



Occurrence of killer whales (*Orcinus orca*) along the Snæfellsnes Peninsula, West Iceland: A decade of photo-identification (2011–2021) reveals travel routes

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Introduction and methods

In this study, findings obtained from the analysis of a photo-identification catalogue of killer whales in Iceland published in January 2022¹ are presented. The catalogue comprises photo-identification images² from February 2011 to December 2021. While the catalogue includes additional individuals from other areas around Iceland, the focus is on identification images taken along the Snæfellsnes Peninsula, Breiðafjörður, West Iceland.

Data on killer whales was collected both from land and onboard whale-watching vessels, and included identification images, geographical location, pod size, and behavioural observations. The sex of individuals was identified based on their dorsal fin size and shape, body size, and/or the exposure of genitals on the surface. Individuals were also determined to be female when close associations with the same calves were repeatedly observed.

Photo-identification images of SN0068/063 "Gunnar" in Iceland and Scotland 2012 - 2021



Images depict changes in appearance over time, such as fin growth and acquisition of new markings, of male individual "Gunnar" (Iceland ID: SN0068 - Scotland ID: 063). SN0068 is one of the individuals that have been spotted repeatedly both in Iceland and Scotland.

Results

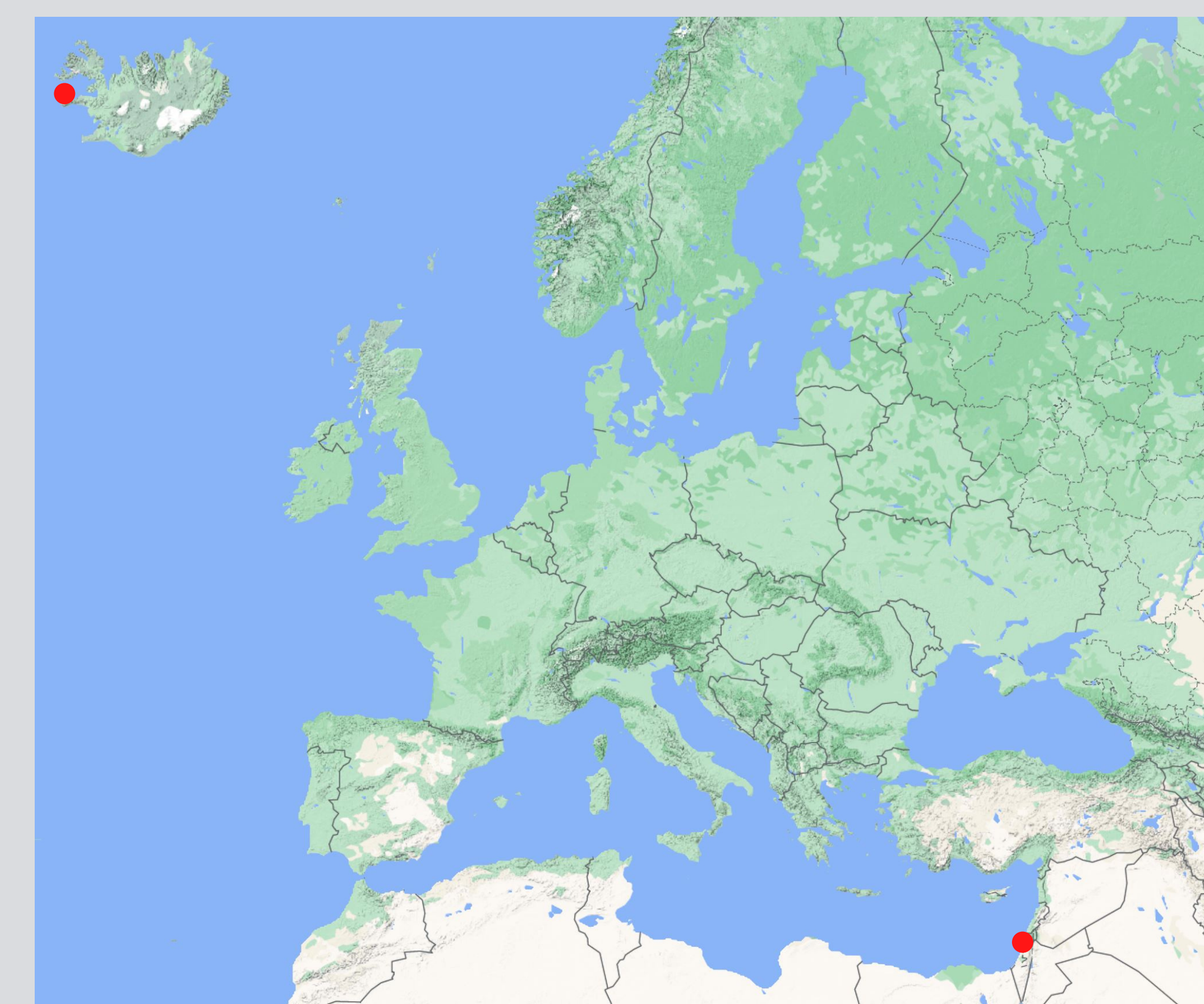
Sex ratio

From a total of 631 sightings and over 330,000 analysed images, 961 individual killer whales were identified in the waters around the Snæfellsnes Peninsula. Of these, 216 (22.5 %) were classified as females, 296 (30.8 %) as males, and 449 (46.7 %) were of unknown sex.

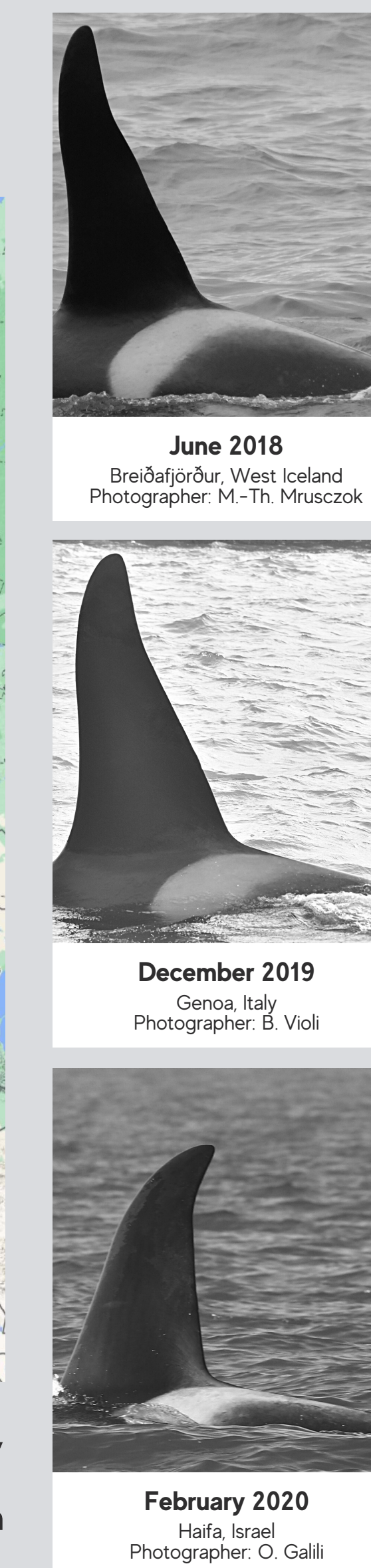
Long-distance movements: Iceland - Scotland

Identification work has revealed both round-trip and one-way movements of killer whales to areas outside of Iceland. There are currently 29 individuals documented to travel between Scotland (including Shetland, Orkney, and the Outer Hebrides) and Snæfellsnes.^{1,3,4}

Long-distance movement of SN0113 "Riptide" from Iceland to Israel



SN0113 "Riptide" was spotted in Breiðafjörður 2014–2018,⁵ and was last identified near Haifa, Israel, in February 2020. Map source: Google Maps. Identification images of SN0113 on the right depict changes in appearance over time. When SN0113 was spotted near Haifa, the fin was leaning considerably towards the right.



Long-distance movements: Iceland - Spain - Italy - Lebanon - Israel

In 2019 and 2020, four killer whales were found to have travelled from Iceland via Spain to Italy, with one individual (SN0113 "Riptide") having swum farther to Lebanon⁵ and Israel, covering a total distance of over 8,000 km.

Future research

Further studies and analyses of current data are needed to better understand the travel routes, social structure, feeding behaviour, and reproductive rates of killer whales in West Iceland, to aid in their conservation.

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Our research in Iceland is critically monitored for its non-invasive character and application of the precautionary approach. Vessel-based data collection is carried out under strict compliance with the IceWhale Code of Conduct for Responsible Whale Watching.

