

Prepared for and submitted to:
National Marine Fisheries Service
Office of Protected Resources
Prepared by:
Department of the Navy
Office of Naval Research

UNCLASSIFIED

2022 – 2023

**Office of Naval Research Arctic Research Activities
Incidental Harassment Authorization
Year 5 After-Action Report**

January 4, 2023

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Office of Naval Research Arctic Research Activities – Incidental Harassment Authorization After Action Report for 2022 – 2023

1 INTRODUCTION

The U.S. Navy prepared this After Action Report in compliance with the National Marine Fisheries Service (NMFS) Incidental Harassment Authorization Renewal under the Marine Mammal Protection Act (MMPA) for Office of Naval Research (ONR) Active Research Activities in 2022 - 2023. The IHA was provided to ONR with a date of September 13, 2022 and covered scientific experiments in the Beaufort Sea from September 14, 2022 through September 13, 2023 (88 Federal Register 65657). That time period is discussed in this report. A biological opinion issued by NMFS is covered by this monitoring report as well (AKRO-2022-01871 issued September 23, 2022).

As described in paragraph 6(i) of the 2022 – 2023 IHA, ONR is required to report the following information to NMFS:

- (1) Acoustic source use;
- (2) Number of shutdowns during monitoring;
- (3) Marine mammal sightings (including the marine mammal's location),
- (4) The number of individuals of each species observed during source deployment and operation; and,
- (5) Marine mammal behavior and distance from the project activities;

This information will be provided in Sections (2)-(4) below. An estimated number of marine mammals taken during the activity was then calculated in Section (5).

Cruises that occurred under this IHA include one by Research Vessel (R/V) Sikuliaq and one by Coast Guard Cutter (CGC) Healy. The R/V Sikuliaq cruise departed Nome, Alaska on September 14, 2022 and returned to Nome on October 27, 2022. The CGC Healy cruise occurred between July 21, 2023 and August 22, 2023; the CGC Healy departed from Seward, Alaska and returned to Kodiak, Alaska.

2 Sound Sources Used

The modeled and permitted acoustic sources are listed in Table 1-1 of the 2022 – 2023 IHA application. The IHA covered deployment and use of nine active acoustic sources to be left in place for one year, two Ice Gateway Buoys (IGBs) to be left in place for one year, and use of seagliders and one autonomous underwater vehicle (REMUS AUV). All other research objectives were not considered to lead to take of marine mammals, and were not considered further under the MMPA. All nine active acoustic sources were active for the IHA period.

3 Individual marine mammal sighting information

3.1 R/V Sikuliaq Cruise (Fall 2022)

ONR funded two dedicated marine mammal observers to ride on the R/V Sikuliaq cruise; they stood visual watches on 41 days with 30 sightings of marine mammals. Their sightings have been reported in

Table 1; a visual representation of the sightings is presented in Figure 1. Inside the operational area, there were limited marine mammal sightings: one sighting of walrus (*Odobenus rosmarus*) and seven sightings of ringed seal (*Phoca hispida*). Additionally, there were two on-effort sightings of polar bears (*Ursus maritimus*), and one off-effort sighting of a mother and two cubs were captured by the bridge crew. Nearly all sightings occurred during transit to and from the Study Area. All sightings that were not within the Study Area fell within designated ringed seal and bearded seal critical habitat.

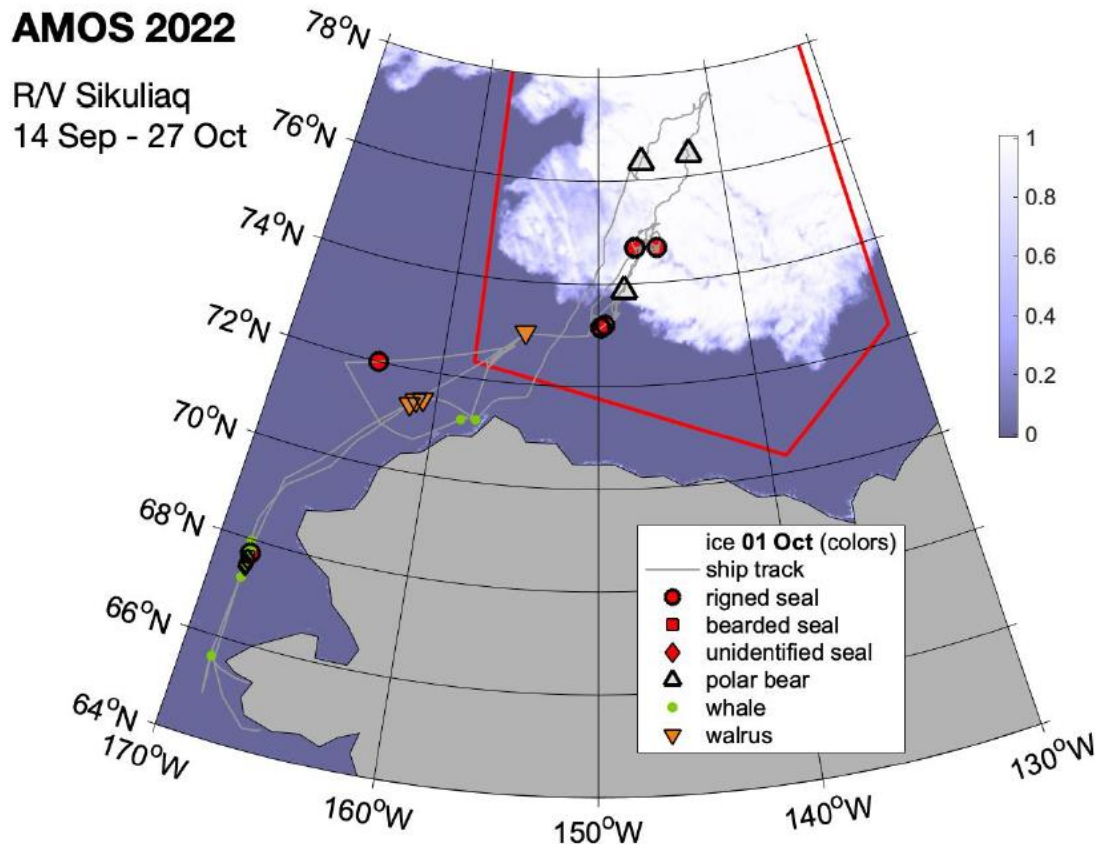


Figure 1. Map of the marine mammal sightings during the AMOS 2022 R/V Sikuliaq cruise. AMOS operational box is shown in red.

3.2 CGC Healy Cruise (Summer 2023)

The AMOS mission on CGC Healy was similar to that in previous cruises. Activities that occurred on this cruise included Seaglider deployment (7) and very low frequency (VLF) source deployment (2). All other permitted acoustic sources were already deployed in advance of this research cruise.

Marine mammal monitoring data is presented below in Table 2. A more detailed monitoring log is attached to this report. Only pinnipeds and polar bears were sighted within the ARA Study Area. All other reported marine mammal sightings occurred during transit, for which no take was requested.

Table 1. Marine Mammal Sightings Recorded During R/V Sikuliaq Research Cruise

<i>Date</i>	<i>Time</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Species</i>	<i>Distance (nm)</i>	<i>Vessel Activity</i>	<i>Group Size Estimate (Best, High, Low)</i>	<i>Beaufort Wind Force (0-12)</i>	<i>Visibility (km)</i>	<i>Description/Behavior</i>
9/14/22	No marine mammals sighted.									
9/15/22	1050	67°38.10' N	168°21.10' W	Humpback whale	2.47	Transit	4, 5, 4	4	6	Many animals all in same area, assumed traveling but could have been feeding. Passed by them at 1101.
9/15/22	1130	67°46.02' N	168°20.84' W	Unidentified baleen whale	0.68	Transit	1, 2, 1	4	6	Several medium blows seen. Definitely not blue or fin whale, probably humpback whale but didn't get any view of the body.
9/15/22	1153	67°50.59' N	168°21.78' W	Gray whale	1.37	Transit	12, 16, 8	4	6	Many scattered animals, probably feeding. Seemed to be taking 3-6 blows at the surface, then fluke up diving. Whales not traveling but were pointed in different directions and seemed to be mostly diving in the same location.
9/15/22	1232	67°58.40' N	168°21.04' W	Gray whale	2.6	Transit	5, 6, 5	4	6	Bushy blows, group spread out.
9/16/22	1144	71°18.74' N	161°35.52' W	Pacific walrus	0.5	Transit	2, 2, 2	6	4	Brown body with tusks, heads seen. Surfaced twice before the ship passed.
9/16/22	1236	71°23.99' N	161°16.38' W	Pacific walrus	0.1	Transit	3, 3, 3	6	4	Brown stocky body with white tusks, heads clearly seen. Animals were together in tight group, swimming to the left relative to the ship. Ship did not turn to approach them but continued on its way.
9/16/22	1337	71°27.40' N	160°50.57' W	Pacific walrus	0.1	Transit	1, 1, 1	6	5	Brown stocky body with white tusk. Walrus surfaced just off the

<i>Date</i>	<i>Time</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Species</i>	<i>Distance (nm)</i>	<i>Vessel Activity</i>	<i>Group Size Estimate (Best, High, Low)</i>	<i>Beaufort Wind Force (0-12)</i>	<i>Visibility (km)</i>	<i>Description/Behavior</i>
										starboard bow; surfaced twice then disappeared.
9/17/22	1254	71°12.66' N	157°28.69' W	Unidentified large whale	1.9	ROV ops	1, 1, 1	5	4	Blows seen in distance, no bodies.
9/18/22	No marine mammals sighted.									
9/19/22	No marine mammals sighted.									
9/20/22	1754	76°21.82' N	146°28.98' W	Polar bear ¹	2	Transit, ice breaking	1, 1, 1	0	2	Bear was traveling in the same direction as the ship, stopped to turn and look at the ship. Ship had limited maneuverability due to icebreaking. Bear eventually moved off to the port side. Healthy looking bear – did not look skinny. Large size, adult.
9/21/22	No marine mammals sighted.									
9/22/22	No marine mammals sighted.									
9/23/22	No marine mammals sighted.									
9/24/22	1305	76°25.78' N	142°31.98' W	Polar bear ¹	1.37	Stationary while CTD casting	1, 2, 1	3	3	Initially saw head pop up behind some ice rubble (unsure if it was really a sighting) but bear got up and walked heading 340 relative to ship. At one point, there might have been a second head that popped up behind the ice? Then the bear went behind some ice and was not seen again.
9/26/22	1358	74°40.54' N	145°41.33' W	Ringed seal ¹	0.4	Stationary getting ready for ice station	1, 1, 1	3	2.5	The ship was backed into the ice for an ice station, and was stationary for greater than 30 minutes. The seal was seen swimming towards the ship in the 'path' the ship made

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										getting into the ice. The seal took 2 breaths, continuing to swim towards ship, then was lost underneath the bow and not seen again. No in-water activities were occurring.
9/26/22	No marine mammals sighted.									
9/27/22	No marine mammals sighted.									
9/28/22	1156	74°40.88' N	147°17.88' W	Ringed seal ¹	0.4	Stationary	1, 1, 1	1	5	Dark colored seal, didn't have a large head, circles on body (rings).
9/28/22	1757	74°41.69' N	147°19.17' W	Ringed seal ¹	0.3	Stationary	1, 1, 1	3	3	Dark colored seal, proportional head, rings on body.
9/29/22	No marine mammals sighted.									
9/30/22	No marine mammals sighted.									
10/1/22	0614	73°51.74' N	148°12.08' W	Polar bear ¹	0.4	Transit, ice breaking	3, 3, 3	-	0.5	Large yellowish/white bear with black nose.
10/2/22	No marine mammals sighted.									
10/3/22	No marine mammals sighted.									
10/4/22	No marine mammals sighted.									
10/5/22	1550	73°12.46' N	149°32.87' W	Ringed seal ¹	0.4	Transit	1, 1, 1	2	4	Seal seen at surface, heading 140° relative to the ship, then dove. About 2% ice cover with mostly grease ice.
10/5/22	1621	73°09.21' N	149°47.73' W	Ringed seal ¹	0.3	Transit	1, 1, 1	3	1.5	Quick surfacing, then dive. Animal roughly headed south when diving.
10/5/22	1627	73°08.65' N	149°50.24' W	Ringed seal ¹	0.3	Transit	1, 1, 1	3	1.5	Animal ahead took a shallow dive, then deeper when we passed it.
10/6/22	No marine mammals sighted.									
10/7/22	No marine mammals sighted.									
10/8/22	No marine mammals sighted.									

<i>Date</i>	<i>Time</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Species</i>	<i>Distance (nm)</i>	<i>Vessel Activity</i>	<i>Group Size Estimate (Best, High, Low)</i>	<i>Beaufort Wind Force (0-12)</i>	<i>Visibility (km)</i>	<i>Description/Behavior</i>
10/9/22	No marine mammals sighted.									
10/10/22	No marine mammals sighted.									
10/11/22	No marine mammals sighted.									
10/12/22	No marine mammals sighted.									
10/13/22	No marine mammals sighted.									
10/14/22	No marine mammals sighted.									
10/15/22	1304	72°00.15' N	164°02.28' W	Ringed seal	0.2	Transit	1, 1, 1	5	2.5	Dark seal, proportional head.
10/16/22	No marine mammals sighted.									
10/17/22	1147	71°10.99' N	158°22.15' W	Unidentified large whale	2.5	Transit	2, 3, 1	6	3	Several short bushy blows seen; quite windy so hard to make out blow characteristics. Seemed to blow about ever 10-15 seconds. Did not see body. Seen again off the port side, 90° relative to ship, same bushy blows. Best guess is humpback or gray whale. Sikuliaq was only in 53 m of water.
10/18/22	No marine mammals sighted.									
10/19/22	No marine mammals sighted.									
10/20/22	1943	73°00.45' N	154°52.36' W	Pacific walrus ¹	0.02	Stationary while retrieving CTD	1, 1, 1	7	0.1	Walrus approached the ship while stationary and retrieving a CTD. When the animal moved away, CTD was retrieved. Ship moved 5 nm to next station and while retrieving the next CTD, a walrus, probably the same one, again approached the ship. The CTD was slowly retrieved when the walrus was away from the CTD.
10/20/22	2240	73°04.12' N	154°40.39' W	Pacific walrus ¹	0.02	Stationary while retrieving CTD	1, 1, 1	7	0.1	
10/21/22	No marine mammals sighted.									

<i>Date</i>	<i>Time</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Species</i>	<i>Distance (nm)</i>	<i>Vessel Activity</i>	<i>Group Size Estimate (Best, High, Low)</i>	<i>Beaufort Wind Force (0-12)</i>	<i>Visibility (km)</i>	<i>Description/Behavior</i>
10/22/22	No marine mammals sighted.									
10/23/22	1205	67°49.66' N	168°13.52' W	Unidentified whale	3.2	Transit	3, 4, 3	3	4	Short bushy blows, several breaths before a 2-minute interval. No part of body seen. Traveling west.
10/23/22	1240	67°43.96' N	168°14.24' W	Ringed seal	0.5	Transit	2, 2, 2	3	4	Two popped up, looked at vessel, then dove.
10/23/22	1307	67°39.45' N	168°14.86' W	Bearded seal	0.5	Transit	1, 1, 1	2	5	Seal was bigger and more robust animal than a ringed seal, so assumed bearded seal.
10/23/22	1324	67°36.81' N	168°15.20' W	Unidentified pinniped	0.7	Transit	1, 1, 1	2	5	One quick look at pinniped, backlit, dark color, no pattern or markings seen. Did not see more than once.
10/23/22	1332	67°35.42' N	168°15.41' W	Unidentified pinniped	0.5	Transit	1, 1, 1	2	5	Briefly saw animal flank as it dove, and didn't seen again. Dark body.
10/23/22	1358	67°31.26' N	168°15.93' W	Unidentified pinniped	0.5	Transit	1, 1, 1	3	5	Brief look at diving seal, brown coloration. One diving animal (diving slowly). Saw flipper.
10/23/22	1404	67°29.94' N	168°16.14' W	Unidentified pinniped	0.25	Transit	1, 1, 1	3	5	Heading 270, only saw a splash, then 4-5 seconds later a back and head. No other details besides that it had brown coloration.
10/23/22	1421	67°27.44' N	168°16.47' W	Unidentified pinniped	0.5	Transit	1, 1, 1	3	5	Brown body and head, only seen once due to splash. Heading 90° relative to vessel.
10/23/22	1435	67°25.09' N	168°16.86' W	Fin whale	2.5	Transit	3, 3, 2	3	5	Initially seen blowing frequently, making a lot of white water, then resighted several times. 3-4 minute dive times, mostly in a clump with 2 animals and 1 separate, then believe they all came together at the end. When surfaced, you'd see a head,

<i>Date</i>	<i>Time</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Species</i>	<i>Distance (nm)</i>	<i>Vessel Activity</i>	<i>Group Size Estimate (Best, High, Low)</i>	<i>Beaufort Wind Force (0-12)</i>	<i>Visibility (km)</i>	<i>Description/Behavior</i>
										then back and then falcate dorsal fin. Didn't see head and dorsal fine at the same time. Blow was very strong and tall.
10/23/22	1542	67°13.95' N	168°18.56' W	Gray whale	1.2	Transit	2, 2, 2	4	3	Initially milling, short, puffy blows. One animal fluked, the other just high arched.
10/24/22	1818	65°35.66' N	168°32.62' W	Gray whale	1.5	Transit	1, 2, 1	5	6	In 53 m of water, two tallish blows then no more seen.
10/25/22	No marine mammals sighted.									
10/26/22	No marine mammals sighted.									
10/27/22	No marine mammals sighted.									

Note: “-” indicates data field was not recorded; nm= nautical mile(s)

¹These sightings occurred within the ARA Study Area.

Table 2. Marine Mammal Sightings Recorded During CGC Healy Cruise

<i>Date</i>	<i>Time (AKDT)</i>	<i>Latitude (°N)</i>	<i>Longitude (°W)</i>	<i>Species</i>	<i>Number</i>	<i>Behavior/Action</i>	<i>Within Critical Habitat?¹</i>	<i>During ARA Operations?</i>
7/21/2023	1554	59.95	-149.35833	Unidentified whale	1	Swimming	No	
7/21/2023	1813	59.45667	-149.315	Dall's porpoise	2	Swimming	Yes	
7/22/2023	1549	57.935	-151.23167	Unidentified whale	2	Swimming	Yes	
7/22/2023	1608	57.9117	-151.28	Unidentified whale	2	Swimming	Yes	
7/22/2023	1609	57.91	-151.28333	Unidentified whale	1	Fluking	Yes	
7/22/2023	1656	57.83	-151.4333	Humpback whale	1	Swimming	Yes	
7/22/2023	1658	57.8283	-151.44	Orca	1	Swimming	Yes	
7/23/2023	0605	56.806	-152.018833	Sei whale	4	Feeding	Yes	
7/23/2023	0928	56.3533	-153.05167	Orca	8	Feeding	Yes	
7/23/2023	0932	56.3433	-153.07833	Orca	2	Swimming	Yes	
7/24/2023	1234	54.1729	-162.827852	Unidentified whale	1	Breaching	Yes	
7/24/2023	1600	54.295	-164.135	Unidentified whale (humpback or gray)	2	Spouting	Yes	
7/24/2023	2010	54.7898	-165.32667	Unidentified whale (humpback or gray)	1	Breaching	Yes	
7/24/2023	2123	54.8783	-165.53667	Orca	2	Swimming	Yes	
7/24/2023	2233	54.995	-165.79833	Unidentified small whale	4	Swimming	Yes	
7/24/2023	2323	55.0783	-165.98833	Unidentified small whale	2	Swimming	Yes	
7/24/2023	2339	55.0983	-166.035	Unidentified whale (humpback or gray)	2	Swimming	Yes	
7/25/2023	2106	59.0507	-168.265167	Dall's porpoise	1	Swimming	Yes	
7/26/2023	0632	64.1752	-167.94575	Unidentified dolphin	1	Swimming	Yes	
7/27/2023	No marine mammals sighted.							
7/28/2023	0328	70.8397	-160.8692	Gray whale	8	Swimming	Yes	
7/28/2023	0506	70.9263	-160.012117	Unidentified pinniped	2	Swimming	Yes	

<i>Date</i>	<i>Time (AKDT)</i>	<i>Latitude (°N)</i>	<i>Longitude (°W)</i>	<i>Species</i>	<i>Number</i>	<i>Behavior/Action</i>	<i>Within Critical Habitat?¹</i>	<i>During ARA Operations?</i>
7/28/2023	0629	71.0522	-158.988883	Beluga whale	1	Swimming	Yes	
7/28/2023	0731	71.125	-158.303333	Pacific walrus	2	Swimming	Yes	
7/28/2023	1209	71.3528	-156.862733	Unidentified whale	1	Swimming	Yes	
7/28/2023	1556	71.375	-156.901667	Unidentified pinniped	1	Swimming	Yes	
7/28/2023	1558	71.38	-156.9	Unidentified pinniped	1	Swimming	Yes	
7/28/2023	1640	71.4355	-156.87395	Pacific walrus	8	Swimming	Yes	
7/29/2023 ²	2030	73.0839	-157.617483	Steller sea lion	1	Flipper slapping	No	
7/30/2023	No marine mammals sighted.							
7/31/2023	No marine mammals sighted.							
8/1/2023 ^{2,3}	0705	75.2617	-142.641667	Unidentified pinniped	1	Hauled out	No	Occurred during ramming/backing. Mitigation to alter course.
8/2/2023 ²	1455	74.2538	-137.978183	Steller sea lion	1	Resting/Logging	No	
8/3/2023	No marine mammals sighted.							
8/4/2023 ²	0822	77.5017	-139.998333	Unidentified pinniped	1	Swimming	No	
8/5/2023	No marine mammals sighted.							
8/6/2023 ²	1305	77.3317	-138.27333	Unidentified pinniped	1	Swimming	No	Ice station work. Mitigation to wait until area was clear of the animal.
8/7/2023 ²	1910	76.28	-142.365	Ringed seal	1	Hauled out	No	
8/8/2023 ²	1524	76.2375	-142.271667	Polar bear	1	Walking	No	
8/9/2023 ²	1646	76.1917	-142.199833	Ringed seal	1	Spyhopping	No	Ice station work. Mitigation to wait until area was clear of the animal.
8/10/2023	No marine mammals sighted.							
8/11/2023	No marine mammals sighted.							
8/12/2023	No marine mammals sighted.							
8/13/2023 ²	0330	75.195	-143.795	Polar bear	1	Walking. Investigated scientific	No	Ice station work; CGC Healy was already moored to the ice floe. Did not complete

<i>Date</i>	<i>Time (AKDT)</i>	<i>Latitude (°N)</i>	<i>Longitude (°W)</i>	<i>Species</i>	<i>Number</i>	<i>Behavior/Action</i>	<i>Within Critical Habitat?¹</i>	<i>During ARA Operations?</i>
						equipment on ice.		additional work until the bear was clear of the area.
8/13/2023 ²	2032	75.12	-144.05667	Polar bear	1	Walking	No	
8/14/2023 ²	1255	75.2367	-145.031667	Pacific walrus	1	Swimming	No	CTD deployment. Mitigation to wait until animal departed the area to deploy.
8/15/2023 ²	0344	74.735	-149.965	Unidentified pinniped	1	Swimming	No	
8/16/2023	0711	72.4389	-161.404733	Pacific walrus	1	Swimming	Yes	
8/16/2023	0719	72.412	-161.460167	Pacific walrus	1	Swimming	Yes	
8/16/2023	0826	72.2412	-161.81085	Pacific walrus	3	Swimming	Yes	
8/16/2023	0830	72.236	-161.825083	Pacific walrus	100	Hauled out	Yes	
8/16/2023	0836	72.2311	-161.843817	Pacific walrus	30	Hauled out	Yes	
8/16/2023	0846	72.2202	-161.867183	Pacific walrus	6	Swimming	Yes	
8/16/2023	0905	72.1922	-161.92935	Pacific walrus	8	Swimming	Yes	
8/16/2023	1113	71.9996	-162.316433	Unidentified pinniped	2	Hauled out	Yes	
8/16/2023	1430	71.7165	-162.922983	Pacific walrus	2	Hauled out	Yes	
8/16/2023	1457	71.6607	-163.004967	Pacific walrus	40	Swimming	Yes	
8/16/2023	1526	71.615	-163.097433	Unidentified pinniped	1	Hauled out	Yes	
8/16/2023	1737	71.4183	-163.490617	Pacific walrus	1	Swimming	Yes	
8/16/2023	1916	71.2159	-163.8901	Pacific walrus	1	Swimming	Yes	
8/17/2023	0952	67.8583	-168.22667	Minke whale	5	Swimming	Yes	
8/17/2023	1058	67.59	-168.275	Minke whale	3	Swimming	Yes	
8/18/2023	No marine mammals sighted.							
8/19/2023	1017	59.9355	-168.39895	Unidentified pinniped	1	Swimming	No	
8/19/2023	1033	59.8744	-168.395383	Humpback whale	1	Fluking	No	
8/19/2023	1850	57.986	-168.211717	Unidentified pinniped	1	Swimming	No	
8/19/2023	2057	57.4483	-168.145	Steller sea lion	1	Breaching	No	
8/20/2023	0823	55.4999	-166.956217	Steller sea lion	1	Resting/Logging	Yes	
8/20/2023	0834	55.479	-166.909683	Steller sea lion	1	Resting/Logging	Yes	

<i>Date</i>	<i>Time (AKDT)</i>	<i>Latitude (°N)</i>	<i>Longitude (°W)</i>	<i>Species</i>	<i>Number</i>	<i>Behavior/Action</i>	<i>Within Critical Habitat?¹</i>	<i>During ARA Operations?</i>
8/20/2023	0848	55.4441	-166.830467	Steller sea lion	3	Resting/Logging	Yes	
8/20/2023	0914	55.4134	-166.762367	Humpback whale	2	Swimming	Yes	
8/20/2023	0915	55.4134	-166.762367	Steller sea lion	1	Resting/Logging	Yes	
8/20/2023	0923	55.4011	-166.72905	Unidentified whale	1	Swimming	Yes	
8/20/2023	1004	55.3333	-166.587417	Unidentified whale	1	Swimming	Yes	
8/20/2023	1014	55.3165	-166.5508	Steller sea lion	1	Resting/Logging	Yes	
8/20/2023	1017	55.3128	-166.541933	Steller sea lion	2	Resting/Logging	Yes	
8/20/2023	1048	55.2588	-166.4198	Steller sea lion	2	Resting/Logging	Yes	
8/20/2023	1113	55.2151	-166.32425	Steller sea lion	1	Resting/Logging	Yes	
8/20/2023	1137	55.1705	-166.22405	Gray whale	1	Swimming	Yes	
8/20/2023	1250	55.0531	-166.983267	Steller sea lion	1	Swimming	Yes	
8/20/2023	1315	55.0027	-165.845717	Gray whale	1	Swimming	Yes	
8/20/2023	1415	54.857	-165.535833	Gray whale	1	Swimming	Yes	
8/20/2023	1417	54.8567	-165.535117	Steller sea lion	1	Swimming	Yes	
8/20/2023	1453	54.8195	-165.453817	Minke whale	1	Swimming	Yes	
8/20/2023	1515	54.7767	-165.371217	Gray whale	1	Swimming	Yes	
8/20/2023	1541	54.7121	-165.30785	Humpback whale	6	Swimming	Yes	
8/20/2023	1634	54.5758	-165.23085	Fur seal	1	Swimming	Yes	
8/20/2023	1654	54.5045	-165.172883	Fur seal	1	Swimming	Yes	
8/20/2023	1729	54.3628	-165.07435	Humpback whale	1	Swimming	Yes	
8/21/2023	1553	55.3084	-155.985433	Sperm whale	1	Swimming	No	
8/21/2023	1745	55.8653	-154.41755	Dall's porpoise	3	Swimming	Yes	
8/22/2023	0924	57.7147	-152.42667	Sea otter	2	Resting/Logging	Yes	
8/22/2023	0925	57.7417	-152.42667	Unidentified pinniped	20	Hauled out	Yes	
8/22/2023	0926	57.7333	-152.43333	Unidentified pinniped	2	Swimming	Yes	

¹ Specific critical habitat designation provided in enclosed tables.

² Sighting occurred within the ARA Study Area.

³ Sighting occurred during a period of active icebreaking.

4 Mitigation Shutdown

The majority of marine mammal sightings occurred during transit, and the only mitigation measure was to remain clear of any animals. This data can be found in the attached Year 5 Marine Mammal Log tables. Minimal sightings occurred during research cruise science activities; the specific mitigations associated with those are found in Table 2.

5 Take Estimate

No dead or injured animals were observed during either research cruise. No take of marine mammal was observed during the IHA period.

The authorized Level B take from the 2022-2023 IHA was:

- Beluga Whale (Beaufort Sea Stock): 145
- Beluga whale (Eastern Chukchi Sea stock): 145
- Ringed Seal: 3,378

The relevant estimate of take comes from:

- Seven ONR Fixed Navigation sources that continued to transmit for the duration of the IHA;
- Two IGB buoys that continued to transmit for the duration of the IHA period;
- Seaglider deployments; and,
- Eight days of icebreaking.

All leave behind acoustic sources were deployed and active for the duration of the IHA period, and all other acoustic sources for which takes were requested were used to the anticipated levels. There was significantly less active icebreaking required than was modeled; a total of 3 hours and 22 minutes of icebreaking occurred, with 32 hours modeled. Based on the analysis above, the Navy assumes that the Level B take of marine mammals associated with Arctic Research Activities is equivalent to the number requested. **Therefore, the total number of animals estimated to have been taken by the Proposed Action is:**

- Beluga whale (Beaufort Sea stock): 145 Level B takes
- Beluga whale (Eastern Chukchi Sea stock): 145 Level B takes
- Ringed seal: 3,378 Level B takes

6 Conclusion

As described above, this IHA period consisted of year-round use of leave behind sources. The Navy believes the Level B take numbers may be conservatively high, but due to the barriers to monitoring (i.e., year-round deployment of acoustic sources in remote locations), there is no way to prove lower take numbers than were modeled. All marine mammal sightings on the R/V Sikuliaq and CGC Healy were recorded, including those during transit to the Study Area.