Recommendations on implementing the EU landing obligation in pelagic fisheries

PELAGIC REGIONAL ADVISORY COUNCIL

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Pelagic RAC

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1 EXECUTIVE SUMMARY

1 Executive Summary

The new Common Fisheries Policy (CFP) which came into force on the 1st of January 2014 foresees a gradual implementation of a landing obligation in EU waters and for vessels flying under an EU flag not subject to foreign jurisdiction and sovereignty (see chapter 1). Pelagic fisheries will be subject to this landing obligation as of the 1st of January 2015. Implementing the landing obligation will not only require a change in fishing behaviour, but also a number of pragmatic solutions and certain flexibilities within the legal framework. In this document the Pelagic RAC provides recommendations on key issues relevant for implementing the landing obligation for the thirteen stocks under the remit of the Pelagic RAC (see chapters 3, 6, 7-19). It also provides advice on how to further increase selectivity by utilizing the European Maritime and Fisheries Fund (EMFF) to advance the development of acoustic imaging techniques and gear modifications and by encouraging skippers to use pre-sampling techniques such as jigging (see chapters 3 and 5).

The recommendations as set out in chapter 6 are summarised below and are based on the detailed stock information, the problems and solutions identified for each of the thirteen stocks (see chapters 7-19) and the Pelagic RAC's interpretation of articles 15 and 16 of the new CFP 1380/2013 (see chapter 3). All recommendations should be followed for a period of two years unless stated otherwise to allow sufficient time for scientific data analysis while simultaneously minimizing potential risks in case the desired effects fail to appear.

On the grounds of selectivity increases which are very difficult to achieve with the current state-of-the-art technology (see chapter 3.1.1.3.1.) the Pelagic RAC recommends that a *de minimis* exemption for some of the pelagic stocks in its remit is warranted (see chapters 3, 7-19). The amount of the *de minimis* should thereby be set according to the official ICES and/or STECF discard rates and apply to the EU as a whole (see chapter 6.1). Despite the current technological limitations to further increase selectivity efforts in this direction must be continued. These should focus on improving acoustic imaging, gear revisions as well as encouraging fishermen to adapt their fishing behaviour and use pre-sampling methods such as jigging wherever possible (see chapter 6.1).

Based on scientific and anecdotal evidence the Pelagic RAC recommends that further research is done how in purse-seine fisheries under specified conditions and dependent on species, gear, crowding density and duration a release rule may be implemented (see chapters 3.1.1.2 and 6.2). It is further recommended that ICES and STECF focus on specific fisheries as a priority, i.e. mackerel, Atlanto-Scandian herring, herring in the North Sea and southern horse mackerel and by July 2014 clearly define conditions under which such a rule could be implemented. In addition the Pelagic RAC will set up a focus group examining

existing studies on the survivability in purse-seine fishing and collaborate with scientists on the formulation of criteria for a release rule (see chapter 6.2).

Regarding the inter-species flexibility of up to 9% the Pelagic RAC advises to temporarily suspend this flexibility for fisheries under its remit with the special exception of mackerel, horse mackerel, blue whiting and associated bycatch species in the French and Spanish artisanal fleets (see chapters 3.1.2 and 6.3). The 10% year-to-year flexibility as well as minimum conservation reference sizes should be adhered to (see chapters 3.1.3, 3.1.4 and 6.3).

Situations of *force majeure* are not covered in the basic regulation of the CFP and therefore the Pelagic RAC emphasizes that the safety of crew and vessel must at all times take precedence over the landing obligation. At the same time situations relating to force majeure must be fully documented and documentation should be transmitted to the appropriate Member State (see chapters 6.4 and chapter 20).

Under a fully documented fishery and a thorough control and enforcement regime leaving no doubts about the verifiability of measures bans on automatic sorting equipment and fish processing plants are obsolete and should therefore be lifted (see chapter 6.5).

The new CFP stresses the importance of cooperation with stakeholders and therefore makes it obligatory for Member States to consult with relevant Advisory Councils. The current consultation process in which different regional Member States groupings dealing with overlapping stocks requesting advice from the Pelagic RAC on short notice is suboptimal and has to be structured in a much more systematic way. The Pelagic RAC therefore strongly advises setting up a regional Member States subgroup dealing exclusively with the thirteen stocks in the remit of the Pelagic RAC (see chapter 6.6).

The Pelagic RAC is deeply concerned regarding the legal context of the CFP which currently does not allow for the implementation of the landing obligation. A situation that creates legal difficulties and ambiguity for the fishermen from the 1st of January 2015 must be avoided and the Pelagic RAC strongly urges Member States to make every possible effort to resolve these uncertainties (see chapter 6.7).

In terms of monitoring, control and enforcement the Pelagic RAC underlines a necessary shift in the burden of proof, the creation of a level-playing field across the EU and the verifiability of measures taken to implement the landing obligation to achieve maximum compliance. Various monitoring and control instruments can be utilized, such as CCTV, observers, drones, genetics and self-sampling and a combination of these might be necessary (see chapters 4 and 6.8).

The costs in relation to achieving the objectives of the CFP as well as implementing the landing obligation can partly be covered under the EMFF and both fishing organisations

as well as Advisory Councils should make readily use of the opportunities provided under the EMFF (see chapters 5 and 6.9).

2 INTRODUCTION

2 General Introduction

On 11 December 2013 the basic regulation of the new CFP has been signed by the Council and the European Parliament providing for the conservation and sustainable exploitation of marine resources in EU waters and by the EU fleet (Regulation (EU) No 1380/2013). One of the main objectives of the new CFP regards achieving maximum sustainable yield (MSY) in 2015 or on a progressive, incremental basis at a later date in cases where this *"would seriously jeopardise the social and economic sustainability of the fishing fleet"* (Regulation (EU) No 1380/2013 p.23), but no later than 2020. To realize this objective different conservation measures are described in the CFP including multiannual plans. These plans can apply either to singles stocks or stock complexes taking into account interactions between fish stocks, fisheries and marine ecosystems (Article 9.3). An important dimension to be integrated in multiannual plans encompasses the implementation of the landing obligation and measures designed to avoid and reduce, as far as possible, unwanted catches (Article 10). The landing obligation represents a fundamental management shift of EU fisheries, switching the focus from landings to catches. It is intended to support the overall objectives of the CFP, namely to ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies (Article 2.1). However, due to a deadlock between Council and Parliament regarding institutional cognisance the approval of multiannual plans is currently stalled. As a temporary solution to implement the landing obligation where no multiannual plan has been adopted the CFP provides the possibility to adopt specific discard plans for a period of no more than three years (Article 15.6). Such discard plans should be submitted as a joint recommendation by Member States with a direct management interest in the resources covered in the plan after having consulted the relevant Advisory Councils (Article 18). Therefore the Pelagic RAC has pro-actively taken the initiative to provide a recommendation on implementing the EU landing obligation in pelagic fisheries based on extensive information collected on the fisheries in its remit, discard avoidance measures already in place as well as specific problems and potential solutions on a stock-by-stock basis. The results are presented in this document giving recommendations solely applicable to the thirteen stocks in the remit of the Pelagic RAC.

Before providing an analysis of the provisions and conditionalities under Articles 15 and 16 of the CFP the nature of pelagic fisheries as opposed to demersal fisheries is outlined and illustrated. Afterwards a chapter regarding monitoring, control and enforcement of the CFP as well as the EMFF is presented, followed by general conclusions and recommendations. Detailed information on the thirteen pelagic stocks in the remit of the Pelagic RAC are

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subsequently included. Stocks identified as priority 1 are dealt with first, succeeded by the remaining priority 2 stocks.

2.1 PELAGIC FISHERIES- OVERVIEW

The nature of pelagic fishing involves targeting large shoals of fish in the mid-water column. Fishing methods include single and pair trawling, purse seine and ring netting. Pelagic fishing vessels take all reasonable precautions to ensure that their fishing activity is only directed towards stocks of the species for which they intend to catch and for which they have the necessary quota entitlement. Trawl nets are made using large mesh in the front part of the net enabling non target species to escape.

The operation to transfer fish caught in the net to the vessel is similar for many pelagic vessels, whereby the catch is pumped directly from the net in the water into the ship. Some vessels do not have a pump, however, and these vessels haul the catch on-board the deck where it is stored by various means. These procedures are totally different to the one undertaken by the demersal fleet where the catch is hauled directly on board the vessel and transferred to the deck where sorting is carried out. Pelagic vessels are fitted with a fish pump, which in the case of a trawl fishery, is attached to the end of the net and used to pump the catch directly into refrigerated seawater (RSW) tanks via a water separator. The catch is rapidly pumped from the net to the vessel at a rate of circa 12 tonnes per minute. *This is a key difference in catching pelagic species and the method of bringing the catch on board the vessel that should be noted as any discards that may arise will not be known until the sorting and grading is done at the factory ashore or at sea.* The operation for purse seine operations is slightly different, the pump is lowered directly into the hauled purse net and the catch pumped aboard (see chapter 3.1.1.2).

2.1.1 FRENCH AND SPANISH ARTISANAL PELAGIC FISHERIES

French artisanal fisheries concern vessels using trawls, purse-seine, longlines and nets to target small pelagic species. With the exception of some purse-seiners, catches are hauled directly on-board, then sorted and stored. For some purse-seiners catches are hauled on-board using a brailer, then sorted and stored. Fishing trips are relatively short lasting from one to approximately ten days at sea.

The Spanish fleet operating in ICES areas VIIIb-d and IXa consists of artisanal vessels, divided by sectors and modalities which use handlines (hooks), traps, bottom longline, purse-seine, gillnet and trawl. The bulk of the fleet fishing with methods other than trawl and purse-seine consists mostly of ships ranging in length from 12 to 15 meters with a capacity of less than 30 GT and a few vessels between 15 and 18 meters. The purse-seine

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fleet with a longstanding tradition consists of vessels between 15 and 26 meters with a capacity of 30 to 150 GT. The trawler fleet, which is more "industrial" within the artisanal fleet, includes vessels below 30 meters with a capacity between 150 and 250 GT.

A single fishing trip usually lasts for a day which means that the vessels leave and return to the harbour on the same day. All fish caught goes directly into human consumption and to the fresh market.

As the Spanish artisanal fleet is very diverse so are its catches and catch composition can vary daily depending on the type of vessel, method used, capacity etc. Once the catch has been brought on-board it is stored in plastic boxes, refrigerated by ice scales, sorted by hand and stowed, prepared to be landed and sold at the port market on the same day.

2.2 FISH OPERATION BY PELAGIC RSW VESSELS AND FREEZER-TRAWLERS- IN PICTURES

Figure 2.2.1 Hauling of the net.

Figure 2.2.2 Net being attached to fish pump.

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Figure 2.2.3 Catch being pumped from a purse-seine.

Figure 2.2.4 Catch being pumped through the separator to the RSW tanks.

2.3 PROCESSING ON-BOARD A FREEZER-TRAWLER AFTER PUMPING THE FISH IN RSW (BUFFER) TANKS- IN PICTURES

Figure 2.3.1 Sorting and grading by machines.

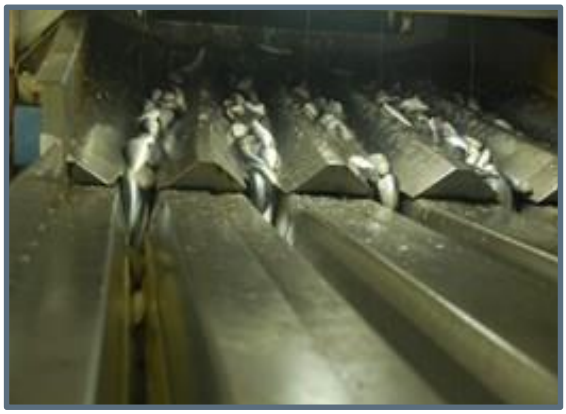

Figure 2.3.2 Sorting and grading by machines.

Figure 2.3.3 Human check of machine sorting and grading.

Figure 2.3.4 Factory deck.

Figure 2.3.5 Filling freezers.

Figure 2.3.6 Frozen blocks of whole fish.

Figure 2.3.7 Sealing box of whole frozen fish.

Figure 2.3.8 Packaging in cartons.

Figures 2.3.9, 2.3.10 and 2.3.11 Unique code (full traceability), straps and storage on-board (-23°C).

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2.4 FISH OPERATION BY THE FRENCH AND SPANISH ARTISANAL PELAGIC FLEET- IN PICTURES

Figure 2.4.1 Artisanal purse-seiner (22,5 m) from Boulogne, France.

Figure 2.4.2 Spanish artisanal vessel.

Figure 2.4.3 Purse-seine nets are hauled back on-board with a crane.

Figure 2.4.4 Brailer on a purse-seiner.

Figure 2.4.5 Pelagic species are conserved in a box.

Figure 2.4.6 Spanish trawl in the mackerel fishery.

Figure 2.4.7 Spanish trawl in the mackerel fishery.

Figure 2.4.8 Spanish mackerel catches destine for human consumption.

Figure 2.4.9 Spanish mackerel catches destined for human consumption.

Figure 2.4.10 Spanish vessels fishing mackerel with handline (line and hook).

Figure 2.4.11 Spanish vessels fishing mackerel with handline (line and hook).

Figure 2.4.12 Mackerel captured by Spanish handline.

Figure 2.4.13 Spanish artisanal purse-seine vessel.

Figure 2.4.14 Spanish purse-seine fishing by handline.

Figure 2.4.15 Spanish purse-seine fishing by handline.

Figure 2.4.16 Spanish purse-seine fishing by handline.

Figure 2.4.17 Spanish pelagic trawler catching mackerel.

3 New requirements in articles 15 and 16 of the CFP in relation to pelagic stocks, implementation of discard measures, timeframes and incentives

In December 2013 the Council and the European Parliament have agreed on a new CFP including the gradual introduction of a landing obligation for all vessels fishing in EU waters and for vessels flying under the flag of an EU Member State fishing outside EU waters not subject to third countries' sovereignty or jurisdiction. The primary objective of the landing obligation is to reduce fishing mortality through more selective and sustainable fishing methods thereby contributing to recovering and maintaining fish stocks at sustainable levels and ensuring that negative impacts of fishing activities on the marine ecosystem are minimized as laid out in the objectives of the CFP (Article 2.2 and 2.3).

Articles 15 and 16 of the CFP lay out the specific provisions applicable under the landing obligation and the relevant paragraphs are discussed in detail in this chapter.

3.1 ARTICLE 15: LANDING OBLIGATION

With regards to pelagic and industrial fisheries the landing obligation will come into force on 1 January 2015 at the latest. This includes among others fisheries for blue whiting, boarfish, herring, mackerel and horse mackerel (Regulation (EU) No 1380/2013 Article 15.1a). Annex III of the CFP clearly stipulates that the above mentioned species fall under the remit of the Pelagic RAC in all geographical areas excluding the Baltic Sea and the Mediterranean Sea. Therefore, any recommendation provided in this document solely applies to the thirteen stocks covered and must not set a precedence for other species, fisheries or stocks.

3.1.1 EXCEPTIONS TO THE LANDING OBLIGATION

Article 15.4 of the CFP lists conditions under which the landing obligation shall not apply:

(a) species in respect of which fishing is prohibited and which are identified as such in a Union legal act adopted in the area of the CFP;

(b) 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;

(c) catches falling under de minimis exemptions.

Details of implementation taking into account the points listed above shall be specified in multiannual plans (Regulation (EU) No 1380/2013 Article 15.5) or where no multiannual plan has been adopted may be determined on a temporary basis in specific discard plans

(Regulation (EU) No 1380/2013 Article 15.6). In both cases Article 18 providing for regional cooperation among Member States shall apply. This also includes consultation of the relevant Advisory Councils and the Pelagic RAC has worked collaboratively within the limited time frame to present its recommendation on implementing the landing obligation.

3.1.1.1 PROHIBITED SPECIES

A list of clearly identified prohibited species is provided under Article 12 of Regulation (EU) No 43/2014 and does not require any further reflection. For a number of species the TAC has been set to 0 in the TAC and quota regulation and these species must therefore not be targeted. However, from a legal point of view these species, when accidentally caught, must be landed contrary to prohibited species. In addition there are species which cannot be landed due to human health considerations such as high levels of heavy metals and dioxins.

3.1.1.2 HIGH SURVIVAL

The nature of pelagic trawl fisheries in which the catch is pumped from the net directly into RSW tanks makes the survival of any fish species highly unlikely. However, purse-seine fisheries under certain conditions could be granted an exemption based on the so-called "Norwegian 7/8 rule" implemented in Norway which depends on the purse-seine net not having been closed for more than 7/8.

In the purse-seine fishery a school of fish is first surrounded by a large net. Subsequently the volume of water surrounded by the net is gradually decreased by retrieving the net and thereby increasing fish density up to a level where the fish are so crowded that they can be pumped onto the ship. However, in some cases the fish are kept encaged at low concentrations for up to 48 hours in order to drain their stomachs for content, a procedure known as "swimming" (see 3.1.1.2.1 for more information). Gradually retrieving the purse seine provides the opportunity to define a point of no return until when retrieving the net surrounding the fish school can be stopped and the fish released with high chances of survival. This is known as the 7/8 rule in Norwegian legislation, a rule which is somewhat controversial because it remains to be shown whether 7/8 is the proper distance, for all species in all fisheries, that secures high survival.

Occasions in which this rule can be beneficial includes situations in which a school of fish is mistaken for the wrong species. Such an incident will not necessarily be realized before the seine has been put in place and the school been surrounded. These cases, even though rare and not well documented, do occur for example in the herring fisheries in which a school of saithe can accidentally been mistaken for a herring school. Another documented example from 2012 mentions a Norwegian fisherman targeting horse mackerel who accidentally surrounded 100-150 bluefin tuna. Thanks to the 7/8 rule which allowed the

fisherman to release the school all but one tuna survived the fishing operation (http://fiskeribladetfiskaren.no/?side=101&lesmer=32889).

Another situation in which it would be desirable not to bring the fish on-board is when the catch consists of undersized fish (Stratoudakis and Marcalo 2002, sardine examples). This can be detected by using pre-sampling methods such as jigging at an early stage and if it is confirmed that the surrounded fish school consists of undersized fish the catch can be released as long as high survival is likely.

In terms of pre-sampling purse-seine fishing operations offer a range of possibilities which aim at increasing selectivity. A surrounded school of fish can potentially be evaluated by:

- Acoustic instrumentation for improved identification of surrounded fish schools (in terms of species, quantity and fish size).
- Evaluating the nature of the surrounded fish school using cinematography.
- Taking a sample of the surrounded fish by jigging.
- Taking a sample by shooting a mini-trawl into the purse seine.

Experiments show that the size of the catch in a purse seine as well as the volume within the purse seine strongly influence when the fish are so crowded that they will no longer survive the release. Also the duration of the period during which the fish experiences high crowding is important. If the catch size is known, the volume inside the net can indicate when fish densities are getting critically high and releasing should no longer be allowed. Several scientific studies have investigated the survival of fish released during purse-seine operations, especially regarding herring, mackerel and sardines (Huse and Vold 2010, Marcalo et al. 2013, Marcalo et al. 2010, Stratoudakis and Marcalo 2002, Misund and Beltestad 2000, Tenningen et al. 2012). The pattern emerging from these studies indicates that survival decreases from being high when there is ample space available within the purse seine to critical levels when crowding density increases, to practically zero when the fish are so limited in space that they enter a state of panic. In general the survival of small pelagic species is variable and does differ between studies (e.g. Marcelo et al. 2008 & 2010, Huse and Vold 2010, Tenningen et al. 2012). This suggests that applying a generic rule – where a fixed part of the purse seine can be retrieved and still allowing for the catch not to be taken onboard the ship, similar to the Norwegian 7/8 rule - is inadequate if high survival is to be secured. Such a rule will not be applicable for all fisheries and all species. Instead, the biology of the species, the size of the purse-seine and the average purse seine catch are all parameters that should be evaluated and taken into account with respect to the specific scientific evidence. Based upon such an evaluation, the part of the purse that can be retrieved while still securing high survival should be determined. To that end the Pelagic RAC proposes to evaluate herring and mackerel separately, although these species are to a large

degree caught by the same fleet, and therefore the purse-seines used will in most cases be the same for the two species. Herring are further divided into three fisheries: the fishery targeting the North Sea stock, the fishery targeting the Atlanto-Scandian stock and the fishery in area IIIa/Skagerrak which targets a mixture of Western Baltic spring spawning herring and North Sea autumn spawning herring.

3.1.1.2.1 HERRING

Anecdotal information on "swimming" indicates that the survival rates of herring are high under the right conditions. "Swimming" is the activity where the herring are kept encaged in the purse seine for up to 48 hours in to order to make sure that the stomachs are empty before they are pumped into the tanks. Typically 2/3 of the net is retrieved under such operations for a catch up to 200 t of herring. The exact proportion of net retrieved depends on sea conditions, whereas the "swimming" duration depends on the temperature. Tenningen et al. (2012) found that crowding densities at 100 kg m-3 or even higher did not result in any additional mortality compared to the control groups, while the mortality after severe crowding (>400 kg m-3) exceeded 50% and in some cases was close to 100%. For comparison the density of overwintering Atlanto-Scandian herring is assumed to be around 7 kg m-3. The mortality was size and condition related, with smaller herring and herring with a lower condition factor being more vulnerable. Similar results have been shown for sardine (Marcalo et al. 2010). The experiments in Tenningen et al. (2012) were conducted under relatively good weather conditions and the mortality rates may be different during other seasons and conditions. A key parameter for survival of herring appears to be the proportion of scales lost. Olsen et al. (2012) did find a significant difference in the survival of individuals that had 50% of their scales removed compared to individuals that had 25% of their scales removed.

3.1.1.2.2 NORTHEAST ATLANTIC MACKEREL

The latest studies conducted by Huse and Vold (2010) support the findings by Lockwood et al. (1983) which show that mackerel are more sensitive to crowding than herring, and that crowding duration is important. Huse and Vold (2010) found a mortality of 28% for fish crowded to a level of 30 kg m-3. From simple confinement trials Lockwood et al. (1983) found that 50% of the fished mackerel died after 48 hours at a stocking density of 30 fish m−3 (6.5 kg m−3). Trials in which fish were held at stocking densities and for durations comparable to those experienced in a "dried up" purse-seine prior to "slipping", showed that up to 90% of "slipped" fish died within 48 hours of release. The primary cause of death was probably skin loss, caused by abrasion. In comparison, Misund and Beltestad (2000) estimated survival rates of 18-56% for mackerel after size-sorting by rigid grid in purse-seines and after one month of monitoring. However, it is important to realize that 30 kg m-

3 still corresponds to a large – but not unrealistic - catch. Tenningen (2013) writes: "The results suggest that for catches of between 115 and 440 tonnes of mackerel, there is still plenty of space inside the net at the point of no return. A 1.000 tonnes catch in the same volume, however, would have been much closer to the critical limit of approximately 30 kg of mackerel/m3."

3.1.1.3 DE MINIMIS EXEMPTION

Paragraph 5c of Article 15 of the CFP defines two conditionalities under which a *de minimis* exemption of up to 5% of total annual catches of all species subject to the landing obligation may be granted:

> *(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 a plan, of total annual catch of that gear.*

Catches under a *de minimis* shall not be counted against the relevant quotas; however, all such catches shall be fully recorded (Regulation (EU) No 1380/2013 Article 15.5c).

For the purpose of clarification and because in our experience this provision often leads to confusion the Pelagic RAC would like to emphasize that the *de minimis* provision does not result in higher fishing mortality because it will be subtracted from the ICES catch advice, but not from the quota. In other words, when the Council sets total annual catches (TACs) it has to take into account the ICES catch advice minus the *de minimis*.

3.1.1.3.1 SELECTIVITY

Fisheries targeting small pelagic stocks are by nature very selective. On the one hand schooling pelagic fish tend to occur in single species aggregations which causes catches to be relatively clean with little bycatch (Borges et al. 2008, Misund 1993). On the other hand there is a strong economic incentive to only catch the target species since fishers do not want to catch fish that either cannot be sold or creates sorting difficulties (Bellido et al. 2011). At the same time undersized fish may not be retained on-board and has to be discarded which requires additional handling and effort (Council Regulation (EC) No 850/98).

The rather clean nature of pelagic fisheries may explain why there has been only limited development and research effort directed to increasing selectivity in pelagic trawl fisheries within the ICES community (ICES 2006a), whereas there are numerous studies targeting demersal fisheries (e.g. Catchpole et al. 2008, Catchpole and Gray 2010, Guijarro

and Massuti 2006, Macher et al. 2008, Massuti et al. 2009, Revill and Holst 2004, Revill et al. 2007). The pelagic industry, however, has in cooperation with private tech companies and/or through industry-science partnerships spent and is still spending substantial resources and efforts into advancing acoustic imaging techniques as well as revising gear to increase both size and species selectivity. Often results of these studies are not or only partially accessible due to confidentiality agreements with the tech companies that aim at patenting their products once deemed fit for purpose.

Some information, however, can be freely accessed. In terms of size selectivity two issues have to be taken into account. On the one hand the aft part of trawls is usually constructed in netting of a small mesh size (typically less than 40mm). This is mainly to avoid "meshing" of smaller individuals. Meshed fish have no economic value as they are badly damaged by the "scissor effect" of the mesh. The use of too large a mesh size in such fisheries has been shown to result in significant increases in sorting time on-board due to this meshing effect (Casey et al. 1992). On the other hand many pelagic fish seem to suffer high mortality after being released from the fishing gear - mainly caused by the loss of scales which easily leads to secondary infections and osmotic imbalance. Several studies reported by Kennelly (2007) have clearly demonstrated that for pelagic species incurring such high post-escape mortality, there is no biological or economic justification for mesh size increases. Clearly unless the level of escape mortality is known, the benefits of a change in selectivity could be largely overestimated. The problem of poor survival after escape appears to be a common characteristic of many pelagic trawl fisheries. These are compelling reasons for not increasing mesh sizes in pelagic trawl mesh sizes as the necessity to minimise meshing outweighs the potential conservation benefits. Therefore mesh size increases are not seen as an appropriate tool to use in managing small pelagic species.

A research project investigating the effects of a selectivity grid on both single and pair trawlers in the Scottish mackerel fishery was carried out under a Scottish industry-science partnership. While the results clearly show that both small mackerel and herring escape through the selectivity grid, differences in sizes and weight between vessels using the grid and control vessels were statistically not significant. However, at the same time it was pointed out that selectivity in the mackerel fishery was already very high due to pre-sampling of shoals using handline or automated jigging techniques that further improvements under these conditions seem highly unlikely and the full potential of the grid could therefore not be estimated (Laurenson and MacDonald 2008).

An EU funded project (SELMITRA) was carried out in the 1990s with the objective to improve species and size selection in midwater trawls through behaviour studies and gear modification. This study, however, showed that separating pelagic species was difficult (van Marlen 1995) and no further work was carried out. As mentioned above a typical problem associated with size selection devices is the high mortality of escaping fish. In Norwegian

mackerel pelagic trawl fisheries, a grid with 42 mm bar spacing was developed to reduce small mackerel, but was not introduced into regulation due to suspected high mortality of the escaping fish (Kvalsvik et al. 2002). Square mesh codend have been tested in the English Channel mackerel fishery, but this did not improve size selectivity of mackerel (Casey et al. 1992) and led to large-scale meshing of legal size mackerel. A grid system was tested for size selectivity in the Baltic herring fishery (Suuronen 1991) which showed it was possible to increase selectivity but at the same time showed mortality of escaping fish was very high and no further trials were carried out. The bycatch of demersal species is reported in a number of pelagic fisheries. In most cases such catches are very low but in some fisheries they are higher, prompting development and testing of selection devices to minimise such catches. In the Norwegian herring fishery, a grid system for large pelagic trawls was developed to reduce catch of saithe and cod (Isaksen et al. 2005). The device is now being used on a voluntary basis. However, large losses of herring have been observed with the use of the device when targeting dense schools of herring, and there is concern over the mortality rates of the escaping fish. Similar grid systems have been tested in Faroe Islands, Iceland and Norway to reduce saithe and cod in the blue whiting fisheries (Zachariassen and Thomsen 2007, H. Einarsson, personal communication). This grid system has been proven to reduce round fish catch significantly and legislation requiring the mandatory use of sorting grids with a maximum bar spacing of 40mm was introduced in the blue whiting fishery by Norway in 2010. The use of the sorting grid in this fishery seems to be effective in reducing bycatch in this fishery. Similar grids are also routinely used by Norwegian and Danish vessels in the Norway Pout fishery to reduce bycatch of gadoid species. Such grids are very effective and their use is now mandatory in the Norway Pout fishery under Norwegian and Danish national legislation. In general, however, scientific studies strongly indicate that there is not much, if any, room for improvement for size and species selection using revised gear.

Advancements in acoustic technology on the other hand might prove more successful. For more than ten years the Dutch pelagic freezer-trawler fleet has engaged in the so-called TWINSON project (Storbeck and De Theije 2006) which aimed at increasing selectivity using two sonars in a bi-static setup. It was concluded that in the future acoustic equipment might be capable to deliver a high enough resolution to differentiate between species such as mackerel and horse mackerel even in cases in which they occur in close proximity. However, further adaptations of the sonar will be necessary as well as the development of new hard- and software to realize real-time calculations which could not be delivered by the manufacturer. New projects investigating future possibilities are currently ongoing. These include the *SOFIC project* (2010-ongoing), the *multi frequency echo sounder project* (2013-2014) and the *broadband multi frequency echo sounder project* (2014 onwards). As the experimental stages of these projects are still running the first results will not be available before the implementation of the landing obligation.

Other factors that have increased selectivity and reduced discards relate to captain's behaviour. In recent years and thanks to the development of efficient communication technology real-time communication between skippers has significantly increased and improved. If a skipper comes across an aggregation of juveniles he warns other vessels in the vicinity, so that these vessels can avoid fishing in that particular area. Skippers are also familiar with the migratory routes and patterns of their target species and use their experience from previous years of fishing. The use of electronic fish-finding and identification equipment is well-established and skippers regularly undertake the necessary training in the correct use of such equipment (A. Wiseman, personal communication).

In the French artisanal fisheries fishermen are voluntarily adopting spatio-temporal measures to avoid unwanted bycatch. Scientific studies in France are underway (REDRESSE, SIMBAD) to test new selective devices and new spatio-temporal approaches for pelagic fisheries to avoid residual discards of species under quota regulation, especially under the new technical measures context (J. Jourdain, personal communication).

The conclusions from past and current research efforts combined with the reported low discard rates by ICES and STECF in pelagic fisheries indicate that with the state of the art technology selectivity in pelagic fisheries cannot be increased much further at the moment. However, as technology advances selectivity might be increased in the future and this issue should be revisited again once progress has been made. Per fishery it should be indicated to what extend the use of existing selectivity measures, such as hailing schemes, pre-sampling of shoal composition by jigging or acoustic imaging, or regulatory measures (see also Chapter 6.1) can be used to further increase selectivity.

3.1.1.3.2 DISPROPORTIONATE COSTS

The second conditionality under which a *de minimis* exemption may be granted relates to situations in which otherwise handling costs of discards become disproportionate. The problem with this conditionality is twofold. On the one hand "disproportionate costs" is a subjective term, on the other hand hardly any research has been done looking at the economic consequences of the landing obligation. A study performed by the Dutch Economic Agricultural Research Institute (LEI) in November 2013 calculated based on two assumed prices of € 0.15 and € 0.30 per kilogram of landed pelagic discards and the current discard levels in this fleet that the Dutch pelagic fleet will suffer a net loss of € 1.5 million and € 0.6 million respectively. If the costs of CCTV and observers are included the net loss increases to € 6.1 million and € 5.2 million respectively. These costs do not include the costs of installing CCTV on board. (Buisman et al. 2013). This calculated net loss is to be compared with the overall economic performance of this fleet. According to the latest annual LEI report on the economic performance of the various Dutch fishing fleet segments, based on formal

financial audit reports the Dutch flagged pelagic fleet suffered an annual average net loss of €8.1 million over the period 2003-2012 (Taal et al. 2014).

At this point it is also noteworthy to mention that the processing costs of fish into frozen blocks on-board a freezer-trawler amount to € 200 per tonne of fish (G. van Balsfoort, personal communication). These costs per tonne are the same for catch that will find its way into the human consumption market as for catch that normally would be discarded. An average freezer-trawler with a loading capacity of 3.000 tonnes and a discard rate of 3% will therefore have to bear additional € 18.000 per fishing trip. These costs do not include opportunity costs and further costs on land associated with disposing landed discards.

3.1.1.3.3. CONCLUSION

The study above and additional information on the economics of the pelagic fleet is regrettably based only on one part of the EU pelagic fleet. Conclusions to other parts of the fleet cannot be drawn. Future research efforts should therefore focus on improving selectivity by further developing acoustic imaging and, to the extent possible, revising gear.

3.1.2 9% INTER-SPECIES FLEXIBILITY

Article 15.8 of the CFP stipulates that catches of species subject to the landing obligation caught in excess of quotas or catches of species in respect of which the Member State has no quota, may be deducted from the quota of the target species provided that they do not exceed 9% of the quota of the target species. This provision shall only apply when the non-target (recipient) species is within safe biological limits.

Stocks under the remit of the Pelagic RAC which are currently either considered outside safe biological limits or for which the stock status is unknown are herring in area VIa South and VIIb,c, Western Baltic spring spawning herring, North Sea horse mackerel and Western horse mackerel. All other stocks are within safe biological limits and hence the 9% inter-species flexibility may be applied to those. STECF has shown that if used responsibly this inter-species flexibility provides a good tool to "balance the books" (STECF-13-23). However, it has also been noted that if used speculatively to transfer quota from a low value species to a high value species mortality of the recipient species can increase significantly, especially if multiple transfers are made to the same recipient species and given the rather high percentage. This in combination with the fact that the size of pelagic and industrial quotas is generally of a much higher order than that of some potential recipient species can easily jeopardize the sustainable exploitation of both demersal and pelagic stocks. Moreover, the Pelagic RAC has understood that this provision was introduced to cater for catch compositions versus quota baskets in mixed demersal fisheries and that it was inspired,

partially, by the positive Icelandic experience, where indeed this rule is applied very limitedly, circumscribed in their demersal fisheries.

Combined with a potential *de minimis* the effects of this flexibility on stock status can be tremendous. The Pelagic RAC is therefore not in favour at this stage about applying the 9% inter-species flexibility in pelagic fisheries as it sees a potential risk for possible abuse of the provision particularly as the effects of the landing obligation are unknown. In light of this possible problem the Pelagic RAC considers a temporary suspension of the 9% inter-species flexibility for two years is warranted for the fisheries under the remit of the Pelagic RAC until the effects of the landing obligation are known. It is therefore recommending to only apply a *de minimis* after sorting and grading for the first two years of implementation of the landing obligation (see chapter 6). The Pelagic RAC believes that in contrast to the inter-species flexibility a *de minimis* can be better controlled since in most cases discards only become apparent once the catch has been landed (see chapter 2) whereas speculative behaviour of fishermen can never be proved. At the same time applying a *de minimis* rather than the inter-species flexibility increases the likelihood of a level-playing field which is of the utmost importance to members of the Pelagic RAC and one of the main pillars in achieving a high level of compliance (see chapter 4). By-catch provisions are currently implemented in e.g. the Western and North Sea horse mackerel fisheries of up to 5% of the target species. A similar solution should be considered in areas VIIIb-d and area IX. In conclusion, the Pelagic RAC does not support implementation of the 9% inter-species flexibility in pelagic fisheries as a temporal measure with the special exception of the French and Spanish artisanal fleets which should be allowed to use up to 9% inter-species flexibility for their blue whiting, horse mackerel and mackerel fisheries with the list of defined associated species. After a year of this exemption the effects of this provision should be evaluated with the view to ascertain whether or not the 9% flexibility is appropriate.

3.1.3 10% INTER-ANNUAL FLEXIBILITY

Article 15.9 of the CFP gives Member States the possibility to use a year-to-year flexibility of up to 10% of their permitted landings. This provision is a good tool to "balance the books" which has proved to work well in the past and the Pelagic RAC continues to support its use. Moreover, the 10% flexibility has been accepted also by the Coastal States and does now apply to most herring stocks, Atlantic mackerel, blue whiting and western horse mackerel.

3.1.4 MINIMUM CONSERVATION REFERENCE SIZES (MCRS)

In the new CFP under article 15.10 minimum conservation reference sizes may be established to protect juveniles of marine organisms. The Pelagic RAC is aware of research suggesting that size selectivity might have negative consequences for the ecosystem (Zhou

et al. 2010, Garcia et al. 2012). However, this research does not have unanimous support by the scientific community and its uptake at the moment is critical (Maxwell et al. 2012). Until further research has doubtlessly shown that minimum conservation reference sizes should be removed the Pelagic RAC is of the strong opinion that the existing minimum landing sizes should be adhered to.

3.1.5 DISCARDING OF CATCHES BELOW MCRS

According to Article 15.12 catches of species not subject to the landing obligation and below MCRS shall be returned to sea immediately. As outlined in chapter 2.1 this is only possible on pelagic freezer-trawlers, but not on RSW vessels where the catch gets pumped into the RSW tanks directly from the net. Sorting machines are currently not allowed on board these vessels and therefore catches of any species falling under this provision only become apparent at the sorting factory ashore (see chapter 6.5).

3.1.6 MONITORING AND CONTROL

Article 15.13 empowers Member States to monitor compliance of the landing obligation by using different means, such as observers, CCTV and others ensuring accurate and detailed documentation of all fishing trips. The Pelagic RAC fully agrees that effective control, monitoring and enforcement is necessary to achieve high compliance with the landing obligation. A special chapter on these issues has been included in this document (see chapter 4).

3.2 ARTICLE 16: FISHING OPPORTUNITIES

Article 16 of the CFP regulates how fishing opportunities are allocated to different Member States for existing and future fisheries. Relevant to the landing obligation is Article 16.2 which states that "fishing opportunities shall be fixed taking into account the change from fixing fishing opportunities that reflect landings to fishing opportunities that reflect catches, on the basis of the fact that, for the first and subsequent years, discarding of that stock will no longer be allowed." This means that quotas for fish stocks for which ICES previously provided landing recommendations may increase by the amount of discards that previously occurred. However, at the same time the objectives of the CFP, i.e. achieving MSY should not be jeopardized. ICES and STECF are currently developing a methodology for calculating catch quotas (European Commission: Clarification of landing obligation (2013)).

This provision is a critical component of the new CFP. For many herring stocks, boarfish and for southern horse mackerel ICES has already provided catch advice for 2014 rather than landings advice. However, for a number of stocks such as widely distributed

pelagic stocks shared with third countries 2015 will mark the first year that ICES will be asked to provide catch advice.

4 Monitoring, control and enforcement (MCE)

Over the entire existence of the Common Fisheries Policy doubts on MCE measures have weakened the effectiveness of the CFP. This has become all the more important as over the years the objectives of the CFP have become more ambitious. The current reform which includes the landing obligation has been hailed as the most ambitious fisheries policy reform ever. An effective MCE scheme in this light has therefore become a top priority in the implementation process of this reformed CFP. For the Pelagic RAC an effective MCE chapter is indeed an essential element of any discard plan and a vital part when one or more of the flexibility possibilities given in Article 15 of the new basic regulation 1380/2013 will be applied in a fishery.

The position of the Pelagic RAC in relation to MCE consists of the following key elements:

4.1 VERIFIABILITY AS PRECONDITION

Whatever measures will be included in a discard plan, including the application of one or more of the potential flexibility rules such as the *de minimis* rule, measures must be verifiable in such a way that authorities and stakeholders can have a high level of confidence in the effectiveness of the measures. This precondition of verifiability therefore demands an effective system of full documentation to be put in place on-board pelagic fishing vessels through which all relevant operations of the fishing, hauling, pumping on-board, sorting and processing is to be registered and documented for independent verification by the control authorities of the Member States and the European Fisheries Control Agency (EFCA).

4.2 BURDEN OF PROOF SHIFT

Until now and in the "classical" way a policy such as the CFP has been set out, it is up to the EU and Member States authorities to prove that a fisherman has infringed existing regulations. The more complicated a policy becomes – and there is little doubt that with the landing obligation the level of complexity will increase to new heights – the more it becomes apparent that the burden of proof should shift towards the subject of the policy, the fishermen. The Pelagic RAC therefore accepts that a shift of the burden of proof has to occur. To what level and under what conditions are questions that have to be looked into more in depth in collaboration between stakeholders, control authorities and policy makers. The Pelagic RAC underlines the need of this shift in the burden of proof.

4 MONITORING, CONTROL & ENFORCEMENT

4.3 LEVEL-PLAYING FIELD

It is vital that a European policy is implemented in the same manner in all Member States and among all fleets. This is even more important for the MCE measures as more often than not fleets of different Member States are operating in the same waters, targeting the same stocks and (often) catering the same markets. MCE measures must also apply to third country vessels fishing in EU waters. For the Pelagic RAC a level playing field of MCE measures is a crucial precondition deserving constant attention by the authorities.

4.4 INSTRUMENTS OF CONTROL AND ENFORCEMENT

New instrument for MCE are constantly being developed. This is partly because the CFP is developing and partly because new technologies become available to be applied in the field of fisheries. The Pelagic RAC does not want to rule out any of the existing (e.g. observers) or new (e.g. CCTV) or even unknown (e.g. drones and genetics) instruments for MCE to be applied in the context of the landing obligation. The Pelagic RAC is aware of on-going tests using CCTV in pilot projects where the pelagic landing obligation is being implemented already. The Pelagic RAC is also aware of the fact that the control experts of the Member States together with experts of the EFCA are currently in the process of developing recommendations for effective control measures in the context of the landing obligation.

Establishing observers at sea and CCTV programmes presents challenges and shortcomings, so a combination of the two methods might be needed to satisfy the reporting needs. Furthermore concern has been raised by French members regarding the use of CCTV which might pose legal problems in France. In case of the use of self-sampling to complement observers and CCTV schemes, the data needs to be audited to determine if it is representative and accurate. This can be achieved by comparing the data from the different programmes. Legislators, operators and scientists should work together closely to optimize the usability of the data collected. At the same time, the existing reporting obligations might need to be reviewed and where possible simplified and harmonised to ensure adequate reporting by skippers.

At this stage the Pelagic RAC therefore does not feel sufficiently comfortable to already select the definitive instrument for MCE and prefers to wait for the results of the CCTV pilot projects and the recommendations of the control experts before recommending any of the above mentioned instruments. The Pelagic RAC will establish and ad hoc Working Group on Control and Enforcement. This group will provide guidance on possible further scientific work, thoroughly scrutinize the results of the pilots and the recommendations of the control experts and take both fully into account when providing advice on what control instrument(s) is (are) to be used in the context of the landing obligation

5 European Maritime and Fisheries Fund (EMFF)

The politically agreed EMFF will support implementation of the EU's maritime and fisheries policies for 2014-2020, including the landing obligation. Specifically the agreed EMFF aims to reduce the impact of fisheries on the marine environment, including the avoidance and reduction, as far as possible, of unwanted catches and so contribute to Europe 2020 strategy for smart, sustainable and inclusive growth (COM(2011) 804, Article 6.1) and foster the implementation of the CFP (COM(2011) 804, Article 5). It is therefore essential that the implementation of the discard ban features high in the individual Member States' operational plans, which will indicate how the available EMFF funding will be allocated. Because of the nature of pelagic stocks, it is also essential that the operational plans of the individual Member States enable transnational cooperation on data collection and control and enforcement.

5.1 FUNDING FOR DATA COLLECTION

The EMFF significantly increases available funding to Member States for data collection. The increased funding provides the opportunity to gain a better understanding of discarding in fisheries as well as the ecological and biological parameters influenced by discarding. The Pelagic RAC members are already taking part in many industry-science research collaborations, where pelagic fishing vessels increasingly are being used as research vessels. The intention is to further expand on these collaborations. Support through the EMFF could be provided in particular through measures under EMFF Article 76:

- The collection, management and use of data for the purpose of scientific analysis and CFP implementation (Article 76.2 a)
- National, transnational and sub–national multi–annual sampling programmes (Article 76.2 b)
- At-sea monitoring of commercial and recreational fisheries, including monitoring of by-catch of marine organisms such as marine mammals and birds (Article 76.2 c)
- Research surveys-at-sea (Article 76.2 d)
- The improvement of data collection and data management systems and the implementation of pilot studies to improve existing data collection and data management systems (Article 76.2 e)

5.2 FUNDING FOR CONTROL AND ENFORCEMENT

The EMFF significantly increases the funding available to Member States for control and enforcement measures. Funding should support a minimum time dedicated to fisheries control in the usage of patrol vessels, aircrafts and helicopters to monitor and control fishing

activities at sea (see Recital 79). Other measures such as financial support to purchase, install and develop technology, including vessel detection systems, CCTV systems etc. can contribute to the effective monitoring, control and enforcement of the landing obligation.

Control and enforcement measures are essential to ensure the proper implementation of the landing obligation. A lack of control could lead to continued discarding and so increased fishing mortality. An unmonitored increase in fishing mortality could jeopardise the objective of the CFP as laid out in Article 2.2 of restoring and maintaining populations of fish stocks above biomass levels capable of producing the maximum sustainable yield.

5.3 FUNDING TO AVOID UNWANTED CATCHES

Member states should make ample use of measures to avoid unwanted catches. This is not limited to, but includes in particular:

- Partnerships between scientists and fishermen (Article 28)
- Support for the design and implementation of conservation measures (Article 36)
- Limiting the impact of fishing on the marine environment and adapting fishing to the protection of species (Article 37)
- Innovation linked to the conservation of marine biological resources (Article 38)
- Protection and restoration of marine biodiversity and ecosystems and compensation regimes in the framework of sustainable fishing activities (Article 39)

5.4 FUNDING TO MAKE BEST USE OF UNWANTED CATCHES

EMFF aid to support the use of unwanted catches might undermine the overall intention of the landing obligation to reduce unwanted mortality as much as possible. As a result, these measures should be used cautiously. However, where scientific evidence indicates that increases in selectivity are very difficult to achieve and fishing mortality is in line with the MSY objective Member States could support funding opportunities under the following measures:

- Added value, product quality and use of unwanted catches (Article 41)
- Investments in fishing ports, auction halls, landing sites and shelters in order to facilitate compliance with the obligation to land all catches (Article 42.2)

5.5 FUNDING FOR ADVISORY COUNCILS

Under the new EMFF studies and pilot projects concerned with the implementation of the CFP and the development of sustainable fishing techniques carried out within Advisory

Councils will be eligible for funding (Article 85). The EMFF shall furthermore support the operating costs of the Advisory Councils (Article 88).

5.6 OTHER INCENTIVES

In addition to financial aid provided by the EMFF, access to fishing opportunities can play a major role in incentivising selective fishing. Article 17 of the CFP basic regulation requests Member States when allocating fishing opportunities to endeavour to provide incentives to fishing vessels deploying selective fishing gear or using fishing techniques with reduced environmental impact. By providing priority access to fishing opportunities to those operators using the best available selective techniques Member States can provide a major incentive to develop and adopt more selective gears and thus support the implementation of the landing obligation.

6 Conclusions and general recommendations

The recent reform of the CFP has been praised as the most ambitious CFP reform ever, not least because of the introduction of the landing obligation. As such complexity as well as the need for thorough implementation and control has increased to new levels. Any policy and regulation is only as effective as its implementation is well carried out. Since the landing obligation poses a new challenge to all players involved in the CFP- fishermen, control experts, Member States and the Commission- it is crucial to harmonize measures across regions and fisheries and to establish a level-playing field that can be guaranteed at all times. At the same time, however, it must be emphasized that an exercise as vast as implementing the landing obligation is a process continuously evolving as knowledge increases. The years to come will beyond doubt be characterized by trial and error, structural rethinking and technological advancements. It will therefore be essential to be flexible in the measures applied in order to achieve the overall objectives of the CFP while also allowing measures to be evaluated. In other words, the period necessary to assess the measures suggested in this document should neither be set too short (as otherwise effects will not become apparent) nor too long (which could have negative consequences if the desired effects fail to appear). Therefore, the Pelagic RAC believes that the recommendations set out in this document should be followed for two years from the moment of implementation. This is the timeframe needed to collect and analyse appropriate data to subsequently evaluate the effectiveness of the recommendations provided.

6.1 DE MINIMIS RECOMMENDATION

In Council Regulation No.1380/2013 it is stated that "in order to cater for unwanted catches that are unavoidable even when all the measures for their reduction are applied, certain *de minimis* exemptions from the landing obligation should be established…"

As described in length in chapter 3 increasing selectivity in pelagic fisheries is extremely difficult with the technology currently available. Therefore, most pelagic fisheries qualify for a *de minimis* exemption. However, some fisheries such as the Irish Sea herring fishery and the fishery of the West of Scotland herring stock are so clean due to the biological characteristics of these stocks, that a *de minimis* exemption is neither required nor justified. In other cases, however, mixing of species, e.g. regarding mackerel and horse mackerel does occur and leads to (relatively small) bycatch problems. Also, boarfish bycatch is a problem in some fisheries due to the increase in boarfish abundance in recent years (ICES 2013b). In these situations granting a *de minimis* should be warranted. The scale of the *de minimis* should thereby be based on the ICES and/or STECF discard rates and apply to the EU as a whole. How the *de minimis* will be distributed on a Member State level has to be

determined by the Member States. Exact figures are provided in the chapters dealing with the individual stocks, but for clarification are also listed here:

- Northeast Atlantic mackerel: 5%
- Western horse mackerel: to be determined by ICES/STECF
- North Sea autumn spawning herring: to be determined by ICES/STECF
- Blue whiting: 1%
- Boarfish: 7%
- Celtic Sea and South of Ireland herring: 1%
- Irish Sea herring: 0%
- VIa South and VIIb,c herring: 0%
- West of Scotland herring: 0%
- Western Baltic spring spawning herring: to be determined by ICES/STECF
- Atlanto-Scandian herring: to be determined by ICES/STECF
- North Sea horse mackerel: to be determined by ICES/STECF
- Southern horse mackerel: 1%

It must also be noted that any *de minimis* should be granted after sorting and grading. When granted, the *de minimis* must be implemented in a non-discriminating form in which freezer trawlers, RSW vessels and other operators using identical fishing techniques and gear are secured equal conditions and provided with matching rules and regulations. Securing a level-playing field for all pelagic operators must be a priority for managers and is a precondition for securing a successful implementation of the landing obligation and the CFP reform in general.

The Pelagic RAC encourages Member States to secure equal conditions for all pelagic operators by lifting the current prohibition in certain fisheries on installing automated sorting machines on-board of RSW vessels. It goes without saying that strict control and monitoring protocols will have to be followed under such conditions.

While granting a *de minimis* seems warranted for certain stocks on the grounds of selectivity in the main pelagic fisheries it must not be forgotten that efforts to improve selectivity have to be continued. As mentioned above funding under the EMFF could be used to further advance acoustic imaging for which promising trials are already ongoing. At the same time skippers should be continuously encouraged to use pre-sampling techniques such as jigging and extend this to other fisheries where possible.

6 CONCLUSIONS & GENERAL RECOMMENDATIONS

6.2 HIGH SURVIVAL

An issue requiring further scientific investigation relates to the "Norwegian 7/8 rule" in purse-seine fisheries (chapter 3.1.1.2). The Pelagic RAC believes that a rule as generic as the one implemented in Norway is not in line with the objectives of the CFP. Nevertheless, both scientific studies and anecdotal evidence clearly indicate that under certain conditions and in certain fisheries a release rule can have beneficial implications for the status of a stock. Therefore, the Pelagic RAC strongly recommends that STECF and ICES should look into specific fisheries, i.e. mackerel, Atlanto-Scandian herring, herring in the North Sea and southern horse mackerel as a matter of priority and provide advice as soon as possible preferably by July 2014 regarding high survival in the purse seine fisheries and conditions under which such a rule could be implemented. Particularly the biology of the species, the size of the catch, gear type, crowding densities and duration should be taken into account when formulating criteria under which a fish shoal surrounded by a purse-seine may be released. Funding from the EMFF (see chapter 5) should be made available to perform survival studies over the next two years in science-industry partnerships on other relevant stocks. Thereby it should also be taken into account that in French and Spanish artisanal fisheries both crowding density and duration are usually lower than in any of the scientific studies performed to date, possibly leading to better survival. In addition the Pelagic RAC will set up a focus group examining existing studies in detail.

6.3 FLEXIBILITY AND MCRS

Other aspects of the CFP include the 9% inter-species flexibility, the 10% year-to-year flexibility and minimum conservation reference sizes. For reasons explained in detail in chapter 3 the Pelagic RAC recommends temporarily suspending the 9% inter-species flexibility for pelagic fisheries with the exception of blue whiting, horse mackerel and mackerel with a list of defined bycatch species for the French and Spanish artisanal fleet. After one year of implementation this flexibility should be re-evaluated and adjusted if necessary. The Pelagic RAC further recommends adhering to both the 10% year-to-year flexibility and the minimum conservation reference sizes.

6.4 FORCE MAJEURE

An important aspect that is not covered under the basic regulation regards *force majeure*. The safety of crew and vessel must under all circumstances and at all times stand above any legal requirement regarding the landing obligation. A non-exhaustive list of situations which must be exempt from the landing obligation is provided in Annex I of this document.

6 CONCLUSIONS & GENERAL RECOMMENDATIONS

6.5 TECHNICAL MEASURES

Under the current provisions on technical measures automated sorting on-board pelagic RSW vessels is not allowed in key fisheries. However, in a fully documented fishery the control and enforcement concerns that led to the existing prohibition are obsolete. Thus the Pelagic RAC recommends derogating form the existing legislation and reintroducing automated sorting equipment on all vessels engaged in the pelagic fishery and not only pelagic freezer trawlers. Such a provision would provide the opportunity to separate mixed catches (for example herring and mackerel) on-board the vessel and store them in separate RSW tanks. Alternatively, unsorted mixed catches will have to be used for reduction as modern specialised fish processing factories are often species- specific and therefore cannot handle mixed catches. It is the opinion of the Pelagic RAC that such a provision would: 1) secure a level playing field for all participants in the pelagic fishery; 2) maximize the share of captured fish that are used for human consumption and not for reduction purposes and; 3) maximise the economic revenue of mixed catches. Furthermore it could be argued that such a separation will provide the scientific community with more accurate and reliable catch data, compared to data which has been estimated from a subsample.

Under the current provisions on technical measures it is also forbidden to carry out on-board a fishing vessel any physical or chemical processing of fish to produce fishmeal, fish-oil, or similar products. In a fully documented fishery as is foreseen with the implementation of the landing obligation and recommended by the Pelagic RAC also this prohibition is obsolete and only reduces the options for rational use of landed discards in a situation where the *de minimis* rule cannot be applied. Therefore the Pelagic RAC recommends to lift the current prohibition to produce fishmeal, fish-oil or similar products on-board fishing vessels once the landing obligation is in force and leave this option open to the vessel-owner.

6.6 COOPERATION WITH STAKEHOLDERS

The Pelagic RAC would like to recommend that a meaningful stakeholder consultation process is immediately put in place with the regional Member States groupings on the discards plans. It should be noted that under article 18.2 of regulation 1380/2013 it is mandatory for the regional groupings to consult with the Advisory Councils. Furthermore the Pelagic RAC considers that it is not conducive to a good consultation process if a number of different regional Member States groupings are dealing with the stocks that come under the remit of the Pelagic RAC and is recommending if it is not possible to have one regional grouping that a subgroup of the relevant Member States groupings is formed to deal with the stocks under the remit of the Pelagic RAC.

6 CONCLUSIONS & GENERAL RECOMMENDATIONS

6.7 LEGAL CONTEXT

The current legal context of the CFP does not allow for the implementation of the landing obligation. It even often works against avoiding bycatches and avoiding discarding. Although the Pelagic RAC is aware of the on-going discussion to amend this legal context the Pelagic RAC is concerned that from 1 January 2015 the legal context of the CFP does create difficulties for fishermen when they have to comply with the landing obligation. The Pelagic RAC therefore strongly urges Member States to make every effort possible in order to avoid this type of legal hazard for fishermen from 1 January 2015.

6.8 MONITORING, CONTROL AND ENFORCEMENT

The Pelagic RAC is of the opinion that a level-playing field across the EU and the verifiability of measures taken to implement the landing obligation are of the utmost importance to achieve a maximum level of compliance. At the same time a shift in the burden of proof towards the fishing industry has to occur. Different instruments of monitoring, control and enforcement, such as CCTV, observers, drones, genetics and self-sampling can be implemented and a combination of these might be necessary. The Pelagic RAC will set up a focus group dealing with control issues and invite control experts to participate in this group before issuing detailed recommendations.

6.9 EMFF

The implementation of the landing obligation is associated with significant costs, requires through control and data collection as well as further studies on e.g. survival, acoustic imaging and gear revisions. The EMFF should be used to cover parts of these costs and the Commission should provide detailed advice how Advisory Councils can possibly draw multiannual funding from the EMFF while at the same time adhering to the annuality rule of the Commission.

7 Northeast Atlantic mackerel

Northeast Atlantic mackerel (*Scomber scombrus*) is one of the most valuable stocks exploited mainly in a directed fishery for human consumption by the EU as well as Norway, Iceland, Faroe Islands and Russia with total catches amounting to 939.000 tonnes in 2011 and 893.000 tonnes in 2012 (ICES 2013b).

7.1 BIOLOGY

Mackerel in the Northeast Atlantic is a widely distributed pelagic fish that forms dense schools near the surface and plays an important role in the ecosystem, both as predator and prey. It feeds on zooplankton as well as larval and juvenile stages of small fish and molluscs while at the same time being predated upon by whales and larger fish (ICES 2013a).

7.2 STOCK SIZE AND DISTRIBUTION

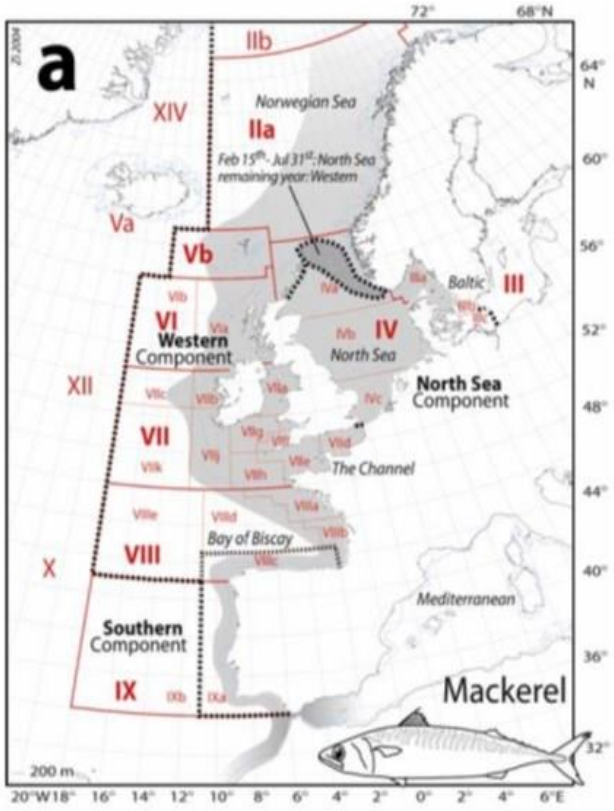


Figure 7.1 Distribution area of Northeast Atlantic mackerel. ICES WGMHSA report 2006.

The stock is distributed over the entire ICES area and consists of three spawning components: a North Sea, a western and a southern component. However, it is assessed by ICES as a single stock since spawning areas are widespread and only the North Sea component is clearly distinct. During the second half of the year the southern and western components migrate to feed in the Nordic Sea and the North Sea where they mix with the North Sea component. In recent years the stock has expanded north-westwards during spawning and summer feedings which seems related to increased stock size and is very likely only temporary. On the other hand, high surface temperature in the Nordic seas resulted in a larger feeding habitat for mackerel, and it is probably this, combined with a large stock size, which is responsible for the north-west expansion during summer (ICES 2013a).

7 NORTHEAST ATLANTIC MACKEREL

7.3 MANAGEMENT

Despite the existence of a management plan agreed upon by the EU, Norway and Faroe Islands in 2008, no Coastal States agreement on the management of the stock has been reached since 2010 when Faroe Islands decided to step out of the international agreement and set quotas unilaterally. Similarly, in recent years Iceland unilaterally set mackerel quotas which from 2011 to 2013 amounted to 23% of the scientifically advised fishing opportunity while there was virtually no Icelandic mackerel fishery prior to 2005. Nevertheless there are strong indications that SSB has been increasing and that the stock is at its full reproductive capacity. Current catch levels do not pose a threat to the stock (ICES 2013a).

7.4 CATCH DATA 2012

The table below provides an ICES overview of mackerel catches by the EU as well as the non EU fleet in 2012.

Country	Catch (tonnes)
Belgium	39
Denmark	36.501
Faroe Islands	107.630
France	20.467
Germany	18.944
Greenland	5.284
Guernsey	5
Iceland	149.282
Ireland	63.049
Netherlands	25.817
Norway	127.023
Portugal	824
Spain	19.386
Sweden	4.564
United Kingdom	169.745
Russia	74.587
Unallocated	5.237
Discards	**15.380**
Total	**892.762**

Table 7.1 Mackerel catches in 2012 (ICES 2013b).

7.5 FISHERIES DATA 2012

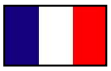
The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Information on hand lines, driftnets and similar gear for Denmark has been provided by the Danish Ministry of Food, Agriculture and Fisheries. Information for Portugal has been provided by the General Directorate of Natural Resources, Security and Maritime Services. As most information has

been provided directly by the pelagic industry the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to achieve an overview of catches of the EU pelagic fleet. Number of vessels engaging in the mackerel fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

7.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Western & North Sea (ICES IV, IIIaN, VI, VII, VIIIa,b,d,e)	Combined trawl/purse seines		RSW: 5	September - November	24.551
Western & North Sea (ICES IV, IIIaN, VI, VII, VIIIa,b,d,e)	Trawl	32-54	RSW: 5	September - November	11.015
ICES IVa	Hooks/hand lines		3	August - October	250

7.5.2 FRANCE



Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Western & North Sea (ICES IVb,c, VII, VIIIa,b,d,e)	Otter trawl	32-54	Fresh fish: 65	April-September & October-December	
Western & North Sea (ICES IV, VI, VII, VIIIa,b,d,e)	Otter trawl	45	Filleting or freezer trawler: 2	January-April & October - December	11.389
Western & North Sea (ICES IVc, VII, VIIIa,b,d,e)	Pair trawl	32-54	Fresh fish: 26	April-June & October-December	
Western (ICES VIIIa,b,d,e, ; VIIe,h)	Purse seines	10-22	Fresh fish: 24	January-April	
Western (ICES VIIIa,b,d,e)	LHM/LTL		Fresh fish: 2	February-March	

7 NORTHEAST ATLANTIC MACKEREL

Remarks:

1) Misreporting regarding fishing gear: some trawls are both reported with OTM and OTB.
2) Number of boats that can fish 10 tons yearly is highly variable.

7.5.3 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IV, VI, VII, VIIIa,b,d	Trawl	32-54	Freezer-trawler: 4	January – March and September-December	18.919

7.5.4 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VI, VII, VIIIa, VIIIb, VIIId VIIIe; EU Vb; Non EU IIa	Trawl	32	RSW: 23 Polyvalent: 26	January – April and October - December	63.226

7.5.5 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IIa (excl. EU-zone), Vb (EU-zone), VI, VII, VIII a,b,d,e, XII and XIV	Trawl	32-54	Freezer: 14	January – March and October - December	25.244

7 NORTHEAST ATLANTIC MACKEREL

7.5.6 PORTUGAL

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Southern	Purse seines		13		799
Southern	Trawlers		11		2.138
Western	Polyvalent		3		548
Western	Trawlers		17		4.146

7.5.7 SPAIN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIIc and IXa	Trawl	70	90 Average of 200 GT	Mainly February-March	3.350
ICES VIIIc and IXa	Purse seines	> 14	264 Average of 36 GT (vessels from Sud of Galician Average of 70-100 GT (vessels from Basque Country and North of Spain)	Mainly February-March	9.000
ICES VIIIc and IXa	Other (hand lines)	Hand lines	619 Average less than 36 GT	Mainly February-March	8.600
ICES IXa Golfo de Cadiz	Purse seines	14	86 Golfo de Cadiz < 36 GT		60
ICES IXa Golfo de Cadiz	Trawl		140 Golfo de Cadiz < 40 GT		360
NEAFC	Trawl	> 90	NEAFC Average of 300 GT		100 By-catch non target

Remarks:

Quota allocated to Spain is distributed based on modalities. Trawlers receive individual quota, purse seiners too, whereas quota for other vessels (handlines) will be allocated by regions (Galician, Asturias, Cantabria and Basque Country).

7 NORTHEAST ATLANTIC MACKEREL

7.5.8 SWEDEN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IIIa and IVa,b and II	Trawl/ purse seines/ net/ hooks	32 - 54	70	May-October	4.709

7.5.9 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Western & North Sea (ICES IV, IIIaN, VI, VII, VIIIa,b,d,e)	Trawl		Freezer: 2	January-April and October-December	16.584
Western & North Sea (ICES IV, IIIaN, VI, VII, VIIIa,b,d,e)	Trawl and purse seines	32-54	RSW: 26	January-February and September-October	139.207
Western & North Sea (ICES IV, IIIaN, VI, VII, VIIIa,b,d,e)	Hand lines/ fixed		Dry Hold: 18	Throughout the year	295

7.6 INFORMATION ON EXISTING DISCARD DATA

- Based upon discard estimates available to STECF the discard is estimated to be less than 5% of the landings.
- WGWIDE report 2012:
    - 25% (range 16-37%) total in the Dutch freezer-trawler fleet in 2003-2011 (van Helmond et al.)
    - Countries that provided discard data in 2011: Netherlands, Spain, Germany, Ireland, Denmark and Portugal; ca. 9000 tons total discards in these countries

7 NORTHEAST ATLANTIC MACKEREL

Year	Updated discard estimate (kt)	Updated WG catch (kt)	Year	Updated discard estimate (kt)	Updated WG catch (kt)
2003	19.427	679.287	2008	36.398	622.488
2004	19.962	660.491	2009	15.693	737.738
2005	25.383	549.109	2010	12.814	875.283
2006	26.593	481.179	2011	10.894	946.661
2007	15.444	586.206	2012	15.380 (not updated)	893.000 (not updated)

Table 7.2 ICES discard estimates and catch figures for 2003-2012 as presented at the ICES benchmark in 2014 (A. Campbell, personal communication).

7.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for Northeast Atlantic mackerel.

7.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 20 cm in EU waters, 30 cm in the North Sea) (Art. 19 (2a) Reg. 850/98)

- Mackerel Box Closure – SW England (Art. 22 of Reg. 850/98)
  - Does not apply to vessels fishing exclusively with gill nets and/or hand lines
  - Does not apply to vessels fishing with demersal trawls, Danish seines or other similar towed nets, provided that they have on board a minimum of 75 % by live weight of marine organisms with the exception of anchovy, herring, horse mackerel, mackerel, pelagic cephalopods and sardine

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
  - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
  - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on

the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in reg. 227/2013)
    - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm
    - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter
    - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

7.7.2 VOLUNTARY

- Industry hailing scheme
    - This is instigated when an EU skipper finds small or immature mackerel, a message is sent out to all vessels in the vicinity providing detailed information where the fish has been caught. All vessels carry a complete contact list for every vessel participating in the mackerel fishery.

- Pre-sampling of shoal composition by jigging undertaken by some fisheries
  Several fleets are rigged with jigging equipment for use in sampling before engaging in full fishing operation. The fleet engages in this procedure before commencing fishing activity as a proactive measure to prevent unnecessary mortality on mackerel shoals by avoiding wherever possible the capture of juvenile/undersized fish.
    - The vessel will engage the use of jigging equipment to assist the master in identifying the composition of the target shoal before fishing activity commences.

- Other vessels may have jig-sampled the target species in the current fishing zone. The skipper will take this information into consideration in deciding whether or not it is necessary to jig before making a decision.
- The sample is taken in order to form average weight data on which to base the fishing decision. (The skipper/master may take additional samples if so desired).
- Each sample taken will be of no less than 20kg.
- Weight measurements will be used to ascertain the suitability of the size distribution of the shoal.
- If results from this sample testing operation indicate an unsuitable catch composition for commercial use, the vessel will not engage in fishing activity against the sampled shoal and will move on.
- Where results indicate there is a predominance of undersized or unsuitable fish from the sampling activity, the skipper should inform other vessels in the vicinity.
- If the resulting catch from a jigged shoal is found to be of poor/unsuitable composition, the skipper/master will make every effort to investigate and modify procedures to improve the integrity of sampling information.

7.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

Whole-year fishery closure in ICES IIIa and IVb,c to protect North Sea component and juveniles has led to mackerel discards in non-directed fisheries, especially horse mackerel.

Solution:

An inter-species rule like it is known in the Western Waters – catches of certain other species may be registered against the horse mackerel quota under a 5% rule (boarfish, haddock, whiting and mackerel) – could solve or reduce the problem.

Problem 2:

In the autumn, mackerel gathers in the North Sea before migrating to the spawning area southwest of the British Isles. The fishery follows the mackerel during this migration. Since the larger individuals are the first to leave the North Sea, the experience from the fishery is that the average size of the individuals in the catches falls through the season as the

mackerel gets closer and closer to the spawning area. This has led to some high-grading in the Western area. A similar situation exists for catches within and outside the 12 mile zone around the Shetland and Orkney Islands where catches inside the 12 mile zone often are of a better size and less often mixed with herring.

Solutions:

a. The fishermen could take more advantage of the jigging technology that gives an indication of the size composition before the net is shot. However, this is only possible in day-time and the fishery takes place in January with limited hours of daylight.
b. More effort should be put into fast-tracking the development of electronic equipment that could give clear indication of the size composition in a shoal of mackerel.
c. For purse-seiners a release rule under specified conditions, subject to scientific justification, could be implemented (see chapter 3.1.1.2 and chapter 6.2).
d. Mackerel grids (but see chapter 3.1.1.3).

Problem 3:

The mackerel fishery of the Spanish fleet is mainly concentrated from February until April when the fish moves along the coast. During these months and beyond there is a huge concentration of mackerel off the coast of Cantabria and mackerel is caught as bycatch in other pelagic fisheries because it mixes with e.g. horse mackerel. Furthermore bycatch of juvenile mackerel sometimes constitutes a problem. For the amount of mackerel biomass the quota is relatively low which results in mackerel being a choke species.

Solutions:

a. More effort should be put into fast-tracking the development of electronic equipment that could give clear indication of the species and size composition in a shoal of pelagic fish.
b. For purse-seiners a release rule under specified conditions, subject to scientific justification, could be implemented (see chapter 3.1.1.2 and chapter 6.2).
c. Improved data collection to get a realistic picture of the stock status.

Problem 4:

Discards in area IVc are mainly related to the minimum size of mackerel (30 cm) which differs from the minimum size in area VIId (20 cm). An important number of vessels in Northern France fish in these two areas.

Solution:

The harmonization of the mackerel minimum size between VIId and IVc would eliminate most discards of mackerel observed for this part of the fleet. The effects of such harmonization could be studies by ICES.

7.9 SPECIFIC RECOMMENDATIONS

- An inter-species rule like it is known in the Western Waters – catches of certain other species may be registered against the horse mackerel quota under a 5% rule (boarfish, haddock, whiting and mackerel) – should be introduced in the fishery for horse mackerel in the North Sea.
- The development of electronic equipment that could give clear indication of the composition of species in a shoal of herring should be prioritised. Funding could be provided by the European Maritime and Fisheries Fund (EMMF) (see chapter 5).
- Allow sorting machines on RSW vessels so the fishermen can land mackerel as mackerel and herring as herring and thus allow the fishermen to optimise the economic return from the landings.
- For purse-seiners a release rule under specified conditions, subject to scientific justification by ICES and/or STECF, could be implemented (see chapter 3.1.1.2 and chapter 6.2).
- Allow fishmeal plants on board freezer-trawlers and RSW vessels (see chapters 4 and 6.5).
- Based on ICES and STECF discard rates a *de minimis* exemption of 5% could be granted for Northeast Atlantic mackerel subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve (see chapter 3.1.1.3).
- Harmonize minimum size between areas VIId and IVc.

8 Western horse mackerel

Western horse mackerel (*Trachurus trachurus*) has previously mostly been caught for meal and oil production while nowadays it is mostly caught for human consumption. In recent years a juvenile fishery (age 1-3) developed mainly for the Japanese market. Larger fish are mostly sold to Africa (ICES 2013b).

8.1 BIOLOGY

Horse mackerel is a long-lived pelagic species which can reach a maximum age of over 30 years. Like other small pelagic fish it forms schools and is highly migratory. It is adapted to swimming at a low, but constant speed. Horse mackerel is a serial spawner with indeterminate fecundity producing occasionally extraordinarily strong year classes. While the fish is mainly planktivorous it also predates on eggs and larvae of other pelagic species. It has been found in the diets of cetaceans, seals, seabirds and other pelagic species (ICES 2013a).

8.2 STOCK SIZE AND DISTRIBUTION

Western horse mackerel is widely distributed on the continental shelf in the Northeast Atlantic and Mediterranean Sea in ICES divisions IIa, IIIa (Western part), IVa, Vb, VIa, VIIa-c, e-k, VIIIa-e. Timing and extent of migration for spawning, feeding and over-wintering seems to be driven by both temperature and the availability of prey. After spawning, which takes place in the Bay of Biscay and in UK and Irish waters, the stock migrates in the Norwegian Sea and the North Sea where it is fished in quarters 3 and 4 (ICES 2013a).

8.3 MANAGEMENT

In 2007 the Pelagic RAC developed a management plan for this stock which works in a relative way without the need to define absolute biomass and mortality reference points. Instead the TAC is calculated relative to the TAC of the previous year taking into account expected developments in stock abundance based on a trend in the egg survey over the last three survey points. Consequently, changes in TACs are rather gradual which provides more stability at the cost of lower yield (Pelagic RAC 2007). This plan has been used for EU TAC setting since 2008, but ICES evaluated this plan to be precautionary only in the short term and advised in 2012 that the plan should undergo a complete review (ICES 2012b). In July 2013 ICES evaluated the plan to be not precautionary because it is not robust to two or more year classes of low recruitment (ICES 2013i). ICES has never based its TAC advice on the plan because Norway objected the use of the plan.

8 WESTERN HORSE MACKEREL

8.4 CATCH DATA 2012

The table below provides an overview of Western horse mackerel catches by the EU as well as the non EU fleet in 2012.

Country	Catch (tonnes)
Belgium	0,2
Denmark	4.002
Faroe Islands	-
France	1.795
Germany	17.063
Ireland	45.242
Netherlands	66.396
Norway	3.251
Spain	13.560
Sweden	-
United Kingdom	13.457
Unallocated	5.095
Discards	**3.280**
Total	**173.141**

Table 8.1 Western horse mackerel catches in 2012 (ICES 2013a).

8.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Information for Portugal has been provided by the General Directorate of Natural Resources, Security and Maritime Services. As most information has been provided directly by the pelagic industry the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to achieve an overview of catches of the EU pelagic fleet. Number of vessels engaging in the western horse mackerel fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

8 WESTERN HORSE MACKEREL

8.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Western (ICES IIIa, IVa, Vb, VIa, VIIa-c, e-k, VIIIa-e)	Trawl	32-54 mm	RSW: 1	Spring and autumn	1.818
Western (ICES IIIa, IVa, Vb, VIa, VIIa-c, e-k, VIIIa-e)	Trawl	32-54 mm	Freezer-trawler: 1	Spring and autumn	5.317

8.5.2 FRANCE

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Western (ICES VII, VIIIa,b,d,e)	Purse seines	10-22	Fresh fish: 20	January-April & November-December	
North (ICES IVb,c, VIId) & Western (ICES VII, VIIIa,b,d,e)	Otter trawl	32-54	Fresh fish: 17	April-June & October-December	
Western (ICES VI,VII, VIIIa,b,d,e) & South (VIIIc)	Otter trawl	45	Filleting or freezer-trawler: 2	January-May & September	6.542
North (VIId) & Western (ICES VII, VIIIa,b,d,e)	Pair trawl	32-54	Fresh fish: 10	April-June & October-December	

Remarks: 8.653 global tonnes caught

8.5.3 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IVa, VIa, VII, VIII	Pelagic trawl	32-54	Freezer: 4	January-April and October-December	17.087

8 WESTERN HORSE MACKEREL

8.5.4 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
EU IIa, Iva, VIIa-c, VIIe-k, VIIIa,b,d,e International Waters of IVb, IVc, VIId	Trawl	32	RSW: 23 Polyvalent: 29	January-April and October-December	40.284

8.5.5 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
EU and international waters of IIa, IVa, VIIa-c, VIIe-k, VIIIabde; EU and international waters of Vb; international waters van XII en XIV	Pelagic trawl	32-54	Freezer: 14	January-March and October-December	65.105

8.5.6 PORTUGAL

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Western	Trawlers		11		2.760

8 WESTERN HORSE MACKEREL

8.5.7 SPAIN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIIc	Others			Throughout the year	800 Non target
ICES VIII	Grand sole trawlers	> 90	18 (6 of them as pair trawlers) Average of 300 GT	Throughout the year. Non target.	Non target
ICES VIIIc,	Trawl	70	90 Average of 200 GT	Throughout the year except February-March	2.300
ICES VIIIc, VIIIa, b	Purse seines	> 14	(170+94)=264 Average of 36 GT (vessels from Sud of Galician) Average of 70-100 GT (vessels from Basque Country and North of Spain)	Throughout the year except February-March	5.150

8.5.8 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
EU IIa, Iva, VIIa-c, VIIe-k, VIIIa,b,d,e International Waters of IVb, IVc, VIId	Pelagic trawl		Freezer: 4	January-May & September-December	12.081
EU IIa, Iva, VIIa-c, VIIe-k, VIIIa,b,d,e International Waters of IVb, IVc, VIId	Pelagic trawl		RSW: 4	January & November	651

8.6 INFORMATION ON EXISTING DISCARD DATA

- Based upon the STECF database discarding is considered to be less than a few percentage of the catch.
- WGWIDE report 2012:

- 15% of total discards in the Dutch freezer-trawler fleet between 2002 and 2005 (Borges et al. 2008)
- 1% of horse mackerel has been discarded in the Dutch freezer-trawler fleet in 2003- 2011 (range: 1-5%) (van Helmond et al. 2009, 2010, 2011)
- In 2011 The Netherlands, Germany, Ireland and Spain provided discard data, but based on these data it is impossible to estimate total discard rates, since the rates reported are very different
- Discards of juvenile horse mackerel was a problem in the past, but not any longer since a targeted fishery on juveniles has developed in recent years

8.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for western horse mackerel.

8.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 15 cm) (Art. 19 (2a) Reg. 850/98)

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
  - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
  - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)

8 WESTERN HORSE MACKEREL

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in Reg. 227/2013)
  - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm
  - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter
  - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Derogation for landing 5% of horse mackerel between 12 and 14 cm below minimum landing size in ICES zone VIIIc and allowance to catch 5% of quota in IX (Footnote in Fishing Opportunities Reg.)

- Inter-area quota flexibility (Footnote to Fishing Opportunities Regulation)
  - Up to 5 % of this quota fished in EU waters of IIa or IVa before 30 June 2013 may be accounted for as fished under the quota concerning the zone of EU waters of IVb, IVc and VIId
  - Up to 5 % of this quota may be fished in VIId

- By-catch provisions (Footnote to Fishing Opportunities Regulation)
  - At least 95 % of landings counted against this quota shall be horse mackerel. By-catches of boarfish, haddock, whiting and mackerel are to be counted against the remaining 5 % of the quota (Footnote to Fishing Opportunities Reg.)

8.7.2 VOLUNTARY

8.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

Boarfish appears frequently as bycatch when trawling for horse mackerel.

Solution:

A solution to avoid bycatch of boarfish in horse mackerel fishery could be to increase selectivity in the trawl using either sorting grids or selection panels (but see chapter 3.1.1.3).

Problem 2:

Boarfish appears frequently as bycatch when trawling for horse mackerel and freezers have until today discarded the boarfish.

Solution:

A solution could be to allow the freezers to produce fishmeal / -oil from the unwanted catches or to allow freezers to produce silage from the unwanted catches (see chapters 4 and 6.5).

Problem 3:

Juvenile mackerel is caught as bycatch in the directed horse mackerel fishery.

Solution:

A flexi grid might be an option to reduce unwanted bycatch of both juvenile mackerel and horse mackerel (but see chapter 3.1.1.3).

Problem 4:

The lack of mackerel quota is a huge problem in the horse mackerel fishery since mackerel is caught as bycatch and this problem is especially severe when the mackerel stock is at a high SSB, but quota are relatively low.

Solution:

At least 95 % of landings counted against this quota shall be of horse mackerel. By-catches of boarfish, haddock, whiting and mackerel are to be counted against the remaining 5 % of the quota (COM/2012/668).

8 WESTERN HORSE MACKEREL

8.9 SPECIFIC RECOMMENDATIONS

- Scientific projects should be designed to develop sorting grids and/or selection panels to reduce the bycatch of mackerel while at the same time aiming for a high survival of escapees (see chapter 3.1.1.3).
- There should be a high focus on advancing acoustic imaging techniques which will help identifying the degree of mixing of both size and species in fish schools (see chapter 3.1.1.3 and 5).
- Allow production of fishmeal / -oil from unwanted catches or allow production of silage from the unwanted catches on-board freezer trawlers and RSW vessels (see chapters 4 and 6.5).
- Based on discard data available for at least parts of the fleet (ICES 2012b) and subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve at the moment (see chapter 3.1.1.3) a *de minimis* exemption could be granted for this stock to be based on the ICES or STECF discard rate.

9 North Sea autumn spawning herring

North Sea autumn spawning herring is primarily caught for human consumption, but also as bycatch in industrial fisheries. It partly overlaps with the Western Baltic herring stock which makes management of this stock particularly challenging (ICES 2013c).

9.1 BIOLOGY

Herring is a migratory pelagic species forming schools at depth of up to 200 m. It moves from spawning and wintering grounds in coastal areas to summer feeding grounds in open water. Eggs are demersal and adhesive on the seabed or on marine vegetation. Therefore spawning grounds are sensitive to gravel extraction and construction. Herring plays a significant role in the food chain, both as predator and prey. In its first year it feeds on small planktonic copepods. Afterwards it also feeds on mysid shrimps, small fishes and arrow worms. Herring is an important prey item for marine mammals and seabirds (ICES 2013c).

9.2 STOCK SIZE AND DISTRIBUTION

North Sea autumn spawning herring is distributed in ICES subarea IV (North Sea) and in division IIIa (Skagerrak and Kattegat) where it partly overlaps with Western Baltic spring spawning herring, as well as division VIId (English Channel). In 2012 the perception of the absolute stock size changed during a benchmark exercise resulting in a SSB which is about twice the size previously assumed. Since the late 1990ies SSB has been above Bpa and fishing mortality has been low for the past five years (ICES 2013c).

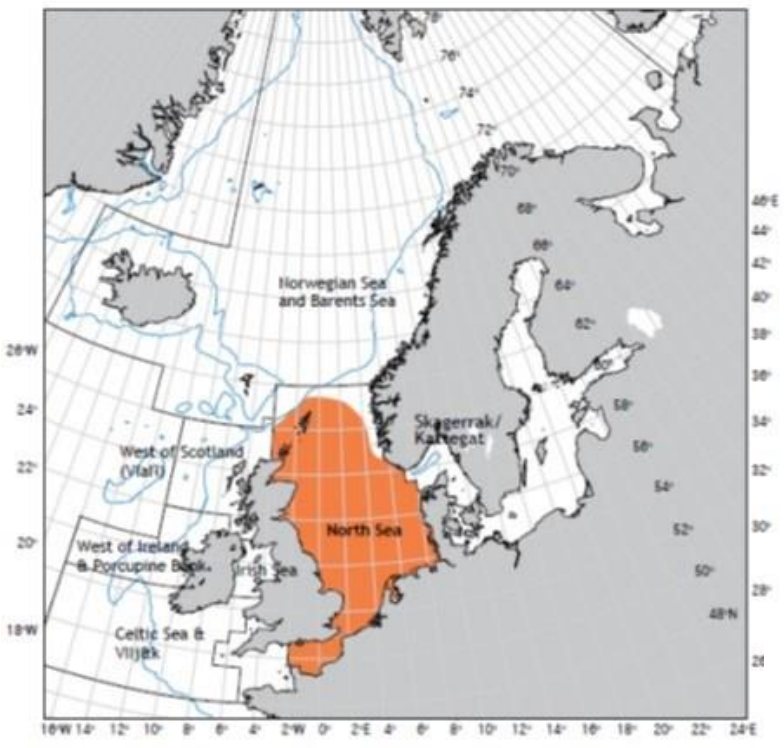


Figure 9.1 Distribution area of North Sea autumn spawning herring.

9 NORTH SEA AUTUMN SPAWNING HERRING

9.3 MANAGEMENT

In 2008 the EU and Norway agreed on a management plan for this stock. ICES evaluated this plan to be in accordance with the precautionary and the MSY approach. However, this management plan proved relatively inflexible after the perception of the stock size has changed. Therefore, a specific EU-Norway request to ICES has been submitted asking for evaluation of different harvest control rules and flexibility mechanisms, all of which have been found to contain precautionary scenarios (ICES 2012a). A new management plan, however, has not been agreed upon.

9.4 CATCH DATA 2012

The table below provides an overview of catches of North Sea autumn spawning herring by the EU as well as the non EU fleet in 2012 according to the HAWG of ICES.

Country	Catch (tonnes)
Belgium	**3**
Denmark	**105.707**
France	**23.819**
Germany	**24.515**
Netherlands	**72.344**
Norway	**119.253**
Sweden	**14.092**
UK (England)	**25.346**
UK (Scotland)	**34.414**
UK (Northern Ireland)	**4.794**
Unallocated landings	**321**
Discards	**0**
Total catch	**424.608**

Table 9.1 North Sea herring catches in 2012 (ICES 2012a).

9.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Therefore the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the North Sea herring fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

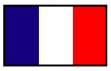
9 NORTH SEA AUTUMN SPAWNING HERRING

9.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
North Sea (ICES IV)	Combined trawl/purse seines		RSW: 5	January - March / June - December	44.102
North Sea (ICES IV)	Trawl	32-54 mm	RSW: 13	January - March / June - December	48.157
North Sea (ICES IV)	Other				790*

* Not ITQ

9.5.2 FRANCE



Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IVa,b,c, VIId	Otter trawl	40	Fresh fish: 15	November-February	
ICES IVa,b,c, VIId	Otter trawl	45	Filleting or freezer-trawler: 2	May-December	23.509
ICES IVa,b,c, VIId	Pair trawl	32-54	Fresh fish: 3	November-February	

Remarks: 29.430 global tonnes caught

9.5.3 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IVc VIId	Trawl	42 - 47 (mesh opening)	Freezer-trawler: 4	December	7.267
ICES IVa,b	Trawl	42-47	Freezer-trawler: 4	June-September	12.886

9.5.4 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IVa and IVb	Pelagic trawl		Freezer-trawler: 10	February and November/December	55.451
ICES IVc and VIId	Pelagic trawl		Freezer-trawler: 9	January and June - December	15.484

9.5.5 SWEDEN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IVa and b / IIIa	Trawl Purse seines	32	17	Whole year	14.810

9.5.6 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IVa,b	Trawl	32-54	RSW	June-September	39.122
ICES area IVa,b	Trawl	32-54	Freezer-trawlers: 4	June-September	16.583
ICES area IVc & VIId	Trawl	32-54	Freezer-Trawlers: 2	November-December	3.835

Remark: UK fleet data is being reviewed and will be updated in future versions.

9.6 INFORMATION ON EXISTING DISCARD DATA

- There are no records on discard to be found in the STECF database.
- HAWG report 2013:
    - In 2012 herring discards were estimated at 1.421 tons in the Dutch freezer-trawler fleet (=2% of the total catch of the fleet)
    - Amount of loss during catch processing, e.g. flushing of tanks and slippage from the net is thought to amount to larger quantities, but there is little information available

9 NORTH SEA AUTUMN SPAWNING HERRING

- ICES advice 2013:
  The human consumption fisheries for herring have little bycatch of other fish and cause almost no disturbance to the seabed. Evidence from observer programs on human consumption fisheries suggests that discarding of herring is not wide-spread. Interactions between the human consumption North Sea herring fishery with marine mammals, sharks and sea birds are considered to be rare. Juvenile herring are caught as bycatch in industrial fisheries.

9.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for North Sea autumn spawning herring.

9.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 20 cm except Kattegat/Skagerrak; 18 cm in Kattegat/Skagerrak) (Art. 19 (2a) Reg. 850/98)

- Seasonal closures (Art. 20 (1b,c,e) Reg. 850/98)
  - Off Jutland from 1 July until 31 October
  - from 15 August to 15 September, within the zone extending from six to 12 miles off the east coast of the United Kingdom as measured from the baselines between latitudes 55° 309 N and 55° 459 N
  - from 15 August to 30 September , within the zone extending from six to 12 miles off the east coast of the United Kingdom as measured from the baselines between latitudes 54° 109 N and 54° 459 N

- Seasonal closure for sprat to protect juvenile herring - off Jutland & eastern Scotland (Art. 21(1a-c) Reg. 850/98)
  - From 1 January to 31 March, and from 1 October to 31 December, within ICES statistical area 39E8

- from 1 January to 31 March, and from 1 October to 31 December, within the inner waters of the Moray Firth west of longitude 3° 309 W, and in the inner waters of the Firth of Forth west of longitude 3° 009 W
- from 1 July to 31 October, within the geographical area bounded by the following coordinates:
  - — the west coast of Denmark at latitude 55° 309 N
  - — latitude 55° 309 N, longitude 7° 009 E
  - — latitude 57° 009 N, longitude 7° 009 E
  - — the west coast of Denmark at latitude 57° 009 N

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)
  - Within Regions 1, 2, 3 and 4 the discarding, during fishing operations, of species subject to quota which can be legally landed shall be prohibited

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)
  - Within Regions 1, 2, 3 and 4, where the quantity of undersized mackerel, herring or horse mackerel exceeds 10 % of the total quantity of the catches in any one haul, the vessel shall move fishing grounds
  - Within Regions 1, 2, 3 and 4 it is prohibited to release mackerel, herring or horse mackerel before the net is fully taken on board a fishing vessel resulting in the loss of dead or dying fish

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in Reg. 227/1013)
  - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm
  - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter

- Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
  - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
  - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea

- Bycatch quotas for industrial fisheries

9.7.2 VOLUNTARY

9.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

In the North Sea mackerel appears occasionally as bycatch in the herring fisheries and if the percentage of mackerel is too high the catches – under the present Market Regulations – are not legal to land. This results in discard of the catches.

Solutions:

- More effort could be put into fast-tracking the development of electronic equipment that could give clear indication of the composition of species in a shoal of herring (see chapter 5).
- Allow sorting machines on RSW vessels so the fishermen can land mackerel as mackerel and herring as herring and thus allow the fishermen to optimise the economic return from the landings.

- For purse-seiners a release rule under specified conditions, subject to scientific justification by ICES and/or STECF, could be implemented (see chapter 3.1.1.2 and chapter 6.2).
- Allow fishmeal plants on board freezer-trawlers and RSW vessels (see chapters 4 and 6.5).

9.9 SPECIFIC RECOMMENDATIONS

- Fast-tracking the development of electronic equipment that could give clear indication of the composition of species in a shoal of herring should be prioritised. Funding could be provided under the EMFF (see chapters 3.1.1.3 and 18).
- The regulation that prohibits sorting machines on RSW vessels should be removed to allow the fishermen to land mackerel as mackerel and herring as herring and thus allow the fishermen to optimise the economic return from the landings (see chapters 4 and 19).
- For purse-seiners a release rule under specified conditions, subject to scientific justification by ICES and/or STECF, could be implemented (see chapter 3.1.1.2 and chapter 6.2).
- Allow fishmeal plants on board freezer-trawlers and RSW vessels (see chapters 4 and 6.5).
- Based on STECF's conclusion that there seems to be sufficient information to provide catch advice for this stock (STECF 13-23) as well as discard data available for at least parts of the fleet (ICES 2013c) and subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve at the moment (see chapter 3.1.1.3) a *de minimis* exemption could be granted for this stock to be based on the ICES or STECF discard rate.

10 Blue whiting

Blue whiting (*Micromesistius poutassou*) is a widely distributed gadoid found in the North Eastern Atlantic from Norway to Portugal. The distribution of blue whiting is centred along the edges of the continental shelf at depth between 300 and 600 m. Blue whiting is caught in the pelagic fishery with catches fluctuating considerably from 105.000 tons in 2011 to 2.378.000 tons in 2004 (ICES 2013a).

10.1 BIOLOGY

Although blue whiting belongs to the gadoids (cod fish) it is not like other gadoids demersal, but is a purely pelagic species (Bailey 1982). It is a relative small gadoid, normally between 20 and 30 cm but can reach lengths up to 50 cm. The diet of blue whiting is mainly krill, squid, small fish, and copepods. Maturity is reached at ages between 2 and 3 years and spawning takes place during spring (March-April) along the shelf edges west of the British Isles (ICES 2013a).

10.2 STOCK SIZE AND DISTRIBUTION

Blue whiting is widely distributed and shows considerable fluctuations in the stock size, with a spawning stock biomass (SSB) ranging from as low as 3.000.000 tons to as high as 7.000.000 tons. It is managed as one stock, although there are some uncertainties about the stock identity and possible sub-stocks (ICES 2013a).

10.3 MANAGEMENT

A management plan was agreed by EU, Norway, Iceland and the Faroe Islands in 2008. In this a target fishing mortality was set to 0.18 which at that time was considered to be in accordance with the MSY principles. This value was revised in 2013 and FMSY is now considered to be 0.30 (ICES 2013e).

10 BLUE WHITING

10.4 CATCH DATA 2012

The table below provides an overview of blue whiting landings by the EU and the non EU fleet in 2012 as estimated by WGWIDE.

Country	Landings (tonnes)
Denmark	340
Faroe Islands	43.290
France	9.799
Germany	6.239
Iceland	63.056
Ireland	7.557
Netherlands	26.526
Norway	118.832
Portugal	1.955
Spain	6.726
United Kingdom	7.895
Russia	88.303
Unallocated	34.99
Discards	**-**
Total	**384.016**

Table 10.1 Blue whiting landings in 2012 (ICES 2013a).

10.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Information for Portugal has been provided by the General Directorate of Natural Resources, Security and Maritime Services. As most information has been provided directly by the pelagic industry the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the blue whiting fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

10.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
	Combined trawl/ purse seine		RSW: 5		127
	Trawl		RSW: 6		68

10 BLUE WHITING

10.5.2 FRANCE

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES V, VI, VII, VIII	OTM	50	Filleting or freezer-trawler: 1	Primary: January-June; Secondary: September-October	9.796

Remarks: Up to 4 vessels potentially involved depending on TAC swaps.

10.5.3 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VI	Pelagic trawl	48-54	Freezer trawler: 4	February-June	6.238

Remarks: often mixed fishery with ARU.

10.5.4 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES I, II, III, IV, V, VI, VII, VIIIa-d, VIII (EU and international waters)	Trawl	32	RSW: 6 Polyvalent: 2	January-April	7.498

10.5.5 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES I, II, III, IV, V, VI, VII, XII, XIV and VIIIa,b,d,e (EU and international waters)	Pelagic trawl		Freezer trawlers: 9	January-June	27.189

10.5.6 PORTUGAL

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
	Trawler		28		5.891

10.5.7 SPAIN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIIc, IXa,b	Trawl	70	52 Average of 200 GT	Throughout the year except February-March	5.800
ICES VIIIc, IXa,b	Trawl (Pair Trawlers)	55	38 (in Pair trawlers modality) Average of 200 GT	Throughout the year	
ICES VIIIc, IXa,b	Trawlers (Golfo de Cadiz)	> 55	140 Average of <70 GT	Throughout the year	120
ICES VIIIc, IXa,b	Others		Less than 15 m.	Throughout the year	50

10.5.8 SWEDEN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IIIa and ICES area IVa, b	Trawl	32	15	Summer/autumn	59

10.5.9 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES I, II, III, IV, V, VI, VII, XII, XIV and VIIIa,b,d,e (EU and international waters)	Pelagic trawl		RSW: 7	February-March	7.572
ICES I, II, III, IV, V, VI, VII, XII, XIV and VIIIa,b,d,e (EU and international waters)	Pelagic trawl		Freezer-trawlers: 3	March	1.590

Remarks: 4.147 tonnes swapped to other Member States

10.6 INFORMATION ON EXISTING DISCARD DATA

- WGWIDE 2013:
  - Discards are generally low
  - Estimates from the DCF discard sampling programme carried out by the Netherlands on pelagic trawlers in 2008, 2009, 2010 are 3%, 1% and 4% in weight respectively.
  - Most of these discards occur in fisheries not directed to blue whiting
- Borges et al. 2008: discards of blue whiting account for 8% of all pelagic discards in the Dutch pelagic freezer-trawler fleet in 2002-2005
- French pelagic industry:
  - 5-7% discards on French filleting trawlers in the blue whiting fishery
- STECF discard rate: 1%

10.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for blue whiting.

10.7.1 REGULATORY

- 10% Inter-annual quota flexibility (NEAFC recommendation)

10.7.2 VOLUNTARY

10.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

A French pelagic trawler is a factory trawler which produces surimi base on-board the vessel from blue whiting fillets. Every blue whiting caught by the vessel must be headed, gutted and fileted which is done by VMK or Baader fileting machines, each processing a hundred fish per minute. Subsequently filets are processed into mince. The mince is washed with refrigerated fresh water produced on-board by reverse osmosis. Afterwards it is refined into surimi base, which is a pulp of fish protein. Surimi base is frozen on-board. Frozen surimi base is used in food factories on land, particularly for the production of surimi stick (also called seafood stick) which is a cooked mix of surimi base (33%), wheat, white of egg, flavors, paprika and water. About 200.000 tons of surimi sticks are produced every year by the EU food industry on land, mainly in Lithuania, France, Spain and Poland. This requires an input of about 65.000 tonnes of frozen surimi base every year. 95% of this surimi base is imported, mainly from the USA (Alaska), Vietnam, Peru and Thailand. Only 5%, i.e. about 3.000 tonnes, are produced in the EU by the only European surimi base factory which is the French trawler.

For obvious food safety reasons frozen surimi base must be free of bacterial contamination. Therefore, damaged blue whiting must not be filleted. Fish can be damaged in case of bad weather through movements and hits while staying in the trunk of the trawler before being headed, gutted and fileted. Given that fishing takes place between mid-January and mid-April in the Northeast Atlantic when the weather can be very rough each season there will be a certain amount of catches being damaged. Due to the short fishing season it is not an option to wait for bad weather to pass. Another problem is the incidental capture of juvenile blue whiting which cannot be correctly headed, gutted and fileted by the fileting machines. Usually size selectivity in the blue whiting fishery is not an issue. However, in cases of very large blue whiting shoals there might be mixing of different sizes in the catch. Improving size selectivity is not possible with the current technology (see chapter 3.1.1.3.1) and even though the regulation gives a mesh size of 32-54 mm the French factory trawler already only uses 54 mm. At the moment damaged fish is being discarded. If it was not discarded it would have to be frozen on-board as whole damaged fish whereby about 5% of the total catch would occupy 15% of the space in the frozen hold. At the same time instead of 4 fishing trips per season 5 fishing trips would have to take place to catch the same amount of fish resulting in significantly higher operating costs. Besides these costs there is no use for damaged fish once it has been landed and therefore it would nevertheless have to be discarded on land.

Solution:

Provision should be made with 1% overall de minimis for blue whining to accommodate the unavoidable discards as explained above of the French factory trawler.

10.9 SPECIFIC RECOMMENDATIONS

- Based on the STECF discard rate (STECF-13-23) and subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve an overall *de minimis* of 1% could be granted for this stock on an EU level (see chapter 3.1.1.3).
- Provision should be made with 1% overall de minimis for blue whiting to accommodate the unavoidable discards of the French factory trawler.

11 Boarfish

Boarfish (*Capros aper*) are targeted in an industrial fishery for fishmeal and oil to the southwest of Ireland. The fishery is conducted in shelf waters and the first landings were reported in 2001. Landings were at very low levels from 2001-2005. The main expansion period of the fishery was 2006-2010 when unrestricted landings increased from 2.772 t to 137.503 t. Landings have been regulated since 2011 and ICES advises that landings in 2014 should not exceed 127.509 tonnes assuming discards of 6.448 tonnes (ICES 2013b).

11.1 BIOLOGY

Boarfish is a small pelagic species which forms shoals to depths of 600 m. Like horse mackerel it is a long-lived species which can reach a maximum age of approximately 30 years. Spawning occurs in asynchronous batches and fecundity is indeterminate. The ecological role of this species is largely unknown in the Northeast Atlantic region. In the Azores some seabirds seem to rely on boarfish as an important food source. Boarfish primarily feeds on a specific plankton species, *Calanus helgolandicus*. Maturity occurs at 3.4 years when the fish is approximately 9.7 cm long (ICES 2013a).

11.2 STOCK SIZE AND DISTRIBUTION

Boarfish is a widely distributed species which can be found from Norway to the Senegal including the Mediterranean Sea, Azores, Canaries, Madeira and Great Meteor Seamount (Hüssy et al. 2011). In 2011 the Irish industry initiated a boarfish acoustic survey which has been continued in 2012 and 2013. As no species-specific target strength (TS) previously existed for boarfish, an industry funded project was conducted to model boarfish TS (Fässler et al. 2013). Application of this target strength to acoustic survey data produced total stock biomass estimates of 863.446t and 439.897t in 2012 and 2013, respectively.

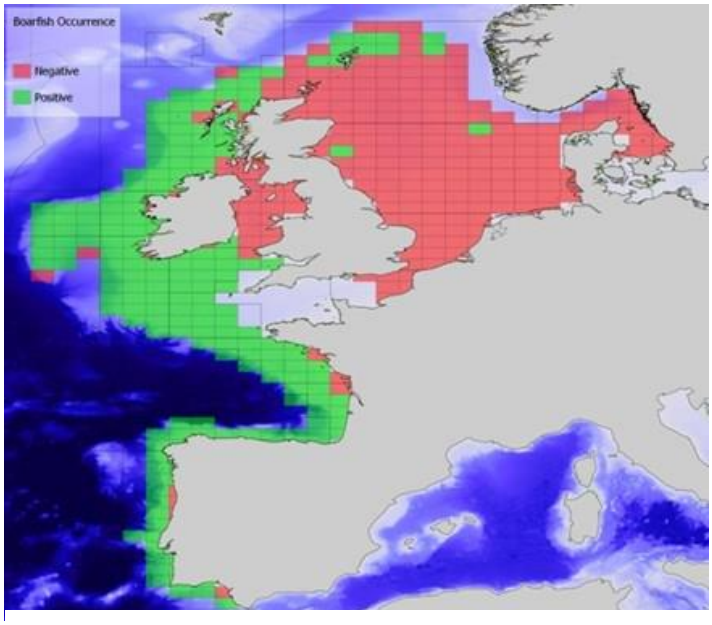


Figure 11.1 Distribution of boarfish in the Northeast Atlantic.

11 BOARFISH

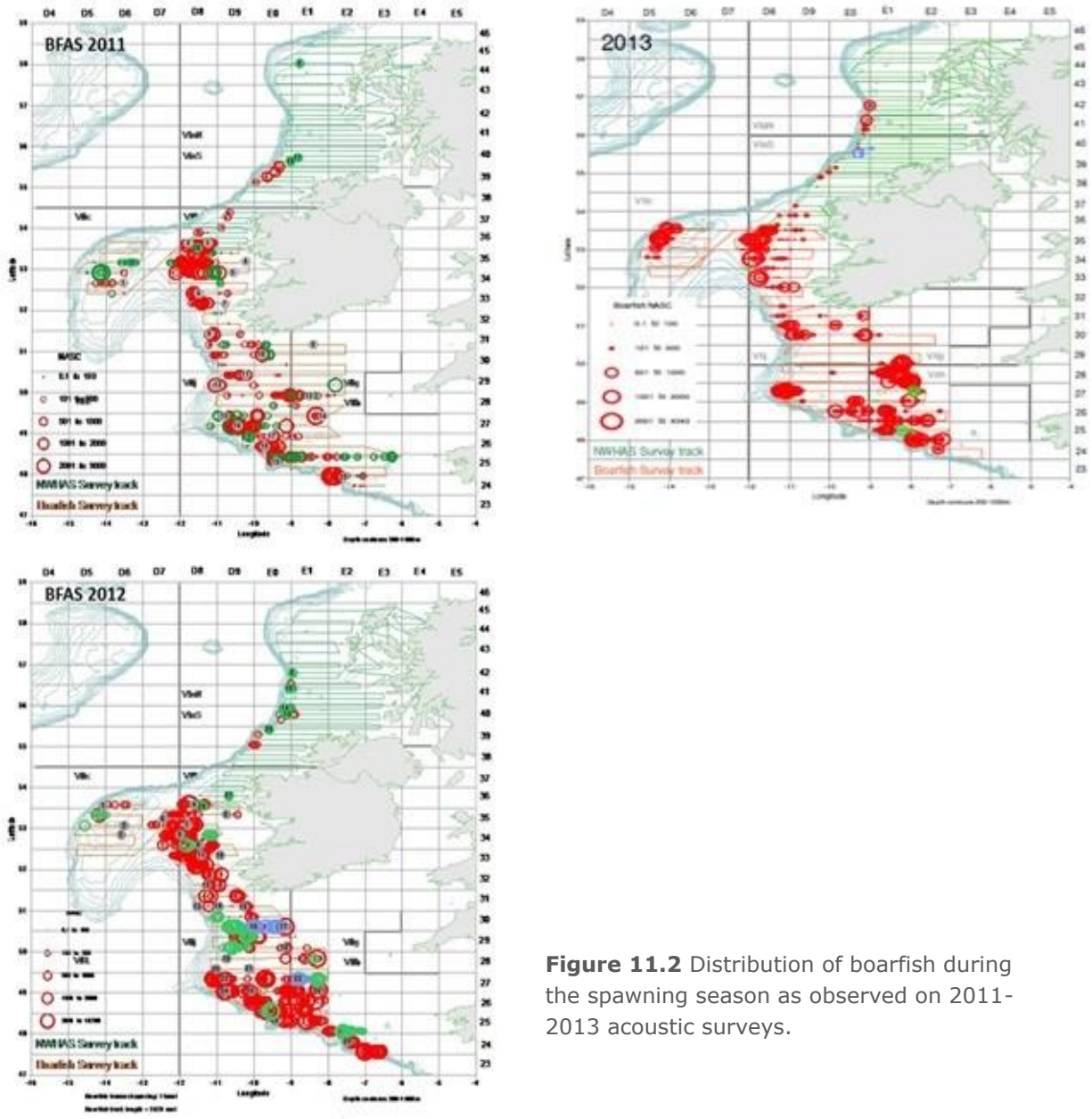


Figure 11.2 Distribution of boarfish during the spawning season as observed on 2011-2013 acoustic surveys.

11.3 MANAGEMENT

Before 2011 catches were unregulated and significantly increased between 2001 and 2010. In 2011 a TAC was set for the first time at 33.000 tons and the European Commission asked

11 BOARFISH

ICES to provide advice for this stock in 2012. On the basis of the MSY approach ICES advised that catches in 2012 should not exceed 82.000 tons. However, in August 2012 the Pelagic RAC submitted a management plan to the European Commission respecting the FAO guidelines for newly developing fisheries (Pelagic RAC 2012c). ICES had been requested to evaluate this plan and concluded that Tier 1.1 of the plan is precautionary as long as a category 1 assessment is available for the stock (ICES 2013b).

11.4 CATCH DATA 2012

The table below provides an overview of boarfish catches in 2012 based on ICES working group estimates.

Country	Catch (tonnes)
Denmark	19.888
Ireland	55.949
United Kingdom (Scotland)	4.884
Discards	**6.634**
Total	**87.355**

Table 11.1 Catches of boarfish in 2012 (ICES 2013b).

11.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. As most information has been provided directly by the pelagic industry the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the boarfish fishery can differ from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

11.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Northeast Atlantic (ICES VI and VII)	Combined trawl/purse seines	32-54	RSW: 4	Winter (beginning and end of year)	14.139
Northeast Atlantic (ICES VI and VII)	Trawl	32-54	RSW: 1	Winter (beginning and end of year)	5.743

11.5.2 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
All waters	Trawl	32	RSW: 20 Polyvalent: 12	January-March and September-December	55.948

11.5.3 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Northeast Atlantic (ICES VI and VII)	Trawl	32-54	RSW: 3	September-October	2.060
Northeast Atlantic (ICES VI and VII)	Trawl	other	RSW: 1	October	1.079

11.6 INFORMATION ON EXISTING DISCARD DATA

Discarding and slippage are not known to occur in the target fishery. However, boarfish are discarded by freezer trawlers and in demersal fisheries. Discard data are available from Dutch and German pelagic freezer trawlers (areas not specified) and from Irish, Spanish and Portuguese demersal fleets (Prista *et al*., WD 2013; Valeiras *et al*., WD 2012; van Overzee and van Helmond, 2013). The Portuguese data relate to Division IXa and are not relevant to the current management area. Discards were not obtained from UK or French freezer trawlers, though discard patterns in these fleets are likely to be similar to the Dutch fleet. Data are only available from 2003 however it is to be expected that discarding occurred before this, in demersal fisheries. It is difficult to predict what the levels may have been.

Year	Germany	Ireland	Netherlands	Portugal	Spain	Total
2003		119	1998		8812	10929
2004		60	837	245	3579	4721
2005		55	733	0	5007	5795
2006		22	411	1017	3933	5382
2007		549	23	377	2617	3566
2008		920	738	273	8410	10341
2009		377	1258	321	5047	7004
2010		85	512	0	5947	6544
2011	49	107	185	8	5461	5809
2012		181	88	114	6365	6748

Table 11.2 Discards of boarfish in demersal and non-target pelagic fisheries by year in tonnes for the whole EU fleet (Ed Farrell, personal communication).

11 BOARFISH

11.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for boarfish.

11.7.1 REGULATORY

There are currently no EU measures in place to prevent or reduce discards of boarfish in the Northeast Atlantic. However, there are some national measures in place, such as the closure in Ireland which has been adopted legally by the Irish Authorities for Irish vessels from the 15th March to the 1st September, and the measures in the Pelagic RAC management plan.

The following measures have been suggested by the Pelagic RAC:

- A closed season from 15th March until 31st August to prevent bycatches of herring and mackerel
- A closed area inside the Irish 12 mile limit south of 52°30 from 12th February until 31st October to prevent bycatch of Celtic Sea herring which is known to form aggregations at this time
- If catches of other species covered by TAC, amount to more than 5% of the total catch by day by ICES statistical rectangle, then all fishing must cease in that rectangle for 5 consecutive days.

11.7.2 VOLUNTARY

Anecdotal evidence from the Irish fishing industry suggests that demersal trawlers usually leave an area if there is a high abundance of boarfish in the catch. The strong dorsal and pectoral spines of boarfish make them difficult to handle if caught in large quantities and can also cause significant damage to other species in the catch.

11.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

There are no known discard problems in the directed fishery for boarfish.
However, boarfish appears as by-catch in other fisheries; primarily in the fishery for horse mackerel. And in that fishery, the catches may be registered against the horse mackerel quota under the 5% 'other species' rule (boarfish, haddock, whiting and mackerel).

11.9 SPECIFIC RECOMMENDATIONS

- Based on the discard information available from ICES and subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting

this stock are very difficult to achieve at the moment a 7% *de minimis* could be granted (see chapter 3.1.1.3).

12 Celtic Sea and South of Ireland herring

12.1 BIOLOGY

The herring south of Ireland, in the Celtic sea and area VIIj has been managed as one stock since 1982 although there are both an autumn and a winter spawning component present. The maturity in the stock takes place early such that around 60% of 1-winter ringers are mature. However large annual variations are present. In the official ICES assessment all individuals older than 9 are merged into a 9+ group. This herring stock is relatively small and the mean individual weight in the stock at spawning time has decreased since the early 1980ies where a three year old fish weighed almost 200 g to now where it weighs 150 g. Similar to most other herring stocks, Celtic Sea and South of Ireland herring are depending on available spawning habitat such as gravel and sea grass.

12.2 STOCK SIZE AND DISTRIBUTION

This stock is distributed in ICES area VIIa South of 52°30'N and in areas VIIg,h,j,k. SSB is currently at its highest level since the 1960s well above any biomass reference points. Fishing mortality is below FMSY (ICES 2013f). The stock has been benchmarked by ICES in 2014 (ICES 2014).

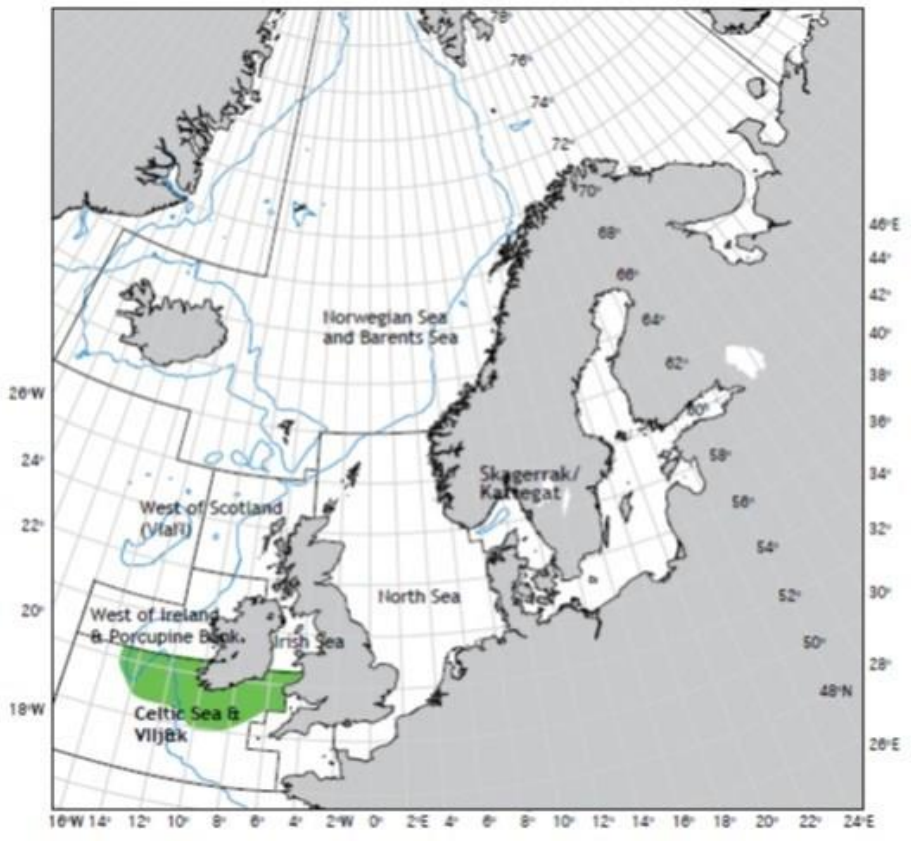


Figure 12.1
Distribution area of the Celtic Sea and South of Ireland herring stock.

12 CELTIC SEA & SOUTH OF IRELAND HERRING

12.3 MANAGEMENT

The Pelagic RAC developed a long-term management plan for this stock which was evaluated by ICES in 2012 and found to be consistent with the precautionary approach. This plan was used as basis for the 2013 and 2014 TAC setting (ICES 2013f).

12.4 CATCH DATA 2012

The table below shows landings in 2012 as estimated by ICES and may not correspond to official landings data in all cases.

Country	Catch (tonnes)
France	3
Germany	230
Ireland	16.132
Netherlands	3.135
Unallocated	2.104
Discards	**Not available**
Total	**21.604**

Table 12.1 Celtic Sea and South of Ireland herring catches in 2012 (ICES 2013f).

12.5 FISHERIES DATA

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. As most information has been provided directly by the pelagic industry the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

12.5.1 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIg-k	Pelagic trawl	42-47	Freezer-trawler: 4	December	230

12 CELTIC SEA & SOUTH OF IRELAND HERRING

12.5.2 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIg, h	Trawl	32	RSW: 2 Polyvalent: 32	September-November	18.236

12.5.3 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VII g, h, j, k	Pelagic trawl		Freezer-trawler: 4	December	1.364

12.6 INFORMATION ON EXISTING DISCARD DATA

- ICES advice 2013:

  There has been considerable efficiency creep in the fishery since the 1980s with a greater ability to locate fish. Under the current management regime the quality of the catch data has improved. Discarding is thought to be low, and there are no observations of discarding or slippage in the Celtic Sea fisheries that target herring. In 2010 and 2011 there were concerns of an elevated risk of discarding due to the quota management system. However, in 2012 this risk is thought to be lower, given the flexibility incorporated into the weekly quota system whereby a vessel could use some of the following week's quota to avoid slippage. In this area sprat landings have increased substantially and misreporting of sprat and herring occur. There is also a concern that sprat in this area may be fished together with bycatches of juvenile herring.

- STECF discard rate: 1%

12.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the

industry to avoid unwanted catches. Below is a list of specific measures for Celtic Sea and South of Ireland herring.

12.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 20 cm) (Art. 19 (2a) Reg. 850/98)

- Seasonal closure – South coast of Ireland (Art. 20 (1 i-k) Reg. 850/98)
  The retention on board of herring which are caught within the geographical areas and during the periods mentioned below shall be prohibited:
  - in 1997, and every third year thereafter, from the second Friday in January, for a period of 16 consecutive days within the area bounded by the following coordinates:
    — the south-east coast of Ireland at latitude 52° 00′ N,
    — latitude 52° 00′ N, longitude 6° 00′ W,
    — latitude 52° 30′ N, longitude 6° 00′ W,
    — the south-east coast of Ireland at latitude 52° 30′
  - in 1997, and every third year thereafter from the first Friday in November for a period of 16 consecutive days within the area bounded by the following coordinates:
    — the south coast of Ireland at longitude 9° 00′ W,
    — latitude 51° 15′ N, longitude 9° 00′ W,
    — latitude 51° 15′ N, longitude 11° 00′ W,
    — latitude 52° 30′ N, longitude 11° 00′ W,
    — the west coast of Ireland at latitude 52° 30′ N
  - in 1998, and every third year thereafter, from the first Friday in November for a period of 16 consecutive days within the area bounded by the following coordinates:
    — the south coast of Ireland at longitude 9° 00′ W,
    — latitude 51° 15′ N, longitude 9° 00′ W,
    — latitude 51° 15′ N, longitude 7° 30′ W,
    — the south coast of Ireland at latitude 52° 00′ N.

- Prohibition of high-grading (Art 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in Reg. 227/2013)

- The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm
- The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter
- Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
  - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
  - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea

12.7.2 VOLUNTARY

12.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

There is a perceived discard issue with this stock due to a lack of quota flexibility.

Solution:

A more flexible management regime for vessels landings could solve this issue.

Problem 2:

The stock assessment has shown a large variation over the past three years which raises concerns regarding the quality of the survey data.

Solution:

As survey and fishing effort is taking place at same time better cooperation and interaction between survey vessel and fishers could improve data collection.

12 CELTIC SEA & SOUTH OF IRELAND HERRING

12.9 SPECIFIC RECOMMENDATIONS

- Installation of a more flexible management regime for vessels landings to solve the perceived discard issue.
- Encourage fishermen and scientists to work closely together in data collection.
- Based on the STECF discard rate and subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve at the moment a *de minimis* of 1% could be granted (see chapter 3.1.1.3).

13 Irish Sea herring

The Irish Sea herring stock is a rather small herring stock in the waters between Ireland and the UK. Only those two countries have an interest in that stock.

13.1 BIOLOGY

Irish Sea herring is an autumn-spawning stock which belongs to the Malin Shelf complex. It seasonally mixes with herring in ICES Subarea VI although it is unclear to which extent. Like with other herring stocks, its spawning and nursery areas are sensitive to human activities like gravel extraction (ICES 2013c).

13.2 STOCK SIZE AND DISTRIBUTION

Irish Sea herring is distributed in ICES area VIIa North. Both SSB and recruitment have increased in recent years while fishing mortality has decreased and the stock is harvested sustainably at MSY level (ICES 2013f).

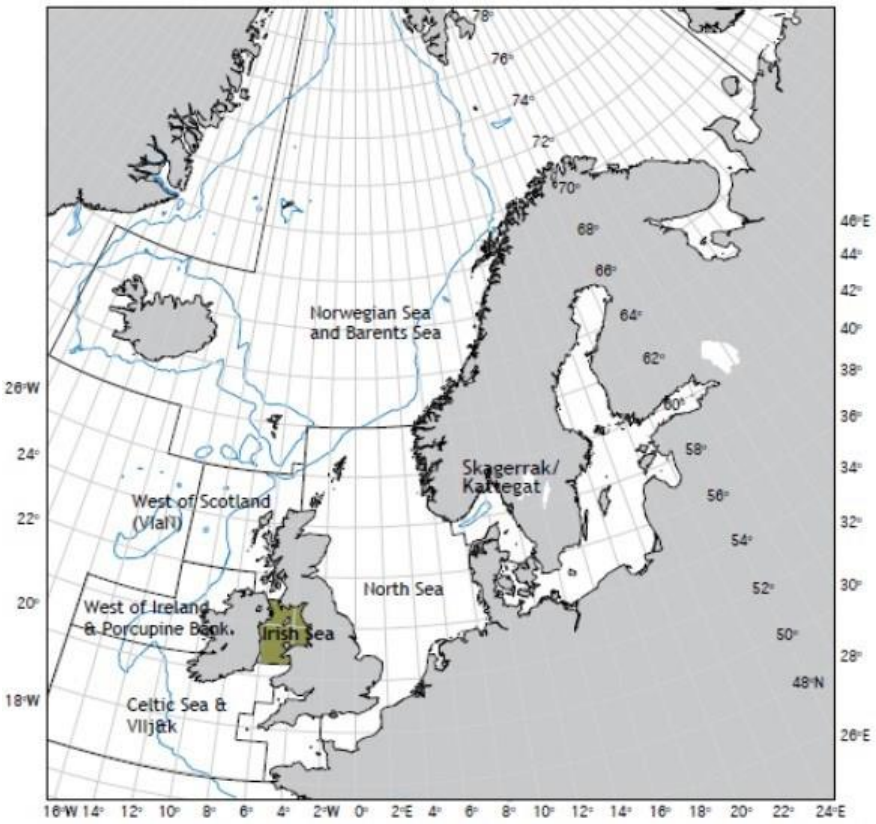


Figure 13.1
Distribution area of Irish Sea herring.

13 IRISH SEA HERRING

13.3 MANAGEMENT

The stock is currently managed according to MSY. However, members of the Pelagic RAC are collaborating with scientists and other stakeholders to develop a long-term management plan for this stock. Initial simulations with a fixed TAC rule did not deliver the results people had hoped for and further investigation is necessary (Pelagic RAC 2013b).

13.4 CATCH DATA 2012

The table below shows the ICES catch estimates for Irish Sea herring in 2012 by country.

Country	Catch (tonnes)
Ireland	18
UK	5.675
Total	**5.693**

Table 13.1 Irish Sea herring catches in 2012 (ICES 2013f).

13.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Therefore the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

13.5.1 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIa	Trawl				1.237 (swopped out)

13.5.2 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIa	Pelagic trawl and pair trawl		RSW: 3	August-November	5.636
ICES VIIa	Fixed gear		Dry hold: 2	September	32

13 IRISH SEA HERRING

13.6 INFORMATION ON EXISTING DISCARD DATA

- ICES advice 2013:

  The fishery has not changed in recent years. UK pelagic trawlers take the majority of catches during the 3rd and 4th quarters. A small local gillnet fishery continues to record landings on the traditional Mourne herring grounds in the 4th quarter. Herring fisheries tend to be clean with little bycatch of other fish. There are no observations of discarding or slippage in the Irish Sea fisheries that target herring.

- STECF discard rate: 1%

13.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for Irish Sea herring.

13.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 20 cm) (Art. 19 (2a) Reg. 850/98)

- Seasonal closures – Isle of Man (Art. 20 (1f,g) of Reg. 850/98)
  - The retention on board of herring which are caught within the geographical areas and during the periods mentioned below shall be prohibited:
    - from 21 September to 31 December, within the parts of ICES Division VIIa bounded by the following coordinates:

      (i) — the east coast of the Isle of Man at latitude 54°20′ N,
      — latitude 54° 20′ N, longitude 3° 40′ W,
      — latitude 53° 50′ N, longitude 3° 50′ W,
      — latitude 53° 50′ N, longitude 4° 50′ W,
      — the south-west coast of the Isle of Man at longitude 4° 50′ W,
      and
      (ii) the east coast of Northern Ireland at latitude 54°15′ N,
      — latitude 54° 15′ N, longitude 5° 15′ W,
      — latitude 53° 50′ N, longitude 5° 50′ W,
      — the east coast of Ireland at latitude 53° 50′ N;

    - throughout the year within ICES Division VIIa, in the geographical area between the west coasts of Scotland, England and Wales, and

a line drawn 12 miles from the baselines of the coasts bounded to the south by latitude 53° 20' N and to the north-west by a line drawn between the Mull of Galloway (Scotland) and the Point of Ayre (Isle of Man);

- Prohibition of high-grading (Art 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in Reg. 227/2013)
  - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm
  - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter
  - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
  - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
  - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea

13.7.2 VOLUNTARY

- The vessels utilise sophisticated electronics to aid in identification of suitable shoals prior to deploying fishing gear.

13 IRISH SEA HERRING

13.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Like many northeast Atlantic herring fisheries, the fishery for Irish Sea herring targets spawning aggregations of adult herring. As such, catches tend to be characteristically clean with few or insignificant volumes of other species being captured at the same time. While small numbers of mackerel, horse-mackerel or whiting may occasionally be removed from the catch during processing, the number and biomass is considered to be insignificant. The nature of the clean catches therefore reflects the fact that the fishery is spatially and temporally limited and takes place in an area where few other pelagic species occur.

Concerns exist in relation to the possibility of slippage in some European pelagic fisheries. However, there are few economic incentives for slipping fish in this fishery. While it is possible that slippage may occur in this fishery, all indications from stakeholders (DARD, vessel crews, processors) are that it was a more common event in the past and is now a very infrequent event that is more likely to result from technical problems with machinery and on-board equipment than for any other reason. Vessels occasionally make very large catches, however in general vessels will have sufficient capacity to hold 500 or more tonnes of fish.

13.9 SPECIFIC RECOMMENDATIONS

- Efforts to develop a management plan for this stock should be continued.

14 Herring in VIa South and VIIb,c

Herring to the northwest of Ireland comprise both an autumn and a winter/spring spawning component, distinguishable by age distribution of the catch and vertebral counts. Spawning is from September until March but may continue until April. Spawning in VIIb has traditionally taken place in the autumn and in VIaS, spawning occurs later in the autumn and in the winter (ICES 2013c).

14.1 BIOLOGY

Maturations are early, such that up to 50% of the individuals are already mature at age 2. The maturation does show annual variation. In the assessment, ages older than age nine are treated as a +9 group. Since the 1990'ies there has been a much higher total mortality than earlier, a condition which likely added to the declining stock size (ICES 2013c).

14.2 STOCK SIZE AND DISTRIBUTION

SSB is historically low and well beneath both Bpa and Blim.

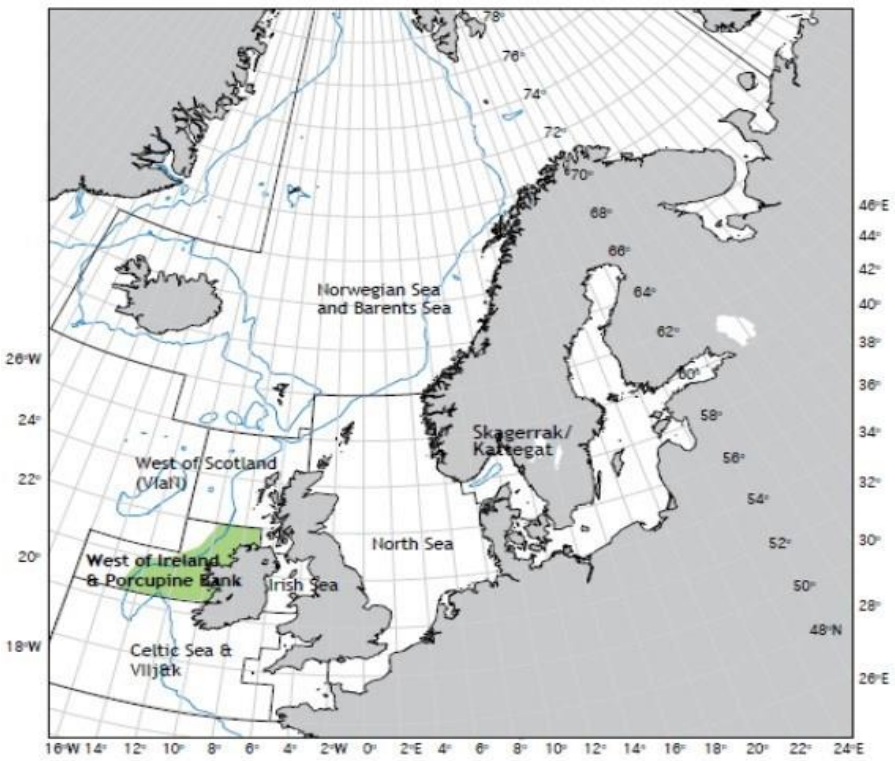


Figure 14.1 Distribution area of VIaSouth and VIIb,c herring.

14 HERRING IN VIA SOUTH AND VIIB,C

14.3 MANAGEMENT

Catches have decreased gradually since the early 1990ies from a level at around 30.000 tonnes to less than 7.000 tonnes in 2012. Since then ICES has advised a zero TAC and the implementation of a recovery plan.

14.4 CATCH DATA 2012

Catches in 2012 were estimated to be 6.571 tonnes whereof 100% was taken in pelagic trawls. From 2013 the advised catch has been 0. The fishery is similar to most other herring fisheries considered to be relatively clean with little bycatch of other species.

14.5 FISHERIES DATA 2012

The fishery is concentrated in quarters one and four and Ireland takes up more than 90% of the TAC. The fishery is purely a pelagic trawl fishery and the number of boats participating in this fishery is relatively constant at around 30 vessels. How many of these are engaged in fishing for herring depends very much on the availability of other species such as mackerel or horse mackerel, as these two species are the most important for the Irish pelagic fleet (ICES 2013c).

14.5.1 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIa South, VIIb,c					3.861

14.5.2 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIa South, VIIb,c	Pelagic trawl		0	0	0

14 HERRING IN VIA SOUTH AND VIIB,C

14.6 INFORMATION ON EXISTING DISCARD DATA

- ICES advice 2013:

  Discarding does occur, but is thought to be low. The fisheries are considered relatively clean, with little bycatch of other fish and cetaceans.

- STECF discard rate: 0%

14.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for herring in VIa South and VIIb,c.

14.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 20 cm) (Art. 19 (2a) Reg. 850/98)

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in Reg. 227/2013)
  - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm
  - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter
  - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)

- Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
- Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea

14.7.2 VOLUNTARY

14.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem1:

From a fishermen's perspective the scientific assessment of the stock in unsatisfactory not reflecting fishermen's observations at sea and has led to TAC restrictions.

Solution:

A benchmark of the stock will take place in 2015 and will likely resolve most of the issues with the scientific assessment. Implementing the rebuilding plan suggested by the Pelagic RAC could further aid in solving the problems related to this stock.

Problem 2:

There is some mixing of this stock with neighbouring herring stocks.

Solution:

Mapping of herring spawning grounds and the exact distribution area as well as migratory routes could provide a clearer picture regarding where and when mixing takes place and hence could either be avoided or taken into account when fishing this stock.

14.9 SPECIFIC RECOMMENDATIONS

- Close collaboration between scientists and stakeholders before and during the benchmark in 2015.
- Implementation of the rebuilding plan developed by the Pelagic RAC.
- Follow-up with HAWG on mapping of spawning ground

15 West of Scotland herring (VIa North)

The West of Scotland herring is an autumn spawning herring belonging to the Malin Shelf Herring Stock complex. Catches have historical been around 30.000 t and at present fishing mortality is historically low (ICES 2013c).

15.1 BIOLOGY

The herring stock west of Scotland is a relatively small herring with a maximum weight around 250 g. At age 3 almost all individuals have matured. The prey is the same as for most other herring stocks consisting of mainly zooplankton (ICES 2013c).

15.2 STOCK SIZE AND DISTRIBUTION

During the last 20 years the SSB has fluctuated around 100.000 t which is well above the defined B_{lim} of 50.000 t. The stock is distributed northwest of Scotland and most catches are taken north of the Scottish mainland and the Outer Hebrides (ICES 2013f).

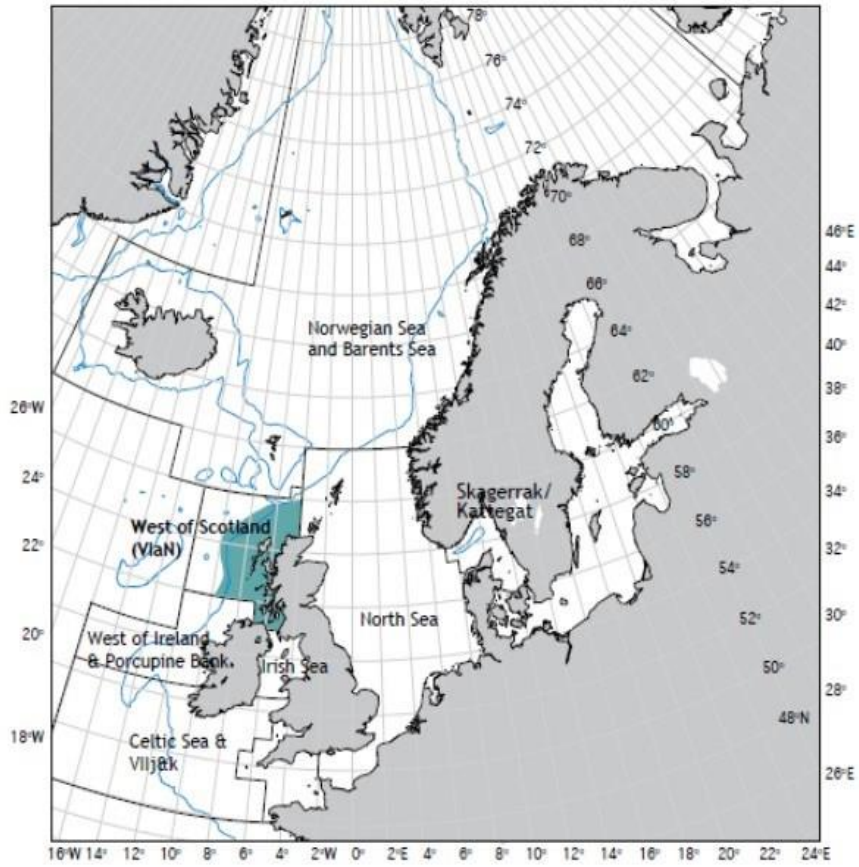


Figure 15.1 Distribution area of the West of Scotland herring stock.

15 WEST OF SCOTLAND HERRING

15.3 MANAGEMENT

An EU management plan is in place with a target fishing mortality of 0.25, unless SSB falls below 75.000 t. In this case fishing mortality will be reduced to 0.2 until B_{lim} is reached which means that fishing will end (ICES 2013f).

15.4 CATCH DATA 2012

The catch table below lists the ICES estimates which do not in all cases correspond to the official statistics.

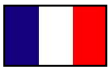
Country	Catch (tonnes)
France	244
Germany	1.829
Ireland	3.451
Netherlands	3.523
UK	12.249
Area-misreported	-2.780
Total	**18.516**

Table 15.1 Catches of West of Scotland herring in 2012 (ICES 2013f).

15.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Therefore the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when aiming to achieve an overview of catches of the EU pelagic fleet. Number of vessels engaging in the fishery can differ from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

15.5.1 FRANCE



Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES Vb (CE), VIa North, VIb	OTM	45	Filleting or freezer trawlers: 2	May-July	843

15 WEST OF SCOTLAND HERRING

15.5.2 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIa North	Pelagic trawl	42-47	Freezer trawler: 4	July-October	1.832

15.5.3 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES Vb and VIb; EU waters VIaN and S	Trawl	32	RSW: 23 Polyvalent: 26	January-March; September-December	3.360

15.5.4 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES Vb (EU waters), VIa North, VIb	Pelagic trawl		Freezer-trawler: 5	July-August, September-October	3.697

15.5.5 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIa North	Pelagic trawl and pair trawl		RSW: 23	March, July-December	10.021
ICES VIa North	Pelagic trawl and pair trawl		Freezer-trawler: 4	June - August	2.330

15.6 INFORMATION ON EXISTING DISCARD DATA

- ICES advice 2013:
  Herring fisheries tend to be clean with little bycatch of other fish. Scottish discard observer programs since 1999 indicate that discarding of herring in these directed fisheries are at a low level. These discard observer programs have recorded occasional catches of seals and zero catches of cetaceans.
- STECF discard rate: 0%

15 WEST OF SCOTLAND HERRING

15.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for West of Scotland herring.

15.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 20 cm) (Art. 19 (2a) Reg. 850/98)

- (Seasonal) closures - Logan Bay & Firth of Clyde (Art. 20 (1a,h) Reg. 850/98)
  - The retention on board of herring which are caught within the geographical areas and during the periods mentioned below shall be prohibited:
    - from 1 January to 30 April, within the geographical area situated to the north-east of a line drawn between Mull of Kintyre and Corsewall Point
    - throughout the year within Logan Bay, defined as the waters east of a line drawn from the Mull of Logan situated at latitude 54° 44' N and longitude 4° 59' W, to Laggantalluch Head, situated at latitude 54° 41' N and longitude 4° 58' W

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in Reg. 227/2013)
  - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm
  - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter
  - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
  - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
  - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea

15.7.2 VOLUNTARY

15.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Due to the nature of the species, this herring fishery has little non-target species by-catch. In general, this pelagic trawl fishery targets herring when it is forming tighter pre-spawning feeding aggregations off-shore, in the third quarter. According to the processing plant (Shetland Catch), the landed catch is clean, rarely containing individual specimens of mackerel, which would have to be sorted manually by the processor. A mixed catch would render the whole catch uneconomic to land, because it would be unmarketable, and could therefore result in slippage at sea. All information that has been available on the likelihood of slippage suggests that the frequency of slippage events are highly likely to be low. No slippage was recorded by observers or log books. Scottish discard observer programmes since 1999 have noted that the level of discards in this directed fishery is low – all herring is landed, as all sizes in the catch are sold, and there is little mixing with other species within a haul (A. McCulla, personal communication).

15.9 SPECIFIC RECOMMENDATIONS

- The fishery is well managed by an effective management plan and should continue as it is. No special provisions are required.

16 Western Baltic spring spawning herring

The Western Baltic spring spawning (WBSS) herring is characterized by distinct spawning, nursery and feeding areas. The majority of the spawning take place in the area around the Island of Rügen and the juveniles uses the Western Baltic as nursery. Later, around age 2, the herring migrates to the Kattegat/Skagerrak area where the adult feeding grounds are located. The migration from the Western Baltic to the Kattegat/Skagerrak takes place in smaller schools of individuals swimming through the Sound between Sweden and Denmark or the Belt Sea. The migration distance is age dependent, meaning that older and larger individuals migrate all the way into the North Sea. During the feeding distribution WBSS herring mixes with North Sea autumn spawning (NSAS) herring, complicating the management and stock assessment. The migration back to the wintering areas takes place in larger schools where most are migrating through the Sound (ICES 2013c).

16.1 BIOLOGY

WBSS herring matures around age 3 and is a relatively small herring which reaches a weight around 200 g at age 8. Similar to other herring stocks its diet consists mainly of zooplankton. Since WBSS resides in the brackish Baltic during its early life stages, only older and larger individuals that have undergone the migration to the more saline feeding areas can be infected with *Anisakis (*ICES 2013c).

16.2 STOCK SIZE AND DISTRIBUTION

The stock is highly migratory and has distinct spawning, nursery and feeding areas. The extent of the summer feeding migration is age dependent, where the younger individuals migrate no longer than into Kattegat and Skagerrak whereas the older and larger individuals migrate all the way out into the eastern North Sea. The stock size is at present low (ICES 2013f).

16.3 MANAGEMENT

In the Skagerrak and Kattegat, herring is fished from two main stocks, North Sea autumn spawners (NSAS) and Western Baltic spring spawners (WBSS), as well as from small local and less migratory stocks. The larger stocks (NSAS and WBSS) migrate into the Skagerrak and Kattegat, NSAS as juveniles from the North Sea, and WBSS on feeding migrations into the Skagerrak and the North Sea. There is no certain method to predict the share of the stock components in the area at a given time. The shares of the stock components in the catches in the area will depend on several factors, i.e. the abundance of year classes, relative distribution and where the fleet chooses to fish.

16 WESTERN BALTIC SPRING SPAWNING HERRING

At present EU and Norway are working on implementing a long term management plan for the fisheries for herring for consumption (the A and C fleet) in the Skagerrak and the Kattegat. In addition there is bycatch of adult WBSS herring in the D fleet targeting sprat for reduction.

In the Baltic Sea subdivision 22-24 it is anticipated that the catches are taken entirely from the WBSS stock complex and hence it is the EU that exclusively manages the fisheries in this area.

16.4 CATCH DATA 2012

The table below provides an overview of combined WBSS herring and NSAS herring catches by the EU and Norway in 2012, in Skagerrak/Kattegat (area IIIa) and the Western Baltic (ICES Subdvisions 22-24)(Norway do not have any fishing possibilities in the Baltic Sea).

Country	Catch (tonnes) Skagerrak	Catch (tonnes) Kattegat	Catch (tonnes) Baltic Sea SD 22-24
Denmark	3.200	6.300	4.140
Germany	600		11.200
Norway	400		
			2.400
Sweden	16.200	800	3.400
Unallocated	-		
Discards	**-**		
Total	**20.400**	**7.100**	**21.140**

Table 16.1 WBSS herring catches in 2012 (ICES 2013c).

16.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Therefore the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when trying to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the fishery can differ from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

16.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IIIa	Trawl		Trawlers: 12	Fall/winter	3.416

16.5.2 SWEDEN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IIIa and Subdivision 22-24	Purse seine/ trawl/ net	32	50	Whole year	19.940

16.6 INFORMATION ON EXISTING DISCARD DATA

Discards are not included in the official ICES catch advice calculations since they are considered to be low (ICES 2013c).

16.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for the EU fisheries of herring in ICES area IIIa (the Skagerrak and the Kattegat).

16.7.1 REGULATORY

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)
  - Within Regions 1, 2, 3 and 4 the discarding, during fishing operations, of species subject to quota which can be legally landed shall be prohibited.

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)
  - Within Regions 1, 2, 3 and 4, where the quantity of undersized mackerel, herring or horse mackerel exceeds 10 % of the total quantity of the catches in any one haul, the vessel shall move fishing grounds.
  - Within Regions 1, 2, 3 and 4 it is prohibited to release mackerel, herring or horse mackerel before the net is fully taken on board a fishing vessel resulting in the loss of dead or dying fish.

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in Reg. 227/1013)
  - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm.

- The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter.
- Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Retention on board of undersized fish – Industrial fisheries (Art. 15 Reg. 2187/2005)
  - Undersized fish shall not be retained on board or be transhipped, landed, transported, stored, sold, displayed or offered for sale, but shall be returned immediately to the sea.
  - For fish other than those defined in Annex II as target species for the mesh size categories 'smaller than 16 mm' or '16 to 31 mm' caught with trawls, Danish seines or similar gears of a mesh size less than 32 mm, or with purse seines, paragraph 1 shall not apply, provided that those fish are not sorted and not sold, displayed or offered for sale for human consumption.

- Bycatch quotas for industrial fisheries

- Inter area quota flexibility - up to 50 % of this amount may be fished in EU waters of IV (Footnote to Annual Fishing Opportunities Regulation).

16.7.2 VOLUNTARY

16.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

Due to the age-dependent migration pattern younger and smaller fish can be caught in the Kattegat/Skagerrak in an area which also serves as nursery for North Sea Autumn spawning herring.

Solution:

The North Sea flexibility possibility mitigates this problem by providing the option to move a proportion of the catches into the North Sea and the transition area, where, on average larger individuals are caught.

16 WESTERN BALTIC SPRING SPAWNING HERRING

16.9 SPECIFIC RECOMMENDATIONS

- The possibility to move a proportion of the fishing possibilities into the North Sea should remain.
- A management plan for the herring fisheries in the Skagerrak and the Kattegat should be finalised as soon as possible.
- Subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve at the moment (see chapter 3.1.1.3) a *de minimis* exemption could be granted for this stock to be based on the ICES or STECF discard rate.

17 Atlanto-Scandian herring

The Atlanto-Scandian herring stock is considered the world's largest herring stock with an SSB fluctuating around 7.000.000-8.000.000 tons after the recovery of the late 1960ies crash. The stock is characterized by being highly migratory, with spawning areas along the Norwegian coast, nurseries in the Barents Sea and, to a lesser extent, the Norwegian fjords, and adult feeding areas offshore in the Norwegian Sea. Atlanto-Scandian herring spawn in late winter and during early spring (ICES 2013a).

17.1 BIOLOGY

Atlanto-Scandian herring is a long lived stock which matures around age 4 to 5. Individuals belonging to the stock can become large, reaching a size up to 400 g when fully grown. The prey is the same as for most other herring stocks consisting mainly of zooplankton (ICES 2013a).

17.2 STOCK SIZE AND DISTRIBUTION

The distribution of Atlanto-Scandian herrings main prey item, zooplankton, is considered to influence the migratory behaviour of the stock and is thus one of the reasons for the large variations in the observed distribution. The stock size is depending on the recruitment which for Atlanto-Scandian Herring is spasmodic with unpredictable high recruitment in some years interrupted by periods of low recruitment.

17.3 MANAGEMENT

A management plan was agreed upon by the EU, Faroe Islands, Iceland, Norway, and Russia in 1999 setting the target mortality at SSB levels higher than 5 million tonnes, to 0.125. However, for 2013 the Faroe Islands set a unilateral quota three times higher than their normal share, causing a fishery at a level where the stock is exploited well above maximum sustainable yield (MSY).

17 ATLANTO-SCANDIAN HERRING

17.4 CATCH DATA 2012

The table below provides an overview of mackerel catches by the EU and the non EU fleet in 2012.

Country	Catch (tonnes)
Denmark	21.754
Faroe Islands	36.190
Germany	11.945
Greenland	1490
Iceland	120.956
Ireland	4813
Netherlands	6237
Norway	491.005
Sweden	705
United Kingdom/Scotland	12.310
Russia	118.595
Unallocated	-
Discards	**-**
Total	**826.000**

Table 17.1 Atlanto-Scandian herring catches in 2012 (ICES 2013b).

17.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Therefore the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when trying to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the Atlanto-Scandian herring fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

17.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IIa, North of 6° 62’	Combined trawl/ purse-seines		RSW: 5	December-February	16.298
ICES area IIa, North of 6° 62’	Purse-seines		RSW: 1	December-February	5.455

17 ATLANTO-SCANDIAN HERRING

17.5.2 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IIa,b (NOR; NEAFC;Svalbard)	Pelagic trawl	42-47	Freezer-trawler: 4	August-October	11.920

17.5.3 IRELAND

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
International waters of ICES area I and II	Pelagic trawl	32	RSW: 5 Polyvalent: 2	February	4.810

17.5.4 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area I and II	Pelagic trawl		Freezer-trawler: 2	October	5.986

17.5.5 SWEDEN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IIa	Pelagic trawl	36	RSW: 2	October	721

17.5.6 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IIa	Pelagic trawl		RSW: 15	February	12.310

17.6 INFORMATION ON EXISTING DISCARD DATA

- ICES advice 2013:
  Minor discards are known to take place, but cannot be quantified accurately; the proportion of discards in the total catches are considered negligible.

17 ATLANTO-SCANDIAN HERRING

17.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for Atlanto-Scandian herring.

17.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size) (Art. 19 (2a) Reg. 850/98)

- Seasonal closure in ICES area IIa (Art. 20a Reg. 850/98 contained in Reg. 227/2013)
    - It shall be prohibited to land or retain on board herring caught in Union waters of ICES division IIa in the periods from 1 January to 28 February and from 16 May to 31 December.

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in reg. 227/2013)
    - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm.
    - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter.
    - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)

- Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears
- Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea.

17.7.2 VOLUNTARY

17.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

There are no known problems with discards for this stock.

In NEZ north of 62° bycatch of saithe does occur and causes problems for Member States without a quota for saithe.

Solution:

An inter-species rule allowing bycatches of saithe in the herring fishery to be counted against the herring quota would solve the problem. 1-2% would suffice.

17.9 SPECIFIC RECOMMENDATIONS

- The Pelagic RAC recommends that the Commission seeks an agreement with Norway that introduces an inter-species arrangement for bycatches of saithe to be counted against the quota for Atlanto-Scandian herring.
- For purse-seiners a release rule under specified conditions, subject to scientific justification by ICES and/or STECF, could be implemented (see chapter 3.1.1.2 and chapter 6.2).
- Subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve at the moment (see chapter 3.1.1.3) a *de minimis* exemption could be granted for this stock to be based on the ICES or STECF discard rate.

18 North Sea horse mackerel

In the 1970s and 1980s North Sea horse mackerel was mainly caught in the Danish industrial fisheries for reduction into fishmeal and fish oil. In the 1990s there was a shift towards a directed human consumption fishery by Dutch freezer-trawlers which then took a larger portion of the catch. In recent years the TAC has been under-utilized for practical reasons relating to the structure of the Danish quota management system which allows only a specific amount of quota to be swapped with other countries (ICES 2013g).

18.1 BIOLOGY

Horse mackerel is considered to be an indeterminate spawner meaning that fecundity is not fixed at the beginning of a spawning season. It is mainly zooplanktivorous, but can also feed on eggs and larvae of other pelagic species. It is predated upon by cetaceans, seals, seabirds and other fish species. Horse mackerel is long-lived reaching ages of 30 years or more and like other pelagic species forms dense fish shoals (ICES 2013c).

18.2 STOCK SIZE AND DISTRIBUTION

Catches of horse mackerel in Divisions IVa (first and second quarter), IIIa (excluding Western Skagerrak in third and fourth quarter) and in Divisions IVb,c and VIId (throughout the year) are allocated to the North Sea horse mackerel stock which distribution area is illustrated in Figure 1. An absolute estimate of biomass is unavailable since there has been no egg survey for horse mackerel been carried out in the North Sea since 1991 and the mackerel egg survey in the North Sea does not cover the spawning area of horse mackerel. However, a biomass index is available and stock size seems to have increased by more than 50% in recent years.

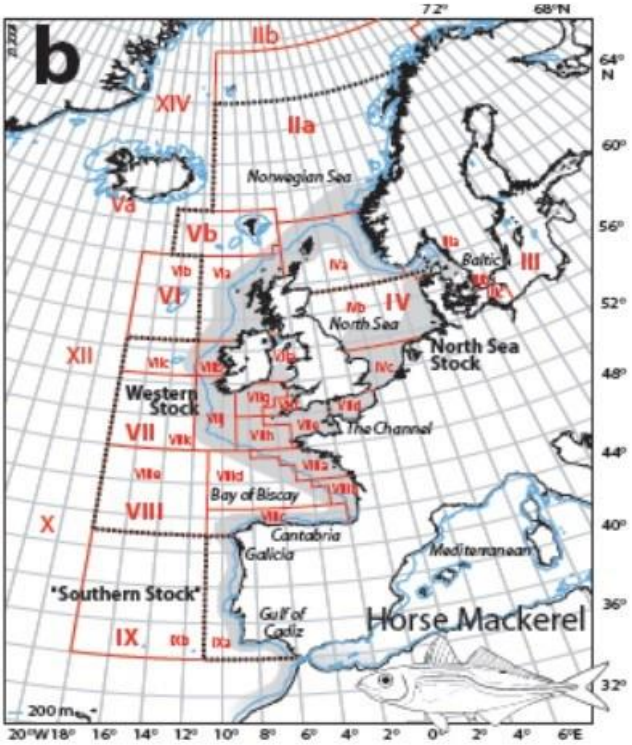


Figure 18.1 Distribution area of the three different horse mackerel stocks.

18 NORTH SEA HORSE MACKEREL

18.3 MANAGEMENT

In 2013 the Pelagic RAC started the development of a long-term management plan which is expected to be available before summer 2014. Throughout this process an action plan to improve the knowledge base for this stock has also been drafted. In the past Division VIId has been included in the management area for Western horse mackerel. However, ICES considers Division VIId as part of the North Sea horse mackerel distribution area and therefore in 2010 a realignment has taken place which now includes Division VIId and IVb,c in the TAC area for North Sea horse mackerel.

18.4 CATCH DATA 2012

The table below comes from the ICES WGWIDE 2013 report and represents national catches. However, at the time the report was finalized this table was considered preliminary only.

Country	Catch (tonnes)
Belgium	46
Denmark	1.514
France	1.047
Germany	5.356
Ireland	0
Netherlands	12.157
Norway	129
United Kingdom (England & Wales)	935
United Kingdom (Scotland)	240
Unallocated	0
Discards	**0**
Total	**21.424**

Table 18.1 North Sea horse mackerel catches in 2012 (ICES 2013a).

18.5 FISHERIES DATA 2012

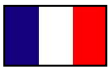
The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Therefore the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when trying to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the North Sea horse mackerel fishery can differ from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below. Ireland has a quota which it does not fish. The quota for 2012 was 1216 tonnes.

18 NORTH SEA HORSE MACKEREL

18.5.1 DENMARK

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
IIIa/IVb,c, VIId	Trawl		3	September to December	1.435

18.5.2 FRANCE



Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IVb,c, VIId	OTM	32-54	Fresh fish: 24	No real season	
ICES IVb,c, VIId	PTM	32-54	Fresh fish: 7	No real season	

18.5.3 GERMANY

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES Ivb,c; VIId	Pelagic trawl	48-54	Freezer-Trawler: 4	February-April, October-December	5.363

18.5.4 NETHERLANDS

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
EU waters of IVb, IVc and VIId (JAX/4bc7d)	Pelagic trawl		Freezer-trawler: 11	No specific season	12.857

18.5.5 SWEDEN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IVa and b	Purse seine/trawl	32	7	Autumn	14

18.5.6 UNITED KINGDOM

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES area IVb,c and VIId	Pelagic trawl		Freezer: 2	No fixed season	872
ICES area IVb,c and VIId	Pelagic trawl		RSW: 2	No fixed season	90

Remarks: 1.469 tonnes swapped out to other Member States

18.6 INFORMATION ON EXISTING DISCARD DATA

- WGWIDE report 2013:

  Discards are known to take place, but cannot be quantified

18.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for North Sea horse mackerel.

18.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 15 cm) (Art. 19 (2a) Reg. 850/98)

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
  - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears.
  - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea.

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in reg. 227/2013)

    - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm.
    - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter.
    - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Inter-area quota flexibility - up to 5% of this quota fished in division VIId may be accounted for as fished under the quota in waters of IIa, IVa, VI, VIIa-c,VIIe-k, VIIIa, VIIIb, VIIId and VIIIe; EU and international waters of Vb; international waters of XII and XIV (Footnote to Fishing Opportunities Regulation).

- By-catch provisions - at least 95% of landings counted against this quota shall be horse mackerel. By-catches of boarfish, haddock, whiting and mackerel are to be counted against the remaining 5% of the quota (Footnote to Fishing Opportunities Regulation).

18.7.2 VOLUNTARY

18.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

Whole-year fishery closure in ICES IIIa and IVb,c to protect North Sea component and juveniles of mackerel has led to discards of mackerel in non-directed fisheries, especially horse mackerel.

Solution:

An inter-species rule like it is known in the Western Waters – catches of certain other species may be registered against the horse mackerel quota under a 5% rule (boarfish, haddock, whiting and mackerel) – could solve or reduce the problem.

18.9 SPECIFIC RECOMMENDATIONS

- An inter-species rule like it is known in the Western Waters – catches of certain other species may be registered against the horse mackerel quota under a 5% rule (boarfish, haddock, whiting and mackerel) – should be introduced in the fishery for horse mackerel in the North Sea.
- Subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve at the moment (see chapter 3.1.1.3) a *de minimis* exemption could be granted for this stock to be based on the ICES or STECF discard rate.

19 Southern horse mackerel

The fishery on southern horse mackerel is shared between Spain and Portugal and fishing mortality has on average been at or below the candidate FMSY. Southern horse mackerel is caught with other species in a mixed fishery. According to the ICES categorisation system southern horse mackerel is a category 1 stock, with a full analytical assessment (ICES 2013d).

19.1 BIOLOGY

Like other pelagic stocks southern horse mackerel forms dense shoals leading to patchiness in its distribution and occurring often close to the sea floor. It is a long-lived species reaching 30 years of age or more. Young horse mackerel are predated upon by other species such as hake, monkfish, Bluefin tuna and dolphins. It is mainly a zooplanktivorous species. Recruitment seems to be influenced by environmental drivers (ICES 2013d).

19.2 STOCK SIZE AND DISTRIBUTION

The EU project HOMSIR concluded that the border between the southern and the western horse mackerel stock lies at the coasts of Galicia at 43° North which at the same time marks the border between ICES division VIIIc and IX and all catches from division IX are allocated to the southern horse mackerel stock. Biomass is currently estimated to be 30% below the long-term average. However, fishing mortality has decreased over the past 2 years and is below FMSY.

19.3 MANAGEMENT

There is no specific management plan for southern horse mackerel and ICES bases its advice on the MSY approach (ICES 2013h).

19.4 CATCH DATA 2012

The table below lists the official catch data as shown in the ICES WGHANSA report 2013.

Country	Catch (tonnes)
Portugal	15.359
Spain	8.373
Total	**23.732**

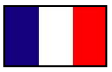
Table 19.1 Southern horse mackerel catches in 2012 (ICES 2013d).

19 SOUTHERN HORSE MACKEREL

19.5 FISHERIES DATA 2012

The information in this section has been compiled by members of the Pelagic RAC who represent pelagic producer organisations in the respective countries. Information for Portugal has been provided by the General Directorate of Natural Resources, Security and Maritime Services. As most information has been provided directly by the pelagic industry the Pelagic RAC believes these data to be relatively accurate. Nevertheless official catch data should always be consulted when trying to get an overview of catches of the EU pelagic fleet. Number of vessels engaging in the southern horse mackerel fishery differs from year to year and 2012 was therefore used as baseline. Only vessels catching more than 10 tonnes a year have been included in the tables below.

19.5.1 FRANCE



Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES VIIIc	OTM	45	Filleting or freezer trawler: 1	March	54

19.5.2 PORTUGAL

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
Southern	Polyvalent		72		2.071
Southern	Purse seiners		115		4.690
Southern	Trawlers		39		8.526

19.5.3 SPAIN

Area	Gear	Mesh size (mm)	Vessels (nr & type)	Season	Tonnes caught
ICES IXa,b Golfo de Cadiz	Purse seines	> 14	86 Average of less than 36 GT	Throughout the year	290
ICES IXa,b Sud of Galcian	Purse seines	> 14	90 Average of 36 GT (vessels from Sud of Galician)	Throughout the year	6.100
ICES IXa,b	Trawl	70	90 Average of 200 GT	Throughout the year	1.200
ICES IX a,b Golfo de Cadiz	Trawl	> 55	140 Average of less than 40 GT	Throughout the year	130
ICES IX a,b	Others		Less than 15 m	Throughout the year	400 Non target

19.6 INFORMATION ON EXISTING DISCARD DATA

- WGHANSA report 2013:
  - In general discards of southern horse mackerel are scarce
  - Spanish discards of southern horse mackerel come from the bottom trawling fleet, but are low, especially in Subdivison IXa North
  - Portuguese discards are very low and not frequent
  - In 2005 Portuguese discards have been estimated as 61 tonnes
  - In other years the occurrence of discards was too low to provide an estimate
- STECF discard rate: 1%

19.7 DISCARD MEASURES ALREADY IN PLACE

For pelagic fisheries many measures to reduce bycatch and discards have already been implemented. These vary between different stocks and can be categorized in regulatory measures, i.e. implemented into EU law and voluntary measures, i.e. initiatives by the industry to avoid unwanted catches. Below is a list of specific measures for southern horse mackerel.

19 SOUTHERN HORSE MACKEREL

19.7.1 REGULATORY

- Derogation to land 10% of undersized fish (below minimum landing size = 15 cm) (Art. 19 (2a) Reg. 850/98)

- Restrictions on the use of automatic grading equipment (Art. 32 Reg. 850/98)
    - Use of automatic grading equipment is permitted provided that the vessel does not simultaneously carry or use on board either towed gear of mesh size less than 70 millimetres or one or more purse seines or similar fishing gears.
    - Grading equipment is also permitted if the whole of the catch which may be lawfully retained on board is stored in a frozen state, the graded fish are frozen immediately after grading and no graded fish are returned to the sea except as required by Art. 19 and the equipment is installed and located on the vessel in such a way as to ensure immediate freezing and not to allow the return of marine organisms to the sea.

- Prohibition of high-grading (Art. 19a Reg. 850/98 contained in Reg. 227/2013)

- Moving-on provisions and prohibition on slipping (Art. 19b Reg. 850/98 contained in Reg. 227/2013)

- Catch handling and discharge restrictions on pelagic vessels (Art. 32a Reg. 850/98 contained in reg. 227/2013)
    - The maximum space between bars in the water separator on board pelagic fishing vessels targeting mackerel, herring and horse mackerel operating in the NEAFC Convention Area shall be 10 mm.
    - The bars shall be welded in place. If holes are used in the water separator instead of bars, the maximum diameter of the holes shall not exceed 10 millimetres. Holes in the chutes before the water separator shall not exceed 15 mm in diameter.
    - Pelagic vessels operating in the NEAFC Convention Area shall be prohibited from discharging fish under their water line from buffer tanks or Refrigerated seawater (RSW) tanks.

- Derogation for landing 5% of horse mackerel between 12 and 14 cm below minimum landing size in ICES zone IX and allowance to catch 5% of quota in VIIIc (Footnote in Annual Fishing Opportunities)

19.7.2 VOLUNTARY

19.8 POSSIBLE PROBLEM AREAS AND TYPES OF DISCARDS, POTENTIAL SOLUTIONS

Problem 1:

Horse mackerel and mackerel are often caught together in southern waters. Lack or shortage of quota for one of the species can therefore create a problem in a fishery targeting the other species and result in discards.

Solution:

An inter-species rule like it is known in the Western Waters and in the North Sea – catches of certain other species may be registered against the horse mackerel quota under a 5% rule – could solve or reduce the problem.

Problem 2:

Discarding of undersized fish.

Solution:

Increased size selectivity through technological advancements (but see chapter 3.1.1.3)

19.9 SPECIFIC RECOMMENDATIONS

- Based on the STECF discard rate a de minimis of 1% could be granted subject to scientific evidence demonstrating that increases in selectivity in the specific fisheries targeting this stock are very difficult to achieve at the moment (see chapter 3.1.1.3).
- Research to advance acoustic imaging which will allow size and species differentiation should be carried out. Funding could be provided under the EMFF (see chapter 5).
- By-catch provisions - at least 95% of catches counted against this quota shall be horse mackerel. By-catches of other species are to be counted against the remaining 5%.

20 Annex I

FORCE MAJEURE AND OTHER SITUATIONS REQUIRING AN EXEMPTION FROM THE LANDING OBLIGATION

During pelagic fishing operations critical situations can occur which make it necessary to discard fish. Therefore these occasions require an exemption. Below is a non-exhaustive list of such situations. In circumstances where there is a risk to the safety of the vessel and/or the crew, safety has to take precedence over the discards provisions. Thorough documentation of all of these situations must be provided and immediately made available to the relevant Member State.

- In cases where a vessel owner finds there is more fish in the net than the boat can carry. After filling the vessel the skipper finds there is still fish remaining in the net, under normal circumstances a neighbouring vessel would pump aboard the fish left in the net. However, in certain circumstances there may be no vessels in the vicinity or the weather may be too bad to pump fish aboard a neighbouring boat. It may also be the case that a skipper may choose not to completely fill his vessel as the sea state makes it too dangerous for the vessel to sail in heavily laden. In the circumstances above a skipper will have no option but to discard part of the catch.
- A skipper may be faced with a critical malfunction of his deck machinery which results in a situation where it is impossible to pump the fish from the net to the vessel. Likewise circumstances might arise in which the catch cannot be brought on-board safely due to technical problems recovering the fishing equipment. This can be if larger objects, such as wrecks, are caught/entangled or salvage-lines have been broken or lost. In these situations there is no option but to discard that particular catch.
- Sometimes during the operation to take the catch on-board, the actual pump can choke with debris of some description or other. To clear the blockage, the pump needs to be detached from the net and cleared. In addition, the rubber hose pipe between the pump and the vessel will be totally jammed full of minced fish. This has also to be cleared which inevitably means discarding the fish in the hose pipe, although this doesn't amount to a huge quantity of fish it invariable means 20 tonnes will be discarded.
- A situation may arise where the vessel or the crew may be put in a life threatening situation by taking the catch on-board. This could be related to weather, a major engineering failure or a crew member trapped in either the machinery or fishing gear.

No skipper should be put in the position that he has to choose between saving his vessel/crew and being prosecuted for discarding a catch of fish.

- A situation can occur in which the fish in the catch has been contaminated by dead/rotten fish, jellyfish, carcasses, oil, paint or other substances that can be hazardous to the crew or will make the catch unsuited for human consumption and reduction.
- In cases where there is one large or large quantity of protected species (e.g. sharks) in the catch, the entire catch might have to be slipped if survival chances of the protected species are to be maximized.
- Situations can occur in which the fish on-board has been putrefied, so that it is not suited for human consumption or reduction. This can be due to breakdown of cooling facilities or an unexpected long travel caused by technical problems or weather.
- Sometimes gear might burst which results in a loss of fish. This often happens underwater and when it does there is nothing that can be done to prevent the loss of fish.
- Meshed fish (fish that is trapped in the meshes of the nets and will be thrown back into the sea when cleaning the nets – small quantities)

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