

NEW ZEALAND / ENVIRONMENT

Scientists scrap over whether quota survey is fishy

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People who dive or fish for crayfish off the north-east of the North Island think size and availability of crayfish is down, according to a survey.



A dispute over the quality of New Zealand's fisheries management has erupted into an international scrap between scientists.



Photo: 123rf.com

Seven scientists are backing a survey that rated this country's Quota Management System in the top five out of 28 major fishing countries, but a dozen researchers say it is badly biased.

The international readership of the respected *Proceedings of the National Academy of Sciences* journal in the US was told in January that New Zealand rated highly.

The survey was a "unique" and "comprehensive" analysis of management systems, said the researchers, including two from the US.

But in a letter published in the journal this week, a dozen scientists - including two from Canada and 10 from New Zealand - dismissed the survey's New Zealand rating.

Otago University zoology professor Liz Slooten said there was "certainly something unusual going on".

"Not only is the sample of people they interviewed clearly biased and not representative but also the sample of fisheries they've looked at is biased."

She questioned why the survey looked at 10 fisheries that were all high-volume high-value ones, when a random sample would have included others that were poorly managed.

However, a second letter - also published in the journal this week - said these critics had failed to recognise that the New Zealand system was a lot better than many others and "among the world's most successful at meeting objectives".

NIWA fish stock assessment chief Dr Rosemary Hurst was one of seven scientists who signed that second letter.

None of the critics, she said, had any experience of stock assessment processes. "The people who were chosen as respondents, some of them had many decades working in that area."

New Zealand's high rating was based on the feedback of a small group of people, including Dr Hurst.

Two of them worked in fisheries management, including for the Ministry for Primary Industries, which has consistently backed the Quota Management System.

Two others worked for the fishing industry, while two more were anonymous.

"I think it was an adequate sample to do the kind of study that they did and draw the conclusions that they drew, yes," said Dr Hurst.

The survey said it had sought views from "fishery experts from diverse backgrounds". This process was not independently reviewed by the journal.

Prof Slooten said the original journal article wrongly described some of the respondents, disguising their industry ties, and the authors had now admitted to this.

Industry lobby group Seafood New Zealand seized on the survey's finding in January in an editorial dismissing conservationist critics of the Quota Management System.

The 12 critics said the quota system encouraged overfishing and dumping and should be scrapped in favour of a whole ecosystem approach.

● LETTER

Evidence of bias in assessment of fisheries management impacts

Elisabeth Slooten^{1,2}, Glenn Simmons³, Stephen M. Dawson⁴, Graeme Bremner⁵, Simon F. Thrush⁶, Hugh Whittaker⁷, Fiona McCormack⁸, Bruce C. Robertson⁹, Nigel Haworth¹⁰, Philip J. Clarke¹¹, Daniel Pauly¹², and Dirk Zeller¹³

Melnychuk et al.'s comments in PNAS (1) that successful fisheries management requires the "capacity to limit fishing pressure" and "scientists are generally unanimous in calling for stronger management" echo comments made in many earlier publications. However, their conclusions about specific fisheries and management approaches lack credibility.

Their analysis relies on an opinion survey, using a nonrepresentative sample. For example, the seven New Zealand (NZ) respondents included three fishing industry employees or consultants, one person working for the Ministry for Primary Industries (MPI) and one person working for the agency responsible for stock assessment. The other two respondents remain anonymous.

Other NZ fisheries experts are much less optimistic, highlighting the lack of scientific data available to run the Quota Management System (QMS) (2). Most NZ stock assessments rely on catch/effort data provided by the industry rather than fisheries-independent surveys. This approach is known to be one of the reasons for consistent overestimation of Canadian cod stocks until they collapsed in 1992 (3). Very few fish stocks have targeted research surveys. Three quarters of QMS stocks have no formal stock assessment (4). For example, "estimates of reference and current biomass are not available" for warehou (*Seriolella brama*) (5). Funding for stock assessment is about 45% of levels in the early 1990s, whereas the number of QMS stocks has increased 3.5-fold (6).

Unintended consequences of fishing (e.g., unsustainable by-catch of endangered dolphins in inshore gillnet and trawl fisheries, sea lion by-catch in the trawl fishery) are just as important, but ignored. Most stock

assessments, in NZ and elsewhere, consider only the target species, ignoring wider ecosystem effects, even those impacting the target species.

Data on ecological impacts are inadequate for most NZ fisheries (2). For decades, government reports recommending increased observer coverage have been ignored. Current coverage is only 8.4% (4) and <1% in most inshore fisheries (7). An independent review of the MPI's handling of illegal fish dumping and dolphin by-catch (8) demonstrated industry capture of the regulator and revealed other serious problems. Widespread illegal dumping and misreporting have distorted catch statistics for decades (9, 10).

Fisheries management needs broadening beyond stock assessment and management actions to reduce fishing pressure so as to encompass more ecosystem-based objectives. Cultural perspectives are also important. For example, for NZ Māori, the "business of fishing" now largely means trading quota instead of their traditional role of guardianship over fisheries. Guardianship over the environment is very different from guardianship over quota rights.

In summary, Melnychuk et al.'s analysis (1) is not a trustworthy evaluation of the effectiveness of fisheries management. Given the strong bias in the NZ sample, it would be surprising if NZ was the only country for which there were problems with the selection of respondents. Instead of providing a robust analysis of the effectiveness of fisheries management, Melnychuk et al. (1) seem to be arguing for business-as-usual while ignoring broader issues, such as ecosystem impacts, environmental change, and social outcomes. Such an analysis does fisheries management no service.

1 Melnychuk MC, Peterson E, Elliott M, Hilborn R (2017) Fisheries management impacts on target species status. *Proc Natl Acad Sci USA* 114:178–183.

2 McKay J (2008) Fisheries resource knowledge, management, and opportunities: Has the Emperor got no clothes? *New Zealand's Ocean and its Future: Knowledge, Opportunities and Management. Proceedings of a Conference Organized by the Royal Society of*

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