



Marine Conservation Society

Bottom towed fishing gear: position statement and background paper

Introduction

The Marine Conservation Society (MCS) was established in 1983 with the aim of protecting the marine environment for wildlife and future generations. MCS is the only national environmental charity working exclusively on the range of issues affecting the marine environment.

The MCS fisheries programme aims to promote ecologically sustainable fisheries and mariculture to protect fish stocks, livelihoods and marine life.

Our approach involves three main strands:

- Influencing fisheries and mariculture policy, management and practice.
- Promoting individual responsibility and consumption of sustainable seafood including wild-caught and farmed fish through the Good Fish Guide, Fishonline www.fishonline.org, and the Pocket Good Fish Guide.
- Raising public awareness of the issues surrounding fishing and mariculture.

Marine Conservation Society's position on bottom towed fishing gear

Bottom towed fishing gears are one of the most effective ways of catching fish and shellfish, however the use of these gears can be harmful to the marine environment in two ways; firstly the act of dragging heavy equipment over the seafloor can result in the destruction of the seabed habitat, and secondly poor selectivity in these gears means that animals other than the fish being targeted may also be caught.

The conservation of seabed habitat is important because it provides shelter and food for a variety of species, including commercial fish that rely on such habitats to grow and reproduce. Many seafloor habitats can be destroyed by a single pass of heavy bottom towed fishing gear, and take months or years to recover. The poor selectivity in bottom towed fishing gears also has important consequences; they can catch and kill large quantities of 'non-target' species, including those of little or no value which are often discarded back in to the sea dead, as well as catching species that are vulnerable to extinction, and therefore can hinder the recovery of over exploited species.

The actual extent of the damage that bottom towed fishing gears may cause, is not the same everywhere because it is dependant on a number of factors; including size & weight of gear being towed, towing speed, type of seafloor, depth, natural disturbance frequency, and the recovery rate of the habitat affected.

MCS is not opposed to the use of bottom-towed fishing gears. However because they have the potential to seriously reduce the productivity and diversity within the marine ecosystem, it is essential that management measures are in place to ensure that impacts on the environment are minimized during the use of these gears. The following are conservation measures, which can reduce the impacts of bottom towed fishing gears on the marine environment, to help protect and conserve the marine ecosystem:

MCS would like to see:

- For marine ecosystem recovery (fish, invertebrates and habitats), MCS believes that 30% of each UK representative habitat¹ must be protected to a level equivalent² to Marine Reserves³. This level of protection can be nested both within, and outside, the borders of multi-use protected areas (MCZs, SACs or NIMAs).
- For rare, threatened and vulnerable species and habitats, potentially more than 30% will be required to be protected in HPMRs (for example BAP, OSPAR habitats and species, and WCA species). (You could add the following in a footnote - for example, *Zostera* and maerl beds area often located in areas of of intense human activity, yet are still subject to anchorage, mooring, piling and fishing).
- Marine reserves should be used in conjunction with Designated Fishing Zones⁴ and reduced total bottom fishing effort (such as reduced days at sea or decommissioning schemes), to avoid the displacement of fishing effort from the reserve areas, to new, potentially vulnerable habitats.
- Implementation of spatial management zones; in areas where static and mobile (towed) gear use are spatially separated between adjacent grounds. This avoids static gear becoming damaged by mobile gear, and will allow the necessary protection of the areas where species, including commercial fish, need to take refuge.
- An ecosystem based fisheries management system, based on the precautionary principle, designed to take account of uncertainty in scientific advice. This will ensure that all impacts of a fishery on the *whole* ecosystem (rather than just the target species) are assessed and accounted for accordingly in the management of the fishery, to ensure minimal impact on the marine environment. Such assessments should be made by the competent authority, on the potential impact of fishing on the marine ecosystem in all new and existing Special Areas of Conservation (SAC).
- Outside of protected areas, MCS recommends Regional Environmental Assessments (REA) are undertaken for fisheries in each regional sea, in conjunction with nature conservation advisors, to come to an arrangement on the effort and types of fishing in each bio-geographical region of the UK. This will allow increased certainty amongst fishers and conservationists of permissible activities and be fed into each regional marine spatial plan.
- Increased survey work to identify the distribution and location of habitats sensitive to the impacts of bottom towed fishing gears- (such as Seasearch⁵) this will allow such areas to be identified and protected accordingly.

¹ Representative habitats are at a very broad scale: rocky reef; sandbank; mud. This broadscale targeting of habitats allows a wide-range of areas to be chosen for inclusion in the network, with a preference for those areas that are less significant to commercial interests.

² Whether in actual designated Marine Reserves, finfishery (e.g. flatfish or whitefish) or shellfishery (e.g. lobster, langoustine) closed areas at sites where no other extractive or damaging activity could impact the closed area, in closed areas for non-damaging military operations, or in entire SACs, MCZs or NIMA-equivalents (depending on what terminology arises from the SMB), or zones within such sites, where a high level of protection is needed to meet the ecological needs of the biodiversity feature for which they are designated.

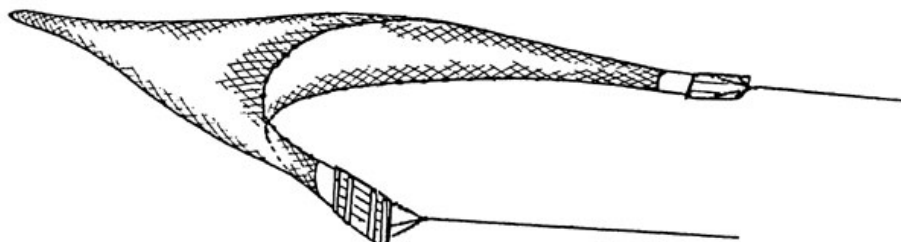
³ Some scientists and conservation experts recommend that 30% of UK seas should be closed to extractive and/or damaging activities. Royal Commission on Environmental Pollution (2004) – Turning the tide: the environmental effects of fishing. Delegates of the IUCN World Parks Congress, Durban, South Africa, 2003 recommended that between 20-30% of the seas should be in fully protected Marine Reserves (or their equivalent). Pew Research Fellows on Marine Conservation Research (2005) called for between 10 and 50% of marine habitats to be located in fully-protected marine reserves.

⁴ MCS supports the establishment of Designated Fishing Zones (DFZs) protect fishing rights protected outside the 30% HPMR network.

⁵ Seasearch is a national volunteer diving project, set up by and is co-ordinated nationally by MCS with the support of a wide range of nature conservation agencies, diving associations and Wildlife Trusts

can be used (fitted to the aft belly of the trawl) to help bottom-dwelling creatures to escape while retaining the target fish.

Bottom otter trawl



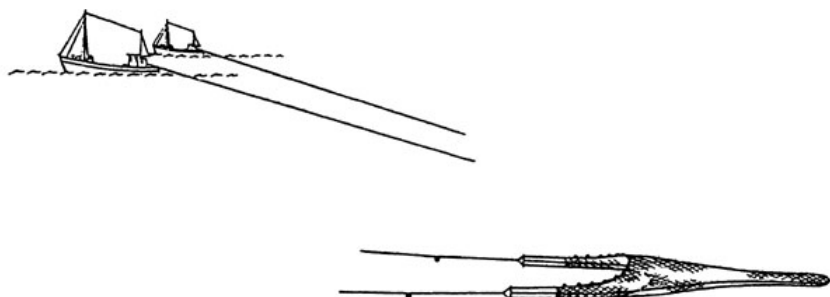
<http://www.fao.org/fishery/geartype/306>

A Bottom otter trawl is used to target demersal species such as cod and haddock. It consists of a large funnel shaped net, with two, four or more panels, finishing in one or two cod ends, it also has side wings that extend forward to guide fish into the funnel. No hydrodynamic forces are needed to keep a bottom otter trawl open; the trawl net is kept open horizontally by two otter boards (also called trawl doors). A headline runs around the upper edge of the net mouth, with floats attached to ensure the net remains open vertically, in addition to a weighted ground rope or footrope which is in contact with the seabed to protect the gear from damage and maximize capture of bottom dwelling fish.

Otter bottom trawls can be used by side trawlers, stern trawlers (the trawl is set and hauled over the stern) and outrigger trawlers (each side one single otter trawl or a twin trawl can be towed). Multitrawl rigging can be used, where up to four parallel trawls are towed from the same boat.

The selectivity of trawl fisheries may be increased by the use of devices known as separator trawls. Separator trawls work by exploiting the behavioural differences between fish species and can be used for example, to segregate cod and plaice into the lower compartment of the net, whilst haddock are taken in the upper part. The mesh size for the two compartments can be altered according to the size of the adult fish being targeted. Insertion of Square Mesh Panels can also improve the selectivity of the bottom otter trawl. Sorting grids are compulsorily fitted in nets in some prawn and shrimp fisheries to release young fish before they enter the cod end, therefore reducing by-catch of unwanted or non-target species.

Bottom pair trawls



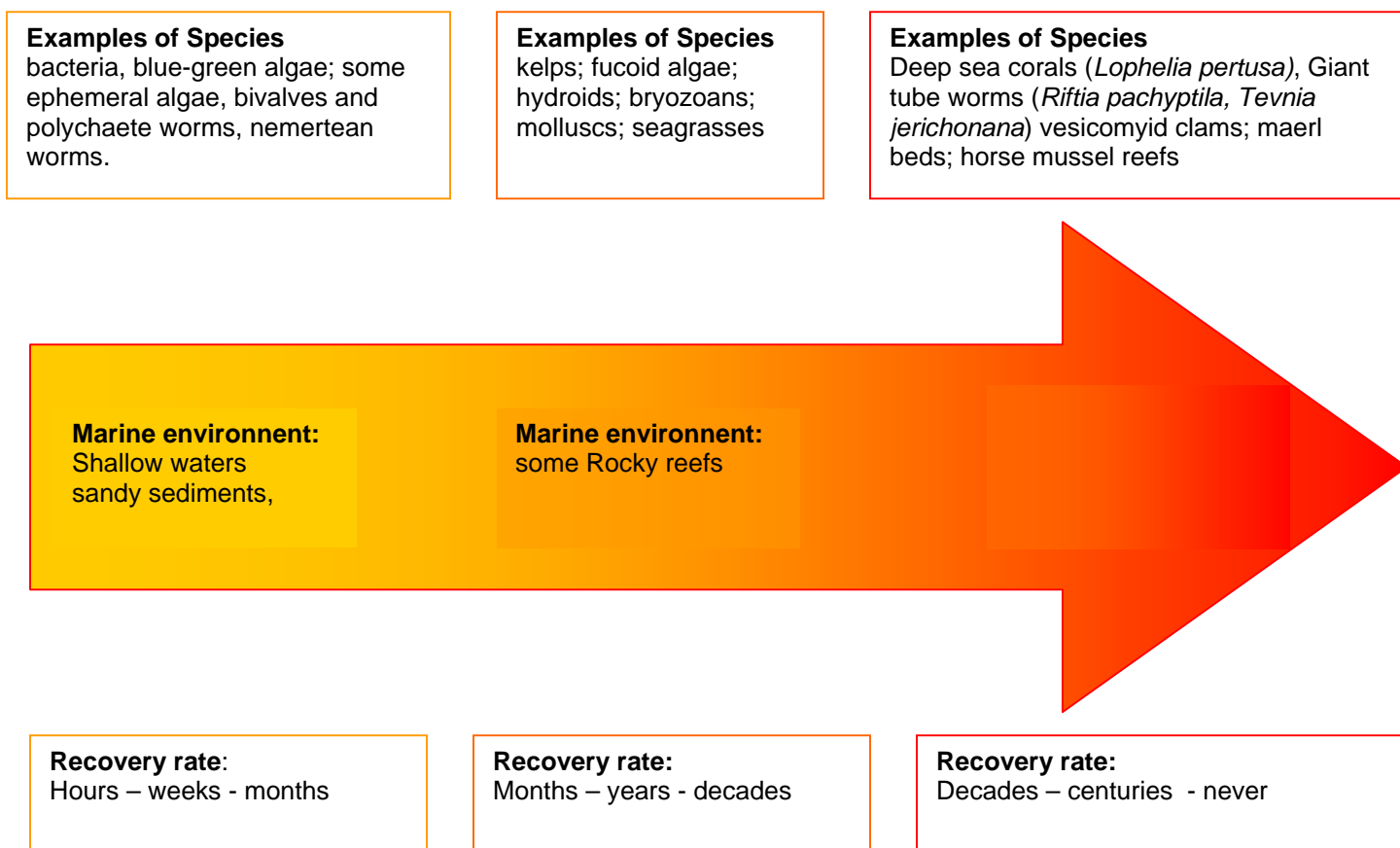
A bottom pair trawl is used to target bottom dwelling fish such as flatfish and to a lesser extent, shrimp. It consists of a large funnel shaped net, consisting of two, four or more panels, closed by a cod end with side wings that extend forward from the opening to guide fish into the funnel. It is operated by two vessels -one of the vessels only tows the trawl (called the 'slave') whilst the other handles the trawl and takes the catch. Bottom pair trawls do not require trawl doors to keep the net open horizontally, and with the combined towing pull of the two vessels, a larger net can be used than would be possible with a single vessel.

Similarly to the bottom otter trawl, the selectivity of the bottom pair trawl can be improved by the use of Square Mesh Panels and Sorting grids.

Dredges

of these plants, expose rhizomes and tear up whole plants¹⁸. Bottom trawls & dredges can also damage mixed grounds that provide a nursery ground for marine species. Other shallow water habitats which are vulnerable to bottom towed fishing gears include coral reefs, Maerl beds and biogenic reefs (where the reef structure is created by the animals themselves, by species such as *Sabellaria spinulosa*, and *Modiolus modiolus*); these provide a home and protection for a variety of species, and can take many years to recover as they are very slow growing. Some Maerl beds have been aged to thousands of years (e.g. the maerl bed in the Fal estuary in Cornwall which was damaged by scallop dredging prior to 2008)¹⁹. Similarly, some deep water reefs are made of the delicate coral, *Lophelia pertusa* that is a very slow-growing species (reefs grow about 1.3mm a year)²⁰ can be destroyed by the single passage of a deep-water trawler, and are unlikely to ever recover to their previous structural integrity, size and species richness. Furthermore, it is impossible to accurately measure the effect that over 100 years of intensive trawling has had on our seas ecosystems.

Figure 1: Diagram to illustrate the variance in extent of the impacts of bottom towed fishing gear on differing marine habitats species



Examples of existing regulations & voluntary agreements

¹⁸ Jennings, S., Kaiser, M.J., Reynolds, J.D., (2001) Marine fisheries ecology. Blackwell science Ltd: pp283

¹⁹ Miles Hoskin (*pers. comm.*) 2006 and 2007

²⁰ Fossa JH, Mortensen, PB and DM Furevik (2002) The deep water coral *Lophelia pertusa* in Norwegian waters: distribution and fishery impacts. *Hydrobiologia* 471:1-12

