

The delusion of using phone apps to accurately record fish catch

The research into the accuracy of current self-reporting regimes find them to be readily manipulated and riddled with errors.

June 2024

The Purpose

The objective of catch and effort reporting by fishers is to generate a time series of catch data that is used to assess fish stocks. Commercial fishers have had an obligation to report landings for many decades. More recently, charter boats have a reporting requirement, and Kaitiaki issuing permits for Māori customary harvest have a reporting obligation.

It is in vogue to suggest that recreational fishers should also report all their catch.

A recent briefing from commercial interests to the Minister states:

"We consider it imperative the Government begins a programme of work to ensure that all catch is reported, or at least more reliably estimated, and can be accounted for in assessments of stock status and reflected accurately in management decisions. We appreciate that some in the recreational sector will strenuously resist reporting or greater monitoring, but we would ask why, when greater transparency can only assist all who care about our oceans and provide better stewardship of our natural resources."

However, the [research](#) into the accuracy of current self-reporting regimes find them to be readily manipulated and riddled with errors. Therefore, the recurring calls for recreational catch self-reporting do not arise from a genuine interest in accurate catch data. These calls are merely a useful distraction, a 'look over there not here' tactic. It's time to let the delusion of accurate app reporting of catch slide into history.

Self-reporting

All catch records are self-reported; that is, the fisher reports their catch. There was a furore in the early 2000s when it was discovered that commercial deep water vessels were dumping huge volumes of fish without reporting it. The practice was so embedded that the reported and landed catch quantities were unsuitable for the purpose it was captured for, leading to stock assessment disarray. Self-reported catch has a very poor record of accounting for total fishing mortality.

Commercial fishers have used different reporting regimes.

- 1) Paper based monthly catch and effort returns were used for decades.
 - a) Fishers often simply used their memory to fill in daily activity, sometimes many months after the fishing event.
 - b) In the early years fishers often hid their earnings from the IRD and falsified the returns to ensure their catch wasn't detected.
- 2) When two years of catch history was used to establish quota entitlements in the 1980s some of the inaccuracies in the written returns were exposed, although most were not due to their historical nature.
- 3) Daily catch and effort reporting forms have been used since 1990. Each time the form was changed, catch and effort estimates also change. This data is used in fisheries management but is widely acknowledged as an unreliable estimate of trends in fish abundance.
- 4) More recently, electronic reporting has been introduced to the commercial fishing industry. Detailed locations and catches are reported daily, and additional data is collected regarding fish and wildlife captured and discarded.

Onboard cameras

Cameras have slowly been introduced onto selected commercial vessels over the last decade. The objective is to validate the self-reported catch and effort returns submitted by fishers. A recent analysis of camera footage by officials disclosed some alarming discrepancies between actual catch from 2018 until cameras were introduced onto those vessels.

Information	Change
Dolphin captures reported	6.8 times increase
Albatross interactions	3.5 times increase
Catch: Species reported	34% increase
Number of species reported in discards	210% increase
Volumes discarded	46% increase

The onboard cameras show that despite strict reporting requirements, recording of fishing activity by fishers has been selective or highly inaccurate.

Catch reconstruction

In 2015 a reconstruction of New Zealand's wild capture marine fisheries was undertaken by the University of British Columbia for the years 1950 – 2010. The objective was to compare the FAO statistics on catch, often considered the most complete data available, with a reconstructed catch record using all available data.

The FAO data is submitted by the New Zealand government and sources from the Fisheries Ministry of the time. Almost all this data is self-reported from fishers. The [reconstruction](#) study found actual catch to be more than twice that of the catch reported to the FAO.

Charter vessel reporting

An evolving reporting regime for [recreational charter vessels](#) has been in place for over 10 years, slowly increasing the number of species reported and including finer grained effort data. The success of the regime has been patchy, with initial reluctance from vessel operators to participate, fearing the data would be used to push them in the Quota Management System and elevate the need to hold quota for the fish taken by their clients. The incomplete list of species caught, coupled with the inconsistent reporting has reduced the utility of this data set.

Self-reported catch data without validation or feedback to skippers about where the data is used is problematic.

Māori Customary harvest

Customary permits issued by Kaitiaki under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and Fisheries (South Island Customary Fishing) Regulations 1999 have a reporting obligation attached. However, catch authorised by Kaitiaki under the Fisheries (Amateur Fishing) Regulations 2013 are not required to be reported to Fisheries New Zealand.

Kaitiaki issuing customary permits pursuant to the 1998 and 1999 regulations are to provide statutory returns identifying the number of each species for which a permit has been issued. Many consider the Crown has no right to enquire into Māori customary practice. This reporting has been patchy, and the input of this data into the official database is incomplete.

The self-reported permit data are so poor they are no guide to actual Māori customary harvest.

Recreational harvest

There is nothing novel about encouraging recreational fishers to self-report their catch and effort. It has been tried overseas and we can learn from their experience. There are two main takeaways that convince us that any such programme applied in New Zealand will result in millions of unvalidated records that are inaccurate or biased:

1. Users are often self-selected and begin with some enthusiasm, but many drop off after a few months.
 - a. Usually, it is the keenest, most avid fishers that keep reporting, who are not representative of recreational fishers as a whole.
 - b. The proportion of fishing trips with accurate catch reports become less over time.
 - c. There is no available method to validate the millions of records that might be submitted from recreational fishers.
2. Without a robust means of validation, self-reporting generates a huge database of expensive, poor quality data.
 - a. Even in countries or states with self-funded registration systems (fishing licenses) that have mandatory reporting, scaling up app-reported catch for all fishers, including those with exemptions, has been found to be unreliable.

National Panel Survey

Currently in New Zealand, recreational catch for most species is estimated by a programme known as the [National Panel Survey](#) (NPS). This [large-scale multi-species survey](#) is conducted about every 5 years and uses a statistically sound suite of techniques to measure participation and catch by area and fishing method, over 12 months.

The programme has widespread support, and is considered by international peer reviewers to be the best methodology available for the purpose.

The results of the 2017-18 NPS was published by Fisheries New Zealand in July 2019. The 2022-23 results are expected to be available in late 2024.

A 2021 Fisheries New Zealand project to test survey methods found that “neither the self-complete link nor the app have produced harvest estimates comparable to the NPS. Although seasonal factors may account for some of this difference, there are systemic issues with the two modes that result in these discrepancies”¹.

¹ Ongoing monitoring of national marine recreational harvest: trails of self-complete, online approaches. New Zealand Fisheries Assessment Report 2021/41. [At 46]

To switch the funding from these comprehensive surveys to a self-reporting phone app would be a tragedy. Comprehensive self-reporting systems would require recreational fishers to register and report their catch, with penalties if they did not. However, these on their own do not come close to accurately reporting fishing mortality.

Recreational fishers are encouraged to participate in the NPS whenever the opportunity arises as it remains the best available programme to estimate recreational catch.

The NPS is a randomised, national survey that avoids the biases associated with self-selection by avid fishers and incomplete reporting of catch over time.

End Note

The recurring calls for recreational catch self-reporting do not arise from a genuine interest in accurate catch data. It serves as a useful distraction, a 'look over there not here' tactic.

The [research](#) into the accuracy of current self-reporting regimes find them to be readily manipulated and riddled with errors.

No-one with a genuine interest in useful catch data would contemplate asking self-selected recreational fishers to report using a phone app. The evidence is clear, and it's notable that those currently responsible for estimating recreational catch for key species have no interest in app-reporting. It's time to let the delusion slide into history.

More information

Hartill, B. Thompson, F. Review of self-reporting tools for recreational fishers. New Zealand Fisheries Assessment Report 2016/06. March 2016.

Brick et al. 2021. A review of nonprobability sampling using mobile apps for fishing effort and catch surveys. American Fisheries Society. October 2021.

Heinemann, A. Wynne-Jones, J. Gray, A. Ongoing monitoring of national marine recreational harvest: trails of self-complete, online approaches. New Zealand Fisheries Assessment Report 2021/41.

Briefing and Background for the incoming Minister of Oceans and Fisheries. Provided by Seafood New Zealand. February 2024.

Update at 1 April 2024: Progress on the rollout of on-board cameras on commercial fishing vessels. Fisheries New Zealand. 1 April 2024.

Overview of the rollout of on-board cameras on commercial fishing vessels. Fisheries New Zealand. 9 February 2024.

Wynne-Jones, J. Gray, A. Heinemann, A. Hill, L. Walton, L. National Panel Survey of Marine Recreational Fishers 2017-18. New Zealand Fisheries Assessment Report 2019/24.