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Climate Change Predicts Southerly Shift of Iconic Whale Species in New Zealand

New research sheds light on how climate change will impact the distribution of great whales in New Zealand waters. Results show that blue and sperm whales will shift to lower latitudes as the oceans become warmer, exposing sites of high conservation priority.

An international collaborative study between the University of Zurich, Massey University and Canterbury University in New Zealand and Flinders University in Australia, used a complex modelling approach to project the regional range shift of blue and sperm whales by the year 2100, under different climate change scenarios.

The study shows a southerly shift of suitable habitat for both species, which increases in magnitude as the ocean warms. The most severe climate change scenario that was tested generated a 61 per cent and 42 per cent loss and decrease of currently suitable habitat for sperm and blue whales respectively, mostly in New Zealand's northern waters.

"Regardless of which of the climate change scenarios becomes reality, even the best-case scenario indicates notable changes in the distribution of suitable habitat for sperm and blue whales in New Zealand," research lead Dr. Katharina Peters of the University of Zurich says.

Critical for the tourism industry and local economy

Island nations such as New Zealand are extremely vulnerable to climate change impact on marine ecosystems because of their strong connection to the ocean. For example, sperm whales in New Zealand are critical for the tourism industry and local economy. Study co-author Professor Karen Stockin, who leads the Cetacean Ecology Research Group at Massey University, says: "The whale-watching industry off Kaikoura may be at potential risk due to fewer and less reliable sightings of sperm whales off that coastline in the future. Such changes in sperm whale distribution would have socioeconomic impacts due to the direct and indirect reliance on the whale-watching activities by the local economy."

Impact on the functioning of the ecosystem

Great whales, such as sperm and blue whales, are important ecosystem engineers. This means that they fulfill a multitude of tasks such as facilitating the transfer of nutrients from deep waters to the surface, and across latitudes via migration from feeding to calving areas. Their predicted future southward shift, driven by climate change, will impact ecosystem functioning and potentially destabilize ecological processes in the northern part of New Zealand.

While this research emphasizes the negative impacts of climate changes on blue and sperm whales, it also highlights habitats that may be suitable in the future for both species around the South Island and offshore islands. "Such areas have the potential to serve as climate refugia for both species," says senior author Dr. Frédérik Saltré, co-leader of the Global Ecology Lab at Flinders University. "Knowing about these areas early on provides an opportunity for their

increased protection in the future, particularly when considering the placement of marine protected areas and the legislation of oil and gas exploration."

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Attachment NZ sperm and blue whales will move southward with warming climate
http://idw-online.de/en/attachment92838

Blue Whale
DBL-Wildlife 2022
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Sperm Whale
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