

Science for Environment Policy

Fisheries need better enforcement of rubbish disposal to reduce plastic waste around UK coasts

A new study has analysed marine litter on beaches across the UK, indicating that the fishing industry is responsible for large quantities of marine rubbish. The researchers recommend a combination of better enforcement of regulations covering waste disposal, and incentives for fishing vessels to reduce marine litter.

Around 6.4 million tonnes of litter enters the sea each year, the majority of which comprises fishing gear, packaging, raw plastics and convenience items. Plastics can persist in the environment for many years with minimal degradation. Plastic fishing gear can cause marine animals, including whales, dolphins, sea birds, turtles, sharks and seals, to become entangled and die. Since 1973, the International Convention for the Prevention of Pollution from Ships ([MARPOL](#)) has regulated marine pollution from the shipping industry. Annex V of MARPOL covers pollution by rubbish, banning plastic disposal at sea and requiring ports, marinas and terminals to provide waste-disposal facilities for ship rubbish. Since 2013, the discharge of all rubbish into the sea has been prohibited, except under specific circumstances.

In this study, researchers attempted to determine the origin of marine litter found on beaches across the UK, focusing on any link with commercial fishing and shipping. Data on beach litter were provided by the [Marine Conservation Society](#) from their 'Beachwatch' litter survey and clean-up events on 1 023 UK beaches between 1999 and 2007. The researchers summarised the litter data into **plastic debris, fishing debris and fishing-related plastic and rubber debris**, depending on the type and most probable source of the rubbish. Correspondence analysis — a statistical technique that explores patterns in complex data — was used to examine the occurrence of rubbish types across the beaches. Statistical modelling was then used to determine if fishing activity was the main factor behind litter accumulation, focusing on the relationship between individual items of rubbish and the locations of fishing ports or fishing grounds.

The study results indicated that beaches with large amounts of rubbish were related to fishing ports and grounds nearby. Most of these beaches were found in the North Sea, English Channel and the west of Scotland. The correspondence analysis did not show any grouping in the types of plastic rubbish other than rubbish related to fishing (e.g. polystyrene fish boxes and heavy-duty rubber gloves). The modelling indicated that there was no significant relationship between plastic marine debris and proximity to fishing ports. However, analysis of specific fishing-related materials on beaches showed that several plastic items, including fish boxes, floats, nets, rope and other plastic pieces, were strongly related to fishing grounds. These results suggest that the fishing industry is responsible for a large proportion of the marine debris on UK beaches, particularly in areas close to fishing grounds.

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<http://dx.doi.org/10.1016/j.marpolbul.2016.04.024>.

Contact:
antoniaunger@posteo.de;
antonia.unger@student.anglia.ac.uk

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The researchers say the results demonstrate that new enforcement approaches are required for MARPOL within the fishing industry. Since Annex V was implemented, there have been concerns over its effectiveness due to difficulties in enforcing it. Enforcement of MARPOL is the responsibility of the Member State where the vessel is registered, with limited jurisdiction in coastal states and ports where vessels are actually operating. States do not often have the resources to patrol the oceans thoroughly and, once waste is detected, it is difficult to trace it back to a specific ship. Vessels will also use flags of convenience (FOC), which are flags of countries whose laws or circumstances make them more attractive as owners. For example, countries who do not have the facilities, interest or resources to comply with MARPOL regulations. As such, more power should be given to coastal states and ports so they can inspect and penalise violations on site.

The researchers also point out that the correct disposal of rubbish in ports remains costly, discouraging fishing companies from complying with MARPOL and EU regulations. The EU requires ports to provide waste-disposal facilities¹ and requires all ships, including fishing vessels, calling at EU ports to deliver their waste before departure. However, the use of these facilities has been low due to high costs for both the user and the port facility, as well as insufficient enforcement of the mandatory waste delivery with respect to fishing vessels. Providing incentives to fishing vessels to recycle waste at ports may, the researchers say, increase use of these services and decrease the incidence of rubbish being dumped at sea. A certification programme requiring the tracking of fishing gear in vessel logs, which is independently monitored and enforced by penalties, could also be implemented. In addition, fishing nets could be tagged to ensure they can be tracked and easily removed from oceans if they are lost at sea.

Researchers say that additional measures could include educating fishers about the environmental impact of plastic waste at sea and encouraging (e.g. through incentives) the use of biodegradable nets and traps to replace synthetic and plastic fishing. Due to the serious impact of plastic rubbish on marine ecosystems and wildlife, the researchers recommend that a range of these measures are considered.



1. Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0059>