FISHERIES AND MARINE SERVICE

Translation Series No. 3839

The nature of the interrelationships between killer whales and other cetaceans

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Original title: Kharakter vzaimootnoshenii kasatok i drugikh kitoobraznykh
(Akad. Nauk SSSR)

From: Morsk. Mlekopitayushchie Chast' 2: 173-174, 1975

Translated by the Translation Bureau(WRI)
Multilingual Services Division
Department of the Secretary of State of Canada

Department of the Environment
Fisheries and Marine Service
Arctic Biological Station
Ste. Anne de Bellevue, P.Q.

1976

4 pages typescript

Form 3839

DEPARTMENT OF THE SECRETARY OF STATE
TRANSLATION BUREAU

MULTILINGUAL SERVICES DIVISION

CANADA

SECRÉTARIAT D'ÉTAT
BUREAU DES TRADUCTIONS

DIVISION DES SERVICES MULTILINGUES

TRANSLATED FROM – TRADUCTION DE	INTO – EN
Russian	English

AUTHOR – AUTEUR

V.I. Shevchenko

TITLE IN ENGLISH – TITRE ANGLAIS

The nature of the interrelationships between killer whales and other cetaceans.

TITLE IN FOREIGN LANGUAGE (TRANSLITERATE FOREIGN CHARACTERS)
TITRE EN LANGUE ÉTRANGÈRE (TRANSCRIRE EN CARACTÈRES ROMAINS)

Kharakter vzaimootnoshenii kasatok i drugikh kitoobraznykh.

REFERENCE IN FOREIGN LANGUAGE (NAME OF BOOK OR PUBLICATION) IN FULL. TRANSLITERATE FOREIGN CHARACTERS.
RÉFÉRENCE EN LANGUE ÉTRANGÈRE (NOM DU LIVRE OU PUBLICATION), AU COMPLET, TRANSCRIRE EN CARACTÈRES ROMAINS.

Morskie mlekopitayushchie. Chast' 2

REFERENCE IN ENGLISH – RÉFÉRENCE EN ANGLAIS

Marine mammals. Part 2.

PUBLISHER – ÉDITEUR	DATE OF PUBLICATION / DATE DE PUBLICATION			PAGE NUMBERS IN ORIGINAL / NUMÉROS DES PAGES DANS L'ORIGINAL
"Naukova Dumka"	YEAR / ANNÉE	VOLUME	ISSUE NO. / NUMÉRO	173-175
PLACE OF PUBLICATION / LIEU DE PUBLICATION				NUMBER OF TYPED PAGES / NOMBRE DE PAGES DACTYLOGRAPHIÉES
Kiev, USSR	1975			4

REQUESTING DEPARTMENT / MINISTÈRE-CLIENT: Environment

TRANSLATION BUREAU NO. / NOTRE DOSSIER N°: 1101510

BRANCH OR DIVISION / DIRECTION OU DIVISION: Fisheries & Marine

TRANSLATOR (INITIALS) / TRADUCTEUR (INITIALES): WRi

PERSON REQUESTING / DEMANDÉ PAR: Dr. M.A. Bigg

YOUR NUMBER / VOTRE DOSSIER N°: 5053-1

DATE OF REQUEST / DATE DE LA DEMANDE: September 8, 1976

UNEDITED TRANSLATION
For information only
TRADUCTION NON REVISÉE
Information seulement

SOS-200-10-6 (REV. 2/68)
7530-21-029-5333

Secretary of State | Secrétariat d'État

TRANSLATION BUREAU | BUREAU DES TRADUCTIONS

MULTILINGUAL SERVICES DIVISION | DIVISION DES SERVICES MULTILINGUES

CLIENT'S NO. / N° DU CLIENT	DEPARTMENT / MINISTÈRE	DIVISION/BRANCH / DIVISION/DIRECTION	CITY / VILLE
5053-1	Environment	Fisheries & Marine	St. Anne de Bellevue, Qué.
BUREAU NO. / N° DU BUREAU	**LANGUAGE / LANGUE**	**TRANSLATOR (INITIALS) / TRADUCTEUR (INITIALES)**	
1101510	Russian	WRi	OCT 28 1976

Morskie mlekopitayushchie. Chast' 2. (Marine Mammals. Part 2)

1975, pages 173-175 (Kiev, USSR)

THE NATURE OF THE INTERRELATIONSHIPS BETWEEN KILLER WHALES AND OTHER CETACEANS.

By V.I. Shevchenko

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Interspecies relations among cetaceans are becoming 173*
an increasingly frequent subject of study for marine researchers (Zenkovich, 1972; Korabel'nikov, 1972).

The interrelationships between the predatory killer
whale and the large species of whales have not until now been 174
clarified. On the one hand some scientists deny the possibility that killer whales may attack large whales (Jonsgard, 1968). They have been seen peacefully foraging alongside baleen whales (Collet, 1912), yet cases of attacks on sperm whales have been described (Berzin, 1971; Zemskii, Budylenko, 1973).

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* Numbers in the right-hand margin indicate the corresponding pages in the original.

From 1962 through 1974 material was collected from the Antarctic whalers "Slava" and "Sovetskaya Ukraina". The studies were conducted along three lines: a) analysis of the contents of the stomachs of killer whales; b) visual observations of the behavior patterns of whales at large in the sea; c) examination of whale carcasses in order to establish the presence of wounds and scars caused by killer whale bites.

In cold waters (south of 50° southern latitude) between November and March, 49 killer whales' stomachs were examined, of which 5, or 10.2%, were empty. Most frequently found in the stomachs were the remains of lesser rorquals (84.2%) and pinnipeds (45.4%), considerably more rarely one finds fragments of fishes (6.8%) and squids (2.3%). Practically all the killer whales were caught north of the ice edge and it is possible that in the open waters among the ice floes the proportion of pinnipeds in the killer whale diet is higher.

In the temperate-warm zone (30-50° southern latitude) in March and April, 30 stomachs were studied among which 11, or 33%, were empty. Here dolphins (47.3%) and fish (42.1%) predominate in the killer whale diet, pinnipeds are rarer (20.1%) and also toothed whales (15.8%). It is possible that owing to the insecure food supply in the warm zone, cases of cannibalism have also been recorded: killer whale remains about 820 cm long were found in two males belonging to the same group.

Not one single stomach was found to contain the remains of sperm whales or large baleen whales. Nor do we know of any studies on the diet of killer whales in the southern hemisphere

where such cases have been described.

According to data from visual observations in cold waters, killer whales herd together mainly in groups of 10 to 30 individuals. In some areas they form aggregations of from 200 to 400 animals. Cases of killer whales attacking seals, penguins and lesser rorquals have been recorded. There are no reliable data of any attacks on or pursuits of sperm whales, sei whales or fin whales. In the temperate-warm zone killer whale groups are small in number (2-15 individuals); larger aggregations do not form. There is some information about this type of group attacking mixed groups of sperm whales (females, calves and young males) and of two predators pursuing an isolated sei whale.

A study of the characteristics of killer whale tooth 175
marks which we carried out began with an examination of the carcasses of male killer whales which had been caught. We assumed that as a result of fights scars should have been left on their bodies. We found such marks and identical scars were later found on the bodies of sperm whales, lesser rorquals, sei whales and fin whales. Typically, these are parallel, light-colored scratches lying some 3 to 3.8 cm from one another. This corresponds with the distance between the teeth of the predator. These are most frequently found on the pectoral and caudal fins. In fin whales the scars have also been seen on the keels of the caudal peduncle and on the dorsal fin.

Traces of killer whale bites were noted in 53.4% of the fin whales, 24.4% of the sei whales and in 6.4% of the lesser rorquals. Such a significant difference may be explained by the

fact that practically all the lesser rorquals which are attacked fall victim to the predators while among the fin whales probably only the sick and the old individuals die. Among the sei whales the determining factor may be their swiftness which makes them capable of outrunning their pursuers,

65.3% of the sperm whales examined showed signs of bites; among large individuals more than 13.5 meters in size, the figure was 34.8%, among the young who undoubtedly suffer attacks more frequently, 64.1% showed signs of bites while the figure for females was 37%.

In cold waters comparatively fresh signs of bites (scratches in the ulcerous stage) were only found on individual lesser rorquals. In temperate-warm waters such signs were recorded on male sperm whales 10.8 to 12.7 meters long and on fin whales.

Thus it has been established that contrary to current thinking, large baleen and toothed whales are often attacked by killer whales. This occurs mainly in the warm zone of the oceans where food supply conditions are worse than in the Antarctic.