



## **Demersal Landing Obligation Trial**

**Marine Scotland, November 2013**

### **Summary**

Marine Scotland invited a pair team of demersal vessels, using a mesh size of 120mm+ and fishing in the North Sea, to participate in a fully documented landing obligation trial for all demersal species. The vessels were awarded a quota uplift for a number of species in line with estimated of Scottish fleet discard rates and required to land all of their demersal catch as a trial of the discard ban, which is to be progressively introduced from 1 January 2016.

The trial provided valuable insight into some of the challenges ahead, particularly the pressure of choke species and financial consequences of leasing in quota to cover non-target and unwanted catches. It also allowed the operational deployment of Fully Documented Fishery Remote Electronic Monitoring (REM) technology, using CCTV cameras, to be successfully tested in a multi-species no-discard mixed fishery.

### **Background**

Marine Scotland has gathered a lot of experience of Fully Documented Fisheries using REM since its original pilot in 2009 and has been progressively improving the tool. A report of our previous trials, which were exclusively for North Sea cod, can be viewed at:

<http://www.scotland.gov.uk/Topics/marine/Sea-Fisheries/17681/CQMS082011>

In return for receiving additional quota, the participants agreed to bring on board, record and land all their catch of the catch quota species (including those under Minimum Landing Size which were also deducted from their quota allocation). The vessels were equipped with CCTV cameras and had to cease fishing in the North Sea when they had fully utilised any one of their available quotas. The tightly controlled catch limit for North Sea cod meant that effort control was not required to regulate mortality and so participating vessels had the flexibility to spend more time at sea, allowing them the opportunity to develop spatial and temporal avoidance techniques.

Marine Scotland acknowledges that there are multiple ways in which to manage a discard-free fishery. However, consider REM to be a significant tool in delivering the necessary levels of confidence in moving towards achievement of the key objectives of the landing obligation.

## Introduction

Marine Scotland has experience of trialling a single species discard-free fishery but there is limited data on multi-species discard-free fisheries, particularly in the mixed fisheries of the North Sea. Consequently, Marine Scotland believes that running practical trials will assist the Scottish Government and the seafood industry to assess viable options in implementing the full discard ban, and will inform how best to use the transition period before the ban comes into effect. Such trials may also help inform other Member States faced with similar challenges.

The Scottish fleet can be divided into four broad segments, which target different fisheries:

- i. demersal whitefish vessels, which target haddock but also catch cod, whiting and saithe and a variety of other demersal species including groundfish such as anglerfish and megrim;
- ii. *Nephrops* vessels, which target *Nephrops* but can also take a bycatch of whitefish (such as cod, haddock and whiting) and smaller amounts of dab, skates and rays;
- iii. pelagic vessels, which target mackerel and herring in relatively clean fisheries; and
- iv. vessels under 10m, which mainly fish with pots and creels variously targeting *Nephrops*, lobster and crab species.

Due to the mixed nature of the North Sea fisheries, we were particularly interested in the impact of the landing obligation on the North Sea demersal whitefish fleet, where a number of species are often caught alongside the normal target species of haddock. In particular, Marine Scotland wanted to get an indication of the extent of unwanted catch during current fishing practices, and whether additional quota equivalent to current Scottish discard estimates would be sufficient to allow fishing operations to remain profitable, whilst attempting to utilise all the available catch opportunities.

## Objectives of the Trial

The main objectives of the trial were:

- to identify the potential impacts of the landing obligation including, for example, any 'choke' species and the extent to which behavioural change could reduce unwanted catch;
- to provide information on the expected sizes and quantities of catches and subsequent increase in quantities landed to inform our work with the onshore sector to help them prepare for the landing obligation; and
- to build on our current experience from existing FDF schemes to help Marine Scotland work, in collaboration with vessels, towards the introduction of a workable demersal discard ban.

## **Participation in the Trial**

Marine Scotland invited all whitefish (TR1) vessels to apply to participate in a six month scheme (1 July – 31 December 2013) during which they would be required to land all of their North Sea demersal catch (i.e. cod, haddock, whiting, saithe, *Nephrops*, lemon sole, witch, plaice, hake, Northern prawn, anglerfish, megrim, ling, tusk, blue ling, dab and flounder, turbot and brill & skates and rays). Eleven applications were received, but due to resource constraints this initial trial was limited to two vessels; a pair team were randomly selected from the applications.

The participating vessels were already on Marine Scotland's North Sea cod FDF scheme, from which they were awarded 56 tonnes of cod quota (17% of 2012 landings) and increased effort. In addition, for the purposes of this no discard trial, the vessels were awarded additional quota by applying the estimated average discard rate of the Scottish fleet to their 2012 landings. This resulted in an additional 7 tonnes of ling (30% of 2012 landings), 4 tonnes of anglerfish (30% of 2012 landings), 190 tonnes of haddock (17% of 2012 landings), 7 tonnes of hake (62% of 2012 landings), 40 tonnes of saithe (24% of 2012 landings) and 10 tonnes of Norway others (10% of 2012 landings).

## **Progress of the Trial**

The participating vessels chose discard reduction gear that had a 130mm codend of 5mm double twine with no top or bottom chafers, which was a modified Orkney trawl with 300mm mesh in the top and bottom wing sheets and 300mm mesh in the top sheet.

The skipper informed Marine Scotland that the average size of haddock targeted by the Scottish fleet is smaller than cod, saithe and hake. Moreover, he reported that the widespread abundance of cod, saithe and hake on the grounds traditionally fished by the Scottish fleet meant that he found it challenging to catch his target haddock without catching these other species; he also noted that attempting to avoid either cod, hake or saithe often resulted in him catching one of the other species.

The skipper reported that he moved grounds whilst on the trial in order to try to avoid concentrations of hake, saithe and cod (a fishing pattern confirmed by VMS data). As the trial progressed the skipper reported that he could not target smaller haddock whilst using effective selective strategies for the other three species and remain economically viable. By the third trip the vessels had used all of their hake quota and within five weeks of the start of the trial the vessels had caught ~36 tonnes of hake. This was substantially beyond the level of catch the Producer Organisation could support as they had already exhausted their initial allocation of North Sea hake before August and could not source hake from elsewhere. Hake therefore proved to be a serious 'choke' species.

Furthermore, the skipper noted that it would cost ~£600/tonne to lease in additional saithe when the market price for small saithe was only ~£600 - £900/tonne. The skipper felt this would represent a net loss after the costs of crewing, provisioning

and maintaining the vessels were included, and so he did not believe that leasing in quota was an economically viable option.

A month into the trial, given the substantial challenges around hake and saithe, Marine Scotland offered the participating vessels the opportunity to convert some of their haddock quota uplift into saithe and hake in a way similar to our expectations for the quota convertibility provisions within the revised Common Fisheries Policy. Although the Producer Organisation was keen to try out this provision, the skipper felt that even this additional flexibility would (a) not be enough to cover the hake catches for the remainder of the year, and (b) would not allow him to remain profitable in a competitive market where others were still able to discard.

As a result of the enormous challenges of moving directly to a full landing obligation with only restricted flexibilities (which were necessarily limited given the need to operate within the current Common Fisheries Policy and without recourse to certain provisions which are not currently available) Marine Scotland agreed to allow the participating vessels to conclude the trial early. Despite this, the vessels remain on the North Sea cod FDF scheme to ensure that cod mortality remains constrained.

The short trial period of the trial limited the data on actual catches when operating under a landing obligation. As a consequence, an agreed condition of ending the landing obligation trial early was that the vessels were required to continue to record the discards of the two biggest problem species in this trial, saithe and hake, for the remainder of the year.

The saithe and hake which are to be discarded (due to lack of quota), including those below Minimum Landing Size, are placed into their respective baskets which, when full, are lifted into the clear view of the cameras before being discarded. The basket has an agreed nominal weight of 25 kg and the number of baskets of each species discarded is recorded. This process is carried out relatively quickly and Marine Scotland hopes it will improve the data on how much discarding currently occurs of these two choke species by vessels trying to avoid large catches of another species (in this case, cod).

## **Conclusions**

There are a number of key lessons learned from this trial, even though it ran for only a third of the expected time:

### **a) Choke species**

‘Choke species’ is generally understood to describe a species with a low quota, which once fully utilised would result in vessels having to stop fishing even if they still have quota for other species.

This trial showed that there are likely to be significant challenges in operating under a landing obligation due to choke species, even where current quota levels are increased by current discard rates relevant to the specific fishing fleet, which in some cases are higher than the average EU estimated rates. Whilst this was not

unexpected for hake, we were surprised as to how quickly it 'choked' the system – particularly due to a lack of available quota to lease/swap in.

Furthermore, the financial consequences of covering catches over and above the quota uplift became particularly apparent for saithe. The skipper reported that the cost of leasing quota approached, or exceeded, the price level for which the fish were sold, resulting in a projected financial loss once operating costs are taken into account for this species.

It is not possible to predict how these situations might differ when the entire EU fleet is subject to a landing obligation and when the flexibilities become available.

#### **b) Unwanted catch**

The trial showed that it is possible to be very selective with regards to juveniles, with very little catch below Minimum Landing Size even when whilst targeting small haddock. Approximately 1% of the catch in this trial was juvenile fish. The terms and conditions of the trial required that this fish could not be sold for human consumption.

Fish below Minimum Landing Size, damaged fish and fish otherwise unsellable were sold as bait to potters and creelers. It seems possible that this market could absorb considerable quantities of unwanted catch once the landing obligation comes into effect. This could be useful as catches below the new Minimum Conservation Reference Sizes (which replace the MLS) will not be able to be sold for human consumption.

#### **c) Enforcing a full landing obligation**

The FDF system used for this trial appears to be an effective tool capable of detecting discarding on demersal vessels. However, whilst the system also works well for a single-species discard ban (i.e. the North Sea cod FDF scheme), we have not yet trialled the system under a multi-species partial discard ban (i.e. just for cod, haddock, whiting and saithe), where the bulk of fish may create new challenges.

#### **d) Scientific data**

The short nature of this landing obligation trial, and limited participation, means that the data collected will not be sufficient to improve the science directly. However, Marine Scotland Science is continuing to progress a number of techniques utilising REM technology in order to provide the size comparison data and estimates of catch weight at the vessel level. For this to be of value in stock assessments, the vessel sampling across the fleet needs to be set up within a statistical design and not based on isolated examples. Furthermore, the 'basketing' system of monitoring saithe and hake discards, whilst operating on an FDF scheme with limited quota, has proven to be effective and verifiable.

## **Discussion and Next Steps**

Marine Scotland is committed to implementing the landing obligation as a means to ending the high levels of wasteful discards that occur in some fisheries – often for regulatory reasons. Although the landing obligation will be introduced progressively, this trial has clearly shown that there are significant challenges ahead in order to allow fishermen to adapt to a new way of working whilst remaining economically viable. Consequently, Marine Scotland believes that the limited remaining time before the introduction of the ban on discards should be used constructively to (a) improve our knowledge of the potential operational and economic impacts of the landing obligation, and (b) facilitate the transition towards discard-free fisheries.

Whilst we consider that any trials should be realistic with respect to the forthcoming landing obligation, we also believe that there needs to be flexibility for fishermen to experiment and adapt their current fishing practices ahead of the landing obligation. Consequently, it is essential that enough quota is available for pilot projects and trials in order to attract sufficient participation for the outcomes to be meaningful. If we are unable to fully trial the landing obligation and the associated flexibilities then we run a significant risk of seriously compromising its effective implementation and enforcement, and of alienating fishermen. It is also critically important to examine other elements of the management framework and handling of quota to ensure that adequate flexibility is also available there.

## ANNEX A – Landings and Observations from the Trial

During the six weeks of the landing obligation trial, the participating vessels predominately landed cod, haddock, whiting, saithe and hake (94% of the catch by volume and 93% of the catch by value). There was very little catch of other species, which consisted of (in order of decreasing tonnage): plaice, ling, catfish, anglerfish, lemon sole, pollack, megrim, halibut, dabs, witch, tusk, turbot and squid.

### Size composition on landings

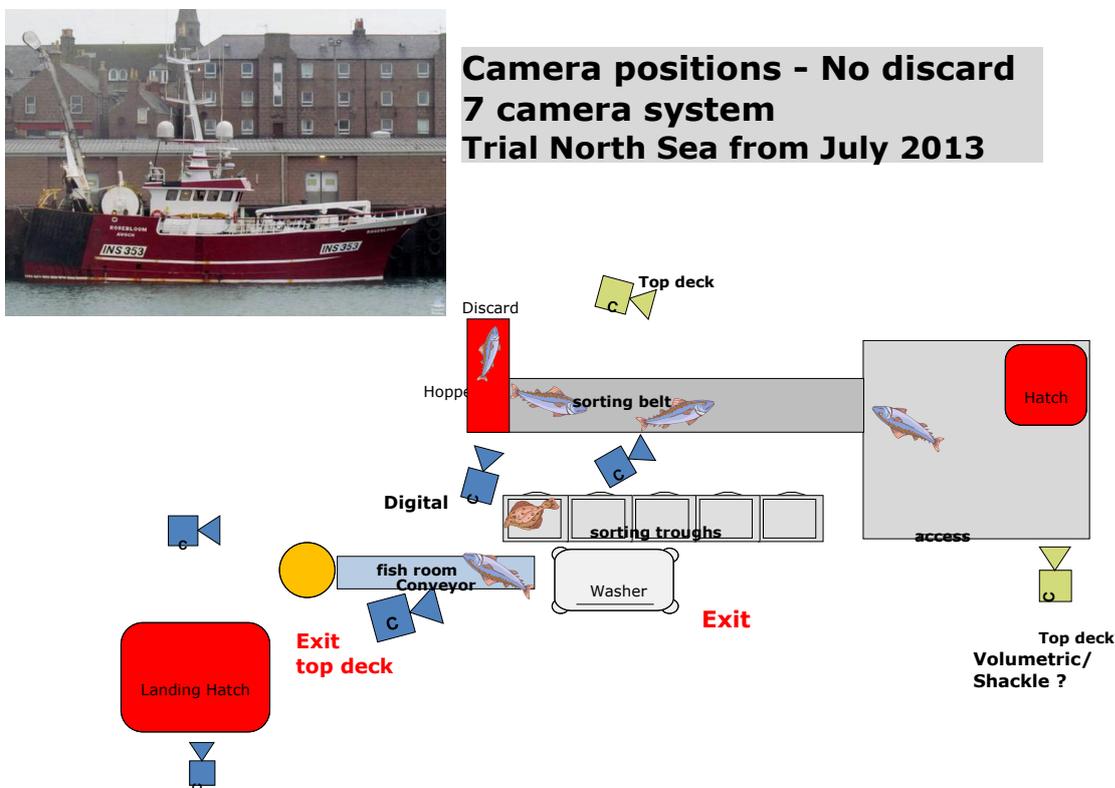
In comparison to the other vessels on the North Sea cod FDF scheme, the vessels on the landing obligation trial tended to land smaller sizes of fish than average, particularly of hake, saithe and whiting. The size composition of the key species landed is shown below:

Species	Percentage breakdown of size of fish landed						Tonnes landed
	0	1	2	3	4	5	
Cod - FDF Vessels	0.0%	9.5%	31.6%	28.6%	15.3%	15.1%	535
Cod Discard ban vessels	0.2%	7.6%	39.0%	19.3%	15.5%	18.4%	86
Haddock - FDF Vessels	0.0%	1.8%	10.3%	30.5%	57.4%	0.0%	1,092
Haddock - Discard ban	0.9%	6.8%	27.2%	40.0%	25.0%	0.0%	248
Hake - FDF Vessels	0.0%	24.4%	41.7%	26.2%	7.7%	0.1%	236
Hake - Discard ban	1.9%	12.8%	31.5%	41.5%	8.8%	3.4%	37
Saithe - FDF Vessels	0.0%	3.6%	16.2%	38.4%	41.9%	0.0%	511
Saithe - Discard ban	0.3%	9.7%	14.8%	9.7%	65.6%	0.0%	46
Whiting - FDF Vessels	0.0%	1.5%	29.0%	5.1%	64.2%	0.0%	244
Whiting - Discard ban	1.3%	2.9%	4.8%	7.5%	83.4%	0.0%	20

## ANNEX B – Remote Electronic Monitoring (REM) System

REM data consists of video footage from strategically placed cameras along with high resolution readings of vessel position, speed and trawling activity. REM data has been used extensively by Marine Scotland Compliance since 2009 however the use of REM to monitor mixed species trawl fisheries is a more recent development.

The landing obligation trial used the Archipelago Marine Research Ltd system with seven cameras. The trial posed different challenges to the cod-only FDF scheme; due to the increased analysis time required to verify the weight of the fish a different verification process was developed to provide the confidence that all the catch quota species were retained on board and only species not covered by the discard ban were returned to the sea (e.g. pelagic species or prohibited species). This new process focused on the exit points from the fish hopper. The schematic below shows the camera positions (marked as 'C') at the exit points, which are marked in red.



### Audit methods

This trial used a similar risk-based approach to that taken in the North Sea cod FDF scheme; analysed camera footage (10% of all activity taken at random) was compared with quantities recorded in the e-logbook. We are now confident that we have a tool capable of detecting discarding on demersal vessels for when the full landing obligation comes into effect (2019). Indeed, the vessels did discard fish towards the end of the trial as they felt they had no option due to lack of hake quota. This was detected by Marine Scotland Compliance. To further strengthen our verification process, Marine Scotland Compliance are also progressing work on volumetric and shackle trials to estimate total weight of catch coming on board; this could be an important tool in the future no-discard policy.