Observations of Marine Mammals at Cape Hay, Bylot Island during the Summer of 1976

by R.G. Greendale and C. Brousseau-Greendale

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ABSTRACT

Greendale, R. G. and C. Brousseau-Greendale. 1976. Observations of marine mammal migrations at Cape Hay, Bylot Island, during the summer of 1976. Fish. Mar. Serv. Res. Dev. Tech. Rep. 680: 25 p.

Marine mammals were observed and counted at Cape Hay, Bylot Island, from 21 June to 31 July 1976. Narwhals, harp seals, belugas, walruses, bowhead whales and bearded seals were recorded as they migrated westward on the south side of Lancaster Sound.

Although bad weather limited observation severely, a total of 6,145 narwhals was recorded during the survey. Extrapolating for fog and other adverse weather factors, the number actually passing was estimated at 8,000 to 10,000. Groups of adult males for the most part headed the migration. Mixed groups and young animals were most frequent in mid-July and females with newborn calves occurred at the end of the migration. The number of narwhals seen passing was about the same as in a survey made at the same site in 1957.

Beluga whales probably passed through for the most part before the survey began. A total of 183 belugas was recorded between 24 June and 5 July. After that only 3 animals were seen.

Harp seals were still passing when the survey ended and only 16,000 were seen as compared with 132,000 in all in 1957. The migration of this species was evidently later than in 1957.

A definite movement of bearded seals occurred in the last week of

July when 164 seals were seen passing at Cape Hay.

Walruses were observed regularly throughout the survey, in groups never exceeding 4. Some feeding took place at the base of Cape Hay cliffs in Lancaster Sound.

Only 3 bowhead whales were observed in 1957. The number had increased to 23 in 1976. Most of these animals were seen between 12 and 17 July. On 15 July, a group of 3 bowheads, 2 adults and a younger animal, was observed.

RESUME

Greendale, R. G. and C. Brousseau-Greendale. 1976. Observations of marine mammal migrations at Cape Hay, Bylot Island, during the summer of 1976. Fish. Mar. Serv. Res. Dev. Tech. Rep. 680: 25 p.

Une migration vers l'Ouest de différents mammifères marins s'effectue annuellement le long de la côte sud de Lancaster Sound. Du 21 Juin au 31 Juillet 1976, une station temporaire a été établie à Cape Hay, Bylot Island, au sommet d'une falaise surplombant Lancaster Sound. Narvals, phoques du Groenland (loup-marins), bélugas, morses, baleines boréales et phoques barbus furent observés et denombrés.

Malgré les mauvaises conditions météorologiques qui ont considérablement limité les observations, un total de 6,145 narvals a été observé pendant l'étude. Tout en demeurant conservateur, on peut estimer que de 8,000 à 10,000 narvals ont effectivement passé à Cape Hay. D'intéressantes données, tant qualitatives que quantitatives, ont été recueillies sur les groupements (nombres et structures) durant la migration. Les concentrations de mâles adultes sont apparues en début de migration pour la plupart.

Les groupes mixtes et les animaux plus jeunes ont été plus abondants par la suite. Les femelles avec de nouveaux-nés, sporadiquement observées à partir du 26 Juin, devinrent prépondérantes dans les derniers jours de la migration. Le nombre de narvals observés en 1976 à Cape Hay, est presqu'identique à celui obtenu au même endroit en 1957.

Les bélugas ont probablement migré pour la plupart avant le début de l'étude. Au total, 186 bélugas ont été vus dont 183 entre le 24 Juin et le 5 Juillet.

La migration des phoques du Groenland s'est prolongé après la fin de notre étude et, dû de toute évidence à ce mouvement tardif, seulement 16,000 phoques ont été comptés. En 1957, 132,000 phoques du Groenland avaient été observés.

Un mouvement bien défini de phoques barbus s'est produit durant la dernière semaine de Juillet alors que 164 phoques passaient à Cape Hay.

Quatre-vingt six morses ont été comptés dont quelques spécimens plongeant pour de la nourriture au pied de la falaise dans Lancaster Sound.

Bien que l'observateur de 1957 eût porté une attention spéciale aux baleines boréales, seulement 3 furent observées cette année-là. En 1976, le nombre a augmenté à 23 dont 20 sur une période de 6 jours (du 12 au 17 Juillet). Un groupe composé de 2 adultes et d'un jeune animal d'âge indéterminé a été observé le 15 Juillet.

INTRODUCTION

Lancaster Sound in the Canadian Eastern Arctic is considered to be a very important migration route for marine mammals, notably belugas, narwhals, harp seals, bearded seals, walruses and bowhead whales, (Table 1), which move through the Sound in spring when ice conditions permit and then proceed to their inshore summering habitat.

In 1957, Dr. Leslie M. Tuck, then with the Canadian Wildlife Service, spent the period from 11 June to 20 August at Cape Hay on northwest Bylot Island (Map 1) and recorded large herds of narwhals and harp seals migrating westward. Other marine mammals were also recorded during his field investigation.

Mansfield, Smith and Beck's (1975) estimate of the narwhal population in Canada and northwestern Greenland is partially based on Tuck's record of 6,000 narwhals at Cape Hay. In order to update Mansfield et al.'s estimate of 10,000, we decided to camp at Cape Hay and record all marine mammals observed migrating past the Cape. We could therefore document changes in marine mammal populations at Cape Hay over a 19 year period and assess the population size of narwhals in the waters of northern Baffin Island.

METHODS

Observations

Our original plan was to maintain observation from 1 July to 31 July. When we arrived in Arctic Bay on 2 June, we were informed that narwhals and belugas had already been observed at the floe edge of Admiralty Inlet (David Ipirq, personal communication). Lancaster Sound was partially ice-free and we decided to start the survey two weeks earlier if possible.

Table 1. Marine mammals recorded between 21 June and 29 July 1976 at Cape Hay.

Date	No. of hrs.	N	HS	B	BS	W	BH	RS	HdS	PB
21 June	8	6				1				
22	0									
23	0									
24	14	290		9						
25	14½	50			2	2				
26	24	157		23	2	7				
27	19	230		1		2				
28	20	108				1				
29	2½									
30	8	212		76						
1 July	21	405		1		5	2			
2	14	6								
3	9	139	87			8				
4	24	636	154	31		13	1			
5	21	492	138	42		9				1
6	0									
7	2½	35				1				
8	0									
9	0									
10	2	63	331							
11	7	72	570			2				3
12	8	136	509				3			1
13	11½	899	3050				2			
14	7½	87	83			1	4			
15	24	1842	929			8	7			1
16	1¾	3	44							
17	7½		1005			1	4			
18	0									
19	0									
20	3½	12	55			1				
21	3	119	70		1					
22	15½		64		13	4			1	
23	19	92	4320		41	5		1		1
24	10½	54	926		18	6				
25	15½		646	1	16			1		
26	24		1852	2	30	6				1

Table 1 (cont'd.)

Date	No. of hrs.	N	HS	B	BS	W	BH	RS	HdS	PB
27 July	9		1131		37	3				
28	6		19		8					
29	0									1
Totals:	373	6145	15983	186	169	86	23	2	1	9

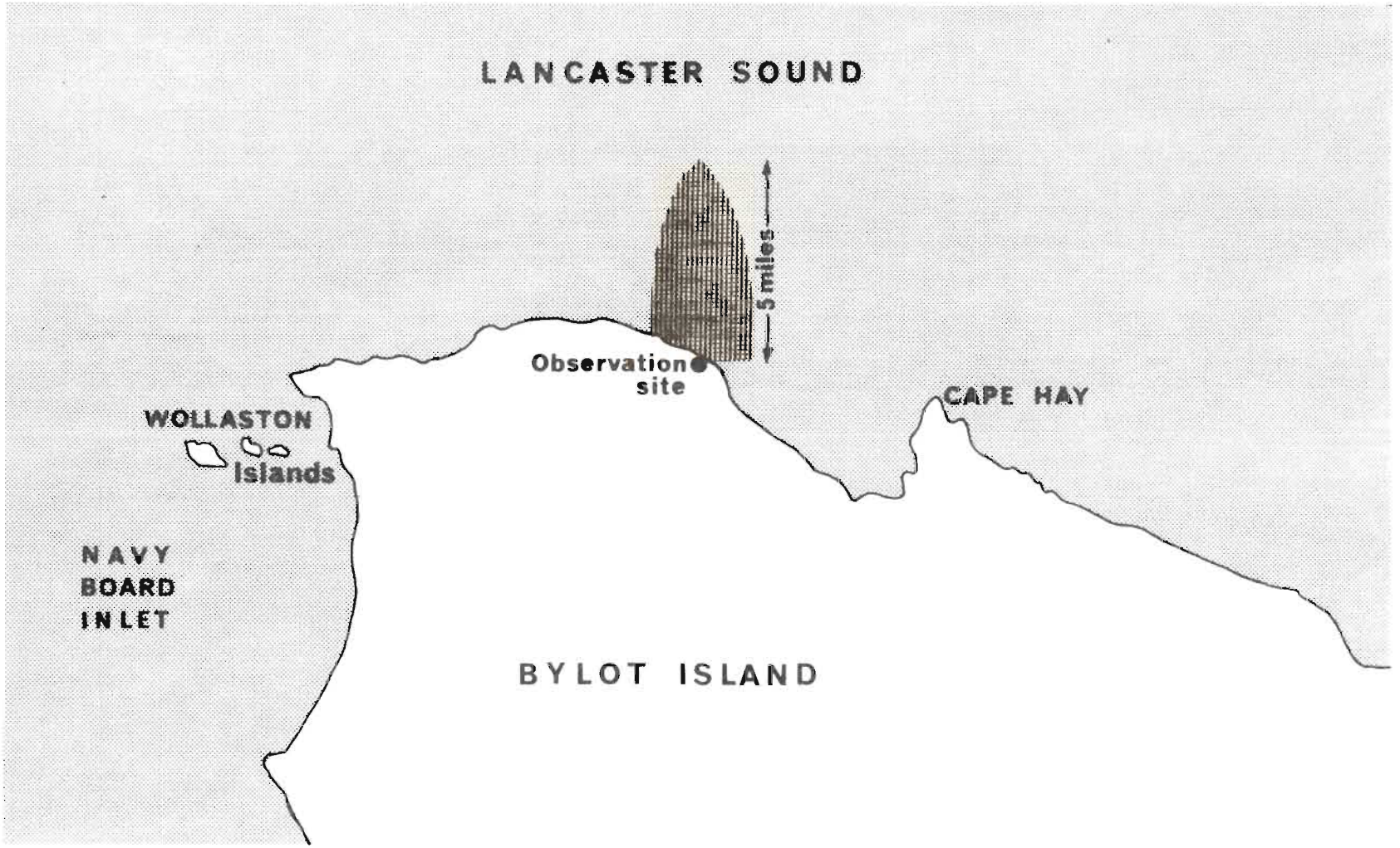
Code:
- N Narwhal
- HS Harp Seal
- B Beluga
- BS Bearded Seal
- W Walrus
- BH Bowhead Whale
- RS Ringed Seal
- HdS Hooded Seal
- PB Polar Bear

Map 1 Map of the Canadian eastern Arctic showing Lancaster Sound and Bylot Island, where the marine mammal census was conducted.

A first attempt to reach Cape Hay by helicopter on 18 June was unsuccessful due to fog. Instead a temporary camp was set up on Bylot Island to the southeast of the Wollaston Islands. Fog persisted at Cape Hay until 21 June when we set up camp at the top of 1000 foot (305 m) high limestone cliffs about 6 miles (9.6 km) west of Cape Hay. Observation of the sea started the same day and was maintained 24 hours per day, weather permitting. Wide-angle 7x35 binoculars and a telescope (powers of 15, 40 and 60) were used for accurate counts of marine mammals. Date, time, weather, ice conditions, group size and composition, direction of movement, distance offshore and behaviour were recorded. Photographs were taken using a Nikkormat camera and a 400 mm telephoto lens. After forty-one days the survey was terminated and we returned to Arctic Bay by helicopter on 31 July.

Obstructions to observation

Under optimum conditions, visibility was about 60 miles (96 km) but accurate counts were limited to 5 miles (8 km) offshore (Map 2) at which distance the slightest degree of sea surface disturbance by wind prevented accurate observation of narwhal group size and composition. Strong winds occurred on many occasions when observation could be limited to as little as one mile (1.6 km) (Appendix I). However, fog was the most important limitation to our survey as it was both frequent and persistent. Occasionally, precipitation in the form of freezing rain or light snow occurred along with fog. A snowstorm on 18 and 19 July lasted 36 hours and resulted in seven inches (17.8 cm) of snow on the ground.



Map 2 Location of observation site on Bylot Island and area surveyed.

Loose ice floes were often seen drifting at the base of the cliffs, moved about by tides, wind or the eastward surface current. Harp seals, which are smaller and faster than narwhals, were especially difficult to see under such ice conditions.

The midnight sun infrequently produced a very bright glare on the surface of the water, thus interfering with observation; however, this situation was quite pleasant, being so rare.

RESULTS

Narwhal (*Monodon monoceros*)

A total of 6,145 narwhals were observed during their westward migration along the south side of Lancaster Sound. The first animals were seen on 21 June when we arrived at Cape Hay. From 21 June on, groups of narwhals were recorded each day that observation was possible. No animals were seen after 24 July. The peak of the migration occurred on 15 July when 1,842 narwhals were observed migrating at a rate of 275 per hour between midnight and 0500 hours. The frequency then decreased considerably to about 40 per hour from 0500 to 1500. Tuck (1957) recorded a maximum frequency of 300 per hour during the peak migration on 10 and 19 July 1957.

Figure 1 indicates the number of narwhals observed per day at Cape Hay and the number of hours of observation on each day. From 6 July to 12 July daily observation time was small because of fog. At this time the migration was reaching a peak. The number of narwhals that passed by Cape Hay during the peak of migration is difficult to estimate. Also observation was limited by fog and snowfall from 16 to 21 July, just following the peak in the migration. The actual total of 6,145 which we recorded must therefore

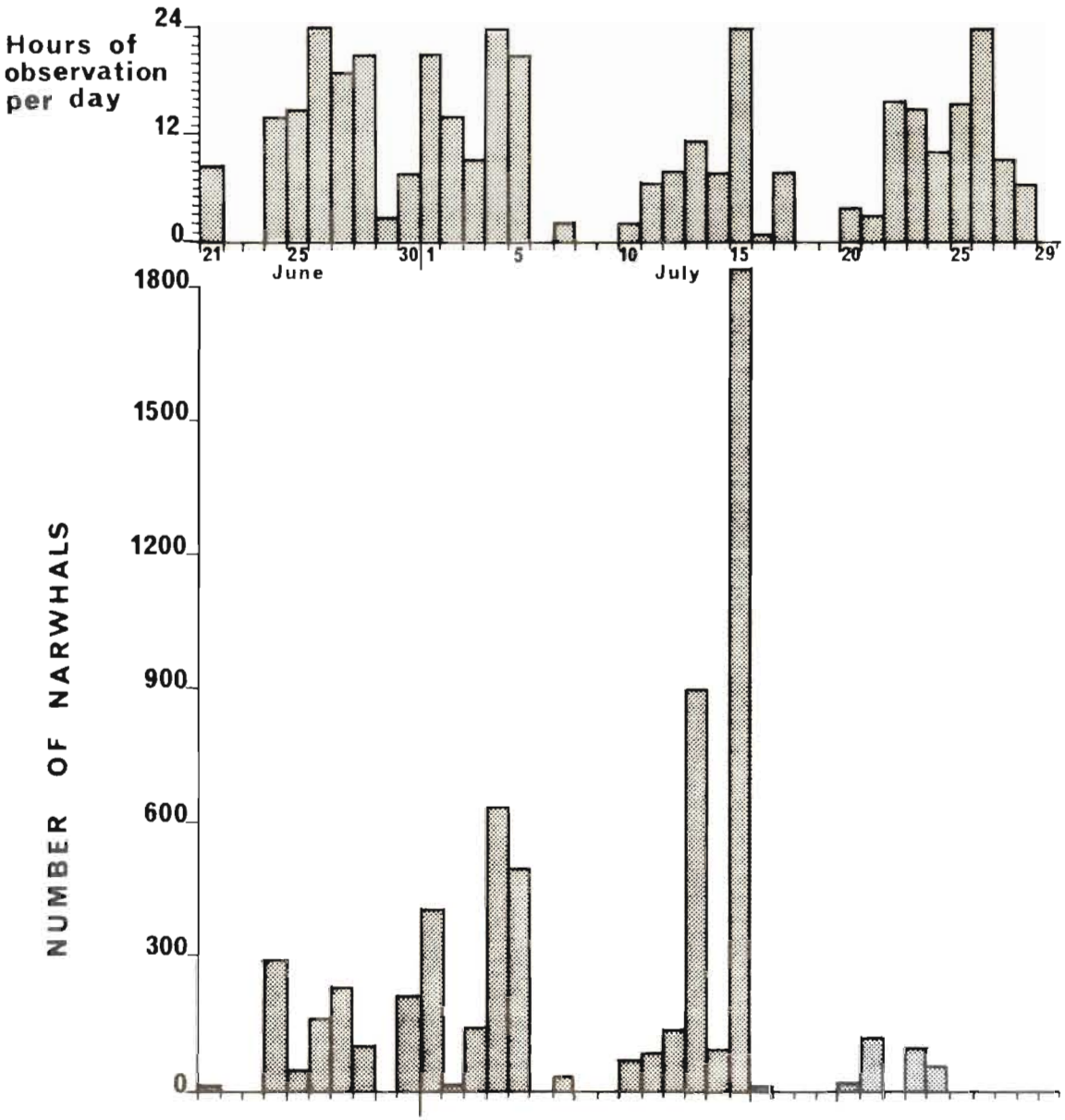


Figure 1 Narwhal migration at Cape Hay in 1976

be considered as the minimum population size of narwhals in the Lancaster Sound area. We estimate that the narwhal migration past Cape Hay could have comprised 8,000 to 10,000 animals.

Group size varied from single animals to 21, but the usual size was 3 to 8. The larger groups, 12 to 21 animals, occurred, for the most part, on 15 July. Table 2 presents the composition of narwhal herds migrating past Cape Hay on each day. Animals with tusks tended to group together and form the larger groups. These were most frequently seen at the beginning of the migration in late June and early July. Family groups (male, female and young) were observed sporadically throughout the survey. Newborn calves were first recorded on 26 June but were most numerous in late July. Groups of females and newborn calves were predominant on 23 and 24 July. This sexual segregation of migrating narwhals, recorded frequently by early Arctic naturalists and reflected in the Inuit hunt of narwhals during summer (K. Hay, personal communication), tends to confirm that the narwhals have finished mating. Best and Fisher (1974) place the mating season at April to May and the birth season at July to August, which is confirmed by the large number of neonatal calves seen at Cape Hay during late July (Table 2).

Harp Seal (*Phoca groenlandica*)

The westward migration of harp seals at Cape Hay has been documented by Tuck (1957) who recorded four main waves of migrating animals from 26 June to 1 August 1957 during which time 132,000 harp seals were observed passing Cape Hay. Our observations in 1976 suggest that by comparison with 1957 this migration was probably delayed, one reason being the late

Table 2. Composition of narwhal herds migrating westward along the south coast of Lancaster Sound.

Date	Adults[a]			Younger[a]			Newborn calves	c	Totals
	Tusk	No tusk	b	Tusk	No tusk	b			
21 June			6						6
24	10	11			1			268	290
25	7	8			2			33	50
26	88	15	25	1	1		1	26	157
27	126	37	16	2	2	2	8	37	230
28	45	15	31	4	7	1	5		108
30	153	8	43	3	1	4			212
1 July	128	62	91	3	22	4	4	91	405
2	1		3					2	6
3	76	36	15	1	7		1	3	139
4	212	102	116	12	22	9	14	149	636
5	199	42	111	10	18	5	3	104	492
7	25	7		2	1				35
10	33	12	7	3	6		2		63
11	1	6	23	1	6	12	3	20	72
12	34	19	13	1	13	3	7	46	136
13	291	184	63	41	99	29	21	171	899
14	24	11	4	5	10	4	4	25	87
15	447	251	115	45	96	59	49	780	1842
16	3								3
20		4			2		2	4	12
21	29	9	13	6	8	4		50	119
23	2	32	3	3	13	4	17	18	92
24	2	28			1		23		54
Totals	1936	899	698	143	338	140	164	1827	6145

[a] distinguished on basis of size and body colour: adults - pale, younger - darker.

[b] presence or absence of tusk not noted.

[c] size and sex category not determined.

ice break-up in the high Arctic. The first harp seals at Cape Hay in 1976 were recorded on 3 July. Groups of harp seals then passed by every day until the end of the survey on 31 July. Two distinct waves were seen with peak numbers on 13 and 23 July (Figure 2). Most of the animals were adults with conspicuous dark saddles but smaller animals (juveniles or bedlamers) were observed occasionally. We estimated the age structure of the migrating harp seals to be 95% adults and 5% juveniles. The adults were always seen in groups varying from 5 to 100 animals while bedlamers were usually solitary. As also described by Tuck (1957), there was daily and seasonal variation in group size. The groups tended to be larger in the evening than at other times of day while the largest groups were seen in late July. Large herds were observed at the mouth of Navy Board Inlet in late August (Dr. S. R. Johnson, personal communication); therefore, we believe that the harp seal migration at Cape Hay continued after our study and achieved another peak during August.

Tuck's description of harp seal migratory behaviour was confirmed by our observations. As the seals moved along the surface they hurled themselves nearly out of the water while swimming on their backs. They remained on the surface from five to ten minutes after each dive. As they dove, they rolled to a normal body position and the dark saddles became very conspicuous. The duration of a dive was five to ten minutes.

In this investigation we recorded a total of 15,983 harp seals migrating westward past Cape Hay and no apparent feeding behaviour was noted.

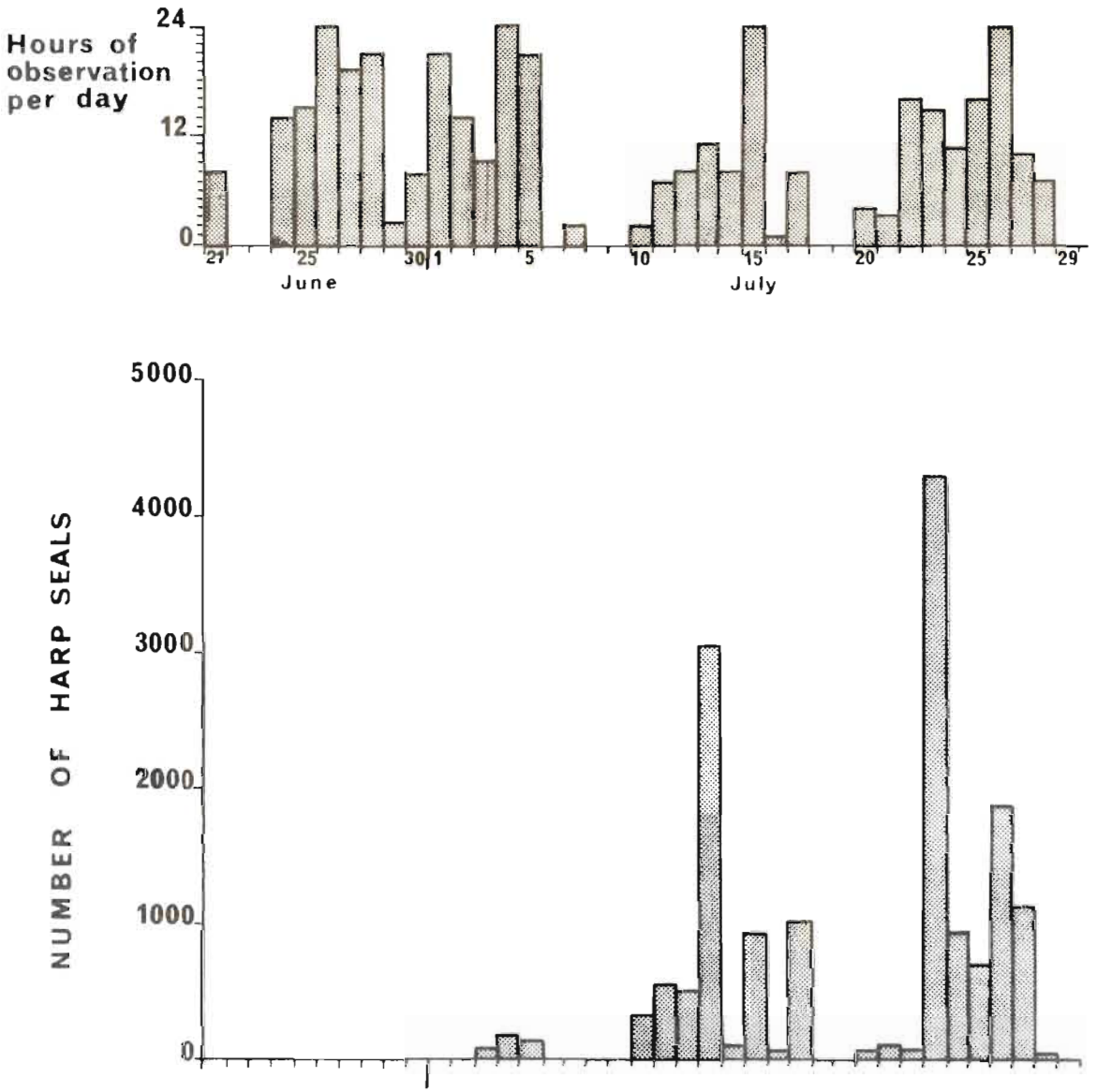


Figure 2 Harp Seal migration at Cape Hay in 1976

Beluga (*Delphinapterus leucas*)

Tuck (1957) recorded only 30 to 40 belugas at Cape Hay, all migrating westward on 26 June 1957. We assume that belugas migrate in Lancaster Sound earlier than narwhals since many large herds were reported at the mouth of Admiralty Inlet and along the north side of Lancaster Sound in late May and early June 1976 (Dr. S. R. Johnson, personal communication). We observed a total of 186 belugas migrating westward at Cape Hay in groups varying from a single animal to 30, during late June and early July (Figure 3). One solitary specimen recorded on 26 July had fresh scars on the back that may have resulted from a polar bear attack. Heyland and Hay (1976) have documented such an attack on a young beluga near Somerset Island.

Bearded Seal (*Erignathus barbatus*)

Bearded seals were frequently seen during the last week of July (Figure 4), when single animals or groups of 2 were recorded migrating westward. Bearded seals are known to migrate into Eclipse Sound in August (Bisset, 1968 and Miller, 1955). In 1976 their migration in Lancaster Sound occurred at the end of the narwhal migration period but coincident with the peak of the harp seal migration. A total of 168 specimens were seen, of which 164 were observed between 21 and 28 July. No seals were seen feeding in Lancaster Sound.

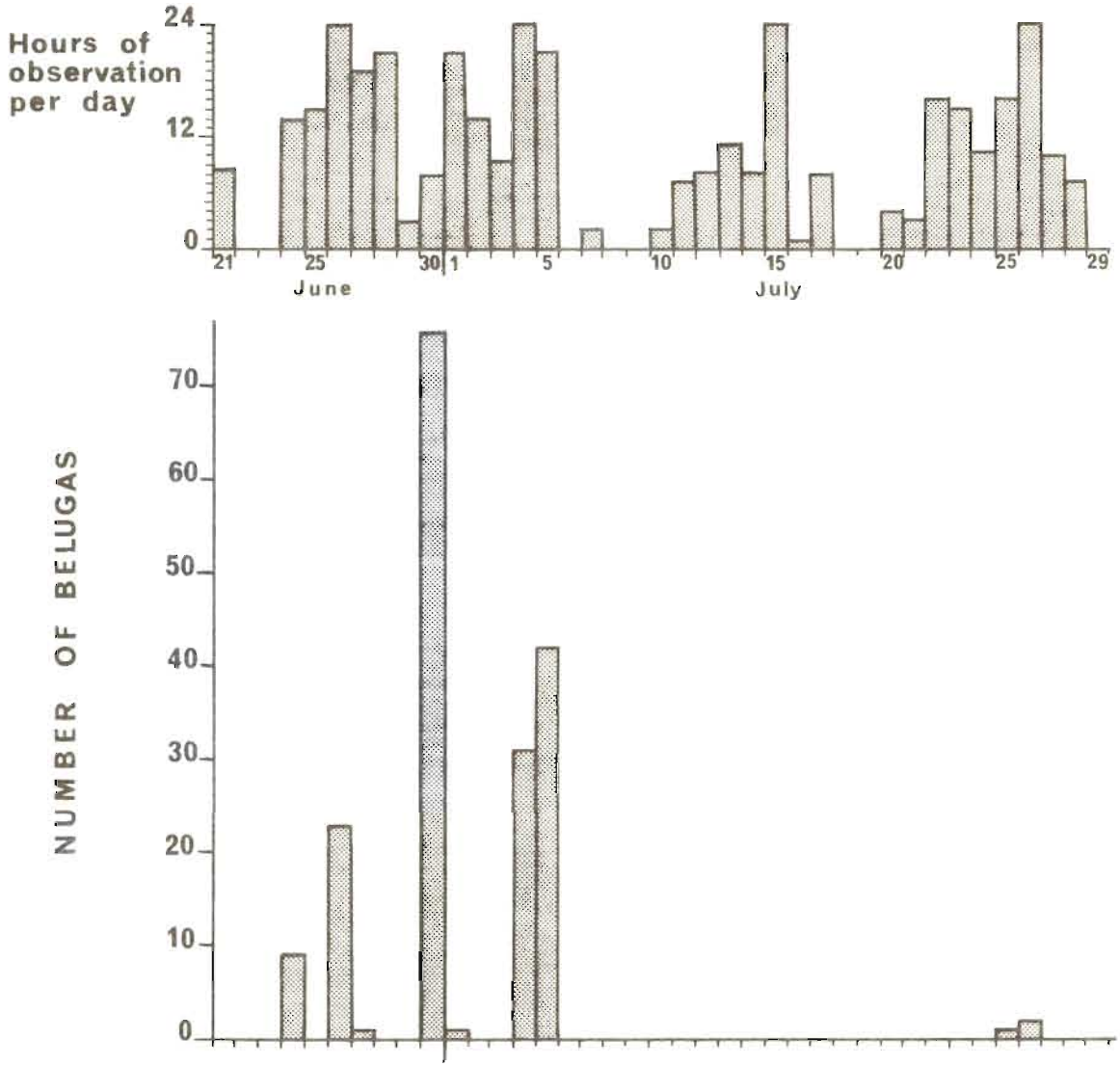


Figure 3 Beluga migration at Cape Hay in 1976

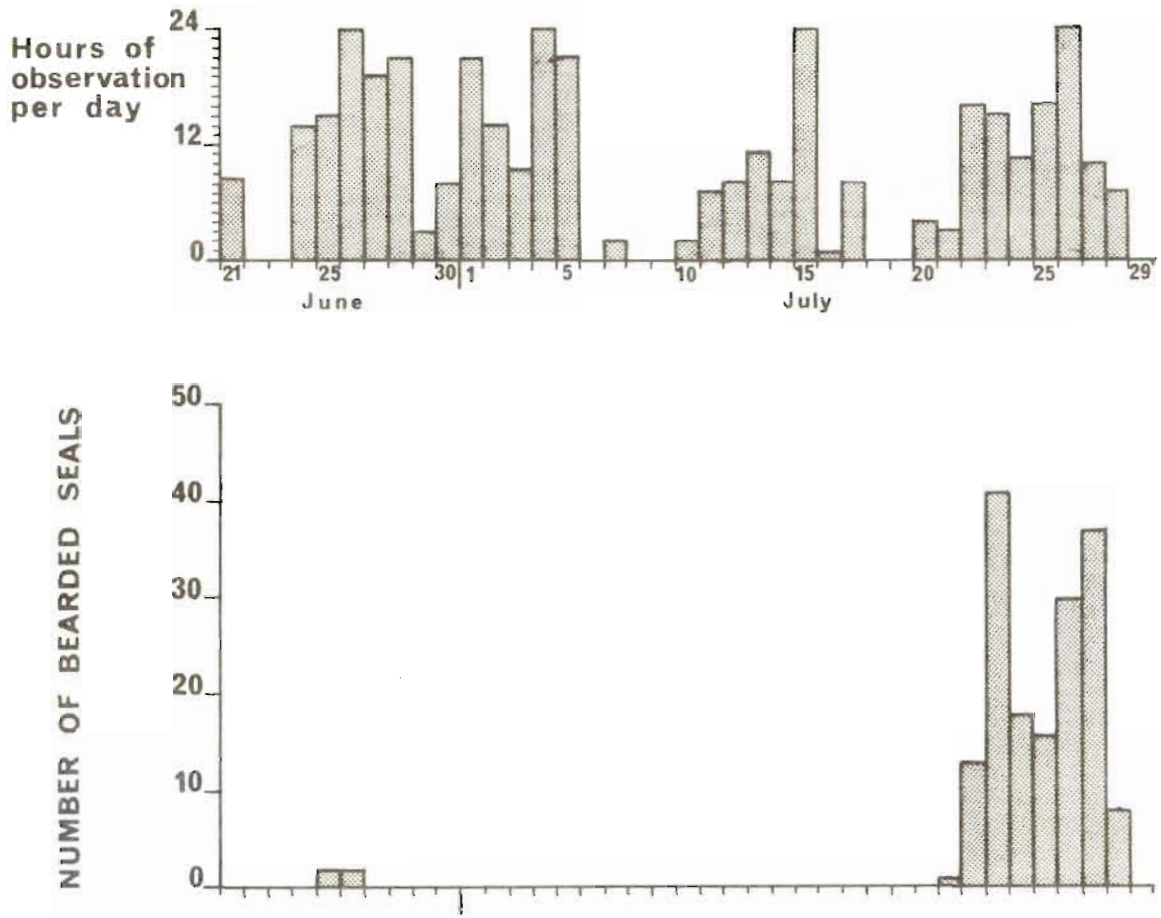


Figure 4 Bearded Seal movements at Cape Hay in 1976

Walrus (*Odobenus rosmarus*)

Walruses were seen regularly throughout the survey (Table 1). Group size did not exceed 4 and all walruses were observed migrating westward except for one group of 3 animals migrating eastward on 27 July. Some animals were observed feeding at the base of the murre cliffs, west of Cape Hay, during the first week of July.

The Wollaston Islands at the mouth of Navy Board Inlet have been stated by Miller (1955) to be a breeding site for walruses. This was denied by Ellis (1957) although he confirmed that walruses haul out on those islands in the summer. Our records of animals feeding in Lancaster Sound and of 2 specimens observed sleeping on an ice pan drifting eastward on 5 July tend to confirm that walruses remain in this area durig July. Inuit of the Pond Inlet region have traditionally hunted walruses at the Wollaston Islands during the summer.

Bowhead Whale (*Balaena mysticetus*)

Tuck (1957) reported only one group of 3 bowheads at Cape Hay. In 1976, twenty-three were observed migrating westward, three in the first week of July and 20 between 12 and 17 July (Table 1). Single bowheads were usually seen but a group of 3 was sighted on 14 July, composed of 2 adults and 1 young.

Hooded Seal (*Cystophora cristata*)

Only one hooded seal was observed at Cape Hay in the summer of 1976.

Four animals were seen on the north side of Lancaster Sound in early September (Dr. S. R. Johnson, personal communication). This species was reported by Tuck (1957) and by Degerbol and Freuchen (1953) to occur in the area in small numbers.

Ringed Seal (*Phoca hispida*)

Only 2 specimens were observed during the Cape Hay survey. The ringed seal is mainly a resident of inshore fast ice regions and is not highly migratory.

Polar Bear (*Thalarctos maritimus*)

Polar bears are fairly abundant in the Cape Hay area. Nine were recorded in the sea from Cape Hay during July, all swimming westward. Tracks were frequently observed on top of the cliffs although no animals visited the campsite. On 19 July, a female and her two cubs were observed about 300 feet (100 m) south of our camp. The presence of a dog at our station was sufficient to keep bears away.

CONCLUSIONS

The primary purpose of the survey was to assess the number of narwhals passing Cape Hay and to make some comparisons with the results obtained by Tuck in 1957. Although Tuck's primary work was a survey of the murres, he appears to have kept a constant watch and estimated numbers of all sea mammals seen on each day. In general, his weather conditions were similar with frequent fog and strong winds. The number of narwhals seen

was about 6,000 in each survey. No change in numbers of narwhals seems therefore to have occurred between 1957 and 1976 at Cape Hay.

An increase in bowhead whale sightings from 3 to 23 seems to be significant since Tuck stated that he kept a special watch for this species.

The harp seal migration in 1976 appears to have been later than in 1957 and was not fully assessed. Therefore no conclusions can be drawn about relative numbers passing Cape Hay in 1957 and 1976.

Tuck stated that bearded seals were rather common in the Cape Hay region but no definite migration was documented. In 1976 a westward movement of 169 seals was recorded at the end of the survey, during the harp seal migration.

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Appendix I. Obstructions to observation.

Date	No. hours observation	Obstruction to observation
21 June	8	Setting up camp
22	0	Fog: no observation
23	0	Fog: no observation
24	14	Fog from 0000 to 1000
25	14½	Fog from 0830 to 1800
26	24	Clear
27	19	Visitors from 0200 to 0700
28	20½	Fog from 1000 to 1330
29	2½	Fog from 0230 to 2400
30	8	Fog from 0000 to 0100 Heavy snow from 0100 to 0200 Free ice packed at base of cliffs until 1600
1 July	21	Fog and snow from 0300 to 0600 Drifting ice and strong wind reduced observation to 1 mile off shore
2	14	Snow and freezing rain reduced visibility from 1000 to 1400 No observation from 1400 to 2400 due to fog and heavy snow
3	9	Fog from 0000 to 1500. Observation limited to 1 mile off shore by strong wind from 2000 to 2400
4	24	Strong wind and drifting ice reduced observation to 1 mile from 0000 to 0330
5	21	Drifting ice all day. Fog from 2100 to 2400
6	0	Fog: no observation
7	2½	Fog from 0000 to 2000 and from 2230 to 2400. Observation from 2000 to 2230 reduced to 1000 ft by strong wind
8	0	Fog: no observation
9	0	Fog: no observation
10	2	Two hours observation in fog and snow reducing visibility to 1000 feet off shore
11	7	Fog from 000 to 1500, then observation in fog and light snow until 2200 when drifting ice stopped observation

Appendix I (cont'd.)

Date	No. hours observation	Obstruction to observation
12 July	8	Fog from 0000 to 0230 Snow blizzard from 0730 to 1130 (strong wind) Strong wind reducing observation to ½ mile off shore from 1130 to 1430. No observation possible from 1430 to 2400
13	11½	Strong wind from 0000 to 0330 Snow blizzard from 1200 to 1530 Thin fog limiting observation to 500 feet off shore from 1530 to 1830 Observation interrupted at 1830 by very strong wind
14	7½	No observation from 0000 to 0830 because of wind. Interrupted at 1500 by heavy rain
15	24	Clear
16	1¾	Fog from 0130 to 2400
17	7½	Fog from 0730 to 2000. Drifting ice from 2000 to 2400
18	0	Fog and heavy snow
19	0	Fog and heavy snow
20	3½	Observation from 0900 to 1015 and from 1630 to 1845 in visibility reduced by fog
21	3	Observation from 0845 to 1045 and from 1330 to 1430 in thin fog
22	15½	Fog from 0000 to 0830
23	19	Fog from 1900 to 2400
24	10½	Fog from 0000 to 0900 Observation from 0900 to 1930 in reduced visibility (½ mile in fog)
25	15½	Fog from 0000 to 0830 and from 1600 to 1730
26	24	Clear
27	9	Fog from 0100 to 1615
28	6	Fog from 0000 to 0700 Strong wind, ice and fog from 1300 to 2400
29	0	Fog, snow, ice and wind all day

Appendix II. Number of narwhals per hour on each day.

Time	21 June	24 June	25 June	26 June	27 June	28 June	29 June	30 June
24-1			17	15	0	41	0	
1-2			0	0	0	21	0	
2-3			0	0		16	0*	
3-4			0	0		0		
4-5			0	0		0		
5-6			0	0		0		
6-7			0	0		2		
7-8			0	0	59	0		
8-9				0	17	0		
9-10				0	45	0		
10-11		12		23	15			
11-12		163		18	20			
12-13		75		0	6			
13-14	0	0		4	26	0**		
14-15	0	0		58	0	0		
15-16	6	0		0	0	0		
16-17	0	0		0	0	0		67
17-18	0	0		0	0	0		94
18-19	0	0	0	27	0	0		20
19-20	0	0	0	12	0	0		2
20-21	0	0	3	0	0	0		24
21-22		0	0	0	0	1		1
22-23		0	28	0	15	1		0
23-24		40	2	0	27	24		0

Appendix II (cont'd.)

Time	1 July	2 July	3 July	4 July	5 July	7 July	10 July	11 July
24-1	0	0		0	9			
1-2	0	0		0	3			
2-3	0	0		0	0			
3-4		0		0	6			
4-5		0		0	0			
5-6		0		0	5			
6-7	0	0		0	0			
7-8	0	0		0	16			
8-9	0	0		6	20			
9-10	0	0		16	0			
10-11	0	0		41	12			
11-12	0	0		65	44			
12-13	0	0		56	47			
13-14	0	6		73	61			
14-15	72			108	71		21**	
15-16	45		30	15	60		25*	10
16-17	9		18	9	17		15*	8
17-18	0		13	13	53			7
18-19	36		2	67	51			41
19-20	45		0	61	17			5
20-21	43		17	70	0	1		0
21-22	25		22	31		34	2*	1
22-23	75		20	0		0*		
23-24	55		17	5				

Appendix II (cont'd.)

Time	12 July	13 July	14 July	15 July	16 July	17 July	20 July	21 July
24-1				92	0	0		
1-2	0**			373	0*	0		
2-3	12			367		0		
3-4	19	118**		100		0		
4-5	28	191		466		0		
5-6	45	166		57		0		
6-7	8*	42		12		0		
7-8		60		34		0*		
8-9		38	0**	6				*10
9-10		181	6	32			7	75
10-11		39	4	46			0*	32
11-12	0**	32	0	19				
12-13	11		11	22				2**
13-14	8		12	141				0**
14-15	5*		13	66				0*
15-16		0**		1				
16-17		25		6			0**	
17-18		7		2			3	
18-19		0*		0			2*	
19-20				0				
20-21				0				
21-22				0	3**			
22-23				0				
23-24			41	0				

Appendix II (cont'd.)

Time	22 July	23 July	24 July	25 July	26 July	27 July	28 July
24-1		0			0	0	
1-2		0			0		
2-3		0			0		
3-4		0			0		
4-5		0			0		
5-6		0			0		
6-7		0			0		
7-8		52			0		0
8-9	0**	16		0**	0		0
9-10	0	0	0	0	0		0
10-11	0	4	0	0	0		0
11-12	0	0	4	0	0		0
12-13	0	0	0	0	0		0
13-14	0	0	0	0	0		
14-15	0	0	0	0	0		
15-16	0	0	2	0	0		
16-17	0	5	46	0	0	0	
17-18	0	15	0	0	0	0	
18-19	0	0	0	0	0	0	
19-20	0		2*	0	0	0	
20-21	0			0	0	0	
21-22	0			0	0	0	
22-23	0			0	0	0	
23-24	0			0	0	0	

* observation only during first half hour.

** observation only during second half hour.