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A REDISCOVERED WHELPING POPULATION OF HOODED SEALS

CYSTOPHORA CRISTATA ERKLEBEN AND ITS POSSIBLE

RELATIONSHIP TO OTHER POPULATIONS

by

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Abstract

The existence is confirmed from aerial survey of a whelping population of hooded seals in Davis Strait, reported in the nineteenth century, and numbering in the tens of thousands. This is believed to be the source of recruitment maintaining the population of hooded seals at icefields east of Newfoundland where the species is heavily hunted. Locations and dates of tag and brand recoveries, frequent wandering of juveniles south of the regular range, and identity of breeding seasons all suggest much mixing between populations in this species.

Introduction

Hooded seals (Cystophora cristata Erxleben) are known to whelp during March-April in two areas of the North Atlantic: the larger population at the "West Ice" in the region of Jan Mayen Island, the smaller, on pack ice northeast of Newfoundland, with a small fraction in the Gulf of St. Lawrence. The only known moulting areas are on pack

ice east of Greenland in Denmark Strait, and from 74° to 76°N in July-August (Fig. 1). What is known of the biology and relationship of these stocks was documented by Øritsland (1959) and Rasmussen (1957,1960). The present paper documents the rediscovery of a whelping ground and discusses the interrelationships of stocks.

#### Whelping Areas

The fishery for hooded seals at the Newfoundland "Front" ice is about 150 years old. Formerly carried out by ships from Newfoundland, it is now prosecuted mainly by a fleet of about 10 small but powerful vessels from Norway. It is a secondary fishery following Pagophilus groenlandicus (Erxleben) some days after that for young harp seals/. [Present opening dates; March 12 and March 20.] It is intensive, apparently taking a large fraction of the available young, and a fair proportion of the attending adults. (ICNAF statistics 1969-1973 show that 26-52, mean 44%, of the catch is of adults.) These comprise especially the females until they leave the young aged about 10 days (Øritsland and Benjaminson (1973) show that the sex ratio of 2089 adults at Newfoundland in 1964 to 1973 was 60.1% females). Therefore, if the population whelping at Newfoundland were isolated, it would long ago have been exterminated by the fishery.

The population of hooded seals at Newfoundland must draw recruits from the northward. Indeed, it has long been noted (e.g. by Rasmussen, 1960), that the short-term fluctuations in catch and catch per effort of hooded seals at Newfoundland are greater than those of harp seals, and that there are in addition long-term fluctuations which, for instance, gave very low figures for catch and catch per effort in the decade of the nineteen thirties, very high figures during the period 1890-1910 and quite high figures for the present period of the 1950-1960's (Fig. 2). Although it is quite easy to relate the long-term change to the known changes of marine climate in the North Atlantic, the exact mechanism by which climatic change has affected the number of hooded seals arriving at Newfoundland is far from clear. Rasmussen (1960) supposed that during warm periods the ice was unsuitable at Newfoundland and the animals retreated north. The hooded seal is certainly a species that prefers the large heavy floes of arctic ice

to the thinner sheets of winter ice on which harp seals whelp. There is also good evidence that hooded seals do whelp to the northward, as follows.

In October 1872 the United States exploring ship Polaris was beset and abandoned by part of her crew off West Greenland at 77°35'N., near Etah. This part of the crew drifted on the ice with whaleboats from Baffin Bay to the southern Labrador coast where they were picked up by a Newfoundland sealing vessel in late April, 1873, (Davis, 1876). Hooded seals with pups were encountered at latitude 59°41' and unknown longitude, that is off Cape Chidley, at the mouth of Hudson Straits, on March 30 and 31 (Davis, op. cit., p. 552). Mosdell (1923) in addition to citing this record states that "A(nother) patch of hood seals breed at the entrance of Hudson Straits near Resolution Island during the month of March. The whaling fleet from New England, after being frozen in the far North in 1840, also reported meeting this patch." Freuchen (1935, p. 231) stated: "I am of the firm opinion that it breeds in the always open water in Lancaster Sound. From there with the west ice not a few drift southwards as far as Cumberland Sound." This claim has not yet been confirmed.

The Canadian sealing industry has been aware of the possibility of northern hooded seals and in late March of 1957 attempted a search for them using a DC3 aircraft flying out of Frobisher Bay. However, this aircraft did not have sufficient range for a thorough search out to the ice edge.

In late March of 1972, 1973 and 1974 searches were carried out collaboratively between this office and the Canadian Armed Forces, Maritime Air Command who made available a long-range "Argus" reconnaissance aircraft. In 1972 and 1973 various problems caused the surveys to be incomplete. In 1974, however success was achieved. On March 25 three large patches of hooded seals were located between 63°30' and 64°20'N, 56°00' and 56°30'W. Total numbers were guessed at perhaps 50,000. There were adults, pups and blood patches, indicating that births had taken place recently. The ice was thick winter or second year ice in small floes frozen together, and the seals were not far from the ice edge to the east. Families were between 50 and 200 yards apart in the different seal patches.

About 50,000 seals might imply 20 or 30,000 young, but photographic surveys would be needed to estimate numbers more accurately.

#### Interrelationships of Stocks

Tag and brand recoveries (Table 1, Fig. 1) give direct evidence of movement of hooded seals marked as young at Newfoundland and the Gulf of St. Lawrence.

Analysis shows recaptures in southeast, south and southwest Greenland of animals aged 1 to 5 years in the months March to July. (The lack of recoveries of older animals may well be due to a loss of tags.)

These recoveries show considerable movement of animals to a shore area close to the only known moulting ground, the east Greenland ice, and season, July-August.

They do not show mixing of stocks, with the exception of S230, which was taken in the whelping season, was possibly old enough to be a young adult male, and was lying midway between the two previously known whelping grounds.

If hooded seals home accurately, it could be argued that the recoveries above represent only a summer migration. However, there is a good deal of information of wide dispersal in young hooded seals, which must be set against the more accurate navigation of young harp seals.

First, juveniles are frequently recovered "off course" in eastern North America (Table 2 and Fig. 3). Recoveries take place either in the St. Lawrence River as far upstream as Montreal, where impassable rapids intervene, or along the eastern seaboard as far south as Florida, and there are also a few records of animals summering in eastern Newfoundland. Similar extralimital records in Europe were documented by Mohr (1963). By contrast harp seals migrate northward with far fewer animals off course (Sergeant, 1971).

This behaviour would lead us to expect greater mixing of stocks in hooded seals.

Cranial studies by R. W. Lie at the University of Bergen are unfortunately not yet available for comparison with those of harp seals. Harp seal stocks whelping at Newfoundland and at Jan Mayen Island

showed marked cranial differences (Yablokov and Sergeant, 1963).

Whelping seasons are not different for the two previously known hooded seal stocks. Rasmussen (1960) found newborn young between March 11 and April 5 at the Front in 1951; Øritsland (1964, Fig. 10) gives March 10 to March 30 (exceptionally - April 10) for births at the West Ice in 1952-1963. The new stock, whelping around March 25, fits in the same time period.

In contrast the whelping seasons of harp seals at the two areas Newfoundland and Jan Mayen are separated by a mean date of two to three weeks (Khuzin, 1967).

#### Implications for Management

Some of these data suggest much more interchange of stocks of hooded seals than of harp seals.

Consequently, management of hood seal stocks is necessary at a more unified level.

Present management occurs under three organisations. In the northwest Atlantic, the International Commission for the Northwest Atlantic Fisheries (ICNAF) is the framework for agreement between sealing nations, setting quotas and other controls for harp and hooded seal (Anon, 1967, 1972). Catches off eastern Canada are then divided between Canada and Norway, the only two nations currently sealing in this area (Anon, 1972). A quota of 15,000 hooded seals was set in 1973 for the 1974 season only, of which about 10,000 were taken. There is no quota for ICNAF subarea 1, and since the hooded seal patches located by us are in international waters, any nation which so wishes is presumably free to seal there.

In the northeast Atlantic seal quotas are decided by the Sealing Commission for the Northeast Atlantic which was established by bilateral agreement between Norway and the USSR, the only nations with commercial sealing interests in that area (Anon, 1959). The agreement now covers harp seals, hooded seals, bearded seals Erignathus barbatus Erxleben and walrus Odobenus rosmarus L. in the North Atlantic east of Kap Farvel, Greenland (Øritsland, in litt. 19 May, 1974). The catching of hooded seals in Denmark Strait was

phased out in 1961 (Rasmussen, 1962).

A most valuable immediate objective would be an undertaking to leave alone the newly discovered population. This probably forms a reserve supplying the Newfoundland stock with recruits and thereby maintaining the Newfoundland fishery. It is probably also important to the southwest Greenland shore catch, and may also provide some recruitment to Jan Mayen.

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Table 1. Tag and brand recoveries of hooded seals marked at Newfoundland as young.

Source	Nation (Canada, Norway)	Tag/Brand No.	Tagged		Recaptured		Age Yr.	Mo.
			Date	Position N W	Date	Location/Pos <sup>n</sup>		
Rasmussen, 1957	N	S 230	31.03.51	5042 5523	11.03.56	6007 4415	5	0
T. Oritsland, in litt. 14-VIII-73	N	A 0143	28.03.64	5006 5315	14.04.65	nr Holsteinsborg	1	1
"	N	A 0145	30.03.64	4942 5232	28.05.67	nr Julianehaab	3	2
"	N	A 0346/ B 464	04.04.70	5222 5510	.07.72	Angmagssalikfjord	2	3
"	N	B 526	25.03.71	5200 5450	04.72	nr Nanortalik	1	1
Original	C	"N"	21.03.72	Magdalen Is.	11.06.73	6010 4610	1	3

Table 2. Extralimital or extraseasonal hooded seals in eastern North America.

A. Juveniles.      B. Adults.

Locality	Lat/Long.		Date	Age	References
	N	W			
A. Penguin Is., Nfld.			early VI-55	Juv.	Fish. Res. Bd. Can. coll.
Bay Bay, N.B.			7-VII-54	Juv.	" " " " "
St. Margaret's Bay, N.S.			30-IX-52	Juv.	" " " " "
Pinkney's Pt., N.S.			XI or X-53	Juv.	" " " " "
Quebec City			VI-60	Juv.	
Montreal, Que.			IX-60	Juv. ♂	
Saguenay R., Que.			VII-61	Juv.	
Newburyport, Mass.			- - -	-	Waters & Rivard, 1962
Providence, R.I.			- - -	-	" " "
Delaware R., N.J.			9-I-38	Imm. ♂	
Morehead, N.C.			20-XI-44	Imm. ♂	Moore, 1953
				71 lb.	
N. Banks Beach, N.C.			VIII-10	♂	Moore, 1953
Bouge, Banks, N.C.			14-IX-04	100 lb.	Goodwin, 1954
C. Canaveral, Fla.	28°27'	80°33'		Imm.	
B. Cambridge, Md.			8165	6 3/4 ft,	Mansueti, 1950
				330 lb.,	
				on ice	
North Harpswell, Me.			25-III-28	(Ad. ♀	Scheffer, 1956
				(+yg.	
Orcutts Hbr., S. Brooksville, Me.			10-IV-74	(Ad. ♀	Anon, 1974
				(+ newborn	
				(yg.	

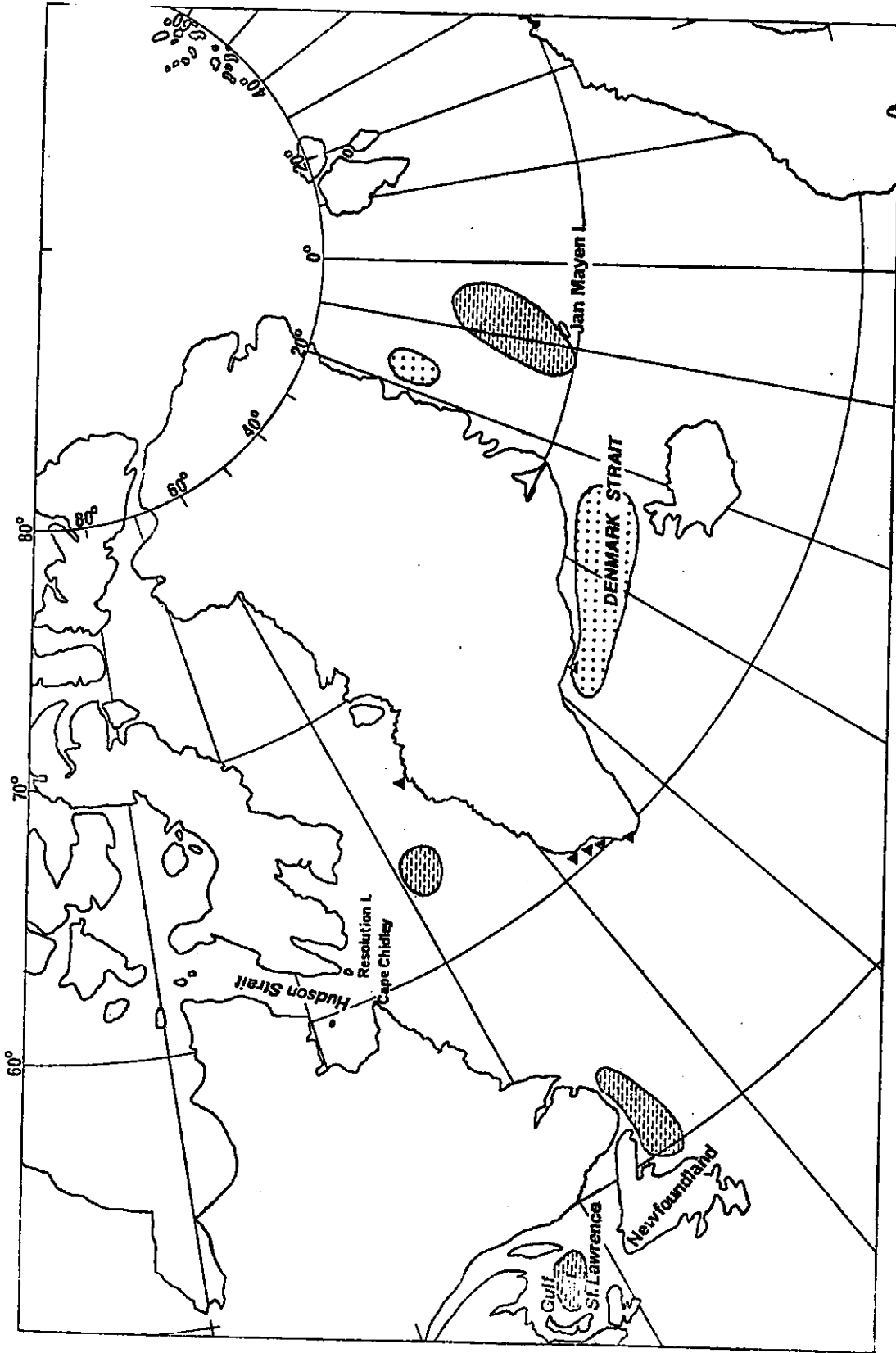


Fig. 1. Known areas of whelping and moult of hooded seals, including new whelping ground in Davis Strait. Other areas after Øritsland (1959) and in litt. Recoveries of animals tagged or branded at Newfoundland and in the Gulf of St. Lawrence are shown.

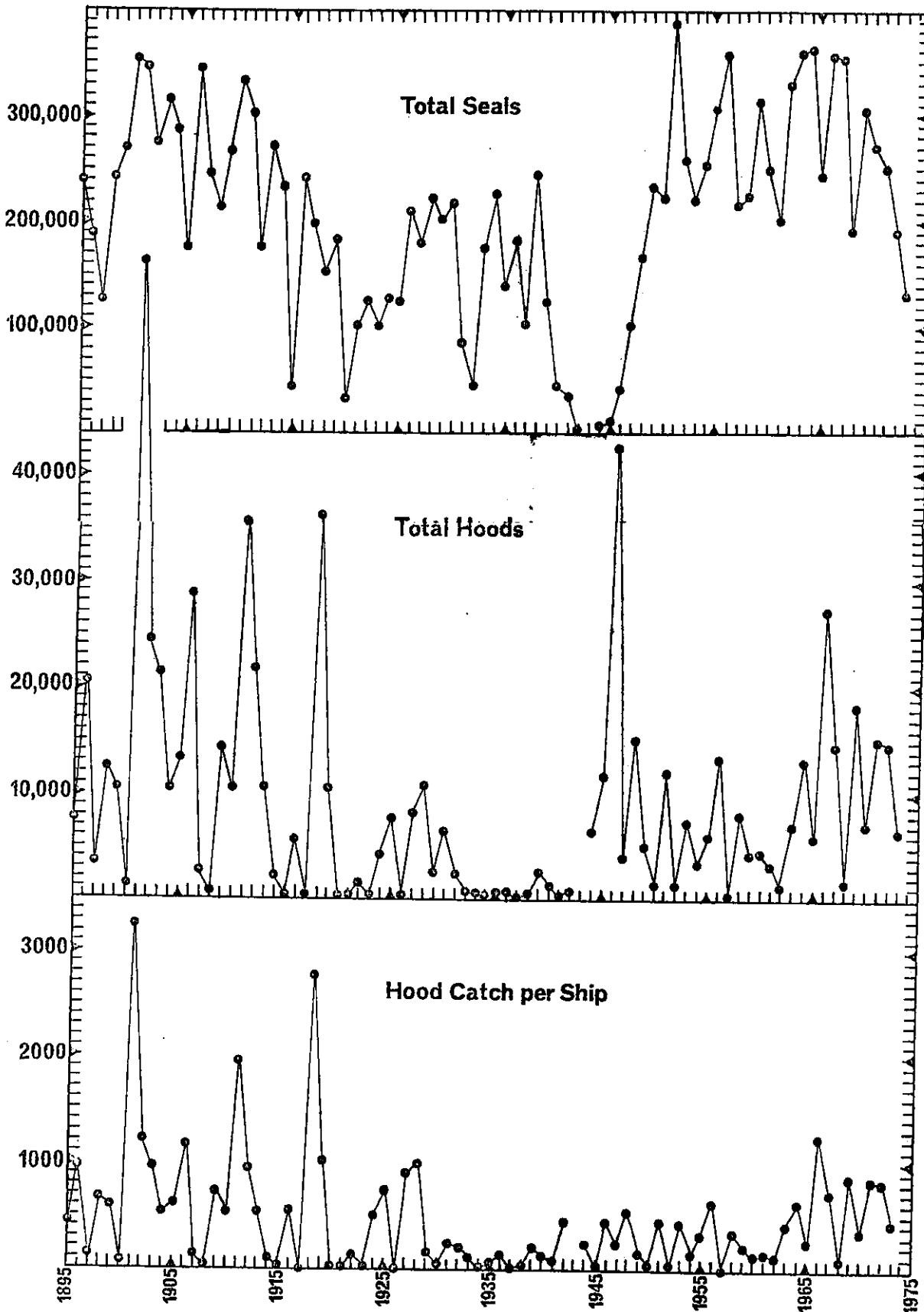


Fig. 2. Hooded seal catches at Newfoundland 1895 to 1973, and catch per ship, compared with catch of all seals - mainly harp seals.

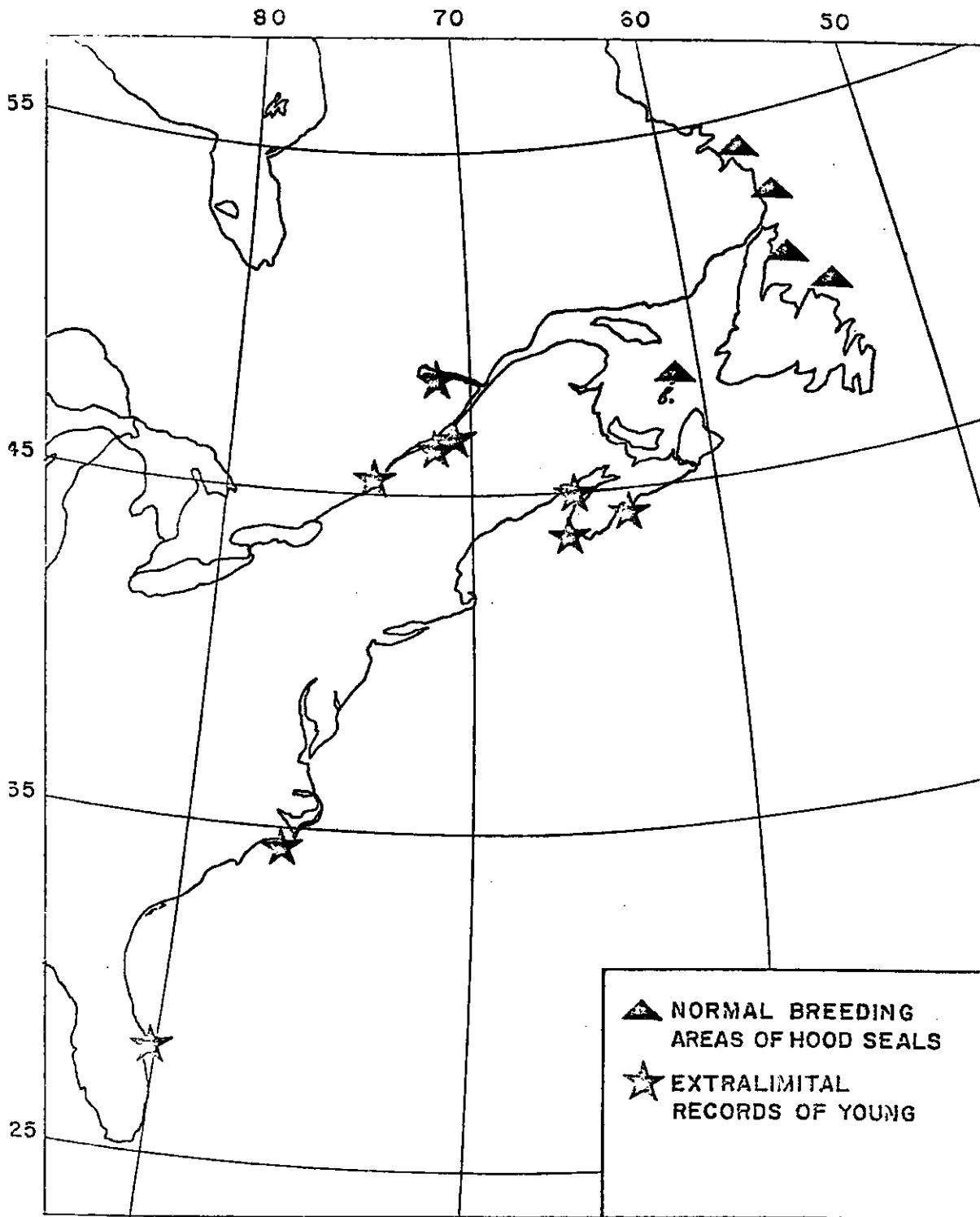


Fig. 3. Extralimital records of young (<1 yr) hooded seals in eastern North America.

