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Update on studies of bowhead whales
(*Balaena mysticetus*) in the Okhotsk Sea in
2014-2015

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Update on studies of bowhead whales (*Balaena mysticetus*) in the Okhotsk Sea in 2014-2015

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Bowhead whales (*Balaena mysticetus*) in the Okhotsk Sea (OS) are regarded as a distinct population separate from other stocks of this species. Ivashchenko and Clapham (2010) summarized information on the status, distribution and exploitation of this population. Much of that information remains unchanged today, and present status of the population is unclear. In recent years, opportunistic observations and biopsy sample collection have been conducted for OS bowheads during the beluga whale study funded by Ocean Park Corporation Hong Kong. Results of 2011-2013 studies have been presented at the previous IWC SC meetings and Holarctic marine mammal conferences (Shpak 2013, Meschersky and Chichkina 2013, Shpak et al. 2014, Shpak and Paramonov 2014). An open database of individual genotypes was created (http://www.sevin.ru/menues1/index_rus.html?..news/676.html), and the results of molecular genetic analysis of the samples collected in 2011-2012 were published (Mescherskiy et al. 2014).

In 2014 no fieldwork was conducted in the known areas of summer bowhead whale concentration in the OS. However, the team of hydrologists working at the head of Penzhina Gulf, the eastern arm of Shelikhov Bay in the north of the OS (Pic.1), observed small groups of 2-3 bowhead whales twice in late August, and “relatively regularly” they saw singletons.

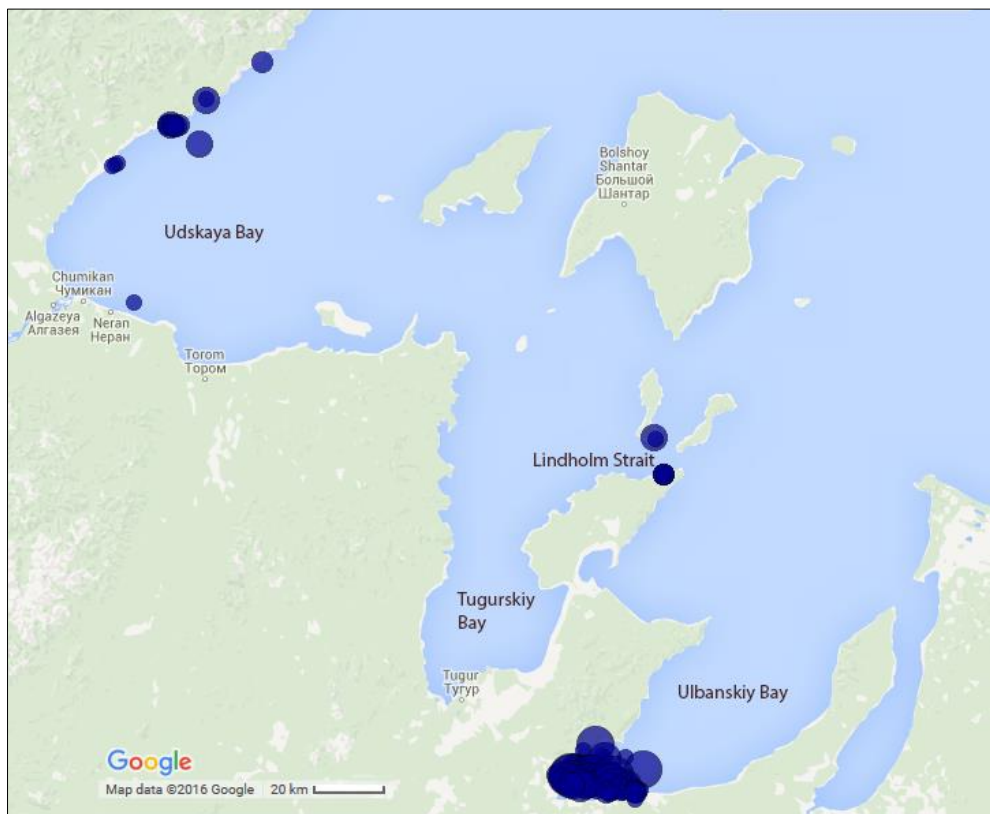


Picture 1. The Okhotsk Sea. 1- Shelikhov Bay, 1a – Penzhina Gulf, 2 – Shantar Archipelago (Shantar region is encircled).

In the summer of 2015, the same team conducted interviews of local people upon our request. According to two reliable interviewees, “several individuals” of bowhead whales can be found in the gulf starting mid-June to late August. Recent observations and interviews suggest that at least part of the population remains in/visits the northern OS in summer.

In the western OS, in the area of Shantar archipelago and the mainland bays, we conducted observations and collected samples from bowhead whales opportunistically during the surveys and other type of boat work in July-October, 2015.

Distribution of bowhead whales was slightly different from previous years. For the first time, in mid- to late August a considerable number of whales concentrated along the northern part of Udskeya Bay (Pic.2). This aggregation consisted of over 20 individuals of different size. Employees of the gold-mining base located 40 km north from Chumikan, Udskeya Bay, reported the presence of bowhead whales since July and noted that permanent presence of large groups of bowheads in mid-summer was very uncommon.



Picture 2. Bowhead whale sightings in Shantar region, July-October, 2015. The size of circles: number of whales per sighting (small: 1-2, medium: 3-4, large: 5-6).

Our observations and interviews of the tourist camp staff in Lindholm Strait between the Tugur peninsula and southern Shantar islands (Pic.2) have confirmed that this passage is actively used by bowhead whales in summer.

Distribution of bowhead whales in Ulbanskiy Bay was not different from previous years. The study period lasted one month longer than in previous years, till October 6, and the bowhead whales were still present in the bay at the time of the research team’s departure.

Throughout the region, the bowhead whales follow the coastline very close to shore, presumably, to escape killer whale (*Orcinus orca*) predation, lie on the bottom to rest/hide, or float/lie with their heads resting on the rocks (our observations). In Lindholm Strait, the whales use shallow coves as rest/retreat places, and both we and tourists have independently observed them lying on the bottom several meters from the water’s edge.

Skin biopsies were collected with a crossbow. Twelve samples were collected in Udskaya Bay, one in Lindholm Strait, and eighteen samples in Ulbanskiy Bay; three of the latter came from fresh corpses. Genetic analysis is ongoing. The results will be used for a capture-recapture abundance estimate.

Killer whale predation in Ulbanskiy Bay seemed alarmingly high in 2015: 1 fresh corpse was found with fresh KW tooth marks and a missing tongue, minimum 3 (possibly 4) corpses of juvenile bowheads were observed by other people (reported in interview data). In addition, there were 2 observations of predation followed by the bowhead whale's death, and 3 training or unsuccessful hunting attempts. One other successful KW attack was recorded by gold miners (a highly reliable source) after the research team's departure. Less reliable interviews contained information on KW predation in Udskaya Bay and Lindholm Strait. It is important to note that during 1 month of observation, according to PhotoID analysis, only one group of killer whales was observed hunting bowhead whales in the bay. Behavioral aspects of hunting/feeding were recorded.

Whale lice are commonly present on bowhead whales from the OS population. The samples (presumably *Cyamus ceti*) were collected from 1 corpse which had an extensive cyamid infestation.

There are annual reports of bowhead whales ruining salmon nets while traveling or escaping KWs along the water-edge. These were supplemented in 2015 by more reported cases, including our observation of two nets, placed at the distance of 300 m from each other, which were brought down on a quiet night most likely by a large cetacean.

Histological analysis of bowhead whale molting skin conducted at IPEE RAS in 2015 confirmed the process of molt previously described by us based upon visual observations only. The data were presented at a conference; a paper has been recently submitted to the journal *Doklady Akademii Nauk*.

A collection of photos of scars and skin lesions of different types remains to be organized. Collaboration with research teams working on different bowhead whale populations on a comparative photo-analysis would be of particular importance for health assessment of the population.

Preliminary abundance estimate for the summer group from Ulbanskiy Bay based on our data collected in 2011-2013 (89 samples, excluding re-captures within one year and 2 samples from Udskaya Bay) was conducted as a capture-recapture analysis and presented to the IWC SC in 2014 (Shpak et al., 2014). The samples collected under Russian-US study in 1995-2000 were analyzed in the US (Maclean, 2002) and are currently stored in the Southwest Fisheries Science Center (SWFSC) Molecular Research Collection. Pooling both datasets together should considerably improve the precision of the abundance estimate. Following recommendation by the IWC SC/65b, a collaboration was established between IPEE RAS and SWFC to unify the results from genotyping of bowhead whales by Russian and US laboratories. We plan to re-genotype both the specimens obtained from the USA and some of ours to verify the allele designations (i.e. to cross-calibrate the nuclear markers). At present, a collection of 20 samples is being prepared by the SWFSC, and upon completion of the necessary paperwork, the DNA will be preserved in *DNASTable Plus (Biomatrix, USA)* and sent to Moscow. The abundance estimate will be conducted using available open-source software packages. A request for funding of the required genetic calibration analysis and abundance estimate is being submitted to the IWC SC.

I sincerely thank Dr. Phil Clapham for revising and improving this report and Dr. Yulia Ivashchenko, who kindly agreed to present it to the IWC Scientific Committee.

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