NOAA FISHERIES

PROPOSED ACTION:	Issuance of an Incidental Harassment Authorization to Glacier Bay National Park to Take Marine Mammals by Harassment Incidental to Seabird Monitoring and Research Conducted in Glacier Bay National Park, Alaska.
TYPE OF STATEMENT:	Environmental Assessment
LEAD AGENCY:	U.S. Department of Commerce National Oceanic and Atmospheric Administration National Marine Fisheries Service
RESPONSIBLE OFFICIAL:	Donna S. Wieting, Director Office of Protected Resources, National Marine Fisheries Service
FOR FURTHER INFORMATION:	Jeannine Cody National Marine Fisheries Service Office of Protected Resources Permits and Conservation Division 1315 East West Highway Silver Spring, MD 20910 301-427-8401
LOCATION:	Glacier Bay National Park, Alaska
ABSTRACT:	This Environmental Assessment analyzes the environmental impacts of the National Marine Fisheries Service, Office of Protected Resources' proposal to issue an Incidental Harassment Authorization to Glacier Bay National Park, for the taking, by Level B harassment, of small numbers of marine mammals, incidental to conducting seabird monitoring and research in Glacier Bay National Park and Preserve, Alaska.
DATE:	August 2014

LIST OF ABBREVIATIONS OR ACRONYMS

Authorization	Incidental Harassment Authorization
CFR	Code of Federal Regulations
Commission	Marine Mammal Commission
dB	decibel
DPS	distinct population segment
EA	Environmental Assessment
ESA	Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*)
FLEIS	Final Legislative Environmental Impact Statement
FONSI	Finding of No Significant Impact
FR	*Federal Register*
ft	feet
GBNPP	Glacier Bay National Park and Preserve
Glacier Bay NP	Glacier Bay National Park
IHA	Incidental Harassment Authorization
ITA	Incidental Take Authorization
ITS	Incidental Take Statement
km	kilometer
m	meter
mi	mile
MMPA	Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1631 *et seq.*)
MOE	Margin of error
µPa	micropascal
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*)
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NPS	National Park Service
OMB	Office of Management and Budget
ROD	Record of Decision
SD	Standard deviation
SE	Standard error

CONTENTS

List of Abbreviations or Acronyms ii

Chapter 1 – Introduction and Purpose and Need 3
- 1.1 Description of Proposed Action 3
  - 1.1.1 Background on Glacier Bay NP's MMPA Application 3
  - 1.1.2 Marine Mammals in the Action Area 4
- 1.2 Purpose and Need 4
- 1.3 The Environmental Review Process 5
  - 1.3.1 Laws, Regulations, or Other NEPA Analyses Influencing the EA's Scope 5
  - 1.3.2 Scope of Environmental Analysis 7
  - 1.3.3 NEPA Public Scoping Summary 8
  - 1.3.4 Relevant Comments on our *Federal Register* Notice 9
- 1.4 Other Permits, Licenses, or Consultation Requirements 10
  - 1.4.1 Marine Mammal Protection Act 10
  - 1.4.2 Endangered Species Act 10

Chapter 2 – Alternatives 11
- 2.1 Introduction 11
- 2.2 Description of Glacier Bay NP's Proposed Activities 11
  - 2.2.1 Specified Time and Specified Areas 11
  - 2.2.2 Ground-Based Surveys 12
  - 2.2.3 Vessel-Based Surveys 12
- 2.3 Description of Alternatives 12
  - 2.3.1 Alternative 1 – Issuance of an Authorization with Mitigation Measures 12
  - 2.3.2 Alternative 2 – No Action 16

Chapter 3 – Affected Environment 17
- 3.1 Physical Environment 17
  - 3.1.1 Marine Mammal Habitat 17
- 3.2 Biological Environment 17
  - 3.2.1 Marine Mammals 17

Chapter 4 – Environmental Consequences 19
- 4.1 Effects of Alternative 1 – Issuance of an Authorization with Mitigation Measures 19
  - 4.1.1 Impacts to Marine Mammal Habitat 19
  - 4.1.2 Impacts to Marine Mammals 19
- 4.2 Effects of Alternative 2– No Action Alternative 20
  - 4.2.1 Impacts to Marine Mammal Habitat 20
  - 4.2.2 Impacts to Marine Mammals 21
- 4.3 Compliance with Necessary Laws – Necessary Federal Permits 21
- 4.4 Unavoidable Adverse Impacts 22
- 4.5 Cumulative Effects 22
  - 4.5.1 Climate Change 22
  - 4.5.2 Past, Present, and Reasonably Foreseeable Future Activities 23

Chapter 5 – List of Preparers and Agencies Consulted 25

References 26

CHAPTER 1 – INTRODUCTION AND PURPOSE AND NEED

1.1 DESCRIPTION OF PROPOSED ACTION

The Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 *et seq.*) prohibits the incidental taking of marine mammals. The incidental take of a marine mammal falls under four categories: mortality, serious injury, injury, or harassment. The MMPA defines harassment as any act of pursuit, torment, or annoyance which: (1) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (2) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

There are exceptions to the MMPA's prohibition on take. The National Marine Fisheries Service, Office of Protected Resources, Permits and Conservation Division (NMFS, hereinafter, we) may authorize the incidental taking of small numbers of marine mammals by harassment upon the request of a U.S. citizen provided we follow certain statutory and regulatory procedures and make determinations. We discuss this exception in more detail in section 1.2

Glacier Bay National Park (Glacier Bay NP) has requested to take marine mammals, by harassment incidental to conducting seabird monitoring and research, May through September, annually. In response to their request, we propose to issue an Incidental Harassment Authorization (Authorization) to Glacier Bay NP under Section 101(a)(5)(D) of the MMPA, which would allow them to take marine mammals, incidental to the conduct of their activities. We do not have the authority to permit, authorize, or prohibit the Glacier Bay NP's activities under Section 101(a)(5)(D) of the MMPA, as that authority lies with the U.S. National Park Service.

Our proposed issuance of an Authorization to Glacier Bay NP is a major federal action under the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 et seq.), the Council on Environmental Quality (CEQ) regulations in 40 CFR §§ 1500-1508, and NOAA Administrative Order (NAO) 216-6. Thus, we are required to analyze the effects of our proposed action on the human environment.

This EA titled, *Issuance of an Incidental Harassment Authorization to Glacier Bay National Park Service to Take Marine Mammals by Harassment Incidental to Seabird Monitoring and Research Conducted in Glacier Bay National Park, Alaska,* addresses the potential environmental impacts of two choices available to us under section 101(a)(5)(D) of the MMPA, namely:

- Issue the Authorization to Glacier Bay NP for Level B harassment take of marine mammals under the MMPA during their seabird monitoring and research activities, taking into account the prescribed means of take, mitigation measures, and monitoring requirements required in the Authorization; or
- Not issue an Authorization to Glacier Bay NP in which case, for the purposes of NEPA analysis only, we assume that the activities would proceed and cause incidental take without the mitigation and monitoring measures prescribed in the Authorization.

1.1.1 BACKGROUND ON GLACIER BAY NP'S MMPA APPLICATION

Glacier Bay NP's proposes to conduct monitoring and research studies on glaucus-winged gulls (*Larus glaucescens*) within Glacier Bay National Park and Preserve (Park and Preserve) in

Alaska, May through September, annually. Glacier Bay NP proposes to identify the onset of gull nesting; conduct mid-season surveys of adult gulls, and locate and document gull nest sites within the following study areas: Boulder, Lone, and Flapjack Islands, and Geikie Rock. Each of these study sites contains harbor seal haulout sites and Glacier Bay NP proposes to visit each site up to five times during the research season (May through September, annually).

Glacier Bay NP must conduct the gull monitoring studies to meet the requirements of a 2010 Record of Decision for a Legislative Environmental Impact Statement (NPS, 2010a) which states that Glacier Bay NP must initiate a monitoring program for the gulls to inform future native egg harvests by the Hoonah Tlingit in Glacier Bay, AK. Glacier Bay NP actively monitors harbor seals at breeding and molting sites to assess population trends over time (e.g., Mathews & Pendleton, 2006; Womble et al., 2010). Glacier Bay NP also coordinates pinniped monitoring programs with the National Marine Mammal Laboratory and the Alaska Department of Fish & Game and plans to continue these collaborations and sharing of monitoring data and observations in the future.

Acoustic and visual stimuli generated by: (1) motorboat and kayak approaches and departures; and (2) the appearance of researchers during seabird monitoring and research activities, have the potential to cause marine mammals to flush into the surrounding water or cause a short-term behavioral disturbance for marine mammals in the proposed areas. We describe Glacier Bay NP's activities in more detail in section 2.2

1.1.2 Marine Mammals in the Action Area

There are two species with confirmed occurrence in the action area: harbor seals (*Phoca vitulina*) and Steller sea lions (*Eumetopia jubatus*). Of the two species, only harbor seals would most likely to be harassed incidental to conducting the seabird monitoring and research activities.

1.2 Purpose and Need

The MMPA prohibits "takes" of marine mammals with only a few specific exceptions. The applicable exception in this case is an exemption for incidental take of marine mammals in section 101(a)(5)(D) of the MMPA.

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce (Secretary) to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if we make certain findings and provide a notice of a proposed authorization to the public for review.

We have issued regulations to implement the Incidental Take Authorization provisions of the MMPA (50 CFR § 216) and have produced Office of Management and Budget (OMB)-approved application instructions (OMB Number 0648-0151) that prescribe the procedures necessary to apply for authorizations. All applicants must comply with the regulations at 50 CFR § 216.104 and submit applications requesting incidental take according to the provisions of the MMPA.

Purpose: The primary purpose of our proposed action is to authorize the take of marine mammals, incidental to Glacier Bay NP's proposed activities. The Authorization would exempt Glacier Bay NP from the take prohibitions contained in the MMPA.

To authorize the take of small numbers of marine mammals, we must evaluate the best available information to determine whether the take would have a negligible impact on marine mammals or stocks and have an unmitigable impact on the availability of affected marine mammal species for certain subsistence uses.

In addition, we must prescribe, where applicable, the permissible methods of taking and other means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat (*i.e.*, mitigation), paying particular attention to rookeries, mating grounds, and other areas of similar significance. If appropriate, we must also prescribe the means of effecting the least practicable impact on the availability of the species or stocks of marine mammals for subsistence uses. Authorizations must also include requirements or conditions pertaining to the monitoring and reporting of such taking—in large part to better understand the effects of such taking on the species

Need: On April 7, 2014, Glacier Bay NP submitted an adequate and complete application demonstrating both the need and potential eligibility for issuance of an Authorization in connection with the activities described in section 1.1.1. We now have a corresponding duty to determine whether and how we can authorize take by Level B harassment incidental to the activities described in Glacier Bay NP's application. Our responsibilities under section 101(a)(5)(D) of the MMPA and its implementing regulations establish and frame the need for this proposed action.

Any alternatives considered under NEPA must meet the agency's statutory and regulatory requirements. Our described purpose and need guide us in developing reasonable alternatives for consideration, including alternative means of mitigating potential adverse effects.

1.3 The Environmental Review Process

NEPA compliance is necessary for all "major" federal actions with the potential to significantly affect the quality of the human environment. Major federal actions include activities fully or partially funded, regulated, conducted, authorized, or approved by a federal agency. Because our issuance of an Authorization would allow for the taking of marine mammals consistent with provisions under the MMPA, we consider this as a major federal action subject to NEPA.

Under the requirements of NAO 216-6 section 6.03(f)(2)(b) for incidental harassment authorizations, we prepared this EA to determine whether the direct, indirect and cumulative impacts related to the issuance of an Authorization for incidental take of marine mammals during the conduct of the Glacier Bay NP's activities in the GBNPP could be significant. If we deem the potential impacts to be not significant, this analysis, in combination with other analyses incorporated by reference—may support the issuance of a Finding of No Significant Impact (FONSI) for the proposed Authorization.

1.3.1 Laws, Regulations, or Other NEPA Analyses Influencing the EA's Scope

We have based the scope of the proposed action and nature of the two alternatives considered in this EA on the relevant requirements in section 101(a)(5)(D) of the MMPA. Thus, our authority under the MMPA bounds the scope of our alternatives. We conclude that this analysis–combined with the analyses in the following documents–fully describes the potential impacts associated with the proposed monitoring and research program, including any required mitigation and monitoring measures.

After conducting an independent review of the information and analyses for sufficiency and adequacy, we incorporate by reference the relevant analyses on Glacier Bay NP's proposed action as well as a discussion of the affected environment and environmental consequences within the following documents per 40 CFR § 1502.21 and NAO 216-6 § 5.09(d):

- Our notice of the proposed Authorization in the *Federal Register* (79 FR 32226, June 4, 2014) (NMFS, 2014b);
- Glacier Bay NP's *Request for Marine Mammal Protection Act Incidental Harassment Authorization Glaucous-winged Gull Monitoring & Research in Glacier Bay National Park, Alaska* (NPS, 2014); and
- The Final Legislative Environmental Impact Statement (FLEIS): Harvest of Glaucous-Winged Gull Eggs by the Huna Tlingit in Glacier Bay National Park, Alaska (NPS, 2010a)
- The Record of Decision for a Legislative Environmental Impact Statement on the Harvest of Glaucous-Winged Gull Eggs by the Huna Tlingit in Glacier Bay National Park, Alaska (NPS, 2010b).

MMPA Application and Notice of the Proposed IHA

The CEQ regulations (40 CFR §1502.25) encourage federal agencies to integrate NEPA's environmental review process with other environmental review laws. We rely substantially on the public process for developing proposed Authorizations under the MMPA and evaluating relevant environmental information and provide a meaningful opportunity for public participation as we develop corresponding EAs. We fully consider public comments received in response to our publication of the notice of proposed Authorization during the corresponding NEPA review process.

On June 4, 2014, we published a notice of a proposed Authorization in the *Federal Register* (79 FR 32226) which included the following:

- A detailed description of the proposed action and an assessment of the potential impacts on marine mammals;
- Plans for Glacier Bay NP's mitigation and monitoring measures to avoid and minimize potential adverse impacts to marine mammals and their habitat and proposed reporting requirements; and
- Our preliminary findings under the MMPA.

We considered Glacier Bay NP's proposed seabird and monitoring research activities and associated mitigation and monitoring measures and preliminarily determined that the proposed activities would result, at worst, in a modification in behavior and/or low-level physiological effects (Level B harassment) of certain species of marine mammals. In addition, we determined that the activity would not have an unmitigable adverse impact on the availability of marine mammals for subsistence uses because Glacier Bay NP prohibits subsistence harvest of harbor seals within the Park and Preserve (Catton, 1995). The notice afforded the public a 30-day comment period on our proposed MMPA Authorization.

1.3.2 Scope of Environmental Analysis

Given the limited scope of the decision for which we are responsible, this EA intends to provide more focused information on the primary issues and impacts of environmental concern related specifically to our proposed issuance of the Authorization.

This EA does not further evaluate effects to the elements of the human environment listed in Table 1 because previous environmental reviews for the annual harvest of glaucous-winged gull eggs and associated monitoring by Glacier Bay NP staff, incorporated by reference have evaluated the effects of these activities on other elements of the human environment. The FLEIS: Harvest of Glaucous-Winged Gull Eggs by the Huna Tlingit in Glacier Bay National Park, Alaska (NPS, 2010a) described direct, indirect, and cumulative impacts to the glaucous-winged gull population, Steller sea lion, harbor seal, other cliff/ground nesting bird populations, and wilderness. The Record of Decision (ROD) for the FLEIS (NPS, 2010b) concluded that the impact of the action would:

- would be minor and would not impair the park's resources or values;
- would not impair the biological sustainability of glaucous-winged gull population in the park;
- would have no major adverse impacts to Glacier Bay's key natural or cultural resources; and
- would be beneficial in maintaining the egg harvesting traditions in a culturally appropriate way.

Table 1 - Components of the human environment not affected by our issuance of an Authorization.

Biological	Physical	Socioeconomic / Cultural
Amphibians	Air Quality	Commercial Fishing
Humans	Essential Fish Habitat	Military Activities
Non-Indigenous Species	Geography	Oil and Gas Activities
Seabirds	Land Use	Recreational Fishing
	Oceanography	Shipping and Boating
	State Marine Protected Areas	National Historic Preservation Sites
	Federal Marine Protected Areas	National Trails and Nationwide Inventory of Rivers
	National Estuarine Research Reserves	Low Income Populations
	National Marine Sanctuaries	Minority Populations
	Park Land	Indigenous Cultural Resources
	Prime Farmlands	Public Health and Safety
	Wetlands	Historic and Cultural Resources
	Wild and Scenic Rivers	
	Ecologically Critical Areas	

In addition, previous environmental reviews for similar seabird monitoring and research activities in California, incorporated by reference, have shown that our limited action of issuing an Authorization for seabird monitoring and research would not affect components of the human environment listed in Table 1. They include:

- the Environmental Assessment on the Issuance of an Incidental Harassment Authorization to PRBO Conservation Science to Take Marine Mammals by Harassment Incidental to Conducting Seabird Research in Central California (NMFS, 2007);
- the Supplemental Environmental Assessment for the Issuance of an Incidental Harassment Authorization to Take Marine Mammals by Harassment Incidental to Conducting Seabird and Pinniped Research in Central California and Environmental Assessment for the Continuation of Scientific Research on Pinnipeds in California Under Scientific Research Permit 373-1868-00 (NMFS, 2008); and
- the Environmental Assessment on the Issuance of an Incidental Harassment Authorization to Point Blue Conservation Science and Partners to Take Marine Mammals by Harassment Incidental to Seabird and Pinniped Research Conducted in Central California (NMFS, 2014a).

In each case, we concluded that that issuance of an incidental take authorization for seabird research would not significantly affect the quality of the human environment and issued findings of no significant impact (FONSI).

1.3.3 NEPA Public Scoping Summary

NAO 216-6 established agency procedures for complying with NEPA and the implementing NEPA regulations issued by the CEQ. Consistent with the intent of NEPA and the clear direction in NAO 216-6 to involve the public in NEPA decision-making, we requested comments on the potential environmental impacts described in Glacier Bay NP's MMPA application and in the *Federal Register* notice of the proposed Authorization (79 FR 32226, June 4, 2014). The CEQ regulations further encourage agencies to integrate the NEPA review process with review under other environmental statutes. Consistent with agency practice we integrated our NEPA review and preparation of this EA with the public process required by the MMPA for the proposed issuance of an Authorization.

The *Federal Register* notice of the proposed Authorization, combined with our preliminary determinations, supporting analyses, and corresponding public comment period are instrumental in providing the public with information on relevant environmental issues and offering the public a meaningful opportunity to provide comments to us for consideration in both the MMPA and NEPA decision-making processes.

The *Federal Register* notice of the proposed Authorization summarized our purpose and need; included a statement that we would prepare an EA for the proposed action; and invited interested parties to submit written comments concerning the application and our preliminary analyses and findings including those relevant to consideration in the EA. The notice of the proposed Authorization was available for public review and comment from June 4, 2014 through July 7, 2014.

We posted Glacier Bay NP's MMPA application on our website concurrently with the release of the *Federal Register* notice of the proposed Authorization. We base this EA on the information included in our *Federal Register* notice, the documents it references, and the public comments provided in response. At the conclusion of this process, we will post the final EA, and, if appropriate, the FONSI, on the same website.

1.3.4 RELEVANT COMMENTS ON OUR *FEDERAL REGISTER* NOTICE

During the 30-day public comment period on the notice of the proposed Authorization, we received one comment from a private citizen and one comment from the Marine Mammal Commission (Commission).

The private citizen's comments related to the potential environmental impacts associated with our action of issuing an Authorization for Glacier Bay NP's action include:

- Denial of the Authorization based on the commenter's view that NMFS should not allow Authorizations for harassment; and
- Negative effects of the proposed action on marine mammals.

We considered the commenter's general opposition to Glacier Bay NP's activities and to our issuance of an Authorization. The Authorization, described in detail in the *Federal Register* notice of the proposed Authorization (79 FR 32226, June 4, 2014) includes mitigation and monitoring measures to effect the least practicable impact to marine mammals and their habitat. It is our responsibility to determine whether the activities would have a negligible impact on the affected species or stocks; weather the activities would have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses, where relevant; and to prescribe the means of effecting the least practicable adverse impact on the affected species or stocks and their habitat, as well as monitoring and reporting requirements.

Regarding the commenter's opposition to authorizing harassment, the MMPA allows U.S. citizens (which includes Glacier Bay NP) to request take of marine mammals incidental to specified activities, and requires us to authorize such taking if we can make the necessary findings required by law and if we set forth the appropriate prescriptions. As explained throughout the *Federal Register* notice (79 FR 32226, June 4, 2014), we made the necessary preliminary findings under 16 U.S.C. 1371(a)(5)(D) to support issuance of the Authorization.

The Marine Mammal Commission (Commission) provides comments on all proposed incidental take authorizations as part of their established role under the MMPA (§ 202 (a)(2)). The Commission concurred with our preliminary findings and recommended that we issue the Authorization to Glacier Bay NP subject to inclusion of the proposed mitigation and monitoring as described in the *Federal Register* notice of the proposed Authorization.

We have considered the comments regarding monitoring and mitigation measures within the context of the MMPA requirement to effect the least practicable impact to marine mammals and their habitat. Consequently, we have determined, based on the best available data that the mitigation measures proposed by Glacier Bay NP are the most feasible and effective monitoring and mitigation measures to achieve the MMPA requirement of effecting the least practicable impact on each marine mammal species or stock.

We will provide our responses to the public comments in the *Federal Register* notice announcing our decision on whether to issue the Authorization. We fully considered the comments, particularly those related to mitigation and monitoring measures in preparing the proposed final Authorization and this EA. None of the comments received in response to this application have resulted in substantive changes to this EA.

1.4 Other Permits, Licenses, or Consultation Requirements

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action.

1.4.1 Marine Mammal Protection Act

We discuss the MMPA and its provisions that pertain to the proposed action described within section 1.2.

1.4.2 Endangered Species Act

Section 7 of the Endangered Species Act (ESA; 16 U.S.C. 1531 *et seq.*) and implementing regulations at 50 CFR § 402 require consultation with the appropriate federal agency (either NMFS or the U.S. Fish and Wildlife Service) for federal actions that "may affect" a listed species or critical habitat.

There is one marine mammal species (western stock of the Steller sea lion) under our jurisdiction listed as endangered under the ESA with confirmed or possible occurrence in the proposed project area. In consideration of the conservation status of the western stock of the Steller sea lion, Glacier Bay NP researchers would not conduct ground-based or vessel-based surveys if they observe Steller sea lions before accessing Boulder, Lone, and Flapjack Islands, and Geikie Rock. Thus by incorporation of this mitigation measure, we do not expect that Glacier Bay NP's proposed activities would affect this stock listed under the ESA. Therefore, we determined that our issuance of an Authorization is not subject to the section 7 consultation requirements.

CHAPTER 2 – ALTERNATIVES

2.1 INTRODUCTION

The NEPA and the implementing CEQ regulations (40 CFR §§ 1500-1508) require consideration of alternatives to proposed major federal actions and NAO 216-6 provides agency policy and guidance on the consideration of alternatives to our proposed action. An EA must consider all reasonable alternatives, including the No Action Alternative. This provides a baseline analysis against which we can compare the other alternatives.

To warrant detailed evaluation as a reasonable alternative, an alternative must meet our purpose and need. In this case, and as we previously explained, an alternative meets the purpose and need if it satisfies the requirements under section 101(a)(5)(D) the MMPA. We evaluated each potential alternative against these criteria; identified one action alternative along with the No Action Alternative; and carried these forward for evaluation in this EA.

Alternative 1 includes a suite of mitigation measures intended to minimize any potential adverse effects to marine mammals. This chapter describes both alternatives and compares them in terms of their environmental impacts and their achievement of objectives.

2.2 DESCRIPTION OF GLACIER BAY NP'S PROPOSED ACTIVITIES

We presented a general overview of Glacier Bay NP's proposed activities in our *Federal Register* notice of the proposed Authorization (79 FR 32226, June 4, 2014). Also, Glacier Bay NP's MMPA application (NPS, 2014) and their FLEIS (NPS, 2010a), describe the survey protocols in detail. We incorporate those descriptions by reference in this EA and briefly summarize them here.

2.2.1 SPECIFIED TIME AND SPECIFIED AREAS

Glacier Bay NP's research activities would occur during the spring/summer annually. If issued, the Authorization would be effective from September 2, 2014 to September 30, 2014.

The proposed study sites would occur in the vicinity of the following locations: Boulder (58°33′18.08″ N; 136°1′13.36″ W), Lone (58°43′17.67″ N; 136°17′41.32″ W), and Flapjack (58°35′10.19″ N; 135°58′50.78″ W) Islands and Geikie Rock (58°41′39.75″ N; 136°18′39.06″ W) in Glacier Bay, Alaska. Glacier Bay NP would also conduct studies at Tlingit Point Islet located at 58°45′16.86″ N; 136°10′41.74″ W; however, there are no reported pinniped haulout sites at that location.

Figure 1 - Proposed locations of the gull monitoring and research sites in Glacier Bay, AK.

2.2.2 Ground-Based Surveys

Glacier Bay NP proposes to conduct ground-based surveys at a maximum frequency of three visits per site. These surveys involve two trained observers visiting the largest gull colony on each island to: (1) Obtain information on the numbers of nests, their location, and contents (i.e., eggs or chicks); (2) determine the onset of laying, distribution, abundance, and predation of gull nests and eggs; and (3) record the proximity of other species relative to colony locations.

The observers would access each island using a kayak, a 32.8 to 39.4-foot (ft) (10 to 12 meter (m)) motorboat, or a 12 ft (4 m) inflatable rowing dinghy. The landing craft's transit speed would not exceed 4 knots (4.6 miles per hour (mph). Ground surveys generally last from 30 minutes to up to two hours depending on the size of the island and the number of nesting gulls. Glacier Bay NP would discontinue ground surveys after they detect the first hatchling to minimize disturbance to the gull colonies.

2.2.3 Vessel-Based Surveys

Glacier Bay NP proposes to conduct vessel-based surveys at a maximum frequency of two visits per site. These surveys involve two trained observers observing and counting the number of adult and fledgling gulls from the deck of a motorized vessel which would transit around each island at a distance of approximately 328 ft (100 m) to avoid flushing the birds from the colonies. Vessel-based surveys generally last from 30 minutes to up to two hours depending on the size of the island and the number of nesting gulls.

2.3 Description of Alternatives

2.3.1 Alternative 1 – Issuance of an Authorization with Mitigation Measures

The Proposed Action constitutes Alternative 1 and is the Preferred Alternative. Under this alternative, we would issue an Authorization (valid for one year) to Glacier Bay NP allowing the incidental take, by Level B harassment, of harbor seals subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the proposed Authorization.

Mitigation Measures

As described in Section 1.2.1, we must prescribe the means of effecting the least practicable adverse impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider Glacier Bay NP's proposed mitigation measures, as well as other potential measures, and assess how such measures could benefit the affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measure to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any additional mitigation measure proposed by us beyond what the applicant proposes should be able to or have a reasonable likelihood of accomplishing or contributing to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or death wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);

- A reduction in the number of times the activity takes individual marine mammals (total number or number at biologically important time or location);
- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);
- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and
- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals thus allowing for more effective implementation of the mitigation.

To reduce the potential for disturbance from acoustic and visual stimuli associated with the activities, Glacier Bay NP and/or its designees have proposed to implement the following monitoring and mitigation measures for marine mammals:

- Perform pre-survey monitoring before deciding to access a study site;
- Avoid accessing a site based on a pre-determined threshold of animals present; sites used by pinnipeds for pupping; or sites used by Steller sea lions;
- Perform controlled and slow ingress to the study site to prevent a stampede and select a pathway of approach to minimize the number of marine mammals harassed;
- Monitor for offshore predators;
- Avoid approaching the study site if killer whales (*Orcinas orca*) are present;
- If Glacier Bay NP and/or its designees see predators in the area, they must not disturb the animals until the area is free of predators; and
- Maintain a quiet research atmosphere in the visual presence of pinnipeds.

Pre-Survey Monitoring: Prior to deciding to land onshore to conduct the study, the researchers would use high-powered image stabilizing binoculars from the watercraft to document the number, species, and location of hauled out marine mammals at each island. The vessels would maintain a distance of 328 to 1,640 ft (100 to 500 m) from the shoreline to allow the researchers to conduct pre-survey monitoring.

Site Avoidance: Researchers would decide whether or not to approach the island based on the species present, number of individuals, and the presence of pups. If there are high numbers (greater than 25) of hauled out harbor seals and/or young pups or there are any Steller sea lions present, the researchers would not approach the island and would not conduct gull monitoring research.

Controlled Landings: The researchers would determine whether to approach the island based on the number and type of animals present. If the island has fewer than 25 individuals without pups, he/she would approach the island by motorboat at a speed of approximately 2 to 3 knots (2.3 to 3.4 mph). This would provide enough time for any marine mammals present to slowly enter the water without panic or stampede. The researchers would also select a pathway of approach farthest from the hauled out harbor seals to minimize disturbance.

Minimize Predator Interactions: If marine predators (i.e. killer whales) are present in the vicinity of hauled out marine mammals, the researchers would not approach the study site.

Noise Reduction Protocols: While onshore at study sites, the researchers would remain vigilant for hauled out marine mammals. If marine mammals are present, the researchers would move slowly and use quiet voices to minimize disturbance to the animals present.

PROPOSED MONITORING MEASURES

Glacier Bay NP proposes to sponsor marine mammal monitoring during the present project, in order to implement the mitigation measures that require real-time monitoring, and to satisfy the monitoring requirements of the Authorization.

The Authorization, if issued, would require Glacier Bay NP to monitor the area for pinnipeds during all research activities. Monitoring activities would consist of conducting and recording observations on pinnipeds within the vicinity of the proposed research areas. The monitoring notes would provide dates, location, species, the researcher's activity, behavioral state, numbers of animals that were alert or moved greater than one meter, and numbers of pinnipeds that flushed into the water.

REPORTING MEASURES

Glacier Bay NP would submit a final monitoring report to us no later than 90 days after the expiration of the Authorization. The final report would describe the activities conducted and sightings of marine mammals near the proposed project. The final report would provide:

(1) A summary and table of the dates, times, and weather during all seabird monitoring and research activities;

(2) Species, number, location, and behavior of any marine mammals observed throughout all monitoring and research activities;

(3) An estimate of the number (by species) of marine mammals that are known to have been exposed to acoustic or visual stimuli associated with the activities;

(4) A description of the implementation and effectiveness of the monitoring and mitigation measures of the Authorization and full documentation of methods, results, and interpretation pertaining to all monitoring.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the Authorization (if issued), such as an injury (Level A harassment), serious injury, or mortality (e.g., vessel-strike, stampede, etc.), Glacier Bay NP and/or its designees would immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and ITP.Cody@noaa.gov and the Alaska Regional Stranding Coordinator at (907) 586-7248. Glacier Bay NP and/or its designees may not resume activities until we are able to review the circumstances of the prohibited take. The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Description and location of the incident (including water depth, if applicable);
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);

- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

In the event that Glacier Bay NP discovers an injured or dead marine mammal, and the lead researcher determines that the cause of the injury or death is unknown and the death is relatively recent (*i.e.*, in less than a moderate state of decomposition as we describe in the next paragraph), Glacier Bay NP would immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and ITP.Cody@noaa.gov and the Alaska Regional Stranding Coordinator at (907) 586-7248. The report must include the same information identified in the paragraph above this section. Activities may continue while we review the circumstances of the incident.

In the event that Glacier Bay NP discovers an injured or dead marine mammal, and the lead visual observer determines that the injury or death is not associated with or related to the authorized activities (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Glacier Bay NP would report the incident to the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and ITP.Cody@noaa.gov and the Alaska Regional Stranding Coordinator at (907) 586-7248 within 24 hours of the discovery. Glacier Bay NP researchers would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to us. We would allow Glacier Bay NP continue their research activities.

TAKE ESTIMATES

Glacier Bay NP has requested take by Level B harassment as a result of the acoustic and visual stimuli generated by their proposed seabird monitoring and research activities. We expect that small boat operations and pedestrian traffic would cause a short-term behavioral disturbance for marine mammals in the proposed areas.

Based on pinniped survey counts conducted by Glacier Bay NP (e.g., Mathews & Pendleton, 2006; Womble, et al., 2010), we estimate that the seabird monitoring and research could potentially affect by Level B behavioral harassment up to 400 harbor seals over the course of the Authorization. This estimate represents 12.6 % of the Glacier Bay/Icy Strait stock of harbor seals and accounts for a maximum disturbance of 20 harbor seals each per visit at Boulder, Lone, and Flapjack Islands, and Geikie Rock, Alaska over a maximum level of five visits annually.

This Preferred Alternative would satisfy the purpose and need of our proposed action under the MMPA–issuance of an Authorization, along with required mitigation measures and monitoring that meets the standards set forth in section 101(a)(5)(D) of the MMPA and the implementing regulations.

2.3.2 ALTERNATIVE 2 – NO ACTION

Under the No Action Alternative, Glacier Bay NP could choose not to proceed with their proposed activities or to proceed without an Authorization. If they choose the latter, they would not be exempt from the MMPA take prohibitions and would be in violation of the MMPA if take of marine mammals occurs.

For purposes of this EA, we characterize the No Action Alternative as Glacier Bay NP not receiving an Authorization and Glacier Bay NP conducting seabird monitoring and research without the protective measures and reporting requirements required by an Authorization under the MMPA. We take this approach to meaningfully evaluate the primary environmental issues—the impact on marine mammals from these activities in the absence of protective measures.

CHAPTER 3 – AFFECTED ENVIRONMENT

This chapter describes existing conditions in proposed area. Descriptions of the physical and biological environment of the action area are contained in the documents incorporated by reference (see section 1.3.1) and summarized here.

3.1 PHYSICAL ENVIRONMENT

As discussed in Chapter 1, our proposed action and alternatives relate only to the proposed issuance of our Authorization of incidental take of marine mammals and not to the physical environment. Certain aspects of the physical environment are not relevant to our proposed action (see section 1.3.2 - Scope of Environmental Analysis). Because of the requirements of NAO 216.6, however, we briefly summarize the physical components of the environment here.

In summary, 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. The outer coast of the park extends 161 km along the Pacific Coast and is exposed to rough seas and frequent Pacific storms (NPS, 2010a).

3.1.1 MARINE MAMMAL HABITAT

We presented information on marine mammal habitat and the potential impacts to marine mammal habitat in the notice of the proposed Authorization (79 FR 32226, June 4, 2014). We incorporate that description by reference here. In summary, marine mammals haul out on the shorelines or in intertidal areas.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 MARINE MAMMALS

We provide information on the occurrence of marine mammals most likely present at the proposed research areas in section 1.1.2 of this EA. Only one marine mammal species would likely occur in the proposed action area, the Pacific harbor seal. This is the marine mammal species most likely to be harassed incidental to conducting seabird monitoring and research at the proposed areas. Glacier Bay NP researchers would not conduct ground-based or vessel-based surveys if they observe Steller sea lions before accessing Boulder, Lone, and Flapjack Islands, and Geikie Rock. Thus, we expect that harassment would not occur for Steller sea lions during the proposed activities.

Our *Federal Register* notice on the proposed Authorization (79 FR 32226), Glacier Bay NP's application (NPS, 2014), and the FLEIS (NPS, 2010a) provide information on the distribution, population size, and conservation status for each species. We incorporate those descriptions by reference here and briefly summarize this information here.

Pacific harbor seals: Harbor seals are the most widely distributed pinniped in the northern hemisphere and occupy a diverse array of habitats along the North Pacific Rim, including small islands, beaches, and glacial ice emanating from tidewater glaciers (NPS, 2014). Harbor seals range from Baja California; north along the western coasts of the U.S., British Columbia, and Southeast Alaska; west through the Gulf of Alaska and the Aleutian Islands; and in the Bering Sea north to Cape Newenham and the Pribilof Islands (NPS, 2010a). Historically, NMFS has managed harbor seals in Alaska as threes stocks (Bering Sea, Gulf of Alaska, Southeast Alaska); however, in 2010, NMFS and their co-management partners, the Alaska Native Harbor Seal Commission, revised the stock structure and identified 12

separate stocks of harbor seals based largely on the genetic structure (Allen & Angliss, 2013; NPS, 2014).

Glacier Bay/Icy Strait Stock: The Glacier Bay/Icy Strait stock shows a negative population trend estimate for harbor seals from 1992-2008 in June and August for glacial and terrestrial sites (Womble, et al., 2010). Trend estimates by Mathews and Pendleton (2006) were similar for both glacial and terrestrial sites. Long-term monitoring of harbor seals on glacial ice has occurred in Glacier Bay since the 1970's (Hoover-Miller, 1994; Hoover, 1983; Mathews & Pendleton, 2006). The Glacier Bay area supports one of the largest breeding aggregations in Alaska (Calambokidis et al., 1987; Streveler, 1979). The retreat of Muir Glacier, in the East Arm of Glacier Bay, between 1973 and 1986 (more than 7 km) and the subsequent grounding and cessation of calving in 1993 reduced the amount of floating glacial ice as as a haul-out substrate for harbor seals (Allen & Angliss, 2013). This reduction ultimately resulted in the abandonment of upper Muir Inlet by harbor seals (Calambokidis, et al., 1987; Hall et al., 1995; Mathews, 1995).

Prior to 1993 seal counts were up to 1,347 in the East Arm of Glacier Bay; 2008 counts were fewer than 200 (Molnia, 2007; Streveler, 1979). The most recent data through 2008 show a decline of harbor seals in Glacier Bay (Womble, et al., 2010) with adjusted mean counts from 2004-2008 less than those for 1992-2002 (Mathews & Pendleton, 2006).

NMFS' 2013 Stock Assessment Report (Allen & Angliss, 2013) also provides the latest abundance and life history information about each species/stock in Alaska.

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

This chapter of the EA includes a discussion of the impacts of the two alternatives and addresses the potential direct, indirect, and cumulative impacts of our issuance of an Authorization. Glacier Bay NP's application, our notice of a proposed Authorization, and other related environmental analyses identified previously, inform our analysis of the direct, indirect, and cumulative effects of our proposed issuance of an Authorization.

Under the MMPA, we have evaluated the potential impacts of Glacier Bay NP's activities in order to determine whether to authorize incidental take of marine mammals. Under NEPA, we have determined that an EA is appropriate to evaluate the potential significance of environmental impacts resulting from the proposed issuance of our Authorization.

4.1 EFFECTS OF ALTERNATIVE 1 – ISSUANCE OF AN AUTHORIZATION WITH MITIGATION MEASURES

Alternative 1 is the Preferred Alternative where we would issue a one-year Authorization to Glacier Bay NP allowing the incidental take, by Level B harassment, of harbor seals subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the Authorization, if issued.

4.1.1 IMPACTS TO MARINE MAMMAL HABITAT

Our proposed action would have no additive or incremental effect on the physical environment beyond those resulting from the proposed activities. The proposed research areas are located within a National Park and other conservation areas. The proposed activity —which uses one small vessel, kayak, or dinghy— would minimally add to limited vessel/pedestrian traffic to the region and would not result in substantial damage to ocean and coastal habitats that might constitute marine mammal habitats. Because Glacier Bay NP's research activities take place on land and do not overlap with designated critical habitat areas, their activities would have no effect on critical habitat. Finally, the Authorization would not impact physical habitat features, such as substrates or water quality.

4.1.2 IMPACTS TO MARINE MAMMALS

We expect that disturbance from acoustic and visual stimuli associated with the seabird and pinniped research have the potential to impact marine mammals. Acoustic and visual stimuli generated by: vessel approaches and departures and human presence during research activities, have the potential to cause marine mammals to flush into the surrounding water or cause a short-term behavioral disturbance for marine mammals in the action areas.

We expect that these disturbances would result, at worst, in a temporary modification in behavior, temporary changes in animal distribution, and/or low-level physiological effects (Level B harassment) of harbor seals. At most, we interpret these effects on marine mammals as falling within the MMPA definition of Level B (behavioral) harassment. We expect these impacts to be minor because we do not anticipate measurable changes to the population or impacts to rookeries, mating grounds, and other areas of similar significance. The duration and extent of the impacts would be short-term (1 hour or less) and localized.

Estimated Take of Marine Mammals by Level B Incidental Harassment: Glacier Bay NP has requested take by Level B harassment as a result of the acoustic and visual stimuli generated

by their proposed research activities. We expect that small boat operations and pedestrian traffic would cause a short-term behavioral disturbance for marine mammals in the proposed areas. Under the Preferred Alternative, we would authorize incidental take, by Level B harassment only, of up to 400 harbor seals over the course of the Authorization. For the Glacier Bay/Icy Strait stock of harbors seals, this estimate is a small number (12.6 % relative to the stock size).

We expect no long-term or substantial adverse effects on marine mammals, their habitats, or their role in the environment. We do not expect the research activities to impact rates of recruitment or survival for any affected species or stock. Further, the activities would not take place in areas of significance for marine mammal feeding, breeding, or calving. We base our consideration on the results of previous monitoring reports for the same activities and anecdotal observations for the same activities conducted in the proposed research area (NPS, 2014).

Injury: Glacier Bay NP did not request authorization to take marine mammals by injury (Level A harassment), serious injury, or mortality. Based on the results of our analyses, Glacier Bay NP's environmental analyses (NPS, 2010a), previous monitoring reports, and anecdotal observations for the same activities there is no evidence that their planned activities could result in injury, serious injury, or mortality within the action area. Under the Preferred Alternative, the required mitigation and monitoring measures would minimize any potential risk of injury, serious injury, or mortality for marine mammals.

Vessel Strikes: The potential for striking marine mammals is a concern with vessel traffic. Studies have associated ship speed with the probability of a ship strike resulting in an injury or mortality of an animal. However, it is highly unlikely that the use of small, slow-moving boats to access the research areas would result in injury, serious injury, or mortality to any marine mammal. Typically, the reasons for vessel strikes are fast transit speeds, lack of maneuverability, or not seeing the animal because the boat is so large. Glacier Bay NP's researchers will access areas at slow transit speeds in easily maneuverable boats negating any chance of an accidental strike.

Unmitigable Adverse Impact: Under the Preferred Alternative, our proposed action has no unmitigable adverse impact to subsistence uses, because there are no permitted subsistence uses of marine mammals in the region.

4.2 Effects of Alternative 2– No Action Alternative

Under the No Action Alternative, we would not issue an Authorization to Glacier Bay NP. As a result, Glacier Bay NP would not receive an exemption from the MMPA prohibitions against the take of marine mammals and would, if they proceeded with their activities, be in violation of the MMPA if take of marine mammals occurs.

The impacts to elements of the human environment resulting from the No Action alternative—conducting research activities in the absence of required protective measures for marine mammals under the MMPA—would be greater than those impacts resulting from Alternative 1, the Preferred Alternative.

4.2.1 Impacts to Marine Mammal Habitat

Under the No Action Alternative, the action would have no additive or incremental effect on the physical environment beyond those resulting from the seabird research activities which we

evaluated in the referenced documents. This Alternative would result in similar effects on the physical environment as Alternative 1.

4.2.2 Impacts to Marine Mammals

Under the No Action Alternative, Glacier Bay NP's research activities would likely result in increased amounts of Level B harassment to marine mammals and possibly takes by injury (Level A harassment), serious injury, or mortality—specifically related to visual and acoustic stimuli—due to the absence of mitigation and monitoring measures required under the Authorization.

While it is difficult to provide an exact number of takes that might occur under the No Action Alternative, we would expect that Glacier Bay NP could take significantly more marine mammals by harassment due to the lack of required mitigation measures for marine mammals.

If the research activities proceeded without the protective measures and reporting requirements required by a final Authorization under the MMPA, the direct, indirect, or cumulative effects on the human or natural environment of not issuing the Authorization would include the following:

- Pinnipeds within the survey area could experience injury (Level A harassment); serious injury; or mortality due to the researchers approaching haul out sites in a fast or disruptive manner. The lack of mitigation measures required in the Authorization could lead to faster boat approaches towards haul out sites which could result in a vessel strike or animals stampeding into the water;
- Pinniped pups could experience injury (Level A harassment), serious injury, or mortality due to stampede-induced crushing because there would be no restrictions on conducting research at pupping sites or restrictions on vessel speed while accessing the sites;
- The likelihood of pinniped predation increases because of the lack of mitigation measures required in the Authorization for monitoring for killer whales and restricting access to haul out sites while predators are offshore;
- Increases in the number of behavioral responses and frequency of changes in animal distribution because of the lack of mitigation measures required in the Authorization. Thus, the incidental take of marine mammals would likely occur at higher levels than we have already identified and evaluated in our *Federal Register* notice on the proposed Authorization; and
- We would not be able to obtain the monitoring and reporting data needed to assess the anticipated impact of the activity upon the species or stock; and increased knowledge of the species as required under the MMPA.

4.3 Compliance with Necessary Laws – Necessary Federal Permits

We have determined that the issuance of an Authorization is consistent with the applicable requirements of the MMPA and our regulations. The applicant consulted with the appropriate Federal, State, and local agencies during the application process and would be required to follow associated laws as a condition of the proposed Authorization.

4.4 Unavoidable Adverse Impacts

Glacier Bay NP's application, our notice of a proposed Authorization, and other environmental analyses identified previously in sections 1.3.1 and 1.3.2 summarize unavoidable adverse impacts to marine mammals or the populations to which they belong or on their habitats occurring in the research area. We incorporate those documents by reference.

We acknowledge that the incidental take, if authorized, would potentially result in unavoidable adverse impacts. However, we do not expect Glacier Bay NP's activities to have adverse consequences on the viability of marine mammals in Glacier Bay NPP and we do not expect the marine mammal populations in that area to experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving and recovering in the wild. We expect that the numbers of individuals of harbor seals taken by harassment would be small (relative to species or stock abundance), that the take resulting from the seabird research activities would have a negligible impact on the affected species or stocks of marine mammals, and that there would not be a an unmitigable adverse impact to subsistence uses of marine mammals in Glacier Bay NPP.

4.5 Cumulative Effects

NEPA defines cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR §1508.7). Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

Past, present, and foreseeable impacts to marine mammal populations include the following: commercial whaling; climate change affecting the prey base and habitat quality as a result of global warming; ship strikes; fishing gear entanglement; exposure to biotoxins and the resulting bioburden; acoustic masking from anthropogenic noise; competition with commercial fisheries; and killer whale predation. These activities account for cumulative impacts to regional and worldwide populations of marine mammals, many of whom are a small fraction of their former abundance. However, quantifying the biological costs for marine mammals within an ecological framework is a critical missing link to our assessment of cumulative impacts in the marine environment and assessing cumulative effects on marine mammals (Clark et al., 2009).

Unknown phenomena as well as occasional inappropriate vessel disturbance by charter or private vessels would continue to affect harbor seals. The effects of unknown natural phenomena would have far greater effects than actions associated with the Preferred Alternative which contribute to the cumulative effects on harbor seals (NPS, 2010a). In summary, the proposed seabird monitoring and research activities would add another, albeit temporary activity to the human environment limited to small, remote, and limited-access areas in Glacier Bay, Alaska.

4.5.1 Climate Change

Climate change has the potential to indirectly impact marine mammals in Glacier Bay NPP in several different ways including: loss of suitable breeding habitat and food resources; a reduction in the foraging or breeding ranges; and a decrease in the overall population size in the region. Climate change would likely alter the ecosystem's food web which could affect marine mammals within the Park and Preserve. Increased temperatures could push populations to a more suitable climate and impact adult survival and breeding.

The primary threat to marine mammals within Glacier Bay is from loss of habitat and potential changes in food supply due to climate change. Sea level rise due to climate change could flood pinniped haul-out sites negatively impacting breeding success. With the large degree of uncertainty on the impact of climate change to marine mammals in Alaska, we recognize that warming of this region could affect the prey base and habitat quality for marine mammals. Nonetheless, we expect that ongoing and future seabird and pinniped research activities in Alaska and the proposed issuance of an Authorization to Glacier Bay NP would not result in any noticeable contributions to climate change. We consider the impact of Glacier Bay NP's presence and effects of conducting research in the research areas to be insignificant when compared to other human activities in the area.

4.5.2 Past, Present, and Reasonably Foreseeable Future Activities

Glacier Bay NP's application, our notice of a proposed Authorization, and other environmental analyses discussed in sections 1.3.1 and 1.3.2, summarize the potential cumulative effects to marine mammals or the populations to which they belong or on their habitats occurring in the research areas. We incorporate those documents and analyses by reference and briefly summarize them here.

The FLEIS noted that current human activities within the proposed action area are limited. Within the park, inappropriate vessel approaches by private vessels transiting through the area are rare (NPS, 2010a). Vessel Quota and Operating Restrictions prohibit vessels from approaching within 100 yards of hauled out seals remain in place, precluding human disturbance to hauled out marine mammals (NPS, 2010a). Because private vessels would not be permitted to approach hauled out marine mammals closer than 100 yards and harvesters on land would be required to remain out of view of hauled out animals, the proposed gull harvest would not add cumulative effects to existing factors affecting harbor seal populations in Glacier Bay. In addition, the harvesters must minimize disturbance to harbor seals by remaining out of view of hauled out animals while on the islands. The FLEIS concluded that the direct, indirect, and cumulative effects of the activity on harbor seals would be negligible.

We are aware of one other research activity within the proposed action area. Glacier Bay NP researchers have an MMPA scientific research permit to study humpback (*Megaptera novaeangliae*), minke (*Balaenoptera acutorostrata*) and killer whales (*Orcinus orca*) to gather information currently lacking regarding their ecology, behavior and population status to enable information-based resource management in southeastern Alaska especially Glacier Bay NPP. Takes by harassment may occur by vessel approaches and biopsy sampling. However, this water-based research would not occur near harbor seal haulout sites within Glacier Bay/Icy Strait and the cumulative effects of the activity on harbor seals would be minor.

This EA's cumulative effects analysis focuses on activities that may temporally or geographically overlap with Glacier Bay NP's activities and would most likely impact the marine mammals present in the proposed areas. We have issued incidental take authorizations for other seabird monitoring and research activities that may have resulted in the harassment of marine mammals within California. These research activities— dispersed both geographically and temporally—are short-term in nature; and use mitigation and monitoring measures to minimize impacts to marine mammals.

The proposed issuance of an Authorization to Glacier Bay NP is not related to other actions with individually insignificant, but cumulatively significant impacts. While other research projects in Alaska may result in harassment to marine mammals, we do not expect that the impacts would be cumulatively significant. Any future Authorizations would have to undergo the same permitting process and would take Glacier Bay NP's action into consideration when addressing cumulative effects.

CHAPTER 5 – LIST OF PREPARERS AND AGENCIES CONSULTED

Agencies Consulted:

Marine Mammal Commission
4340 East West Highway, Room 700
Bethesda, Maryland 20814

Glacier Bay National Park
P.O. Box 140
Gustavus, Alaska 99826

Prepared By:

Jeannine Cody, M.Sc.
Fisheries Biologist
Incidental Take Program
Permits and Conservation Division
Office of Protected Resources
NOAA, National Marine Fisheries Service

REFERENCES

Allen, B. M., & Angliss, R. P. (2013). Alaska marine mammal stock assessments, 2012. Technical Memorandum NMFS-AFSC-245. NOAA, National Marine Fisheries Service, Alaska Fisheries Science Center. 291 pp.

Calambokidis, J., Taylor, B. L., Carter, S. D., Steiger, G. H., Dawson, P. K., & Antrim, L. D. (1987). Distribution and haul-out behavior of harbor seals in Glacier Bay, Alaska. *Canadian Journal of Zoology, 65*(6), 1391-1396.

Catton, T. (1995). *Land reborn: A history of administration and visitor use in Glacier Bay National Park and Preserve.* . Anchorage, AK: National Park Service contracted through Cooperative Park Studies Unit, College of Forest Resources, University of Washington, Seattle, Washington 98195. 453 pp.

Clark, C. W., Ellison, W. T., Southall, B. L., Hatch, L., Van Parijs, S. M., Frankel, A., & Ponirakis, D. (2009). Acoustic masking in marine ecosystems: intuitions, analysis, and implication. *Marine Ecology Progress Series, 395*, 201-222.

Hall, D. K., Benson, C. S., & Field, W. O. (1995). Changes of glaciers in Glacier Bay, Alaska, using ground and satellite measurements. *Physical Geography, 16*(1), 27-41.

Hoover-Miller, A. A. (1994). *Harbor seal (Phoca vitulina) biology and management in Alaska.* Marine Mammal Commission. 52 pp.

Hoover, A. A. (1983). *Behavior and ecology of harbor seals (Phoca vitulina richardsi) inhabiting glacial ice in Aialik Bay, Alaska.* M.S., University of Alaska.

Mathews, E. A. (1995). *Longterm trends in abundance of harbor seals (Phoca vitulina richardsi) and development of monitoring methods in Glacier Bay National Park, Southeast Alaska.* Paper presented at the Proceedings of the Third Glacier Bay Science Symposium. US National Park Service, Glacier Bay National Park & Preserve, PO Box.

Mathews, E. A., & Pendleton, G. W. (2006). Declines in harbor seal (Phoca vitulina) numbers in Glacier Bay national park, Alaska, 1992–2002. *Marine Mammal Science, 22*(1), 167-189.

Molnia, B. F. (2007). Late nineteenth to early twenty-first century behavior of Alaskan glaciers as indicators of changing regional climate. *Global and Planetary Change, 56*(1), 23-56.

NMFS. (2007). Environmental Assessment on the Issuance of an Incidental Harassment Authorization to PRBO Conservation Science to Take Marine Mammals by Harassment Incidental to Conducting Seabird Research in Central California. Silver Spring, MD. National Marine Fisheries Service. 26 pp.

NMFS. (2008). Supplemental Environmental Assessment for the Issuance of an Incidental Harassment Authorization to Take Marine Mammals by Harassment Incidental to Conducting Seabird and Pinniped Research in Central California and Environmental Assessment for the Continuation of Scientific Research on Pinnipeds in California Under Scientific Research Permit 373-1868-00. Silver Spring, MD. National Marine Fisheries Service. 57 pp.

NMFS. (2014a). Environmental Assessment on the Issuance of an Incidental Harassment Authorization to Point Blue Conservation Science and Partners to Take Marine Mammals by Harassment Incidental to Seabird and Pinniped Research Conducted in Central California. Silver Spring, MD. National Marine Fisheries Service. 47 pp.

NMFS. (2014b). "Takes of Marine Mammals Incidental to Specified Activities; Seabird Monitoring and Research in Glacier Bay National Park, Alaska, 2014; Notice; Proposed Incidental Harassment Authorization; Request For Comments," 79 *Federal Register* 107 (June 4, 2014), pp. 32226 -32237

NPS. (2010a). Final Legislative Environmental Impact Statement: Harvest of Glaucous-Winged Gull Eggs by the Huna Tlingit in Glacier Bay National Park, Alaska Gustavus, AK. U.S. Department of the Interior National Park Service 197 pp.

NPS. (2010b). Record of Decision: Harvest of Glaucous-Winged Gull Eggs by the Huna Tlingit in Glacier Bay National Park, Alaska Gustavus, AK. U.S. Department of the Interior National Park Service 197 pp.

NPS. (2014). *Request for Marine Mammal Protection Act Incidental Harassment Authorization Glaucous-winged Gull Monitoring & Research in Glacier Bay National Park, Alaska.* Gustavus, Alaska 18 pp.

Streveler, G. P. (1979). *Distribution, population ecology and impact susceptibility of the harbor seal in Glacier Bay, Alaska.* Unplublished: National Park Service.

Womble, J. N., Pendleton, G. W., Mathews, E. A., Blundell, G. M., Bool, N. M., & Gende, S. M. (2010). Harbor seal (*Phoca vitulina richardii*) decline continues in the rapidly changing landscape of Glacier Bay National Park, Alaska 1992–2008. *Marine mammal science, 26*(3), 686-697.