

The cost of ghost fishing: Can biodegradable gear make a difference?

If biodegradable fishing gear is to help mitigate the environmental and economic impacts of 'ghost fishing', its design needs to be improved, say researchers from the University of Portsmouth.



Image source: David Waschbüsch from [Pexels](#)

Ghost fishing is a term that describes what happens when abandoned, lost, or otherwise discarded fishing gear (ALDFG) continues to catch and kill fish and other marine animals. It is a significant source of plastic waste (the European Commission 2018 estimated that as much as 27% of marine litter in EU sea basins is caused by ALDFG) and can cause a variety of environmental problems as it remains relatively unchanged for a long time, perhaps for hundreds of years.

There is also an economic aspect to ALDFG, with previous studies showing that marine litter could result in cost impact of up to £30,000 per year for a single vessel (Hall 2000) and that 86% of fishermen reported reduced catches due to marine litter (Mouat et al 2010).

The development of biodegradable fishing gear (BFG) with a reduced lifespan could help both address the fishing industry's contribution to marine litter and reduce the impacts of marine litter on the fishing industry.

Economic viability

However, Portsmouth University researchers found that the economic cost of decreased catches from fishermen using BFG compared to current fishing equipment, is not sufficient to offset the cost of ghost fishing prevented by BFG.

Dr Ben Drakeford, associate professor in Marine Resource Economics in the Centre for Blue Governance at the University of Portsmouth, said: "Implementing BFG is a technical problem and not an economic one. The challenge of achieving similar fishing efficiency with BFG compared to current gear presents the main obstacle to adoption."



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"The majority of costs to fishermen in terms of BFG use are not related to investment and maintenance costs, rather the impact of reduced fishing efficiency. In our research, we found issues around strength and flexibility and their impact on fishing efficiency. This has led to a lack of faith in the concept by fishermen, or reservations around BFG as it is not like-for-like in terms of functionality and cost."

The researchers conducted a study of the English Channel fishery, which is home to around 274 10m-and-under and 61 over-10m fixed gear vessels. They compared the direct costs (eg. gear use and replacement, operational costs and earning) and indirect economic and social costs and benefits of ghost fishing and the use of BFG in the Channel fishery. They also spoke to fishing organisations, representatives, authorities and private enterprises.

Cost barrier

From this, they developed an economic model that looked at various scenarios based on vessel size, cost of BFG and fishing efficiency.

They estimate the costs of implementing BFG to be as high as £8m. However, if the issue of fishing efficiency was resolved (BFG was a like-for-like compared to current gear) then the large negative costs could be overturned to between a cost of £880,000 and a small positive benefit of around £150,000.

Given the various scenarios, the researchers suggest that the cost of adopting BFG would be easily achievable through a small financial incentive - if any is needed at all for some vessels - it is the cost of using BFG that is the main barrier.

Dr Drakeford said: "As the marine litter problem continues to grow, and the cumulative impact may be such that each additional piece of marine litter has a greater environmental impact than the one before, the role of BFG in sustainable fisheries deserves further attention. Considering the negative environmental impacts of lost gear, the benefits of BFG use over traditional fishing gear would grow exponentially."

The study is published in [Marine Pollution Bulletin](#).