



Towards a definition of Humpback Whale population units in Tanzania - revealing the unknown from data deficient regions.

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Study Goal

Bridging crucial data gaps in connectivity, population structure and movement dynamics.

How: – Photo ID catalogue development and its comparison with the existing catalogues within and outside the Region C for the connectivity evidence detection.

Methods

Small boat surveys in Zanzibar (Zanzibar channel, Unguja), and Mtwara (off MBREMP). ID photographs were processed in the software **Discovery**.

Years of study 2017-2022. **Total survey** - 43 days (174.45 hours). **Total focal groups followed** – 45



Results

Images in the catalogue - 379 ID'ed individuals - 92 Unguja, Zanzibar - 48 Mtwara - 44



Recapture.

Intra-seasonal and intra-areal. Animal 0031 was photographed on 17th July 2022 accompanied by 4 adult individuals, and recaptured on 20th July 2022 accompanied by other 4 adult individuals.

58 flukes were compared with the global database on the Happy-Whale platform. 2 matches were identified using this algorithm.

1st Match.

Inter-seasonal and intra-areal. Animal 0046 was first photographed by Peter Bennett off Zanzibar on the 12th of August 2017 and contributed to the Tanzania Whale Network citizen science group and uploaded to Happy Whale by Gill Braulik; and later the same individual was re-sighted off Mnazi Bay Ruvuma Estuary MP which is only 500 km away from the original location, on the 21st July 2022 by the researchers from the present study.

2nd Match.

Cross boundary inter-seasonal and inter-areal. Animal 0080 was first photographed on 10th July 2013 by Natalia Botera, later the same individual was spotted on the 13th of August 2017 by Esteban Duque Mesa, both sightings in the South Pacific. The same individual was photographed 5 years later in 2022 on the 22nd of August off Zanzibar by the researchers from the present study.

C1 C2 C3 C4



Discussion

Intra-seasonal and intra-areal recapture demonstrates residency time at least 4 days and socializing behaviour with fission fusion patterns in between different groups. Inter-seasonal and intra-areal recapture demonstrates site fidelity at a national level. A single individual captured off Zanzibar in 2022 which also catalogued and sighted twice outside of the West Indian Ocean region represents a long-distance match between two different breeding grounds. The low re-sighting rates within and in between seasons, together with the documented unique cross boundary match, indicate the complexity of migration routes and population dynamics. These initial results shed light on our understanding of site fidelity, residency time and the movement range of humpback whales within Tanzanian waters. They also underpin the necessity of further research on the habitats that hold considerable gaps of knowledge. Results will be published in a peer reviewed journal.

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