

BYCATCH BYLINES



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HEADLINE

Observer offerings

Government fisheries observers have been part of the landscape for about 20 years now. But how can you find out what they've found out and where will they turn up next?

Observers are a critical part of fisheries management in this country. They collect information that allows target fish stocks to be managed, and they also help keep tabs on the environmental effects of fishing. This includes protected species. After vessels carry an observer, the Ministry for Primary Industries' Observer Services Unit sends a report to the vessel. This has detailed information on what the observer found out during the observed trip. However, it doesn't capture the bigger picture. For example, where have observers been, where are they going, and why?

In inshore fisheries between 1 July 2013 and 30 April 2014, government observers spent 1465 days at sea. This was mainly divided amongst set net, trawl, and bottom longline fisheries. Set net coverage included the east (69 observer sea days) and west (16 days) coasts of the South Island, and the west coast of the North Island (308 days). Amongst small inshore trawl vessels, observers covered 39 sea days off the west coast of the North Island, and 84 and 112 days off the west and east coasts of the South Island, respectively. In the Snapper 1 fishery, trawl, Danish seine and bottom longline coverage amounted to a total of 767 observer days at sea.

Protected species interactions of particular interest to observers in these areas involve dolphins and seabirds. Naturally, collecting information relating to the fish catch is also important.

The winter (July – September) will see less observer effort rolled out in inshore fisheries. Effort will be focused on inshore vessels targeting hoki in Cook Strait and off the west coast of the South Island. Key protected species interactions in those areas include fur seals and seabirds.

Coverage will also continue on trawl vessels operating in Snapper 1, trawlers operating off the west coast of the North Island, and set net vessels off New Plymouth.

To find out more about information collected by observers, check the links in 'Want to know more?'



Seabirds, gear and the target catch ... three aspects of fishing of interest to government observers. Photo: DOC/MPi

YOUR VOICE

We're all ears!

The *Bycatch Bylines* reader survey is now completed. Thanks for sharing your views!

In the past couple of months, most of you receiving *Bycatch Bylines* will have also received a survey link. After two years of newsletters, it was time to review and think about

where to go next. Thanks to those who followed the link to provide their feedback on the newsletter. Your feedback is appreciated and will be considered as funders decide on the future and form of *Bycatch Bylines*.

The survey is now closed. However, if you still want to tell us your thoughts on the newsletter, send an email anytime (jpecnz@gmail.com).



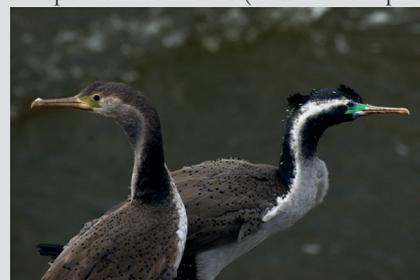
A red-billed gull shares its views. Photo: © M.P. Pierre

WHAT THE FAQ?!

Do shags change their spots?

According to the popular saying, leopards don't change their spots. But what about shags?

- The spotted shag is an inshore seabird that lives all around the coast of New Zealand. It can be found feeding up to around 15 km offshore.
- Like leopards, these shags don't change their spots. While you've got to be close to see them, both juvenile and adult shags have dark spots on their backs (check out the photo).



Juvenile and adult spotted shags, showing how they got their name. Photo: © M.P. Pierre

- Spotted shags make their nests on rocky islands and cliffs, in groups of 10 to about 700 breeding pairs.
- These shags can live for more than 10 years.
- Spotted shags are unique to New Zealand.

Now you see it, now you don't

Determining the extent of protected species captures in fisheries is an ongoing challenge. The information available never has all the answers and an especially difficult problem is knowing what you don't see. This 'cryptic mortality' is the focus of increasing attention from researchers both here and abroad. (Cryptic mortalities are also known as unobserved mortalities, that is, deaths that are normally not seen.) But is there more to cryptic mortality than black-box models and expert guesses?

For years, government fisheries observers and fishers have kept tabs on protected species landed alive, injured and dead on fishing vessels. Reporting these captures contributes to a large and growing information base used to guide the management of protected species interacting with commercial fishing operations. However, a proportion of protected species captures and deaths are never observed. For example, the bodies of some seabirds killed by striking trawl warps will never be recovered. Further, for captured animals released alive, some will die later as a result of their injuries or the stress of capture. This is 'cryptic mortality'.

So, how can this be addressed? To fully understand the impacts of fishing on protected species, accurately assessing the extent of mortalities is vital. One attempt to do this in longline fisheries used 15 years of data collected across 11 vessels – no small feat! In that time, of the birds seen caught on hooks during the set and unable to free themselves, more than half did not come up again on the haul. That means half the bodies came off hooks underwater. So, if bycatch is measured only by

counting birds retrieved during the haul, the actual level of bycatch would be around twice as high as previously thought. In trawl fisheries, seabird strikes on trawl warps and net interactions are both difficult to detect.



A hooked fur seal may recover completely, or could become an instance of cryptic mortality if, for example its hook injury becomes infected. Photo: DOC/MPI

Also, attempts to predict the outcome of interactions is fraught with uncertainty. Work done a few years back that looked at the relationship between the number of birds recorded as captured on trawl warps, and the number of trawl warp strikes observed, came up with controversial answers. For example, for every albatross and giant petrel captured on the trawl warps, an estimated 244 warp strikes occurred. Some of these strikes are expected to be fatal. The analysis used to derive the numbers may come across as a black box. However, the conclusion remains that the effect of warp strikes on seabirds is greater than is shown by just counting captured birds. A more recent example comes from the Falklands, where cryptic mortalities were about a quarter of the total number of seabird mortalities for one trawler on which especially detailed information was collected.

In addition to seabirds, researchers have also examined cryptic mortality amongst captured marine mammals. In set net fisheries for example, marine mammals may fall out of nets on the haul before observers or crew become aware of them. In trawl fisheries, the potential for injuries and mortalities amongst sea lions passing through sea lion exclusion devices (SLEDs) has been robustly debated over the past decade.

So how are fisheries managers dealing with the issue of cryptic mortality when considering protected species interactions? Currently, the focus is on seabirds. The risk assessment used by the Government to highlight seabirds with populations that may be at particular risk from fisheries captures considers cryptic mortality. This is achieved using a combination of data and expert estimates. DOC and MPI are working to improve our understanding of seabird cryptic mortality in trawl and longline fisheries. Local and international experts are involved in this work; a step towards figuring out what it is that we don't see.

Beam me up! The new laser SeaBird Saver

Fishermen have talked about it for years, but that talk has become a reality: lasers are being commercialised as part of the mitigation tool box. Collaboration between well-known longline innovators Mustad and a Dutch enterprise called SaveWave has resulted in the development of the 'SeaBird Saver'.

The SeaBird Saver uses both laser light and sound to deter seabirds from attending fishing vessels. Currently, the laser component of the system is commercially available. The sound is to be available in future. The concept of the device is that light and sound can be directed at risk areas where birds may encounter fishing gear, for example during longline sets and hauls. The laser emerges as a widened beam designed for visibility and also to minimise the potential for any damage to birds' eyes, should they experience long-term exposure. Further, when the laser beam hits the sea surface, the light scatters. The sound component of the SeaBird Saver is expected to be delivered through an iPod set-up. Sound emitted is described as a mix of 'predatory calls, distress cries, and unannounced sinus waves'... sounds worse than a Gisborne pub on Friday night!

But does it work? The SeaBird Saver has been trialled during five longline sets and hauls conducted on coastal fishing grounds off Iceland. During trials of the device, seabirds were reported to follow the vessel at greater distances astern than when the device was not used. As a result, the risk of catching seabirds on hooks was reduced. Additional trials are being considered, including on an Australian longline vessel. More extensive tests will confirm whether the device is effective in the



The new laser SeaBird Saver.

Photo: <http://www.seabirdsaver.com/>

short-term. In addition, monitoring efficacy over time is important, to ensure birds are not getting used to the device. The SeaBird Saver will be available as both a fixed unit, suited to larger vessels, and a hand-held unit better suited for use on smaller vessels.



A good test for the SeaBird Saver: birds gathered astern a trawler at hauling. Photo: DOC/MPI

WANT TO KNOW MORE?

- *Headline:* Protected species information collected by fisheries observers in 2012/13 is summarised online at: <http://tinyurl.com/mk47eub>.
- Rationale for observer coverage in 2013/14 is described at <http://tinyurl.com/mbcyevh>.
- For more information on what observers are up to, contact the Ministry for Primary Industries' Observer Services Unit: 0800 00 83 33.
- *Word on the street:* For more information about cryptic mortality in fisheries, go to <http://tinyurl.com/hy28y4d>
- *World watch:* Check out the SeaBird Saver at www.seabirdsaver.com/