

Marine Mammal Monitoring Report for the **Sentinel Island Moorage Float**

Gastineau Channel Historical Society – Juneau, Alaska

NMFS IHA Dated October 5, 2020

Submitted To:

National Marine Fisheries Service

Office of Protected Resources

1315 East-West Highway

Silver Spring, Maryland 20910-3226

Submitted By:

Gastineau Channel Historical Society

PO Box 21264

Juneau, AK 99802

juneauhistory@gmail.com

Compiled by:

Sailfin Marine Observing and Consulting,
L.L.C

Daniel Michrowski and Shannon Easterly

sailfinmarine@gmail.com (907) 419-779

Contents

Executive Summary.....	2
Introduction.....	2
Methods.....	3
Daily Observation Logs.....	7
Observation Summary.....	9

Executive Summary

In-water installation of two 16” steel piles occurred over four days in mid-August 2021 for a moorage float on Sentinel Island to facilitate access to the National Register of Historic Places-listed Sentinel Island Lighthouse owned by the Gastineau Channel Historical Society. This construction required marine mammal observations consistent with the issued Incidental Harassment Authorization for the project. During the course of monitoring for the project, 17 harbor seals, 12 humpback whales, 4 Steller sea lions, and 2 harbor porpoises were observed to be level B takes. As the entirety of the large action area for the project was not under direct observation, a correction factor was applied to estimate the takes in this portion of the monitoring zone. Furthermore, an additional correction factor was employed for brief periods of reduced visibility. This resulted in a total of 38 harbor seal, 27 humpback whale, 9 Steller sea lion, and 5 harbor porpoise level B takes for the project, or 4.7% (harbor seal), 56.3% (humpback whale), 0.6% (Steller sea lion), and 9.8% (harbor porpoise), respectively, of the allowed takes under the IHA. There were no level A takes during the course of the project, and no construction shutdowns or other mitigation measures were necessary.

Introduction

This project was undertaken to construct a moorage float held in position by steel piling on the east side of Sentinel Island, the location of the Sentinel Island Lighthouse which was listed in 2002 in the National Register of Historic Places and subsequently transferred to the Gastineau Channel Historical Society (GCHS) in 2004. Float construction provides easier and safer access to the island for maintenance and visitation of the lighthouse, regardless of tide. Sentinel Island, after demolition of the dilapidated hoist house in 2004, is currently only accessible by boat at very limited tidal heights or by helicopter.

The initial design of the project called for installation of up to 6 steel piles of up to 24” diameter with vibratory driving and down-the-hole socket drilling. These piles would support the float as well as provide a means for winter storage of the gangway when the float is removed to avoid weather damage.

The design changed during the course of the project; after consultation with the engineers, the contractor and owner settled on the installation of two 16" diameter piles.

As many different species of marine mammals utilize the waters in the vicinity of Sentinel Island, GCHS applied for an Incidental Harassment Authorization (IHA) for the project. Species found in the action area of the project include humpback whale (*Megaptera novaeangliae*), harbor seal (*Phoca vitulina*), Steller sea lion (*Eumetopias jubatus*), harbor porpoise (*Phocoena phocoena*), killer whale (*Orcinus orca*), and others. Utilization of the action area includes a known Steller sea lion haulout at nearby Benjamin Island; however, this location is usually seasonally vacated in mid-July, which dictated the timing of this construction project.

The initial design parameters, which included the potential for 24" piles, resulted in an IHA which required monitoring an action area with a radius of 12.1 km. As such, three observation stations were established to cover the zone: one on Sentinel Island to monitor the shutdown zone and immediate vicinity, with another two locations on the mainland to observe additional portions of the monitoring zone. Table 1 contains the latitude and longitude of the observer stations. Observations from these stations covered approximately 46.5% of the action area; takes in the remainder of the area would be estimated utilizing correction factors derived from direct observations.

Additional details can be found in the initial Request for an Incidental Harassment Authorization for this project.

Table 1: Latitude and Longitude of Observer Stations

Position	Latitude	Longitude	Notes
Sentinel Island	58° 32' 44" N	134° 55' 17" W	Location as indicated in IHA application
Shrine of St. Therese	58° 28' 20" N	134° 47' 16" W	Location as indicated in IHA application
Eagle Beach (Kayak Launch)	58° 32' 22" N	134° 50' 58" W	Location as indicated in IHA application
Eagle Beach (Pull Out)	58° 31' 56" N	134° 49' 47" W	Utilized on 8/16 and 8/18 due to construction at kayak launch

Methods

The methodology employed for the monitoring of the construction activity followed that outlined in the Marine Mammal Monitoring Plan (MMMP) provided with the IHA request. Additional detailed information in regards to the take data included herein can be found below.

Distance calculations

Making accurate measurements of sighting distances over the large observation zones provided an anticipated challenge. When possible, particularly at the lead observer position on Sentinel Island, sighting distances were measured precisely with laser rangefinders.

For sightings where this was not possible, distance was estimated. These estimates were made either utilizing the position of the sighting in relation to landmarks of known distance, or via the use of semi-circular zones of defined distances from each observer location. Each observer station was provided with maps which indicated the distances to these landmarks and ones which established the semi-circular zones.

Utilizing these zones provided observers with a tool to estimate sighting location when distances could not be measured directly. When observers indicated a zone for a sighting, the geographic center of that zone was used to determine the distance and bearing to the sighting. This method introduced a measure of uncertainty; distances in the nearest zone to the observer could vary by up to 270 meters, 340 m for the middle zone, and 915 m for the furthest zone.

Distances and bearings provided in the “Daily Observation Log” below are those from construction to the sighting. These parameters are calculated using the distances and bearings recorded from the observer to the sighting as well as the known distance and bearing from each observer station to the construction site.

Resightings

Observers used their training and experience to attempt to follow individuals or groups during their movements in the monitoring zone; these are indicated as resightings in the data. Observers were also instructed to err on the side of caution: if they were unsure whether an animal, or group of animals, constituted a resighting, they reported it instead as a new sighting.

Correction factors

Correction factors to estimate take were employed for both poor visibility due to weather and for portions of the action area not under direct observation. In the case of poor visibility, it was assumed that the entire zone of responsibility of that observer station was obscured and the correction factor would apply to that whole area for the period of reduced visibility.

For instances of poor visibility, an average rate of sightings per hour was calculated for each species by dividing the total number of sightings over the course of the project from the affected position by the total amount of observation time (24.5 hours for this project). This rate was then multiplied by the amount of time construction occurred during the period of reduced visibility to provide the number of takes of each species to be added to the actual observed takes. Correction factors indicated less than one additional take, but greater than zero, were rounded to one. All other additional take numbers were rounded to the nearest whole number.

In order to compensate for the 53.5% of the action area not covered by direct observations, the rate of takes of each species was calculated for the proportion of the area observed. This rate was then applied to the proportion of the area not observed in order to estimate the potential number of additional takes for each species observed. This report lists the actual observed takes in the next section; the subsequent section details the total number of takes, i.e. the observed takes plus the ones calculated via correction factor.

Key to abbreviations and codes

Marine Mammal Observation Record – Sighting Codes

Behavior Codes

Code	Behavior	Definition
BR	Breaching	Leaps clear of water
CD	Change Direction	Suddenly changes direction of travel
CH	Chuff	Makes loud, forceful exhalation of air at surface
DI	Dive	Forward dives below surface
DE	Dead	Shows decomposition or is confirmed as dead by investigation
DS	Disorientation	An individual displaying multiple behaviors that have no clear direction or purpose
FI	Fight	Agonistic interactions between two or more individuals
FO	Foraging	Confirmed by food seen in mouth
MI	Milling	Moving slowly at surface, changing direction often, not moving in any particular direction
PL	Play	Behavior that does not seem to be directed towards a particular goal; may involve one, two or more individuals
PO	Porpoising	Moving rapidly with body breaking surface of water
SL	Slap	Vigorously slaps surface of water with body, flippers, tail etc.
SP	Sprhopping	Rises vertically in the water to "look" above the water
SW	Swimming	General progress in a direction. Note general direction of travel when last seen (Example: "SW (N)" for swimming north)
TR	Traveling	Traveling in an obvious direction. Note direction of travel when last seen (Example: "TR (N)" for traveling north)
UN	Unknown	Behavior of animal undetermined, does not fit into another behavior
AWA	Approach Work	
LWA	Leave Work Area	
Pinniped only		
EW	Enter Water (from haul out)	Enters water from a haul-out for no obvious reason
FL	Flush (from haul out)	Enters water in response to disturbance
HO	Haul out (from water)	Hauls out on land
RE	Resting	Resting onshore or on surface of water
LO	Look	Is upright in water "looking" in several directions or at a single focus
SI	Sink	Sinks out of sight below surface without obvious effort (usually from an upright position)
VO	Vocalizing	Animal emits barks, squeals, etc.
Cetacean only		
LG	Logging	Resting on surface of water with no obvious signs of movement

Sea State and Wave Height: Use Beaufort Sea State Scale for Sea State. This refers to the surface layer and whether it is glassy in appearance or full of white caps. In the open ocean, it also takes into account the wave height or swell, but in inland waters the wave height (swells) may never reach the levels that correspond to the correct surface white cap number. Therefore, include wave height for clarity.

Glare: Percent glare should be the total glare of observer's area of responsibility. Determine if observer coverage is covering 90 degrees or 180 degrees and document daily. Then assess total glare for that area. This will provide needed information on what percentage of the field of view was poor due to glare.

Swell Direction: Swell direction should be where the swell is coming from (S for coming from the south). If possible, record direction relative to fixed location (pier). Choose this location at beginning of monitoring project.

Wind Direction: Wind direction should also be where the wind is coming from.

Event

Code	Activity Type
E ON	Effort On
E OFF	Effort Off
PRE	Pre-Construction Watch
POST	Post-Construction Watch
CON	Construction (see types)
S	Sighting
M	Mitigation (see types)
OR	Observer Rotation

Sighting Cues

Code	Distance Visible
BL	Blow
BO	Body
BR	Breach
DF	Dorsal Fin
SA	Surface Activity
OTHR	Other

Marine Mammal Species

Code	Marine Mammal Species
HSEA	Harbor Seal
STSL	Steller Sea Lion
HPBK	Humpback Whale
OTT	Sea Otter
STEID	Steller's Eider
OTHR	Other

Construction Type

Code	Activity Type
V	Vibratory Pile Driving
D	Drilling
I	Impact Pile Driving
DP	Dead pull
ST	Stabbing
DR	Drilling
OWC	Over-Water Construction
NOWC	No Over-Water Construction
NONE	No Construction

Mitigation Codes

Code	Activity Type
SS	Soft Start
BC	Bubble Curtain
DE	Delay onset of In-Water Work
SD	Shut down In-Water Work

Visibility

Code	Distance Visible
B	Bad (<0.5km)
P	Poor (0.5 – 0.9km)
M	Moderate (0.9 – 3km)
G	Good (3 – 10km)
E	Excellent (>10km)

Weather Conditions

Code	Weather Condition
S	Sunny
PC	Partly Cloudy
L	Light Rain
R	Steady Rain
F	Fog
OC	Overcast
SN	Snow
HR	Heavy Rain

Wave Height

Code	Wave Height
Light	0 – 3 ft
Moderate	4 – 6 ft
Heavy	>6 ft

Daily Observation Log

		Date	August 16, 2021	August 18, 2021
Monitoring time		Start	11:35	9:05
		End	12:58	18:10
Construction Activity			Vibratory pile driving to assess pile locations and overburden	Installation of steel pile with vibratory hammer; down-the-hole drilling
Weather parameters		Visibility	Excellent	Moderate to Good
		Glare	5%	0%
		Condition	Overcast	Overcast with periods of light rain and fog
		Waves	Low	Low
		Beaufort	0 to 1	1 to 3
Take observations		Sighting designation	S1	T8 - T10, T11
		PSO position	Sentinel Island (S); Eagle Beach (E); Shrine of St. Therese (T)	Sentinel Island (S); Eagle Beach (E); Shrine of St. Therese (T)
		Species and Number	S1: Harbor seal- 1	T8 - T10: Harbor seal- 1 each; T11: Harbor seal- 2
		Distance and bearing from construction	S1: 172m, 265°	T8: 10 984m, 118°; T9: 11 294m, 206°; T10: 11 323m, 227°; T11: 11 321m, 242°
		Behavior	S1: Swimming (SSE)	T8 - T10: Look; T11: Look, Sink
Marine mammal obs., non-take		Num. of add'l. sightings	None	E: Harbor seal- 3; T: Steller sea lion- 1; Humpback whale- 5; Harbor porpoise- 1
		Species and Total number		E: Harbor seal- 4; T: Steller sea lion- 1; Humpback whale- 5; Harbor porpoise- 1
		General behavior		Harbor seal- Look, Sink; Steller sea lion- Traveling (S); Humpback whale- Swimming, Traveling, Diving, Blow
Take Numbers		Level A	None	None
		Level B	Harbor seal- 1	Harbor seal- 5
Mitigation			None	None

		Date	August 19, 2021	August 20, 2021
Monitoring time		Start	8:20	8:15
		End	14:52	15:45
		Construction Activity	Installation of steel pile with vibratory hammer; down-the-hole drilling	Installation of steel pile with vibratory hammer; down-the-hole drilling
Weather parameters		Visibility	Good to Excellent	Good to Excellent
		Glare	0%	5%
		Condition	Overcast; fog early at Eagle Beach	Overcast
		Waves	Low	Low to Moderate
		Beaufort	0 to 2	0 to 3
Take observations		Sighting designation	E2.1, E3; T1 - T3, T5.1, T7, T8, T13, T14	E1 - E4, E6.1; T1.5, T2, T4.1, T5 - T12
		PSO position	Sentinel Island (S); Eagle Beach (E); Shrine of St. Therese (T)	Sentinel Island (S); Eagle Beach (E); Shrine of St. Therese (T)
		Species and Number	E2.1: Harbor porpoise- 2; E3: Harbor seal- 1; T1, T3, T7, T8: Humpback whale- 1 each; T2, T5.1: Harbor seal- 1 each; T13: Humpback whale- 2; T14: Steller sea lion- 2	E1 - E4: Harbor seal- 1 each; E6.1: Humpback whale- 1; T1.5, T2, T5, T8, T12: Humpback whale- 1 each; T4.1, T7, T10, T11: Harbor seal- 1 each; T6, T9: Steller sea lion- 1 each
		Distance and bearing from construction	E2.1: 2 516m, 100°; E3: 3 628m, 127°; T1: 11 175m, 165°; T2: 11 036m, 96°; T3: 9 994m, 145°; T5.1: 11 171m, 112°; T7: 9 719m, 148°; T8: 10 928m, 177°; T13: 10 252m, 126°; T14: 11 208m, 122°	E1: 4 254m, 185°; E2: 4 167m, 101°; E3: 4 179m, 135°; E4: 4 213m, 153°; E6.1: 3 672m, 151°; T1.5: 10 975m, 177°; T2: 9 253m, 94°; T4.1: 11 265m, 196°; T5: 11 005m, 136°; T6: 11 202m, 106°; T7: 11 254m, 185°; T8: 11 777m, 198°; T9: 11 210m, 127°; T10: 11 215m, 136°; T11: 11 267m, 187°; T12: 10 975m, 177°
		Behavior	E2.1: Traveling (N); E3: Look, Sink, Swimming; T1: Swimming (SE), Diving; T2: Milling, Look; T3: Diving; T5.1: Look; T7: Diving; T8: Swimming (N), Diving; T13: Milling, Diving; T14: Look	E1, E2: Swimming, Milling; E3, E4: Milling; E6.1: Diving; T1.5: Diving; T2: Traveling (N); T4.1: Swimming, Look, Sink; T5: Swimming (S), Diving; T6: Traveling (S); T7: Look; T8: Blowing, Diving; T9: Swimming (N); T10: Look; T11: Look, Sink; T12: Traveling (E)
Marine mammal obs., non-take		Num. of add'l. sightings	E: Harbor seal- 2; Harbor porpoise- 1; T: Harbor seal- 1; Harbor porpoise- 1; Humpback whale- 9	S: Steller sea lion- 1; E: Harbor seal- 1; Humpback whale- 1; T: Steller sea lion- 1; Humpback whale- 1
		Species and Total number	E: Harbor seal- 2; Harbor porpoise- 1; T: Harbor seal- 1; Harbor porpoise- 2; Humpback whale- 10	S: Steller sea lion- 1; E: Harbor seal- 1; Humpback whale- 1; T: Steller sea lion- 2; Humpback whale- 1
		General behavior	Harbor seal- Look; Humpback whale- Swimming, Diving, Milling; Harbor porpoise- Traveling (N), Swimming (W)	Steller sea lion- Swimming (N), Look, Milling; Harbor seal- Look; Humpback whale- Traveling (S), Diving
Take Numbers		Level A	None	None
		Level B	Harbor seal- 3; Steller sea lion- 2; Humpback whale- 6; Harbor porpoise- 2	Harbor seal- 8; Steller sea lion- 2; Humpback whale- 6
		Mitigation	None	None

Observation Summary

Observation and construction

Construction activities occurred over the course of four days in August (16th, 18th – 20th) during which two 16" steel piles were installed via vibratory hammer and down-the-hole socket drilling. Actual in-water construction time for the project was approximately 9 hours; most of this time was drilling with only 39 minutes of vibratory hammer usage. Observers were on station and monitoring the action area for a total of 24.5 hours during the course of the project.

Distribution patterns of sighted species

There were relatively few sightings of marine mammals in the action area during the course of the project. This can be partially attributed to the timing of construction to coincide with the seasonal migration of Steller sea lions away from their nearby haul out, with the few sightings of sea lions likely individuals transiting the area.

Similarly, there were larger number of humpback whales in the general vicinity, but these were reported feeding on their prey outside the project's action area. These confirmed reports were from the local whale watch tour industry, including by some of the personnel who served as observers for this project.

In general, the marine mammals sighted in the monitoring zones were observed briefly in the action area, utilizing or transiting out quickly.

Mitigation

No mitigation efforts were required for this project as no marine mammals approached the shutdown zone and no species for which takes were not authorized were sighted.

Takes

There were no level A takes of any species during this project.

There were 17 harbor seal, 12 humpback whale, 4 Steller sea lion, and 2 harbor porpoise observed level B takes during the course of in-water construction activities.

There were two brief periods, totaling 2.2 hours of construction time, of reduced visibility due to fog at the Eagle Beach station. Applying correction factors for these results in one additional level B take each for harbor seal, harbor porpoise, and humpback whale.

Applying the observed takes in order to calculate the correction factor for proportion of the monitoring zone not covered results in an additional 20 harbor seal, 14 humpback whale, 5 Steller sea lion, and 2 harbor porpoise level B takes.

Combining the observed takes with those derived from the correction factors, the total estimated level B takes for this project are 38 harbor seal, 27 humpback whale, 9 Steller sea lion, and 5 harbor

porpoise. When considering the allocated takes for each species in the IHA, these numbers represent 4.7% (harbor seal), 56.3% (humpback whale), 0.6% (Steller sea lion), and 9.8% (harbor porpoise) of the potential allowed takes.

Since the actual design of the project resulted in fewer and smaller piles being installed than initially indicated in the IHA application, the monitoring zone and take numbers established by the IHA can be viewed as conservative. With this in mind, these take numbers are well within those set out by the IHA, and the project was completed with minimal impact to the marine mammals in the area.