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Whale marking - the present position

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Introduction

Although there had been various experiments in marking whales from at least as early as 1910, the first successful large scale marking programme was started in the 1932/33 Antarctic whaling season by the Discovery Investigations using the Discovery-type mark - a serially numbered metal tube fitted with a ballistic head and fired from a modified 12-bore shot gun. An effective hit using this mark is one in which the mark completely penetrates the blubber and buries itself in the underlying musculature, to be found when the whale is later killed and processed. Marks which protrude from the blubber are not counted as effective hits (except for any recovered later) since they are usually lost within a short time. A reward is paid for each mark returned with information of the date and position of capture, together with the species, sex, length and other data relating to the animal in which the mark was found.

Distribution and numbers of whales marked and recovered

1. Antarctic pre-war

Up to the outbreak of the Second World War, marking on the Antarctic whaling grounds was carried out by Discovery Investigations and, in the 1938/39 season only, by some co-operating German whaling expeditions. In six seasons, 4988 of the large commercially important whales were estimated to have been effectively marked (Table 1). Fin whales comprised 74% of the total and, as a result of several marking expeditions based on South Georgia, 51% of all the whales marked were in Antarctic whaling Area II. The marking was concentrated on fin, blue and humpback whales, the species from which large catches were being taken and from which recoveries could be expected. Negligible numbers of sei, sperm, minke and right whales were marked and there have been no recoveries from these species.

At the close of the 1938/39 whaling season marks had been recovered from 190 blue, fin and humpback whales (3.8%) during processing on pelagic factory ships in the Antarctic, or at land stations in South Georgia, South Africa and Australia. Marks fired before the war continued to be recovered in numbers from fin whales in the post-war years and the total number of recoveries from all three species was 397 (8.0%) at the close of the 1972/73 whaling season.

2. Antarctic post-war

Several organizations and whaling companies from different countries co-operated in whale marking in the Antarctic in the early post-war whaling seasons

and in 1955 a co-operative International marking scheme was launched under the auspices and with the support of the International Whaling Commission. This scheme developed in different regions and finally embraced all whale marking in the southern hemisphere with the exception of that carried out by the Soviet Union. It includes marking on the pelagic whaling grounds which, in recent years, has been carried out entirely by Japanese expeditions with the invaluable co-operation of the Japanese whaling companies and research laboratories. The extensive marking by expeditions from the Soviet Union forms an entirely separate marking programme, although there is close liaison between the two schemes as far as data from recovered marks are concerned.

In the 23 seasons of post-war marking to the close of the 1972/73 season, a further 3103 large whales were marked under the international scheme in the Antarctic (Table 2). Fin whales again comprise more than half of the total whales marked (54%) but in addition to fin, blue and humpback whales, 272 sei whales and 344 sperm whales have been marked, and the marking of all species has been more widely distributed in the six whaling Areas than in the pre-war seasons.

The percentage of recoveries for all species (15.1%) is substantially higher than for the pre-war marking and, apart from humpback whales, the percentage returns from the individual species are also higher.

In the U.S.S.R. marking scheme, 1224 large whales have been marked in the Antarctic in the 20 seasons from 1952/53 to 1971/72 inclusive (Table 3). Humpback whales account for 42% of the total but numbers of fin, sei and sperm whales have also been marked and marking is widely distributed in the whaling Areas. The percentage of recoveries for all species (11.0%) is rather less than for the post-war marking under the international scheme.

### 3. Southern hemisphere north of 40° South latitude

The international scheme includes marking off the coasts of Australia, New Zealand, the island groups of the south-west Pacific Ocean, off the west coast of South America and off the coasts of South Africa. The amount of marking carried out in the separate regions and the numbers of the different species marked are largely dependent on the nature and behaviour of the local whale populations and on the special interests of the organizations carrying out the marking. For example, humpback whales have predominated off New Zealand and in the South Pacific islands, and sperm whales off South Africa (Table 4). A total of 3482 whales had been marked up to the close of the 1973 whaling season, including 2248 humpback whales (66%) and 1094 sperm whales (31%). Humpback whales have been protected in the Southern Hemisphere since 1964 but up to that date 84 recoveries (6.3%) had been made from the Australian marking alone.

### 4. North Pacific

Whale marking in the North Pacific was started by Japan in 1949. The Soviet Union extended their separate marking scheme into the North Pacific in 1954, and Canada and the United States have also carried out marking programmes off the west coast of North America. A total of 6986 large whales have been marked up to the close of the 1973 whaling season. They include 4539 sperm whales and 1022 fin whales (65% and 15% respectively of the total number marked). It has not always been possible to identify positively individual sei and Bryde whales during marking operations so that in addition to 315 sei and 51 Bryde whales which were definitely identified, there are 304 marked whales which may be of

either species. 49 recoveries have also been made from whales of these two species which were not positively identified. The percentage of recoveries from all species is 9.3% but of the separate species the largest number of returns have come from sei whales (22.9%) and fin whales (21.5%).

The marking in the North Pacific is organized separately from that in the southern hemisphere, and the Whales Research Institute in Tokyo is responsible for compiling the records relating to it.

#### 5. North Atlantic

Although small numbers of whales had been marked in the North Atlantic from 1950 onwards, this marking was sporadic until the expansion of the Canadian programme in 1966. Larger numbers of whales have been marked in programmes in more recent years but the total of 778 marked whales of all species is much smaller than in any of the other oceans (Tables 6 and 7). The three main species which had been marked are fin whales (44%), humpback whales (25%) and sperm whales (17%). In addition to the major species, a few bottle-nosed, pilot and killer whales have been marked, and one mark has been recovered from a bottle-nosed whale. The percentage of recoveries from all species is 7.1% and the largest number of returns is from fin whales (13.5%).

#### 6. Summary for all regions

A total of 20,544 whales belonging to the large whale species (but including the minke whale) are estimated to have been effectively marked with Discovery-type marks up to the end of 1973 (Table 7). The largest numbers of whales have been marked in the Antarctic (pre-war and post-war years combined) and in the North Pacific. Fin (34%), humpback (22%) and sperm whales (31%) account for 87% of the total.

Complete figures for all recoveries throughout the world are not at present available but for the regions where the percentages of returns are known they range in the post-war years for all species combined from 7.1% in the North Atlantic to 15.1% in the Antarctic.

#### Reference

Ivashin, M.V. 1973. Marking of whales in the southern hemisphere (Soviet materials). Twenty-third report of the International Whaling Commission, pp.174-191.

TABLE 1. Antarctic whale marking - 1932/33 to 1938/39

SPECIES	WHALING AREAS						ALL AREAS	RECOVERIES			
	I	II	III	IV	V	VI		TO 1938/39 No.	%	TO 1972/73 No.	%
Blue	6	298	281	110	-	-	695	37	5.3	46	6.6
Fin	159	2210	1172	125	-	7	3673	118	3.2	313	8.5
Humpback	39	38	100	389	-	-	566	35	6.2	38	6.7
Sei	-	11	-	-	1	-	12	-	-	-	-
Minke	-	2	1	-	-	-	3	-	-	-	-
Right	-	6	-	-	-	-	6	-	-	-	-
Sperm	-	1	28	4	-	-	33	-	-	-	-
All Species	204	2566	1582	628	1	7	4988	190	3.8	397	8.0

TABLE 2. Antarctic whale marking - 1945/46 to 1972/73 (International Scheme)

SPECIES	WHALING AREAS						ALL AREAS	RECOVERIES TO 1972/73	
	I	II	III	IV	V	VI		No.	%
Blue	64	25	106*	20	43	10	268	49	18.3
Fin	121	272	808	210	174	78	1663	371	22.3
Humpback	40	13	45	113	331	25	567	14	2.5
Sei	2	61	34	79	47	9	232	32	13.8
Minke	-	-	-	6	-	2	8	-	-
Right	-	1	-	19	-	1	21	-	-
Sperm	3	21	100	127	77	16	344	4	1.2
All Species	230	393	1093	574	672	141	3103	470	15.1

\* includes 3 pigmy blue whales

TABLE 3. Antarctic whale marking - 1952/53 to 1971/72 (U.S.S.R. Scheme)  
(compiled from Ivashin, 1973)

SPECIES	WHALING AREAS						ALL AREAS	RECOVERIES TO 1971/72	
	I	II	III	IV	V	VI		No.	%
Blue							18	2	11.1
Fin	37	156	129	16	15	6	359	43	12.0
Humpback	24	8	17	207	228	33	517	63	12.2
Sei	10	25	20	14	46	14	129	14	10.9
Minke							23	-	-
Right							47	-	-
Sperm	4	30	36	17	44	-	131	13	9.9
All Species							1224	135	11.0

TABLE 4. Marking in the Southern Hemisphere north of 40° South latitude - to end of 1973 season

	BLUE	FIN	HUMPBAC	SEI	BRYDE	MINKE	RIGHT	SPERM	TOTAL
South Africa	-	1	-	7	7	1	-	397	413
Australia	1	2	1333	10	-	-	1	422	1769
New Zealand & South West Pacific Islands	1	-	915	9	5	-	-	54	984
South America (West Coast)	2	11	-	16	-	-	2	121	152
Elsewhere	1	7	-	52	-	-	4	100	164
	5	21	2248	94	12	1	7	1094	3482

TABLE 5. Marking in the North Pacific - 1949 to 1973

	BLUE	FIN	HUMPBACK	SEI	BRYDE	RIGHT	GRAY	SPERM	TOTAL
Canada (1955/1967)	-	19	4	-	5	-	5	83	116
Japan (1949/1973)	64	889	394	{ - 299 - 251	{ - 32 }	13	1	2792	4735
U.S.A. (1962/1969)	76	56	44	10	19	-	5	176	386
U.S.S.R. (1954/1973)	8	58	73	54	-	24	44	1488	1749
	148	1022	515	{ 315 - 304	{ 51 - }	37	55	4539	6986
Recoveries to 1973	15	220	21	{ 72 - 49	{ 2 - }	-	-	273	652
%	10.1	21.5	4.1	{ 22.9 - 16.1	{ 3.9 - }	-	-	6.0	9.3

Table 6. Marking in the North Atlantic

	BLUE	FIN	HUMPBAC	SEI	MINKE	RIGHT	SPERM	BOTTLE -NOSED	PILOT	KILLER	TOTAL
Canada (1960/1973)	20	287	190	30	12	8	109	2	7	6	671
France (1965/1969)	-	2*	-	-	-	-	4	-	2	-	8
Iceland (1965/1972)	-	17	-	-	-	-	6	-	-	-	23
Norway (1954/1973)	-	27	6	-	18	-	2	-	-	-	53
United Kingdom (1950/1955)	-	9	-	-	-	-	14	-	-	-	23
	20	342	196	30	30	8	135	2	9	6	778
Recoveries to 1973	-	46	1	3	3	-	1	1	-	-	55
%	-	13.5	0.5	10.0	10.0	-	0.7	50.0	-	-	7.1

\* Marked in the Mediterranean Sea

Table 7. Estimated numbers of the large whale species marked throughout  
the world at the end of 1973  
(U.S.S.R. Antarctic scheme 1972).

	BLUE	FIN	HUMPBACK	SEI	BRYDE	MINKE	RIGHT	GRAY	SPERM	TOTAL
Antarctic (1932/1939)	695	3673	566	12	-	3	6	-	33	4988
(1945/1973)	268	1663	567	232	-	8	21	-	344	3103
(International Scheme) (1952/1972) (U.S.S.R. Scheme)	18	359	517	129	-	23	47	-	131	1224
Southern Hemisphere	5	21	2248	94	12	1	7	-	1094	3482
North Pacific	148	1022	515	315	51	-	37	55	4539	6986
North Atlantic	20	342	196	30	-	30	8	-	135	761
All Regions	1154	7080	4609	812	63	65	126	55	6276	20544

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