

BYCATCH BYLINES



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HEADLINE

Novel weights = safer crewmates

Over the next few months, government fisheries observers will be working with surface longline fishers to try out new weights that are safer to use than older-style weighted swivels. Already tested overseas, these weights are designed to significantly reduce the risk of lead weight impacts while not reducing fish catch.

Everyone in surface lining knows of someone who has been injured by a lead weight. Weights can fly back when the line is under tension at hauling. While weighted swivels are small, they can still pack a punch. However, weights are also one of the best ways to reduce seabird access to fishing gear. In addition, weighted gear sinks faster than unweighted gear, which means it reaches fishing depth more quickly. Gear technologists are now producing weights that aim to capture the best of both worlds: reducing seabird captures and keeping crew safe.

The two types of 'safe weights' on the market are the safe lead and the lumo lead. Both involve a lead component. The safe lead comprises two lead pieces held with o-rings around a rubber core. A monofilament snood passes through the middle of this core. The mono also passes through the centre of the lumo lead. However, the lumo comprises a lead core with a fluorescent plastic coating on the outside and plastic screw top to hold the weight in place on the snood.

The key similarity between these weights is what they do when the line is under pressure. As the line stretches, the monofilament thins, making it possible for the weight to move up and down. If the line stretches and then breaks, the weight moves down the snood absorbing the recoil. If the weight travels far enough along the stretched line, it will fall off the snood at the break point. Sure, this is a lost weight. However, it's a lot

better than having it fly back towards the vessel like a traditional swivel, potentially causing an injury.

This winter, inshore surface longliners are invited to try either or both weights on their own gear. Weights can be fitted to gear and then after a trip or two to bed them in, an observer will be deployed. Observers will record line sink rates with weights on and off, and also collect data to confirm that weights have either a positive effect, or no effect, on fish catch. After the observer time is completed, fans of the weights will be able to keep some for free, as a 'thank you' for being involved. To join the trial, see 'Want to know more?' on the back page.



Safe leads of two different sizes (left) and lumo leads (right), not to scale: a safer way to fish for surface longliners. *Images: www.fishtekmarine.com/safeleads.php*

WHAT'S UP?

Tori meets baffler in the Falkland Islands

Managing processing waste discharge is priority number one for reducing seabird bycatch on trawl gear. However, in terms of hardware, tori lines are still the most effective devices we know of for keeping birds safe from trawl warp strikes. We also know tori lines can get blown off course by the wind, don't always track well during vessel turns, and tangle on occasion. Working to solve these problems, a team in the Falklands has come up with something that looks like a hybrid of the bafflers' booms and the tori lines' streamers. It's early days, and work continues. Watch this space!



Tori line-type streamers hung from 14 m long booms on a trawler operating in the Falklands (see 'Want to know more?'). *Photo: G. Parker and colleagues*

WHAT THE FAQ?!

Curiosity killed the grouper?

The spotted black grouper is a protected species rarely reported caught in New Zealand waters.

- Where and when? The spotted black grouper is found in northern New Zealand waters, including around the Kermadec islands.
- How big are they? These groupers can attain lengths of 1.8 m in New Zealand waters but most are smaller, at 40–80 cm.
- How are they caught? This fish can be caught in pot, set net, line and trawl fisheries. Its natural curiosity about fishing gear is sometimes its downfall!
- Do males and females look the same? In this species, males and females are the same animals! At around 25–33 years of age, female fish change into males. Funky...!



The spotted black grouper. *Photo: www.daveharasti.com/articles/speciesspotlight/blackcod.htm*

Techy solutions for tricky problems

Pete Kibel of Fishtek is one of a small number of experts worldwide who develop technical solutions to bycatch problems. He is one of the brains behind the safer weights for surface longlining that are being tested here this winter (see 'Headline'). Pete talks about his approach to developing new devices for reducing bycatch.

How did you get into the development of technical solutions for bycatch reduction?
My background is in marine biology and fisheries. I have been involved with a broad range of fisheries work including aquaculture and teaching.

In terms of gear development, initially we were working on commercial and recreational fishing gear for line fishing, for example, lures for jigging machines used by Icelandic cod fishermen. I was also running fisheries courses as part of a marine biology degree and these covered bycatch issues. We realised that technology had the potential to reduce bycatch in many areas of fishing. I've now been involved in gear development for about 20 years altogether.

How do you choose which bycatch reduction projects to get involved with?

This depends on a number of things—how bad the problem is, how likely it is that we can develop an effective solution, whether we can fund the development of the technology, and what the end market for a product is likely to be. Legislation may also have a part to play, as this can encourage fishers to use the solutions we develop. For example, thinking about safe leads, legislation requiring the use of weights in surface longlining exists in a number of countries and fisheries. However, safer weights are more effective than conventional approaches to weighting because they reduce fly-backs and improve crew safety.



Pete in his element—at sea chasing fish.
Photo courtesy P. Kibel

Safe lead technology refines a concept that was already in use in the fishery—line-weighting. Alternatively, we might develop an entirely novel approach or gear concept to address a bycatch issue. For example, there are significant conservation issues around non-target catch of sharks globally. A 'shark guard' could be developed for use in surface longline fisheries to reduce shark bycatch. At the moment there is no effective mitigation measure to reduce shark bycatch. Perhaps consequently, there is also no legal requirement to solve this bycatch issue. Such a concept would take a few years to bring to reality, including operational testing at sea, proving efficacy in reducing shark bycatch, demonstrating there are no negative effects on target catch, and so on. Given the potential cost of developing such a device (perhaps \$100,000), we would probably only tackle this sort of project with matched funding.

Are you involved in other areas of work, in addition to bycatch reduction technologies?

Yes, we work all over the world in fisheries consultancy. The common element to our work is the application of technology to solve fisheries issues. A lot of our work focuses on mitigation for freshwater fisheries affected by hydroelectric power projects. For example, we develop fish migration technologies that allow migratory fish to pass large hydroelectric dams.

Finally for today, can you tell us how you recharge and relax, away from the office?

I go fishing. Nothing beats a 4 am start chasing cod and pollack in mid-channel.

We'll talk more with Pete about his approach to product development in the next issue.

Bottom lines for tough times

In the March issue, we talked about bycatch limits on Australian sea lions in Australian gillnet, hook, and trap fisheries. The Australian sea lion is an endangered species, and limits on catching them are time- and area-specific. Sea lion captures exceeded these limits, which has resulted in closures of gillnet fisheries, at least for a while. So, what to do?

With gillnetting off the menu, an alternative method is necessary to land the target fish catch. In the Southern and Eastern Scafish and Shark fishery, longlining is a possible option. The target species here is rig, which can be caught on bottom lines.

Supported by funding from the Australian government to the Southern Shark Fishery Alliance, a training programme is underway to help industry transition the fishery from the use of gillnets to using bottom longlines. As with any fisheries problem, there are complexities aplenty. Key issues are how to efficiently catch the target species while avoiding fish bycatch of legally-limited species and seabird bycatch on longline hooks. Two workshops held to date in South Australia have been well attended, with wide-ranging and robust discussion on all aspects of the technical challenges of longlining and the legislative operating environment around fishing and bycatch. It's a tough challenge. However, for industry, including quota owners, fish processors, and fishermen themselves, everyone wins if there is a solution. With flexible thinking, persistence, and the right advice, someone seems bound to find a way.



The Australian sea lion (*Neophoca cinerea*).
Photo: B.M. Hunt, GNU Free Documentation License v1.3

WANT TO KNOW MORE?

- *Headline:* For more information on the trials of safe weights on inshore surface longline vessels, email Dave or Johanna: goad.dave@gmail.com or johanna@dragonfly.co.nz. For videos of safe weights in action, see: www.fishtekmarine.com/safeleads.php
- *What's up?:* Work on this developing mitigation device is described at: www.acap.aq/index.php/en/working-groups/doc_download/2037-sbmg5-doc-08-early-results-from-trials-of-bird-scaring-lines-bsls-attached-to-14-m-booms-on-a-demersal-trawler
- *What the FAQ?:* Additional facts on the spotted black grouper can be found at: www.doc.govt.nz/conservation/native-animals/marine-fish/spotted-black-grouper/facts/
- *Who's who?:* For more about what the guys at Fishtek are up to, check out their website: www.fishtekmarine.com/index.php