

Study highlights major flaw in strategy to halt sea lion decline

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A new University of Otago-led study of the endangered New Zealand sea lion indicates efforts by the Government that focus mainly on the survival of sea lion pups to reverse the population decline will probably fail.

Scientists, writing in the international journal *Marine Biology*, say that instead the conservation focus should be on female adult sea lions.

The New Zealand sea lion was recently named as an endangered animal by the IUCN (International Union for Conservation of Nature) based on a 50% decline in pup numbers since 1998. Government-led management of the species now focuses on improving pup survival, including options of vaccinating pups against disease and making the environment safer for pups - thus removing misadventure as a cause of death.

The just-published modelling study led by the University of Otago, and involving scientists at the University of Toronto and Massey University, finds that adult female survival, not pup survival, is the key parameter in reversing the species' decline.

"Our work shows that survival of adult female New Zealand sea lions is the key to managing their future. We provide statistical evidence that even the smallest improvement in adult female survival will have a positive effect on population growth, whereas much more effort and money will be required to improve pup survival to a level for it to have an important impact on population growth," lead author and PhD

candidate at the University's Department of Zoology Stefan Meyer says.

"Our study uses a model specifically developed for New Zealand sea lions, something requested as a high priority by the expert scientific panel reviewing sea lion management in the New Zealand Government's on-going Threat Management Planning process. To date, Government-contracted modelling has used an existing seabird model."

The current focus on pup survival is a consequence of the New Zealand Government concluding that sea lion bycatch in trawl fisheries, which since 1992 is estimated at 600 sea lions (many of them female), has been effectively mitigated. However, there are ongoing concerns that mitigation devices are not functioning as planned and that sea lion bycatch is continuing undetected.

"With female sea lion survival playing such an important role in reversing the [population decline](#), it is essential to address ongoing concerns that mitigation devices are failing," says Meyer.

Ongoing research by the authors is also throwing light on past disease-related mass mortality events (so called epizootics), which have killed a large number of pups in three years. Using the new sea lion model, the team show that these disease events do not have a negative effect on [population growth](#).

"It seems that disease has killed only those pups that were already impacted by other factors, such as starvation," says Meyer.

"Our results highlight that large numbers of pup deaths are a natural phenomenon that does not lead to large changes in population size, and hence is not behind the ongoing decline of the species. As such, implementing sophisticated expensive management actions to reduce pup mortality, such as vaccinating pups, will prove inefficient.

"We should focus on the factors we can successfully influence. Because our research provides good evidence that fishing is likely still having a negative impact on the New Zealand sea lion population, a simple option would be to remove fishing from parts of the Auckland Islands. This would allow some of the sea lion breeding colonies to have a break from fishing impacts and would give us the opportunity to examine the ongoing impact of [sea lion](#) bycatch."

More information: "Population dynamics reveal conservation priorities of the threatened New Zealand sea lion *Phocarctos hookeri*" *Marine Biology* July 2015. [DOI: 10.1007/s00227-015-2695-8](https://doi.org/10.1007/s00227-015-2695-8)

Provided by University of Otago

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