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Landing Obligation in EU Fisheries - part II (STECF-14-01)

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**SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES
(STECF)**

Landing Obligation in EU Fisheries part II (STECF-14-01)

**THIS REPORT WAS REVIEWED BY THE STECF BY WRITTEN PROCEDURE IN
FEBRUARY 2014**

Background

The introduction of the obligation to land all catches in the recent reform of the Common Fisheries Policy (CFP) (EU regulation 1380/2013) represents a fundamental shift in the management approach to EU fisheries. The new CFP introduces a switch from the monitoring landings as a measure of TAC/quota uptake to the monitoring and regulation of catches as an essential component of the landings obligation and also introduces regionalised decision-making into the management of EU fisheries.

The landings obligation included under Article 15 of the new CFP basic regulation prohibits the discarding of species subject to catch limits (i.e. TAC and quota species) and those subject to minimum size limits in the Mediterranean. It contains a number of exemptions are included, namely species not covered by catch limits; species where high survivability can be demonstrated and; limited volumes of permissible discards which can be triggered under certain conditions, the so called *de minimis* exemptions, as well as inter-species and inter-annual quota flexibility mechanisms.

Following joint STECF/ICES discussions on the landing obligation, a number of scientific and technical issues were identified as having significant implications for management implementation of the landing obligation requiring further analysis. STECF noted that these raised important considerations for the implementation of the regulation, catch forecasting, stock assessment and control and monitoring. The expert group (EWG 13-16) was set up specifically to explore these issues with the intention to provide advice and guidance for the Commission, Member States and the industry to assist in the implementation of the landing obligation.

During the meeting of this EWG 13-16 issues relating to survivability, de minis and quota flexibilities, data issues, control and enforcement issues and the formation of regional discard plans were addressed. However, it was agreed by EWG 13-16 that a further meeting was required to explore implementation issues surrounding the landing obligation. Given that the landings obligation will come into effect in 2015 for Baltic Fisheries for Salmon as well as fisheries targeting small and large pelagic species and industrial species, there is an urgent need to develop implementation guidelines for the Commission and Member States to facilitate the development of regional discard plans.

Request to the STECF

STECF is requested to review and comment on the findings presented in the Report of the EWG 13-17 in relation to the following Terms of Reference.

1. Develop guidelines to assist Member States in formulating joint recommendations that will form the basis of regional discard plans. These should articulate the information and minimum acceptable standards for the elements of the discard plans
 - a. Definition of fisheries; management units and timelines for implementation.
 - b. Exemptions on the basis of high survivability;
 - c. Provisions for *de minimis* exemptions
 - d. Provisions on documentation of catches;
 - e. Fixing of minimum conservation reference sizes
 - f. Identification of potential indicators for future impact assessments
2. Through worked examples test and refine the revenue to break even revenue ratio economic balance indicator', developed by EWG 13-16 to assess the *de minimis* conditionality of technical difficulties to improving selectivity
3. Develop guidelines for setting appropriate minimum conservation reference sizes and explore cases where they could justification for changing them compared to the current minimum landing sizes.
4. Through worked examples, identify circumstances leading to restrictions in fishing activity associated with restrictive quotas (choke species) and identify potential responses and options to minimise such situations.

Observations of the STECF

The Report of the STECF EWG 13-17 represents the findings of the second Expert Group meeting in a series of such meetings planned to address the implications associated with the implementation of the Landing Obligation, the provisions of which are prescribed primarily in Article 15 of the 2013 Reform of the Common Fisheries Policy (Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013).

The report provides further commentary on those issues listed in the Report of the EWG 13-16 (STECF 13-23) that were identified as requiring further investigation and clarification, notably the following:

- Definition of fisheries; management units and timelines for implementation.
- Exemptions on the basis of high survivability
- Provisions for *de minimis* exemptions
- Provisions on documentation of catches
- Fixing of minimum conservation reference sizes
- Identification of potential indicators for future impact assessments
- Analysis of potential chokes issues
- In addition the EWG 13-17 Report presents a more detailed discussion on candidate guidelines for the development of discard plans.

Conclusions of the STECF

The STECF concludes that the Report of the EWG 13-17 represents yet another important contribution to the identification and understanding of many of the key considerations that regional groups need to address when developing and assessing regional discard and management plans.

STECF also concludes that the EWG 13-17 adequately addressed the Terms of Reference, but notes that all potential issues have not yet been fully addressed and further exploration of some issues is still required. These include *inter alia*, further analysis of technical issues relating to the provisions on survivability and *de minimis* exemptions contained in Article 15 of the 2013 Reform of the CFP. There is a particular need to explore such issues in relation to the discard plans that are currently being developed for the Baltic Sea and for pelagic species, both of which are required to be in place by 1 January 2015. To this end, a third Expert Group meeting (EWG 14-01) is to be convened in Varese, Italy from 10-14 February 2014 with the following Terms of Reference:

1. Evaluate the various elements of the Baltfish draft joint recommendations. Identify areas where additional supporting information may be required.
2. Review the current scientific knowledge on the survival of salmon and identified small pelagic species and where appropriate, provide guidance on additional scientific information that may be required in support of applications for species specific exemptions based on high survival.
3. Develop an objective framework for setting *de minimis* levels taking account of the provisions of article 2 of the basic regulation (e.g. FMSY and Precautionary Approach considerations)
4. Review the control and monitoring issues associated with the documentation of catches to be specified in discard plans.
5. Test this framework using worked examples from Pelagic fisheries and the Baltic Sea.

STECF endorses the findings presented in the report of the EWG 13-17.

EXPERT WORKING GROUP EWG-13-17 REPORT

REPORT TO THE STECF

**EXPERT WORKING GROUP ON
Landing Obligation in EU Fisheries part II
(EWG-13-17)**

Dublin, Ireland, 26-28 November 2013

This report does not necessarily reflect the view of the STECF and the European Commission and in no way anticipates the Commission's future policy in this area

EXECUTIVE SUMMARY

Definition of fisheries; management units and timelines for implementation.

The Common Fisheries Policy regulation (EU regulation 1380/2013) provides different and phased timelines for the implementation of the landings obligation. In some cases, the time line is defined on the basis of the “fishery” with some species attached to them, in other cases, time line is defined on the basis of a list of species with some fisheries attached to them. This could allow for a landings obligation to apply to only e.g. cod caught in the directed fisheries for cod, haddock, whiting and saithe and not apply to cod caught in other fisheries e.g. for Norway lobster. Staggering the introduction of species depending on which management (fishery) unit may have some unintended consequences, for example from a control and catch documentation perspective if specific stocks are included or excluded depending on the fishery. An alternative interpretation could mean that only specific species are phased in over time, and that all fisheries irrespective of their overall contribution they make to catches of that species are subject to the landings obligation. Managers may want to consider that this may be more tractable from a control and monitoring perspective and would avoid the need to define management units based on specific catch profile.

Exemptions on the basis of high survivability

EWG 13-16 identified the type and utility of experiments that could be used to assess survival in the short, medium and longer-term. EWG 13-17 has identified the types of data that should be collated to support applications for exemption based on the notion of high survivability. EWG 13-17 reiterates that it is not possible to provide any judgement on what constitutes ‘high’ as this is a subjective term and is dependent on the survival rate at age and the age composition of the overall catch and the relative contribution discards make to it and whether exempting fisheries will remove the incentive to reduce discards which is considered the primary objective of article 15. Exemptions are likely to be metier specific which has implications in terms of the level of supporting information required in that exemptions should not only focus on the biological survivability of the species, but how the evidence of survival relates to the fishing activity and in turn how these metiers are defined in the regional plans. The data and information needed to provide reasonable scientific evidence of high survival in most cases will be substantive. The work presented in this report represents the initial considerations of EWG 13-17 but further work to develop more detailed guidelines is being undertaken by an ICES expert group (Workshop on Methods for Estimating Discard Survival (WKMEDS)).

Provisions for de minimis exemptions

The EWG 13-17 maintained the view that the spirit and general purpose of the *de minimis* provision (‘a small discard proportion’) is to provide a ‘safety valve’ allowing for some discarding in the most difficult circumstances. The application of *de minimis* should be considered only after other technical or tactical approaches to avoid capture of unwanted catch in the first instance have been exhausted (Recitals 29 & 31 EU regulation 1380/2013). As such, a large number of *de minimis* cases would not be expected to be found in forthcoming discard plans and, as with exemptions for survival, EWG 13-17 considers that a thorough review all the available options for reducing discards ahead of developing cases for justifying the conditionalities of the *de minimis* would be beneficial and it is suggested that a hierarchical or decision tree approach could be developed to identify *inter alia* – cases where there was an obvious or ‘easy’ solution, cases where changes in the quota management

approach would be beneficial, opportunities for quota exchange or the use of flexibilities, spatial avoidance measures or adoption of new more selective gears. EWG 13-16 concluded that on a purely technical basis, there is scope for improvements in selectivity (or fish avoidance using other methods eg spatial). The difficulty for most fishing operations is that such improvements may lead to losses in revenue or increases in cost, rendering the improvements 'difficult to achieve'. Several examples of situations where technical solutions potentially lead to reduced economic viability were tabulated in the previous report. An approach making use of the 'break even indicator' was proposed as a tool for evaluating potential *de minimis* cases and testing the first conditionality (EWG 13-16). This concept was explored further by EWG 13-17 through a worked example to show how the tool could be used by the regional groups. The analysis shows that the greater the increase in selectivity, the greater the decrease in revenue, and a resultant lower CR/BER estimate. It is worth noting however, that there are a number of other external factors that can affect the CR/BER such as fluctuations in fuel and quota leasing costs which may mean that in any given year the business may be generating more than enough revenue to break even (>1), and less so in others (<1). No consideration has been given to any potential increases in income that could be expected with quota uplift, and therefore could be viewed as a worst case scenario. The analysis is based on the use of average information and does not provide any indication of the scale of variability within a given fleet segment meaning that even if the average CR/BER estimate is positive, the fleet segment may contain individual businesses that have CR/BER ratios of less than 1. Notwithstanding, the potential of the CR/BER approach is to identify selectivity options which would result in taking a fleet from a position of being nearly always profitable position into a permanently loss making one.

Regarding the triggering of *de minimis* on the basis of "disproportionate costs" EWG 13-17 assumed that disproportionate cost is assumed and the issue is to arrive at some discard percentage which will be permitted for a particular gear in a specific fishery. The process of arriving at an acceptable discard percentage for different gears under an assumption of disproportionate cost is complex and depends on the specificities of each fishery. EWG 13-17 considered that defining specific values would be unhelpful. Instead, guidelines on the types of information to be considered and submitted in a regional discard plan were compiled. EWG 13-17 suggests that the following information should be presented in the regional discard plans. This should include: the management unit in terms of number of vessels; the target Species and unwanted by-catch species; the cause of disproportionate costs; the measures taken to reduce disproportionate costs; total annual catches by species for the management units; the total levels of unwanted catches; discard rate and the contribution to the total unwanted catches for all management units. Of primary importance is specifying the actual level of *de minimis* to be applied, which will need to be specified in the plan.

Provisions on documentation of catches

EWG 13-17 consider that regional groups need to consider this introduction of appropriate methods for on-board catch documentation and reiterates that the evidence thus far indicates that the current mandatory recording of discards in logbooks is unreliable and represents a gross underestimate of actual discards. This implies that consideration should be given to the introduction of additional methods for catch verification. EWG 13-17 notes that EU regulation 1380/2013 that "Member states shall ensure detailed and accurate documentation of all fishing trips and adequate capacity and means, such as observers, closed circuit television (CCTV) and others." Enhanced measures (such as those identified in 1380/2013) may be necessary on a case-by-case basis and in accordance with the level of risk posed by a given fishery or fleet. Where fleets from more than one MS share a common fishery, regional groups should consider the potential for a harmonised approach to monitoring requirements.

Consideration might usefully be given to altering the applicability of the current 50 kg threshold per species to < 50 kg per trip and assessing the potential unaccounted catch associated with different threshold levels. Regional groups should consider whether there is a requirement to reduce the threshold (vessel length) at which reporting in logbooks becomes mandatory or alternatively ensure that fisheries monitoring (observer) programs can capture this information independently through inter alia observers or electronic monitoring. Regional groups will need to establish a suitable means of monitoring the level of *de minimis* discarding where this applies to a given fishery. The degree of monitoring required should be assessed against the potential risks of the *de minimis* allowance being exceeded or where this flexibility may be open to abuse. EWG 13-17 considers that it would be preferable that the justification of the selection of the enforcement tools to support the provision of fully documented catches should be clearly indicated in the regional plans. Regarding high risk fisheries full monitoring (CCTV and/or observers) are the only control methods which seem to be effective to ensure all catches are documented and counted against quota.

Fixing of minimum conservation reference sizes

In line with the obligation to land all catches, there is a need to abolish current minimum landing sizes (MLS) and replace them by Minimum Conservation Reference Sizes (MCRS). While the basis of MCRS appear to be similar to the present MLS “*established with the aim of ensuring the protection of juveniles of marine organisms*” the obligation to land (and discount against quota) all fish below MCRS, if appropriately implemented, does introduce a strong economic incentive to avoid capture of fish below MCRS as those catches will consume available quota and/or will create difficulties of storage. However, application of MCRS across a broad range of species in complex mixed-species fisheries may result in substantial uptake in catches below MCRS if not appropriately aligned with the selectivity characteristic of the main gears. EWG 13-17 has identified guidelines to assist in the setting of MCRS, EWG 13-17 considers that plans should clearly state the objectives for setting MCRS and that the primary objective should be for the protection of juveniles. Plans should also specify the metrics to be used to measure protection of juveniles, for example through the reduction in fishing mortality on juveniles to a specified rate. If there is no provision to include a MCRS in the plan for stocks for which a MLS currently exists or conversely where no MLS exists and there is a desire to introduce a MCRS, provision of supporting information to justify the absence of a MCRS would inform the decision on whether to accept such a provision. Plans should provide information to demonstrate that the introduction of the proposed MCRS is likely to achieve the stated objectives. Such information, where possible, should include results of simulations. EWG 13-17 notes that there are a variety of issues that regional groups may wish to take into account when considering the desirability of introducing a MCRS, these include the setting of MCRS for market considerations, limiting the supply of particular size ranges to prevent oversupply; social or ethical reasons e.g. minimising catches that cannot be sold for human consumption; biological and ecological considerations e.g. to encourage a change in exploitation pattern for example to realise the growth potential of the stock and/or to reduce the fishing mortality on juveniles.

Identification of potential indicators for future impact assessments

There was insufficient time available to fully consider potential indicators for future evaluations of the landing obligation and to assess the performance of individual regional discard plans. However, EWG 13-17 consider this is an important aspect that should be considered within regional discard plans and work should progress on this aspect and this might be best achieved through a dedicated expert group or contract.

Analysis of potential chokes issues

The available studies of the potential impacts of choke species suggest that there is a risk of choke species having a large negative effect on fishing if access to quota issues cannot be resolved. In many cases there may be businesses unable to continue trading and large quantities of quota uncaught if choke species take the effect highlighted in these reports. In some cases, substantial changes in practice will be required in order for businesses to remain profitable while observing the landings obligations. All methods used in the analyses considered relied on very important assumptions which may not represent the reality, and, depending on the assumptions used, may lead to very different conclusions. However, without a large margin of flexibility there could possibly be a substantial and unsustainable loss in profitability for vessel businesses. The interpretation of the regulation, particularly the application of *de minimis* allocations, may have substantial effects on businesses as a consequence, the prospect of going out of business would clearly generate a substantial incentive for individual business operators not to comply with the landings obligation and compliance issues should be considered in light of identified expected choke species. Objective 1 of the CFP requires that fishing should deliver economic and social benefits and be done in such a way as to be environmentally sustainable. Article 15 of CFP reform might prove inconsistent with this objective if many vessel businesses cannot continue to trade and much of the agreed quota remains uncaught due to the effects of choke species. Quota swaps between MS might become more difficult to achieve because MS that previously were willing to swap away quota, may now need that quota to prevent the species from becoming a choke species. The problem and solutions vary by MS according to how they variously manage their allocation of quotas to vessels / businesses. MS and Producer Organisations that operate tradable quota units will have different solutions than those that have equal monthly catch allocations per vessel, non-tradable and not time flexible. Different species may choke different individual vessels and / or groups of vessels operating in the same sea areas, depending on how access to quota is allocated.

1 INTRODUCTION

The basic regulation of the Common Fisheries Policy allows for cooperation between Member States on conservation measures at a regional basis (article 18), the so called regionalisation of the CFP. It is envisaged that the landings obligation, a central tenant of the CFP reform, should be included as part of more encompassing multi-annual (multi-species/mixed-fisheries) plans (articles 9 and 10). However, institutional issues with co-decision between the European Parliament and the Council of Ministers, has slowed the delivery of these. In order to facilitate the introduction of the landings obligation in accordance with the timelines specified in article 15.1, alternative provisions are available for the development and implementation of time-limited (3 years) ‘stand-alone’ discard plan until such time that the landings obligation can be incorporated into multi-annual management plans (article 15.6).

Article 15.5 allows for Member States, in consultation with the Advisory Councils, to submit joint recommendations (discard plans) for the implementation of the landings obligation to the European Commission describing specific provisions, aligned with the specifications of article 15.5 (a)-(e). These should articulate the specific details on how the plans are to be implemented, including details on the fleets and species covered, proposals for exemptions based on high survival; provisions for *de minimis* exemptions; provisions for the documentation of catches and the fixing of minimum conservation reference sizes.

Member States have an obligation to ensure that any joint recommendations are based on the best available scientific evidence and that they fulfil a number of requirements and that the recommendations are compatible with the objectives and quantifiable targets specified in Article 2 of the basic regulation (Article 18.5(a)). If the provisions are not deemed to be in accordance with these, then the Commission may submit alternative plans (Article 15.7).

The role of STECF in this process is to provide support, when requested, to the Commission on the application of the basic regulation (article 6.2). To this end, STECF has been requested to provide comment on a number of issues relating to the implementation, catch forecasting, stock assessment and control and monitoring. In particular, EWG 13-16 commented on issues surrounding exemptions, flexibilities and catch documentation elements of the provisions of the landings obligation. The conclusions of EWG 13-16 highlighted that there are a plausible range of interpretations associated with some of the provisions and depending on interpretation, which depending on how they are implemented, could result in unintended or unwanted circumstances.

Given the timelines for the introduction of the landing obligation (article 15.1) and the regionalisation provisions, a number of initiatives to develop regional discard plans are already underway within and between Member States and also by Advisory Councils. The specificities of these are known to vary in terms of detail and content and this is simply reflective of the state of progress, as well as the need and desire to develop discard plans in the absence of specific guidance on the specific details that may be required for subsequent evaluation. To this end, EWG 13-17 was convened by the Commission to draft a series of guidance notes that could be used by those responsible with the drafting of discard plans.

These guidelines articulate the types of data and information that may be required in order to assess the appropriateness of the plan and whether the plan is in accordance with the general provisions of the basic regulation. It is stressed that the contents of these guidelines are based on expert scientific opinion from the first meeting convened to consider the data and

information needs. As such, these guidelines should only be considered as a first step in an evolving process and will undoubtedly be modified and refined as the process of developing discard plans evolves. By necessity, the guidance notes are generic and may not be fully applicable to every situation. It should be noted that it is not the intention of this document to identify the specific details of discard plans in a prescriptive sense; these details are the responsibility of those making the joint recommendation. However, this document may be useful as guidance to the standards and level of detail that may be required for future evaluation of discard plans by the the European Commission for approval and implementation through delegated acts.

2 TERMS OF REFERENCE FOR EWG-13-17

Background

The introduction of the obligation to land all catches in the recent reform of the Common Fisheries Policy (CFP) (EU regulation 1380/2013) represents a fundamental shift in the management approach to EU fisheries. The new CFP introduces a switch from the monitoring landings as a measure of TAC/quota uptake to the monitoring and regulation of catches as an essential component of the landings obligation and also introduces regionalised decision-making into the management of EU fisheries.

The landings obligation included under Article 15 of the new CFP basic regulation prohibits the discarding of species subject to catch limits (i.e. TAC and quota species) and those subject to minimum size limits in the Mediterranean. It contains a number of exemptions are included, namely species not covered by catch limits; species where high survivability can be demonstrated and; limited volumes of permissible discards which can be triggered under certain conditions, the so called *de minimis* exemptions, as well as inter-species and inter-annual quota flexibility mechanisms.

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During the meeting of this EWG 13-16 issues relating to survivability, de minis and quota flexibilities, data issues, control and enforcement issues and the formation of regional discard plans were addressed. However, it was agreed by EWG 13-16 that a further meeting was required to explore implementation issues surrounding the landing obligation. Given that the landings obligation will come into effect in 2015 for Baltic Fisheries for Salmon as well as fisheries targeting small and large pelagic species and industrial species, there is an urgent need to develop implementation guidelines for the Commission and Member States to facilitate the development of regional discard plans.

Specific Terms of Reference

5. Develop guidelines to assist Member States in formulating joint recommendations that will form the basis of regional discard plans. These should articulate the information and minimum acceptable standards for the elements of the discard plans
 - a. Definition of fisheries; management units and timelines for implementation.
 - b. Exemptions on the basis of high survivability;
 - c. Provisions for *de minimis* exemptions
 - d. Provisions on documentation of catches;
 - e. Fixing of minimum conservation reference sizes
 - f. Identification of potential indicators for future impact assessments
6. Through worked examples test and refine the revenue to break even revenue ratio economic balance indicator', developed by EWG 13-16 to assess the *de minimis* conditionality of technical difficulties to improving selectivity
7. Develop guidelines for setting appropriate minimum conservation reference sizes and explore cases where they could justification for changing them compared to the current minimum landing sizes.
8. Through worked examples, identify circumstances leading to restrictions in fishing activity associated with restrictive quotas (choke species) and identify potential responses and options to minimise such situations.

3 TOR 1A - DEFINITION OF FISHERIES; MANAGEMENT UNITS AND TIMELINES FOR IMPLEMENTATION

Article 15(5a) of Regulation (EU) 1380/2014 defines the first element that can be included under a regional discard plan as, "specific provisions regarding fisheries or species concerned by the landing obligation". EWG 13-17 takes this to mean the definition of fisheries and timelines for implementation within a discard plan following clarification by the Commission.

Definition of Fisheries

The approach taken in discard or multiannual plan requires the definition of management units to differentiate fisheries/fleets/metiers. In this regard Regulation (EU) 1389/2014 uses the generic term "fisheries" as the management unit in the context of formulating discard plans throughout Article 15 without defining what is actually meant by "fisheries". In seeking

to prepare discard plans for regions, MS should consider what groups or combinations of vessels, species, areas, and gears they are including in separate plans. Where possible it can be helpful to avoid use of the word “fishery” and instead say more precisely what is meant, e.g. fleet segment or vessels, or activity by vessels fishing mainly for [species] in [area].

In para 15.1.a) four bullet points start with “fisheries for [list of species]”. So in this case the word “fishery” seems to refer to the activity aimed at catching those fish species. The implication of interpreting it this way is it means that all species subject to catch limits that are caught by those fishing activities shall be recorded landed and counted against the quota where applicable (where there is a quota). Therefore, if vessels engaged in catching small pelagic, large pelagic, industrial species and salmon in the Baltic, have unwanted catches of, for example, demersal species subject to catch limits, then those demersal fish shall also be subject to the landings obligation because they are caught by a pelagic “fishery”. It seems clear that para 1.a) does not only refer to the species listed, but to all species caught by vessels fishing for the species listed.

Para 15.1.b,c,d) have a different construct than para 15.1.a). They refer to species that define the fisheries at one date and then at a later date, all other species in the named sea areas. Noticeably, no species are explicitly listed for the Baltic Sea (1b) and for the Mediterranean/Black Sea (1d), whereas there are some species mentioned for the North Sea, Northwestern and Southwestern waters. However, this notion of a fishery “for” certain species implies that the operator of the vessel is intending to catch a certain species or group of species, and therefore the phrase “fishery for” implies knowing the intention of the vessel operator on any specific fishing trip or even any specific tow of the nets. It is for example conceivable that in the North Sea, a vessel operator might intend to catch a mix of cod, haddock, whiting and saithe, but would also expect to catch some quantity of hake in the same tows of the nets. How to define or record the intent of the vessel operator in terms of what species are intended to be caught in any individual trip or tow of the nets could be a challenge for those drafting discard plans. Certainly if there is a discard plan for some selected species during the period 1 January 2016 to 31 December 2018, it seems that it could be legal to discard any species that the vessel operator states was not the intended species to be caught, even if there is evidence from previous similar activities to show that those species will almost inevitably be caught.

The date for pelagic species to be subject to the landings obligation is 1st January 2015. The discard plan for mackerel is for mackerel and not for any specific types of gear . However, a problem arises for the potential non-pelagic bycatches. Paragraph 1.a) can be interpreted to mean that any non-pelagic species bycatch that is subject to catch limit is also subject to the landing obligation, if the operators are expecting and intending to catch pelagic species and therefore the “fishery” (vessels, area, activity, intended catch) is classed as a “small pelagic fishery” or “large pelagic fishery”. Alternatively , the timeline of 1st January 2015, specified in para 1.a) could be taken to mean that only the pelagic species of catches by vessels whose operators are aiming for pelagic species and not the accidental bycatch, are subject to the landings obligation.

This issue will for example be important for the mixed demersal/pelagic fisheries as practiced in the South western waters, which cannot easily be classified as either pelagic or demersal, therefore the implementation timeline is unclear. Also, some fisheries like Hake fisheries in North Western waters can have some by-catch of small pelagics and will therefore not enter the landing obligation until 1st January 2016 as the species defining the fisheries are predominantly demersal species like Hake, Monkfish or Megrim.

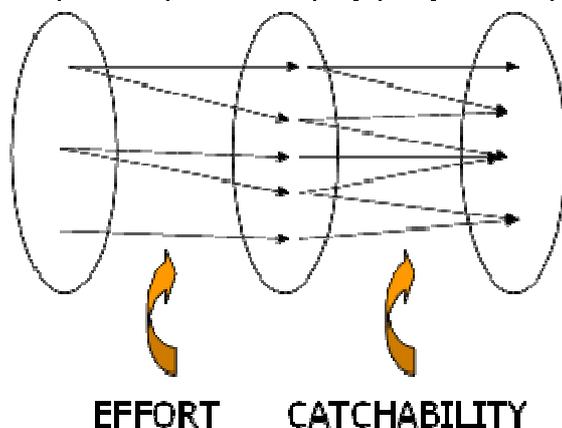
For the fisheries other than pelagic and Baltic, Para 1 a) to d) give dates by which the landings obligation shall apply to fish caught in the sea areas and to the species or by the fisheries listed. In para 1.c) there is a clear date, 1 January 2016, by which the landings obligation should apply to species which define the fisheries to be included. However, the regulation gives a much later date, 1 January 2019, by which all other species, which are subject to catch limits, must be subject to the landings obligation and therefore also included in the appropriate Discard Plan(s). Regional Discard Plans should explicitly state which species that are not listed but which are also caught in those sea areas are subject to catch limits. Discard Plans should specify the date (no later than the specified date) by which landings obligations shall apply to those other (not listed) species.

Several management units at the level of fishing vessels and fishing activities are commonly used in fisheries management. The Data Collection Framework (DCF) is based on the collection of scientific data on two types of management unit:

- A fleet (or fleet segment) being a group of vessels with the same length class and predominant fishing gear during the year. Vessels may have different fishing activities during the reference period, but might be classified in only one fleet segment.
- A métier being a group of fishing operations targeting a similar (assemblage of) species, using similar gear, during the same period of the year and/or within the same area and which are characterised by a similar exploitation pattern.

As such, the fleet describes the vessels while the métier(s) describes the fishing activity in which the fleet engages (Figure 1). Both concepts are complementary in capturing the diversity and flexibility of fishing operations.

Fleet (vessel) Métier (trip) Species (catches)



Fleets and métiers are aggregations of individual operations and vessels and as such are not natural entities with obvious boundaries (like, e.g. a species). Each vessel (and each trip, respectively) is unique in terms of catch rate, fishing type, profitability, incentives, etc., it is very difficult to provide simple and meaningful averages and to identify key fishing patterns. Grouping and averaging depend upon the desired management scale and grouping criteria used. It has been shown that in many cases, the link between fishing trip inputs (e.g. gear, mesh size, area) and fishing trip outputs (catch composition) is unclear, especially in demersal mixed fisheries. This implies that a given fishing trip /fishing vessel might end up in very different categories if fisheries are defined by gear and mesh size or by target species. Additionally, classifications based on target species (“fisheries for Norway lobster”) suffer from several major hindrances: i) available data at the scale of the fishing trip reflect only what has been landed, and not what has been caught, the difference between both being

linked to selectivity, markets and regulation aspects; ii) catch data reflect the actual outcome of the trip, but this may differ from the intended target, iii) the classification of the trip into a target-based fishery can only be done a posteriori after the trip has taken place, which limits how such fisheries can be managed, iv) different species might be targeted in individual hauls within the same trip; and v) many trips will de facto catch a range of species in varying proportions, ending up in unclear boundaries between target fisheries (for example, is a trip with 40% *Nephrops* and 60% whitefish significantly different from a trip with 60% *Nephrops* and 40% whitefish?).

In considering what management unit regional groups should use within a discard plan there are a number of factors that needed to be considered.

If regional groups choose to follow a species based approach irrespective of which fisheries they are caught in, then there is little need to define management units (fleet segments or métiers). Following such an approach the only real main requirement for defining management units would be for implementing specific exemptions to the landing obligation (e.g. *de minimis* or high survivability exemptions).

If, however, regional groups choose to phase implementation based on fisheries rather than species then it will be necessary to identify fleets or management units with homogenous catch patterns in much greater detail. However, in this case EWG 13-17 underlines that trade-offs will need to be made between the precision and the number of management units that can be easily defined. EWG 13-17 suggests three levels with varying degrees of complexity:

- (i) stock (i.e. species*area) level,
- (ii) stock*gear level
- (iii) stock*gear*targeted fishery level.

In the first case, definitions and rules are few and simple, but they disregard the major differences in discards rates and technological challenges across groups of users.

In the second case, considerations are given to differences in discarding rates across gears, and are also easy enough to enforce if gear categories are directly linked to information available in logbooks. However, in mixed fisheries as pertain in the North Sea, this may lead to a great number of plans to enforce and control (as a matter of illustration, in the ICES MIXFISH analyses, which include the main assessed demersal stocks in the North Sea, Skagerrak and English Channel, 43 fleets segments are defined over the various countries (9), main gear (5) and, sometimes, vessel size class (up to 3); These fleets engage in one to four different métiers (defined as mesh size*area, e.g. TR1 in North Sea and TR2 in Eastern Channel), resulting in 118 combinations of country*fleet*métier*area catching cod, haddock, whiting, saithe, plaice, sole, *Nephrops* and hake). That number would be reduced if the discard plans are regionally (sea basin) and not nationally defined but even so the number of potential management units is relatively large.

In the third level where criteria other than gear/mesh size/(vessel size) are used to define a fishery/management unit (e.g. distinguishing between saithe targeted fishery vs. cod targeted fishery), great flexibility can be used for defining target action that is tailored to local circumstances. However, such an option would suffer from three major difficulties: the multiplicity of plans to manage and control; the difficulty to quantitatively and objectively define rules for identifying which activity belongs to which fishery; and the risk for regional unbalance in the level playing field.

Based on this analysis EWG 13-17 suggests regional groups think carefully about the approach they take (i.e. species or fisheries based) and take cognisance of the implications of

the potential complexities before defining management units. EWG 13-17 considers the following should be identified:

- Where and for which purpose specific management units are needed (e.g. survivability and/or *de minimis* exemptions)
- If the units are linked to vessels (“fleet segments”), fishing activities (“métiers”) or both
- If the units are specific to a subset of Member States or apply across the whole region/area
- If the units are linked to a given gear/mesh size throughout the year or if they are specific to given seasons and/or given areas and/or given types of fishing patterns within this gear/mesh size category
- If there is sufficient data to specifically evaluate the basis for exemption of these units within the current data collection frames, and if not, whether specific monitoring will take place (e.g. through self-sampling or specific studies)
- How a fishing vessel and/or fishing activity can be eligible for belonging to that Use of the word “fishery” (and “fisheries”) can sometimes lead to lack of clarity about its precise meaning as this word or concept is used variably by different people to include aspects of vessels, vessel types, gear, fishing activity, species or stock and location. Rules should be checked for applicability on available data

3.1.1 Learning from the past: definitions issues in the first Effort Management Plans 2003-2008

In providing guidance for regional groups in defining the appropriate management units EWG 13-17 considers it useful to learn from previous attempts to define specific management units.

Effort restrictions (days at sea) were first introduced in 2003 to supplement TACs in areas covered by the cod recovery plan (EC, 2004), and were updated annually afterwards. Subsequently, similar effort restrictions were introduced in relation to southern hake and *Nephrops*, western channel sole and sandeel fisheries. Management units (fisheries) for days at sea limits were defined in terms of gear type and codend mesh size combinations. ‘Special condition’ categories were also defined such that a vessel qualifying for such status would be entitled to a greater number of days at sea than the default value for the same gear-mesh size group. These categories were initially designed and implemented over a very short period of time and without any clear scientific basis. Subsequently, STECF expert groups were tasked to evaluate the effects of these regulations, requiring extensive compilation of effort and catch data aiming to match that hierarchy of gear, mesh size and special conditions. These exercises proved to be difficult, time-consuming, error-prone and inconsistent across EU Member States, mainly because the scientific data, collected following DCF standards, did not contain as precise gear descriptors as required by the effort regulation.

Furthermore, the implementation of the days at sea system led to strong protests from the fishing industry questioning both its fairness and its basis. As cod is caught by most gears in the areas under the cod plans, most demersal fisheries were affected by the system, regardless of whether they were actually targeting cod or not. The industry considered this conservation measure to be neither efficient nor fairly shared, and protests pressured the Member States to exempt some of their fleets. This resulted in increasingly detailed micromanagement, and an even more complex set of regulations that basically changed every year (Table 1).

Table 3-1 Overview over the number of regulated gear categories (top value) and corresponding ‘special conditions’ (bottom value) by year in the EU Cod Management plan for the North Sea, Skagerrak and Eastern English Channel. Column in grey is the “new” cod plan 1342/2008. (From ICES, 2009)

Gear type	2003	2004	2005	2006	2007	2008	2009
Demersal Trawls, seines, towed gears	3	3	3	5	5	5	3
	-	2	4	15	17	17	-
Beam trawl	1	1	1	4	4	4	2
	-	-	1	5	5	5	-
Static demersal nets	1	1	1	-	-	-	-
	-	2	2	-	-	-	-
Gillnets	-	-	-	2	4	4	1
	-	-	-	1	1	1	-
Trammel	-	-	-	1	1	1	1
	-	-	-	1	1	1	-
Long lines	1	1	1	1	1	1	1
	-	-	-	-	-	-	-
Total	6	10	13	35	39	39	8

In 2008, the system was no longer considered sustainable, controllable and effective by the EU, and a complete new approach for effort control was agreed with Member States. This moved from limitations at the level of the individual vessel and métier to limitations at the level of the Member States over broader gear/mesh size categories, thus allowing for more flexibility. Additionally, some bottom-up mechanisms aiming at encouraging cod-avoidance behavior in the fishing industry (articles 11 and 13) were introduced alongside the existing top-down rigid effort categories by gear type. These exemptions mechanisms are not linked to a pre-agreed definition of gear, but are results-based mechanisms requiring that exempted fisheries demonstrate that the de facto catch low amount of cod. Four years later, it is noticeable that no proliferation of sub-categories has yet occurred, compared to the previous system.

The conclusion is that as long as métiers are to be used for scientific and monitoring purposes without regulatory consequences, the issue of definition and quantification, although not easy to resolve due to the questions listed above, will stay within the scientific remit and will likely not lead to political disputes. On the other side, disputes on definitions issues are more likely to pop up when categorization start forming the basis of top-down regulations, where different subset of users are imposed different levels of restrictions. Obviously, the more mixed are the fisheries in question, the more difficult will it be to agree on management definitions.

Timelines

Article 15 provides different and phased timelines for the implementation of the landing obligation which depend on the region, type of fisheries¹ and species concerned. In some cases, the time line is defined on the basis of the fishery with some species attached to them (15.1a), in some other cases, the time line is defined on the basis of a list of species with some fisheries attached to them (15.1c). For the Baltic Sea (15.1b) and the Mediterranean and the Black Sea (15.1d), no species list is provided. Where specific fisheries are identified with an attached list of species, the implementation is relatively clear (and there are no phase-in provisions given in any case). Where phase-in provisions are given and these are associated with a list of species with some fisheries attached, the interpretational issues are more substantial.

Using the example of 15.1(c)(ii), which specifies the implementation for demersal fisheries in the North Sea, there are a number of possible scenarios that could be envisaged.

- (c) From 1 January 2016 at the latest for the species which define the fisheries and from 1 January 2019 at the latest for all other species in:
- (i) the North Sea
- fisheries for cod, haddock, whiting, saithe;
 - fisheries for Norway lobster;
 - fisheries for common sole and plaice;
 - fisheries for hake;
 - fisheries for Northern prawn;

One possible interpretation is that this could allow for a landing obligation to apply to only e.g. cod caught in the fisheries for cod, haddock, whiting and saithe and not apply to cod caught in fisheries for *Nephrops* for example. Staggering the introduction of species depending on which management (fishery) unit may have some unintended consequences, for example from a control and catch documentation perspective if specific stocks are included or excluded depending on the fishery.

An alternative interpretation would mean that only specific species are phased in over time, and that all fisheries irrespective of their overall contribution they make to catches of that species are subject to the landings obligation. Managers may want to consider that this may be more tractable from a control and monitoring perspective and would avoid the need to define management units based on specific catch profile. Defining management units based on catch profiles will always present boundary issues between units, and can also offer an incentive to switch between management units to avoid short-term inclusion in the landings obligation. Furthermore, article 15.1(c) refers to “*species which define the fisheries*”, which is somewhat ambiguous. Articulating which species defines a fishery is a matter of perspective, which could be viewed from an economic, a biological or a gear standpoint. Furthermore, the significance of a particular species (in the context of defining a fishery)

¹ The term “fishery” is somewhat ambiguous and is a rather loose concept and may need to be more precisely defined in management plans (see section **Error! Reference source not found.** for further comment).

could be considered in terms of volumes caught or in terms of conservation status e.g. vulnerable species could be considered as defining a fishery if specific management actions are required for conservation purposes.

3.1.2 *De minimis and high survivability*

It is important to recognise the added complexity for defining management units introduced by the inclusion of *de minimis* and high survivability exemptions. These can be considered "a right to discard". This is a valuable right that vessel operators will want to secure because it can enable and legalise a certain amount of high-grading, which will increase their value per tonne landed. If a right to discard is created in a discard plan, then thought must be given to how that valuable right is allocated among individual businesses. If there are different rules or different enforcement regimes between different groups, then one will be deemed to be more attractive to business owners and the different sets of rules therefore create an incentive to be managed under the more attractive set of rules. So, for example if operators of vessels under 10m don't have to complete a log book and declare their landings, then owners of vessels just over 10m, will trade their vessel for one that is 9.99m long, in order to be able to operate under the more attractive set of rules. This "threshold effect" has been observed and is predictable.

The direct impact of differentiated discards plan by fishery is an important issue. A top-down imposed categorisation will lead to the same disputes and vicious circles as in the first cod plan. Therefore, regional groups should privilege a bottom-up approach where i) Member States would first suggest which specific fisheries they would like to consider, and how these can be evaluated and monitored on the basis of existing scientific data, and ii) a regional approach would address afterwards both a standardisation of definition of those national fisheries which are broadly common to several Member States, and, if needed a recognition of specific fisheries that are indeed practiced by specific Member States only. A similar approach has been for example followed by North Sea scientists in defining the fisheries used for bringing together national data into integrated datasets for the purposes of stock assessment and mixed fisheries advice.

3.1.3 *Phased inclusion of species*

For the various sets of fisheries and areas defined in articles 15.1.a-d, Member States could therefore

- Identify the exhaustive list of species/stocks concerned, including also, beyond the target species already listed in the regulation (if any),
 - demersal bycatches in pelagic fisheries or pelagic bycatches in demersal fisheries (if relevant)
 - All TAC stocks
 - stocks subject to international agreements
- Establish which of these have an early and established time line (first priority list)
- Agree on the principle whether landings obligation for remaining species should be introduced gradually or all at once.
- If a gradual introduction is preferred, establish a second priority (i.e. those not specifically listed in the regulation) list based on e.g.
 - jointly managed stocks

- stocks with high levels of discards
- stocks caught by a large variety of gears
- stocks with poor biological status
- stocks with low discards survivability
- stocks managed in combined TAC and/or strongly associated to the target species
- Establish an explicit time line for each individual species/stock in the list, no later than the latest time line expressed in the regulation.

Examples of implementation strategies

Skagerrak discards ban

As a result of the revocation of the Skagerrak agreement and the joint ministerial declaration of 23 November 2011 by the Ministers responsible for fisheries in Denmark, Norway and Sweden to introduce a discard ban in the Skagerrak, a joint EU-Norway working group consisting of managers, scientists and fishing organisations from Denmark, Sweden and Norway.

The first main task of the Working Group was to propose a list of species to be included under a discard ban. It was therefore agreed that all three countries should compile and present their fishing activities in the Skagerrak.. The trans-boundary fisheries identified that was considered to be affected by the revocation of the Skagerrak agreement to be problematic due to their catch compositions in the anticipated discard ban was: *Pandalus* (Northern prawn) trawl fishery, Directed *Nephrops* trawl fishery, Mixed *Nephrops* and demersal trawl fishery; and, Mixed demersal trawl and seine fishery. Other fisheries were also identified (pelagic, industrial, gill-and trammel nets and creels and pots) but considered to be relatively unproblematic in terms of the anticipated discard ban. The identification and assignment of fisheries was rather unproblematic and did not cause any major problems for the parties.

Using the catch information the Working Group developed a list of species that they proposed should be included under the discard ban. Initially, there were many discussions about whether the discard ban would be introduced on a fishery basis or by species. Norway insisted the discard ban should be species based. However, the group noted that for practical reasons a stepwise approach to the implementation of a discard ban may be necessary, where a set of criteria was developed to categorise the list of species in terms of implementing the discard ban. Criteria for species for which the discard ban would be introduced first was jointly managed stocks, species with high levels of discards, species caught across fisheries, species with poor survivability of discards and species with poor biological status. In a second step further species would be introduced.

After this mapping exercise, the Working Group did not have any evidence that a species based discard ban would cause undue problems for any of the main fisheries in the Skagerrak. It was therefore recommended that a species approach rather than a fisheries approach was appropriate. However, exceptions for certain fisheries could be considered afterwards for specific fisheries in the light of experience gained during the first period of application or on the basis of scientific evidence on survival rates in those fisheries.

Baltic (BALTFISH)

The draft discard plan for the Baltic Sea proposed by Baltfish, the regional body for the Baltic Sea countries, dismisses the timeline postulated in art 15.1b (2015 for species that define

fisheries and 2017 for all other species). This means that the landing obligation is introduced for all species at once January 1st 2015. By this construction the issue of definition of fisheries becomes irrelevant as all fisheries that catch species subject to catch limits are affected simultaneously (similar to the Skagerrak proposal). Furthermore, Baltfish suggest that *de minimis* provisions are to be seen as a last resort and suggests that *de minimis* is only relevant for seal damaged catch.

Pelagic RAC approach

STECF has examined the pelagic RAC proposals for possible future discard plans which are still in the process of developing. STECF notes that the discard plans been developed relate to the five species that come under their remit (Mackerel, Horse Mackerel, Blue whiting, herring and boarfish). These species will be incorporated in 12 separate discard plans with the aim to finalise these discard plans by July 2014. At this stage the Pelagic RAC is proposing to develop its plans in a specific format. STECF consider that this approach and format could also be potential starting point for other discard plans proposals.

The pelagic RAC proposed approach involve 8 different sections. These are:

Section 1 provides an introductory section dealing with biology, stock size and distribution, management and recent catch data.

Section 2 is collating the existing fisheries data covering the different management area, different gears, mesh size, vessel type & number and the fishing season, tonnage (by country). This data will be presented in tabular and GIS format.

Section 3 is collating the existing discard data (ICES, STECF and other sources). This data will also be presented in a GIS format (discard atlases). This data should identify the key areas (hotspots) and gears where discarding is a main issue. It should be noted that this information will be a key component of the proposed plan.

Section 4 identifies the discard measures in place (both the regulatory and Industry initiatives).

Section 5 will try to identify all the discarding problems related to the different species and will try to put forward workable and effective solutions.

Section 6 is the most difficult section in the plan as the PRAC will try to interpret the new rules of the CFP in the articles 14, 15 and 16, as to how they relate to the pelagic species. This section then goes on to deal with the implementation of these rules and will also cover necessary incentives to the stakeholders to change their fishing practices.

Section 7 will deal with the Control and enforcement of the different measures proposed in the plans and how these can be verified to detailed and accurate documentation of all fishing trips.

The final section will be the conclusions and the detailed recommendations that the PRAC is proposing in order to comply with the landing obligation.

3.1.4 Conclusions and observations

- The main conclusion of the Expert group is that in terms of phasing the implementation of the landings obligation, a time line based on species (rather than fisheries) is likely more tractable than a time line based on fisheries. The need to define fisheries will only be relevant if and when differential management actions are to be implemented, and in particular
- For the areas mentioned in articles 15 1(c) and 15.1(d), some species are explicitly mentioned in terms of timeline, but some others are not (the species that do not define the fisheries). Member states would need to establish a time line for all those species.

- In some cases, the time line is defined according to a fishery with some species attached to it (15.1a), and in some other cases the time line is defined according to a species with some fisheries attached to it (15.1b-d). This can potentially create inconsistencies as some stocks will be either included or excluded depending on the fishery in which they have been caught. Member States would need to explicitly list all species and fisheries when establishing the time line.
- When the timeline is defined by a fishery, one may need to consider how the fishery is defined during the transition period (e.g. before 1st January 2019), i.e. whether the fishery is defined by its intention (intended target species with a given gear*mesh size*area) or by its actual catch composition after completion of the trip. Both options are problematic. The intended target is not recorded in logbooks and therefore not known. On the other side, it may not be a desirable option to manage fisheries defined by their *post hoc* catch composition, as no regulation can be enforced on a fishing trip that has already taken place.
- In mixed fisheries, there is no unique and simple solution on defining fisheries. Individual fishing activities and fishing vessels can be grouped in many ways for defining fisheries and fleets, and therefore the question requires a political trade-off on the agreed level of aggregation (“zoom in”) and grouping criteria.
- Ultimately, management units should be of tractable size and number, and their definition should be in accordance with the availability of information that will be used to monitor and control them.
- Defining fisheries based on their target species (“fishery for Norway lobster”) is intuitively meaningful, but in practice it is really difficult to define clear, robust and objective quantitative rules allowing individual fishing vessels and fishing trips to be allocated to such fisheries. Management units based on gear specifications are easier to manage and monitor, but they may ignore large differences in individual fishing and targeting patterns which could be relevant for *de minimis* applications.
- There is no simple single solution for the accurate definition of fisheries. This may pose challenges when trying to differentiate management actions for different groups (fisheries) which will be required for e.g. the application of *de minimis* and survival exemptions). Also, if there are different rules or different enforcement regimes between different fisheries, then this will create incentives to operate within the most attractive set of rules. This “threshold effect” has been observed and is predictable.

4 GUIDELINES FOR EXEMPTION BASED ON HIGH SURVIVAL (TOR 1B)

Background

Research has shown that some discards survive. In some cases, the proportion of discarded fish that survive can be substantial, depending on the species, the characteristics of the vessels and other operational, biological and environmental factors. Article 15 paragraph 2(b)

of the regulation allows for the possibility of exemptions from the landing obligation for species for which "*scientific evidence demonstrates high survival rates, taking into account the characteristics of the gear, of the fishing practices and of the ecosystem*".

EWG 13-16 concluded the selection of a value which constitutes "high survival" is subjective and likely to be species- and fishery-specific. The value will be based on "trade-offs" between the stock benefits of continued discarding and the potential removal of incentives to change exploitation pattern and how this contributes to the minimisation of waste and the elimination of discards. EWG 13-16 considered that avoidance of unwanted catch should be the primary focus of such considerations. Therefore, the choice of survival levels/value(s) in the context of article 15.2(b) will depend on which objective (e.g. avoidance of waste; improve stock sustainability; improve financial viability) is set as priority.

Furthermore, the article notes that consideration must be given to the specific characteristics of the gear, fishing practices and of the ecosystem. Therefore such exemptions are likely to be metier specific which has implications in terms of the level of supporting information required in that exemptions should not only focus on the biological survivability of the species, but how the evidence of survival relates to the fishing activity. More specific details on the factors that can influence survival and how these may need to be considered can be found in the report of EWG 13-16.

EWG 13-16 identified that these "trade-offs" are a construct of the following aspects which should be considered when deciding on the utility and appropriateness of exemptions based on high survival:

- the estimated survival rate & its associated uncertainty;
- the age structure of the discards and their survival rate at age;
- the relative importance of discards in the overall catch the relative importance of fishing mortality (including discard mortality) compared to natural mortality;
- the impact of the landing obligation on the stock e.g. impact on fishing mortality and stock productivity;
- the potential for improving selectivity and handling practices;
- and the level of motivation for fishers to avoid unwanted catches.

As a next step, EWG 13-17 has used these points to formulate guidelines suggesting the content of a Discard Plan where exemption is sought under Article 15 paragraph 2(b). It should be noted that these represent initial considerations of EWG 13-17 but further work to develop more detailed guidelines is being undertaken by an ICES expert group (Workshop on Methods for Estimating Discard Survival (WKMEDS)).

EWG 13-17 suggests that a regional Discard Plan should initially set out the objectives for including an exemption from the landing obligation on the basis of high survival. This should take account of how the exemption will support the broader objectives of the landings obligation listed in Article 2(4a) and supporting recitals (18) of the new CFP and the broader overarching environmental, sustainability and precautionary objectives (articles 2.1; 2.2; 2.3) within the region. A description of the relative impacts of an approved exemption on the basis of high survival versus an obligation to land all catches could also be considered.

EWG 13-17 suggests that other supporting evidence to enable the use of exemption under Article 15 paragraph 2(b) should include information on the management unit to which the

exemption is intended; the evidence supporting the estimated level of discard survival and the relevance of this evidence to the defined management unit.

4.1.1 Providing Context and background:

To guide this process EWG 13-17 have identified the following information that should be considered for inclusion in a regional Discard Management Plan where exemption under high survival is being proposed. It is acknowledged that more comprehensive supportive information may facilitate any evaluation process undertaken in determining the appropriateness of the use of Article 15 paragraph 2(b).

1. Define the selected species for which the exemption is being sought.
2. Define the stock or stocks of the selected species for which the exemption is being sought. This should be consistent with the stock(s) as defined in the management context and include the assessed status of the stock.
3. Define the management unit (group of vessels) for which the exemption is being sought. The management unit description could include descriptions of:
 - the gear types employed (fishing method, net configuration, mesh sizes, selective devices etc);
 - the catch composition (volumes and proportions of species caught, categorised by discards and retained, including variability in catches where possible);
 - the operational characteristics of the management unit, for example, trip durations, tow durations or soak times, deck handling and catch sorting practices;
 - the variability within the defined management unit in the above.
4. Describe the discard profile of the selected species including discard rate, age composition, seasonal and temporal patterns, confidence and variability in the data.
5. Describe any selective measures developed, implemented, taken up and having potential to reduce catches of the selected species, including the provision of evidence of success and impact of these measures.
6. Provide an evaluation of the effects of the landing obligation on the stock of the selected species compared with the effect of exemption under the high survival provision. This could include reference to the status of the stock in the context of management plans/objectives for this stock.

4.1.2 Evidence base requirements

The description of the scientific evidence presented could include:

- Details of the source of the information (for example, published papers, reports, newly acquired data).
- Details of the experimental approaches applied to estimate discard survival (for example, captive observation, vitality assessment and/or tagging & biotelemetry), and justification of the selected methods. EWG 13-16 progressed the development of a framework to undertake survival studies.
- A description of the experimental design, including the treatment of experimental and control specimens, and the level of replication.
- Operational description and technical details of the fishing operations during the survival experiments if appropriate.
- The representativeness of the experimental trials and data relative to the management unit as defined. This will include whether the data were obtained from the management unit as it is defined, from which components of the management unit were data generated and, the level of extrapolation of the results to enable the inclusion of the all components and activities of the management unit.
- Details of the analyses and statistical methods used to generate estimated discard survival rates. This will include the methods used to decipher data generated by data storage tags (DSTs) and methods to identify factors influencing variability in survival rates.
- Considerations given to estimating discard survival rates across the full age/length structure of the catch.
- The identification of factors influencing survival (biological, environmental and operational), and the potential to introduce measures to enhance survival, including the cost implications for these measures.
- The variability and confidence in the discard survival rate estimates.
- A description of the potential limitations of the study, this will include details and implications of underlying assumptions.
- A comparison of the results from new studies presented with outputs from other relevant studies.

4.1.3 Monitoring and surveillance considerations

A description of the defined management unit, and variability in the characteristics of the management unit to which the exemption would apply. This could include the spatial and temporal range of the defined management unit, the range in fishing gear specifications (e.g. mesh size range) and the range in fishing operations (e.g. range of tow durations or soak times and methods of handling and sorting the catch).

A description of the mechanism by which the defined management unit will be monitored to ensure that the exemption is applied only to vessels within the management unit as defined.

A description of the methods used to meet the requirements of full documentation. This could include the methods to generate quantities and length and age structure of the discard component in cases where discard survival is not 100% (see section 6.1.2).

A description of the method to supply and include discard mortality estimates in to the necessary stock assessment processes.

4.1.4 Other considerations:

Details of ongoing or future planned relevant work and the expected outputs from this work. This could include additional survival studies, selectivity developments and other operational investigations.

A description of any other expected benefits or known risks (economic, environmental) of the provision of an exemption from the landing obligation on the basis of high discard survival.

5 PROVISIONS FOR *DE MINIMIS* EXEMPTIONS (TOR 1)

At the first meeting of the STECF EWG working on landing obligations (EWG 13-16) the *de minimis* provision was discussed at length and the consequences of various interpretations of the provision were examined.

STECF EWG 13 17 decided from the outset that the further discussion surrounding this TOR should not involve a revisiting of the interpretations of what '*de minimis*' means in the context of the landing obligation or how *de minimis* quantities should be calculated. More important was a contribution to guidelines for use by the regional groups in their development of discard plans. Of particular importance was guidance on the preparation and presentation of information suitable for justifying the use of the conditionalities contained within the *de minimis* provision.

The EWG 1317 maintained the view from the first meeting that the spirit and general purpose of the *de minimis* provision ('a small discard proportion') is to provide a 'safety valve' allowing for some discarding in the most difficult circumstances. The group made the observation that a large number of *de minimis* cases would not be expected to be found in forthcoming discard plans and, as with exemptions for survival, the application of *de minimis* should be considered only after other technical or tactical approaches to avoid capture of unwanted catch in the first instance have been exhausted (Recitals 29 & 31 EU regulation 1380/2013).

By way of guidance, the EWG identified the need for regional groups to thoroughly review all the available options for reducing unwanted catches ahead of developing cases for justifying the conditionalities of the *de minimis*. It was suggested that a hierarchical or decision tree approach could be developed to identify *inter alia* – cases where there was an obvious or 'easy' solution, cases where changes in the quota management approach would be beneficial, opportunities for quota exchange or the use of flexibilities, spatial avoidance measures or adoption of new more selective gears. The following schema identifies the possible flow and fate of catches following the introduction of the landings obligation highlighting where and under which circumstances *de minimis* catches could be legally discarded.

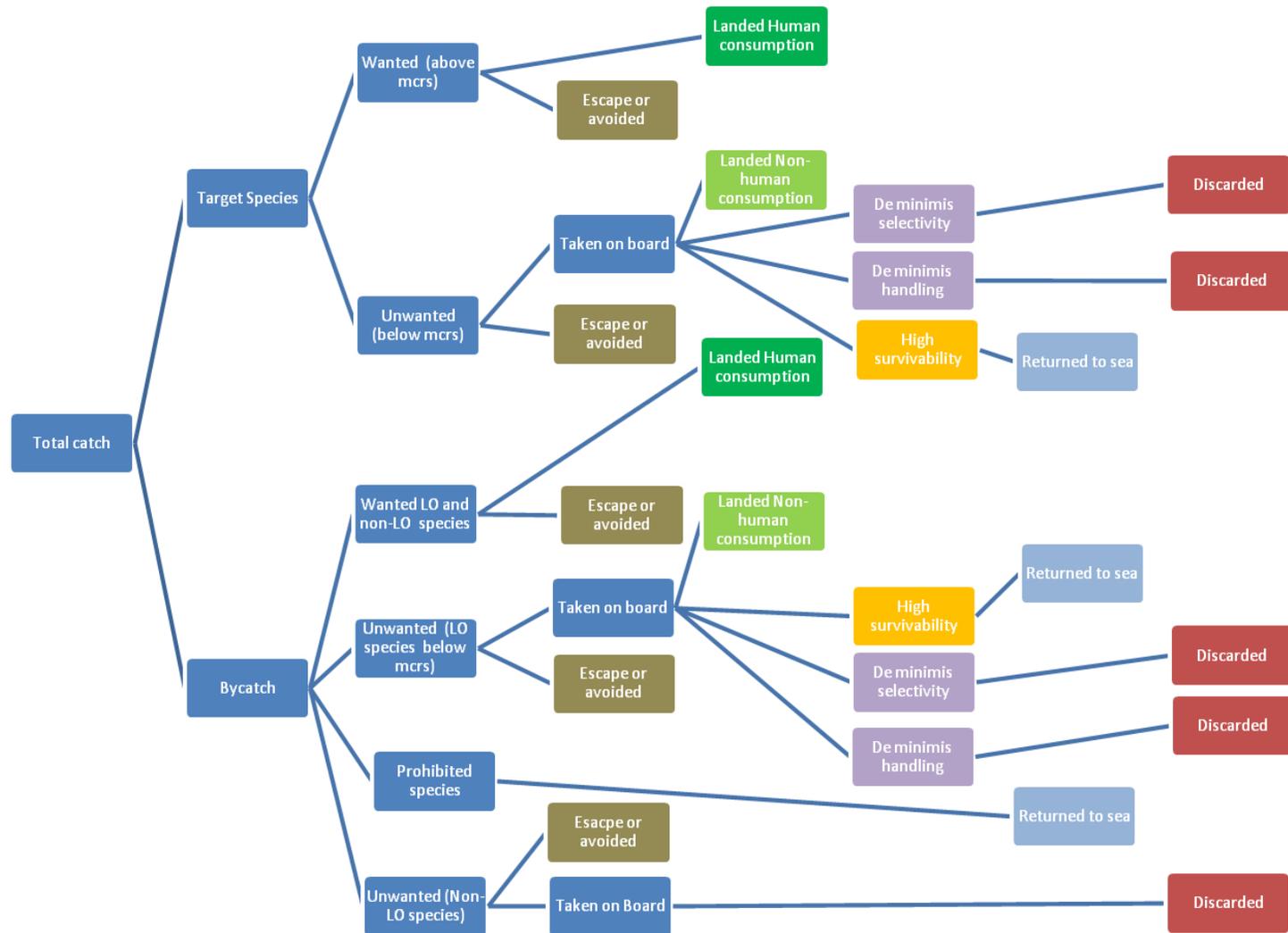


Table 5-1 Potential fate of catches under the Landings Obligation.

Such an approach would narrow down the number of cases requiring to be tested against the conditionalities. Regional groups should also attempt to provide background information on the scale of the discard problem relative to the overall international catch and/ or the estimated stock size (the example provided under the part ii) disproportionate costs discussion indicates the type of information to provide).

Having produced a relatively short list of candidate cases, the process of justifying conditionalities could then be pursued. Two conditionalities exist and guidance on these is discussed in turn:

i) where scientific evidence indicates that increases in selectivity are very difficult to achieve; or

ii) to avoid disproportionate costs of handling unwanted catches, for those fishing gears where unwanted catches per fishing gear do not represent more than a certain percentage, to be established in the plan, of total annual catch of that gear.

5.1.1 “Selectivity very difficult to achieve”

The previous EWG concluded that on a purely technical basis, there is scope for improvements in selectivity (or fish avoidance using other methods eg spatial). The difficulty for most fishing operations is that such improvements may lead to losses in revenue or increases in cost, rendering the improvements ‘difficult to achieve’. Several examples of situations where technical solutions potentially lead to reduced economic viability were tabulated in the previous report and include: the problem of Norway pout in the *Pandalus* fishery; demersal fish species in the *Nephrops* fisheries of the Irish Sea and west of Scotland; demersal fish in some pelagic fisheries (e.g. the Baltic). Given that it is the potential for negative and unsustainable economic impact associated with loss of commercial catch associated with changes in selectivity rather than the technical difficulty of improving selectivity, an approach making use of the ‘break even indicator’ was proposed as a tool for evaluating potential *de minimis* cases and testing the first conditionality (EWG 13-16). Here, this concept is explored further through real examples to show how the tool could be used by the regional groups.

The break even revenue (BER) is the revenue required to cover both fixed and variable costs so that no losses are incurred and no profits are generated. The current revenue (CR) is the total operating income of the fleet segment, which consists of income from landings and non-fishing income. Data on direct income subsidies should be excluded from the calculation. In addition, MS should decide whether income and expenditure from the lease of fishing rights should be included in the calculation or not (if either significantly affect profitability then the preference would be to include them). This analysis is carried out from a fleet economic viability short term perspective rather than an individual vessel economic viability perspective (ie it doesn’t include investments and debt servicing etc)

The formula for calculating the BER is as follows:

$$BER = (Fixed Costs) / (1 - [Variable costs / Current Revenue])$$

Where:

$$\text{Variable costs} = \text{Crew costs} + \text{Unpaid labour} + \text{Energy costs} + \text{Repair and Maintenance costs} + \text{other variable costs}$$

And where:

$$\text{Fixed costs} = \text{Non variable costs} + \text{depreciation} + \text{opportunity cost of capital}$$

- The ratio (break even indicator) is calculated by dividing the current revenue by the BER i.e.

$$\text{Ratio} = \text{Current Revenue (CR)} / \text{BER}$$

The ratio between a fleets current revenue and break-even revenue shows how close the current revenue of a fleet is to the revenue required for the fleet to break even from an economic point of view. If the ratio is greater than 1, then enough income is generated to cover variable and fixed costs, indicating that the segment is profitable. Conversely, if the ratio is less than 1, insufficient income is generated to cover variable and fixed costs, indicating that the segment is unprofitable. If the CR/BER result is negative, this means that variable costs alone exceed current revenue, indicating that the more revenue is generated, the greater the losses will be.

Two types of analysis are included as examples of how the break even indicator might be used. The first analysis, using DCF data, calculates the % change in landings revenue which equates to different CC/BER (break even indicator) values arising from various percentage changes in landings revenue (the changes could flow from adoption of avoidance or selectivity measures). Where actual selectivity data are not available to calculate impact of increases in selectivity on revenues, this approach provides a quick assessment of the sensitivity of a case to revenue change and therefore the extent to which ‘increases in selectivity is difficult to achieve’.

In the example given below, the costs structures used in the analyses are published data for the years 2006-2012, which have been estimated based on sample data gleaned from vessels financial accounts. For the North Sea and West of Scotland demersal segments there is good sample coverage, always around or above 50% of all vessels in the segment, so they can be considered to be fairly representative. No consideration has been given to any potential increases in income that you would expect with an uplift, therefore the analysis presents a view of possible changes in BER but based on historic (by necessity) revenue information and therefore considered the impact on the CR/BER of a % decrease in revenue that you expect from increases in selectivity. Therefore, this could be viewed as a worst case scenario as it does not consider any possible increases that would occur with any future up lift in quota associated with the provisions of article 16. However, factoring in increased income from an uplift would not be straightforward as there may be additional costs associated with the fact that more fish was now getting landed e.g. more effort required to catch the additional fish, but the relationship is unclear and therefore difficult to factor into this analysis.

Here we use the Scottish demersal fishery as an example application of the BER. The Scottish demersal fishery is executed by a range of gear types (single/pair/twin trawl and single/pair seine), with a range of vessel lengths and power. This utilises available information on changes in catch rate arising from different gear selectivity options and uses fish 'value' information to calculate the predicted change in revenue. These changes are then fed into the break even indicator to test whether the CR/BER ratio drops below 1. Experimental catch comparison trials on a range of selective TR1 gears took place during 2008 and 2010. The gears were classified into three categories in relation to their selectivity.

For each fleet segment, species specific selectivity for each of the 4 gear categories and LPUE data were then used to calculate the annual percentage change in revenue that would be associated with using gears from each category. The segmentation is based on the approach followed in the Seafish financial survey of the UK fleet (Seafish, 2012) from where information on vessel costs is drawn. The five segments are classified as follows: (i) Demersal Trawlers > 24m (ii) Scottish seiners (iii) Pair seiners and pair trawlers (iv) Demersal Trawlers <24 m and over 300kW (v) Demersal Trawlers <24 m and under 300kW.

	% change in revenue per day			
	Baseline	Cat 2	Cat 3	Cat 4
Demersal > 24m	100	89	86	69
Demersal Seiners	100	90	83	74
Demersal pair trawl / seine	100	93	93	82
Demersal under 24m over 300kW	100	73	67	46
Demersal under 24m under 300kW	100	76	65	48

Table 5-2 Scottish whitefish fleet segment selectivity impacts on landings revenue

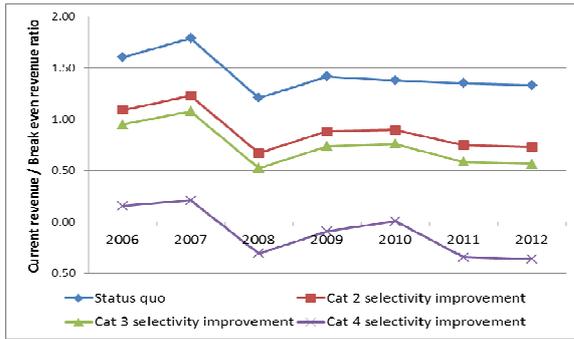


Figure 0-1 Scottish North Sea and West of Scotland demersal trawl over 24m

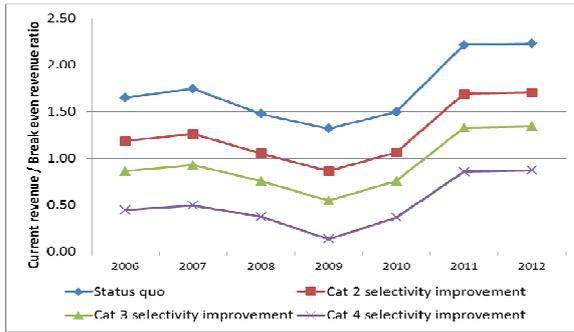


Figure 0-2 Scottish North Sea and West of Scotland demersal seine

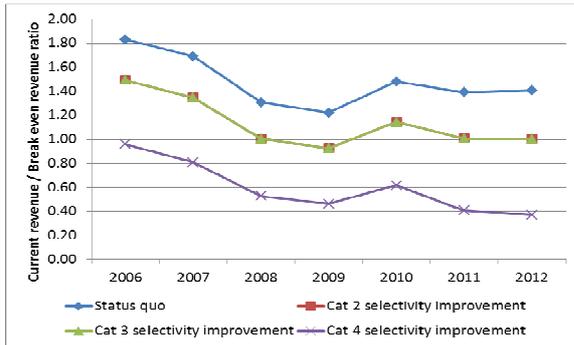


Figure 0-3 Scottish North Sea and West of Scotland demersal pair trawls and seines

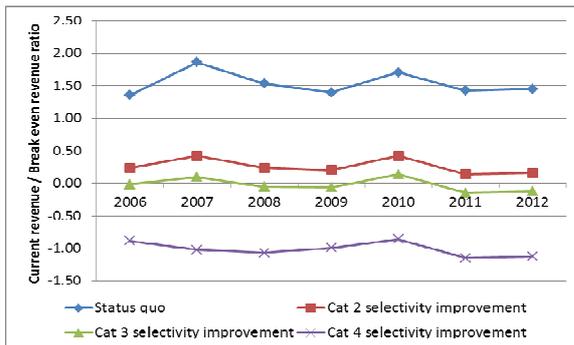


Figure 0-4 Scottish North Sea and West of Scotland demersal trawl under 24m over 300kW

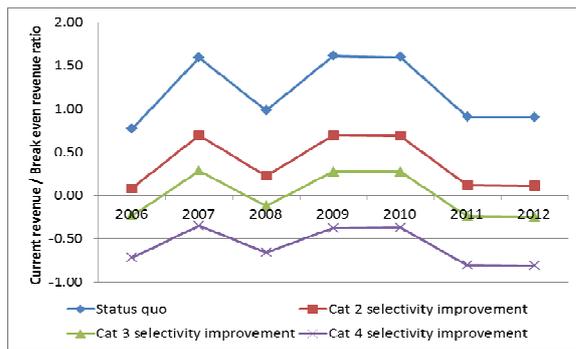


Figure 0-5 Scottish North Sea and West of Scotland demersal trawl under 24m under 300kW

Unsurprisingly, the analysis shows that the greater the increase in selectivity, the greater the decrease in revenue, the lower the CR/BER is. It is worth noting however, that there are a number of other external factors that can affect the CR/BER such as fluctuations in fuel and quota leasing costs for example which may mean that in one year the business may be generating more than enough revenue to break even (>1), and less so in others (<1).

The variability in the impact of each of the selectivity categories between the various gear and vessel segments is attributed to differences in species preferences between the segments and how the individual gear options affected the catch rates of the primary target assemblages, which differs between the fleet segments. For example, the use of the category 4 gears has a greater impact on the larger demersal trawl segment in comparison to the single and pair seine as the cat. 4 modification also results in losses of monkfish and other flatfish species which are not the primary focus of the seine net segments.

The analysis is based on the use of average information and does not provide any indication of the scale of variability within a given fleet segment meaning that even if the average CR/BER estimate is positive, the fleet segment may contain individual businesses that have CR/BER ratios of less than 1. Notwithstanding, the potential of the CR/BER approach is to identify selectivity options which would result in taking a fleet from a position of being nearly always profitable position into a permanently loss making one.

This example provides a relatively simple ways of testing the conditionalities. In order to use this approach, however, some basic data on the economics of fishing operations are required. The EWG 13-17 suggests that in preparation for carrying out tests of conditionalities, regional groups could usefully be compiling relevant information. A similar process has already been undertaken in the North Sea regional group where a discard atlas illustrating the main discard problems is being finalised. In the case of the collation of economic information, some of this is already compiled as part of the DCF process and is already available in the STECF Annual Economic Report. These data are quite highly aggregated and may not be suitable for all situations but it is likely that within Member States those responsible for providing economic information could aggregate material at an appropriate level to test conditionalities relating to smaller units.

Similarly, there is a need to compile available selectivity data. A meta-analysis would be beneficial providing a resource for the regional groups to utilise. This could be supplemented with new and emerging selectivity work. The limited availability of selectivity data suggests that initially, an analysis taking in as much information as possible is required.

In some circumstances a discard issue may be common to several member states using the same gear and participating in the same fishery. In this case regional groups could consider the use of appropriately aggregated data to inform a collective test of the conditionality.

5.1.2 “Disproportionate costs”

Here, the issue relates more to the handling of the unwanted catch, or storage of the catch. The EWG assumed the same interpretation of this conditionality as for the previous meeting. The disproportionate cost is assumed and the issue is to arrive at some discard percentage which will be permitted for a particular gear in a specific fishery. If a different understanding of this part of the regulation is assumed – one where the disproportionate cost is required to be demonstrated- then the approach described above for the first conditionality could be readily adapted. However, this is not attempted here.

The process of arriving at an acceptable discard percentage for different gears under an assumption of disproportionate cost is complex and depends on the specificities of each fishery – EWG considered that defining specific values would be unhelpful. Instead, guidelines on the types of information to be considered and submitted in a regional discard plan were compiled. EWG 13-17 suggests the following information should be supplied. Note that these are in addition to the actual level of *de minimis* to be applied which will need to be specified in the plan.

1. Description of the problem in terms of:
 - a. Management unit in terms of number of vessels
 - b. Target Species and unwanted bycatch species
 - c. Cause of disproportionate costs (e.g. as a result of on board sorting and handling, for safety reasons relating to storage capacity on board and also related to damaged fish caused by depredation by marine mammals or other predators.
 - d. Measures taken to reduce disproportionate costs in terms of improvement in selectivity/avoidance measures or to on board handling systems.
2. Total annual catches by species for the management units to which the exemption is to apply.
3. Total levels of unwanted catches (we assume unwanted catches means unwanted catches of species subject to the landing obligation).
4. Discard Rate in terms of total annual catches in the management unit
5. Contribution to the total unwanted catches for all management units

Summary of Guidelines

- Explore and document all options for reducing discards before preparing applications for the use of *de minimis*
- Use hierarchical or decision tree analysis to identify and eliminate cases which do not require the use of *de minimis*
- Conditionality 1 – improved selectivity (avoidance) too difficult – a) Regional groups should consider compiling and presenting background information surrounding the issue b) Regional Groups could utilise the ‘break even indicator’ to evaluate whether the available technical solutions too difficult economically. This indicator may not be the only one capable of informing decisions on meeting the conditionality, and others could be employed.
- Suggest regional groups begin compiling relevant economic and selectivity data now.

- Conditionality 2 – disproportionate costs – Regional groups should compile and present background information to illustrate problem and scale.

6 GUIDANCE NOTES ON THE DOCUMENTATION OF CATCHES

Background

EWG 13-17 was asked to provide guidance to regional groups on issues relating to catch documentation. EWG 13-16, concluded that there are a number of control, monitoring and enforcement issues that will have significant influence on how successful the implementation of the landing obligation will be, particularly relating to the provision of reliable catch statistics which are used as a core input into stock assessments and the provision of scientific advice.

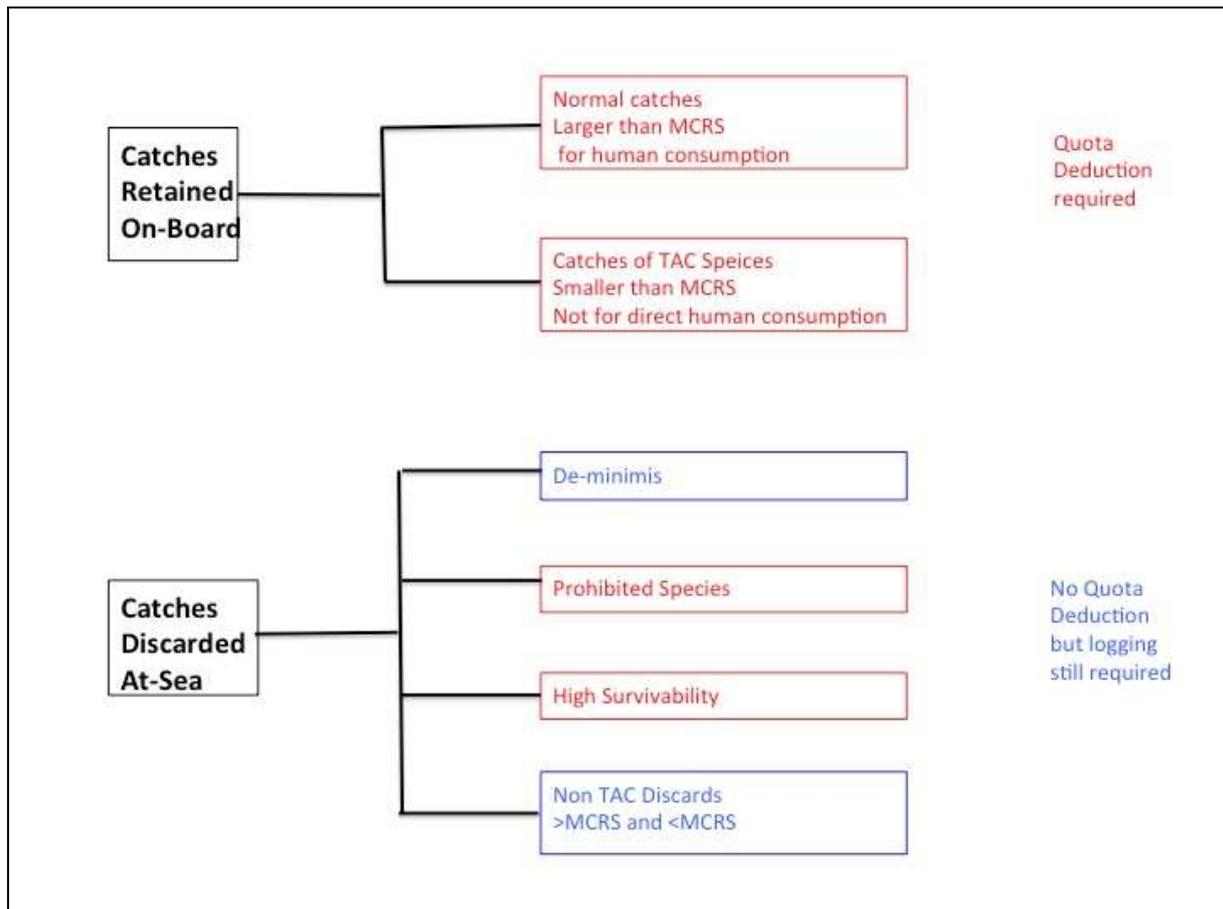
The group addressed the ToR in two steps, firstly by providing considerations for the regional groups on what data is necessary to collect for achieving accurate and detailed documentation and secondly by providing considerations on how to verify that the documentation requirements are followed through enforcement actions.

6.1.1 Documentation requirements

It is expected that confidence in catch data needs to be sufficiently high in order to manage the outtake from stocks effectively and to provide accurate catch data for scientific purposes. This is particularly important where the management shifts fundamentally from the monitoring and control of landings to that of catch and incorporates potential for inter-species quota and other flexibilities and exemptions. Furthermore, to justify and manage any potential requests for quota uplifts due to consideration of previous discards (article 16.2) a high confidence in catch data is a prerequisite.

The CFP stipulates that “*Member States shall ensure detailed and accurate documentation of all fishing trips and adequate capacity and means, such as observers, closed-circuit television (CCTV) and others. In doing so, Member States shall respect the principle of efficiency and proportionality*”. This provision should form the basic objective for the regional groups regarding catch documentation.

From 2015 certain regulated species will be subject to a landing obligation in a phased approach, leading to a full landing obligation for all regulated species from 2019. Regional groups will need to consider how best to ensure that detailed and accurate data is collected during this transition in which some regulated species will continue to be discarded. At the full stage implementation of the landings obligation the following reporting categories are envisioned.



Current retained catch and discard documentation requirements are prescribed in the Control Regulation (EC 1224/2009). Paper and electronic logbooks form the basis of self reported catch records. Although in the case of the under 10m fleet self reporting is only mandatory if the Member State requires this. Verification of self reported catch data is currently carried out through monitoring and inspection programs at sea and landing inspections followed by administrative cross-checks with sales data ashore in order to deter or identify untimely, inaccurate or non-reporting of catches and effort.

Under the landing obligation regional groups may need to consider if the current requirement for catch documentation and also the means of verifying catch documentation through monitoring and control, are appropriate. Enhanced measures may be necessary on a case-by-case basis and in accordance with the level of risk posed by a given fishery or fleet. Where fleets from more than one MS share a common fishery, regional groups should consider the potential for a harmonised approach to monitoring requirements.

EWG 13-17 suggests that the regional group consider including provisions for the following issues in the regional plans:

- The Control Regulation stipulates that catch shall be recorded every 24 hours. Since discarding and retention takes place at each haul, consideration to requiring haul by haul documentation might usefully be given where this is practicable and compliments the ability to corroborate reported catches such as through the use of electronic monitoring. As a generality, haul-by-haul documentation increases the

burden of compliance on fishermen. In order to minimise burden on fishermen, consideration might be given to requiring haul-by-haul documentation being maintained but with transmission frequency of 24 hours.

- The Control Regulation allows for modifying logbooks during the entire fishing trip. Regional groups might usefully consider including a limit of 24-hour on the editing of log-sheets, and transmission of catch information when crossing the boundaries of relevant control areas would represent a substantial improvement in the confidence of reported data.
- Article 14 of the Control Regulation is interpreted by most MS that catch and discards below 50 kg per species do not have to be recorded. That provision can result in missing information on discards, particularly where a relatively large number of vessels are catching small quantities of a large number of individual species. With this provision there is concern that accurate and detailed catch reporting may not be realized. For this reason, consideration might usefully be given to altering the applicability of the current 50 kg threshold per species to < 50 kg per trip and assessing the potential unaccounted catch associated with different threshold levels.
- Regional groups should consider whether there is a requirement to reduce the threshold (vessel length) at which reporting in logbooks becomes mandatory or alternatively ensure that fisheries monitoring (observer) programs can capture this information independently through *inter alia* observers or electronic monitoring.
- Current observer schemes have limited coverage (< 1% total fleet effort) and only used for the provision of discard estimates for assessment purposes. Under the landing obligation this data could potentially be used for the estimation and monitoring of quota uptake. It is therefore necessary that sampling protocols and observer programmes are designed so that they are properly aligned with fleet management units and that the estimates have an acceptable level of precision and accuracy.
- *De minimis* provision is one that allows legitimate discards and no quota deduction. There therefore exists risk of overlogging non-*de minimis* discards as *de minimis*, and underlogging of true *de minimis* discards to protect such provisions. Regional groups will need to establish a suitable means of monitoring the level of *de minimis* discarding where this applies to a given fishery. The degree of monitoring required should be assessed against the potential risks of the *de minimis* allowance being exceeded or where this flexibility may be open to abuse. This in-turn will depend on how *de minimis* is applied within that regional plan. As an example, if a regional group seeks to allow the discarding of severely damaged or contaminated fish within *de minimis* levels, consideration should be given as to how to prevent this flexibility being abused to allow *inter alia* high grading.
- The data provided by catch documentation serve various purposes. Regional groups should also evaluate the potential for enhanced monitoring systems to generate more than just a method for verifying compliance but also the ability and efficacy of generating and contributing to the collection of biological data and whether this represents a cost-effective alternative or addition to existing data collection frameworks.

6.1.2 *Verification of catch documentation*

There are a number of factors influencing the level of compliance with the requirement to document all catches (overall management structure, stakeholder involvement, penalty levels etc). EWG 13-17 considers that the management plans should incorporate a common regional approach to the various logistical challenges of meaningfully verifying the accuracy and completeness of documentation, i.e. a common control strategy should be developed at the regional level. A common regional approach to assessing risks, intensity of monitoring and controls, and enforcement actions to deal with non-compliance should also facilitate a level playing field.

Real challenges exist for fishermen in accurately logging quantity of species. In highly mixed demersal fisheries that currently have high discards, fishers would have to devote significant time to sorting of undesired catches, including non-TAC species and fish <MCRS. Pelagic fishers might have different logistical challenges in estimating the quantity of fish discarded if slipped before being brought on-board. These challenges tend away from compliance with the landing obligation and the recording of discards, and the regional plan should strive towards finding a balance between the burden of compliance for the fisherman and the detail and accuracy of the documentation provided. A particular point here is the potential for fish survival to be compromised by efforts to ensure accurate documentation, e.g. where discards are collected for weight estimation before being returned to the sea. Regional groups should therefore consider whether enhanced electronic or observer monitoring programs can in fact assist the self-reporting by fishers. Discard plans should therefore also include provisions on how observer or EM programs will be used to enhance the potential for improvements to data accuracy.

EWG 13-17 recognise that the current control tools currently described by the control regulations are based around landings-quotas and limited in allowing meaningful verification of documentation of retained and discarded catch. In addition, available data show that there is poor compliance with the current obligation to record discards in logbooks (see EWG 13-16). In order to ensure an acceptable level of accuracy and detail of the overall catch documentation in the region, EWG 13-17 considers that a risk assessment should be carried out at the regional level. Risk is here considered as of the probability of not complying with the requirement to accurately record all catches. Approaches to assessing the level of risk should be set out in regional discard plans together with the justification which may be evidence based or where there is uncertainty, taking a precautionary approach.

The regional groups might usefully consider the following high risk factors when assessing the risk of non-compliance with the obligation for accurate documentation:

- Fisheries with a high likelihood of unintended catches, hence a high impact of the landing obligation and a high burden of discard sorting and logging for the fishermen.
- Fleet segments currently identified as having high discard rates and/or selectivity characteristics that are likely to result in significant catches of fish below MCRS.
- Fleet segments engaged in fisheries that are known to have high-grading issues.
- Fleet segments engaged in mixed-species fisheries where there is a risk of species specific limiting quota i.e. choke species (see section 0).

- Fisheries with history of previous compliance issues such as high-grading or miss-reporting.
- Fisheries where there is substantial differences in the catches logged by similar vessels/gear.
- Fleets where analysis of observer data highlights differences in catch composition between vessels subject to observer coverage and vessels subject to self-reporting of catches.

EWG 13-17 considers that it would be preferable that the justification of the selection of the enforcement tools to support the provision of fully documented catches should be clearly indicated in the regional plans. Regarding high risk fisheries full monitoring (CCTV and/or observers) are the only control methods which seem to offer the only effective approach to ensure all catches are documented and counted against quota.

7 GUIDELINES FOR THE SELECTION OF MINIMUM CONSERVATION REFERENCE SIZES (TOR 1d & TOR 4)

Introduction

In line with the obligation to land all catches, there is a need to abolish current minimum landing sizes (MLS) as they would conflict with the requirement to land all catches as presently MLS regulations prohibit the landing of catches below the minimum size. In the new CFP MLS are to be replaced by Minimum Conservation Reference Sizes (MCRS).

It is intended that current MLS values will simply be retained and renamed MCRS (Article 4(17)). Until such time as the landings obligation is introduced, fish retained below MLS will continue to be discarded, but once incorporated into the landings obligation they must be landed and discounted against quotas but not sold for human consumption (Recital 30). STECF -12-20 noted that for species that have high discard mortality, there is no empirical evidence to show the use of MLS has any conservation benefit and the rationale behind MLS is unclear, particularly in multi-species/multi-gear fisheries. There are many cases where there is a mismatch between MLS and gear selectivity and mismatch between species caught in the same fishery; this can significantly contribute to discarding or incentives fixes to reduce selectivity to avoid loss of fish greater than the MLS.

Furthermore, STECF 12-20 noted that the predominant reaction to minimum landing sizes, is to comply through discarding, particularly if moving to other areas would result in a reduction in potential revenue i.e. movement to an area with fewer marketable fish. In mixed species fisheries, the relationship between mesh size and minimum legal sizes is often more complex, where a single mesh size is used to select a range of species often with differing minimum landing sizes. In practice, the choice of minimum landing size is often a compromise to discourage the retention of small fish rather than one based on biological suitability e.g. maturity and it is hard to find any biological justification for measures that in many instances are clearly conflicting e.g. input measures to control selectivity (mesh size) and output measures (MLS) to regulate the minimum size of fish that can be landed.

Such factors may need to be considered if changes/abolition of current MLS when switching to MCRS are included in regional discard plans.

While the basis of MCRS appear to be similar to the present MLS “*established with the aim of ensuring the protection of juveniles of marine organisms*” the obligation to land (and discount against quota) all fish below MCRS, if appropriately implemented, does introduce a

strong economic incentive to avoid capture of fish below MCRS as those catches will consume available quota and/or will create difficulties of storage without economic benefit. As such, applying MCRS could offer a tool to encourage avoidance of areas with elevated levels of juveniles or to use gears with appropriate selectivity. However, application of MCRS across a broad range of species in complex mixed-species fisheries may result in substantial uptake in catches below MCRS if not appropriately aligned with the selectivity characteristic of the main gears.

EWG 13-17 has identified the following guidelines to assist in the setting of MCRS

- The EWG considers that plans should clearly state the objectives for setting MCRS and that the primary objective should be in accordance with Article 4 (17) and Article 15(10). The latter specifies that minimum conservation reference sizes may be established with the aim of ensuring the protection of juveniles of marine organisms. The EWG also considers that plans should also specify the metrics to be used to measure protection of juveniles. For example protection of juveniles may be determined through the reduction in fishing mortality on juveniles to a specified rate. Notwithstanding the provision of Article 15(10), the group notes that additional objectives and accompanying justifications may also be proposed.
- If there is no provision to include a MCRS in the plan for stocks for which a MLS currently exists, provision of supporting information to justify the absence of a MCRS would inform the decision on whether to accept such a provision and the EWG considers that such information should accompany the plan.
- For those stocks that are not currently subject to a MLS, the EWG considers that supporting information to justify the introduction of a MCRS would inform the decision on whether to accept such a provision and that such information should accompany the plan.
- The EWG considers that plans should provide information to demonstrate that the introduction of the proposed MCRS is likely to achieve the stated objectives. Such information, where possible, should include results of simulations.

7.1.1 Supporting information on the use and selection of minimum sizes

Setting appropriate MCRSs

Given that the aim of setting MCRSs is to protect juveniles (Article 15(10)), it would be appropriate to set the MCRS at the size above which a certain proportion of fish are mature. However, noting that sustainable exploitation of juveniles can be achieved if the exploitation rate is appropriate, the choice of the proportion of immature fish to be protected needs to be determined on a case by case basis taking into account the likelihood of meeting MSY objectives. An assessment of the likely impact of any proposed MCRS should form part of proposed discard or management plans. Furthermore, an assessment of whether setting

MCRSs on a species basis is likely to result in the desired level of protection for the juveniles of such species if they are exploited in mixed fisheries would be particularly informative.

Justification for changing from MLS

The EWG considers that the first step in the approach is to identify whether the introduction of a MCRSs that differs from currently-established MLSs is desirable, would be to identify those fishery management units that currently have high discards and identify the reasons that such discards arise. For example, discards can arise for a number of reasons which include *inter alia* discards arising as a result of compliance with currently-established MLSs or due to quota restrictions. For those fishery management units for which the primary reason for discarding is a result of compliance with currently-established MLSs, Regional groups may then wish to consider whether they wish to introduce a MCRS, whether it should differ from the current MLS and is likely to achieve the principle aim of ensuring the protection of juveniles of marine organisms (Article 10).

The EWG notes that there are a variety of issues that regional groups may wish to take into account when considering the desirability of introducing a MCRS. The following classification includes a number of examples of such issues.

Market issues

- *To preserve current markets e.g. set low MCRS because market for small/juvenile fish is strong – economic argument?*
- *To avoid small/juvenile fish on market so that price of large fish is maintained*
- *Prevent development of new markets for e.g. small/juvenile fish*
- *Increase revenue by reducing MCRS for stocks where e.g. price/kg for small/juvenile fish is higher than for large fish.*
- *Increase revenue returns e.g. by setting a relatively high MCRF so that more of the catch can be sold for purposes other than direct human consumption and at the same time maintain high prices for larger fish to be sold for direct human consumption. Such an approach may encourage the avoidance of lower value fish below the MCRS in the catch which may in turn give rise to higher catches of higher value fish in the longer-term.*

Societal/Ethical drivers

- *Protection of juveniles. However, protection of juveniles cannot be achieved through MCRS alone. Protection of juveniles i.e. eliminating or reducing F on juveniles will only result if the exploitation pattern on juveniles is modified.*
- *Modify the proportion of the catch that can be used for direct HC by setting a low MCRS thereby “reducing waste”.*

Biological/ecological drivers

- *To encourage a change in exploitation pattern for example to realise the growth potential of the stock and/or to reduce the fishing mortality on juveniles. A change in exploitation pattern may be achieved because of the additional costs of handling catches that earn less or no money than those above the MCRF.*

8 CONSIDERATIONS FOR FUTURE EVALUATION OF REGIONAL DISCARD PLANS (TOR 1.F)

There was insufficient time available to fully consider potential indicators for future evaluations of the landing obligation and to assess the performance of individual regional discard plans. However, EWG 13-17 consider this is an important aspect that should be

considered within regional discard plans and work should progress on this aspect and this might be best achieved through a dedicated expert group or contract.

9 CHOKE SPECIES (TOR 4)

Introduction

The introduction of the landing obligation will present a number of operational challenges to both managers and the industry. One of the key impacts when moving from the regulation of landings to the regulation of catches is the issue of choke species. Presently, businesses engaged in mixed species fisheries are permitted to continue fishing even if some quotas have been exhausted and fishing opportunities remain for others. Where quotas have been exhausted, businesses must discard all catches of that particular species, leading to “over-quota” discards. One of the key elements of the landings obligation is to prevent this occurring, which means that unless tactical or technical adaptations are deployed to avoid quota exhausted species, then fishing activity must cease, thereby ‘choking’ any further activity. The scale and extent of this issue is dependent on a number of factors including quota availability and the ability of the business to respond to minimise or avoid uptake (catch) of quota limiting species while maintaining economic viability. A number of recent studies have explored the potential rate of choke given existing quota allocations, including scenarios which factor in additional allocation quota (quota uplift), where in future fishing opportunities will be set with consideration of current discard rates (Recital 32).

Four studies into likely impacts of a landings obligation were presented to and discussed by the EWG. The four studies are:

1. UK fleet segment-based case studies
2. English otter trawl study
3. Economic effects of a landing obligation for Dutch fisheries
4. Study of Scottish whitefish pair trawlers engaged in Fully Documented Fisheries trials

Study 1.

Findings of a study conducted by Poseidon ARM Ltd in conjunction with Seafish were presented to the meeting. The analysis uses 2012 data to present what might have happened with choke species for 3 case study fleet segments if the landings obligation had applied to both target and by-catch species in 2012. The study is due to be published in January by Seafish

The objectives of the study were to address the following questions:

1. How would the landing obligation affect fleet economic performance?
2. At fleet level, given current discards, what would the quota requirements amount to?
3. Are there ‘choke’ species that could limit operations of the fleet?

The model for the study considers the implications of the discard ban for specific fisheries in terms of the fleet's average economic performance. It combines published data on landings, quota use, cost & earnings and recent discard rates to identify likely 'choke' species. The model estimates average economic performance of the selected fleet segments considering the various allowances and exemptions being proposed in the landing obligation.

The model does not explore changes in fishing patterns that might be expected with the introduction of the landing obligation (changes to selectivity, etc.). The coping strategies employed by individual vessel operators will depend on their specific quota unit holdings or access to further quota unit, which vary enormously throughout each fleet segment.

The model results highlight priority issues to be addressed in each case study fishery. The model has not been used to attempt to anticipate the likely approaches and actions that may be employed by management authorities to help mitigate the economic impact of the landings obligation.

Some of the key assumptions used in the model can clearly affect the results of the different scenarios and sensitivity analysis would be useful. Assumptions include a constant rate catch per day at sea within fleet segments, with no seasonality adjustments throughout the year. It is also assumed that the fleet segments have access to all the UK quota if needed. This assumption was used in part because there is no public record of quota unit allocations per fleet segment. This assumption is clearly unrealistic and the results generated under it can be considered to be optimistic.

Results of the UK fleet case studies:

Irish Sea (Area VIIa) Nephrops Trawl Fleet (Table 9-1)

- *Key 'choke'* = whiting. UK VIIa quota would have been used up after 10 fishing days (avg over 3 years)
- *Leasing* - Low UK TAC for VIIa whiting (32 tonnes), vs. EU TAC = 84 tonnes. Leasing in all additional EU VIIa whiting quota would only give another 24 days fishing. Not enough quota in the EU TAC to keep this fleet segment fishing and viable.
- *Uplift* – 75% or more of current VIIa whiting discards would ensure fleet could continue to operate. Estimated 293 tonnes of VIIa whiting discarded by fleet in 2012.
- *'Flexibility'* - converting 9% of *Nephrops* quota (552 tonnes) to cover landings of whiting gives fleet enough quota to remain viable and fish for 130 days. But, VIIa whiting is a data-limited stock, not within safe biological limits, ICES advising lowest possible catch for 2014. Flexibility to use target species quota to cover landings of whiting is unlikely.
- *De minimis* – If this exemption is equal to 5% of all of the fleet's quota catch, fleet is viable. If equal to 5% of UK VIIa whiting, gives only 2 more fishing days. Definition of the exemption is key, plus there is a need to justify use of *de minimis*
- **Conclusion:** This fleet should now prioritise improving selectivity to catch *Nephrops* but avoid whiting, while maintaining current selectivity in terms of cod-avoidance.
-

North Sea mixed whitefish trawl fleet (Table 9-2)

- *Leasing* – Expenditure on quota leasing would increase by 500%. 25% decrease in profit
- *Key 'choke'* in 2010-12 = hake, secondary choke = saithe, cod and haddock
- *Uplift* – based on ICES estimates and conservative 20% uplift where no ICES uplift advice, fleet still profitable *if* uplift applied also to swaps, otherwise problem

- *Flexibility* – target quota stock debatable. If can use an under-utilised stock (plaice) to cover choke species, profits could actually increase, if haddock used as target, likely profits would have decreased
- *De minimis* – If equal to 5% of all of the fleets quota catch, slight reduction in profits. If equal to 5% of hake, around 80% of status quo days available to the fleet
- **Conclusion:** Again, current swaps critical, but likelihood of getting them is questionable; limited additional selectivity improvements possible before loss of target catch. Combination of measures would likely maintain fleet viability

North Sea Nephrops Trawl Fleet (Table 9-3)

- *Leasing* – expenditure on leasing would have increased by 250%, profit margins would have decreased, but fleet segment would still be viable.
- *Key ‘choke’* = hake (all years without swaps), or whiting (2010 after swaps), saithe (2011 after swaps) and cod (2012 after swaps)
- *Uplift* – based on ICES estimates and conservative 20% uplift where no ICES uplift advice, fleet still profitable if uplift applied also to swaps, otherwise there is a problem
- *‘Flexibility’* - converting 9% of *Nephrops* to cover choke species reduces profitability but fleet is viable
- *De minimis* – If equal to 5% of all of the fleet’s quota catch, slight reduction in profits. If equal to 5% of hake, less than 50% of status quo days available to the fleet
- **Conclusion:** Ensuring that current swaps continue is critical, but may not be possible since other MS will have higher need for their own quota which they previously (currently) are willing to swap away. Combination of flexibility measures would likely maintain fleet viability.

Note that, for North Sea, discard estimates were based on CEFAS and Marine Scotland data, but estimates are markedly different. Assumed discard rates could have a key impact on outcomes in modelling and in reality.

Assumptions about sales prices for species previously considered being by-catch are key to sensitivity analysis of what fishing patterns could be viable / profitable.

Table 9-1 Irish Sea *Nephrops* 'choke' species in 2012 (avg. days at sea 138). NB quota uplift refers to an uplift based on the average volume of discards being added to the existing landings based TAC

Species Area VIIa	Tonnes				Scenario 3: choke species		Scenario 4: Quota uplift		
	Initial NI quota allocation	Quota change in Year	Year end NI quota	Catch per day	Fishing days before NI quota exhausted	Fishing days before UK quota exhausted	Fishing days with 25% uplift	Fishing days with 50% uplift	Fishing days with 75% uplift
sole	12.75	-0.3	12.5	0.07	171	NA			
plaice	223.67	11.7	235.4	3.14	75	130	159	188	217
cod	92.76	11.1	103.9	0.71	146	NA			
whiting	28.53	4.2	32.7	2.17	15.07	15	49	83	116
saithe	120.07	-33.7	86.4	0.00	22,597	NA			
anglers	333.32	-139.2	194.1	0.89	219	NA			
megrim	31.42	-1.1	30.3	0.00	11,148	NA			
haddock	498.45	-13.0	485.4	1.89	257	NA			
hake	680.10	-560.9	119.2	0.47	254	NA			
pollack	292.76	-64.0	228.8	0.09	2,610	NA			
Nephrops	6,646.60	596.4	7,243.0	51.29	141	162			
skates & rays	146.19	6.2	152.4	2.23	68	863			

Table 9-2. North Sea Mixed Whitefish Trawl 'choke' species, 2012 (avg. days at sea 154)

Species Area VIIa	Tonnes				Scenario 3: choke species			Scenario 4: Quota uplift	
	Initial quota allocation	Quota change in Year	Year end quota	Catch per day	Fishing days before UK quota exhausted	Fishing days from swaps	Fishing days after swaps	% quota uplift (ICES advice)	Fishing days with quota uplift (from ICES)
haddock	26,644	1,075	27,719	185.60	144	6	149	12%	166
cod	11,276	2,045	13,320	92.38	122	22	144	30%	181
whiting	10,539	446	10,985	68.95	153	6	159	52%	238
saithe	6,318	1,821	8,139	71.04	89	26	115	20%*	132
plaice	22,542	-3,599	18,943	128.43	176	-28	147	43%	223
hake	466	1,385	1,851	17.20	27	81	108	20%*	113
anglers	8,209	-351	7,858	38.25	215	-9	205	0%	205
megrim	1,952	-16	1,936	10.81	181	-1	179	18%	211
Nephrops	21,175	-1,340	19,835	71.38	297	-19	278	4%	291
lemons	3,905	-56	3,849	10.29	379	-5	374	20%*	449
dabs	1,588	64	1,652	8.65	184	7	191	20%*	227
turbot	717	-202	515	3.10	231	-65	166	0%	166
skates & rays	989	-215	774	5.15	192	-42	150	20%*	188
sole	803	414	1,217	4.67	172	89	260	20%*	294

*20% is assumed for stocks for which there is no ICES advice for uplift in quota

Table 9-3 North Sea *Nephrops* Trawl 'choke' species, 2012 (avg days at sea: 143)

Species Area VIIa	Tonnes					Scenario 3: choke species		Scenario 4: Quota uplift	
	Initial quota allocation	Quota change in Year	Year end quota	Landings 2012	Catch per fishing day	Fishing days before UK quota exhausted	Fishing days after swaps	% quota uplift (ICES advice)	Fishing days with catch quota (based on ICES)
haddock	26,644.00	1,075	27,719	27,302	288.25	92	96	12%	106
cod	11,275.56	2,045	13,320	12,190	152.82	74	87	30%	109
whiting	10,539.00	446	10,985	9,865	101.80	104	108	52%	161
saithe	6,318.00	1,821	8,139	7,714	64.00	99	127	20%*	147
plaice	22,542.00	-3,599	18,943	17,018	157.30	143	120	43%	182
hake	466.01	1,385	1,851	1,827	20.65	23	90	20%*	94
anglers	8,209.00	-351	7,858	4,920	45.49	180	173	0%	173
megrim	1,952.00	-16	1,936	1,390	12.86	152	151	18%	177
Nephrops	21,175.06	-1,340	19,835	10,993	76.87	275	258	4%	270
lemons	3,905.00	-56	3,849	1,457	12.64	309	304	20%*	366
dabs	1,588.00	64	1,652	706	7.93	200	208	20%*	248
turbot	717.00	-202	515	477	4.41	162	117	0%	117
skates & rays	989.00	-215	774	662	6.12	162	126	20%*	158
sole	803.02	414	1,217	601	4.26	188	285	20%*	323

*20% is assumed for stocks for which there is no ICES advice for uplift in quota

Study 2.

The short-term impacts of implementing catch quotas and a discard ban on English North Sea otter trawlers. (Condie *et al*, 2013)

Summary of key points from report:

The objective of the study was to calculate potential changes in fishing effort, landings, and profits with catch quotas for English North Sea otter trawlers. The study used logbook data, detailing landings, income, and fishing effort by trip and data on discards from the CEFAS observer programme (COP). Data used was from 2010.

The fleet was separated into six vessel segments (by vessel length, engine size and target (either *Nephrops* or whitefish) to reflect economics data.

Model:

- CQs for four main species: cod, haddock, whiting and plaice; set at 75% of discard rate to uplift landings quotas.
- Increased quota distributed equally among the fleet segments.
- Each species analysed individually and in four combinations of species.
- Fulfilment of any catch quotas stopped fishing.
- No banking/borrowing or substitution scenarios analysed.

Scenarios:

1. No behaviour change (random selection of trips without replacement)
2. Adopting selective gear – applying data on changes in catch composition from published gear trials.
3. Optimal trip selection (based on operating profits and quota uptake)
4. Least optimal trips (based on operating profits and quota uptake)

Results:

1) **No behaviour change**

Fleet discard proportions of cod and whiting were 19 and 28% higher than the ICES estimate, resulting in the largest reductions in fishing effort, of up to 16%, under catch quotas for cod and whiting. Haddock discard proportions lower than ICES.

Effort reductions were greatest under a catch quota for whiting, resulting in fall operating profits of up to 15% (0-15%) compared with landings quota regime.

There were variations in the impact of catch quotas in different vessel segments. For example, <10m vessels discarded a higher percentage of plaice than whitefish vessels under 300 kW in engine power and therefore demonstrated larger fall in profits.

2) **Vessels adopting selective gear:** relative to the ‘no behaviour change’ scenario showed no overall increase in profits.

Gears: *Nephrops*: Cutaway trawl; 120 mm codend; inclined separator panel; modified square mesh panel; Swedish grid with/without square mesh codend. Fish trawls: Orkney trawl, Eliminator trawl.

Why? This is due to the loss of marketable fish with these gears. We assumed the gears would be used all of the time and could not be enhanced or improved by the skippers. Combinations selected.

3) **Optimised trips:** The highest ranked trips were those catching the least undersized regulated species and those catching the most unregulated species. Demonstrated marginal increase in profits.

4) **Least optimised trips:** provided a worst case scenario, the most restricted species were utilised first, resulting in substantial decreases in profits (up to 82%).

Conclusions: In general the level of incentive (for changing selectivity/non-compliance) increases with how much higher the vessel discard rate is from the uplift received, but it depends...

Assumptions and considerations	Selection of fleet (species defining the fishery)
Variability/representativeness of discard estimates	Potential to manipulate catch composition (selectivity)
Uplift level (% of discards => catch quota)	Representativeness of gear trial data
Distribution of uplift within the fleet	Markets for fish <CRS
Foregone catches	Logistic costs of landing <CRS fish : storage, transport etc
Market prices: in general and particularly of previously discarded >MLS fish	Access to available quota
Variability/confidence in operating costs	Banking/borrowing and substitutions
<i>de minimis</i>	Effort restrictions

Study 3.

Economic effects of a landing obligation for Dutch fisheries (Buisman *et al*, 2013)

Key findings

The total net costs of the introduction of a landing obligation for the Dutch fishing fleet are estimated to amount to between 6 and 28 million euros, depending on the way in which the quotas are modified and the prices of the by-catches to be landed. In this regard, it is assumed that the catch composition and all fishing activities will be the same as in the baseline year (2011). This study therefore says nothing about how fishermen could modify their fishing activities in order to reduce the costs of the landing obligation, and what the effects of such a modification would be.

In the event that the catch quotas remain the same as the current quotas plus discards (scenario 1), the costs of the landing obligation for the entire Dutch offshore fishing fleet would amount to between 6 and 14 million euros. By far the largest share of these costs would be borne by the cutter sector. The additional revenues from the landed by-catches are greatly dependent on sales prices, and do not compensate for the extra costs incurred to land the by-catches. The additional costs for full monitoring of all fishing trips by means of cameras would amount to approximately 6 million euros. The costs of observers on all trips would amount to approximately 18 million euros. The costs of enforcement may be lower if less than 100% of vessels and trips are checked.

Table S.1	Scenario 1 Costs and benefits for the entire fleet in millions of euros					
	Cutters		Pelagic fleet		Total	
Price of by-catch	€0.15/kg	€0.30/kg	€0.15/kg	€0.30/kg	€0.15/kg	€0.30/kg
Revenues	6.7	13.4	0.9	1.8	7.6	15.2
Costs	19.0	19.0	2.4	2.4	21.4	21.4
Net benefits	-12.3	-5.6	-1.5	-0.6	-13.8	-6.2

In scenario 2, in which it is assumed that the catch quotas will be equal to the current landing quotas, the net costs of the introduction of a landing obligation would be between 23 and 28 million euros, excluding any additional costs relating to checks. In this scenario, too, the largest share of the costs would be borne by the cutter sector.

Table S.2	Scenario 2 Costs and benefits for the entire fleet in millions of euros					
	Cutters		Pelagic fleet		Total	
Price of by-catch	€0.15/kg	€0.30/kg	€0.15/kg	€0.30/kg	€0.15/kg	€0.30/kg
Revenues from by-catch	3.9	7.7	0.7	1.3	4.5	9.0
Variable costs saved	58.4	58.4	1.3	1.3	59.7	59.7
Costs of landing by-catch	10.3	10.3	2.4	2.4	12.8	12.8
Costs of missed catches	77.5	77.5	1.8	1.8	79.3	79.3
Net benefits	-25.6	-21.7	-2.2	-1.6	-27.8	-23.3

In 2011, the total volume of discards of quota species in the Dutch fisheries sector amounted to more than 57,000 tonnes, of which around 47,000 tonnes were in the cutter fishing sector and just under 10,000 tonnes were in the pelagic sector.

The market survey carried out demonstrates that a selling price of between €0.15/kg and €0.30/kg can be expected for landed by-catches.

Scenario 2 and choke species

Scenario 2: Fishing quotas are equivalent in size to the current landing quotas. As the total catches are considerably higher than the current landings (and quotas), it is in this scenario, the species for which quotas are fully be used, not possible to land all current catches. If the selectivity of fishing does not improve, there will be so much of some species that less undersized fish can be landed. At the time that the quota of a specific species, which cannot be avoided completely, has been used (choke species), and escape clauses such as the 9% rule are utilized, fisheries should be stopped and even less of the other species can be landed.

Table 3.5		Scenario 2. Catches an quota for the Dutch cutterfleet					
Species	NL Quota 2011 (after swaps)	Total catch (incl. discards)			Total catch – 5% de minimis	Proportion quota/catch	Quota used in month
		Euro- cutters	Cutters >300 hp	Total			
Rays	258	69	1,376	1,445	1,373	0.2	3
Langoustine	1,103	2,055	582	2,637	2,505	0.4	6
Dab and flounder	11,421	4,153	21,204	25,357	24,089	0.5	6
Plaice	31,024	6,018	43,079	49,097	46,642	0.7	8
Whiting	1,401	498	1,385	1,883	1,788	0.8	10
Lemon sole and witch flounder	853	74	788	863	819	1.0	13
Turbot and brill	2,579	259	2,260	2,519	2,393	1.1	13
Sole	10,867	1,158	7,807	8,965	8,516	1.3	16
Cod	2,255	198	1,497	1,695	1,610	1.4	17

Table 3.5 shows the catches in 2011 compared to the quota for that year. The relationship between quotas and catch is lowest for rays (0.2). The quotas have been exhausted for rays by around March. At that time, only less than 25% of the current plaice and sole catches would have been taken. Fisheries may still not be stopped immediately upon catching choke species quotas, the 9% rule still offers the possibility of some delay.

According to this rule, 9% of the plaice quota (2,800 tons) and sole quota to date (975 tonnes) could be used for landing catch. This would mean that rays would be no longer a problem because the total volume of the catch is low. The next choke species is dab. The quota for this is fished by June. At that time, approximately 360 tonnes of skate could be landed within the plaice quota. So there is still space for 2,440 tons of dab and ray. It takes about 1.2 months before 9% of the plaice quota is taken for this. By mid-July fishing must be closed. Meanwhile the plaice quota is almost fully taken (83% plaice catches plus 10% of dab and rays).

Study 4.

Marine Scotland study. Demersal Landing Obligation Trial

Summary of key points from Marine Scotland report:

A pair team of demersal vessels, using a mesh size of 120mm+ and fishing in the North Sea, participated in a fully-documented landing obligation trial for all demersal species. The vessels had a quota uplift for several species in line with estimated of Scottish fleet discard rates and had to land all demersal catch.

The trial provided valuable insight into the pressure of choke species and financial consequences of leasing-in quota to cover non-target and unwanted catches.

The main objectives of the trial were:

- to identify the potential impacts of the landing obligation including, e.g., 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;
- 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.

The owner of the participating vessels chose by-catch reduction gear with 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 average size of haddock targeted by the Scottish fleet is smaller than cod, saithe and hake. A widespread abundance of cod, saithe and hake on the grounds traditionally fished by the Scottish fleet made it challenging to catch the target haddock without catching these other species; attempting to avoid either cod, hake or saithe often resulted in catching one of the other species. The vessels moved grounds to try to avoid concentrations of hake, saithe and cod (fishing pattern confirmed by VMS data).

As the trial progressed the skippers 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 their hake quota and within five weeks of the start of the trial the vessels had caught c.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 lease more hake quota. Hake therefore proved to be a key ‘choke’ species.

It would cost c.£600/tonne to lease in additional saithe when the market price for small saithe was only c.£600 - £900/tonne. This would represent a net loss after the costs of crewing, provisioning and maintaining the vessels were included, so leasing in quota was not an economically viable option. A month into the trial, the owner of the participating vessels was offered the opportunity to convert some haddock quota uplift into saithe and hake, to reflect quota convertibility provisions within the revised CFP. However, the skipper felt that this 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 the trial concluded early. The short trial period of the trial limited the data on actual catches when operating under a landing obligation.

Conclusions

a) Choke 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. Hake ‘choked’ the system very quickly, particularly due to a lack of available quota to lease or swap in.

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

b) Unwanted catch

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 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 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.

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4. Study of Scottish whitefish pair trawlers engaged in Fully Documented Fisheries trials. Demersal Landing Obligation Trial, Marine Scotland, November 2013, available at: <http://www.scotland.gov.uk/Resource/0043/00438386.pdf>

EWG Observations

The reports summarised above are useful in helping to identify some of the challenges regarding choke species that are facing those responsible for preparing discard plans.

These reports do suggest that there is a risk of choke species having a large negative effect on fishing if access to quota issues cannot be resolved. In many cases there may be businesses unable to continue trading and large quantities of quota uncaught if choke species take the effect highlighted in these reports. For instance, it was suggested that, as matters stand, Spanish vessels currently used to fishing in waters west of Scotland and Ireland have zero access to quota for 7 choke species, and if these vessels are unable to obtain quota for these species, they will not be able to fish there at all after the landings obligation is in effect for all species.

Analyses conducted show how difficult it will be in some cases to allow existing vessels to remain in business. In some cases, substantial changes in practice will be required in order for businesses to remain profitable while observing the landings obligations.

All methods used in the analyses considered relied on very important assumptions which may not represent the reality, and, depending on the assumptions used, may lead to very different conclusions. However, without a large margin of flexibility (e.g. interpreting the minimis on total TAC or 9% flexibility in transferring e.g. Nephrops for whiting) there could possibly be a substantial and unsustainable loss in profitability for vessel businesses.

Use of the *de minimis* exemption will be crucial in some cases and could mean the difference between vessels remaining in business or not. The interpretation of the regulation, particularly 5% of what, exactly, can legally be discarded, may have substantial effects on businesses. Also, the order of application of the exemptions may be important, eg. if species swap of 9% is applied first and then 5% permitted discards is applied after that.

It might not be possible to take a sea basin or regional approach to discard plans since MS rules for individual vessel access to quota vary substantially, and use of the 9% inter-species quota flexibility (which may totally change relative stability). Some of the solutions to problems may be specific to individual MS or even to individual POs within MS.

Swaps of quota between MS might become more difficult to achieve because MS that previously were willing to swap away quota, may now need that quota to prevent the species from becoming a choke species for their own vessels, or at least to limit the choke effect of certain species.

The problem and solutions vary by MS according to how they variously manage their allocation of quotas to vessels / businesses. MS and Producer Organisations that operate tradable quota units will have different solutions than those that have equal monthly catch allocations per vessel, non-tradable and not time flexible. Different species may choke different individual vessels and / or groups of vessels operating in the same sea areas, depending on how access to quota is allocated.

The species that may choke the catching activity depend on MS quota share.

In some cases, it will be difficult to identify in real time what the choke species are going to be, because of all the various flexibilities and exemptions that could be exercised. Equally, it may be

difficult to establish more than a few years ahead which species would be likely to choke the activities of various groups of vessels.

Some of the choke species issues might be less in future years if or as stock sizes increase and quotas increase.

The prospect of going out of business would clearly generate a substantial incentive for individual business operators not to comply with the landings obligation and compliance issues should be considered in light of identified expected choke species.

Experts are aware of schemes in third countries to manage allocation of quota for choke species and suggest that those involved in preparing discard plans may want to familiarise themselves with solutions in other parts of the world.

Discards plans will be more likely to be effective if they take consideration of incentives created to be more selective in catching and also, the incentives for non-compliance that may be created for individual business owners faced with the time and cost of making substantial adjustments to gear and practices.

Objective 1 of the CFP requires that fishing should deliver economic and social benefits and be done in such a way as to be environmentally sustainable. Article 15 of CFP reform might prove inconsistent with this objective if many vessel businesses cannot continue to trade and much of the agreed quota remains uncaught due to the effects of choke species.

Guidelines to MS in preparing Discard Plans:

Discard plans should include identification of the likely choke species for each MS involved in the plan. It could be useful to use methods similar to those used in Poseidon study and the LEI study. It would also be useful to take account of methods used in Condi et al.

Having identified choke species per MS, discard plans should show how the problems caused by choke species could be alleviated by quota swaps, use of improved selectivity of catching and use of exemptions and flexibilities such as the 9% inter-species flexibility and the 5% *de minimis* legal discard.

Where it is identified that a choke species may cause an early exhaustion of quota, any associated compliance risks should be identified in the discards plan and specific risk-based compliance and enforcement plans should be prepared.

Discard plans could consider use of special quota pools for choke species as a possible means to allow most vessels to continue fishing while endeavouring to avoid catching the choke species.

10 CONCLUSIONS AND OBSERVATIONS

Definitions of fisheries; management units and timelines for implementation

- Fishery (and “fisheries”) is an ambiguous term this word or concept is used variably to include aspects of vessels, vessel types, gear, fishing activity, species or stock and location. . Consideration should be given to what groups or combinations of vessels, species, areas, and gears are being managed. Where possible avoid the term “fishery” and define the management

units more precisely e.g. fleet segment or vessels, or activity by vessels fishing mainly for [species] in [area].

- Consideration should be given to phasing-in by species rather than fisheries as this negates the need to define fisheries (fleet/metier management units) which is problematic particularly in complex multi-species/multi-gear fisheries which tend to lack obvious boundaries.
- Phasing-in based on fisheries will lead to situations where certain species will be either included or excluded from the landings obligation depending on the fishery in which they are caught. This could in turn present significant control issues and may incentivise switching between management units.
- Clear definition of management units (“fisheries”) will be required for the application of *de minimis* and survival exemptions and other overarching management objectives. Consideration should be given to the acceptable level of administrative burden for the definition (aggregation) of management units including control and monitoring and the need for clearly defined rules for assigning an individual business (vessel) to a particular management unit.
- Defining fisheries is in essence a difficult task which has no unique and simple scientific solution. Individual fishing activities and fishing vessels can be grouped in many ways for defining fisheries and fleets, and therefore the question requires a political trade-off on the agreed level of aggregation (“zoom in”) and grouping criteria. Defining fisheries based on their target species (“fishery for Norway lobster”) is intuitively meaningful, but in practice it is really difficult to define clear, robust and objective quantitative rules allowing individual fishing vessels and fishing trips to be allocated to such fisheries. Conversely, management units based on gear specifications are easier to define, manage and monitor, but they may ignore large differences in individual fishing and targeting patterns.

Exemptions on the basis of high survivability

- Information and data needs that constitute robust scientific evidence of high survival are in general substantial and require dedicated scientific experiments which are capable of demonstrating survival in the short, medium and long term.
- Consideration should be given to the current state of the art for specific species/fisheries with respect to survival estimates or the potential to obtain such estimates when deciding on species and fisheries to be included in discard plans.
- Consideration should be given to the appropriateness and utility of exemptions based on high survival given that this may limit the incentive to improve selectivity thereby undermining one of the key principals of the reform. A comparison of the potential impacts of exempting a particular species versus an obligation to land should be provided together with supporting justification why improvements in selectivity are difficult or unwarranted.
- Exemptions are likely to be metier specific which has implications in terms of the level of supporting information required in that exemptions should not only focus on the biological survivability of the species, but how the evidence of survival relates to the fishing activity. As such there will be a need to define management units based not only on the species but also on the technical characteristics of the vessels, gears and operation.
- Captive survival experiments are often undertaken under ideal conditions. It is important that any studies undertaken as the basis of scientific exemptions replicate as much as practically possible, the operational conditions of the fleets for which exemption is being sought.

- Where survival is shown to be less than 100%, provisions should be made for estimation of the weight and age structure of fish not surviving the discarding process.
- Approved exemptions should be supported by long term tagging studies to monitor and assess the level of true survival in the wild. Such experiments are necessary to eliminate potential (positive) bias that may be associated with captive survival studies.

Provisions for de minimis exemptions

- The basic regulation considers that the application of *de minimis* discard allocations should be considered as a 'last resort' after possible technical and tactical adaptations to reduce unwanted catch have been exhausted. This may be aided by the use of a hierarchical or decision tree analysis.
- Consideration should be given to reviewing the key "fisheries" in all areas with existing discarding issues with the aim of evaluating the potential options currently available to minimise discards for each fishery. This should also include the contribution each segment makes to the overall catch.
- By a process of elimination, fleets/metiers where *de minimis* may be appropriate based on the appropriate conditionality, regional groups should provide justification why *de minimis* is required this should include circumstances where it is economically unviable to adjust the selectivity of the fleets concerned. This can be achieved by e.g. the application of the break even indicator.
- The EWG interpreted that disproportionate cost is assumed and the issue is how to arrive at some discard percentage which will be permitted for a particular gear in a specific fishery. If a different understanding of this part of the regulation is assumed then the approach described above for the first conditionality could be readily adapted.
- The process of arriving at an acceptable discard percentage for different gears under an assumption of disproportionate cost is complex and depends on the specificities of each fishery.
- Consideration should be given to the provision of data *inter alia* describing the fleets that which would be recipients of "certain percentage" defined in the regulation, the overall contribution that these fleets make to the national and internal catches; causes of disproportionate costs; measures already taken to reduce discards.

Provisions for the documentation of catches

- Discarding and retention takes place at each haul, consideration to requiring haul by haul documentation should be considered as this will aid verification of catch.
- Regional groups will need to establish suitable means of monitoring discarding associated with *de minimis* allowances. The degree of monitoring should be assessed against the potential risks of allocations being exceeded.
- The current >50kg threshold for the mandatory reporting of discards is likely to result in significant underreporting of catches and consideration should be given to adjusting the 50kg threshold to minimise under reporting of discards.
- Control tools currently available are focussed towards the control of landings and adherence to catch composition rules. These have limited utility for verification of documentation of retained and discarded catch and available data shows that there is poor compliance with the mandatory recording of discards. Such an analysis could be undertaken considering *inter alia* current discard profiles; fleets known to have ongoing high-grading issues.

- In order to ensure a high level of accuracy and compliance, a risk based analysis at a regional level which explore the potential for a given fleet not complying with the need to accurately record all catches or the retention of all species subject to the landing obligation.
- Consideration should be given to the continued independent quantification and verification of discards by observers and such estimates should be used as the basis of monitoring uptake of fishing opportunities.

Fixing of minimum conservation sizes

- The EWG considers that plans should clearly state the objectives for setting MCRS and that the primary objective should be the aim of ensuring the protection of juveniles of marine organisms and at the same time maximizing the potential of the resource by changing the exploitation pattern. The EWG also considers that plans should also specify the metrics to be used to measure protection of juveniles. For example protection of juveniles may be determined through the reduction in fishing mortality on juveniles to a specified rate.
- Regional groups may also consider additional objectives e.g. market; ethical and other biological/ecological considerations. In such circumstances it will be necessary to provide accompanying justifications.
- If there is no provision to include a MCRS in the plan for stocks for which a MLS currently exists, provision of supporting information to justify the absence of a MCRS would inform the decision on whether to accept such a provision.
- For those stocks that are not currently subject to a MLS, supporting information to justify the introduction of a MCRS would inform the decision on whether to accept such a provision and that such information should accompany the plan.
- The EWG considers that plans should provide information to demonstrate that the introduction of the proposed MCRS is likely to achieve the stated objectives. Such information, where possible, should include results of simulations.

Potential impacts of landing obligation due to choke species

- The evidence presented suggests that there is a risk of choke species having a large negative effect on fishing if access to quota issues cannot be resolved. In many cases there may be businesses unable to continue trading and large quantities of quota uncaught if choke species take the effect highlighted.
- Analyses conducted show how difficult it will be in some cases to allow existing vessels to remain in business. In some cases, substantial changes in practice will be required in order for businesses to remain profitable while observing the landings obligations. Without a large margin of flexibility (e.g. interpreting the minimis on total TAC or 9% flexibility there could possibly be a substantial and unsustainable loss in profitability for vessel businesses.
- Swaps of quota between MS might become more difficult to achieve because MS that previously were willing to swap away quota, may now need that quota to prevent the species from becoming a choke species for their own vessels, or at least to limit the choke effect of certain species.
- The problem and solutions vary by MS according to how they variously manage their allocation of quotas to vessels / businesses and their quota allocation of the overall TAC. MS and Producer Organisations that operate tradable quota units will have different solutions than those that have equal monthly catch allocations per vessel, non-tradable and not time flexible. Different species

may choke different individual vessels and / or groups of vessels operating in the same sea areas, depending on how access to quota is allocated.

- The prospect of going out of business would clearly generate a substantial incentive for individual business operators not to comply with the landings obligation and compliance issues should be considered in light of identified expected choke species.
- Objective 1 of the CFP requires that fishing should deliver economic and social benefits and be done in such a way as to be environmentally sustainable. Article 15 of CFP reform might prove inconsistent with this objective if many vessel businesses cannot continue to trade and much of the agreed quota remains uncaught due to the effects of choke species.
- Discard plans should include identification of the likely choke species for each MS involved in the plan. Having identified choke species per MS, discard plans should show how the problems caused by choke species could be alleviated by quota swaps, use of improved selectivity of catching and use of exemptions and flexibilities such as the 9% inter-species flexibility and the 5% *de minimis* legal discard.
- Where it is identified that a choke species may cause an early exhaustion of quota, any associated compliance risks should be identified in the discards plan and specific risk-based compliance and enforcement plans should be prepared. Discard plans could consider use of special quota pools for choke species as a possible means to allow most vessels to continue fishing while endeavouring to avoid catching the choke species.

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13 LIST OF BACKGROUND DOCUMENTS

Background documents are published on the meeting's web site on:

<http://stecf.jrc.ec.europa.eu/web/stecf/ewg1317>

List of background documents:

1. EWG-13-17 – Doc 1 - Declarations of interest of invited and JRC experts (see also section 12 of this report – List of participants)

European Commission

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Abstract

The Expert Working Group meeting of the Scientific, Technical and Economic Committee for Fisheries EWG-13-17 on Landing obligation in EU fisheries part II was held from 26-28 November 2013 in Dublin, Ireland. The report was reviewed and endorsed by the STECF by written procedure in February 2014.

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