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PRELIMINARY REPORT ON
CANADIAN RESEARCH ON
HARP AND HOOD SEALS,
1973

by

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Harp Seals

A. Photographic Aerial Survey. A survey was carried out from March 5 to 10 from a chartered two-engined Piper Aztec aircraft with long-range tanks preceded by reconnaissance aircraft. One patch of seals in the Gulf, located 35 km north northwest of Grindstone, Magdalen Islands, (47°N, 62°W) was photographed on March 5. Seals on the Front were located beginning to whelp 25 km east of Spotted Islands (53°30'N, 55°20'W) on March 5. They stretched out along a north-south axis as the current drifted them south, and split into three major patches: south (the first whelped), centre and north. They were photographed on March 7 and incompletely on March 10.

Results: Gross totals of adults counted show 15,000 adults in the Gulf on March 5, 61,000 adults on the Front on March 7, or 4 times as many seals on the Front as in the Gulf. In 1972, by contrast more seals whelped in the Gulf than on the Front, relative numbers counted being 125,000 and 100,000.

Photographic counts of adults are always underestimates especially if counts are made early in the season. Early season counts are necessary where ice is moving and wheeling which is normal, and if early catching occurs, as on the Front from March 12, 1973.

Some correction can be applied for the Gulf photographic counts on March 5, 1973 which were made from 1115-1130 hours. From the number of open breathing holes seen on the photos, many adults were in the water. "On-ice" counts made in this patch by our observer from a helicopter at 1000 hours on March 8, 1973 gave a figure of 4 adults to 10 young, and the same ratio was obtained at 1430 hours on March 9. Applied as a correction to the March 5 counts, it gives a figure of $15,000/0.4$ or 37,500 adults in the Gulf on March 5. These are presumed to be whelping females, since on-ice counts showed no adult males present on ice up to March 10.

A further correction could be made for unwhelped adults, assuming these to be in the water. In 1973, births occurred between February 28 and March 17 approximately. The curve of number of births against time is believed to be positively skewed with a peak about March 4 in the Gulf of St. Lawrence. Then on March 5, about 55% of the pups were born. If all unpupped adults were in the water the count can be increased to $37,500/0.55$ or 68,000 adults. This is a maximal estimate for the Gulf since it would be reduced if the unpupped adults were on the ice. No other seal patches were located or reported in the Gulf.

On the Front, no on-ice counts of this kind are available, since workers on the ice were too busy tagging and branding adults to count relative adult and pup numbers; moreover whelping was at an earlier stage than in the Gulf. However, a capture-recapture experiment will give an estimate of the number of pups to number of adults for one patch on the Front during the week of the survey.

B. Helicopter Operation. Owing to heavy ice in the spring of 1972, an icebreaker could not be obtained to work on the Front. A helicopter operation was therefore planned for 1973 using a Hughes 500 machine, previously found to be the most speedy and economical to use. A fuel cache of JP4 jet fuel was established in late November, 1972 by ship at Cartwright, Labrador. Small caches on the outer coast were not set out by ship owing to an early freeze-up, but were established by aircraft in March at Black Tickle and Mary's Harbour, Labrador. The helicopter was based at Cartwright. Four men carried out branding and tagging work. All work was carried out at the most southerly of the three Front patches. An automatic beacon was left on the ice and the helicopter homed on it, tracing the southward drift of the patch in the Labrador current. Some searching, however, was still necessary and continued reconnaissance on every day (the photo aircraft did not fly every day) would have helped the rather short-range helicopter to locate seals. From March 7 to 11, the helicopter flew daily, helped by good weather.

C. Tagging. Nine hundred and thirty-three young seals were tagged in the southern and central patches.

Recaptures, at time of writing, are coming in from Canadian ships, and landsmen. Norwegian ships took young seals from one or more of the northerly patches and no recaptures are expected from them.

The Canadian ships took their catch in the southern patches from March 12 onward. From late March through early April, landsmen took tagged seals in the neighbourhood of the Baie Verte Peninsula and at Twillingate, northeast Newfoundland.

Estimates of the catch of young seals by ships and landsmen are already available, and with completed tag recoveries will allow estimates of production of young in these patches up to the mean date of tagging, March 10. In order to estimate full production in this patch, a correction will be needed, based on the estimated curve of whelping by date on the Front. This is about 5 days later than in the Gulf, giving a mean date of birth of about March 10.

D. Branding. An explosive branding device, modified from that used in the Gulf in 1972, was tested on the Front. Two hundred and fourteen adults were branded with the symbol 73. Together with branded adults marked with other symbols in the Gulf in 1972, recaptures of these animals, principally from shore fisheries, will give direct information on mixing of whelping adults between Gulf and Front. However, as noted in the section on photographic aerial survey, the indirect evidence from changing relative numbers in the two areas in each year is very strong that massive cross-mixing occurs each year. These changes are probably associated with changing ice conditions. In 1972, ice conditions were severe all winter; in 1973, above-normal temperatures began in late February and the ice became normal in thickness. The relative numbers of harp seals returned to the normal pattern. A wide shore lead, extending north along the Labrador coast to Cape Harrison (55°N) by March 7, allowed the seals on the Front to reach their usual position.

The branding apparatus showed some malfunctions, later corrected and this feature, together with loose ice conditions, prevented us from branding more adults on the Front in 1973.

In the Gulf, a liquid propane-fired branding torch was used to brand the letter X on 60 young harp seals in March 1973. The management helicopter was used for this work in the Gulf of St. Lawrence.

Owing to an early freeze-up on the North Shore of Quebec in December, the seal-net fisheries on this coast failed for the second successive winter. It is scarcely surprising, therefore, that no brand returns were made from these fisheries, from among 550 adult seals branded in the Gulf in March 1972. However, three such brands were reported from a small vessel which took some adult seals in the water near the Magdalen Islands in March 1973, but subsequently sank with its cargo.

Brands from among 500 young harp seals branded in the Gulf in March, 1972 were returned from West Greenland (3 brands) and from the northeast coast of Newfoundland (1 brand). This pattern had already been established in the past from tag returns, but the expected zero mortality rate of brands will likely allow longer-continued information on mixing of young seals born in the Gulf with those born on the Front in subsequent years.

E. Age Samples. The only major age sample obtained in 1973 has been from the St. Anthony area of northeast Newfoundland. It is understood to number about 250 seals, but at time of writing has just been received. A sample from this region has been analysed annually since 1966, and shows a good mixture of all age classes, with comparable bias due to heterogeneity each year. It is likely that the 1973 sample, when analysed, will allow an estimate of the strength of the 1972 year class, aged one year in the new sample, and will therefore allow a first appraisal of the escapement following the quota of 120,000 first imposed in 1972. This quota resulted in 1972 in a catch (Gulf and Front) of some 117,000 young harp seals by all agencies.

Hood Seals

Little information was gained on hood seals in 1973. They are protected in the Gulf of St. Lawrence. Very few were found there in 1973. Six were branded, three females and their three young. Their rarity was believed due to unsuitably thin ice.

On the Front a reconnaissance flight northward along the Labrador coast to Frobisher was carried out on March 26. No hood seals were seen. Wind conditions had moved a mass of ice south from Cape Chidley, leaving only broken ice along the Labrador coast. This could explain below-normal catches of about 5000 hood seals northeast of Newfoundland by the Norwegian fleet. It is possible that many hood seals in 1973 whelped on heavy and extensive ice which extended in late March from Cape Chidley, north and east round Baffin Island into Davis Strait, but this area could not be surveyed.

Canadian Catch Figures

Catch estimates for 1973 are shown in Table 1. Accurate figures and a detailed breakdown are not yet available. These figures refer to all seals.

Table 1. Canadian harp and hood seal provisional catch figures, 1973.

ICNAF Area	'Front'		'Gulf'	
	2, 3		4	
	<u>Pups and beaters</u>	<u>Immatures and adults</u>	<u>Pups and beaters</u>	<u>Immatures and adults</u>
a) Harp seals				
Landsmen and small craft	22,026	6,301	7,879	100
Ships	<u>29,082</u>	<u>4,962</u>	<u>-</u>	<u>-</u>
	51,108	11,263	7,879	100
Total harp seals - - - - -				<u><u>70,350</u></u>
b) Hood seals	<u>Pups</u>	<u>Immatures and adults</u>		
Landsmen and small craft	47	17		
Ships	<u>76</u>	<u>268</u>		
	123	285		
Total hood seals - - - - -				408