
CHAPTER 2: ALTERNATIVES



Photograph by Mary Beth Moss.

Glaucous-winged gull nest on South Marble Island.

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CHAPTER TWO: ALTERNATIVES

2.1 ALTERNATIVES CONSIDERED IN DETAIL

This chapter describes the No-Action Alternative (Alternative 1) and two alternative approaches to managing glaucous-winged gull egg harvest in Glacier Bay National Park including actions common to both action alternatives. The action alternatives were developed after discussions with representatives of federal, state, and local agencies; the Hoonah Indian Association (HIA), interest groups, and the public.

2.1.1 Alternative 1 (No Action)

Under Alternative 1 (No Action) the harvest of glaucous-wing gull eggs in Glacier Bay National Park would not be authorized. Legislation would not be proposed and gull-egg harvest in the park would remain closed by statute. Alternative 1 (No Action) 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 Trip, 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 National Park Service (NPS) and the HIA would prepare an annual harvest plan by May 1 of each year (see Section 2.2.2). The harvest plan would list all suitable harvest locations based on annual monitoring (see Section 2.2.8) and harvest history and would identify up to two sites from which the HIA could harvest eggs.

2.1.3 Alternative 3 (Two Annual Trips, Several Locations)

Alternative 3 would propose legislation to authorize the annual harvest of glaucous-winged gull eggs at several designated locations in Glacier Bay National Park on two separate dates. The first harvest would occur on or before June 9; a second harvest at the same sites would occur within nine days of the first harvest. The logistics of vessel transportation (travel between Hoonah and Glacier Bay, travel within Glacier Bay, harvest time at sites) would limit the number of sites that could be visited in a given day. Depending on weather and other conditions as well as the sites selected, harvest would likely occur at three to four sites.

The NPS and the HIA would prepare an annual harvest plan by May 1 of each year (see Section 2.2.2). The harvest plan would list all suitable harvest locations based on annual monitoring (see Section 2.2.8) and harvest history and would identify the sites from which the HIA could harvest eggs.

2.2 ACTIONS COMMON TO ALTERNATIVES 2 AND 3

Potential harvest locations, method of harvest, and harvest group size would be similar for both alternatives.

2.2.1 Potential Harvest Locations

Glaucous-winged gulls currently nest in locations throughout the park (Figure 2-1) including:

- 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
- Tlingit Point Islet

Any of these sites could be identified by the Superintendent as suitable for harvest. It is likely that gulls would begin nesting in new, as yet unknown, sites in the future. For this reason, the list above may be amended as information on new colonies becomes available. New colonies would be added as potential harvest locations no sooner than six years following the first observation of glaucous-winged gull nesting at that location. This criteria ensures that chicks fledged at a new colony have reached maturity (average age at maturity = 5.4 years) and have had the opportunity to return to the new colony to nest themselves.

Conversely, vegetational succession on South Marble Island and other currently active glaucous-winged gull nesting areas may eventually preclude gull nesting at these sites. In these cases, 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.

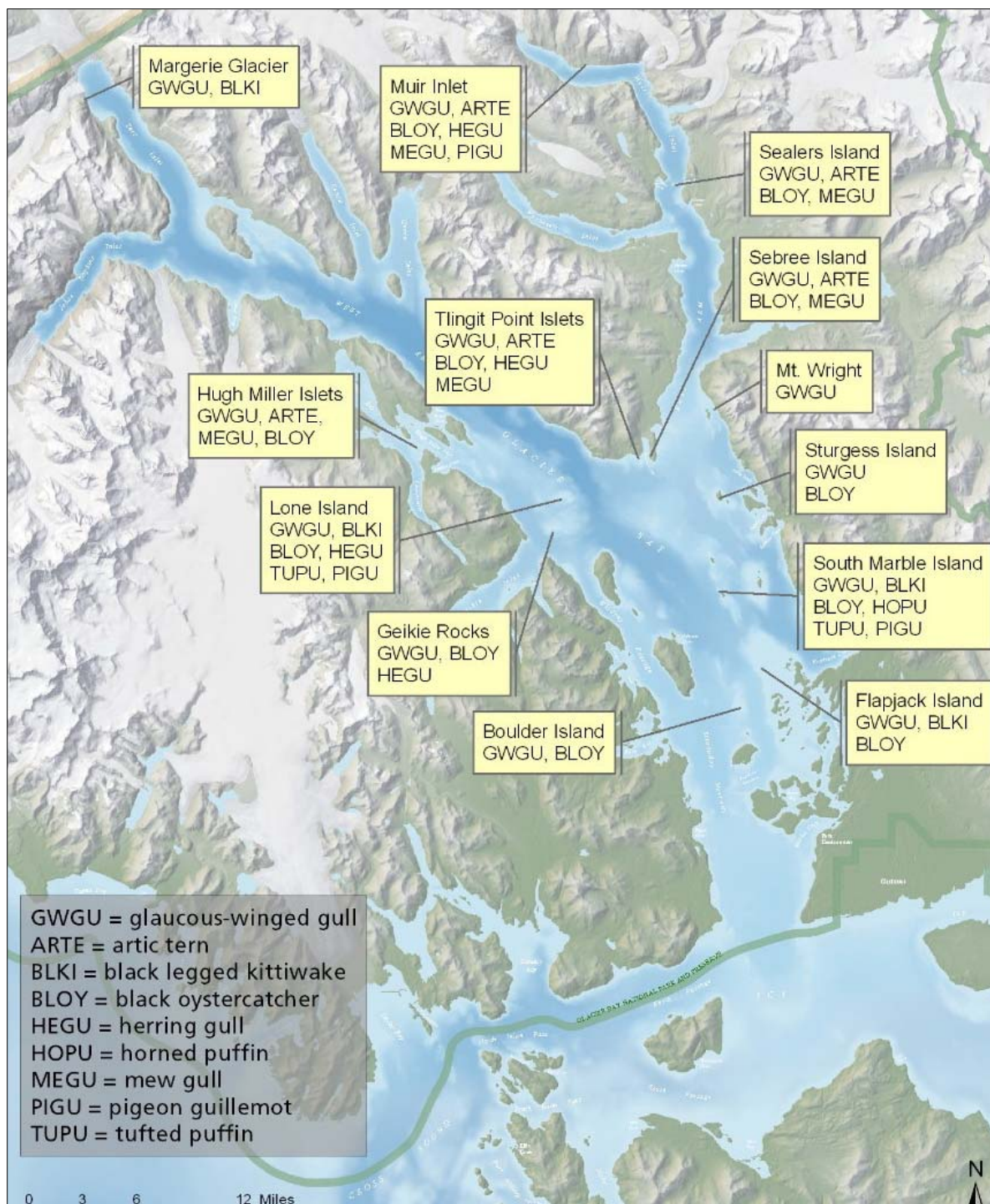


Figure 2-1. Potential harvest locations for glaucous-winged gull eggs and associated cliff and ground nesting bird species in Glacier Bay proper.

3. Other species present, potential for disturbance: Sites that do not support 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.

2.2.2 Annual Harvest Plan

Each year, the NPS and the HIA would jointly prepare a harvest plan. The plan would identify suitable harvest sites based on information identified in Section 2.2.1 above, as well as monitoring data collected per Section 2.2.8. The harvest plan 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 (see 2.2.6 Accessing Sites).

2.2.3 Harvest Methods

The HIA would assign harvesters to search sections of the colonies. 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 be visible to hauled out marine mammals. Harvesters would locate nests with eggs and check eggs for pipping or star-fractures which indicate developing chicks. No eggs would be taken from nests with pipping or star-fractured eggs. All eggs would be harvested from other nests regardless of the number of eggs in the nest. Harvesters would tally the number of nests located and harvested from (the number of nests with 0, 1, 2, 3, and 4 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.

2.2.4 Harvest Limits

The total number of eggs harvested in a particular location, on a particular day, or in a particular year would not be regulated. Harvesters would be authorized to harvest as many eggs as available within the constraints of the alternatives.

2.2.5 Harvest Group/Group Size

The harvest group would include up to twelve enrolled tribal members identified by the HIA. One official representative (from the NPS and/or the HIA) would accompany the group to collect data. 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.

2.2.6 Accessing Sites

Vessels operating in Glacier Bay National Park would adhere to vessel operating regulations per 36 CFR Part 13. Depending on harvest sites authorized, a permit may be required to waive the 100-yard approach distance to South Marble Island, Flapjack Island, Boulder Island, Geikie Rock and/or Lone Island (36 CFR 13.1178) to allow access to, and foot traffic at, harvest locations.

A 2003 amendment to the Memorandum of Understanding between the NPS and the HIA authorizes the HIA to allocate vessel entries to tribal members during the May 1– August 31 visitor season. The HIA would use this vessel entry provision to access Glacier Bay to harvest gull eggs. Vessels associated with egg-harvest activities would call in to Bartlett Cove dispatch upon arrival in the park and would comply with all park vessel regulations other than those exempted through this action.

Vessels associated with harvest would access South Marble Island from one or more of five small beaches (Figure 2-2). To spread out the harvest group, individuals would be dropped at as many of these locations as feasible. Vessels at South Marble Island and other nesting areas would remain at least 100 yards from hauled out marine mammals and other cliff and ground nesting bird colonies (Figures 2-2, 2-3, 2-4) and would stand off at a distance greater than 100 feet to preclude marine mammal and seabird disturbance after dropping off harvesters. If new colonies emerge at locations subject to vessel approach or foot traffic restrictions, additional waivers may be required.

2.2.7 Harvest Data

On-site activities would be documented in a trip report prepared by the HIA and submitted to the Superintendent following each trip. The trip report would include:

- Date of trip and number of harvesters
- Number of eggs taken from nests with 1, 2, 3 and 4 eggs as well as number of nests with no eggs located
- Number of pipped, star-fractured, or predated eggs and number of hatched chicks in nests located
- 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
- Other species present
- Visitor interactions

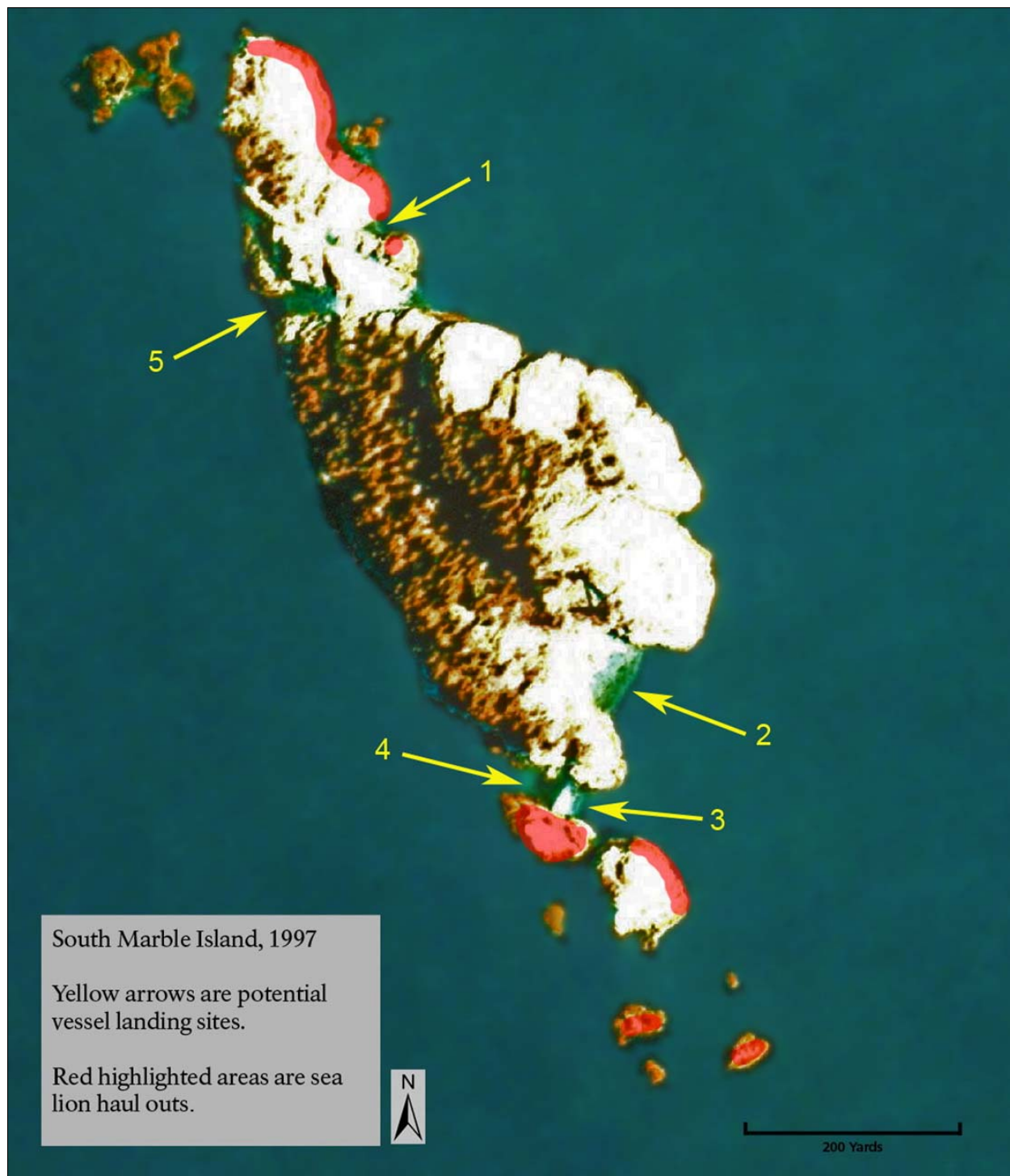


Figure 2-2. Potential vessel landing sites and their proximity to sea lion haul outs on South Marble Island.

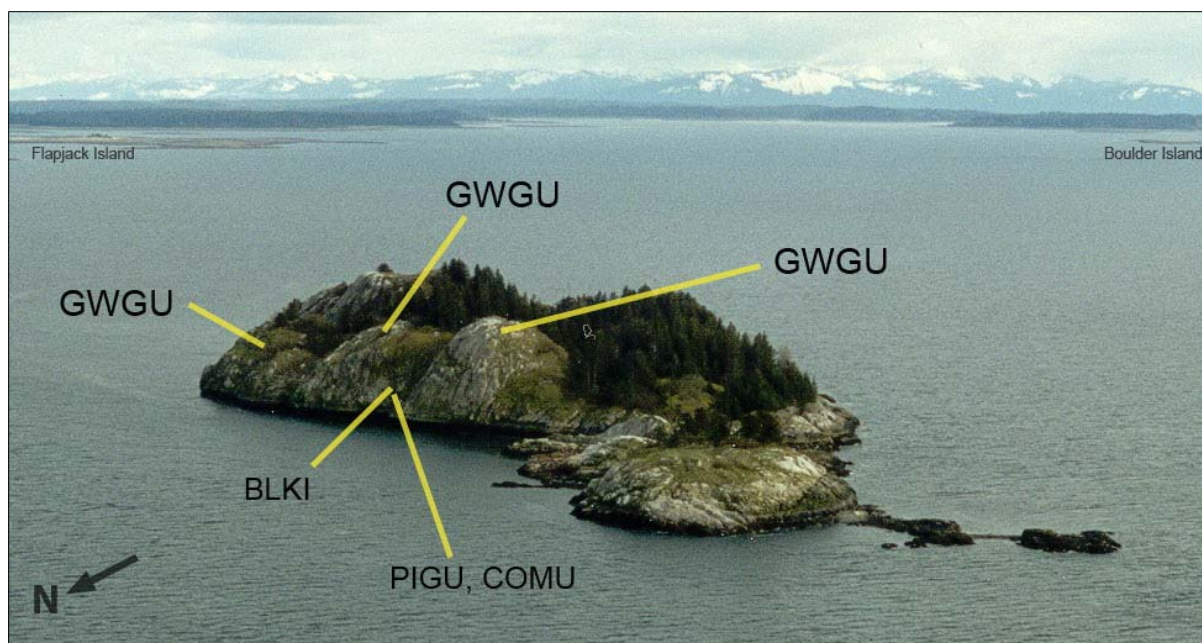
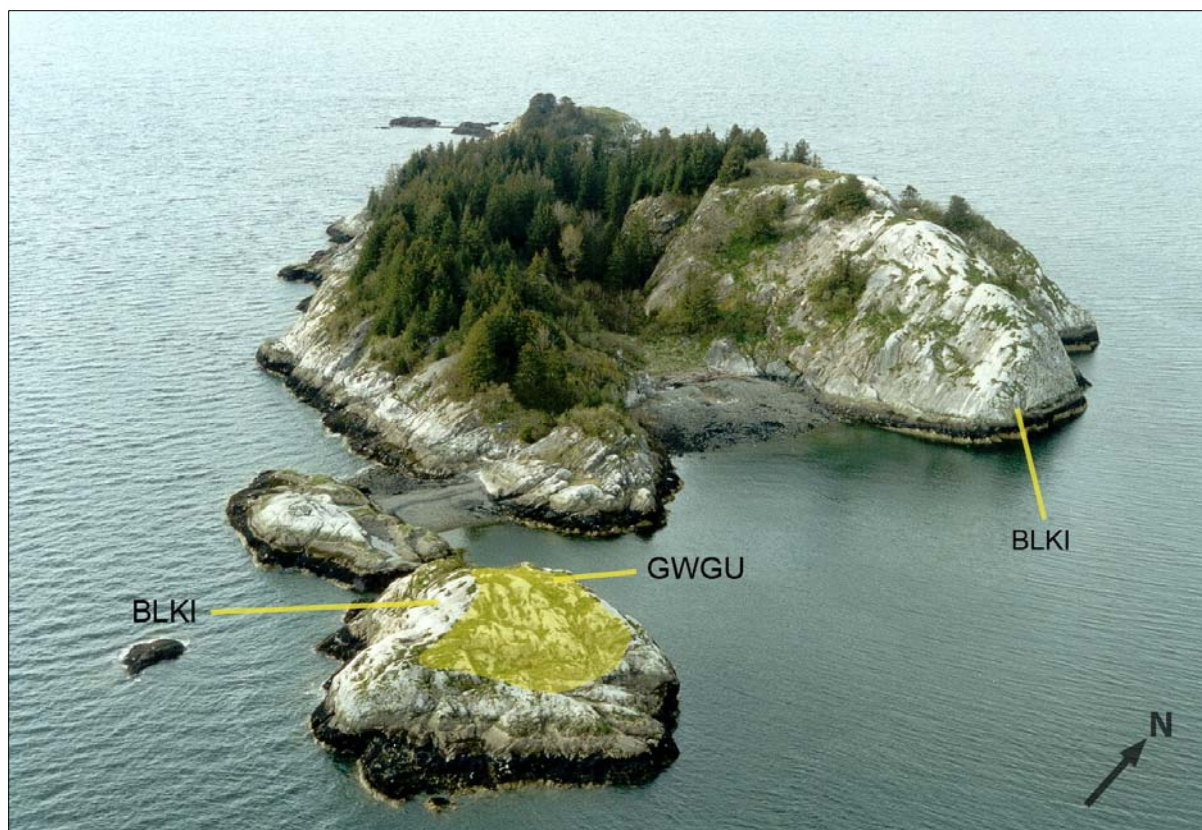


Figure 2-3. Glaucous-winged gull and other cliff and ground nesting bird colony locations on South Marble Island. GWGU = Glaucous-winged gull, BLKI = Black legged kittiwake, PIGU = Pigeon Guillemot, COMU = Common murre.

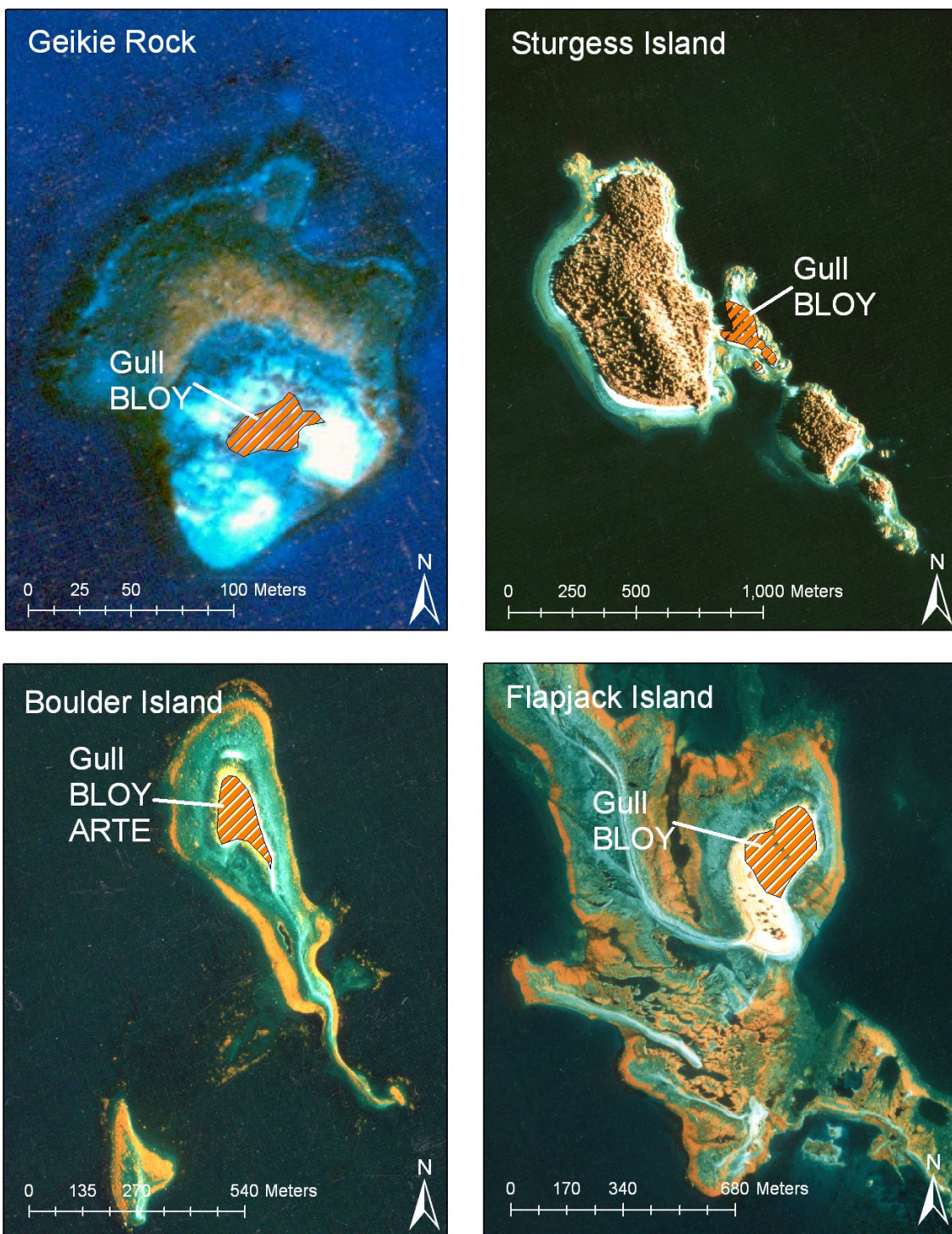


Figure 2-4. Glaucous-winged gull and other cliff and ground nesting bird colony locations in Glacier Bay National Park. Gull = glaucous-winged gull, BLOY = black oystercatcher, ARTE = arctic tern.

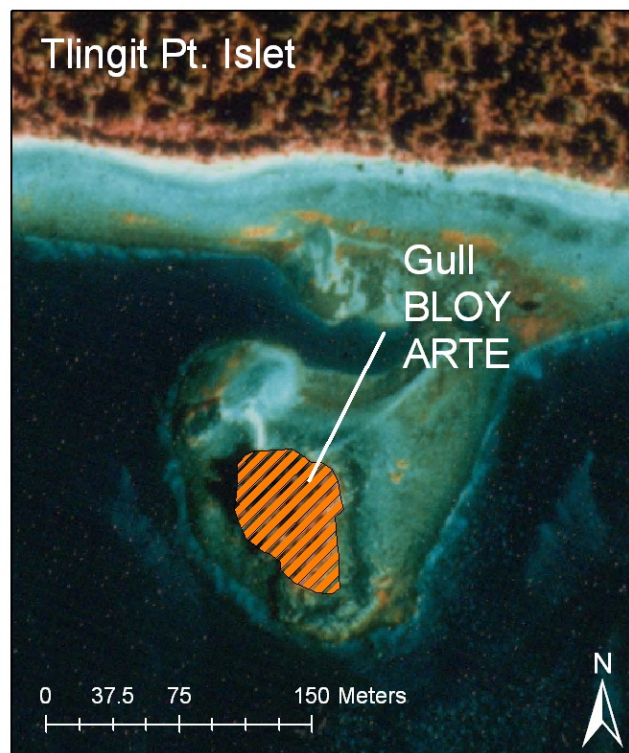
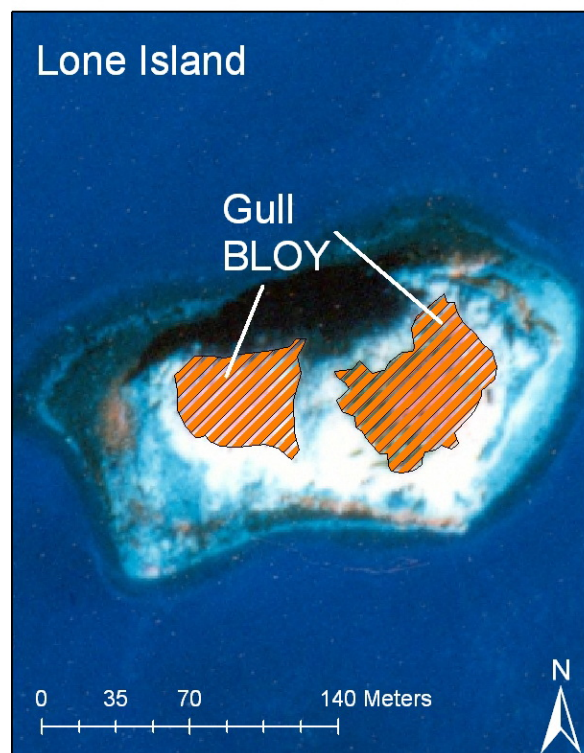


Figure 2-4, cont'd. Glaucous-winged gull and other cliff and ground nesting bird colony locations in Glacier Bay National Park. Gull = glaucous-winged gull, BLOY = black oystercatcher, ARTE = arctic tern.

2.2.8 Monitoring Program

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.

Annual Monitoring Conducted by National Park Service

Annual monitoring would assist the Superintendent in making decisions regarding harvest locations and would help ensure that harvest activities are not impacting park purposes and values. The NPS, with assistance from the HIA, would collect the following information contingent upon funding:

- Sea lions and harbor seals: The number of marine mammals hauled out at South Marble Island and other potential egg harvest sites would be monitored annually using visual counts.
- All avian species: Prior to harvest, a vessel-based survey of South Marble Island and other potential egg harvest sites would tally the number of all bird species seen.
- Glaucous-winged gulls: Biologists would conduct a survey of nests (tallying numbers of nests with 0, 1, 2, 3, 4 eggs or chicks) and note evidence of predation.
- Visitor Experience: The NPS would monitor the number of positive and negative comments to NPS staff about egg harvest activities.
- Cultural: The HIA would 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).

Three-Year Study

In addition to annual monitoring, a three-year study is recommended following the first year of harvest. The study would include an assessment of egg laying phenology, predation pressure, and early 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).

2.3 MITIGATION MEASURES

Mitigation measures are specific methods for avoiding, minimizing, rectifying, reducing, or compensating for an alternative's adverse effect(s).

2.3.1 Biological Environment

Mitigation measures for biological resources are largely incorporated into the action alternatives described in preceding sections (e.g., harvesting strategies). Both action alternatives incorporate adaptive management by allowing the Superintendent to select harvest sites and/or to preclude

harvest at a particular site; this approach is essentially mitigative in design. Ongoing monitoring of population levels will help the NPS develop strategies to ensure that biological resources are not impacted by any alternative.

2.3.2 Human Environment

A number of mitigation measures could be implemented to alleviate impacts to ethnographic resources should Alternative 1 (No Action) be implemented. These measures would include a variety of efforts aimed at documenting and transmitting the cultural practice of egg harvesting.

- The HIA and NPS could jointly produce a publication relevant to the native community that describes traditional egg harvest practices.
- The NPS could complete additional ethnographic studies focused on collecting and preserving information about the Huna Tlingit use of bird eggs, as well as other historic events and traditional practices.

The NPS could conduct programs that encourage legal traditional uses in Glacier Bay to increase opportunities for the Huna Tlingit to maintain ties and interact in a meaningful way with their traditional homeland.

2.4 THE NPS PREFERRED ALTERNATIVE

Alternative 3 is the NPS preferred alternative for several reasons. First, it most closely simulates the traditional harvest strategy of the Huna Tlingit people who harvested from a given site on more than one occasion. Second, this alternative would maximize the number of eggs harvested and thus available to the community of Hoonah. Third, this alternative is expected to have the longest lasting positive effects on the Huna Tlingit culture as it involves a greater number of young people who would thus be able to pass on information about the cultural practice of gull egg harvest. Monitoring of egg harvest activities, gull productivity, gull egg predation, and marine mammal disturbance and subsequent adaptive management would help ensure that the park's purposes and values would be protected. The Superintendent would retain the authority to preclude harvest at any site.

2.5 THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with Director's Order 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001), the NPS is required to identify the "environmentally preferred alternative" in all environmental documents, including environmental impact statements. The environmentally preferred alternative is "the alternative that causes the least damage to the biological and physical environment; it also mean the alternative which best protects, preserves, and enhances historic, cultural, and natural resources."

Based on these criteria, Alternative 3 is the environmentally preferred alternative. While Alternatives 1 (No Action) and 2 have less impact on the biological environment, neither protects nor preserves the cultural resource associated with traditional gull egg harvest practices. Alternative 3 accomplishes this while preserving the biological integrity of Glacier Bay National

Park in that most harvested gull eggs would be re-laid and gull reproductive success would not be impaired.

2.6 ACTIONS OR ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS IN THIS LEIS

During the early stages of planning, the park considered several different concepts and actions for authorizing gull egg harvest within Glacier Bay but subsequently eliminated them from further analysis. These options and the rationale for no longer considering them are described below.

2.6.1 Harvest of Other Cliff/Ground Nesting Species

In addition to glaucous-winged gull eggs, the Huna Tlingit people harvested eggs of many cliff and ground nesting birds including black-legged kittiwake, Arctic tern, Pelagic cormorant, Canada goose, mallard, black oystercatcher, tufted puffin, grouse, ptarmigan, and other duck species (Hunn et al. 2002). Because specific biological data is limited for these species in Glacier Bay National Park and because they were less prized than the eggs of the glaucous-winged gull, this analysis did not consider authorizing the harvest of eggs of other bird species.

2.6.2 Vegetation Manipulation to Maintain Gull Nesting Habitat

Successional processes occurring throughout Glacier Bay National Park result in ever changing vegetative communities. Succession has affected the suitability of past cliff and ground nesting areas such as North Marble Island which no longer supports a breeding colony of glaucous-winged gulls. Inevitably, sites which are currently suitable as cliff and ground nesting bird habitat will decrease in suitability as vegetation encroaches into nesting areas.

While the Tlingit people are known to have managed vegetation in prime berry picking habitats (Thornton 1995), Hunn et al. (2002) stated that vegetation control had never been implemented in gull nesting habitat. It is possible that the need to control vegetation had not arisen and thus vegetation manipulation was not documented in oral tradition. Because this tradition was not documented, and because vegetation control in backcountry areas is counter to NPS policy, this analysis will not consider any actions to manipulate vegetation to maintain or foster earlier successional stages more suitable for nesting birds.

2.6.3 Unlimited Harvest of Gull Eggs

Hunn et al. (2002) noted that traditionally no limits were placed on the number of people that gathered eggs at a particular site or on the number of harvest trips made to a particular site in a given year. It is likely that informal communication within the Hoonah community and community sharing of the harvest bounty “regulated” the harvest of glaucous-winged gull eggs.

Some tribal members suggested that the community should be authorized to “informally” regulate harvest of glaucous-winged gull eggs without formal oversight by the NPS or the HIA.

This alternative was not considered as it would be difficult to monitor the effects of such activity on park resources and values.

2.6.4 Other Harvest Strategies

The harvest strategy outlined in Alternatives 2 and 3 are the most commonly used strategies by the Huna Tlingit (Hunn et al. 2002). A number of other strategies were cited by one or more tribal members including floating eggs prior to harvest to determine whether they have started developing (and hence should be left in the nests to hatch) and removing only some of the eggs from a clutch.

Although floating eggs in water is a technique that would allow harvesters to determine whether a particular egg already supported a developing chick, it also requires handling each egg, potentially chilling the egg by floating it in cold water, and would greatly increase the amount of time harvesters remained in a nesting colony. For these reasons, egg floating was not considered.

Some Huna Tlingit noted that it was traditional to take only some eggs from a clutch, leaving others in the clutch to hatch. Because female gulls are stimulated to relay only when a nest is completely empty, this practice was not considered.

2.6.5 Facilitating Harvest Outside Park Boundaries

During the public scoping period following the publication of a Notice of Intent to Prepare an Environmental Impact Statement in the Federal Register (71 FR 54687), the NPS received comments from a private citizen recommending that NPS consider a fourth alternative. The commenter suggested that the NPS establish a “cooperative program with the Huna Tlingit under which the park would facilitate, through transportation and other assistance, gull egg collecting at Middle Rock and other glaucous-winged gull nesting sites outside park boundaries.” This alternative, while reasonable and feasible, falls outside of the scope of this LEIS as Congress, through Section 4 of P.L. 106-455, directed the NPS to assess whether “sea gull eggs can be collected in Glacier Bay National Park without impairing the biological sustainability of the gull population in the park”.

2.7 SUMMARY AND COMPARISON OF ALTERNATIVES

Alternative 1 (No Action) would not authorize gull egg harvest anywhere in Glacier Bay National Park. Alternative 2 would authorize gull egg harvest at two locations on a single date while Alternative 3 would authorize gull egg harvest at several locations on two dates. Harvest strategies would be identical for both action alternatives. Table 2-1 provides a comparison of the components of the three alternatives. Table 2-2 provides a comparison of environmental effects of alternatives based on the impact analysis documented in Chapter 4 of the LEIS.

Table 2-1. Comparison of Alternative Actions

	Alternative 1: (No Action)	Alternative 2	Alternative 3
Management Emphasis	Management would emphasize minimizing impacts on gull colonies.	Management would emphasize providing for a minimal level of gull egg harvest to maintain traditional cultural practices of the Huna Tlingit.	Management would emphasize closely simulating the traditional practice of harvesting eggs several times during a season at locations throughout Glacier Bay.
Egg Harvest Location	Egg harvest would not be authorized within park boundaries.	Egg harvest would be authorized at two locations in the park.	Egg harvest would be authorized at several locations in the park.
Number of Harvest Trips	No harvest trips would be authorized.	One harvest trip.	Two harvest trips.
Egg Harvest Timing	No harvest trips would be authorized.	Harvest would occur on or before June 9.	First harvest trip would occur on or before June 9. Second harvest trip would occur on or before the 9 th day following the first harvest date.
Egg Harvest Strategy	No eggs would be harvested.	All eggs harvested from nests containing 1, 2, 3 or 4 eggs. No eggs taken from nests with pipping or star-fractured eggs.	All eggs harvested from nests containing 1, 2, 3 or 4 eggs. No eggs taken from nests with pipping or star-fractured eggs.
Number of Harvesters in Group	No harvesters authorized.	12 or fewer harvesters; 1 observer each trip.	12 or fewer harvesters each trip; 1 observer each trip.
Monitoring	No monitoring activities.	Monitoring activities as described in 2.2.8.	Monitoring activities as described in 2.2.8.

Table 2-2. Comparison of environmental effects of alternatives

	Alternative 1: (No-Action)	Alternative 2	Alternative 3
Glaucous-winged Gulls	Negligible Effect No on-site disturbance related to foot traffic, no removal of eggs or reduced hatching success, no stress-related effects to adult gulls.	Minor Effect Limited on-site disturbance related to foot traffic once each year, slightly reduced hatching success (4.5% less), slightly increased corticosteroid level in adult females due to relaying efforts.	Minor – Moderate Effect Limited on-site disturbance related to foot traffic twice each year, somewhat reduced hatching success (22% less), slightly increased corticosteroid level in adult females due to relaying efforts.
Other Cliff/Ground-Nesting Birds	Negligible Effect No disturbance related to foot or vessel traffic.	Negligible Effect Slight disturbance related to foot traffic once each year.	Negligible Effect Slight disturbance related to foot traffic twice each year.
T&E Species: Sea Lions	Negligible Effect No disturbance related to foot or vessel traffic.	Negligible Effect No disturbance related to foot or vessel traffic.	Negligible Effect No disturbance related to foot or vessel traffic.
Harbor Seals	Negligible Effect No disturbance related to foot or vessel traffic.	Negligible Effect No disturbance related to foot or vessel traffic.	Negligible Effect No disturbance related to foot or vessel traffic.
Wilderness	Negligible Effect No human activity.	Negligible Effect No structures; limited, short-term evidence of human activity.	Negligible Effect No structures; limited, short-term evidence of human activity.
Ethnographic Resources	Major Effect Egg harvesting traditions would be lost for current and future generations. Few opportunities to interact with traditional homeland in a culturally appropriate way.	Minor – Moderate Beneficial Effect Egg harvesting traditions would be maintained by a small number of living Huna Tlingit and by a smaller number of future Huna Tlingit for several generations. Limited opportunity for harvesters to interact with traditional homeland in a culturally appropriate way.	Moderate – Major Beneficial Effect Egg harvesting traditions would be maintained by a moderate number of living Huna Tlingit and by a moderate number of future Huna Tlingit for many generations. Several opportunities for harvesters to interact with traditional homeland in a culturally appropriate way.

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