BYCATCH BYLINES

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HEADLINE

Hook, line and … pod?

Fishing with weights is one way to reduce the risk of seabird bycatch on surface longline gear. Weights come in many forms – traditional, like the weighted swivel, and more novel, such as lumo leads. The latest type of novel weight to hit our waters is the hook pod. So how did it perform?

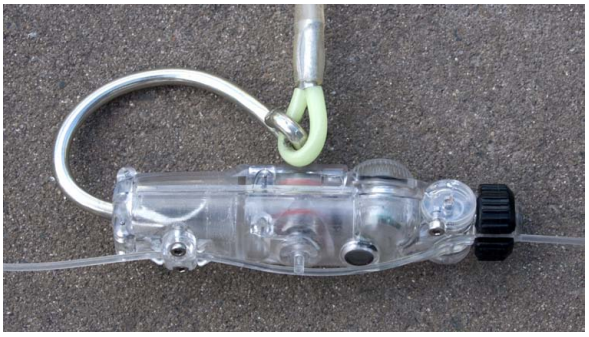
Novel weight designs were first tested in New Zealand surface longline fisheries about 6 years ago, in the form of the Safe Lead – a weight with two lead pellets secured by o-rings around a rubber core. These weights are designed to move up or down on snoods under tension. The same operational concept has been refined for lumo leads – now being picked up by New Zealand fishers and already widely used in Australia.

A newer addition to the mitigation line-up is the hook pod. The pod has been under development for more than 5 years. The hook pod protects bait, and seabirds, by completely enclosing the baited hook barb. The pod is set in advance to open at a selected depth. While the pods are closed around hooks, the unit sinks faster. When pods open, baited hooks are deployed and fishing can start! Pods are fitted with an optional LED, so there's no need for lightsticks.

Hooks pods have been tested in Australia, South Africa, and Brazil, in addition to New Zealand. Trials here involved a set of 50 hook pods, deployed at 1.4 – 1.8 m from the hook and tested on normal gear on six sets. The crew soon got the hang of deploying the pods as part of normal setting operations. More testing is needed to confirm that fish catch rates are comparable to normal gear, but initial results are encouraging. Snoods with hook pods successfully caught tuna and swordfish – a good sign given the small number of pods deployed.

From the surface to 6 m depth, gear fitted with hook pods sank faster than gear without the pods. In any case, while the hooks are covered, the risks to seabirds are minimised. Birds have less time to attack exposed baited hooks, which should significantly reduce the risk of bird captures. Combining hook pods with other mitigation measures would reduce bycatch risk further still. Interestingly, sharks still attacked closed pods – in some cases baits were gone and shark damage was evident on a still-closed pod.

The development process is ongoing and the current hook pod is the result of eight design phases. Recommendations from the New Zealand trials include reducing the size of pods and making them slide better on snoods. Obviously cost considerations are vital for any broad-scale deployments. However, with continued development, hook pods may become a high-tech tool for a seabird bycatch-free future.



A hook pod (and unbaited hook) tested on a surface longliner this year. *Photo: D. Goad.*

BEST PRACTICE BASELINES

Sinking standards

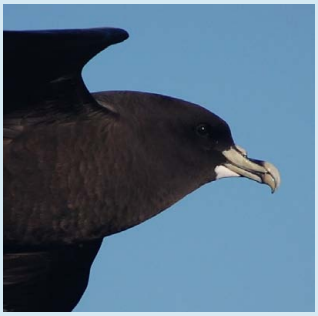
Weighting is a critical part of bottom longline fishing operations. It helps reduce the risk of seabird bycatch. But how much weight is enough? What qualifies as 'best practice'?

Globally, there are two common standards:

- weighting gear so it sinks to 10 m-deep by the time it reaches the end of the tori line, and,
- weighting gear so it sinks at 0.3 metres per second.

These standards are recognised as best practice for reducing seabird bycatch risk. But they can be difficult to achieve with some types of gear.

How does your gear measure up? It's easy to find out. Check out the bottle test over the page – it's quick, cheap, and invented by a fisherman!



The white-chinned petrel benefits from best-practice line-weighting. *Photo: Lt. E. Crapo, NOAA, CC Generic 2.0.*

WHAT THE FAQ?!

Mad about muttonducks

Flesh-footed shearwaters may not be as famous as their celebrity cousin, the black petrel. But they are cool characters in their own right.

Flesh-footed shearwater. The pink foot shows how it got its name. *Photo: Duncan, CC by SA 2.0.*

- Like black petrels, flesh-footed shearwaters are fair-weather residents. In our winter, these shearwaters head for the North Pacific.
- Flesh-footed shearwaters can dive to depths of 67 m!
- Flesh-foots breed mainly in New Zealand and Australia.
- Flesh-footed shearwaters have been observed caught in trawl and longline fisheries in New Zealand. They are also caught by recreational fishers.

THE BIG PICTURE

Bottle tests and bottom lines

Sinking bottom longline gear rapidly is key to reducing seabird bycatch risk. The global standard for this fishing method is to sink gear at a rate of 0.3 metres per second. But where and how is this standard used, and how can you test your own gear?

Work done in Patagonian toothfish fisheries about 15 years ago led to a sink rate of 0.3 m/s emerging as a global standard for reducing seabird bycatch risks associated with bottom longline gear. This rate is based on the diving abilities of albatrosses, and how long they can access sinking longlines. The standard is still used in Antarctic fisheries overseen by CCAMLR – the Commission on the Conservation of Antarctic Marine Living Resources. It has also been adopted to support the Australian Threat Abatement Plan for managing seabird bycatch in longline fisheries – their plan that is similar to our National Plan of Action for seabirds.

For vessels using integrated weighted line, achieving these sorts of sink rates is relatively straightforward. For externally weighted gear it may be trickier. For example, backbone diameter and winch power have been highlighted as limitations on line-weighting. Also, while the method is called bottom longline, the gear is often not fishing on the bottom. Weight and float arrangements used to keep the gear at fishing depth will obviously affect sink rates.

So how can you find out what your gear is doing? The bottle test is a tried and true method to simply and cheaply check sink rate. Even better – it was developed by a fisherman. To test sink rates to 10 m, follow these steps:

Not so high-tech equipment, ready for a bottle test. *Photo: J. Cleal.*

- Use an empty 750 ml water bottle (500 ml to 1 L will also work, if that's all you have). Spray paint this a bright colour (e.g. yellow or pink) or cover it in reflective tape. This will make it more visible astern.
- Screw the lid on the bottle, and pull the mouthpiece out so water can enter the bottle once it's in the sea.
- Tie 10 m of longline (e.g. monofilament or rope, but not integrated weight line) to the neck of the bottle. Attach a clip to the other end of the 10 m length. Wrap the 10 m length around the bottle.
- During setting, attach the clip to the longline midway between two weights and throw the attached bottle overboard.
- Start a stopwatch when the mainline enters the water at the point where the bottle is clipped on. Stop timing when the bottle is pulled completely under the water by the sinking mainline.
- Find out the line sink rate: Sink rate = 10/time to bottle submergence
- Note that you can measure sink rate to any depth by adjusting the length of rope on the bottle. Then sink rate = rope length/time to submergence.

If your gear is sinking slower than 0.3 m/s, it is probably time to look at other ways to reduce the seabird bycatch risks your gear represents. Options include adding more weight, especially close to any floats on the line. Using fewer or smaller floats, only setting at night and using a really good tori line may also be appropriate next steps.

The New Zealand regulations applying to bottom longline weighting were based on global best practice (including CCAMLR standards) and a limited amount of information available on domestic vessels in 2008. With more information, better approaches can be developed to manage seabird bycatch risks associated with bottom longline methods. Recognising the diversity of gear set-ups and what is needed to have a successful fishing operation will be critical steps towards that end-point.

For more on best-practice sink rates, see '*Want to know more?*'

WORLD WATCH

In the pink!

Solutions to bycatch problems can lie in unexpected places. Recent work in South Australian fisheries has breathed new life into the humble pinkie as a mitigation device for reducing seabird strikes on trawl warps. What's the story?

In 2009, staff from the Australian Fisheries Management Authority (AFMA) learned that seabird strikes on trawl warps were occurring in two sectors of the Southern and Eastern Scalefish and Shark Fishery (SESSF). Testing two trawl warp strike mitigation devices was part of their response. The devices were a New Zealand-style warp scarer and what the Aussies called a 'warp deflector', made up of a pinkie buoy clipped to the trawl warp and also attached at the vessel stern. (Note that in the New Zealand regulations, the warp scarer is called a warp deflector – the same name as the Aussies have given to their pinkie device….confused?!).

Trials were done during 124 trawl tows aboard nine SESSF trawlers. AFMA observers collected the data aboard vessels, monitoring seabird strikes on trawl warps, as well as interactions with trawl nets. The shy albatross – closely related to our white-capped albatross – was the bird of greatest interest in the trials. The number of shy albatross strikes on trawl warps was compared between a pinkie device, a warp scarer, and having no mitigation device in place. Few net interactions were recorded overall.

An Australian government statistician analysed the data collected. He found that the pinkie decreased shy albatross interactions with trawl warps, when these occurred on the sea surface and birds were not pushed underwater as a result. When birds were pushed underwater, the pinkie was less effective. The Australian warp scarer was less effective than the pinkie. It reduced warp strikes only when birds were feeding aggressively and were not pushed underwater by the warp.

Seabird strikes on trawl warps: what the pinkie will help Southern Australian trawl fishers avoid. *Photo: DOC/MPI.*

Deploying and retrieving the pinkie device in its current design requires care, especially in rough weather. However, with further work on deployment strategies, this may become easier.

The Australian results are of particular interest in relation to smaller-vessel trawl fisheries. Most bycatch reduction approaches for trawlers have only been tested on vessels larger than 28 m. In contrast, the Australian vessels were 18–26 m in length. Having another effective device in the mitigation tool box is a win for both seabirds and fishers.

WANT TO KNOW MORE?

- *Headline:* To find out more about the hook pod, go to *http://www.hookpod.com*
- *The Big Picture:* Find best-practice guidance for reducing seabird bycatch in bottom longline fisheries at *http://tinyurl.com/nx22qpo*
- *World Watch:* Read a short summary of the pinkie trial at *http://tinyurl.com/no77pxg* or the full report at *http://tinyurl.com/oq9dmrd*

FEEDBACK

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

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