

First matrilineal catalogue of killer whales in Icelandic waters

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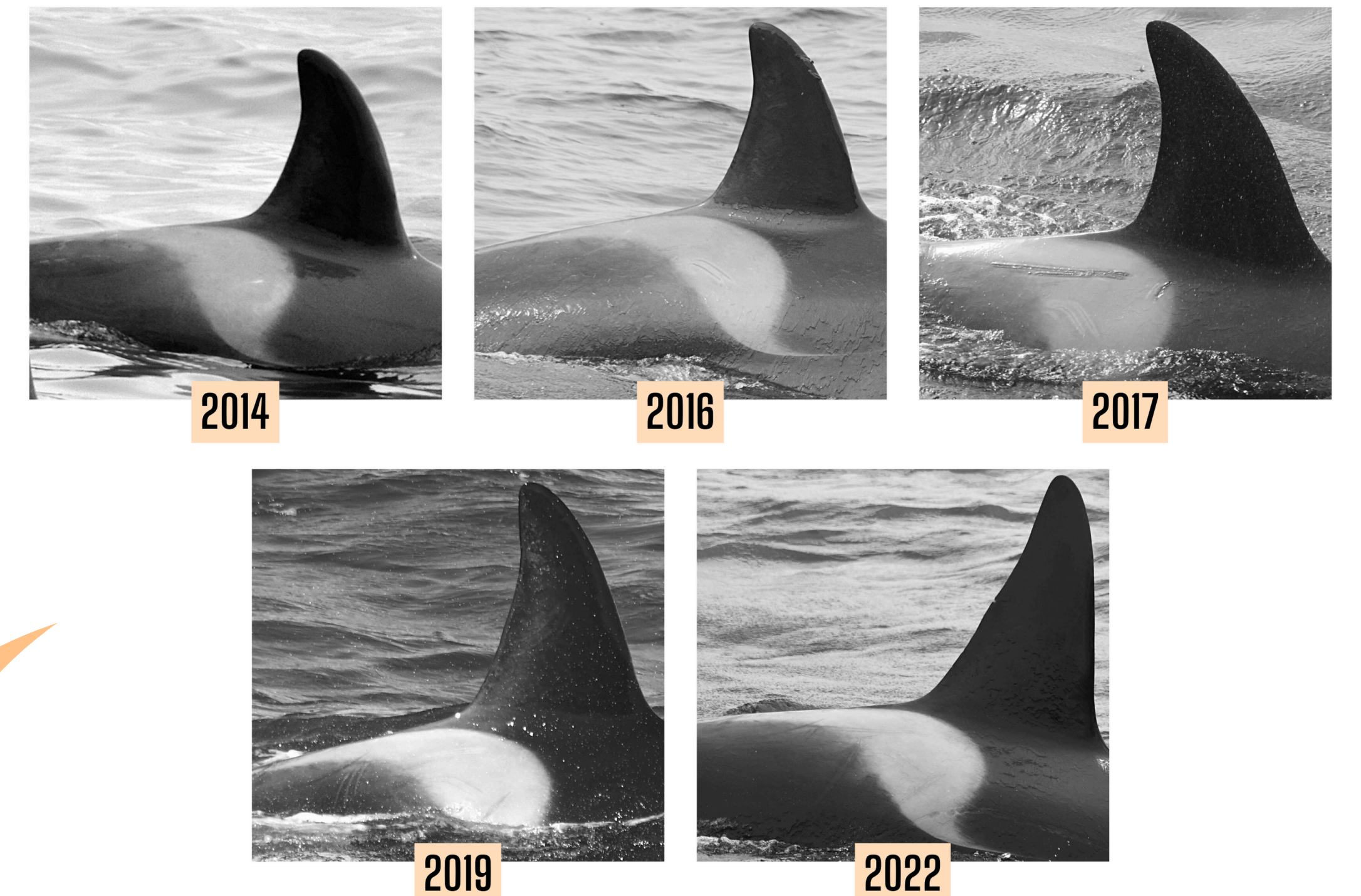
Introduction and methods

Killer whales (*Orcinus orca*) are often seen in the waters surrounding the Snæfellsnes peninsula. Behavioural, locational, and photographic data of killer whales has been obtained there since 2011 in an ongoing non-invasive research and monitoring project. Data is collected from an opportunistic platform aboard whale-watching boats, as well as via land- and vessel-based dedicated surveys. Details on the age, sex and maternal ancestry are compiled, if possible, for each individual killer whale via the commonly accepted standards.^{1,2,3,4} A regularly updated killer whale photo-identification catalogue (currently comprising 987 individuals) maintained by Orca Guardians Iceland and Náttúrustofa Vesturlands has been made openly available.⁵

Results

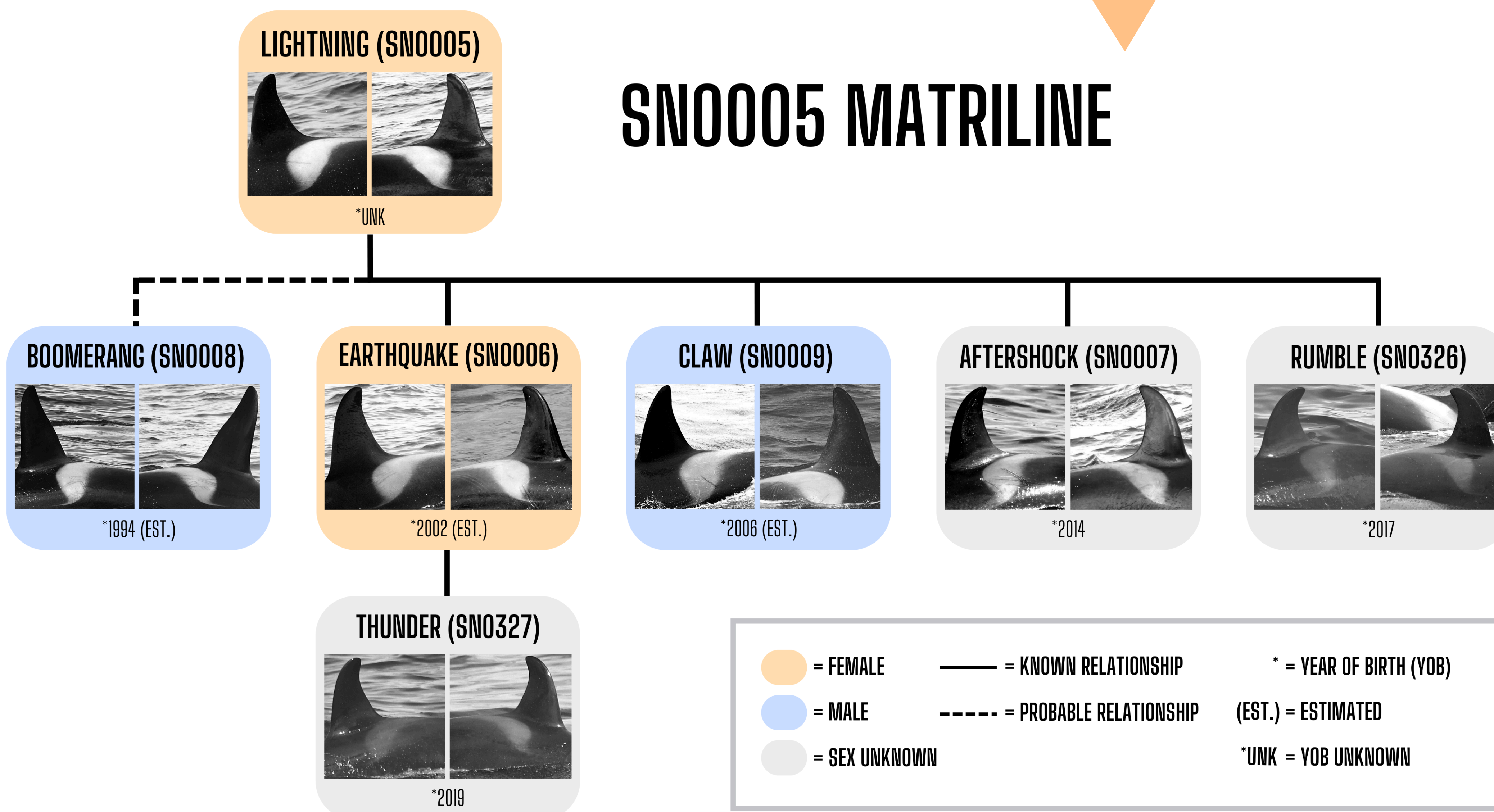
Here, we present the first matrilineal catalogue of killer whales in Icelandic waters,⁶ comprising matrilineal groups of the most-documented 180 individuals (≥15 encounters) spotted over several years (≥6 years; at least one encounter per year).

Photo-identification images of SN0009 “Claw” in West Iceland 2014-2022



Example of changes in appearance over the years, including fin growth and acquisition of new nicks and markings, of individual SN0009 “Claw”. Changes in appearance can be tracked if individuals are repeatedly photographed over several years.

SN0005 MATRILINE



Excerpt from the 2023 matrilineal catalogue, depicting the SN0005 matriline with members of three generations.

SN0005 and SN0006 are the currently reproductive females (see below). SN0009 was confirmed to be male due to changes in fin size (see above).

Close associations between several matrilineal groups made it possible to suggest larger pod structures, but more observations are needed to confirm these groupings.

SN0005 “Lightning” in close association with her offspring SN0007 and SN0326



SN0005 was photographed with a newborn calf both in 2014 (SN0007) and 2017 (SN0326), and subsequently documented in close association with these calves in the following years. This is an example of tracing maternal ancestry through association over time.

A total of 38 matrilineal groups, spanning up to three generations, could be established from 737 encounters. Temporary dispersal from the matriline by subadult and adult males has been found in the course of the analysis, as well as splitting of pods into smaller units over time, though the frequency of these events (and whether pods are splitting up permanently) needs to be thoroughly investigated in future research.

Future research

Exploring the dynamics within orca matrilineal groups is crucial to better understanding the complex social behaviour of this highly empathetic and intelligent species. Such understanding can aid in both conservational efforts as well as contribute to our general knowledge on social behaviour in mammals.

Our research 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.

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