STATUS of the RINGED SEAL POPULATION of THESIGER BAY, N.W.T., 1987

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FISHERIES JOINT MANAGEMENT COMMITTEE

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of

THESIGER BAY, N.W.T., 1987

by

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DISCLAIMER

This report was prepared for the Fisheries Joint Management Committee, as part of the implementation terms of the Inuvialuit Final Agreement. The opinions, findings, conclusions and recommendations expressed in this report are those of the Authors and do not necessarily reflect the views of the Fisheries Joint Management Committee.

SUMMARY

Kingsley, M.C.S. and T. Byers. 1988. Status of the ringed seal population of Thesiger Bay, N.W.T., 1987. Rep. prep. for the Fisheries Joint Management Committee. Unpublished. 30 pp.

Seventy-five Ringed Seals (36 females, 39 males) were collected from Thesiger Bay off the south coast of Banks Island, N.W.T. from 8--11 June and 12 July--16 August 1987. Measurements, aging samples, and organ and tissue samples were got. The seals collected were as fat and heavy as usual at that time of year. However, 1- to 3-year-olds were very scarce: less than 3% of the population, instead of the 40--50% that they should be in a normal population. There were only 2 pups in the sample. Twelve of 25 females (48%) 6+ years old had never had pups. 40% of sexually mature females had inactive ovaries. Mean body condition of females that had never had pups was worse than of those that had, perhaps indicating that condition had constrained reproduction. No pathological conditions were noted in the sample population except that 3 seals were emaciated, 2 others had lung cysts, and one female had a 2.5 cm tumor on an oviduct. Preliminary analyses of blubber samples from 6 seals showed that mean organochlorine levels are high, but still 10 to 100 times lower than levels recorded in European pinnipeds from highly contaminated waters. While high levels of organochlorine residues do affect mammalian reproduction, the levels found are probably not high enough to do so.

INTRODUCTION

The purpose of this study was to determine the status of the Ringed Seal population of the Thesiger Bay area. Since 1984 Sachs Harbour hunters have only brought in a handful of seal pups each year. The Sachs Harbour Hunters and Trappers Committee presented this concern to the Fisheries Joint Management Committee. The F.J.M.C., set up under the Western Arctic Land Claims Agreement, advises the Minister of Fisheries and Oceans on management concerns and research priorities. The F.J.M.C. asked for, and accepted, a proposal from the Department of Fisheries and Oceans to investigate the condition of the population and to determine whether any abnormal factors could explain the recent scarcity of pups in the open water harvest by the Sachs Harbour Inuit.

The Ringed Seal is an ecologically important species. It is the main prey of the polar bear (Stirling 1977; Stirling and McEwan 1975; Stirling and Archibald 1977; Smith 1980). Feeding on fish and crustaceans, the Ringed Seal is an important link in Arctic seas between primary production and the top predators, polar bear and man. As well, the Ringed Seal may be a useful indicator of ecological health, being a large marine vertebrate distributed widely and evenly all over the Arctic, actively collected almost year-round by northern people.

The Ringed Seal is not now a staple in the diet of the Sachs Harbour Inuit. Muskox and caribou are plentiful on Banks Island and southern foods are accepted and available, although expensive. Adult and subadult seals are now hunted solely for dog food. Only seal pups are still eaten, a delicacy

prized by the local people. There is no longer a market for seal pelts in the general fur trade, but a few families still use seal skins for clothing and handicrafts to supplement their income. Nevertheless, one must not depreciate the role of the Ringed Seal in the economy of Sachs Harbour. Although skidoos are the preferred mode of winter transportation, dogteams are still required by guides for polar bear sport hunts in early spring, which bring tens of thousands of dollars to Sachs Harbour every year. During the 2 to 4 week spring period of the hunt the dogs must be in prime, vigorous condition. To this end, seal meat and blubber form the necessary basis of the canine diet throughout the year.

Previous Studies:

The biology of the Ringed Seal in the western Canadian Arctic has been studied intensively for two decades, most notably by Dr. T.G. Smith (1973, 1976, 1987; Smith and Stirling 1975, 1978), Dr. I. Stirling (1973; Stirling et al. 1977, 1982) and M.C.S. Kingsley (1984, 1986; Kingsley and Lunn 1983; Kingsley et al. 1982). These years of research have suggested that annual reproductive success and recruitment may fluctuate significantly from year to year (Stirling et al. 1977, 1982; Smith and Stirling 1978; Smith 1987).

There is little baseline data for the waters off southwest Banks Island. Cumulative results of aerial surveys from 1974 to 1979 (Stirling et al. 1982) show that the area from Cape Parry north to and including Thesiger Bay had the highest concentration of Ringed Seals in the eastern Beaufort Sea. In the Beaufort Sea aerial survey, the area north and east of Cape Dalhousie, south of Cape Kellet, and west of Nelson Head (Stirling et al.

1982) had the highest densities of Ringed Seals (mean rank of this area from 1974 through 1979 was 1.67 of 4). Mean densities in Thesiger Bay, south of Cape Kellet and west of Nelson Head, ranged from 0.161 to 0.6 /sq. km. (Stirling 1982, aerial survey detailed data). Amundsen Gulf had high densities of Ringed Seals, up to 3 /sq. km., in four years of aerial survey from 1981 through 1984 (Kingsley 1986).

METHODS

Study Design and Study Area:

It was determined that the first step in investigating the status of the Ringed Seal population of the Thesiger Bay area would be to examine the seals taken by the Sachs Harbour hunters. It was proposed that the physical condition of the seals, the structure of the population and contaminant levels in body tissues should be investigated. It would have been desirable to conduct aerial surveys to determine distribution and relative abundance of Ringed Seals in the area. However, the agreement to proceed with the study was finalized too late for those arrangements to be made.

All seals were collected by Inuk hunters of Sachs Harbour from Thesiger Bay off the southwest coast of Banks Island. Thesiger Bay lies between the Beaufort Sea to the west and Amundsen Gulf to the south and east. The second collections (10 seals) were made in the first week and a half of June. A second more extensive collection was made from the first half of July through August (65 Ringed Seals).

Ice Chronology:

By 9 July 1987 Thesiger Bay was clear of all consolidated ice, there being only a 2/10 cover of floating pans. By 30 July Amundsen Gulf was relatively ice-free, except for a wide belt of fast ice along the coast of Victoria Island and 2/10- -6/10 ice cover at the, western, mouth of the Gulf. 29 October marked the beginning of freeze-up (brash ice) in Thesiger Bay and Amundsen Gulf.

Field Sampling and Lab Analysis of Samples:

All seals brought into Sachs Harbour by the Inuk hunters were processed according to standard necropsy procedures for pinnipeds (Fay et al. 1979). For each seal these data were recorded:

1. Date, habitat and location of kill; whenever possible, approximate time and distance from shore; on ice, accompanying seals at holes or cracks;
2. Hair slip and general coat condition;
3. Ridge counts on foreclaws;
4. Total length and axillary girth to nearest cm;
5. Total body weight (this as well as sculp weight to nearest pound, later converted to kilograms);
6. Blubber thickness between sternum and skin to nearest mm;
7. Sculp weight (ears to hips);

and these samples obtained:

1. Brain and lung samples extracted from a subsample of seals and preserved;
2. Reproductive organs, stomach contents, and samples of blubber, muscle (from flank or back over ribcage), liver, and kidney were extracted and preserved, reproductive organs in formalin, others by freezing;
3. Lower jaw skinned out and saved for later aging by sectioning and reading of canines;

Seals were aged by the methods of Smith (1973). The jaws were boiled to loosen the teeth, and a canine was pulled out. Cross sections about 0.1 mm thick were sawn, fixed in an alcohol/glycerine mixture, and examined under transmitted light. Layers in the dentine of each section were counted three times, but not by different observers. In all age-based analyses the tooth age was used rather than the claw age. Claw age determinations were found

to be unreliable, especially for adults. Subadult ages from claw rings were underestimated by 1 to 2 years in comparison with the tooth age determinations of the same individuals. For adults, differences in ages between the two methods were 2 to 4 times greater than this.

Past reproduction of females was determined from the condition of the uterus. Multiparous females, that is those that had borne more than one pup, were identified by both uterine horns being stretched or swollen; primiparous females, that had only borne one, by stretching of only one horn.

Two indices of body condition, i.e. fatness, were calculated for each seal. The first was defined by

Cond1 = (Girth / Total Length) x 100;

the second by

Cond2 = (Total Weight / Total Length) x 100 (Smith 1987).

RESULTS and DISCUSSION

Age Structure:

In the Sachs Harbour open-water collection, 30 females and 35 males were taken (10 others were taken on the ice in spring). Collections from the ice are usually biased towards breeding adults, but open water collections should be less biased (Smith 1987). At least 20% of the seals in Smith's open-water samples were pups and 30% to 40% were in the 1+--6+ age class. However, in the 1987 collections from Thesiger Bay the year classes 0+--3+ account for only 5% of the total population (Fig. 1). Fig. 2 shows a population structure very different from the open-water populations examined by Smith (1987); the Thesiger Bay population has few pups, many adults. Previous studies (Stirling et al. 1982; Smith 1973) show that young of the year can compose over 40% of a healthy population. Smith's samples from open-water hunts out of Holman have between 14% and 42% young of the year in good seal production periods: 1971--72 and 1976--81. His collections were made at Holman and in Prince Albert Sound, surrounded by annually dependable fast ice and good breeding habitat. The southwest coast of Banks Island is close to the Cape Bathurst polynya, which opens up by early summer in most years and may affect the dependability of the fast ice breeding habitat to the southwest of Sachs Harbour. There is no good accumulation of baseline data for Thesiger Bay to indicate the long-term catch composition.

No definite explanations can be given for the low percentage of pups (2.7%) and 1- to 3-year-olds in Thesiger Bay in 1987. Possible reasons for low

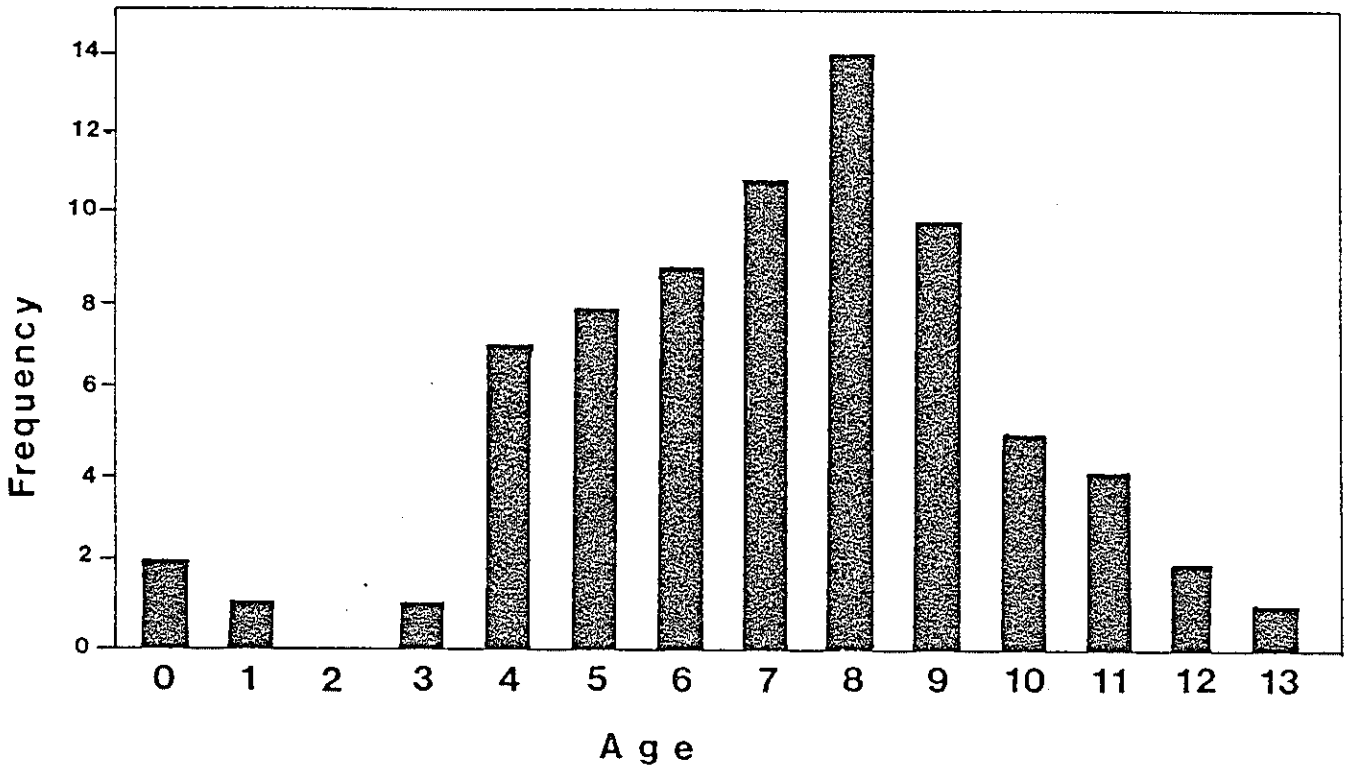

Fig. 1. Age frequency distribution of Thesiger Bay Ringed Seals.

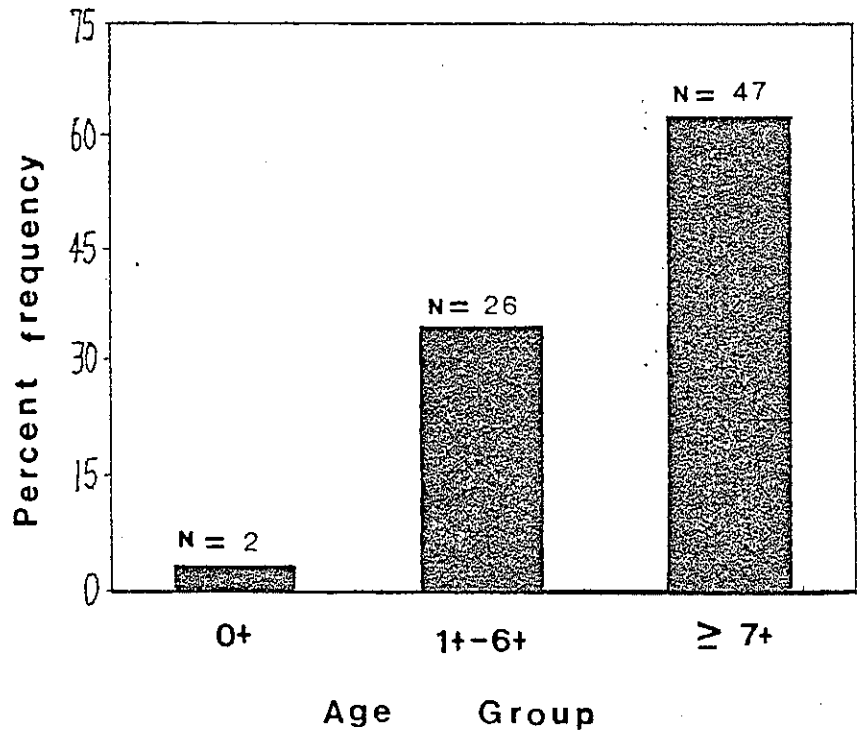

Fig. 2. Percent frequency of pups, sub-adults, and adult Ringed Seals from Thesiger Bay.

recruitment in some years are: high pup losses due to exposure or predation; reduced conception rates associated with poor condition; and physiological dysfunction in reproductive processes due to contamination by chlorinated hydrocarbon residues. Pups are heavily preyed on by Arctic foxes and polar bears, from which they are hidden and partly protected by the birth lair (Smith 1976, 1987; Stirling 1977; Burns and Kelly 1982; Lydersen and Gjertz 1986). Low snow cover may be an important factor in pup mortality: lack of sufficient snow accumulation may cause higher predation rates on the then more accessible pups, or perhaps expose pups to the elements (Smith and Hammill 1980). Very low snowfall in 1985 (Fig. 3) may have had an effect on pup survival in that year (no 2-year-olds in our sample). This would not, however, explain the low percentage of 3- year-olds as 1984 was a very high snowfall year.

Heavy ice cover in the Beaufort Sea in the winter of 1974--75, lingering through much of the following summer, was associated with a crash in Ringed Seal condition and pregnancy rates (Stirling et al. 1977), a drop in densities found in aerial survey, and a reduction in polar bear reproduction rates and condition (Kingsley 1979). In the summer of 1985, the Beaufort Sea cleared of ice slowly and late (Lawrence, pers. comm.) and measures of the condition of the polar bear population, such as cub weight, subadult condition, and reproductive rates, have since been low (Stirling, pers. comm.). This indicates that our evidence of low seal reproduction over the last four years is not a sampling error, but an accurate measure of the situation.

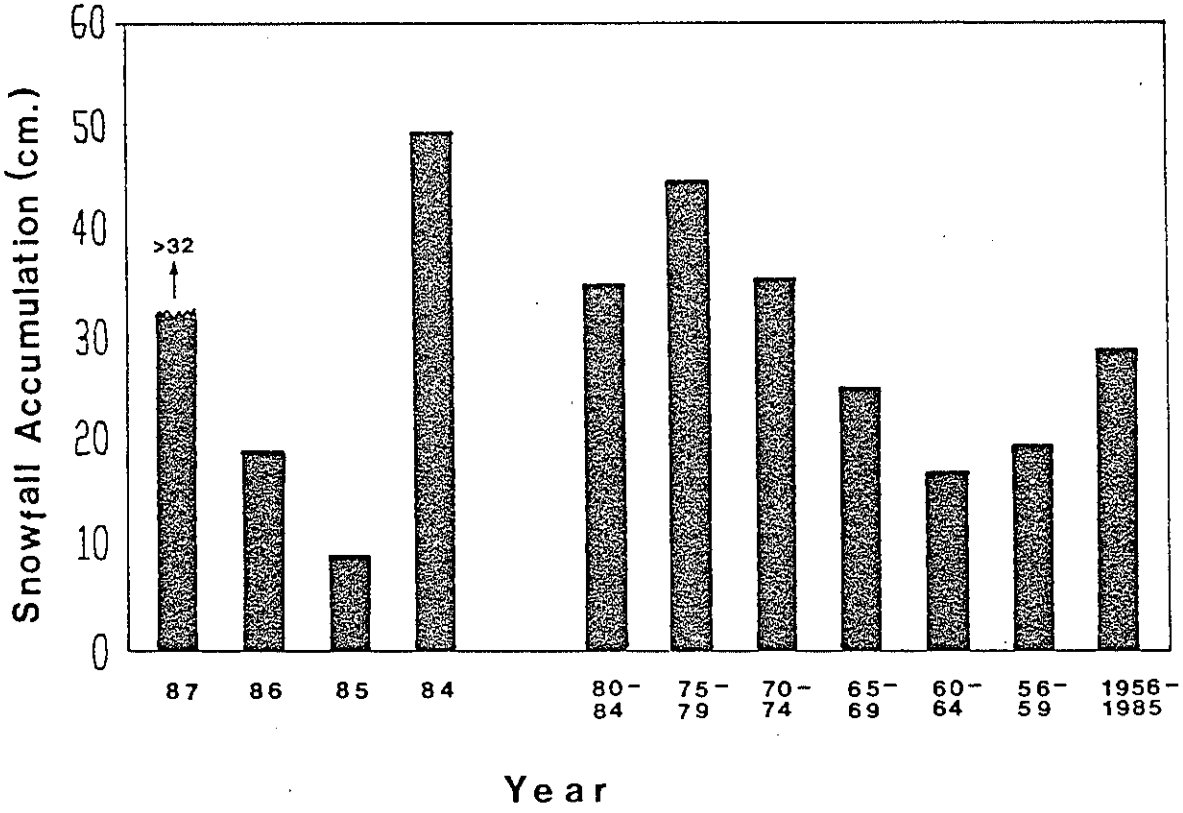

Fig. 3. Snowfall accumulation for Sachs Harbour (1956--1957) for the 4-month period November--February of every year, 5-year means for 1956--1984, and mean for 1956--1985.

There is evidence associating reproductive dysfunction and population declines among ringed and common seals in Europe with chronic contamination with chlorinated residues (Helle 1983; Reijnders 1980). Narrowing or blocking of the uterine tubes has been associated with DDT and PCB contamination in ringed seals in the Baltic Sea (Helle 1976). Common seals have declined in the western Waddensee where levels of DDT and PCBs are high, and interference with reproductive processes was indicated by feeding captive seals on Waddensee fish (Reijnders 1986). DeLong et al. (1973) found high organochlorine levels in female California sea lions bearing prematurely or aborting. Contaminant levels in our sample were not at levels expected to cause reproductive failure, and we saw no indication of any pathological conditions in the female reproductive tracts.

Reproductive Status:

Female ringed seals normally mature sexually between 6 and 8 years of age (Smith 1973, Table 8; 1987, Table 11). In the Sachs Harbour sample, 25 of 35 females were at least 6 years old. Of these, 52% (13/25) had previously borne pups, and 8% more (2/25) although they had not, had ovarian bodies or developing follicles; i.e. only 60% (15) showed any evidence of ovulation in current or previous years (parous individuals + nulliparous females having bodies or developing follicles in their ovaries). 72.7% (8/11) females of year classes 7+ and 9+ had no history of pregnancy (Fig. 4). This finding of 40% of mature females with inactive ovaries was similar to Smith's results (1987) in 2 of the 3 lowest seal production years in Amundsen Gulf (39% in 1974, 46% in 1975). Similarly, Stirling et al. (1977,

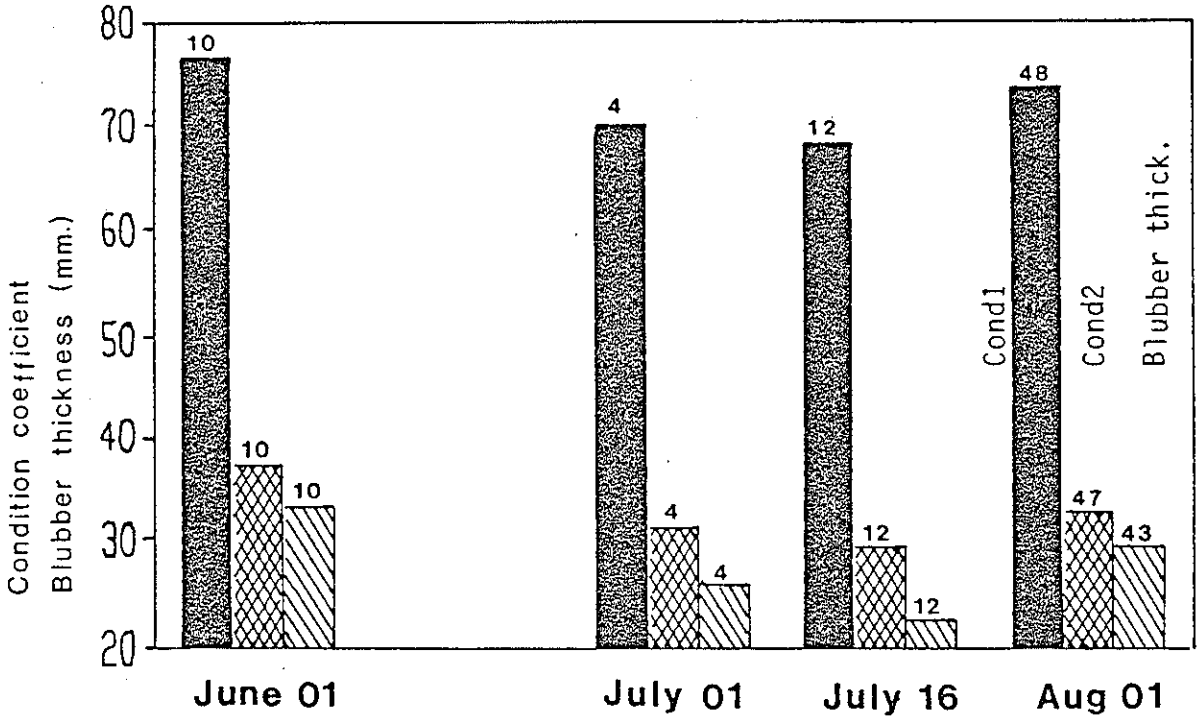

Fig. 4. Frequency histograms of nulliparous and parous females in all age classes.

1982) found low ovulation rates in 51% of the adult female Ringed Seals in the eastern Beaufort Sea and Thesiger Bay in 1975, a year of pup scarcity (2% of 186 seals sampled). One female, a 7-year-old collected on June 10, 1987, had an ovarian cyst 2.5 cm in diameter.

Physical Condition:

Indices of physical condition decreased in July from June levels, rising significantly again ($t(cond1) = 7.069$, $p < 0.001$; $t(cond2) = 4.334$, $p < 0.001$) in the first half of August (Fig. 5). This agreed well with known cycles of condition in Ringed Seals (McLaren 1958; Smith 1987), which lose a lot of their fat reserves in the moulting fast starting in May and continuing through the summer. Condition (cond1) of adult Ringed Seals at Holman declined from the beginning of June through July to a mean low of between 70 and 75, then returned to values over 80 by the first half of August (Smith 1987). The mean condition of the Holman subadult samples followed much the same pattern, but didn't start increasing again until the second half of August. Our results showing a decrease in body condition and blubber thickness through summer are normal and as expected.

On the basis of Smith's (1987) criteria for stunted seals (two standard deviations below the mean standard length for that age group) our sample population contained no stunted seals, although 10 (7 mature females, 2 mature male, 1 five year-old male) were at least 1.5 standard deviations below their means.

The condition of nulliparous females (Table 1) was worse than that of

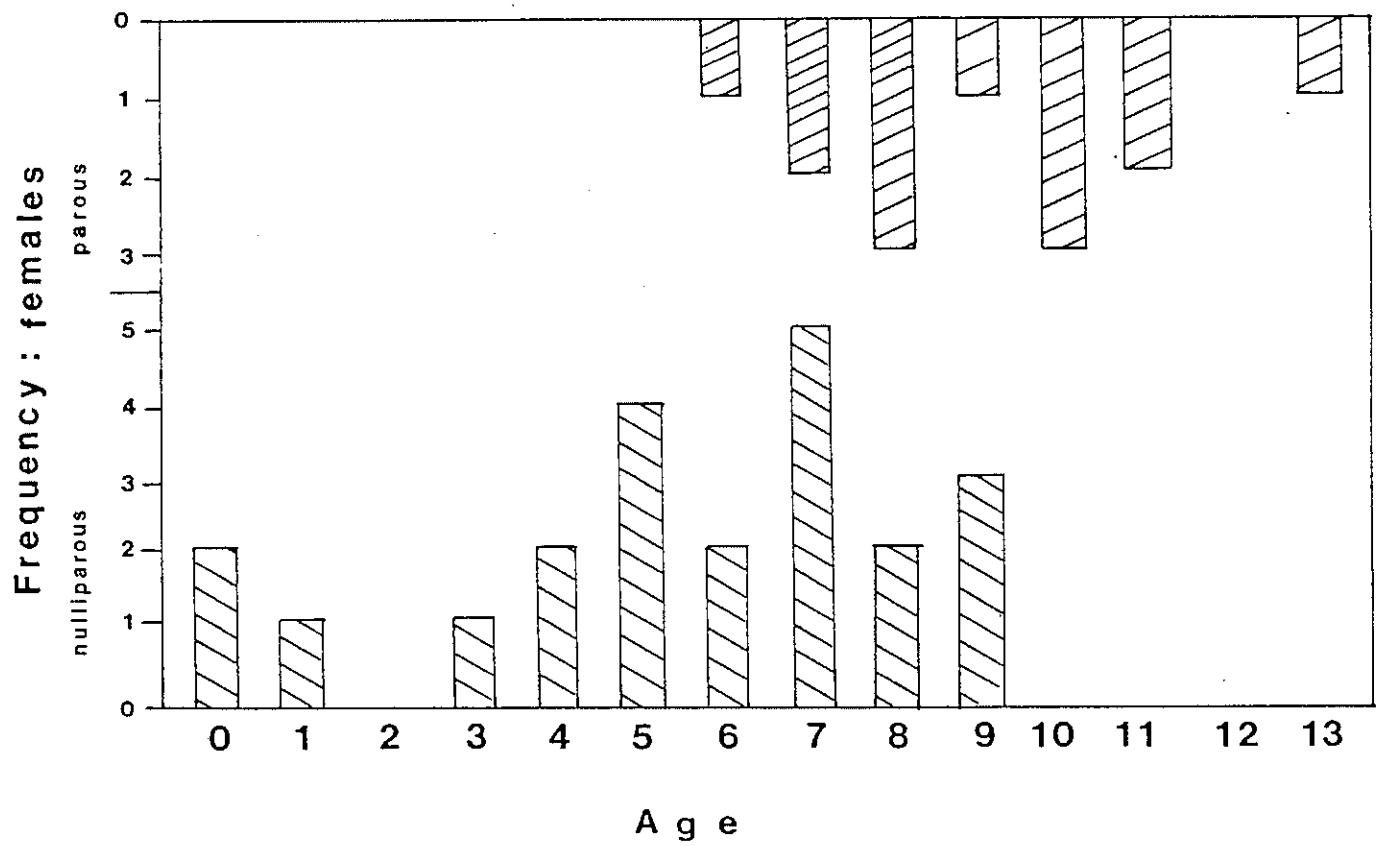

Fig. 5. Condition indices and blubber thickness, with sample sizes, of Ringed Seals over four collection periods in 1987.

found to be emaciated. The female had body condition indices of 62.97 and 28.21. The males had condition indices of 58.08 and 22.92, and 63.64 and 28.63. These thin seals had greatly enlarged gall bladders (8.2--9.1 cm. long). This is also indicative of malnutrition, as the mammalian gall bladder becomes distended with backed-up bile during fasting or starvation (Hightower and Janowitz 1979). There were no pathological abnormalities to explain the cause of these emaciations. No parasite infestations were found in these seals. Lungworm infestations have been associated with emaciation in ringed seals, but only in very young ones (Smith, pers. comm.). Only one seal in our sample, an eight-year-old female, had a heavy parasite load (roundworms in an empty stomach).

Contaminants:

From preliminary analysis of organochlorine residues in 6 seals (4 males and 2 females) taken from Thesiger Bay in June, it appears that PCB levels are higher than in seals from elsewhere in the Canadian Arctic, but are still 10 to 100 times lower than those in European seals (Table 2). Levels of all organochlorines except dieldrin are higher in the 6 Thesiger Bay ringed seals than recorded in ringed seals elsewhere in the Canadian Arctic in the past 15 years, although Harp Seals from 1976-78 in Grise Fjord, Pangnirtung, and north West Greenland (Ronald et al. 1984) had greater DDT (both sexes) and PCB (adult males) levels.

Of the two female samples analyzed, a non-ovulating 7-year-old had less PCB, total DDT and toxaphene residues than a multiparous 10-year-old. However, the nullipara had twice the HCH levels and 3 times the CBz of the

Table 1. Condition indices of ovulating vs. non-ovulating ringed seals of Thesiger Bay.

Collection period		Ovulation Status: ovulating	non-ovulating	t-test
June 01-15	Cond1	76.34 + 2.33	78.36 + 0.69	
	Cond2	34.53 + 3.20	34.08 + 0.11	
	n	4	2	
July 01-15	Cond1	73.57 + 3.12	66.02 + 1.10	
	Cond2	30.66 + 0.75	23.42 + 0.81	
	n	2	2	
Aug. 01-15	Cond1	75.59 + 5.74	69.28 + 5.89	4.437
	Cond2	39.01 + 6.14	28.56 + 1.44	7.925
	n	10	4	
Total (June-Aug)	Cond1	75.52 + 4.71	70.74 + 6.27	4.838
	Cond2	36.84 + 5.86	28.66 + 4.15	8.193
	n	16	8	

females that had borne pups. There is some basis for argument that body condition has an effect on ovulation (Stirling et al. 1982). Half of the 8 non-ovulating mature females appeared to have somewhat retarded growth (at least 1.5 standard deviations below the means for their ages).

Pathology:

On superficial examination, 2 seals were found to have lung cysts (a 10-year-old female and a 9-year-old male). However, the male had above average condition indices (cond1 = 70, cond2 = 34), and the female's were only slightly below average (69, 33.5).

Three mature seals (a 9 year-old female and two 8 year-old males) were

multipara, as well as greater dieldrin levels (Table 3).

Table 3. Organochlorine levels in an ovulating (#8705) and a non-ovulating (#8704) female.

Sample #	Age	CBz	HCH	Chlor.	DDT	PCB	Toxaph.	Dield.
SH8704	7	158.06	766.98	598.15	666.02	1172.50	368.76	39.03
SH8705	10	57.70	358.54	1071.49	702.22	2252.65	2074.42	30.81

CBz = chlorobenzenes; HCH = hexachlorocyclohexanes; Chlor. = chlordane;
DDT = sum of DDT isomers & metabolites; Dield. = dieldrin;
Toxaph. = toxaphene (results subject to further study).

CONCLUSIONS

We conclude that reproductive success has been low among the Ringed Seals of the eastern Beaufort Sea for the past four years, results from our sample being confirmed by the state of polar bears. Poor reproduction in 1974--75 was apparently associated with a winter of heavy ice in the Beaufort Sea, and a similar occurrence may have been responsible this time. There is now no evidence of poor body condition, widespread disease or heavy parasite infestation, or high pollution contamination in the area.

RECOMMENDATIONS for CONTINUED RESEARCH

In the light of the apparently low recruitment of 1+ to 3+ year classes, we recommend that this study be extended for another year to investigate the status of the 0+--4+ year cohorts in next year's population. It would be advisable to begin field activities earlier in the season (i.e. June) so as to:

a) increase sample size, especially important should there be another poor weather open-water season which decreases hunting opportunities and success;

b) avoid late-summer reluctance of hunters to allow their seals to be cut up. (They prefer to preserve them intact for winter dog food.)

Another factor influencing the need for earlier collections is that "Ovarian evidence from early in the season is also needed to ascertain that there is a normal proportion of sexually functional (ovulating) females in the sample" (Smith 1987).

Sampling from the Holman open-water harvest might also be advisable to investigate any possible differences between areas that may explain the scarcity of pups and young in Thesiger Bay.

Aerial surveys, though expensive to undertake, would be beneficial in providing a good picture of the distribution and abundance of Ringed Seals and other marine mammals in the Thesiger Bay/Amundsen Gulf area.

Analysis of a greater number of blubber samples must be completed before anything conclusive can be said about the level of organochlorine

contamination in the Ringed Seals of the study area. Tissue samples have been preserved and more are to be analysed in 1988.

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Appendices I - III

Collection Data for Ringed Seals : Sachs Harbour '87

Sample	Location	Habitat	Dist. from Shore	Time of Day	Remarks
SH8701	south of Sachs Harbour	ice hole	1.5-2 miles	late aftern.	
02-03	south of Sachs Harbour	ice crack	1.5-2 miles	late aftern/ early even.	02=alone 03=grp of 3
04	south of Sachs Harbour	ice hole	1.5-2 miles	early even.	grp. of 2
05-09	south of Sachs Harbour	ice hole	<2 mile	morning/ early aftern	alone
10	west of Sachs Harbour	ice hole		afternoon	alone
SH8712-15	Cape Kellett	ice (2) o.w.(2)	1 mile (2) 2 mile (2)	late aftern. late aftern.	
16	Fish Lake	*			
17-21	u.s.	o.w.			
22	NO DATA				
23-27	u.s.	o.w.			
28-30	Cape Kellett	o.w.	>2 mile	night	grp. of ~50
31	Cape Kellett	o.w.	30 metres	late night	single
32	east of Cape Kellett	o.w.	~1 km.	00:30	small grp.
33	Cape Kellett	o.w.	nearshore		
34	Cape Kellett	o.w.	<1 km.		
35-38	u.s.	o.w.	nearshore		
39-43	Masik River	o.w.	<1 km.		
44-48	Cape Kellett	o.w.			
49	south of Sachs H.	ice pan	between 2 & 15 km.	late aftern.	
50-51	u.s.	o.w.			
52-55	south of Sachs H.	o.w.	>2 km.		heading west
57	Duck Hawk Bluff	o.w.		night	
58	u.s.	o.w.		15:00-22:00	
59-66	south of Sachs H.	o.w.	5-10 mile		some in grp. some single
67	Fish Lake	o.w.			
68	south of Sachs H.	o.w.	~4 mile		single
69-70	u.s.	o.w.		late night	

71-72	south of Sachs H.	o.w.	5-10 mile	late night	
73-74	south of Sachs H.	o.w.			heading towards shore
75-76	between Sachs H & Newfish L.	o.w.			

o.w. = open water
u.s. = unknown site in Thesiger Bay
* shot & wounded on ice, then chased through open water.

RINGED SEAL DATA (SACHS HARBOUR 1987)

Sample #	Date Coll.	Date Processed	Sex	Age	Total Length (cm)	Girth (cm)	Body Wt. (kg)	Sc. Wt. (kg)	Blubb. Thick. (mm)	Testis Length (mm)
SH8701	870608	870608	M		127.5	093.0	50.0	20.4	33	
SH8702	870608	870608	M		135.0	097.5	52.3	22.7	32	
SH8703	870608	870608	M		127.5	099.0	56.8	20.4	30	
SH8704	870608	870608	F		113.5	089.5	38.6	18.2	33	
SH8705	870609	870609	F		120.0	094.5	46.8	22.7	40	
SH8706	870609	870609	M		130.0	101.0	59.1	27.0	34	49
SH8707	870609	870609	F		113.0	084.0	36.4	18.2	35	
SH8708	870609	870609	F		113.0	084.0	36.4	15.9	31	
SH8709	870609	870609	F		113.0	088.0	38.6	18.2	36	
SH8710	870610	870610	F	05	124.5	097.0	43.2	18.2	32	
SH8712	870712	870726	F	06	113.5	081.0	35.4	16.4	27	
SH8713	870712	870726	M	05	117.6	081.6	38.2	15.9	25	
SH8714	870712	870726	M	03	108.8	075.3	30.9	10.9	22	16
SH8715	870712	870726	M		116.8	080.7	39.1	15.0	28	39
SH8716	870717-21	870727	F	06	111.5	084.5	33.6		28	
SH8717	870717-21	870727	F	04	102.1	068.2	24.5	07.7	14	
SH8718	870717-21	870727	M	05	118.7	083.0	40.4	16.4	27	40
SH8719	870718	870730	M	04	127.6	089.5	46.4	18.2	23	45
SH8720	870718	870730	M	03		073.0	28.6	10.4	24	35
SH8721	870721	870802	M	04	128.2	092.8	47.3	18.2	27	42
SH8722	870700	870802	M	04	129.7	086.8	42.3	17.3	29	44
SH8723	870718	870802	M	05	116.9	067.9	26.8	07.3	13	27
SH8724	870718	870803	F	02	103.3	067.4	23.6	09.1	20	
SH8725	870718	870803	M	03	115.4	075.5	32.3	11.4	24	44
SH8726	870718	870803	M	05	116.9	086.8	34.5	14.5	22	37
SH8727	870718	870803	M	04	118.1	077.9	32.3	11.4	23	30
SH8728	870806	870807	M	05	117.5	088.7	45.9	20.0	42	39
SH8729	870806	870807	M	02	101.6	076.7	34.5	14.5	38	41
SH8730	870806	870807	M	05	119.3	091.8	50.0	20.9	41	40
SH8731	870808	870810	M	08	115.0	85.6	41.4	18.6	38	38
SH8732	870808	870810	M	01	092.7	070.8	26.4	14.5	25	27
SH8733	870719-22	870810	M	01	115.0	081.2	30.9	12.7	27	28
SH8734	870807-08	870810	F	07	105.4	083.2	39.1	17.3	41	
SH8735	870809	870810	F	01	079.5	063.2	16.4	06.4	12	
SH8736	870809	870810	F	01	088.5	064.2	19.1	09.1	27	
SH8737	870809	870810	F	01	106.5	079.5	30.4	12.7	31	
SH8738	870807-08	870810	M	03	103.1	079.0	34.1	12.7	21	32
SH8739	870809	870811	F	05	102.7	072.7	27.7	12.3	37	
SH8740	870809	870811	M	06	117.4	074.0	34.1	12.7	18	41
SH8741	870809	870811	F	04	113.0	077.4	34.5	14.5	30	
SH8742	870809	870811	F	08	108.6	074.8	36.4	14.5	21	
SH8743	870809	870811	M	05	118.3	081.0	40.4	16.4	28	38
SH8744	870808	870811	M	02	100.5	071.0	25.4	10.0	20	25
SH8745	870808	870812	F	08	130.0	096.5	48.6	20.9	26	
SH8746	870808	870812	F	09	122.0	084.4	40.9	18.2	35	
SH8747	870808	870812	F	07	118.7	097.6	51.4	22.3	37	
SH8748	870808	870812	F	06	109.8	073.2	31.4	13.2	23	
SH8749	870811	870811	F	01	119.1	075.0	33.6	10.0	07	

SH8750	870812	870812	M	02	120.7	083.7	35.0	14.5	29	24
SH8751	870811	870813	M	04	111.7	084.2	40.4	18.2	33	
SH8752	870811	870813	F	02	110.6	072.7	33.6	15.4	29	
SH8753	870811	870813	M	05	111.1	077.1	34.5	17.3	34	30
SH8754	870811	870813	M	06	119.0	084.0	40.0	17.3	32	40
SH8755	870811	870813	M	05	107.9	080.0	35.0	15.4	36	25
SH8756	870812	870813	M	04	114.9	083.4	37.3	15.9	32	27
SH8757	870812	870813	M	03	106.2	081.4		14.1	30	21
SH8758	870812	870813	M	05	110.0	086.3	44.1	18.2	36	30
SH8759	870813	870814	F	08	124.9	085.4	46.4	16.4	27	
SH8760	870813	870814	F	08	113.2	085.5	34.5	13.6	28	-
SH8761	870813	870814	F	08	123.5	099.4	59.1	30.4	42	
SH8762	870813	870814	M	05	112.5	089.1	36.8	16.4	29	27
SH8763	870813	870814	F	04	113.9	082.5	35.9	16.4	30	
SH8764	870813	870814	M	04	105.7	071.0	30.0	11.4	26	29
SH8765	870813	870814	F	01	098.9	076.0	25.0	10.4	32	
SH8766	870813	870814	F	01	101.0	072.5	27.7	11.4	26	
SH8767	870815	870816	F	03	094.8	080.0	31.4	13.2	34	
SH8768	870816	870816	F	08	127.4	102.8	62.7	32.7	44	
SH8769	870816	870817	M	06	112.0	086.8	41.8	16.4	24	40
SH8770	870816	870817	F	05	101.0	083.6	35.9	14.5	24	
SH8771	870816	870817	M	01	110.8	074.4	28.6	11.8	23	23
SH8772	870816	870817	F	01	113.1	089.2	39.5	17.3	40	
SH8773	870811-14	870818	F	01	094.3	073.1	22.3	07.7	19	
SH8774	870811-14	870818	F	06	121.7	093.3	50.0	23.2	38	
SH8775	870811-14	870818	M	06	125.4	079.8	35.9	11.8	18	40
SH8776	870811-14	870818	F	02	112.0	085.9	34.1	16.4	23	
*				**						

* SH8711 is a Bearded Seal.
** 2 Ringed Seal pups were collected but not examined.

Mean lengths of age classes : Thesiger Bay Ringed Seals

Age	n	Mean Length	St. Dev.	Range
0	2	84.00	6.36	79.5- 88.5
1	1	94.30		
2	0	-----		
3	1	94.80		
4	7	105.93	7.28	98.9-119.3
5	8	111.69	11.75	92.7-135.0
6	8	110.20	4.05	102.7-115.0
7	11	113.32	6.57	101.0-124.5
8	14	116.56	7.43	102.1-127.6
9	10	116.83	9.27	101.6-130.0
10	5	119.92	7.66	108.6-130.0
11	4	126.02	2.20	123.5-128.2
12	2	116.50	1.56	115.4-117.6
13	1	127.40		
$\bar{X}$[pop]: 7.1	74	113.3 ± 10.4		