

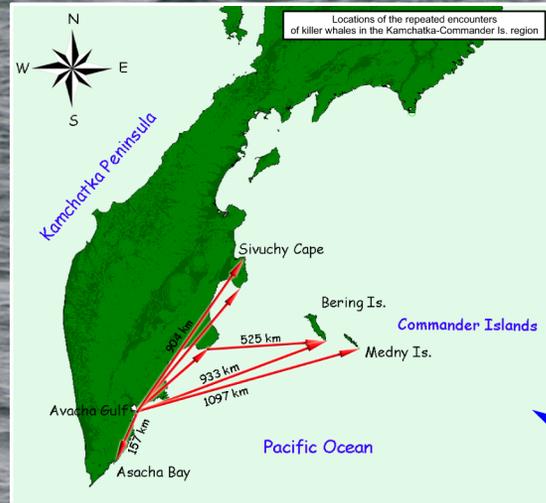
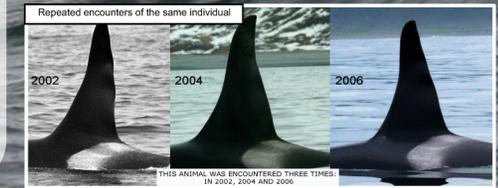
RESULTS OF A PHOTOIDENTIFICATION STUDY OF KILLER WHALES (*Orcinus orca*) IN THE NORTHWESTERN PACIFIC IN 1995-2008

Tatiana Shulezhko¹, Hal Sato², Evgeny Mamaev³, Vladimir Burkanov^{1,4}

- (1) Kamchatka Branch of Pacific Institute of Geography, FEB, RAS, Petropavlovsk-Kamchatsky, Russia; T.Shulezhko@gmail.com
- (2) Far East Russia Orca Project, Tokyo, Japan; Dzf14072@nifty.ne.jp
- (3) Kamchatka Research Institute of Fishery and Oceanography, Nikol'skoe, Russia; Emamaev@lionsea.kirov.ru
- (4) National Marine Mammal Laboratory, NMFS, NOAA, Seattle, USA; Vladimir.Burkanov@noaa.gov

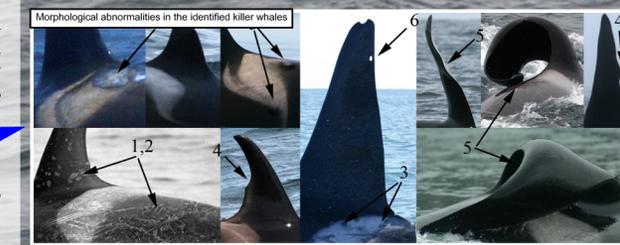
Photoidentification and the analysis of repeated animal encounters has allowed for detailed research on the biology of killer whales inhabiting coastal waters of Alaska, Canada and Washington State. We have applied the techniques of photoidentification-based research to killer whales sighted in Russian waters of the northwestern Pacific Ocean.

Photos of killer whales were taken in 2001-2008 during vessel surveys and onshore observations in the Russian waters of eastern Kamchatka, Sea of Okhotsk, and the Commander and Kuril Islands, and in 1995-2008 during nature-oriented boat tours in Shiretoko-Nemuro Strait, eastern Hokkaido, Japan. Each of the obtained photos were compared with photos of killer whales from the North Pacific found in the available published catalogs: one catalog of killer whales of the eastern Kamchatka (350 individuals) and five catalogs of killer whales from the northeastern Pacific: British Columbia, Alaska and Washington State (1,265 individuals) (Catalogs: [Burdin A.M., Hoyt E., Sato H., Filatova O.A. 2006](#). The Killer Whales of Eastern Kamchatka. Seward, Alaska: Alaska SeaLife Center. 157 p; [Ford J.K.B., Ellis G.M., 1999](#). Transients. Mammal Hunting Killer Whales of British Columbia, Washington and Southeastern Alaska. Vancouver: UBC Press. 96 p; [Ford J.K.B., Ellis G.M., Balcomb K.C., 2000](#). Killer Whales. The Natural History and Genealogy of *O. orca* in British Columbia and Washington. Vancouver: UBC Press. 104 p; [Matkin C., Ellis G., Saulitis E., Barrett-Lennard L., Matkin D., 1999](#). Killer Whales of Southern Alaska. Homer, Alaska: North Gulf Oceanic Society. 96 p.).



A total of 281 killer whales were identified in the waters of eastern Kamchatka and the Commander Islands, 119 along Kuril Islands and in the Sea of Okhotsk; 141 individuals were identified near eastern Hokkaido. Presumably killer whales of both resident and transient ecological types were encountered. No matches were found between killer whales observed in the northeastern and northwestern parts of the Pacific Ocean. This indicates that killer whale migrations between the eastern coast of Asia and western coast of North America occur rarely or are absent.

Some of the identified killer whales have distinctive body scars and dorsal fin abnormalities: deep and/or numerous scars on the dorso-lateral surfaces (19% of all identified killer whales; see #1); scars caused by skin diseases (6%; #2); presumably scars from cookie-cutter shark bites (11%; #3); large notches on the edges of the dorsal fin (13%; #4); bent, twisted, collapsed or misshapen dorsal fins (3%; #5); and holes in the dorsal fin (1%; #6). Additionally, one case of albinism in an adult male was recorded. The highest rate of injured killer whales, especially animals with collapsed fins (88%) or obvious skin diseases (82%), was recorded in the waters of eastern Kamchatka region.



A significant number (63+9+17) of the repeat encounters of the same individuals was recorded within the waters bounded by Sivuchy Cape in the north, Asacha Bay in the south (Kamchatka Peninsula) and the Commander Islands in the east (see map). Only one match was found between the Kuril Islands and eastern Kamchatka. Also one re-sight has logged between the Kuril Islands and Shiretoko-Nemuro Strait, eastern Hokkaido.

REGION	Eastern Kamchatka, Russia	Commander Is., Russia	Kuril Is., Russia	Sea of Okhotsk, Russia
Eastern Kamchatka, Russia	63	9	1	0
Commander Is., Russia	9	17	0	0
Kuril Is., Russia	1	0	1	0
Sea of Okhotsk, Russia	0	0	0	0
Eastern Hokkaido, Japan	0	0	1	0
Northeastern Pacific, USA/Canada	0	0	0	0

Out of all identified killer whales the same individuals were not encountered more than three times; the longest time interval between the first and the repeated encounters was 4 years. The longest linear distance between the locations of repeated encounters of the same individual was 1097 km (from the Avacha Gulf of Kamchatka to the southeastern end of Medny Island). Some killer whales were encountered in the same pod over the period of several years.



Financial support for this research was provided by the NATIONAL MARINE MAMMAL LABORATORY, USA (NMML, AFSC, NMFS, NOAA), ALASKA SEALIFE CENTER, U.S. MARINE MAMMAL COMMISSION AND US FISH AND WILDLIFE SERVICE

RUSSIAN FAR EAST MARINE MAMMAL RESEARCH PROGRAM [HTTP://WWW.FEEMMR.ORG](http://www.feemmr.org)