

Brief Communication

The northernmost sightings of Humpback whales

(*Megaptera novaeangliae*)

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Abstract

The decrease in sea ice coverage impacts the accessibility of marine areas especially in the Arctic. Areas further north than previously reported can be accessed by marine mammals which are usually restricted by the sea ice. We report sightings of several humpback whales north of 81° North. This is a previously unknown habitat expansion. The recent decrease in Arctic sea ice cover is likely to increase accessibility of marine areas for cetaceans, potentially resulting in northward expansions of species habitat ranges. Here, we report multiple sightings of humpback whales (*Megaptera novaeangliae*) north and west of Jackson Island in the Franz Josef archipelago in July 2016. The observations are north of 81° North, significantly increasing the northernmost observation of humpback whales. The sea ice loss in the summer of 2016 was larger than previous recorded. Changes in population dynamics, especially increase of population size, might be the most important driver for the habitat expansion, but climate change is opening up new marine habitats in the Arctic. Our observations suggest that cetaceans are already expanding their ranges into ice-free areas. [JMATE 2018; 10(1):5-8]

Keywords: Humpback whales, habitat expansion, sea ice loss, the Arctic, climate change

Introduction

Animal distributions in marine habitats are highly affected by climate changes through increasing sea water temperatures and decreasing sea ice cover

[2, 4, 7, 11, 13, 22]. With these changes, areas of high primary production close to the sea ice are shifting further North which is also influencing the distribution of animals at higher trophic levels [6]. Both direct and indirect effects of a changing environment are altering the ecology of marine mammals, but baleen whales are often less affected because of their large-scale migration patterns which make more habitats accessible [9].

One of the most studied baleen whales, the humpback whale (*Megaptera novaeangliae*) can be found in all oceans of the earth [1, 15, 19]. They have a migratory pattern of commuting to lower latitudes for breeding in winter time and traveling to higher latitudes to feeding areas in summer time [17, 18, 24]. In the North Atlantic, humpback whales can be found in areas as far south as the Caribbean Sea and Cape Verde Islands [8, 10, 14]. There, the whales spend up to several months a year for mating and giving birth to their offspring. After the breeding season, the humpback whales migrate north to areas in northern Canada, Greenland, Iceland, Svalbard, and the mainland of northern Norway [5, 8, 10, 16].

To the best of our knowledge, the northernmost observation of humpback whales to date stems from an observation in 2015 by a Russian scientist in the southern part of Franz Josef Land at approximately 80° North [21]. The sightings of humpback whales presented here proves an expansion of their previously known habitat.

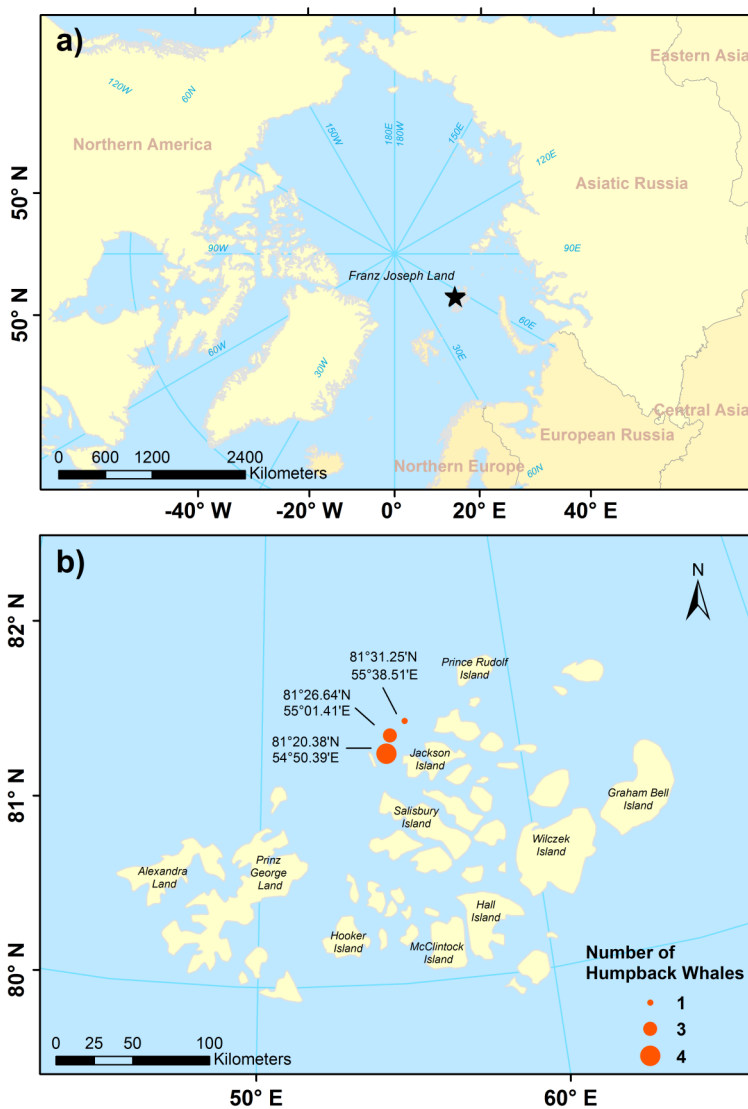


Figure 1: Sightings of humpback whales north of 81° North on July 29th, 2016. a) Humpback whales were observed in the northern part of Franz Josef Land in the Russian Arctic. The whales were observed from the bridge on a ship moving southwards through the archipelago. b) One individual humpback whale was observed at 22:09, three individuals were observed at 22:23, and four individuals were observed 23:01 Moscow time (UTC+3). Different group sizes are indicated with red circles. The individuals could not be safely distinguished from each other, but it is likely that it was unique individuals in all observations.

Methods and Results

In July 2016, two trained ecologists took two seven hours shifts daily, recording detailed wildlife observations. This was done on an expedition cruise returning from the North Pole to Murmansk (68° 57' N). The overlap between shifts was only an hour, meaning

that at least one person was making observations at each time from 90° North and until the observations ended at 78° North. The observers made their recordings from the bridge of the ship - NS 50 Years of Victory (50 лет Победы). Three spatially and temporally different sightings of humpback whales occurred north of 81° North on July 29th, Moscow time (UTC+3) (Figure 1). All observations occurred within an hour, with 15 minutes between the two first observations and 40 minutes between the second and the last observation. The ship was moving south-southwest with a speed of approximately 14 knots at the time of the observations. All observed humpback individuals exhibited short diving intervals, had visible characteristic dorsal fins, fluked with a straight fluke, and had a typical column-shaped blow. Together, these traits clearly distinguished the observed humpback whales from other whale species of similar size that could potentially be present in this area, such as bowhead whales (*Balaena mysticetus*). The observations were not sufficiently detailed to adequately distinguish between humpback individuals across time and space. Consequently, the total number of individuals in all three sightings varied from four to eight, depending on how double observations of individuals were accounted for.

However, based on whale behaviour such as short diving intervals which indicates feeding activity, and the time and distance travelled between observations, the three sightings likely included eight different humpback individuals.

Discussion

A novel sighting of humpback whales was made just a few miles south of the ice edge in the Russian Arctic. Several individual humpback whales were seen in the northern parts of Franz Josef Land at a latitude north of 81° North. The population size of humpback whales has increased over the last decades, and the migration north of the previously known distribution range might be driven by competition [23]. Humpback whales migrate north in summer to feed, and it is also possible that the humpback whales migrate further north than previously known because they are following the range shifts of their food sources. The frequent diving in our observations indicated that the whales were feeding.

This expansion of the habitat of the humpback whales in 2016 can be explained due to little sea ice coverage during that summer, which followed unusually warm events from the previous winter [3]. Large areas north of our observations which normally have all year sea ice had open water at the time of the observations [12]. This area had sea ice again in the summer of 2017, but open water conditions similar to the summer of 2016 will become more frequent as the Arctic summer ice cap is retreating, and hence provide new habitats for baleen whales [12, 20]. Several other marine predators in the northern hemisphere, such as fish, pinnipeds, and other cetaceans are expanding their distribution range northwards demonstrating a relationship to a changing environment [10, 12].

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