

## SOVIET TAGGING OF HARP AND HOODED SEALS IN THE NORTH ATLANTIC

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### ABSTRACT

POPOV, L. A. 1970. Soviet tagging of harp and hooded seals in the North Atlantic. *FiskDir. Skr. Ser. HavUnders.*, 16: 1—9.

In 1960—1968, 2 705 harp seal pups and 55 adult female harp seals were tagged in the White Sea. At Newfoundland 79 harp seal pups were tagged in 1963, and in the Jan Mayen area of the Greenland Sea 50 hooded seal pups were tagged in 1966. Monel metal clip tags were used in two seasons, but coloured plastic tail tags have been in use since 1965.

Early recaptures have shown that the northward drift of the pack ice brings the pups from the White Sea to the southern part of the Barents Sea. In some years, however, adverse conditions may change this drift pattern. Recaptures after one and two years indicate that immature harp seals spend the winter in coastal waters of the southern Barents Sea and the northern White Sea.

Two pups tagged off Newfoundland have been recaptured in West Greenland during their first summer.

### INTRODUCTION

As part of an extensive Soviet research program, harp seals, *Pagophilus groenlandicus* (Erxleben, 1777) and hooded seals, *Cystophora cristata* (Erxleben 1777) have been tagged in the White Sea since 1960, in the Jan Mayen area of the Greenland Sea in 1964 and 1966 and off Newfoundland—Labrador in 1963. The taggings have been carried out by scientists from VNIRO Moscow, PINRO Murmansk and SevPINRO Arkhangelsk in accordance with programs approved by the Sealing Commission for the Northeast Atlantic.

The taggings by Soviet scientists supplement Canadian taggings at Newfoundland (SERGEANT 1965) and Norwegian taggings at Newfoundland, in the Greenland Sea and in the Barents Sea (RASMUSSEN and ØRITSLAND 1964). This paper summarizes data on Soviet taggings from 1960 to 1968 and reports the recoveries of tagged seals up to April 1969.

Table 1. Soviet seal pup taggings in 1960—1968 and recoveries up to April 1969.

Year of tagging	Series	Number tagged	Recoveries	
			Same Year	1—2 years later
Harp seals, White Sea.				
1960—1962.....	BM	45	0	0
1963.....	A	495	0	1
1964.....	A	105	0	0
1965.....	B	410	8	1
1966.....	B6	598	21	1
1967.....	B7	389	3	1
1968.....	B7	718*	14	0
Sum .....		2 760**	46	4
Harp seals, Newfoundland.				
1963.....	N	79	4	0
Hooded seals, Greenland Sea.				
1964.....	—	10	2	0
1966.....	G6	50	4	0
Sum .....		60	6	0
Total .....		2 899	56	4

\* 168 pups tagged by «Chistopol» not included.

\*\* 55 adult females included.

#### TAGGINGS AND TAGGING METHODS

The number of seals tagged in the different areas are listed by year in Table 1. The greatest number, 2 760 harp seals, has been tagged in the White Sea. In 1960—1964, 645 harp seal pups were tagged in areas where the sealers were operating, but in 1965—1968 when sealing from vessels was prohibited in the White Sea and only coastal dwellers were allowed to hunt, the taggings were made outside the hunting areas. In 1965, 410 pups were tagged from a research vessel. In 1966, 1967 and 1968, 1 650 pups and 55 adult females were tagged from the «Toros» stations on the drifting pack ice. The first two years thin 20 mm wide plastic tags (series BM) were attached to the tails with a wire. These tags were fragile and the attachment was not good enough so they were substituted by other types. Clip tags of monel metal (fur seal type, Fig. 1A) were used in 1963 and 1964. These tags were applied to the web of a hind flipper by special pliers. Because of their colour the metal

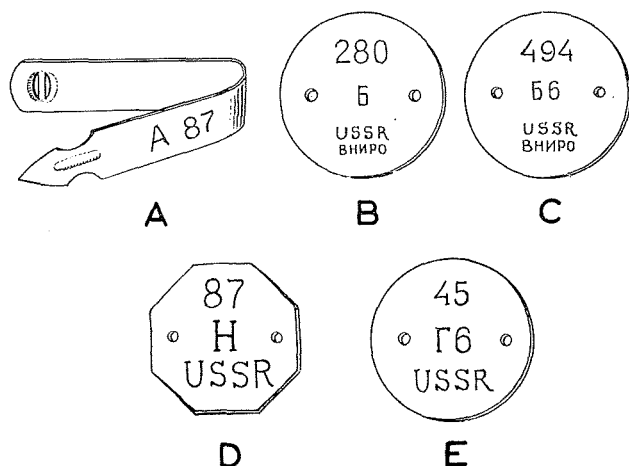


Fig. 1. Tag types used in Soviet taggings in: A, B and C) The White Sea, D) the Newfoundland area, E) the Jan Mayen area of the Greenland Sea.

tags are not easily discovered on harp seals, and may be overlooked by hunters. They also may cause inflammation with subsequent shedding of the tags. The use of the clip tags therefore was discontinued. In the following years (1965—1968) circular tags of red plastic, 2.5—3.0 mm thick and 32 mm wide, have been used (series B, B6 and B7 — USSR VNIRO, Fig. 1, B and C). These tags are attached to the tails of the seals with stainless wire, treated with a penicillin ointment, by piercing the tail with special needles.

In the Front area off Newfoundland—Labrador, 79 harp seal pups were tagged by an experimental Soviet sealing expedition in March 1963. Orange octahedral tail tags, 2.0 mm thick and 30 mm wide, were used (series N — USSR, Fig. 1D).

Except for a small number tagged with metal clips in 1964 (not included in Table 1), harp seals have not been tagged in the Greenland Sea. In 1966, however, scientists onboard the research vessel «Chistopol» succeeded in tagging 50 hooded seal pups in this area using tail tags of red plastic (series G6 — USSR, Fig. 1E).

#### RECOVERIES

All recovered tags are listed in the appended Table I, and the recaptures from the White Sea taggings are shown in Fig. 2. No early recoveries were reported from the taggings in 1960—1964. In 1965 Soviet vessels did not hunt in this area, and recoveries in that season were reported only by Norwegian vessels hunting in the Barents Sea.

The recaptures, 2.0% of the tagged pups, were all made during the second half of April in the area north and west of Cape Kanin Nos.

In 1966 strong winds kept the pup patches drifting in the White Sea basin throughout March and April. In May and June pups were observed along the southern and western parts of the White Sea shores. All early recoveries, 3.5%, were made among pups which had perished from exhaustion or had been caught in fish nets in these areas in May and June. The northward migration of pups to the Barents Sea did not start until the mouth of the White Sea was free from ice in June and July.

In 1967 only three of 389 tagged pups were recaptured. Southerly

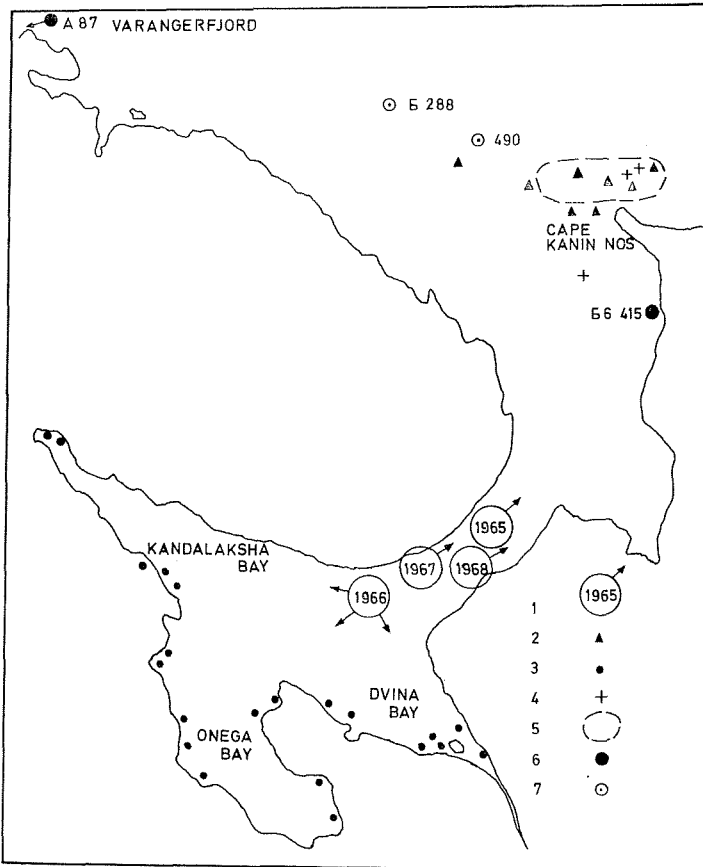


Fig. 2. Recoveries of harp seal tags from the White Sea. 1) Tagging locality and direction of passive migration, 2) recoveries in the tagging season 1965, 3) recoveries in the tagging season 1966, 4) recoveries in the tagging season 1967, 5) recoveries in the tagging season 1968, 6) recoveries in winter after 1—2 years, 7) recoveries in spring after 1—2 years.

winds kept the ice and the breeding lairs drifting northwards, and the tagged pups were found near Cape Kanin Nos by the research vessel «Chistopol» in early April, some 25 days after the tagging. No tags were returned from Norwegian sealers in 1967.

In 1968, 718 pups were tagged. Again the prevailing winds and currents sent the pups drifting to the north. After 30—35 days the pups were in international waters where the Norwegian vessels were hunting. Norwegian sealers reported 14 recaptures, 1.9%, outside Cape Kanin Nos during the first ten days of April.

Four harp seals tagged as pups in the White Sea, have been recaptured one or two years after the tagging (Fig. 2). Two of these (Nos. 490 and B288) were caught in the spring among moulting immature seals in the Barents Sea. The other two were caught in coastal waters in January 1968: a one-year-old (A67) in the Varangerfjord, Norway, and a two-year-old (B6 415) on the west coast of the Kanin Nos Peninsula.

Of the 79 harp seal pups tagged off Newfoundland in 1963, only

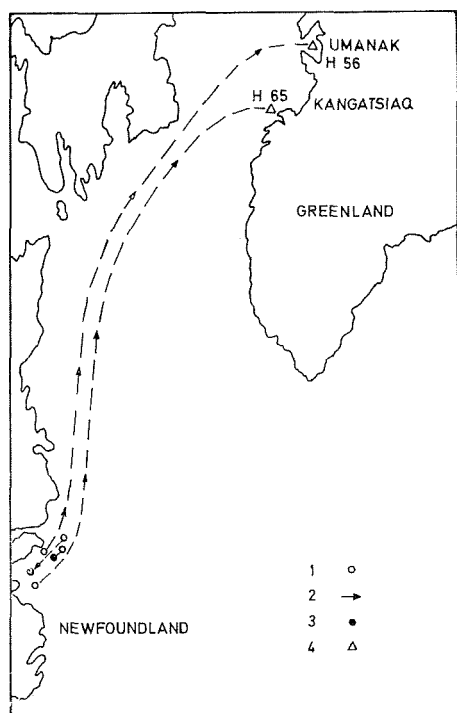


Fig. 3. Recoveries of harp seal tags from the Newfoundland area. 1) Tagging localities, April 1963, 2) assumed migrations, 3) early recoveries, 4) recoveries in July and August.

4 (5.1%) have been recaptured. Tagging localities and recoveries are shown in Fig. 3. Two tags were recovered by Canadian sealers in the same area 7 and 17 days after the tagging, and two were found on the West Greenland coast in July and August the same year.

In the Jan Mayen area of the Greenland Sea only four (8.0%) of a total of 50 hooded seal pups have been recaptured. They were all caught in the same area the same month.

#### DISCUSSION

The recoveries of harp seals tagged in the White Sea show that pups move passively with the drifting pack ice during the lactation period and for some time after weaning. This drift which is influenced by currents and winds in the area, usually has a northward direction and brings the pups out to the Barents Sea during April. In some years, however, constant and strong northerly winds in March and April may move the pack ice southwards, bringing the pups to the southern shores of the White Sea (e.g. 1966).

The duration of the passive northward migration of pups from the southern part of the White Sea estuary where they are born, to the Kanin Nos area depends upon the velocity of the ice drift in March. Constant and strong winds may move the pup concentrations past Cape Kanin Nos in 20—25 days, whereas the drift may take 40—50 days in years with variable winds. The passive migration to the Barents Sea brings the pups to areas with a rich food supply at the time when they are ready to start independent feeding. However, in years with a southward ice drift the pups are brought to areas of the White Sea which are poor in suitable food organisms. This will seriously impair the condition of the animals and may eventually lead to a heavy mortality among the pups as observed in 1966.

The recaptures of immature seals off the Kanin Nos Peninsula and in the Varangerfjord in January indicate that immature harp seals spend the winter in coastal waters of the Barents Sea and the northern White Sea. Independent observations show that they are feeding intensively on polar cod, *Boreogadus saida* (Lepechin, 1773), at this time of the year. Also adult seals are found feeding in coastal waters near Cape Kanin Nos during winter. In February the adult seals move towards the southern parts of the White Sea where they continue to feed until the breeding season.

The immature seals which were recaptured in the Barents Sea in April—May, were found in patches of moulting seals in the area where the White Sea harp seals usually stay during their moult.

The recaptures of harp seal pups in the Northwest Atlantic in 1963 support results of Canadian and Norwegian taggings off Newfoundland (SERGEANT 1965, RASMUSSEN and ØRITSLAND 1964). During lactation and for some time after weaning the pups move passively with the drift of the ice. Later they migrate northwards to their summer range in West Greenland (SERGEANT 1965).

Recoveries of tags from hooded seal pups in the Greenland Sea in 1966 illustrate the early dispersal of pups in that area (RASMUSSEN and ØRITSLAND 1964). The pups had moved in directions between north-north-west and southwest and were recaptured from 7 to 17 days after the tagging and from about 50 to about 110 nautical miles from the tagging localities.

#### ACKNOWLEDGEMENT

This paper has been edited by TORGER ØRITSLAND, Institute of Marine Research, Bergen.

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Received 25 February 1970

Printed 10 February 1971

Table I. Seal tags recovered up to April 1969 from Soviet taggings in the White Sea, off Newfoundland and in the Greenland Sea 1960—1968.

Tag No.	Tagging		Recovery	
	Date	Locality	Date	Locality
Harp seals, White Sea and Barents Sea.				
490.....	17 March 63	65°41'N 39°22'E	3 May 65	68°55'N 41°00'E
BM 33.....	11 » 65	66°44'N 39°58'E	17 April 65	69°10'N 44°10'E
B 83.....	13 » 65	66°25'N 41°11'E	23 » 65	Kanin Nos area
B 158.....	»	»	26 April 65	69°00'N 42°38'E
B 183.....	»	»	22 April 65	68°51'N 41°48'E
B 193.....	»	»	April 65	Kanin Nos Area
B 211.....	»	»	» »	» » »
B 269.....	»	»	23 April 65	» » »
B 280.....	»	»	25 April 65	69°06'N 39°53'E
B 288.....	»	»	19 April 66	70°10'N 37°15'E
B6 494.....	3 March 66	65°40'N 38°00'E	15 May 66	66°34'E 34°00'E
B6 511.....	»	»	23 May 66	64°05'N 38°00'E
B6 313.....	»	»	5 June 66	Kandalaksha
B6 339.....	»	»	7 June 65	Dvina River delta
B6 380.....	»	»	June 66	Kandalaksha
B6 558.....	»	»	»	64°45'N 34°45'E
B6 4.....	13 March 66	65°20'N 38°05'E	27 June 66	64°56'N 36°20'E
B6 190.....	»	»	»	65°22'N 34°20'E
B6 387.....	»	»	June 66	65°00'N 36°40'E
B6 415.....	»	»	10 Jan. 68	67°42'N 44°00'E
B6 483.....	»	»	June 66	65°55'N 34°45'E
B6 595.....	»	»	4 June 66	64°15'N 34°30'E
B6 ?.....	?	?	June 66	64°40'N 35°00'E
B6 421.....	18 March 66	65°10'N 37°50'E	»	65°55'N 34°45'E
B6 168.....	»	»	15 June 66	?
B6 129.....	»	»	1 June 66	Dvina River delta
B6 179.....	24 March 66	65°10'N 37°50'E	June 66	65°22'N 34°30'E
B6 389.....	»	»	23 May 66	Dvina River delta
B6 547.....	»	»	6 June 66	» » »
B6 533.....	»	»	16 June 66	64°22'N 37°35'E
B6 ?.....	?	?	June 66	65°00'N 37°45'E
B6 ?.....	?	?	»	64°26'N 35°20'E
A67.....	March 67	White Sea	16 Jan. 68	Varangerfj., Norw.
B7 136.....	7 March 67	66°15'N 39°40'E	3 April 67	69°06'N 44°09'E
B7 145.....	»	»	»	69°06'N 44°10'E
?.....	?	?	»	68°17'N 43°02'E
B7 427.....	4 March 68	66°10'N 41°00'E	7 April 68	69°—69°15'N 42°—44°E
B7 465.....	»	»	11 April 68	»
B7 490.....	5 March 68	66°15'N 41°50'E	»	»
B7 500.....	4 March 68	66°10'N 41°00'E	»	»
B7 503.....	»	»	»	»



Table I (contd.) Seal tags recovered up to April 1969 from Soviet taggings in the White Sea, off Newfoundland and in the Greenland Sea 1960—1968.

Tag No.	Tagging		Recovery	
	Date	Locality	Date	Locality
B7 504.....	4 March 68	66°10'N 41°00'E	10 April 68	69°—69 15'N 42°—44°E
B7 513.....	»	»	7 April 78	»
B7 518.....	»	»	»	»
B7 547.....	»	»	»	»
B7 625.....	5 March 68	66°15'N 41°50'E	»	»
B7 699.....	»	»	?	»
B7 985.....	10 March 68	66°45'N 42°20'E	10 April 68	»
B7 1101.....	11 March 68	66°30'N 42°10'E	»	»
B7 ? .....	?	?	»	»
Harp seals, Northwest Atlantic.				
N 6.....	10 March 63	52°00'N 54°42'W	20 April 63	White Bay, Newfoundland
N 56.....	22 March 63	51°20'N 53°06'W	10 Aug. 63	70°50'N 52°00'W
N 60.....	»	51°23'N 53°06'W	March 63	Same area.
N 65.....	19 March 63	50°20'N 55°04'W	July 63	approx. 68°21'N 53°20'W
Hooded seals, Greenland Sea.				
G6 07.....	2 April 66	70°00'N 11°05'W	19 April 66	69°50'N 16°00'W
G6 13.....	»	»	9 April 66	70°45'N 14°20'W
G6 33.....	3 April 66	70°12'N 11°05'W	19 April 66	69° N 15° W
G6 45.....	»	»	»	70°54'N 12°10'W