

A watch for marine mammals was conducted from the bridge of the R/V *Siquliaq* during the DBO-CEO-AMBON-EcoFOCI cruise from Dutch Harbor to the Chukchi and Beaufort seas, with a return to Nome. Watches were conducted during daylight hours when the ship was underway, augmented by periodic scans around the ship when on station. The lone marine mammal watch stander was aided in spotting mammals by a seabird observer and the ship's crew. The purpose of the watch is to detect marine mammals and identify sightings to species at temporal and spatial scales coincident with oceanographic sampling. The overarching goal is to improve integration of upper-trophic species' distribution, abundance and behaviors with measures of biophysical variability in the Pacific Arctic marine ecosystem.

A total of 164 hours of watch effort was completed (Table 1). Overall, weather and sea conditions were very good for most of the cruise, with watch effort curtailed on only one day due to high sea states. Watches were limited on three days when the ship sampled multiple DBO stations in quick succession or remained at a mooring site for most of the day.

Nine marine mammal species were seen (Table 1). The first day of the cruise was remarkable for the number of humpback whales (65) and fin whales (55) seen, as the ship headed towards NOAA's M2 mooring in the southeast Bering Sea. The ship was diverted to Nome prior to arriving at M2, with few marine mammals seen along the way possibly due to a large coccolithophore bloom in the southeastern Bering Sea. Three gray and five minke whales were seen as the ship passed south of St Lawrence Island on the way to DBO 1 region. There were no marine mammal sightings in the DBO 1 region, including near NOAA's M8 mooring. This lack of marine mammal sighting proved to be foretelling for much of the cruise, with the exception of the observations highlighted below.

Highlights

- A dense aggregation of 73 gray whales was seen on **17 September** in the northern Bering Sea between DBO 2.6-2.4a. Several distinct mud plumes were seen indicating the whales were feeding on infaunal crustaceans
- A dispersed assemblage of 40 gray whales was seen on **29 September** in the southern Chukchi Sea, as the ship transited toward DBO 3.8, and then eastward to and including DBO 3.6. Several indistinct mud trails were seen indicating the whales might be feeding on epifaunal crustaceans (e.g., krill or mysids). Notably, there were rafts of short-tailed shearwaters associated with the feeding whales, krill were prevalent in the epi-fauna sampling nets and krill acoustic signature was evident on the ship's underway instruments. The ship returned to the DBO 3 region on **1 October**, where 14 gray whales were seen between DBO 3.4-3.5 and extending to NOAA's C12 mooring site – this was an eastward extension of the gray whale distribution seen on 29 September.
- After completing sampling in the DBO 3 region on **2 October**, the ship transited south to conduct a search for whales just north of the shoal areas along the northern Seward Peninsula, where aggregations of baleen whales had been seen on prior cruises. Humpback whales (52) and fin whales (11) were the common on the track approaching

and along the mid-peninsula track, with gray whales (19) showing up closer to the peninsula's tip and mid-channel on the east branch of Bering Strait.

- Notable, were sightings of minke whales feeding in association with short-tailed shearwaters on **13, 19 and 29 September**, and **2 October**. On these occasions, the minke whales appeared to feed by swimming on their sides just sub-surface with their mouths open and shearwaters dabbling the water above their open gape – the whale's pointed white chins and white-spotted pectoral flippers often broke the surface confirming species identification.

Table 1. Marine Mammal Watch Summary

Hours of watch effort (EFT) and number of sightings/number of animals, by species.

Species Codes: HW=humpback whale, FW=fin whale, GW=gray whale, MW=minke whale, KW=killer whale, DP=Dall's porpoise, HP=harbor porpoise, WS=walrus, SP=spotted seal; CT=unidentified cetacean, PN=unidentified pinniped

DATE	EFT	HW	FW	GW	MW	KW	DP	HP	WS	SP	Comments
9/10/23	8	10/65	6/55			2/10	3/30				DUTCH-M2 run
9/11/23	7										coccolith bloom
9/12/23	7										Nome-Norton Sound
9/13/23	11			1/3	3/5						CT=1/3, likely HW
9/14/23	2										M8 all day; Russian flyover
9/15/23	6										DBO 1 stations
9/16/23	10										Anadyr; CT=1/4; PN=1/1
9/17/23	10			9/73						1/1	GW btwn DBO 2.6-2.4a
9/18/23	3										Gale-force winds
9/19/23	11				3/5				1/9		Transit to C5
9/20/23	4									1/5	UTQ - DBO 5.1
9/21/23	7										DBO 5.1 to BF2
9/22/23	9									1/1	NRS mooring-transit DBO 4
9/23/23	9			2/4						1/2	DBO4 & UTQ-boat, 'no joy'
9/24/23	1										CEO site All Day
9/25/23	0										NO Watch-CEO tripod day
9/26/23	6									2/5	Icy Cape Line
9/27/23	5										Icy Cape Line
9/28/23	11										C15-Long Transit -DBO 3
9/29/23	7	1/1		11/40	1/1						GW, enroute DBO 3.8 & to 3.6
9/30/23	7									1/2	KOTZ for eDNA board
10/1/23	5			4/14							GW, DBO 3.4-3.5 + C12
10/2/23	10	14/52	3/11	4/19	1/1			1/5			N Seward Penin-shoal srch
10/3/23	8										NM1 mooring – to – NOME
TOTAL	164	25/118	9/66	31/153	8/12	2/10	3/30	1/5	1/9	7/16	

Note: an excel spreadsheet of all marine mammal watch data is available upon request