

Humpback habitats off Madagascar revealed as energy exploration ramps up

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How humpback whales use marine habitats off the eastern coast of Africa is only partially understood, and that has become a conservation concern as offshore energy exploration expands in the region. However, a new study published in *Marine Ecology Progress Series* found that humpback whales that were satellite tagged off the coast of Madagascar during peak breeding season are traveling much further in the southwest Indian Ocean than previously thought. This research can help define potentially sensitive areas that should be protected from the disruption of seismic testing or other industrial development that could be destructive to the humpback population and this globally important marine habitat.

For this field research, twenty-three [humpback whales](#) were satellite tagged off Madagascar during the height of breeding season, a scientific first.

The study was led by the New England Aquarium's Dr. Salvatore Cerchio, while working with the Wildlife Conservation Society in New York, in a broad international collaboration with the University of Paris Sud, the Madagascar-based NGO Cetamada, and NOAA's National Marine Mammal Lab in Seattle. The research team sought to examine movements of humpback whales in the southwestern Indian Ocean where they breed and calf during the southern hemisphere's winter months, after migrating from their sub-Antarctic summer feeding waters.

"It's our hope that this work will help us understand more accurately the

breeding and migratory behavior of humpback whales in the southwest Indian Ocean," said Dr. Cerchio who is also affiliated with Woods Hole Oceanographic Institution. "As more development and industry encroaches on their habitat, it will be important for us to know how these potentially sensitive areas should be protected for this vital species."

Among the more significant discoveries was that males and females had different movement patterns. Males were more localized as they seemed to establish preferred areas from which to broadcast their famous songs, while females - quite unexpectedly - showed more long distance travel patterns presumably in search of more mates.

Two areas along Madagascar's 900 mile length were also found to be important and possibly distinct breeding habitats. Whales tagged in northeastern waters spent more time on the central east coast, while whales tagged in the southwest frequented the southern coast of the world's fourth largest island. Several whales from the northeast study group swam westward across the Mozambique Channel to near the African mainland where there is also another significant sub-population of wintering humpbacks. This is a movement corridor that was previously unknown.

An historic humpback first was also documented as a male cruising up the east African coast swam all the way to southern Somalia. En route, he crossed the equator making him the first known humpback to do so in the Indian Ocean. Humpback populations are found around the world in both the southern and northern hemispheres feeding during their respective summers in high latitude, cold waters then migrating to tropical waters for the winter to breed and give birth. Humpbacks have been documented crossing the equator in only two other parts of the world. "This was very exciting" added Cerchio, "because there is a highly endangered population of humpback whales in the northern Indian Ocean that is believed to be completely isolated from the

Southern Hemisphere populations. That this male from Madagascar crossed into the northern Indian Ocean was very unexpected."

Another impressive long distance traveler was a mother and calf tagged off of Madagascar that swam all the way to Kenyan waters. The movement of individual whales from Madagascar to East Africa suggests there is more to learn about the mixing of regional humpback populations across the southwest Indian Ocean. This has direct relevance to efforts by the International Whaling Commission to more accurately assess the recovery of humpback whales in the region after their depletion by commercial whaling in the 20th Century.

Dr. Laurene Trudelle of the University of Paris Sud noted, "Breeding areas of humpback whales are typically located in coastal habitats and are generally subject to strong human pressures that affect the quality of these breeding habitats." Recently, the southwest Indian Ocean has experienced expanded industrial development with more oil and gas exploration and production, mineral mining, and coastal development. Major processing of mined materials around the central and southern Madagascar coast is occurring, and seismic surveys are increasing throughout the region, which is commonly known to disturb humpback whales and their singing breeding behavior. Trudelle added, "Providing knowledge on the movements and the distribution patterns of humpback whales off Madagascar and more broadly in the southwestern Indian Ocean can be used to assist future management decisions." Dr. Trudelle published a companion paper on the influence of environmental parameters on the tagged whales in Royal Society Open Science, as part of her doctoral dissertation at University of Paris Sud using data from the collaborative study.

Provided by New England Aquarium

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