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FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife
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PNE-466

Report of a Survey of

MARINE MAMMALS IN THE CHUKCHI SEA

MASTER

conducted for the Atomic Energy Commission

29 - 30 March 1961

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Following the completion of a seven-day aerial survey of walruses over the Bering Sea, two days were devoted to a similar survey of marine mammals over parts of the eastern Chukchi Sea, centered on Cape Thompson. Flights were based out of Nome; two brief landings were made at Point Hope. The survey party consisted of the following personnel, all of the Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service: Theron A. Smith, pilot, and John S. Kobza, co-pilot, from Region 6; Don W. Hayne, biometrician, Karl W. Kenyon and Richard H. Manville, biologists, from the Branch of Wildlife Research. For part of the time, Burton T. Ostenson and Myron L. Barbour, biologists stationed at Point Hope, joined the party.

Flights were made by chartered DC-3. Flight speed was 120 knots; flight altitude was usually 500 feet but occasionally, under certain weather conditions, the altitude was lowered to 200 feet, rarely to 100 feet. All marine mammals seen within $\frac{1}{2}$ mile on each side of the flight track were recorded in the tally columns. Most, but not all, animals seen outside the 1-mile-wide census strip were recorded under "Remarks." The survey design aimed to determine populations within bands at three distances from Cape Thompson; in a 20-mile shore strip; and near the flight route now used by investigators at Point Hope.

Indicated by symbols on the chart are species of mammals noted; a figure nearby denotes the number of individuals (or polar bear trails) if more than one was seen. Records were kept of characteristic holes made in young ice by the different species, but these records were not altogether consistent. There probably was also some confusion between holes of bearded and ringed seals, and between the latter and small holes made by walruses. Location of these holes is not indicated on the chart, but is included in the tabular field notes that follow.

The survey flights are indicated on the accompanying chart. Greenwich mean time (Zebra time) is shown at each change of course. All distances are in nautical miles. Bearings for the flights on these two days were as follows:

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29 March:

2145	Dep. Nome		
2258	65° 44' N, 169° 52' W		
2304	65 54	169 52	
2318	65 55	169 00	
0046	Over Pt. Hope		
0132	68 30	167 10	
0206	69 26	164 50	
0232	69 36	163 00	
0312	69 55	166 00	
0338	68 55	167 00	
0412	68 30	170 15	
0447	67 36	167 55	
0519	66 36	169 05	
0546	65 48	167 34	
0709	Ar. Nome		

30 March:

2107	Dep. Nome		
2155	66° 04' N, 166° 46' W		
2257	67 09	163 45	
2328	67 47	166 00	
2339	67 47	167 05	
0001	68 05	165 50	
0018	68 05	167 35	
0033	68 15	165 10	
0050	68 15	167 50	
0104	68 21	166 50	
0403	Opp. Cape Krusenstern		
0407	67 01	163 32	
0423	Over Kotzebue		
0808	Ar. Anchorage		

In the field notes reproduced beyond, "H" indicates a hole in young ice made by some mammal. The term "flat ice" denotes young or old ice showing few pressure ridges or leads. Animals listed in the remarks column but not in the tally column were seen outside the 1-mile counting strip.

The entire area was largely icebound, except for a few open leads near the coast in the vicinity of Kivalina, Cape Thompson, Point Hope and Cape Lisburne. Observers at Point Hope reported that 18 polar bears, 1 walrus, and approximately 400 seals had been taken by hunters in the vicinity that season. On our return to Anchorage, we delivered to Robert L. Rausch of the Public Health Service four large containers of preserved pinniped stomachs and reproductive tracts collected by Ostenson and party at Point Hope.

Our observations north of Bering Strait included sightings of 1 bearded seal (Erignathus barbatus), 61 ringed seals (Pusa hispida), and 1 walrus (Odobenus rosmarus). In the northern Bering Sea we also noted 4 ringed seals and 6 bearded seals. Locations of these records are indicated on the chart. Holes made in the ice by these species are also noted in the log. In addition, trails of polar bears (Thalarctos maritimus) were seen at 19 different places, and of Arctic foxes (Alopex lagopus) at 13 sites.

For sampling, the area within 120 nautical miles of Cape Thompson was divided into 12 strata. Within strata, each portion had about the same chance of being covered by a flight path. Estimates are based upon numbers seen in 10-mile sectors of flight. Since only visible animals or tracks can be used in the estimates, these are minimum values. For example, the estimate of ringed seals within 80 miles of Cape Thompson exceeds by only a few the recorded harvest at Point Hope, but the estimate cannot include those animals missed within pressure ridges or

Field Notes, Marine Mammal Survey
in Chukchi Sea

29-30 March 1961

Z. time	Walrus		Bearded seal		Ringed seal		Remarks
	left	right	left	right	left	right	
<u>29 March</u>							
2145							Over shore, Nome - open water 1/2 mi. shore ice to pack Inside Sledge Is.
2155							Turn to 309° T
2156							Over large floes and leads, 1 mi. off shore ice
2159						1	
2202					2	H	
2203			1	H		H	
2205				H	H	2H	Flat young ice, few leads
2206			2	3			
2207				H	H		Wind 18 knots at 345°
2208			H				Air temp. - 12°C
2210			H				
2212			H	H			
2214				H			
2215					H		
2225			H				
2230							Air temp. - 19°C
	H						Young ice, few old floes
2232					1		
2233					H		
2235							Whale? in large hole
2236				H			
2239							Leave young ice, enter old ice
2240							Polar bear tracks, leads 100 yds.
2244							Due south Fairway Rock
2246						H	
2250							Wide expanse old ice and few leads
2258							Turn to 360°T
2303							" " 070°T
2304							Leads, young ice, old ice
2305						H	Temp. -20°, wind 20 knots, N. Leave Bering Sea enter Chukchi Sea
2310							N. of Big Diomedes, 5 mi. old ice no leads, consolidated old ice
2311						H	
2318							Turn to 020°T
2340							Still no leads

Z. time	Walrus		Bearded seal		Ringed seal		Remarks
	left	right	left	right	left	right	
<u>29 March</u>							
0000							Still no leads
0005							Polar bear tracks
0010							Temp. - 10°
0030							Old leads visible but frozen over, old ice pressure ridges, less numerous
0037							Leave old ice, over flat younger area, no open leads
0040					1		
0043							Turn to 294°T
0046							Over Pt. Hope
0052							Land Pt. Hope
0125							Dept. " " Temp. +5°F
0126							314°T
0132							042°T, old ice, many pressure ridges
0145						H	-20°C
0149						H	Young ice, Cape Lisburne
0150							Tip of Cape Lisburne, old ice
0205							Old ice, huge pressure ridges, no leads
0206							Change to 074°T
0225							Flat ice, fairly young, few pressure ridges
0231							Over shore ice
0232							Turn to 286°T, 10 mi. S of Pt. Lay
0236							Narrow lead
0245							Old ice, many pressure ridges
0246							Narrow lead, young ice
0258							Polar bear tracks
0300							Turn to 328°T
0302							Polar bear tracks
0312							Turn to 200°T
0322							Polar bear tracks
0334							" " "
0338							Turn to 256°T
0344							Old polar bear tracks
0346		1					No open leads
0348							Polar bear tracks
0409							Very old polar bear tracks
0411							" " "
0412							Turn to 137°T
0416							Polar bear tracks
0422							Old polar bear tracks

Z. time	Walrus		Bearded seal		Ringed seal		Remarks
	left	right	left	right	left	right	
<u>29 March</u>							
0425							Old polar bear tracks
0447							No leads this leg, turn to 210°T
0500							Polar bear tracks, fresh
0519							No leads, old ice, turn to 132°T; air temp. -20°C
0546							No leads, old ice, houses, over land
0556							Due east Little Diomede, see Big Diomede and East Cape
0559							Over Wales
0600							Dim visibility, darkness approaching
Totals	1		6		5		

<u>30 March</u>							
2155							On course N side Seward Pen., no leads; 48°T; heavy pressure ridges, old ice
2210							5 mi. N Shishmaref, air temp. -7°C
2222							Fox track
2225					1*		
2226							Fox track
2230					1*		" " , 2
2233							" " , 2
2234							" "
2236					1		" "
2237						1	
2238					1	1	Solid pack ice, no leads
2239					1, 1*		
2241						1	
2242					1	H	
					1		
2244						1	Fox track

* Originally recorded as bearded seals but quite certainly a mistake.

- KWK

Z. time	Walrus		Bearded seal		Ringed seal		Remarks
	left	right	left	right	left	right	

30 March							
2247					2		Fox track
2248					2		
2250						1	
2258							Turn to 306°T
2302					H		
2303					1	1	
					1	1	
2305					1	2	1 ringed seal out, right
						1	
						1	
2306					1	1	1 ringed seal out, right
2307					1	1	
					1		
2310					H		First open lead, others follow
2315					H	1	
2318							Polar bear and fox tracks
2322						1	
2323					H	H	Young ice on lead
2324					H	H	" " " "
2325							Open lead, old polar bear tracks
2328					H		Turn to 271°T
					H	3H	Lead with young ice
2329					H		-10°C
2330					2H		
2333					4H		Lead, young ice
2336							Polar bear tracks
2337							" " " " (+ 2 cubs?)
2339							Turn to 057°T
2342					H		
2345							Fresh polar bear tracks
2347					H	H	
					H	2H	
2348						H	
2349						H	Lead, young ice
2350						H	" " "
					H	H	" " "
2351						2H	" " "
						2H	" " "
					H	2H	" " "

Z. time	Walrus		Bearded seal		Ringed seal		Remarks
	left	right	left	right	left	right	

30 March							
2352					10H	7H 13H	Lead, young ice Polar bear tracks, frozen lead
2356						H	
2357	H		H		H		Lead with young ice
0001							Open lead; turn at Cape Thompson to 271°T
0003					H		
0005			H	1		2H	
0006					H		
					H	3H	
0007					H		Frozen leads
					H	H	
					1	H	
0008					1		Frozen leads
0013					H		
0015					H	H	Frozen leads
						H	
0017					H		
0018							Turn to 073°T; flat ice, few pressure ridges
0026							Fox tracks
0029					H	1	Young ice, leads
						H	
						H	
0030						1	Young ice, leads
					1	1	
0031					1	H	
						H	
						1	
0033							Turn to 271°T
0035					1		
					1		
0039					H		Open lead in young ice
0042					H	H	Young ice
0043					H		
0046							Consolidated pack ice, -19°C outside
0050							Turn to 073°T
0058					H	H	Young ice
0102							Crossed shore
0104							Total time 3 hr. 57 min; landed Pt. Hope

Z. time	Walrus		Bearded seal		Ringed seal		Remarks
	left	right	left	right	left	right	
<u>30 March</u>							
0310							Departed Pt. Hope
0312							Over young ice
0313							Over shore ice shelf, heavy old ice
0320						1	Leave shore ice, young ice, leads
0321						4	2 ringed seals out, right
0323					2	1	
0325						H	
0331							Open lead, older ice
0333						H	Frozen lead
0342					H	2H	" "
						2H	Vast old ice
0348						1	
						1	Photo, by hole
0350						1	" , 1 ringed seal out, right
0352						1	1 ringed seal out, right
0354						1	
0355						1	
0357						H	Temp. 0°C [was -15°]
0358						1	
						1	
0401					H		
0402					1		
0407							Crossed Cape Krusenstern
0409							Course 108°T
0412							Fox tracks
0423							Over Kotzebue; terminate marine mammal survey
Totals	0		1		62		
Grand totals	1		7		67		6 ringed seals outside strip

Estimates (with standard errors) based on animals seen (ringed seal) or tracks observed (polar bear, arctic fox) during about 1100 nautical miles of aerial sampling over the Chukchi Sea

	Area, sq mi	Seals, total no.	Bear tr. per 10 mi	Fox tr. per 10 mi
<u>Miles from Cape Thompson -</u>				
0-40 : entire area	3,100	119±53	.12±.06	.05±.04
: within 20 miles of shore	1,900	119±53	.08±.06	.08±.06
40-80 : entire area	9,700	354±102	.21±.08	.02±.02
: within 20 miles of shore	2,400	354±102	.09±.09	.08±.08
80-120: entire area	16,200	148±90	.23±.10	.16±.08
: within 20 miles of shore	2,700	148±90	.00	.96±.48
<u>Within 20 miles of path regularly flown by investigators at Point Hope -</u>				
	2,300	98±51	.13±.07	.02±.02

in the water. The tracks visible from the air do not allow estimation of animal numbers. The estimated mean number of tracks per 10 miles of flight can serve as an index to animal activity, subject to all the factors influencing visibility.

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May 25, 1961