

The Seafish guide to discards

Introduction

In a series of guides covering topical issues affecting the UK fishing industry, Seafish considers the nature of discarding in fishing, and what is being done to reduce them.

There are other Seafish guides on related topics including sustainability, responsible sourcing, the Responsible Fishing Scheme and bottom trawling.

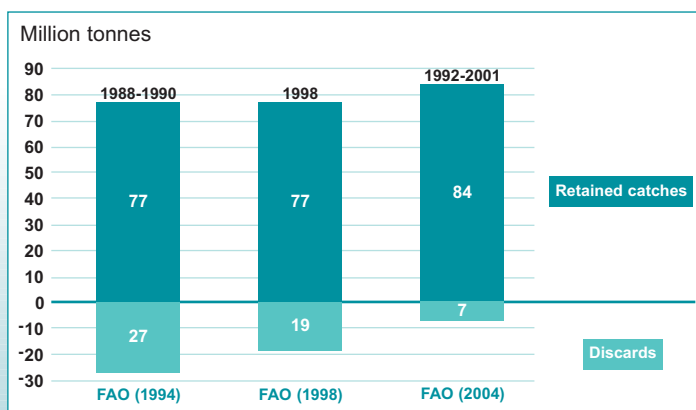
The size of the problem

Discarding is fishery-specific so global totals are of limited value. However figures are available and the best source of information is FAO. In their 2005 review *Discards in the World Marine Fisheries* (1), FAO estimates that the global total is around 7.3 million tonnes, or around 8% by weight of total global catch. However, other sources estimate figures of 27 or even 39 million tonnes (2). The FAO review explains that the higher figures come from an earlier 1994 FAO publication (3). FAO states these

figures are outdated and should not be used.

It is more important to know how much discarding is occurring in each fishery and which species are affected. The level of waste may be biologically significant or it may not be significant. Sometimes very low levels of discarding can be highly significant. This will be the case if a species is endangered in some way, is highly valued or raises animal welfare issues.

Comparison of discard estimates and retained catches



Discards are those parts of the catch that are returned to the sea.

WHAT ARE DISCARDS?

Discards are those parts of the catch that are returned to the sea.

It is important to emphasise that discarding is not a universal problem affecting all fisheries. The level of discarding varies widely between fisheries, and within fisheries. Some fisheries are almost completely 'clean', others may discard more than they retain, and in some fisheries discarding is a good thing. Assessing how much of a problem discarding poses, and to whom, can be complex.

'Discards' can be counted in various ways, they can refer only to commercial fish species, to all fish species, to all animal species, including invertebrates or to all species, including plant life.

Discard rates can also be described in terms of numbers of animals or their weight. Using numbers, especially together with size, can give an idea of the waste of growth potential. Discarding many small dead fish of commercial species clearly removes any prospect of catching them later, when they would have grown bigger, and had a chance to breed.

There is no doubt that the discarding of fish wastes resources and there is an urgent need to implement measures to reduce the level of discards wherever possible.

Measures to eliminate discards

Fisheries in the North East Atlantic, including the North Sea, have disproportionately higher discard levels compared to many other sea areas. Discard rates in European fisheries vary widely, from negligible in some small-scale coastal fisheries up to 70-90% of the catches in some trawl fisheries. In 2009 the Commission launched a wide-ranging debate on the way that EU fisheries are managed. The reform of the Common Fisheries Policy (to take effect in January 2013) will take better account of the huge differences across European fleets and fisheries and should help pave the way for minimising discards.

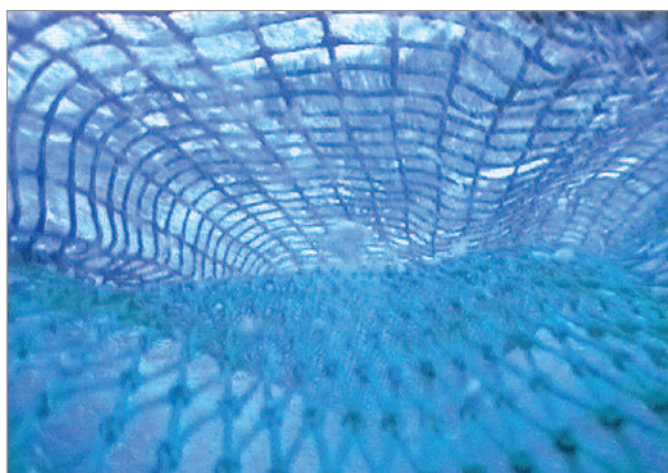
There are four main means of controlling discards: through selective gear technology, regulatory controls, the management of fishing effort and increasing market demand for under-utilised species.

1. Gear selectivity

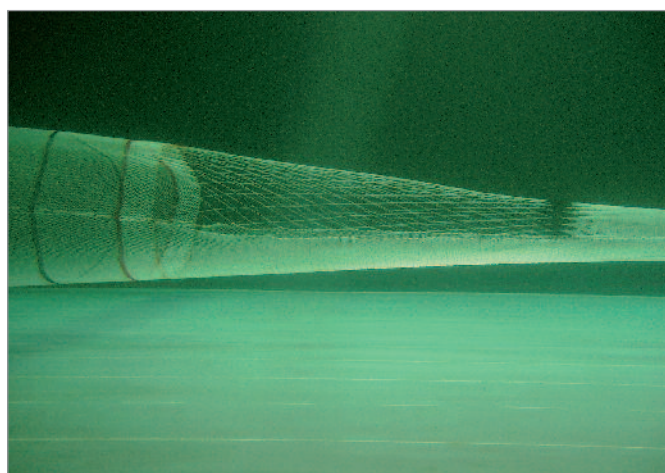
It is often possible to make fishing gear more selective so that bycatch and discards are reduced. Much discarding occurs because fishing gears are not selective enough. Many fisheries are based on a mixture of species and fish that are not wanted can be caught inadvertently. Some selectivity problems can be solved relatively easily. If the unwanted creatures – such as dolphins –

are very different from the target species, then a sorting grid can be used. However it is more difficult when there is a mix of species that are fairly similar such as cod, haddock, whiting, plaice, sole and monkfish, and each species has a different minimum permitted size - no single mesh size will retain all legal fish and release the rest.

Options trialled by gear technologists have included using behavioural differences between species to guide them to different parts of the gear, using large mesh panels to allow unwanted species to escape, inserting 'windows' of 'square mesh' or other devices at strategic points in the gear, and taking advantage of the different body shapes or sizes between, for example, flat and round fish; fish and langoustine; or fish and sea mammals or turtles.



Close up of square mesh panel



Large mesh panel allows unwanted species to escape

Gear selectivity in action:

- **In Scottish waters** - A whole host of measures were introduced under the Conservation Credits Scheme including a "one-net rule" so that vessels carry only one regulated gear mesh size per trip. Special rules were introduced for twin-rig vessels and single trawl vessels. There have also been selectivity trials covering *Nephrops*, cod and whitefish mixed fisheries.

- **Project 50%** - Funded by Defra and co-ordinated by Cefas, Project 50% (4), used social scientists' skills to understand the reasons behind the apparent resistance to adopting new gear modifications and to help guide a new approach to developing discard-reduction techniques. Collaboration was at the heart of the project.

Through Project 50% Devon beam-trawler crews agreed to try to reduce their discards by an ambitious 50%.

Working with local net-makers, the fishermen trialled their own new net designs alongside standard trawling configurations. The research was supported by Cefas gear technologists and fishery liaison officers. The trials were a resounding success, with average discards reductions of 52%, and the most successful boat achieving a 69% reduction.

2. Regulatory controls

Regulatory discards can also be reduced. As examples, it is possible to have swapping or short-term leasing of quota entitlement. Minimum landing sizes can also be adjusted so that edible fish, that would only be discarded dead, can instead be landed legally. A possible disadvantage of this approach is that small fish might then become the subject of 'high grading'. Managers have also

successfully introduced limits on non-target catches in many fisheries. An example of this approach is Total Allowable Bycatch in North America.

Regulatory controls in action:

- **Catch Quota Management** - The UK has been piloting an alternative quota management system for cod based on

catch quotas (a quota for what you catch rather than land at port). Interim results from these trials are positive; discards of cod are low (1-7%) and fishermen are fishing more selectively in order to maximise the value of their catches. An expansion of this scheme, both in terms of the number and the type of vessel participating, and the number of species, is planned (see next page for more details).

3. Managing fishing effort

These schemes depend upon vessels reporting in when they start to encounter particular fish at levels over a given threshold. Once the nature and extent of the concentration of fish has been established, measures can be taken either to close the area for a given period or for specific selectivity devices to be mandated for the area.

Managing fishing effort in action:

- **In the North Sea** - A Voluntary Real Time Closure (RTC) Scheme has been implemented throughout the cod recovery zone since early 2008. Initially this was to protect spawning cod but was later expanded to cover all cod. When a high abundance of cod is

identified a limited area is closed for a fixed period of 21 days after which the area will automatically re-open. In Scottish waters there are a maximum of nine RTCs in place at any one time. There are also seasonal closures. Localised RTCs provide necessary protection for local aggregations of fish.

4. Increasing demand for under-utilised species

The fishing industry is potentially losing significant value by failing to develop markets for edible or otherwise usable species, and by not capitalising on the possible value of sustainably or locally caught species. This failure to develop markets contributes to the potential for discarded fish with effort being focussed on a small number of species.

Increasing demand in action:

- **New markets** - The food service sector is actively working towards bringing under-utilised species to the market. Chefs have an important role to play in creating new dining experiences using species such as dab, flounder, grey mullet, pouting, gurnard and cuttlefish.

- **Red gurnard** – This under-utilised species won the Billingsgate School Sustainable Fish and Shellfish Award in 2008. This annual event aims to raise awareness of the diversity of responsibly sourced seafood that is available.
- **Government initiatives** - Defra is working with industry to influence the market, remove barriers and create new incentives to improve sustainability for edible, under-utilised species.

Why discards happen

There are many different reasons for discarding but the two major reasons are market conditions and management regulations. Both these sets of conditions can change by season or by fishing area, even within one fishery.

Market conditions

- Market conditions may result in fish being discarded because they are completely non-commercial and therefore have no economic value; they are of a marketable species but of low value and not worth keeping; or the fish are mechanically

damaged and are of such reduced value that they are not worth keeping.

Management regulations

- Fish may also be discarded because of management regulations – so called 'regulatory discards'. Regulations restrict the retention of fish that are a commercial species but below the legal minimum landing size (MLS); restricted by quota so that there's no entitlement to land them; or non marketable because of catch composition restrictions (there are rules controlling the relative proportion of species that may be held or landed in some fisheries).

A combination of market forces and regulations may result in the discarding

of fish that are valuable but not as valuable as (usually) larger fish of the same species. This discarding of lower value commercial catch to maximise the value of quota is referred to as 'high grading'. Discarding is less harmful for species that survive when returned to the sea. Undersized or 'soft' shellfish like crabs and lobsters survive well and fish like sole, plaice and dogfish also have high survival rates.

It is not only fish that are discarded. Many fishermen working demersal towed gear often haul marine rubbish up with their catch which would be tossed back overboard. A 'Fishing for Litter' scheme now encourages them to retain this litter onboard, for safe disposal in port.

Electronic Monitoring

Twenty three vessels, six in England and 17 in Scotland, are taking part in a trial where they account for all they catch (including discards) and in return are given increased catch quotas. Participating vessels have agreed to make use of closed circuit television cameras (CCTV), as part of a network of sensors, that record all fishing and processing activities, on board the vessels. In return they get an additional 5% of the EU share of the cod TAC. The trials started in June and will continue and be expanded in 2011.

Interim reports in September showed all six participants of the English trial have demonstrated evidence of behaviour change to avoid capturing small cod and discarding of cod has been low (currently 4 vessels have been fully analysed, with discard rates

of <1%, 1%, 7%, <1%). The recorded crew data, observer data and REM data show good correlations and Cefas project workers support the view that the scheme is reducing discards and encouraging more selective fishing practices.

In Scotland initial signs from the trials suggests this scheme provides a clear and strong economic driver which brings about behavioural changes (spatial, selectivity, diversification) in fishermen. They are clearly incentivised to fish in a way that optimises their catch. However only a small number of candidate stocks would be suitable for catch quota management in the North Sea. These are: cod, haddock, whiting and plaice, which make up a significant proportion of all catches.



The Cefas trial in action

REFERENCES

1. Kelleher, 2005: Discards in the World's Marine Fisheries – an Update; FAO Technical Report 470.
2. www.oceana.org/index.php?id=612
3. Alverson et al, 1994: A Global Assessment of Fisheries Bycatch and Discards; FAO Fisheries Technical Paper No 339.
4. www.cefas.co.uk/ourscience/fisheriesinformation/marinefisheries/fishing-geartechnology/project-50.aspx
5. Catchpole, T. L., et al., Constructing indices to detect temporal trends in discarding. Fish Res. (2010). Doi: 10.1016/j.fishres.2010.10.012. 17 October 2010.

SEAFISH DISCARDS WEB PAGE

Seafish has pulled together key information on discards and the measures being taken to reduce levels in a dedicated web page. See: www.seafish.org/b2b/subject.asp?p=325

Data Collection and declining levels

For management measures to be effective there must be accurate measurements of the amount of fish discarded, identified by species, size and sex composition. The fishing fleet is the natural sampling platform for discard monitoring.

The Centre for Environment, Fisheries and Aquaculture (Cefas) and Marine Scotland Science send scientific observers to sea with fishermen to sample the quantity of fish discarded and retained by fishing vessels. This sampling is intended to provide estimates of discards of the main commercial

species, but at present is not fully representative of all UK fisheries. It is only possible to sample a proportion of the vessels participating in any fishery.

A new fisheries research article utilises data from observer programmes for England and Wales and shows a reduction of 61% between 2002 and 2008 in the weight of discards. This was attributed to reducing levels of fishing effort and diminishing catch weights. The weight per day was estimated to have declined from 761kg in 2002 to 425 kg in 2008 (5).

Seafish: who we are

Seafish, the authority on seafood, was founded in 1981 by an act of parliament and supports the seafood industry for a sustainable, profitable future. Our services range from research and development, economic consulting, market research and training through to account management and legislative advice for the seafood industry.

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