

Sinking rope: a win-win for cetaceans and fishermen?

A creel fisherman may experience the entanglement of a cetacean, basking shark or turtle once in their career, if at all – but the overall impact on cetacean populations can still be significant. To reduce the figures, the fishermen-led Scottish Entanglement Alliance is exploring the introduction of sinking groundline in the fishery

WORK BY THE Scottish Entanglement Alliance (SEA), a collaborative partnership of fishing, science and NGO groups, has shown that most of the whales and basking sharks that become entangled in creel ropes are caught in the groundline. But is this a problem with a win-win solution?

Fishermen interviewed as part of SEA's work suggested replacing floating rope with sinking rope to remove the loops of rope that float between creels when they are on the seabed. Sinking rope (also known as leaded or negatively buoyant rope) looks the same as the floating rope in general use, and is available in the usual diameters. However, it has a thin thread of beaded lead that runs through the weave to make it slightly negatively buoyant.

A trial of sinking rope has been running since 2022, funded by the Scottish government's

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Nature Restoration Fund (managed by NatureScot) and led by Whale and Dolphin Conservation, and has just published its report. The project's aim was to work with fishermen to assess if sinking rope was practical to use in prawn and crab fleets, looking at possible issues such as fasteners, abrasion, handling, weight and the rope picking up mud.

The feedback from the skippers of the 15 creel boats working out of the North West Highlands and the Isle of Skye who used the rope was very positive, with few experiencing any problems. During the year and a half that the project ran, over 60 fleets were re-rope, with the participating fishermen reporting on each haul – over 1,500 hauls through the trial. Rates of snagging or other



problems were judged to be no higher than with buoyant rope. Several fishermen preferred the rope, saying it sat better on deck and on the seabed.

Sinking line has been used elsewhere in the world to reduce whale entanglement in creels, pots and traps. On the US east coast, it has been one of a range of measures used in response to North Atlantic right whale entanglement. In South Africa, it was introduced to the octopus fishery to mitigate Bryde's whale entanglement and has worked well, with no further entanglements reported. In the



▲ Left to right: Jarrod Styles, Susie Calderan and DL MacKinnon onboard the creel vessel Valhalla, one of the 15 vessels that took part in the trial.

Sinking line: a definition

"We have been asked why we use the term 'sinking line' and not the more traditional leaded line, or leadline, or similar," said Susie Calderan.

"The answer is that the ropes used in this trial are negatively buoyant – but

only just. The rope sits very lightly on the seabed, and is much less dense than what traditionally would be called leadline, used as ground ropes, for example, on gill-nets.

"Sinking line does just that – it sinks."

US, the situation is much more complicated, and it has been more difficult to understand how effective each of the range of measures brought in have been.

However, in trialling sinking rope in Scotland, we hope for a better future risk reduction and fewer implementation problems than in the US. This is for a number of reasons. Firstly, we

have much clearer information on where in the gear entanglements are taking place (80% of basking sharks and minke whales, and 50% of humpback whales, become entangled in groundline).

Secondly, engagement with fishermen in the US is often problematic, whereas this project was planned from the start to take a bottom-up, collaborative approach. Thirdly, the design and manufacture of sinking line has much improved since it was first implemented in the US. It is only slightly heavier than standard rope, and lies lightly on the seabed, with minimal movement or impact on the seabed.

To assess the performance and behaviour of the rope in the water, the project also deployed depth sensors/accelerometers and carried out remotely operated vehicle (ROV) filming on a range of rope configurations on both crab/lobster and prawn creels. The arches formed by floating rope had an average maximum height of 3.7m off the seabed, with no significant difference between self-shot or hand-shot gear.



▲ Taken from an ROV used in the project, these pictures show the contrast between the floating rope...



▲ ... and the sinking rope when in the water. The floating rope was measured to have an average maximum loop height of over 3m above the seabed, whilst the sinking rope – not as heavy as earlier leaded rope – sits lightly on the seabed, without mudding up or affecting any seabed life.



▲ Sensors were mounted on the ropes, to record how they moved during the tidal cycle when the gear was on the ground.



▲ The sinking rope has a thin core that runs through the weave. It is available in all of the normal diameters – but the cost is significantly higher, so widespread take-up would depend on funding support.

Attempts to mitigate bycatch and entanglement can be contentious, and difficult or expensive to implement, but we hope this can be different. Replacing floating rope with sinking rope could be reasonably straightforward, and for the most part enable fishermen to carry on fishing as normal.

The main issue is that it is currently more expensive. Therefore the next phase of our work will be consulting with creel fishermen around Scotland and with the Scottish government



▲ The use of low-drag buoys will be investigated during further trials, to see how effective these are at reducing the risks of the tide and swell dragging gear over the seabed.

to understand the options for implementing sinking rope more widely, and how that might be supported (for example through incentives, gear exchanges or subsidies), as part of other inshore fisheries management measures.

The basis of the trial has been the very successful, bottom-up partnership approach with Scottish creel fishers and the Scottish Creel Fishermen's Federation (SCFF). It has demonstrated the importance of collaborative approaches to address complex conservation and management issues. Its implications are key to supporting the Scottish government's commitment to reduce incidental bycatch in fisheries.

The full report is now available online at: bit.ly/3VaD448



▲ The sinking line was trialled with crab pots as well as with prawn creels. DL MacKinnon, seen here preparing his gear onboard his vessel Valhalla, expected to see more fasteners when using his crab gear with sinking line, but was pleasantly surprised at the results.

Trials 'a chance to get ahead of the game'

For the 15 fishermen around the east of Skye who participated in the trial, it was a chance to try sinking rope for themselves, and make up their own minds about how practical it was to fish with. The fishermen in the trial all agreed that avoiding entanglement was the main incentive to using the rope. The point of the trial was to assess whether it was practical.

Duncan McAndrew, who fishes for prawns out of Plockton on his 6.5m vessel Cordelia, was keen to be involved. "Anything that we can do to improve the all-round environmental impact of what we do is a positive, so I was in full agreement with why the trial was taking place and its objectives."

DL MacKinnon, fishing for crab and prawns from Kyleakin on the Valhalla, who was another participant in the trials, said: "If you can avoid entangling a whale and there's ways that can minimise it, you should take any measures you can to avoid that happening." His son Martin, who also fishes, but this summer is running the family Shellfish Shack in Broadford, agrees that 'anything we can do to help the impact of entanglement, the better'.

At the Shellfish Shack, the MacKinnon family are selling their product locally to reduce their carbon footprint. They know that their customers are interested in the environmental credentials of the shellfish they buy. Martin said: "Using the sinking rope is definitely a selling point with the Shellfish Shack's customers. Creel fishing is low-impact already, but the sinking rope will definitely be a plus."

Bally Philp, another prawn fisherman in the trial working out of Kyleakin, and also co-ordinator of the SCFF, went further. "I don't think we're going to be allowed to have a creel fishery in the future if we don't get a grip of the bycatch issues that are associated with it. The public want better standards than they are getting."

For the most part, trial participants didn't notice much difference between using floating or sinking ropes. They all shared initial concerns about its weight on the boat, abrasion, fasteners or picking up mud – but in general, these issues were not a factor. "No hassle at all – it doesn't affect anything at all," said Martin. His boat fishes for crab, which was thought likely to be more problematic, as well as prawns.

Duncan McAndrew noted: "My boat is only 21ft, and I did



▲ Creel fishermen Duncan Finlayson and Bally Philp in conversation at Kyleakin. All of the participants in the trial agreed on the value of having been able to try out the sinking rope for themselves, dispelling many of the concerns they would have had if this had been imposed as a top-down measure.

think the rope might possibly be quite heavy, but it didn't make any difference to my operations. I didn't notice any difference with fasteners, and it didn't collect anything more in the way of mud than any other rope – just the same. I don't think it fishes any different."

to trial the gear first, or at least people they respect and whose opinion they value trial the gear first. I think if someone had told us we have to go to sinking rope before we had the opportunity to test it out, our scepticism about the implications would have meant that we would have been

For any fisherman that's got any conscience, one whale is too many to kill

DL MacKinnon thought that in many ways the rope was preferable to floating rope. "I'm glad to say that on the whole the trial was surprisingly favourable, and actually better than the systems we'd been using before – very little problem.

"Before the trial, everyone was saying it would wear a lot on the bottom, but I didn't see any more significant wear and tear. I like the way the prawns seemed better in the creels because there was less movement. There's less chance of things catching in the loops."

Bally Philp agreed: "I actually quite liked the rope. I think the gear travels through the water column quicker and hits the seabed quicker and becomes bunched up less. I was finding fewer tangles."

The trial participants all agreed on the importance of trying the rope for themselves, and having the opportunity to influence the direction of travel of future fisheries measures, with DL MacKinnon saying: "If we have a chance to get ahead of the game, trial it, see for our ourselves – and we can have our say on what's a good idea, and what's not a good idea, and work out what works, and what doesn't – it's got to be to our benefit."

Bally Philp was of the same opinion. "I think it's really important that the fishermen get

really unwilling to go down this route. But because somebody said you can try it first and then tell us what you think, that's crucially important."

However, an all-round concern is how the extra cost of the rope will be handled – a key issue which the next stage of the project will address. Duncan McAndrew said: "There needs to be some form of government backing, because it is a fairly significant expense." Bally Philp agreed, saying: "Anyone who wants to work with us to make this happen needs to listen to the fishermen. That's the bottom-up approach, and that's how you can make this work."

Overall, the trial has been a big success. DL MacKinnon could not have put it better: "For me, or I would think any fisherman that's got any conscience, one whale is too many to kill.

"Maybe if you haven't caught a whale with your ropes, you don't fully understand the implications, but when you've actually caught one – that's a huge animal that you've caught, and you've taken the life off it, when there's ways around it that can minimise it, at least.

"Just because you've done something one way your whole life, it doesn't mean it's the right way to do it, and if someone's showing you a better way of doing it, well..."