest Outside Park Boundaries .....	2-14
2.6.5	Shifting Harvest Dates Annually .....	2-14
2.7	Summary and Comparison of Alternatives.....	2-15
<b>CHAPTER 3: AFFECTED ENVIRONMENT</b>		
3.1	Physical Environment .....	3-1
3.2	Biological Environment .....	3-1
3.2.1	Glaucous-winged Gull Population.....	3-1
3.2.2	Other Cliff and Ground Nesting Bird Populations .....	3-6
3.2.3	Steller Sea Lion Population .....	3-11
3.2.4	Harbor Seal Population.....	3-15
3.3	Human Environment.....	3-17
3.3.1	Wilderness Resources .....	3-17
3.3.2	Ethnographic Resources: Huna Tlingit Gull Egg Harvest Practice .....	3-18
<b>CHAPTER 4: ENVIRONMENTAL CONSEQUENCES</b>		
4.1	Introduction.....	4-1
4.2	Cumulative Analysis Assumptions .....	4-2
4.3	Biological Environment .....	4-3
4.3.1	Glaucous-winged Gull Population.....	4-3
4.3.2	Other Cliff and Ground Nesting Bird Populations .....	4-11
4.3.3	Steller Sea Lion Population .....	4-14
4.3.4	Harbor Seal Population.....	4-18
4.4	Human Environment.....	4-22
4.4.1	Wilderness Resources .....	4-22
4.4.2	Ethnographic Resources: Huna Tlingit Gull Egg Harvest Practice .....	4-25
4.5	Unavoidable Adverse Effects .....	4-30
4.5.1	Alternative 1.....	4-30
4.5.2	Alternative 2.....	4-30

4.5.3 Alternative 3.....	4-30
4.6 The Relationship between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity.....	4-30
4.6.1 Alternative 1.....	4-30
4.6.2 Alternative 2.....	4-31
4.6.3 Alternative 3.....	4-31
4.7 Irreversible and Irretrievable Commitments of Resources.....	4-31
4.7.1 Alternative 1.....	4-31
4.7.2 Alternative 2.....	4-31
4.7.3 Alternative 3.....	4-32

**CHAPTER 5: CONSULTATION AND COORDINATION**

5.1 History of Public Involvement.....	5-1
5.2 Tribal and Agency Consultation.....	5-1
5.3 Preparers, Contributors and Consultants.....	5-1
5.3.1 Principle Document Preparers.....	5-1
5.4 Recipients of the Final Legislative Environmental Impact Statement.....	5-3

**CHAPTER 6: RESPONSE TO PUBLIC COMMENTS ON THE DRAFT LEIS ..... 6-1**

**REFERENCES..... 7-1**

Literature Cited.....	7-1
Index.....	7-11

**APPENDICES**

Appendix 1: Glacier Bay Resource Management Act.....	A-1
Appendix 2: Historical information on seabirds breeding on South and North Marble Island, Glacier Bay.....	A-3
Appendix 3: Wilderness Minimum Requirements Decision Guide.....	A-5
Appendix 4: Summary Evaluation and Findings, ANILCA, Section 810(a).....	A-9
Appendix 5: Endangered Species Act Section 7 Consultation.....	A-15

**TABLES**

Table 2-1: Comparison of alternatives actions.....	2-16
Table 2-2: Comparison of effects of alternatives.....	2-17
Table 3-1: Number of glaucous-winged gulls, nests and eggs/nest in selected Colonial	

nesting areas in Glacier Bay National Park ..... 3-6

Table 3-2: Nest/territorial pair counts and adult counts for specific locations in Glacier Bay National Park ..... 3-7

Table 3-3: Designations within Glacier Bay National Park and Preserve ..... 3-17

Table 3-4: Egg harvest strategies used by the Huna Tlingit ..... 3-31

Table 4-1: Threshold criteria for effects analysis on glaucous-winged gulls ..... 4-4

Table 4-2: Comparison of eggs harvested, eggs re-laid, and eggs available to hatch for selected glaucous-winged gull colonies subjected to harvest strategies outlined for each alternative..... 4-7

Table 4-3: Threshold criteria for effects analysis on cliff/ground nesting bird populations .... 4-12

Table 4-4: Threshold criteria for effects analysis on endangered and threatened Steller sea lion population ..... 4-15

Table 4-5: Threshold criteria for effects analysis on the harbor seal population..... 4-19

Table 4-6: Threshold criteria for wilderness effects analysis ..... 4-22

Table 4-7: Threshold criteria for effects analysis on ethnographic resources ..... 4-26

**FIGURES**

Figure 1-1: Glacier Bay National Park with overlay of Huna Tlingit traditional homeland ..... 1-2

Figure 2-1: Potential harvest locations for glaucous-winged gull eggs and associated cliff and ground nesting bird species in Glacier Bay proper ..... 2-3

Figure 2-2: Potential vessel landing sites and their proximity to sea lion haul outs on South Marble Island..... 2-6

Figure 2-3: Glaucous-winged gull and other cliff and ground nesting bird colony locations on South Marble Island ..... 2-7

Figure 2-4: Glaucous-winged gull and other cliff and ground nesting bird colony locations in Glacier Bay National Park..... 2-8

Figure 3-1: Steller sea lion and harbor seal haul outs in Glacier Bay National Park ..... 3-13

Figure 3-2: Egg harvest sites within Huna Tlingit traditional territory ..... 3-28

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