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Newfoundland Hooded Seal Tag Returns in the Northeast Atlantic

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Abstract

Hooded seals (*Cystophora cristata*) whelp in large concentrations during March and early-April on the North Atlantic pack ice. Traditionally it was thought that seals from all areas overlap during the non-breeding period and may mix at the moulting patch in Denmark Strait. However, reviews of tag returns lead to the hypothesis that Northwest Atlantic hooded seals do not overlap with Northeast Atlantic seals. This paper summarizes data obtained through the tagging of hooded seals conducted by scientific personnel in Newfoundland from 1983–94. A total of 3 435 hooded seal pups were tagged at the whelping concentrations at the Front in 1983, 1984, 1985 and 1994, in Davis Strait in 1984 and in the Gulf in 1986. A total of 36 tags have been returned. Tags returned from Greenland indicated that there was considerable overlap among seals form the three Northwest Atlantic whelping areas and that seals from both the Front and Davis Strait mix with Greenland Sea hooded seals during part of the year. It is unknown if there is any mixing among the different stocks during the breeding period, based on both traditional and satellite tagging, it appears that the majority of Northwest Atlantic hooded seals moult in the Denmark Strait area, but some individuals may moult elsewhere such as northeast Greenland or Baffin Bay.

Key words: Davis Strait, Gulf of St. Lawrence, hooded seals, Newfoundland area, tagging

Introduction

Hooded seals (*Cystophora cristata*) whelp in large concentrations during March and early April on the North Atlantic pack ice. In the Northeast Atlantic, these concentrations form in the Greenland Sea, near Jan Mayen Island, while in the Northwest Atlantic, whelping occurs in the Davis Strait, off the coast of southern Labrador or northeastern Newfoundland ('Front'), and in the Gulf of St. Lawrence ('Gulf') (Fig. 1). After breeding, which takes place shortly after whelping, hooded seals disperse throughout the north Atlantic. In late June they moult in large groups in the Denmark Strait and along the northeast coast of Greenland (approximately 72–74°N, Fig. 1).

Traditionally it was thought that seals from all areas overlap during the non-breeding period and may mix at the moulting patch in Denmark Strait. However, reviews of tag returns, primarily from Greenland, indicate that there is extensive overlap among seals from the Gulf, Front and Davis Strait whelping areas but little overlap between hooded seals from the Northwest and Northeast Atlantic (Kapel, MS 1995). This information lead to the hypothesis that Northwest Atlantic hooded seals do not overlap with Northeast Atlantic seals, and that Northwest Atlantic seals moult in the Denmark Strait while seals which whelp in the Greenland Sea moult along the coast of northeastern Greenland (Anon., MS 1990).

In the Northwest Atlantic, tagging of hooded seal pups was carried out in the Gulf of St. Lawrence between 1971 and 1984 while small numbers were tagged at the Front between 1964 and 1976. Extensive tagging of pups was carried out at the Front and in Davis Strait in the early-1980s. Data on the recapture of hooded seals tagged in the Gulf and at the Front prior to 1983 are summarized by Sergeant (1974, MS 1978) and Kapel (1982, MS 1995). Information on Greenland returns from the more recent tagging (1983–94) has been summarized by Kapel (MS 1995) but details of returns from other area have not been presented previously. The objective of this paper is to summarize data obtained through the tagging of hooded seals conducted by scientific personnel in Newfoundland from 1983–94 and to discuss the implications of tag returns on stock identity.

Method

Hooded seals were tagged at the whelping concentrations at the Front in 1983, 1984, 1985 and 1994, in Davis Strait in 1984 and in the Gulf in 1986. A total of 3 435 pups were tagged (Table 1).

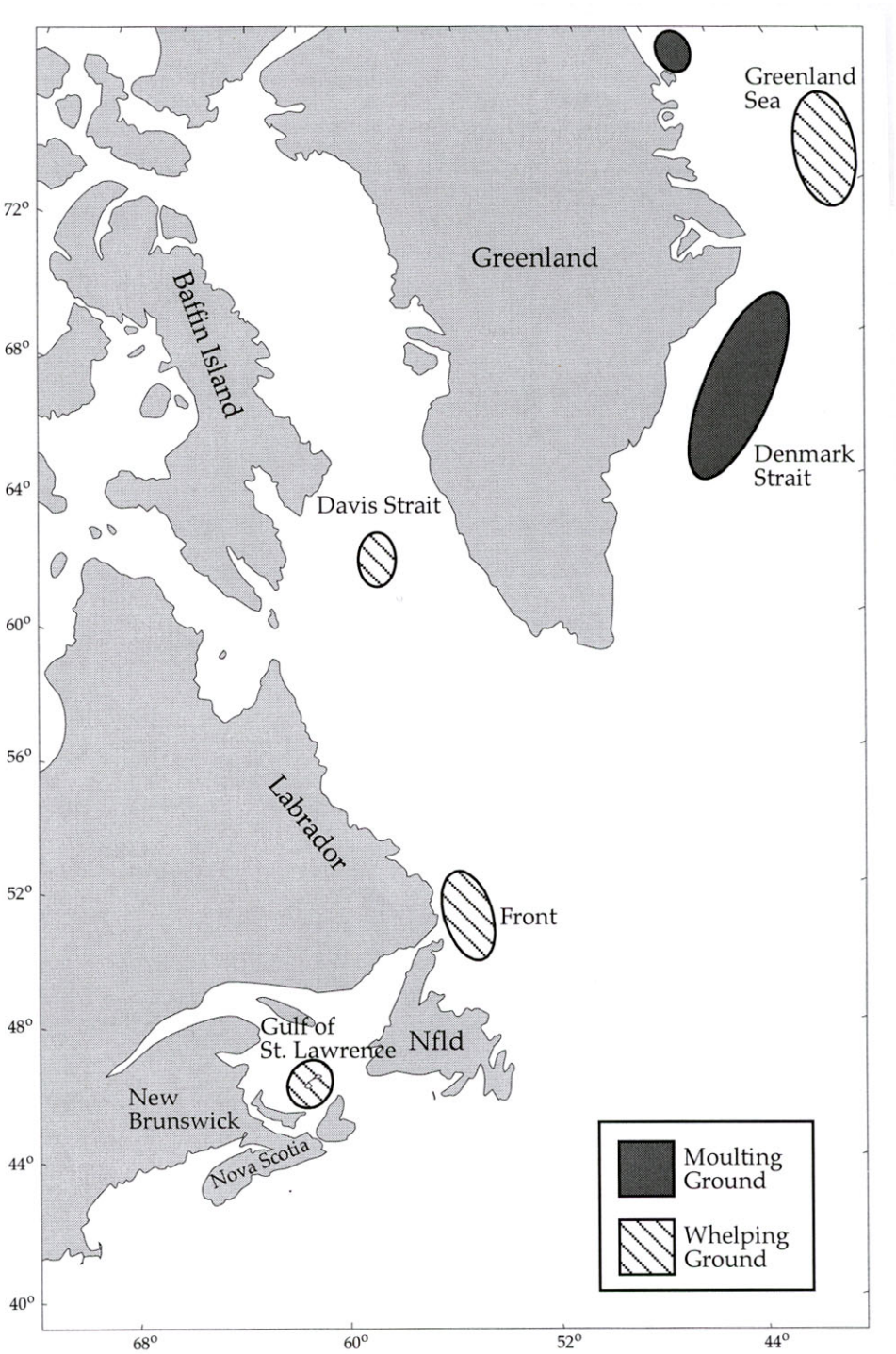

Fig. 1. Model estimates of total harp seal population in numbers.

Tags were collected by hunters and returned the Department of Fisheries and Oceans in St. John's, Newfoundland, along with information describing the date, location and method of capture. Tags obtained from Greenland were returned to the Greenland Fisheries Institute in Copenhagen, Denmark, and information concerning the return was forwarded to St. John's, Newfoundland. Similarly, tags obtained during hunting by Russian vessels in the Northeast Greenland moulting area were collected by scientists from SevPINRO (Arkhangelsk, Russia)

TABLE 1. Hooded seal tagging conducted by personnel from Newfoundland, 1983–94.

Year	No. Seals Tagged	Area Tagged
1983	825	Front
1984	415	Front
	1 465	Davis Strait
1985	702	Front
1986	16	Gulf
1994	12	Front

and information forwarded to St. John's, Newfoundland. Tag returns were grouped into four areas; Canadian (NAFO Subareas 2 and 3), West Greenland (NAFO Subarea 1), East Greenland (ICES Subarea XIVb) and Russian returns from the northeast Greenland moulting area.

Results

A total of 36 tags have been returned from animals tagged between 1983 and 1985, but none from seals tagged more recently (Table 2). The majority of tags were returned from Greenland (n = 27) while six (6) were returned by Canadian hunters. Three (3) tags have been returned from the northeastern Greenland moulting patch by Russian scientists.

Details of the three tags returned from the northeastern Greenland moulting area are given in Table 3. These animals ranged from 7 to 11 years of age and included individuals from both the Front and Davis Strait whelping areas.

Discussion

Very few tags were returned by Canadian hunters. This was expected given the small numbers of hooded seals taken in Canada; between 1983 and 1994, an average of approximately 1 000 hooded seals were taken annually, and in 50% of the years the catch was less than 450 (Anon., MS 1994 and unpublished data). Four of the six Canadian returns were from pups caught in April 1983. These seals were caught in Notre Dame Bay and had probably drifted with the pack ice from the whelping area.

The majority of hooded seal tags returned came from Greenland. Of the nine Davis Strait tags returned, almost equal numbers came from East (n = 4) and West (n = 5) Greenland. However, all of the tags returned in West Greenland were caught during the year of tagging. The majority of Front tags were recovered from East Greenland (n = 14, 77.8%). Of these, most were from the Ammassalik district, Southeast Greenland (Kapel, MS 1995). With the exception of the slightly higher return rates from Western Greenland for seals from Davis Strait, the distribution of tag returns was very similar to that seen for seals tagged in the Gulf of St. Lawrence (Sergeant, 1974, 1978; Kapel, 1982, MS 1995) and indicated that there was considerable overlap among seals from the three Northwest Atlantic whelping areas.

Previously, only a single tag from the Greenland Sea whelping area had been recovered in Greenland, suggesting that there was very little overlap between Northwest and Northeast Atlantic hooded seals (Kapel, MS 1995). However, the occurrence of three Northwest Atlantic tags from the presumed Greenland Sea stock moulting area along northeastern Greenland suggests that seals from both the Front and Davis Strait mix with Greenland Sea hooded seals during part of the year. The extent of this mixing is unknown, although 8% of the tags returned came from this area suggesting that it may not be minor. Similarly, although all three of these seals were adults, it is unknown if there is any mixing among the different stocks during the breeding period. Genetic studies comparing hooded seals from different whelping areas may provide information on the degree of exchange among areas.

The movements of seals with conventional tags provides a similar picture of distribution to that obtained using satellite transmitters (Stenson *et al.*, NWAFC, St. John's, Newfoundland, unpublished data). Of the twenty six hooded seals tagged during the whelping period in the Gulf and Front, all but one went to the Southeast Greenland/Denmark Strait area before losing their transmitters, presumably during the moult. The lone exception went northward to Baffin Island. Therefore, based on both traditional and satellite tagging, it appears that the majority of Northwest Atlantic hooded seals moult in the Denmark Strait area, but some individuals may moult elsewhere such as Northeast Greenland or Baffin Bay. However, the extent to which hooded seals from the Northwest Atlantic intermix with seals from the Northeast Atlantic, particularly during the breeding period, is unknown.

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TABLE 2. Hooded seal tag returns, by area. Areas from which no tags were returned in a particular year are not listed.

Year of Return	Area of Return	Year of Tagging: 1983 Front	1984 Front	1984 Davis Strait	1985 Front
1983	CAN[1]	4			
1984	WG[2]	–	–	5	
	EG[3]	–	–	2	
1985	WG	–	–	–	1
	EG	1	2	2	–
1986	EG	–	1	–	7
1987	WG	–	–	–	1
1988	EG	–	–	–	1
1989	WG	–	–	–	1
	EG	–	1	–	–
1991	CAN	–	–	–	1
	EG	–	–	–	1
	NEGM[4]	–	–	1	–
1992	WG	–	–	–	1
	NEGM	–	1	–	–
1994	CAN	–	1	–	–
	NEGM	–	–	–	1
Total:		5	6	10	15

[1] CAN – Canadian returns.
[2] WG – returns from West Greenland.
[3] EG – returns from East Greenland.
[4] NEGM – Russian returns from the Northeast Greenland moulting area.

TABLE 3. Details of three tag returns by Russia from the Northeast Greenland Moulting area.

Release Date	Release Area	Return Date	Return Area
26/03/1984	Front	21/05/1992	73°12'N 07°14'W
25/03/1984	Davis Strait	16/05/1991	72°19'N 14°12'W
26/03/1985	Front	29/05/1994	72°53'N 15°04'W

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