

BYCATCH BYLINES

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HEADLINE ✈

Making tracks

When and where do marine animals and human activities overlap at sea? This question is being investigated as part of a six-year government-funded research project led by NIWA. With the help of researchers from the University of Tasmania, New Zealand sea lions on Campbell Island have been in the spotlight during the past three years of the project. To date, what progress is there with finding out where these animals are making tracks?

In addition to New Zealand sea lions, the project also includes other large marine animals that are classified as threatened: elephant seals, white pointer sharks, Campbell and grey-headed albatross and rockhopper penguins. The overall project goal is to identify critical areas for these animals. How human activities interact with those areas is also of interest.

For sea lions, scientists first need to find out where they go at sea, in terms of geographic location and how deeply animals are diving. This information can shed light on the food sources animals are using. Tools for this technically tricky task include remote tracking technology such as 'SPLASH' tags. These devices are attached to sea lions when they are on land. The tags collect data when sea lions move around underwater. When the sea lions surface the tags send the data to orbiting satellites. Scientists then access the data and begin unlocking the sea lions' previously secret movements.

So how many sea lions have been tracked from Campbell Island so far? From 2012–2014, 25 animals were followed using SPLASH tags. The age and sex of animals can affect where and when they travel.

So, following both males and females and a mix of ages is important. The group of 25 sea lions tracked from Campbell included juvenile males and females, and sub-adult males. And what happens next? With information on where and when sea lions are travelling at sea, scientists plan to create maps exploring how human activities at sea might affect sea lions. It's a kind of risk assessment that uses detailed information on sea lion locations in space and time.

For the other species, large amounts of data have also been obtained on diving depths and locations. Interpreting this information includes considering difficult issues such as the indirect effects of human activities. Climate change is another big unknown for the researchers to grapple with.

Watch this space for future updates on the secrets (or should that be sea-crets?) of these marine animals' lives.



A New Zealand sea lion wearing its high-tech backpack. The circled tags track the animal's location and dive depth. Photo: M. Hindell, University of Tasmania

WHAT'S UP? 📄

Threat Management Plan progresses

The spotlight fell on New Zealand sea lions at a Wellington meeting in August, where stakeholders were updated on the government's Threat Management Plan (TMP) for this species. How is the plan progressing?

- At the meeting, NIWA scientists presented results from their demographic assessment model. This model looks at what might be going on with the sea lion population. The outputs from this model will be a key tool used to consider management actions for the TMP.
- Model outputs will be reviewed further during a second expert risk assessment workshop in September, when the development and evaluation of threat management options will occur.
- The management options will be presented to the Ministers of Conservation and Primary Industries by April 2016.



A New Zealand sea lion on Otago Peninsula. Photo: © M.P. Pierre

WHAT THE FAQ?! 🗒

Great Gibson's

Gibson's albatross is known as a 'great albatross' due to its large size and wingspan. What else is great about this seabird?



Gibson's albatross. Photo: JJ Harrison, CC BY-SA 3.0

- These birds are no lightweights: on average, adult males weigh just under 7 kg, while adult females are around a kilo lighter.
- The eggs of this albatross measure about 13 cm end to end.
- That large egg then turns into a chick, which stays in the nest for about 290 days – most of a full year!
- Adults take turns looking after the egg and chick. They each take shifts of up to three weeks long, solo-parenting while their mate feeds at sea.
- Gibson's albatross start to breed at about 8 years old.

What's next for WCPFC?

In August, the Scientific Committee of the Western and Central Pacific Fisheries Commission (WCPFC) met to discuss progress and issues with the science that supports 'their' fisheries. What were the key issues that might affect New Zealand?

WCPFC manages highly migratory fish stocks in the western and central Pacific Ocean. Their area of jurisdiction includes New Zealand waters. The Scientific Committee meeting covered the following four theme areas relevant to these fisheries: stock assessment, data and statistics, management issues, ecosystem and bycatch mitigation.

Seabirds, marine turtles and sharks were the main groups of protected species considered at the meeting. Of relevance to New Zealand were Japanese scientists' findings from their tests of tori lines for small pelagic longline vessels. Also, seabird distributions were evaluated in areas where bycatch mitigation measures are not currently required by WCPFC. And for marine turtles, the commencement of a Pacific-wide assessment of interactions with longline fisheries was discussed. Challenges with meeting goals for shark research were also considered.

Key results with relevance to New Zealand's protected species and fisheries included:

- ongoing interest in reducing captures of oceanic whitetip sharks (considered at low risk here, but caught in greater numbers elsewhere)
- plans to review interactions between manta and devil rays and WCPFC fisheries, and,
- a difference of opinion amongst parties on whether the area in which seabird mitigation measures apply should be extended (to include waters between 25°S and 30°S), given a review of seabird distributions at these latitudes.

Collective management can take a while to progress, however these issues will resurface at future meetings. For detailed reports from the Scientific Committee meeting, follow the link in 'Want to know more?.'



The leatherback turtle: one of the turtle species occurring in New Zealand waters that is caught in WCPFC fisheries.

Photo: <http://saveasiaendangeredanimals.wikispaces.com/Leatherback+Turtle>, CC BY-SA 3.0

Sea lion skirmishes

The New Zealand sea lion is classified as Nationally Critical. There is clear evidence that the sea lion population is trending downwards. However, ongoing controversy rages about causes of the decline. Does anyone really know what the truth is?

Since the 1990s, the impacts of commercial fishing on New Zealand sea lions have been controversial. Fisheries targeting squid, southern blue whiting and scampi have most often been in the spotlight due to sea lion interactions. Initially, attention focused on the direct effects of fishing – that is, sea lion deaths in trawl nets. Subsequently, the effects of fishing on the sea lion's food resource have been considered.

In the media, Forest and Bird's position is clear. They consider that the impacts of fisheries are the biggest threat to the sea lion population. Forest and Bird's Marine Conservation Advocate Katrina Goddard says, 'By-catch of adult female sea lions in fishing nets needs to be stopped to protect the future of this species'.

Forest and Bird is also of the view that fishing for squid should occur elsewhere. That would reduce the potential for resource competition between foraging sea lions and fisheries. While recognising that disease is an issue for this species, Forest and Bird considers that management should focus on adult females.

So what about other views? Seafood New Zealand's George Clement reflects concern about the sea lion's decline, noting that sea lions on the Auckland Islands are faring worse than others. He refers to the 'serious impact' of bacterial disease on sea lion pups there, with disease causing significant numbers of pup deaths in the last 10 years. He also notes industry's ongoing investment in research investigating the species' decline.

While sea lions may be struggling at the Auckland Islands, the small colony on Otago Peninsula is faring much better. Female sea lions there have pups at a younger age than on the Auckland Islands, with better survival in early life. More and more sea lion pups are being found on Stewart Island too.



Two New Zealand sea lions exchange their own 'words on the street'.
Photo: L. Boren

It's a complicated story with many questions still unanswered. Here, we leave the last word to science. NIWA's Dr Jim Roberts considers that the results of the scientific research point to several threats contributing to the decline in Auckland Island sea lions. He notes that 'Mortalities relating to interactions with trawl gear are not sufficient to explain all the changes we are seeing. There are a number of clues that point to nutritional stress, and disease is also affecting the number of pups surviving to adulthood'.

Identifying threats to sea lions is complex, and managing them may not be much easier. Leadership on that task falls to Government, and will be addressed in the threat management plan for New Zealand sea lions due for completion next year.

Check the links in 'Want to know more?.'

WANT TO KNOW MORE?

- *What's up?:* Keep tabs on meeting and project updates relevant to the New Zealand sea lion Threat Management Plan at: <http://tinyurl.com/kg5bo8k>.
- *World Watch:* Go to <http://tinyurl.com/nn6bu3b> to find out more about what was discussed by the WCPFC Scientific Committee in August.
- *Word on the Street:* Read Forest and Bird's views on sea lion conservation at: <http://tinyurl.com/q8xbahj>. Seafood New Zealand's position is discussed at: <http://tinyurl.com/pr87z66>. An update from NIWA's Dr Jim Roberts is at: <http://tinyurl.com/on8p7xa>. The Government's work towards a threat management plan for sea lions is posted at: <http://tinyurl.com/kg5bo8k>

FEEDBACK

To submit feedback or questions, please email: jpecnz@gmail.com

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