

Discard Initiatives in Member States

The United Kingdom

1. Gear selectivity

Conservation Credits Scheme

In Scottish waters a whole host of measure have been 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 coordinated by Cefas, Project 50% 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 by fishery liaison officers. The trials were a resounding success, with average discards reductions of 52%, and the most successful boat achieving a 69% reduction.

Scottish Industry Science Partnerships

In 2011 funding of £243,000 was awarded to five projects working to enhance the conservation credentials of Scotland's fishing sector - £50,000 will go towards trials of coverless and low headline trawls aimed at reducing whitefish catches in *Nephrops* fisheries. £14,000 in the Western Isles to look at the effects of mesh size and escape panels on catch composition in the *Nephrops* creel fishery.

In 2010 trials to reduce cod by-catches in Shetland mixed demersal whitefish trawl fisheries were conducted by putting large meshes (300 and 600mm) in the front portion of a commercial trawl. The results showed that both test gears caught significantly fewer cod, hake, megrim and ling than the control trawl across all length classes and significantly fewer monkfish below 76 and 83cm respectively than the control trawl. The 300mm trawl caught significantly more haddock than the other trawls and catches of saithe greater than 53cm were reduced in both test gears.

CEFAS 2010/2011 Fisheries Science Partnership Project

The final year in the latest three-year commitment of Defra to the FSP initiative, and a further £1m has been allocated for the year.

Square mesh panels trials on twin/multi rig working inshore grounds in the northern Thames Estuary to investigate the potential of more selective/environmentally friendly fishing methods to reduce discard rates of fish and benthos in the northern Thames Estuary.

Bristol Channel 100mm cod end trials to understand the effects on landings and discards of moving to a 100 mm mesh cod-end compared with a standard 80mm cod end.

Cornwall red mullet gillnet fishery discard reduction trialling a range of nets.

Modified commercial trawl survey to know more about the behaviour of cod and other fish as they enter the net.

CEFAS 2009/2010 Fisheries Science Partnership Project

North Sea 'Eliminator' Type Gear Trials. To provide new information on comparative catch profiles of the 'eliminator' trawl to those from a conventional trawl fitted with belly cod-escape panels. This modification has been demonstrated to reduce the catches of cod by over 55% in a mixed North Sea demersal whitefish fishery.

South Wales Bass Square Mesh Panels. To reduce catches of undersized bass through the use of square mesh panels. A lower percentage of undersized bass were caught, the percentage of undersized bass was 11% of the total bass catch when using the experimental trawl and 30% when using the control trawl; the number of discards of other species caught per hour per haul was on average 14% lower when using the square-mesh section; in general, a lower number of fish of 30cm in length and below were caught.

Simple trawl modification to reduce cod catches. Design a demersal trawl modification to facilitate cod escapement in order to catch fewer cod and comply with conservation objectives in the North Sea. The trawl reduced catches of cod by over 55% in a mixed North Sea demersal whitefish fishery.

More generally:

- Square Mesh Panels: have dramatically reduced unwanted catch of either juveniles or by-catch of haddock and whiting.
- Benthic Release Panels: provide beam trawlers with a means to reduce discards and maintain the quality of their catch.
- Irish Sea Double Panel Project: trials to reduce discards of demersal species in the Nephrops fishery using a double square mesh configuration.
- Shrimp veils: permit the escape of small plaice and other species in this necessarily small mesh fishery.

2. Regulatory controls

Cod Catch Quota Scheme

In 2010, Defra and Marine Scotland introduced a voluntary pilot Cod Catch Quota Scheme (CCQS), where participating vessels must retain on board and land all cod that is caught, regardless of size and marketability. The Defra scheme is to count all fish against quota, regardless of size and marketability. A final combined UK report once the pilot has concluded should look to compare what, if any, difference in approaches can be identified. The Defra scheme is on a far smaller scale but covers different types of vessels and activities, and the comparative data from both trials will be invaluable. Those participating in the Catch Quota Scheme are now operating a fully documented fishery for cod.

Twenty three vessels, six in England and 17 in Scotland, took 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. 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.

In 2011 58 Scottish skippers have applied to join the Cod Catch Quota Scheme in Scotland and 26 have been approved. Defra opened applications on 21 January for fishermen in England who want to join the North Sea Cod Catch Quota Scheme and to take part in a new Catch Quota Scheme for Channel sole. Closing date was 21 February 2011. Last year the amount of additional quota set aside to run the scheme amounted to 5%, this year it will be 12%; vessels are limited to 30% additional cod quota. There will also be a trial in the South west sole fishery. In 2011 the trial is due to run from March to December.

3. Managing fishing effort

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. Designed to reduce mortality on concentrations of cod

using data from catches and tracking information from vessels, enabled an estimated reduction of 10% in cod mortality during 2009

RTCs

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.

Individual Vessel Cod Avoidance Plans (formal and informal)

To test the efficacy of cod avoidance plans in ensuring that vessels operate to restrict catches of cod to their quota allocations, through spatial, temporal and gear adaptations. Skippers use their own knowledge and experience to avoid cod whilst fishing for other species and while stocks rebuild.

Trevose Box Closure

An area of 3600 square miles off Padstow which closes each season to protect the spawning of fish such as dover sole and whiting. This agreement was secured by Cornish fishermen; working closely with their European counterparts. It provides protection for aggregations of spawning cod where and when they would be vulnerable and discards more likely.

4. Marketing

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, under its 'Fishing for the market' project, is working with industry to influence the market, remove barriers and create new incentives to improve sustainability for edible, under-utilised species.

Denmark

Change of regulatory system and the impact on discards

In 2007 a new regulatory system was introduced in the Danish fisheries – giving owners rights to the fishermen – and allowing transfers between vessels. The details of the system are not important for the purpose of this brief, but the consequence has been a reduction in fleet size from 1200 vessels to 700 vessels. This reduction in fleet size in itself has brought a reduction in discards, but above the effect of the reduced fleet *per se*, it is evident, that the former system, with all vessels fishing on biweekly or monthly rations and then discarding after having caught the ration, will have caused a much higher discard, than the present, where fewer vessels fish on a yearly quota and consequently only needing to discard once their yearly ceiling has been reached.

The system allows for fishers to join pools within which the transfer of quota from member to member is fast and not bureaucratic. Quota available in the pools is always on display and the system is therefore highly transparent.

First and foremost the transparency in the pools system allow the fishers to plan their fishery and acquire the necessary quotas before they start their fishing trip. This in itself reduces the need for discarding. Secondly, if a fisher catches fish for which he has not acquired quota, he is able to buy quota for a reasonable price (the fish are for sale “always” and the price does not go up in the particular situation). Thirdly, there is a system for transfers between pools, so even in the rare occasion where a pool has run out of quota for a particular species, more quota can be achieved from another pool. An analysis performed by the Danish Fishermen’s Association in late 2009 demonstrates that the flexibility of the system is utilized to a very high degree.

Other regulatory changes

The Danish MLS for a number of species has been set higher than the size stipulated by the Community’s regulations. Although the high Danish MLS was originally intended as a conservation measure, it became apparent that despite the good intentions, the result was perhaps a higher level of discards than was intended. In 2009 the Danish MLS was consequently reduced to that of the Community.

Awareness

Although fishers never liked to discard, discarding has been an accepted procedure for years unnumbered. There is little doubt however, that the increased focus on the consequences of this unfortunate routine has contributed to an increased awareness amongst fishers, which has lead to reduced discards. One consequence of the aforementioned cooperative data collection from the commercial fishery has been a high level of “peer pressure” and colleagues friendly invitation to improve performance in some high level discarding operations.

Development of selective gears

Selectivity has several aspects and therefore the term “improving selectivity” is not always very succinct. There are two main ways of changing the selectivity of a given fishing gear. One is to adapt the gear to avoid undersized specimens of a particular species, the other to reduce catch of other species.

When striving to reduce catch of undersized fish the general approach is to increase the mesh size, which certainly will reduce the proportion of smaller fish caught. The connected problem however, is that it will also lead to a reduced catch of fish above the legal size and thus affect the income of the fisherman who will then have to spend more time (fuel) to catch his quota.

The problem of selectivity in mixed fisheries is a constant challenge – in particular where high value species of small size are caught in a mixture with other species of larger size. Numerous Danish experiments have been undertaken – mostly in joint effort with scientists from DTU-Aqua. Examples of some of the more promising are the SELTRA-trawl with 330 mm square meshes in the upper side of the cod end, and the “Cut away” or topless trawl, where the headline is further back than the footrope (top allow gadoid fish to go over the trawl, whilst retaining the flatfish and crustaceans).

The use of pingers to reduce the bycatch of harbour porpoise has been a Danish focus area for many years.

In the Baltic the introduction of BACOMA- and T90-trawls has been undertaken with a high degree of support from the industry. Many fishers change gear (as well as mesh size) during the fishing seasons, in order to reduce catches of undersized fish the occurrence of which varies over the year.

Industry proposals for further actions

RTCs in a less top controlled system.

Year to year, and species to species flexibility.

Fixed closures – in periods and/or areas where discards occur in all years. Although many fishers avoid these areas in the relevant periods, some may not and closures can be an acceptable tool, where periods and areas can be identified.

The regulation of catch composition through the technical regulation which stipulates a maximum proportion of different species in a given mesh size is another driver of discards. Less focus on catch composition per day – should only apply at the time of landing.

France

Selectivity of gear

Programme in collaboration with IFREMER to improve the selectivity of multispecies trawls working in the North Sea and Eastern Channel:

SAUPLIMOR (2001), SELECMER (2009) and SELECCAB (2010): Testing the use of a selective grid and square mesh windows to limit catches of undersized whiting. The trials also involved testing a large-mesh trawl to avoid catches of cod. Testing continues with tests of a cylinder of 2m square mesh, placed in the extension (currently being tested elsewhere in the Bay of Biscay *Nephrops* fishery), expected in May to improve selectivity for whiting;

Programme EFFICHALUT (2011): Testing a new configuration of trawls with a view to saving energy, this trawl was also tested in January in the East Channel during a campaign at sea a week to see any benefits in terms of selectivity;

Selectivity of shrimp trawl: use of a selective trawl for shrimp fishing crisis on the Channel coast and the Atlantic.

Development of selective trawls for Norway lobster fishery in the Gulf of Biscay: further work on selectivity since 2009 under the Sustainable Fisheries Programme Selectivity and led by AGLIA. This program includes, in addition to testing new selective devices, a study on the survival rate of prawns.

Study by IFREMER to develop a selectivity grid for monkfish in the Celtic Sea

Spatial Measures

Until 2010: system for real time closures to limit catches of cod in the Eastern Channel;

French system of collective management of quotas: the management of pooled fishing rights (catch quotas, quotas, fishing effort and fishing licenses) can align the activities of vessels, improving fishing opportunities and providing a better recovery of the total catch.

Developing and marketing

Study AGRIMER France (2011) on the beneficial reuse of withdrawals and discards. The objective is to determine the alternatives to "manage" the releases on board, explore different avenues of recovery for possible release and to assess the economic consequences for producers.

Data Collection

-The Observer Program National Sea OBSMER, implemented by the Directorate of Marine Fisheries and Aquaculture (meeting the regulatory requirements of the DCF but also those of Regulation 812/2004. Regulation deep water species ...) was strengthened in 2009 and 2010 and allowed the collection of more information on catch composition and activity of various French fishing vessels.

The Netherlands

1. Discards monitoring as part of DCR (data collection registration). More than 25 ships participate to deliver discards data.
2. VDTN: Discards reducing modifications that were tested on a research vessel in 2007, 2008 and 2009 are further developed in this project. Final goal is introduce them in the Dutch beam trawl fleet.
3. Shark by-catch: a project aimed at gaining more insight in by-catch and landings of sharks and establishing a platform for sharing and transfer of knowledge on this subject.
4. A report that summarizes current knowledge and insights in discards of the Dutch beam trawl fleet; extent, effects and possibilities for discards reduction.
5. CCTV pilot: a pilot with camera's on board to reduce discards. The systems are being installed on the ships.
6. Discards network of practising fishermen: implementing rules that reduce the total impact on the ecosystem by implementing generic rules and development of a catch sorting device.
7. GAP2: Combining knowledge and skills of stakeholders & science to enhance the understanding and management of fisheries & the marine environment, case-study is discards.
8. Discard monitoring of flyshoot fishery: monitoring to gain understanding in discards in flyshoot fishery.
9. Discards think tank: fishing industry brainstorms to come up with practical solutions to discards problems, then discusses them with government and NGO's.
10. Research collaboration platform: a platform in which industry, government and scientists discuss ongoing research issues including discards

11. Industry discards research from 2004-2008: industry's own discards research to get better information on the amount of discards.

Belgium

Gear Selectivity

Several experiments have been carried out to find ways to reduce by-catches in beam trawls by technical gear alterations. Besides undersized commercial fish, attention has also been paid to non- commercial fish and invertebrates. All details can be found in the compilation report: Polet, H., Depestele, J., Van Craeynest, K. and Vandendriessche, S., 2011. An overview of sea trials with the alternative beam trawl. ILVO report 2011/01, Oostende, Belgium, 2011.

1.1 Cod-end modifications

Several cod-end modifications have been tested for their selective properties. The trials have been carried out on board of the research vessel Belgica but also on commercial trawlers. The alternatives often show clear advantages in terms of release of unwanted organisms. Practical problems, however, prevent a wider commercial application. Usually the availability of suitable (stable) netting material on the market is the main issue. Following were tested successfully:

- T90 Cod-end
- Square mesh cod-end
- Narrow cod-end

1.2 Benthos release panels

Extensive trials have been carried out with benthos release panels, on research as well as on commercial vessels. Good results have been obtained, mainly in releasing invertebrate catch. Occasionally problems were recorded with loss of commercial sole catch.

1.3 Alterations to the top panel

Different types of alterations to the top panel of beam trawls were tested ranging from partial square mesh, full top panel in square mesh, square mesh window, large diamond meshes or simply a cut- away top panel. Positive results were found for releasing whiting and haddock and to a smaller extent for cod. Flatfish losses were rarely recorded.

1.4 Separator panels

Two types of separator panels were tried in beam trawls, i.e. a horizontal panel and an inclined panel. Catch separation was possible in both cases although 100% (or close to) separation in species was not recorded.

1.5 T90 extension

The T90 extension did not give good results in terms of discard reduction. It did, however, reduce the problem of large amounts of sediment in the cod-end.

1.6 Trawls in Dyneema™ netting

Dyneema netting proved to be an interesting way of reducing the drag of trawls and is voluntarily used by several fishermen.

2. Monitoring And Evaluation Of Discards In The Belgian Fisheries Sector

2.1 Fisheries Science Partnerships Project:

Belgian self-sampling program: cod-avoidance in VIIf,g

On request and initiative of the Belgian fisheries sector, in close corporation with the Institute for Agricultural and Fisheries Research (ILVO), a self-sampling program was started to identify and monitor the impact of the Belgian beam trawl fishery on the Celtic Sea (areas VIIf and VIIg) cod stock and discards quantities. Since February 2010, fishermen of over 10 vessels are participating in the pilot project on a voluntary basis. The skippers and crew were trained by scientists of ILVO to follow a standard sampling protocol for collecting and recording data, i.e for stock composition and discard quantities.

This FSP Celtic Sea cod program aims to gather robust, accurate and detailed information on catches (landings and discards) of cod and to promote a better relationship between scientists and fishermen. In total 37 trips were sampled by fishermen in 2010. It seems that the Belgian self-sampling project allows a serious increase in spatial as well as temporal coverage and reduces the problems of very large raising factors based on scientific observer data only. Furthermore, the engagement of the industry in the collection of fisheries data is creating a better relationship between the scientists and fishermen and awareness with the fishermen regarding discards.

2.2 Project Fish2Fork

Marketing: the industry, the fish auctions and the Flemish Marketing Agency for Agriculture and Fisheries Products are introducing “wild, unknown” species to the training schools for Chefs. Chefs play an important role in marketing and introducing new species to the consumer. This project aims at creating a better knowledge and expertise for less known fish and to create a better price for the products.

2.3 Sustainability Sheets

Marketing: the Belgian processing industry has introduced the use of Sustainability Sheets for marketed fish. Through looking at the used gear technology, the status of the stock and the management systems in place for stocks, a traffic light system is used to flag out if the stock is harvested in a sustainable way. The monitoring and avoidance of discards is of crucial importance to allow a fish species to be marketed

by the processing industry. Furthermore, when the sector can present a fish with a positive evaluation, a better price could be negotiated.

2.4 General - ongoing projects

‘Convenant’ between Fisheries Industry and Authorities

The Belgian fisheries sector has committed to undersign and follow a ‘Convenant’ between the Industry, the Management, the Scientists and the NGOs. One of the main objectives of this ‘Convenant’ is to achieve a substantial long term decrease of discards by implementing correct gear technology, a close monitoring of the catches and by changing the mindset of the fishermen.

Data Collection Framework – (DCF)

Since 2002, there is a close corporation between the scientist and the fisheries sector in order to collect the data of catches and discards in order to comply with the DCF Regulation EC no. 199/2008. In this context the sector is fully cooperative in giving sea-going observers on the Belgian vessels access to information. As such, the fisherman is aware of the level of discards they have and mitigation measures are gradually implemented.

GERMANY

Has initiated a “Stopp discard”-project in the saithe and cod fisheries

German fishers respect the voluntary Scottish RTC-System

One vessel has started with a CCTV system on board.