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The sealing season and Norwegian seal investigations off Newfoundland-Labrador in 1977

by

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Introduction

Seal investigations on the Front off Newfoundland-Labrador were carried out during the sealing season in 1977 on board the sealer Kvitbjørn of Tromsø, captain Arvid Kristiansen.

The established program includes the plotting of ice edges and seal distributions, sampling for general biological studies of harp and hooded seals, particularly sampling for age analyses of both species.

The allocated Norwegian quotas of 35 000 harp and 6000 hooded seals had been divided equally between the five ships which participated in the hunt this year. Catches of one-year-old and older harp seals were limited to 5% and catches of adult female hooded seals to 10% of total catches of each species, or 350 and 120 seals respectively for each of the Norwegian ships. It also had been anticipated that Norwegian ships would manage to take their full quotas of harps from pups only. Therefore special scientific permits had been issued for the Institute of Marine Research to kill 500 one-year-old and older harp seals and 300 female hooded seals over and above the allocated Norwegian quotas in order to obtain non-selective samples for age analyses of the two species in 1977.

As it turned out all Norwegian ships filled their individual quotas of harp seals, but two ships were not able to fill their quotas of hoods. The Norwegian ships caught a total of 35 624 harps and only 905 of these (2.5%) were one-year-old and older animals. This latter figure includes the 500 moulting seals killed by permit. The total Norwegian

catch of hoods added up to 6 050 seals, comprising 4 292 pups, 908 adult males and 850 adult females (14.1%), included 178 females killed by permit.

Kvitbjørn left Tromsø on 3 March and arrived at the ice-edge off Labrador at 53°35'N 52°11'W on 11 March. Having caught her quotas plus the permitted extra seals killed for sampling, she left the ice at 52°24'N 53°30'W on 12 April after 29 days in the area. Kvitbjørn returned to Tromsø on 21 April after 50 days away from her home port.

Weather and ice conditions

The Norwegian ships struck the ice between 53°00'N and 54°00'N and between 52°11'W and 52°20'W during the days from 9 to 11 March. The edge of the pack-ice thus was found about 130 (nautical) miles east of Roundhill Island. Information from Canadian ships indicated that Hamilton Inlet at that time was practically free of ice and that a shore lead along the Labrador coast south of the inlet was 10-15 miles wide. It therefore appeared that the icepack had been torn off from the coast at Hamilton Inlet. The ice had been broken by heavy swell and westerly winds had spread the floes and opened the pack. The ships therefore experienced no difficulty going directly from the edge of the pack to the harp seal breeding patches. Ice conditions did not change much during the season and every day swells penetrated far into the packice. Large floes were rare, and occurred only close to shore. The outer floes were broken and churned by the swell and as early as 2 April the ice did not extend more than 25 miles eastwards from Gray Islands. There was no ice to the south of Funk Island.

The season was characterized by varying weather conditions, changing from one day to the next and also from morning to night throughout the season. The weather was clear and visibility good for five days only. Visibility remained fair to good in 15 more days with clouds or a partially clouded sky. However, visibility was reduced to a minimum for 12 days, including three days of snow, two days of sleet, three days of rain and four days of fog.

Air temperatures changed markedly and frequently, but mild weather dominated through the season. The temperature stayed above freezing (0°C) for 19 days and near freezing for another 10 days. Temperatures below freezing were recorded on 7 days only, the lowest air temperature at noon (-8°C) on 14 March.

Harp seals

A Canadian Fisheries Service aircraft had found a breeding patch of harp seals at 52°45'N 55°00'W on 9 March. All ships had arrived in this patch by 11 March and on this day they found the greatest concentrations within the patch at 52°40'N 52°20'W. However, the ships had passed through a 45 mile wide area of scattered breeding harps with smaller concentrations of 500-1000 seals in each before they reached the patch that had been reported. The patch was rather diffuse, but the main concentration of seals covered an area of approximately 10 x 24 miles on 13 March. Disturbances during haul-out and pupping and the continuing swell with breakage of the ice can possibly have been the cause of the dispersal of breeding harp seals this year. Newly born harp seal pups were found at 52°00'N 54°15'W as late as on 23 March. However, some pups had started to moult as early as on the opening date of 15 March, and the majority of the pups probably were born around 8 March. It therefore would have been advantageous to the sealers if the opening date had been advanced to 12 March this year.

The main patch drifted slowly to the south and towards the end of March and in the first days of April the largest concentrations of weaned pups were found in an area stretching some 40 miles to the south and southeast from the southernmost of the Gray Islands. Ice floes with traces of births and weaned pups also were found 10-20 miles north and northwest of Fogo Island and in Notre Dame Bay during the first days of April. In 20 days the breeding patch apparently had drifted 120-150 miles to the south, at an average speed of 6-7 miles per day (0.25-0.30 knots). Moulded pups were found within an area of 80 x 40 miles between Fogo Island and the Gray Islands during the first five days of April.

On 15 March, the opening day of the hunt, all Norwegian and Canadian ships were positioned in the main patch, near the central and towards the southeastern end of the patch. Swells broke through the ice, particularly near the southern end of the area where the ships were only 4-5 miles inside the ice-edges.

The Norwegian ships stopped catching whitecoats on 18-20 March, and started their search for hooded seals. On their way out towards the east some of the ships passed several smaller patches of harp seal pups through about 25 miles of packice.

When they stopped after 3-5 days, the Norwegian ships had caught from 4000 to 5000 whitecoats each. The ships did not return to the harp seal patches until 27-28 March when 10-15% of the pups had finished moulting. The ships hunted selectively and caught only pups which had completely finished the moult. On 4-5 April about 90% of the pups had moulted and approximately 80% of all pups finished moulting during the period from 27 March to 5 April.

Because of the wide dispersal of breeding seals and broken ice the ships did not find as dense concentrations of pups as in 1976. However, one Canadian ship caught 1200 beaters in one day close to shore at the southernmost of the Gray Islands. Other catches ranged from 150 to 750 per day and ship mostly taken by picking single pups ("plukkkfangst"). The first Norwegian ship had filled its harp seal quota on 2 April. Kvitbjørn with a permit to catch extra moulting subadult and adult harps, did not finish until 11 April.

During the days from 5 to 10 April Kvitbjørn searched northwards for moulting harps in the area east of Cape Bauld. Currents and strong winds had scattered the icefloes, and poor visibility also hindered the search, so that large concentrations were not found until 11 April when a patch was discovered at 52°12'N 54°06'W. However, small groups and single seals were recorded throughout the area to the northwest of Fogo Island and east of Belle Isle. A remarkable large number of the scattered seals in the area east of Belle Isle appeared to be subadult 2-3 years old animals, many of which were females ovulating for the first time. Relatively few were small enough to be one-year-olds. Counts indicate that 80% of the seals were subadults, 15% were adult males (saddlers) and 5% were adult females.

On 10 April 10 seals were caught and all of them had stomachs filled (4-6 l) with deep-sea prawns (Pandalus). On 11 April the stomachs of 54 seals were investigated and remains of prawns and capelin were found in 23 of them. Judging from their melted burrows on the ice, these seals had hauled out at least a couple of days previously, and red coloured faeces with prawn exoskeletons on the ice indicated that a large number of them had eaten prawns.

Hooded seals

The first observations of breeding hooded seals were made by a spotting aircraft on 15 March at 50°45'N 53°30'W. However, these seals were not seen again by aircraft or ships which later searched the area.

Under normal ice conditions the hoods usually haul out to breed southeast of the harps. On 18 March some ships stopped catching harp seal pups and started searching for hoods towards the east and southeast.

Three Norwegian ships found a patch of breeding hoods at $51^{\circ}30'N$ $53^{\circ}20'W$ in the afternoon of 20 March. The patch was a small one, approximately 0.5 x 5 miles, but fairly dense. About half of the pups were 3-5 days old, a few, approximately 10%, were newly born and the rest (49%) were weaned. On the opening date for hoods, 22 March, only about 25% of the remaining pups were still attended by their mothers. Apparently a large number of females left their pups on this day, and an unknown number of pups also had gone to sea as indicated by placenta remains on the ice.

The other sealers, two Norwegian and all Canadian ships, found another patch of hoods at $51^{\circ}30'N$ $54^{\circ}15'W$ on 20 March. This patch was the largest of the two and the pups apparently had been born two or three days later than in the eastern patch and here approximately 1/3 of the pups were weaned. On 21 March a spotting aircraft reported scattered hooded seals between the two patches. The seals were hauled out in an elliptical area of ice between the two concentrations, and most of them were weaned pups although a few families were also observed.

In the eastern patch of hoods, sealing ended during the day on 23 March as the rest of the pups were caught or went into the sea. A total of 1500-1600 seals had been taken in this area when the three ships left to join the rest of the fleet in the western patch. Here the hoods had hauled out on heavy pack and operations were hampered by difficult ice-conditions. On 24 March nearly all pups had been left by their mothers, but the hunt continued a few days for weaned pups which were on the move towards the ice edge in the east. Very few adult seals were taken after 25 March, but the pup hunt culminated around the turn of the month.

On 29 March the spotting aircraft found some hooded seal families in between the Gray Islands. Because of their inaccessibility these families were not hunted. As late as 1 April newly born pups were found by a Norwegian ship five miles east of Cape Bauld. The seals were widely dispersed, and only 150 hoods were caught in a day. A patch of hooded seals discovered on 23 March at $52^{\circ}00'N$ $54^{\circ}25'W$ by a Canadian Fisheries Service aircraft was reported somewhat belatedly by a Canadian ship 7 April. It is probable that the scattered hoods found east of Cape Bauld on 1 April were the remains of

this patch. Allegedly the patch had contained 7000-8000 seals and eventually it drifted into the Hare Bay-Gray Islands area. Another and larger patch spotted on the same day at 52°20'N 55°10'W, drifted into the Strait of Belle Isle. None of these two patches was hunted to any extent, even if some seals were caught between Cape Bauld and the Gray Islands and landsmen probably caught some 4000 in the Strait of Belle Isle. The survival of hooded seal pups therefore probably was good this year, considering an apparently large escapement also from the patches that were hunted by the ships.

The total catch of hooded seals by Norwegian and Canadian ships is estimated at 10758 animals, and thus the TAC of 15 000 seals was not filled. Female hooded seals at Newfoundland remain on the ice for only 5-8 days after haulout, and the pups for no more than 7-12 days after birth. The wide dispersal of the hoods, probably caused by unusual ice-conditions, combined with the late opening date (22 March) in relation to peak pupping which as usual occurred around 15-17 March, nicely explain the failure to take the full quota. A contributing factor was the restriction that females should not exceed 10% of the daily catches.

Polar bears

Two polar bears, one of them a large animal and the other probably 2-3 years old, were observed among breeding harps at 51°54'N 54°32'W on 14 March and at 51°54'N 54°19'W on 16 March. The bears avoided the sealers and did not disturb the operations. The Kvitbjørn crew found one adult harp and 20 harp seal pups slain by polar bears. Polar bears were not seen among the hoods nor among the moulting harp seals in April.

Killer whales

On 28 March three killer whales were seen to chase moulted harp seal pups and bedlamers 8 miles north of Fogo Island.

Sampling

Jaws were collected for age analysis from all the 514 adult hooded seals caught by Kvitbjørn. Additional age samples comprising nearly 1300 adult hoods were collected by inspectors and crews on other norwegian ships, so the total age sample collected from Norwegian catches of hooded seals at Newfoundland in 1977 adds up about 1800 animals

A total of 690 subadult and adult moulting harp seals were caught by Kvitbjørn, partly under permit to kill 500 moulters for age analysis. Jaws were collected from 657 of these animals.

The sex ratio of 472 harp seal pups studied throughout the season was 52.3% males. Classified counts showed that 51 (53.1 %) of 96 harp seal pups had finished moulting their foetal pelage on 30 March. 51 (75.0%) of 68 had finished on 2 April and 72(98.6%) of 73 had finished the moult on 5 April.

Aknowledgements

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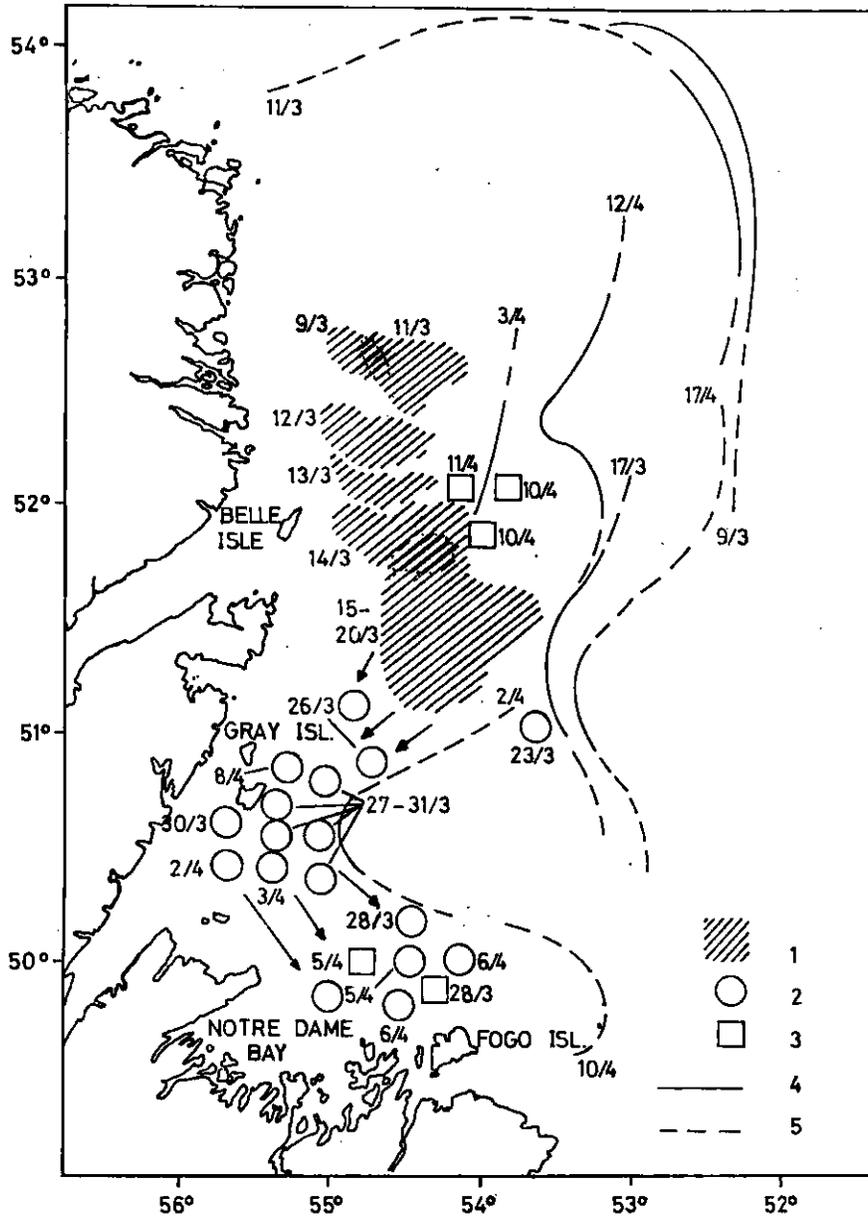


Fig. 1. Ice edges and the distribution of harp seals off Newfoundland-Labrador in March and April 1977. 1) Breeding patches, 2) Weaned (abandoned) pups, 3) Moulting lairs, 4) Observed ice edges, 5) Inferred ice edges.

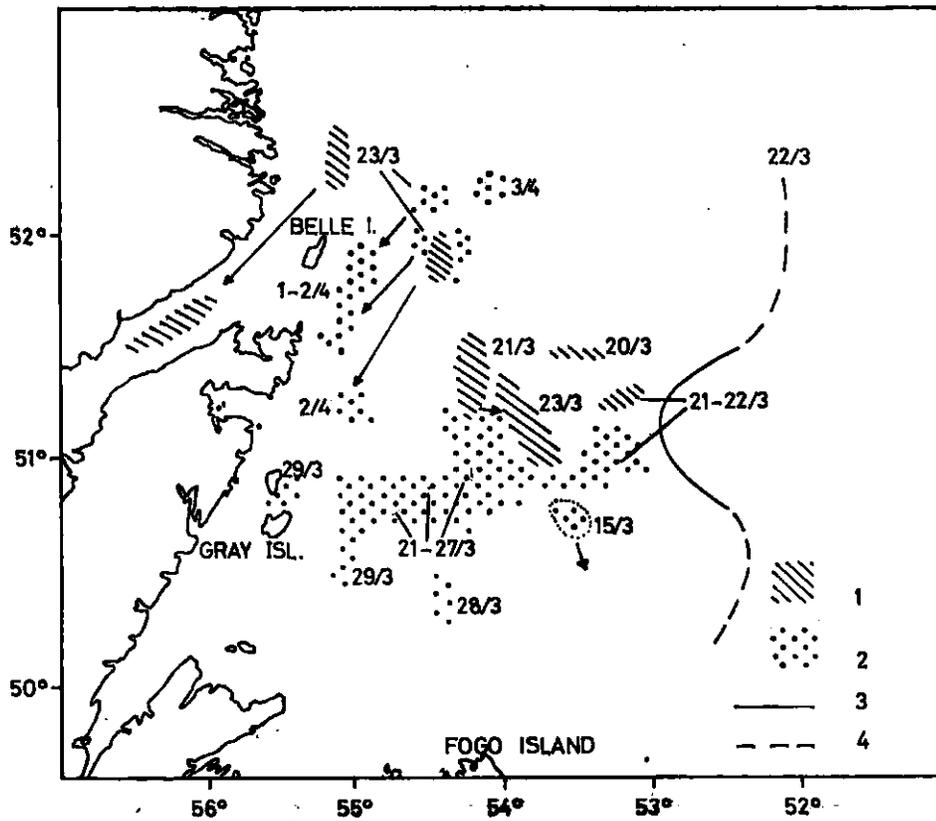


Fig. 2. Ice edges and the distribution of hooded seals off Newfoundland-Labrador in March and April 1977. 1) Concentrations of breeding seals, 2) Scattered breeding seals and weaned pups, 3) Observed ice edges, 4) Inferred ice edges.

