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Report on bowhead whale *Balaena  
mysticetus* recent population status in the  
waters of Franz-Josef Land Archipelago

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INTERNATIONAL  
WHALING COMMISSION

# STATUS OF BOWHEAD WHALE *BALAENA MYSTICETUS* IN THE WATERS OF FRANZ-JOSEF LAND ARCHIPELAGO

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## Introduction

The Spitsbergen population of bowhead whales is listed as Endangered in Red Data Book of Russia and as Critically Endangered on the IUCN Red List (Reilly *et al.* 2012). The general distribution of these whales is from the east coast of Greenland, the Greenland Sea, around Svalbard and the Franz-Josef Land Archipelago, Barents Sea, east into the Kara Sea to Severnaya Zemlya, Russian Federation, (Rice 1998). Before commercial whaling, this population was considered to be the most abundant of all bowhead populations and it was hunted for 300 years from 1611 to 1911 (Ross 1993).

Franz-Josef Land (*Zemlya Frantsa-Iosifa*), not discovered until 1873, is the northernmost archipelago in the world and consists of some 192 islands. In 1994, these lands and their adjacent waters were designated as a specially protected area, the State natural refuge of federal level (in Russian: *zakaznik*). In 2009, the Russian Arctic National Park (RANP) was established on the northern tip of Novaya Zemlya Archipelago. The administration of the RANP also manages the Franz-Josef Land Refuge and is responsible for wildlife monitoring in the area. One of the important marine species is the bowhead whale. Observations on bowhead whales within the boundaries of FJL Refuge and in adjacent waters is a part of the ongoing monitoring program of the RANP.

Here I present new observations on the status of bowhead whales in the waters around Franz-Josef Land Archipelago and describe future threats to these whales.

**Materials and methods.** I summarize available data on bowhead whale sightings in the waters adjacent to the Franz-Josef Land Archipelago. The data include our own observations during scientific expeditions to the area and reports / communications from other expeditions and cruises as well as records from published sources. Original data on whale distribution were collected in the summer during several vessel-based cruises using the line transect method. Whales were observed from the bridge of the ship by scanning the 90 degree sector from straight to abeam of portside with 10 x 51 Swarovski binoculars. Estimated distance and bearing to the whales were recorded.

Animals spotted on the starboard either by an observer, or by crew or passengers were also recorded with special notes. Other parameters recorded included: whale behaviour, sea state, and ice conditions. When possible, digital photos were taken. Line transects were conducted from vessels of opportunity (icebreaker, R/V, or motor-sail yacht) in August and September 2010–2014, mostly in the southern parts of the Franz-Josef Land waters. All opportunistic observations from tourist cruise vessels and land-based occasional observations were also collected.

In spring (April), data were obtained during opportunistic helicopter flights in 2010 and 2013 and during land-based stationary observations of polynyas where they came to the coast of Alexandra Land (the distance to the fast ice edge of the polynyas varied from 10 m to 1.5 km in 2013 and 2014). Ice charts / MODIS satellite images of ice conditions for the observation period were also obtained.

All new data and the records from published sources were entered into the database and mapped in ArcGIS.

## **Results**

### ***Database***

The Russian Arctic National Park database contains a total of 26 records of bowhead whale sightings including more than 250 animals. This total includes available historical records (1971–2006) from publications and unpublished reports.

Most of the records are original data collected during 2010–2014. During this recent 5-year period, there were 109 records of 217 animals, or ca. 85% of both the records and numbers of whales in the database. Most of the sightings were from the south-western section of the archipelago, which is an important feeding area for bowheads. There were no confirmed sightings of calves or small individuals during our surveys.

An overview of the seasonal distribution during this period is given below with some references to historical data.

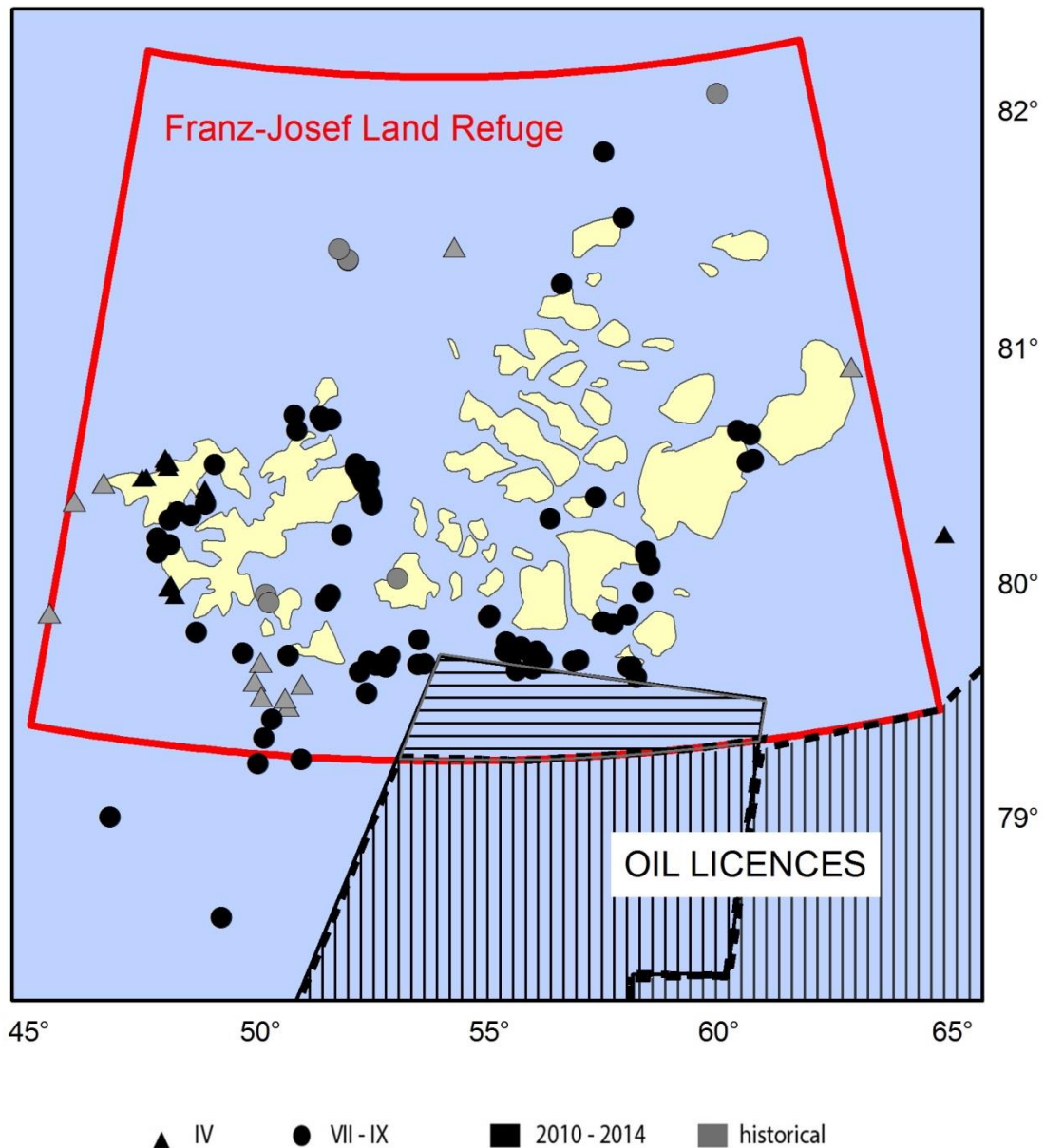


Figure 1. All bowhead whale sightings in Franz-Josef Land area stored in the database for the 1971–2014 period.

Overlap of Albanov licence area with Franz-Josef Land Refuge is to be fixed according to the federal law

### *Seasonal distribution*

#### *Spring (April)*

There are 25 records of 50 whales for April over the period 1971 to 2014, including 16 records of 36 whales during the recent 5 years.

**2010:** A total of 20 bowheads were observed from helicopters in recurring flaw polynyas off the SW part of FJL during two helicopter flights on 2 and 3 April (Gavrilo & Ershov 2010). SSW off Prince George Land 3, 3, 4, and 1 whales were spotted in polynyas filled with nilas and young

ice, within 1–2 km of the narrow fast ice belt. Three, 5 and a large singleton whales were observed in an open water polynya next to the glacier front NW off Alexandra Land (within 1 to 4 km). During the flight over the polynya east off FJL in mid-April no whales were seen.

**2013:** Three groups of whales (3, 2, and 4 animals) were seen simultaneously in the polynya NW of Alexandra Land among loose ice floes. A singleton was spotted within the same area on 8 and 10 April. All observations were conducted from land. Two singletons were sighted from helicopter E off Franz-Josef Land within the area of leads and fractures among the pack ice on April 11.

**2014:** Two single whales were seen skim feeding from the same observation site as in 2013 on 6 and 13 April 2014. The polynya was mostly closed with young ice and nilas. One of the whales approached the coast fringed with narrow fast ice, i.e. was in very shallow water. Two whales were recorded on 16 April 2014 in Cambridge Strait at the very inner narrow portion of the polynya.

Historical records provide data on whales observed in polynyas S and E off FJL in April 1970–1980s (this includes bowhead whales and large unidentified whales, Belikov *et al.*, 1984, 1989)

#### *Summer (July – mid-September)*

Most of the records obtained in 2010–2014 (74 of the total 108 individuals sighted) were from August (25 records of 44 whales) and September, and only 3 records of 6 individuals were from July.

There is also one record of a single whale from June – it was spotted next to the ice edge SE of FJL on 11 June 2013.

The distribution by months partly reflects the intensity of observation efforts, since most of the cruises were conducted from very late July to early September.

#### **Discussion**

Moore and Reeves (1993) reported 37 sightings between 1940 and 1990, and most of these were in the waters near Svalbard and Franz Josef Land. These records include two early sightings mentioned by Belikov *et al.* (1989) of large winter aggregations off Franz Josef Land in 1981 (“several tens of individuals”) and 1983 (“about 66 animals”).

In the summer, the whales were dispersed around the archipelago between 78°45' and 82° 20'N.

Most of the whales were encountered within the archipelago; during ice-free seasons they tended to concentrate south of the central part of Franz-Josef Land and in the western part of the archipelago, which is dissected with deep straits, such as Cambridge Sound between the two most western islands shown in Fig. 1. Fewer animals are seen in the inner and shallower parts of FJL.

The highest concentration was observed on 2 August 2010, when 27 whales were spotted from the bridge of an icebreaker during a 1.5 hr cruise south of McKlintok Island (over a distance of approximately 40 km). High abundances were also recorded in August 2012 and 2013. The highest densities were observed south of the central part of the archipelago, with 10 records of 22 whales along a 50 km route travelled by yacht in 2012, and in Morgan Strait in the eastern part of the archipelago between Wilczek Land and Graham Bell Island, where 18 animals in four groups were encountered along a 20 km route travelled in 2013. Record low ice records for the FJL area were recorded in both years. Whales were observed as singletons or in small groups of 2–3 to 7 animals.

*Bowhead Whale Abundance and status in FJL.* Recent data shows that bowhead whales occur regularly in Franz-Josef Land, at least in spring and summer from April to September. They use recurring polynyas which develop more often west of the archipelago, and some whales probably overwinter there. During summer, foraging bowheads make extensive use of waters adjacent to the FJL, where they form feeding concentrations in favourable areas. Highest densities were observed in ice free seasons. Maximal numbers of whales sighted during a single summer cruise (direct surface observations without any correction factors applied) during 2010–2013 were as high as 20 to 46 individuals. If we consider 0–30 days of cruising within archipelago waters as quasi-simultaneous scan of the area, the total numbers in the area might exceed 100 animals. However, Reilly *et al.* (2012) noted that the increase in the number of sighting records over time might reflect increased effort rather than increasing numbers of whales. These authors also noted that there were no calves or small individuals in any of the recently reported sightings. The only recent sighting of a bowhead calf from this population was a mother and a calf observed off the northeast coast of Greenland in July 2009 (Boertmann and Nielsen 2010). We have yet to confirm any small individuals or calves in FJL waters.

Our data, together with a recent report from NE Greenland (Boertmann *et al.* 2015), suggest that existing overall Spitsbergen bowhead population estimate (Christensen *et al.*, 1992; Zeh *et al.*, 1993; Kovacs *et al.*, 2009) may be an underestimate and should be re-evaluated.

### **Conservation issues**

Franz-Josef Land and the adjacent 9,000,000 hectares of waters are protected as a state refuge. All commercial activity is prohibited within the protected area, including commercial fishing, shipping, prospecting for mineral resources, and mining. Nevertheless, there are a number of hazards from outside the refuge. Major risks come from the developing petroleum industry and the associated seismic surveys in the surrounding shelf areas. Recently issued oil and gas licences include areas directly bordering the southern boundaries of the specially protected area, which is an

important summer feeding ground for the bowhead whales (Figure 1). There are also plans to transport petroleum products from West Siberia to the east, which will increase ship traffic in the vicinity of Franz-Josef Land in the near future. Recently developing military activity in Franz-Josef Land, including large-scale vessel operations, as well as the expected increase in ship traffic to the newly designated outer anchorage site in the Cambridge Strait, where bowhead whales are known to regularly occur and feed, will pose additional threats to the whales within the specially protected area.

Human activities in the Arctic are increasing each year and are becoming more intense for all of the endemic bowhead whale populations that never leave these waters. The Svalbard-Barents Sea bowhead population is the most endangered of the five bowhead populations. Therefore, serious consideration must be given to mitigating all types of human activities in the area including: designating vessel traffic lanes with speed restrictions in areas where whales concentrate, creating additional temporal or spatial closures of specified areas, and issuing specific regulations for seismic surveys.

All these human activities, especially the seismic surveys that will be conducted in the northern Russian part of the Barents Sea near FJL, require urgent measures for monitoring and research on this endangered bowhead whale population as well as protection of its important summer feeding grounds. The critical elements of a mitigation and monitoring plan, which must be developed before the start of any seismic surveys, include: collection of baseline ecological data; substantial advance planning, communication, and critical review; integrated acoustic and visual monitoring of sounds and whales during seismic operations; and systematic analysis of results to inform future planning and mitigation (Nowacek *et al.* 2013).

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Table Bowhead whale observations during 2010 – 2014 in Franz-Josef Land waters

Year	Season		Efforts	Numbers of whales sighted
2010	April	Aerial, helicopter (MG)		20
	August	Vessel based, stationary and linear (MG)	Total distance travelled 2400 km, but all whales observed along 70 km segment during 9 hrs	34
	TOTAL SEEN			<b>54</b>
2011	August	Vessel based linear (MG)	Total distance travelled some 1800 km, but all whales observed along 120 km of 3 segments	19
	August	Vessel based, opportunistic	Tourist cruise some 900 km distance travelled in FJL waters	1
	TOTAL SEEN			<b>20</b>
2012	Late July – early September	Vessel based linear (MG)	Total distance travelled some 3700 km, but most of the whales (40) observed along 80 km of 3 segments	52
	August - September	Vessel & land based, opportunistic		5
	TOTAL SEEN			<b>57</b>
2013	April	Land based stationary (MG)	Two visits to the same site with 9 and 1 ind. observed at the same time	10
	April	Aerial, helicopter (MG)	300 km flight over close drifting ice	2
	June	Vessel based, opportunistic (MG)	Ca. 600 km distance travelled	1
	August	Vessel based linear (MG)	Total distance travelled 3500 km, but most of the whales (40) observed along 80 km of 3 segments	46
	August	Vessel based, opportunistic	Four tourist cruises with total distance travelled of some 3000 km	3
	TOTAL SEEN			<b>62</b>
2014	April	Land based stationary (MG)	Three visits to the same site with 9, and occasional observation in other place	4
	August	Occasional from vessel, boat or land		9
	September	Vessel based linear	Total distance travelled some 350 km	11
	TOTAL SEEN			<b>24</b>
<b>GRAND TOTAL 2010 – 2014</b>			<b>217</b>	