

Bycatch responsible for decline of New Zealand sea lion

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Getting caught in fishing nets is a major cause of death for the increasingly endangered New Zealand sea lion, according to new research from New Zealand's University of Otago, Massey University and the University of Toronto. Credit: Louise Chilvers

Getting caught in fishing nets is a major cause of death for the

increasingly endangered New Zealand sea lion, according to new research from the New Zealand's University of Otago and Massey University and the University of Toronto.

Scientists from the three universities have analyzed government data of the New Zealand sea lion population and fisheries bycatch to investigate the role [commercial fishing](#) has played in the near 50 per cent decline of the species.

Their conclusion, published in the international journal *PNAS* (*Proceedings of the National Academy of Sciences*), is that, despite measures since 2001 to protect New Zealand sea lions from being killed in fishing nets, commercial fishing continues to affect their numbers. The authors believe the current management of sea lion bycatch in the arrow squid fishery around the subantarctic Auckland Islands places the population at risk of extinction, because the New Zealand government assumes fishing is not a major threat to the species.

Lead author and population ecologist Dr Stefan Meyer, an Otago Department of Zoology PhD graduate, says the study presents a major breakthrough in understanding why New Zealand sea lions are declining at their main breeding colonies on the Auckland Islands.

"Several threats, such as disease and fisheries bycatch, have been postulated as causes of the sea-lion decline. However, until this research, studies have been unable to link these threats to the decline."

Associate Professor Bruce Robertson, of Otago's Department of Zoology, says since 2001 sea-lion exclusion devices have been used in the arrow squid fishery to stop them drowning in the trawl nets.

While the observed bycatch has declined, he says unfortunately there is no firm evidence the devices have successfully removed the bycatch

threat.

"What information is available raises concerns that the devices may be hiding sea-lion deaths by allowing dead sea lions to fall out of the nets at sea or causing injury that reduces life expectancy or reproductive ability."

Dr Meyer adds: "We now know that sea-lion exclusion devices have, despite all assumptions, obscured bycatch of New Zealand sea lions and that this factor posed a significant and ongoing impact to the population. Our findings are therefore a game changer in New Zealand sea lion management."

Professor Martin Krkosek, from the University of Toronto, says the findings are unique in global bycatch research.

"Given what we have found in this case study, we urge a wider assessment of [bycatch](#) exclusion devices used in global trawl fisheries."

In the recently released New Zealand sea lion threat management plan (TMP), published by the Department of Conservation and the Ministry for Primary Industries, the Government committed to halting the species' decline within the next five years, aiming for a stable or growing population within the next 20 years.

The current focus of the New Zealand TMP is on reducing pup deaths; fishing impacts are, incorrectly, thought to be only minor.

Associate Professor Louise Chilvers from Massey University and Associate Professor Robertson have been researching New Zealand sea lions for almost 20 years.

They question the downplaying of the role of commercial fishing in the

sea-lion decline.

"The *PNAS* study shows that the impact from the squid fishery is likely a key driver of the NZ sea-lion decline," Associate Professor Robertson says.

"With fishing threats being ignored in sea-lion management, it is hard to see how the Government's goals to increase the population will be achieved.

"We hope that our study will lead to meaningful management. The good news is there are a range of options open to the government to reduce the impact of fishing on the sea-[lion](#) population, while still allowing commercial fishing in the New Zealand subantarctic".

More information: Stefan Meyer et al, Marine mammal population decline linked to obscured by-catch, *Proceedings of the National Academy of Sciences* (2017). [DOI: 10.1073/pnas.1703165114](https://doi.org/10.1073/pnas.1703165114)

Provided by University of Otago

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