Request for Marine Mammal Protection Act Incidental Harassment Authorization

Glaucous-winged Gull Monitoring & Research in Glacier Bay National Park, Alaska

Submitted by:

Glacier Bay National Park

P.O. Box 140

Gustavus, Alaska 99826

Submitted to:

Permits, Conservation, and Education Division

National Marine Fisheries Service (NMFS)

Office of Protected Resources

1315 East-West Highway

Silver Spring, Maryland 20910-3226

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Permit Application Summary

Glacier Bay National Park is applying for an Incidental Harassment Authorization permit to effectively access island study sites for gull monitoring in Glacier Bay National Park (GLBA), in southeastern, Alaska. The gull monitoring studies are mandated by a Record of Decision of an Legislative Environmental Impact Statement (NPS 2010) which states that Glacier Bay National Park must initiate a monitoring program for glaucous-winged gulls (*Larus glaucescens)* to inform future native egg harvest by the Hoonah Tlingit in Glacier Bay, Alaska. To effectively access the islands for gull monitoring, occasional minimal disturbance (or Level B harassment) harbor seals may occur. We are requesting an Incidental Harassment permit to access four study sites up to five times per year for gull research and monitoring activities. We expect that the disturbance to harbor seals will be minimal and will be limited to Level B harassment and will not result in serious injury or death. Glacier Bay National Park actively monitors harbor seals at breeding and molting sites to assess population trends over time (e.g., Mathews & Pendleton 2006; Womble et al. 2010). GLBA coordinates pinniped monitoring programs with National Marine Mammal Laboratory & Alaska Department of Fish & Game and plans to continue these collaborations and sharing of monitoring data and observations in the future.

1. A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals

Glaucous-winged gulls are common inshore residents along the northwestern coast of North America (Hayward and Verbeek 2008). These gulls nest colonially in small and large aggregations, often on islands. Glaucous-winged gulls are abundant in Southeast Alaska throughout the year and nest colonially on islands in Glacier Bay from mid-May to August (Patten, 1974). Traditionally the Huna Tlingit, whose ancestral homeland encompasses Glacier Bay National Park, harvested gull eggs annually during the spring and early summer months (Hunn, 2002). This historic egg harvest in Glacier Bay was an important activity both for cultural and nutritional purposes. Legislation is currently underway (Huna Tlingit Traditional Gull Egg Use Act: S. 156 and H. R. 3110) to allow native subsistence harvest of glaucous-winged gulls at up to 15 locations in Glacier Bay National Park. A Legislative Environmental Impact Statement (LEIS) for gull egg harvest was developed and finalized in 2010 (NPS 2010). The LEIS Record of Decision mandates that the National Park Service (NPS) develop a monitoring program to inform a yearly traditional harvest plan and ensure that harvest activities do not impact park purposes and values (NPS 2010). Annual monitoring requirements outlined in the LEIS include: identify the onset of gull nesting, conduct mid-season adult counts, count number of eggs in nests during harvest, conduct complete nest surveys just before hatch on harvested islands, and document other bird and marine mammal species present that may be impacted by harvest activities. Harvest sites will be selected based on several characteristics including size of colony; population parameters including productivity, population status, recent harvest, age of colony; and minimizing disturbance to other species present.

The goal of this project is to collect data on the number and distribution of nesting glaucous-winged gulls to fulfill the mandates of the LEIS Record of Decision and to inform annual gull egg harvest. Gull monitoring with be conducting using a combination of ground and vessel surveys. Ground surveys will be used to obtain information on numbers of nest and contents (eggs or chicks) in the Glacier Bay gull colonies because terrain and vegetation prevent most nests from being visible from an offshore vessel or airplane. From May 01 – Sept. 30, we will conduct ground surveys (1-3 visits each) at the largest glaucous-winged gull colonies: South Marble Island, Boulder Island, Lone Island, Geikie Rock, Flapjack Island, and Tlingit Point Islet (Figure 1) to determine the onset of laying, distribution and abundance of gull nests and eggs, and other species present. Study sites will be accessed by motorized or non-motorized vessel landings at specific access points on the island. Ground surveys will be conducted by two trained observers conducting complete nest counts of the colonies (Zador 2001, Arimitsu et al. 2007). The survey will encompass all portions of the gull colony accessible to humans and thus represent a census of the harvestable nests. GPS locations of nests and associated vegetation along with the number of live and predated eggs will be collected during at least one visit to obtain precise nest locations to characterize nesting habitat. On subsequent surveys, nest counts will be tallied on paper so observers can move through the colony more quickly and minimize disturbance. Ground surveys will be discontinued after the first hatched chick is detected to minimize disturbance and mortalities. During ground surveys, observers will also record other bird and marine mammal species in proximity to colonies.

Vessel surveys will be conducted from the deck of a 5 – 20 m motorized vessel and will be used to count the number adult and fledgling gull that are visible from the water (Zador 2001, Arimitsu et al. 2007). Vessel surveys give us a more reliable estimate of the numbers of gulls in the colony than ground surveys because we can count nesting birds in areas that are inaccessible by foot and because the birds do not flush from our presence. From May 01 - Sept. 30 we will conduct 1-2 vessel surveys of South Marble Island, Boulder Island, Lone Island, Geikie Rock, Tlingit Point Islet, and other suspected gull colonies. We will conduct these surveys by circling the islands at approximately 100 m and counting the number of adult and chick gull as well as other bird and mammal species present.

Preliminary data collection conducted in 2012 - 2014 found that several gull colony study sites are islands that are sometimes occupied by marine mammals, including harbor seals. Effort was made to stay at least 100 - 500 m from harbor seals, which often resulted in not accessing the islands. This prevented data collection vital to the development of egg harvest management strategies and increased field costs as repeated visits were necessary to determine if marine mammals were present.

2. The date(s) and duration of such activity and the specific geographical region where it will occur:

Ground and vessel surveys for nesting gulls will be conducted from May 01 - Sept. 30 in 2016 on bird nesting islands in Glacier Bay National Park and Preserve (Figure 1, Table 1) and other suspected gull colonies. There will be 1-3 ground visits and 1-2 vessel surveys at each site per summer adding up to a maximum of 5 visits per site. Duration of surveys will be 0.5 – 2 hours each.

3. The species and numbers of marine mammals likely to be found within the activity area:

Harbor seal (*Phoca vitulina richardii*), Glacier Bay/Icy Strait stock may be found hauled-out at gull monitoring study sites (Table 1):

Table 1. Gull study sites potentially occupied by hauled out harbor seals in Glacier Bay, Alaska.

Site Name	**Latitude (dd)**	**Longitude (dd)**	**Harbor Seals**
Boulder	58.55535	-136.01814	X
Flapjack	58.58698	-135.98251	X
Geikie	58.69402	-136.31291	X
Lone	58.72102	-136.29470	X
South Marble	58.64240	-136.04421	
Tlingit Point	58.74805	-136.17679	

Harbor seals regularly haul out on 4 of the 6 islands based on aerial surveys conducted during harbor seal monitoring in June and August (Table 2). Gull researchers observed 1-35 harbor seals hauled out at these 4 gull monitoring study sites multiple times throughout the summers of 2012 - 2015. These counts likely represent a minimum estimate due to difficulty observing marine mammals from a vessel.

Table 2. Average and maximum counts of hauled out harbor seals vulnerable to disturbance at glaucous-winged gull study sites during harbor seal monitoring aerial surveys in June and August from 2007-2013 (Womble et al. 2010, Womble and Gende 2013a *data).*

Site	**Average Seal Count**	**Maximum Seal Count**	**# of Surveys**
Boulder Island			
2007			
June	4	8	2
August	3	8	5
2008			
June	2	6	3

August	2	3	4
2009			
June	4	10	4
August	16	43	6
2010			
June	16	28	6
August	53	82	3
2011			
June	18	28	4
August	66	92	3
2012			
June	24	84	4
August	34	118	4
2013			
June	8	19	5
August	115	175	4
Flapjack Island			
2007			
June	87	150	3
August	10	37	5
2008			
June	57	131	4
August	78	98	4
2009			
June	106	160	5
August	96	182	10
2010			
June	98	167	5
August	132	175	3
2011			
June	205	285	8
August	168	220	3
2012			
June	138	226	4
August	170	273	7
2013			
June	84	115	6
August	83	151	5
Geikie Rock			
2007			
June	5	7	3

August	3	16	5
2008			
June	6	17	4
August	9	12	4
2009			
June	4	13	4
August	3	10	5
2010			
June	2	4	5
August	10	10	1
2011			
June	0	0	4
August	40	46	2
2012			
June	0	0	4
August	6	17	3
2013			
June	0	0	2
August	13	35	3
Lone Island			
2007			
June	1	3	3
August	14	29	5
2008			
June	4	7	4
August	11	13	4
2009			
June	7	10	4
August	31	35	5
2010			
June	15	20	5
August	37	38	2
2011			
June	16	22	4
August	20	20	2
2012			
June	11	13	4
August	7	19	4
2013			
June	6	10	4
August	47	59	3

4. A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities:

Harbor seal (Phoca vitulina richardii), Glacier Bay/Icy Strait stock

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. Historically, harbor seals in Alaska have been managed as threes stocks (Bering Sea, Gulf of Alaska, Southeast Alaska); however, in 2010, the National Marine Fisheries Service 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. Although genetic samples were not obtained continuously throughout the range, a total evidence approach was used to consider additional factors such as population trends, observed harbor seal movements and traditional native use areas in the final designation of stock boundaries. The twelve stocks of harbor seals identified in Alaska are 1) the Aleutian Islands stock, 2) the Pribilof Islands stock, 3) the Bristol Bay stock, 4) the North Kodiak stock, 5) the South Kodiak stock, 6) the Prince William Sound stock, 7) the Cook Inlet/Shelikof stock, 8) the Glacier Bay/Icy Strait stock, 9) the Lynn Canal/Stephens stock, 10) the Sitka/Chatham stock, 11) the Dixon/Cape Decision stock, and 12) the Clarence Strait stock (Allen & Angliss 2011).

Population monitoring of harbor seals has a long history in Glacier Bay spanning from the 1970's to the present (Streveler 1979, Calambokdis et al. 1987, Mathews and Pendleton 2006, Womble et al. 2010) representing one of only a few sites in in Alaska where such long-term monitoring efforts for harbor seals exist (Pitcher 1990, Frost et al. 1999, Jemison et al. 2006, Hoover-Miller et al. 2011). The primary objectives of Glacier Bay National Park harbor seal population monitoring are to (1) evaluate population status, trend and distribution within the park; (2) help determine whether conservation and management strategies are effective in reversing the decline; (3) share the survey data with NOAA Fisheries-National Marine Mammal Laboratory in order to estimate Alaska-wide trends, and (4) inform the National Marine Fisheries Stock Assessments for harbor seals in Alaska. Stock assessment of harbor seals is required under section 117 of Marine Mammal Protection Act of 1972.

During the harbor seal breeding (May-June) and molting (August) periods, ~66% of seals in Glacier Bay inhabit the primary glacial ice site and ~22% of seals are found in and adjacent to the a group of islands in the southeast portion of Glacier Bay. Harbor seals are also found at smaller terrestrial sites that are scattered throughout Glacier Bay and at 2 small glacial ice sites (Mathews and Pendleton 2006; Womble et al. 2010). From 1992-2002, the number of harbor seals counted declined precipitously at terrestrial and glacial ice sites in Glacier Bay (Mathews and Pendleton 2006). The numbers of non-pups declined in the primary glacial ice site by 6.6%/yr (-39%/8yr) in June and by 9.6%/yr (-63%/11yr) in August and at all other haulout by 14.5%/yr (-75%/10yr) during August (Mathews and Pendleton 2006). The precipitous declines documented in the number of seals counted in Glacier Bay (Mathews and Pendleton 2006) were

in contrast to trends for nearby regions in Ketchikan and Sitka (Small et al. 2003), thus raising questions regarding possible factors that may have contributed to declines in the number of seals in Glacier Bay.

The observed declines in harbor seals resulted in new research efforts which were initiated in 2004 and were aimed at trying to further understand the biology and ecology of seals and possible factors that may have contributed to the declines (e.g., Herreman et al. 2009, Blundell et al. 2011, Hueffer et al. 2012, Womble and Gende 2013a, Womble et al. *forthcoming*) with an emphasis on possible factors that may have contributed to the declines. The recent studies suggest that (1) harbor seals in Glacier Bay are not significantly stressed due to nutritional constraints (Blundell et al. 2011), (2) the clinical health and disease status of seals within Glacier Bay is not different than seals from other stable or increasing populations (Hueffer et al. 2012), and (3) disturbance by vessels does not appear to be a primary factor driving the decline (Young 2009). The most recent long-term trend estimate for harbor seals at terrestrial sites in Glacier Bay for the 20-year period from 1992-2011 is -9.27 % / yr (SE=0.489, 95% CI = -10.22, -8.31). This trend is less negative than previous estimates from 1992-2001 (-14.5%/year: -17.07, -11.85, CI) (Mathews and Pendleton 2006) and 1992-2008 (-11.5%/year; -12.7, -10.4, CI) (Womble et al. 2010). From 2007-2011, there was a 5-yr trend estimate of 3.52 % / yr (SE=2.607, 95% CI = -1.59, 8.63). The strong quadratic term in the long-term estimate and the positive (though imprecise) 5-yr estimate suggest that the decline in seals at terrestrial sites in Glacier Bay has lessened to some extent (Womble and Gende 2013a). Results from satellite telemetry studies suggest that harbor seals traveled extensively beyond the boundaries of Glacier Bay during the post-breeding season (September-April); however, harbor seals demonstrated a high degree of inter-annual site fidelity (93%) to Glacier Bay the following breeding season (Womble and Gende 2013b). Glacier Bay is also home to the only enforceable regulations in United States waters aimed at protecting harbor seals from vessel and human-related disturbance (Jansen et al. 2010). Spatial and temporal regulations for vessels transiting in and near harbor seal breeding areas, and operating regulations once in those areas, are all aimed at reducing impacts of human visitation.

5. The type of incidental taking authorization that is being requested (i.e., takes by harassment only; takes by harassment, injury and/or death) and the method of incidental taking:

An Incidental Harassment Authorization (IHA) for Level B harassment is being requested. We do not expect any death or serious injury to harbor seals as a result of the proposed activities.

6. By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in paragraph (a)(5) of this section, and the number of times such takings by each type of taking are likely to occur:

Table 4. Annual number of marine mammals expected to be taken by incidental harassment during glaucous-winged gull monitoring in Glacier Bay, Alaska.

Species	Lifestage	Sex	Animals per Year	Takes per Animal	Procedures	Details
Harbor seal	ALL	Male and female	400	5	Ground and vessel surveys	Incidental disturbance when approaching or surveying gull colonies on the ground or by vessel.

Harbor seals

Harbor seals may be disturbed when vessels approach or researchers go ashore for the purpose of monitoring gull colonies. Harbor seals tend to haul out in small numbers (average < 50 animals) at most sites with the exception of Flapjack Island (Table 2). However, harbor seals hauled out at Flapjack Island are generally on the southern end whereas the glaucous-winged gull colony is on the northern end. Similarly, harbor seals on Boulder Island tend to haul out on the southern end while the gull colony is located and can be accessed on the northern end without disturbing the marine mammals. However, aerial survey maximum counts show that harbor seals sometimes haul out in large numbers at all four locations (Table 2), and sometimes individuals and mother/pup pairs occupy different terrestrial locations than the main haulout (J. Womble, *personal observation*). We believe an annual take of 400 harbor seals is a reasonable estimate that will allow access to gull colonies for monitoring. This number would allow for a maximum disturbance of 20 harbors seals at 4 sites during 5 visits. The highest number of annual visits to each gull study site will be 5, therefore it is expected that individual harbor seals at a given site will be disturbed no more than 5 times per year.

7. The anticipated impact of the activity upon the species or stock:

We anticipate potential temporary behavioral disturbance of individual harbor seals lions as a result of our activities. We do not anticipate death, injury, or reduction in reproductive fitness of any marine mammal species or stocks due to the temporary nature of the disturbance of a small number of individuals. Temporary disturbance constitutes Level B harassment that should not result in negative impacts to individual or stocks of marine mammals. No long-term negative effects are anticipated and every effort will be made to minimize the potential for stampeding and disturbance of dependent young (see #11).

8. The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses:

Subsistence harvest of harbor seals by Alaska Natives is authorized under the Marine Mammal Protection Act; however, subsistence harvest of harbor seals has not been permitted in Glacier Bay National Park since 1974 (Catton 1995). Yet the extensive post-breeding seasonal distribution of seals from Glacier Bay (Womble and Gende 2013b) may expose seals to subsistence harvest outside of the park. Subsistence surveys and anthropological studies demonstrate that harbor seals may be harvested during all months; however, there are typically two distinct seasonal

peaks for harvest of seals which occur during spring and in autumn/early winter (de Laguna 1972; Emmons 1991). These time periods co-occur with the time period during which seals travel beyond the boundaries of Glacier Bay (Womble and Gende 2013b). The level of subsistence harvest on seals from Glacier Bay/Icy Strait stock has not been quantified; however, subsistence reports from nearby communities have documented subsistence harvest (e.g., Wolfe et al. 2009). Due to the prohibition of subsistence harvest at the gull study sites and the temporary non-lethal nature of marine mammal disturbance caused by this project, we anticipate no impacts to subsistence harvest of marine mammals in the region.

9. The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat:

This activity will not impact marine mammal habitat.

10. The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved:

There will be no loss or modification to marine mammal habitat.

11. The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance:

Disturbance to hauled out marine mammals will be minimized as follows:

- During every visit, each study site will be examined closely using high powered image stabilizing binoculars before approaching at distances of > 500 m to determine and document the number, species, and location of hauled out marine mammals.
- If hauled out marine mammals are detected at or near the access point to a study site, a decision will be made 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 (> 25) of hauled out harbor seals and/or young pups vulnerable to being separated from their mothers, the study site will not be approached.
- If marine predators (i.e. killer whales) are present in the vicinity of hauled out marine mammals, the study site will not be approached.
- If there are a small number (<25) of individuals without pups and no visible marine predators, the research vessel will approach slowly (2-3 knots) allowing the marine mammals adequate time enter the water without panic or stampede. Research vessels will approach study sites on a pathway that will maximize distance from marine mammals and minimize disturbance as is possible.

- While on shore at study sites, researchers will remain vigilant for hauled out marine mammals and move slowly and use quiet voices when marine mammals are in the vicinity.
- Researchers will document and report each disturbance annually in reports submitted to NMFS.

12. Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a "plan of cooperation" or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses:

Not applicable

13. The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity:

Gull researchers will report all observations of marine mammals and document all disturbances to state and federal agencies conducting marine mammal research in this region. We will coordinate with state and federal marine mammal biologists to determine what additional data or observations may be useful for monitoring marine mammals and haul outs in Glacier Bay. At a minimum we will collect and report the following:

Harbor seals

- Vessel-based counts of harbor seals during each visit to each study site.
- Document and report all disturbance events.
- Document and photograph injured or dead harbor seals.

14. Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects:

Glacier Bay National Park actively monitors harbor seals at breeding and molting haul out locations to assess trends over time (e.g., Mathews & Pendleton 2006; Womble et al. 2010, Womble and Gende 2013a). This monitoring program involves collaborations with biologists

from the Alaska Department of Fish and Game, and the National Marine Mammal Laboratory. We will continue these collaborations and encourage continued or renewed monitoring of marine mammal species. Additionally, we will report vessel-based counts of marine mammals, branded or injured animals, and all observed disturbances to state and federal agencies.

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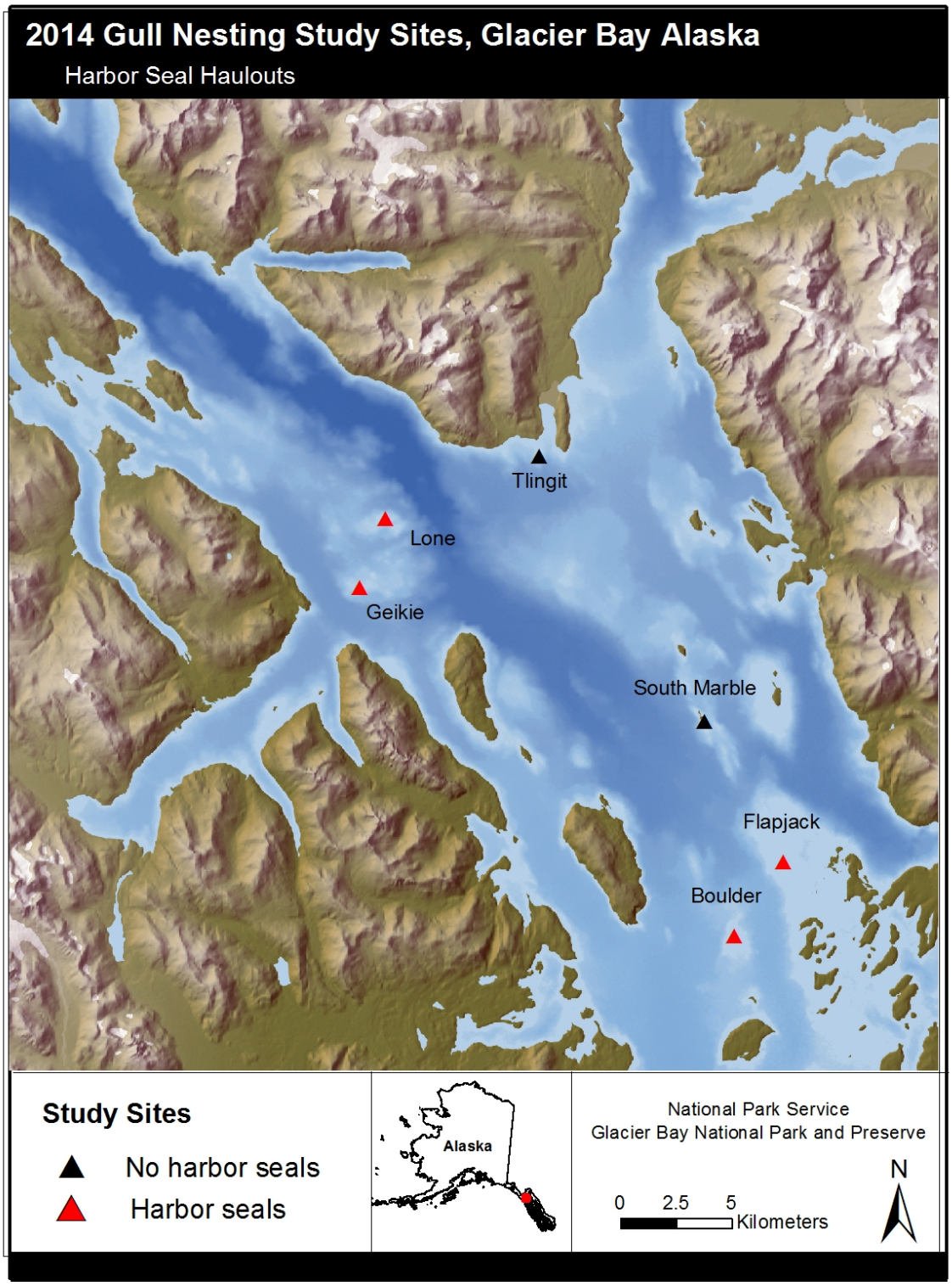

Figure 1. Gull nesting study sites that may be occupied by hauled out harbor seals during glaucous-winged gull monitoring in Glacier Bay, Alaska.