MEDIA RELEASE

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Climate change forces declining apex predator to forage further and further afield

Dramatic changes to the food web in the Indian Ocean threaten the viability of apex predators such as the flesh-footed shearwater, a joint study by researchers based at the universities of Tasmania and Saskatchewan has revealed.

In a paper published this week in the journal *Global Change Biology*, Dr Jennifer Lavers of the University of Tasmania's Institute for Marine and Antarctic Studies and Dr Alexander Bond from the University of Saskatchewan argue that an improved understanding and ability to mitigate the impacts of global climactic changes is critical to the long-term sustainability of the shearwater.

"Marine ecosystems are being affected by such factors as bycatch of marine animals in fisheries, ocean acidification, warming waters and pollution," Dr Lavers explained.

"The changes in the world's oceans have altered nutrient flow, and affected the viability of predator populations when prey species become unavailable."

Adds Dr Bond: "Our goal in this study was to determine whether there had been any significant changes in shearwaters' foraging patterns over the last 75 years, and use this information to provide insight into likely future impacts faced by this vulnerable species.

"Our results suggest that the food web in the eastern Indian Ocean has changed drastically; it is also predicted to worsen in coming years and that will have implications for other apex predators."

The flesh-footed shearwater has two main breeding grounds – one in the southwest Pacific Ocean and the other along the coast of Western Australia from Cape Leeuwin to the Recherche Archipelago.

To gauge changes in diet Drs Lavers and Bond analysed breast feathers obtained from adult shearwaters at sites in Western Australia and South Australia during 2009-11 and compared them with historical specimens.

Dr Lavers, who in other studies has revealed that this species suffers from significant heavy metal contamination, said the shearwaters are eating an ever broader range of prey, but their position in the food chain dropped considerably in the last 75 years.

“This is the largest drop in food web position yet reported in any marine bird, suggesting a relatively rapid shift in the composition of the Indian Ocean food web, or changes in baseline carbon and nitrogen values.

“Current climate forecasts predict this trend to continue, leading to increased oceanic ‘tropicalisation’ and potentially competition between flesh-footed shearwaters and more tropical species with expanding ranges.

“Flesh-footed shearwater populations are declining, and current conservation measures aimed primarily at bycatch mitigation are not restoring populations,” Dr Lavers said.

“Widespread shifts in foraging, as shown in our study, may explain some of the reported decline.”

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