North Sea Advisory Council

NSAC Advice Ref.14-1617

Managing Fisheries within the Landing Obligation

This consensus advice was approved at the NSAC Executive Committee meeting on the 4th October 2017.

1.0 Introduction

1.1 The NSAC has produced several advice papers on the implementation of the Landing Obligation (LO). As we move towards the 2019 phasing deadline it is becoming increasingly necessary to consider measures that can supplement those provided in the Common Fisheries Policy (CFP). In our past advice, we have considered the benefits and drawbacks of each of the measures included in Regulation (EU) No. 1380/2013[1] (Article 15). In this paper, we go further, looking beyond Article 15 at additional measures that could bolster those already in the management 'toolbox' and be introduced, either immediately or over a longer period to address the challenges of the LO. In doing so we aim to take a more holistic look at fisheries management and how it can help resolve issues to ensure successful achievement of the CFP's objectives.

2.0 Background Information

2.1 It is difficult to obtain precise information on the degree to which North Sea demersal fleets have adapted to the requirements of the LO to date. The species and fisheries chosen for introduction during the first two years of the demersal LO have been those with fewer direct problems associated with them. There is an ongoing process of developing selective gear in the Member States, and projects have in some cases been accelerated in response to the introduction of the LO.

2.2 There are examples of ways in which fishing businesses have been proactive and adjusted their gear and operations to respond positively to the challenges of the LO[2]. It may be the case that other vessels are waiting for clarity as to what they will need to

[1] Article 15, Regulation (EU) No. 1380/2013 of the European Parliament and Council on the Common Fisheries Policy.
[2] Discardless Selectivity Manual

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do to comply with the LO. A list of on ongoing projects and research is listed in Appendix 1.

2.3 Notwithstanding the Commission's 2016 report on the implementation of the LO[3], information on its successes and challenges is still limited in a number of ways. In this paper, we highlight the need for improved information sharing so that action can be taken at the earliest stage to ensure that challenges can be addressed.

2.4 A particular challenge is choke species (for a breakdown of choke 'categories' (see section 6.3). The NSAC considers that the implementation of the LO in 2018 and 2019 will be much more difficult than 2016 and 2017 because of the inclusion of many additional species with the potential to cause multiple chokes. In its previous advice, the NSAC has considered issues with choke species and various tools that could be used to address these.

2.5 In February 2016 the NSAC provided advice on the application of the exemptions and flexibilities outlined in Article 15 of the CFP basic regulation and outlined mitigation measures to ease phasing of the LO and address the challenges presented by choke species.

The exemptions and flexibilities are:

- Avoidance of unwanted catches and selectivity;
- High survival exemptions;
- *De minimis* exemptions;
- Interspecies flexibility;
- Adjustments to TACs and quotas, which includes quota swaps and transfers;
- Additional technical measures that focus on meeting the requirements of the LO;
- Inter-annual quota flexibilities

The advice is available on the NSAC website; 02-1516 Implementation of the LO

3.0 Scope of this paper

3.1 This paper describes a wide range of measures that could in combination, potentially contribute to the reduction of the risk of chokes in mixed demersal fisheries. In listing these various measures, we are clear that there is no panacea. The relevance of each measure will depend on the circumstances of each fishery – type of discard, target species, fishing grounds, vessel characteristics, catch composition, gear adaptations etc. The purpose in listing and discussing each measure, is to create a sufficiently large menu, or tool box, for regulators and stakeholders to draw on to provide as many options as possible. Their application will have to be weighed, taking the specifics of each case into account.

3.2 In this paper we consider additional fisheries management options that may prove useful in addressing the challenges of implementing the LO by 1st January 2019, but

[3] SWD/2017/0256 final, Commission Staff Working Document accompanying the document 'Communication from the Commission on the State of Play of the Common Fisheries Policy and Consultation on the Fishing Opportunities for 2018', p. 16, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2017:256:FIN

also the management of fisheries under the LO beyond that date. To inform this advice, the NSAC hosted a Choke Symposium on 2 November 2016. It provided new ideas that could potentially be utilised within the existing legal framework, either as supplementary or additional approaches to those listed in Article 15. These are listed in Appendix 2.

3.3 This paper presents NSAC's advice on some of these approaches and suggests who should take responsibility for particular actions to help mitigate the risk of choking. In doing so it considers both measures that could be implemented now or in the near future and those where changes may take place over a longer term.

Predictive analysis

- To what extent it is possible to predict when chokes will arise.

Avoidance, information sharing and gear selectivity

- Avoidance
- Information sharing
- Real-time closures
- Precautionary areas
- Move-on policy
- Seasonal closures
- Gear selectivity

The application of TACs

- Data Limited Stocks
- Use of F_{MSY} ranges
- Grouping of TACs
- Removing TACs
- By-catch quota
- Prohibited species
- Zero TAC species

Quota Management Considerations

- Domestic quota management
- Quota uplifts
- Quota swaps & transfers

3.4 Parallel work is being undertaken in the NWWAC, which may have considerable relevance to this advice and should be taken into account, in particular the development of a choke mitigation tool. Next steps for the NSAC will be to work further with the Member States and the Scheveningen Group to develop a choke mitigation tool for the North Sea.

3.5 In analysing the above measures, we emphasise the importance of the Scheveningen Group developing a plan, which incorporates all the possible tools for addressing chokes, prioritising selectivity and avoidance measures in line with the LO and then considering the other measures in relation to each choke species. We request that the Scheveningen Group works with the NSAC in the development of this plan.

3.6 We note that there are several additional challenges to implementing the LO. In particular, we note a changing political landscape, recognising that Brexit will have implications not just for the implementation of the LO, but for fisheries management as a whole. In addition, it will be important to ensure that other legislation supports the implementation of the LO, a key example being the technical conservation measures framework and the North Sea multi-annual plan.

3.7 We understand there is a question over the legal basis for discard plans and that there are ongoing discussions to resolve this issue and prevent a vacuum. We consider it extremely important to have clarity sooner rather than later. This assumes that the North Sea multi-annual plan will be in place which contains principles for the management of the LO as per article 15 of the CFP.

3.8 Throughout this paper we acknowledge that the successful implementation of the LO will be heavily dependent on the degree to which the fishing industry takes ownership of the issue.

4.0 Predictive Analysis

4.1 NSAC has undertaken some preliminary predictive analysis to identify where chokes are likely to arise for the nine stocks which define the fisheries, specifically mentioned in Article 15, as well as to identify which mitigation measures might be relevant for addressing each choke. When the LO is fully implemented on 1st January 2019 it should be noted that the choke risk is expanded to all other species subject to this measure. We would like to build on this work with the Member States.

4.2 Where possible individual chokes should be identified and predicted before they become a problem. However, chokes may be essentially unpredictable, because of the number of variables involved. We need to begin to think about the implications of this and appropriate contingency measures to be put in place when chokes occur.

4.3 Below we set out a number of potential measures for the mitigation of chokes, looking at the pros and cons of each. In doing so NSAC does not attempt to provide a comprehensive solution, only to present options which should be taken under serious consideration to inform decisions on how to address this key challenge.

5.0 Avoidance, Information Sharing and Gear Selectivity

5.1 At this time, it is not realistic or feasible to expect unwanted catch to be reduced to zero in mixed demersal fisheries. Nevertheless, there are a range of measures from avoidance, information sharing, real-time closures, precautionary areas, move-on policies, closed areas and gear selectivity that are available to minimise unwanted catch:

Avoidance

5.2 Primary responsibility for reducing unwanted catch lies initially with the individual vessel through choosing where and when to fish and which gear is used.

5.3 Avoiding unwanted catch is the most obvious way to address the issue of choke species. There are continuing technical advances and improved selectivity strategies, however, eliminating all unwanted catches in demersal mixed fisheries is not feasible at this time. Technical advances and a deeper understanding of how fisheries operate mean that selectivity strategies and progressive improvements will continue to be made in this area over time.

Information Sharing

5.4 Sharing of catch information amongst fishermen can be one of the ways through which unwanted catch can be reduced. For example, the spur dog avoidance trial in the Bristol Channel[4] allows fishermen to input their knowledge into a predictive map available to all utilizing the area. Application of this type of method in the US has proven that it can greatly improve catch selectivity by giving fishermen the responsibility to make choices on which areas to avoid. This method could be of particular use for less mobile stocks like skates and rays and some flatfish. 5.5 Coordination and a focus on effective dissemination of information is required so that other fishers and fleets can use this to inform their own selectivity and avoidance measures, thereby maximising the impact of research projects.

Real time closures

5.5 The EU has introduced Real Time Closures (RTCs) in the North Sea and the Skagerrak for cod, saithe, whiting and haddock in accordance with the EU/Norway agreement (2009)[5]. RTCs can work in some areas but no single RTC will solve all avoidance issues. In November 2010, the NSAC submitted a Position Paper on the Implementation of Real Time Closures to the European Commission which stated:

"The NSRAC recognises that RTCs can play an important role in management. They are a major tool in the fisheries management toolbox. Where there is a need to protect aggregations of fish from over-exploitation RTCs provide an especially useful measure. There are essentially two ways that the closures can contribute; firstly, they can avoid discards and increase yields by protecting juveniles; secondly, they can protect spawning fish during a vulnerable stage in their lives and perhaps also reduce fishing mortality on adult fish".

5.6 RTCs or a variant on RTCs could potentially play a useful role in reducing chokes by redirecting fishing effort away from areas in which there are concentrations of choke species. We already have extensive experience of operating RTCs in the North Sea (both in the EU and Norwegian Sector) that are in place as part of an avoidance strategy for cod and immature fish (respectively). A system of RTCs for chokes would require tailored criteria.

[4] https://www.gov.uk/government/news/spurdog-picked-dogfish-by-catch-avoidance-programme

[5] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0783&from=EN

Avoidance strategies could:

- Be based on fully closed areas based on real time information, based on at-sea- monitoring
- Be partially closed, access being conditional on the use of specified gear, or meeting maximum bycatch targets
- Be voluntary areas, for which there is real time information regarding potential choke species

Precautionary areas

5.7 Precautionary areas are a fisheries management tool, similar to RTC areas in as much as they are temporary spatially defined areas within which fisheries are subject to time restrictions and using specified gears. In Norway, precautionary areas are set on the basis that vessels can fish within the prescribed area having first informed the Norwegian authorities of their intentions. Continued activity is dependent on the vessel committing to selectivity and the following series of actions being taken;

- Precautionary area is established on the basis of real-time information.
- Precautionary area is announced.
- Vessels obliged to notify entry to area.
- Juvenile catch samples in the area must remain within a maximum pre-prescribed limit.

5.8 Norwegian authorities at times will establish precautionary areas if a high number of juveniles are caught in an area. They give a clear indication of the presence of small fish giving the responsibility to the fishermen to tailor their selectivity to prevent unwanted catches. The essence of a precautionary area is that the vessel must demonstrate compliance with parameters. We consider that this could have relevance to the demersal fisheries of the North Sea but this would have to be tailored to the specific conditions.

5.9 In precautionary areas, vessels can continue to fish if they can demonstrate that their catch of juveniles is below predetermined levels. This offers a more flexible system than RTCs but requires constant at sea monitoring. If vessels choose to fish in the areas this may address some concerns around displacement of effort. Precautionary areas should be viewed as one of a range of measures to mitigate against the perceived weaknesses of the LO and problems caused by choke species. Their introduction would go some way to incentivising new approaches and improvements in selectivity.

Move-on policy

5.10 An example of a move-on policy is the obligation in Norwegian waters to change fishing ground where operations contravene regulations, e.g. catch limits or permitted intermixture. The advantage of this system is that it places responsibility for avoidance and minimising unwanted catch with the fishers. The value of such a measure would

be within the context of a range of other measures. We consider that this approach may have relevance to the fisheries in EU waters, however the specific design of such an approach would have to reflect the local conditions in EU waters/ fisheries.

5.11 In EU waters we also have an example of a move-on policy (and move-on provisions are envisaged in the Control Regulation, as above). In Belgium, there is a move on obligation related to the management of the *De Minimis* exemption for sole in different areas. At any time during a voyage the *De Minimis* discarding may not exceed a percentage of the total catch quantity of that species; for the North Sea, this is 10%. When this percentage is reached, the vessel has to move on a minimum of 10 nm. away from the area. For vessels below 70 GT the minimum move on distance is 3 nm.

Seasonal Closures

5.12 Seasonal closures are put in place for a range of reasons relating to the protection of fish stocks and vulnerable marine ecosystems. They have been particularly effective at protecting spawning aggregations of species such as North Sea cod and area VI blue ling. Seasonal closures are only as effective as the information underpinning their introduction; fishers' knowledge should be a key component in their identification and delineation.

5.13 Seasonal closures need to take into account a range of external factors including the negative impact of displacement, in addition to any short-term economic impacts that could result from such measures. The successful introduction of legislative instruments such as seasonal and other closures relies heavily on co-management with the fishing sector. Their introduction should be targeted, time limited and should remain under constant review.

Gear selectivity

5.14 Selectivity has a role to play in the successful implementation of the LO. It is important that EMFF funding is fully utilized, for the development of selective gears and support of ongoing trials. It is therefore important that Member States do not hamper access to their operational programmes or in their national rules for public co-financing.

5.15 There is more that can be done to increase the pace of change. It is essential that the details of existing selectivity projects and any outcomes are made publicly available to avoid duplication of effort and to foster partnerships that will facilitate quicker progress in moving towards improved selectivity. For example, the Discardless project[6] has recently published an overview of selectivity projects in different countries and waters and Appendix 1 of this paper includes an overview of current selectivity trials in the North Sea area.

6.0 The application of TACs

6.1 TAC setting (either on an annual basis or as part of a longer-term strategy or plan) is likely to play an important role in either mitigating or increasing the likelihood of chokes. Recognising the MSY objective of the CFP applies to all 'harvested' species, it will be the responsibility of decision-makers to set TACs at sustainable levels, minimise the

[6] http://www.discardless.eu/

potential for choking and consider the socio-economic consequences of the decisions taken. In this context, it may be necessary in certain circumstances to consider alternative approaches to TAC setting.

6.2 Given this, we consider some options below with the recommendation that the Scheveningen Group continues to work with the Advisory Council to consider the benefits and drawbacks of all alternative approaches to setting TACs and whether these approaches satisfy CFP obligations.

Choking as a result of TACs and Quotas

6.3 The levels at which TACs and quotas are set and allocated on an annual basis, whether at EU or Member State level, can be a key cause of chokes under the LO. Whilst ensuring that the CFP objectives are met, it may be beneficial to consider different approaches to setting TACs and quotas - recognising that some approaches will be more useful in addressing different categories of chokes than others. Chokes have been categorised as:

Category 1: Sufficient quota at MS level—choke is due to distribution within the Member State such that a region or fleet segment does not have enough and this can be resolved by the Member State itself.

Category 2: Sufficient quota at EU level, but insufficient quota at MS level—choke is due to a mis-match of catches and the distribution of quotas between Member States and can theoretically be resolved between themselves in a regional context.

Category 3: Insufficient quota at EU level—choke is due to insufficient quota within the relevant sea basin to cover present catches or catch levels that can be realistically reduced, resulting in a total stop of fishing for a Member State or Member States.

The NSAC has suggested an additional category. This fourth category reflects the impairment of a vessel's economic activity.

Category 4: Economic choking may occur at the vessel level when there is a considerable bycatch of a low value species and the boat is filled with fish that will not deliver a profit.

6.4 When mitigating chokes, it will be important for fisheries managers to consider choke categories as a means of identifying where responsibilities lie to address them.

Commercial species that can be resolved within the toolbox

6.5 With a few important qualifications, and depending on the extent to which the flexibilities and exemptions identified in Article 15 are applied, the NSAC considers that the existing toolbox is capable of dealing with most potential chokes for those species which are listed in Article 15 (1)(c) of the Basic Regulation. Two important exceptions appear to arise with:

- Hake, where the stock development has out-stripped historic allocation arrangements, leading to a generalised shortage across the North Sea sea-basin;

- Where scientific stock assessments underestimate the size of incoming year classes, causing an imbalance between fishing opportunities and quantities of that species encountered on the fishing grounds.

6.6 In this context, NSAC considers that in the North Sea demersal fisheries, most chokes will be associated with the species not listed in Article 15 and will require more consideration by fisheries managers to enable the effective implementation of the LO.

Differentiating between Primary and Secondary Species

6.7 At present, the EU applies total allowable catches (TACs) to a wide range of species in the North Sea. One potential option to reduce choking is to consider whether the CFP's MSY objective for all 'harvested' species could also be achieved for a number of these species through alternative management approaches.

6.8 For example, Australia applies a system of management that distinguishes between primary species and secondary species, with TACs applying to primary species and a risk-based bycatch management approach applied to secondary commercial species. Much depends on how the fisheries are defined but this seems to be a potentially fruitful approach to managing unwanted catch whilst minimising the potential for chokes.

6.9 We think that this type of approach should be examined closely, taking into account the differences between circumstances in the North Sea demersal fisheries and where the such alternative management approaches are already applied, accepting that it will also be important to fish bycatch species at sustainable levels.

Data limited stocks

6.10 Data limitation poses a particular challenge for the implementation of the LO. ICES has evaluated stocks and categorised them in line with the available data amongst other factors[7]. The categories are:

- Category 1 – stocks with quantitative assessments. Includes the stocks with full analytical assessments and forecasts as well as stocks with quantitative assessments based on production models.

- Category 2 – stocks with analytical assessments and forecasts that are only treated qualitatively. Includes stocks with quantitative assessments and forecasts which for a variety of reasons are considered indicative of trends in fishing mortality, recruitment, and biomass.

- Category 3 – stocks for which survey-based assessments indicate trends. Includes stocks for which survey or other indices are available that provide reliable

[7] ICES Context of Advice

indications of trends in stock metrics, such as total mortality, recruitment, and biomass. ICES Advice basis February 2016 ICES Advice 2016, Book 1 5

- Category 4 – stocks for which only reliable catch data are available. Includes stocks for which a time-series of catch can be used to approximate MSY.
- Category 5 – landings only stocks. Includes stocks for which only landings data are available.
- Category 6 – Stock with negligible landings and stocks caught in minor amounts as bycatch. Includes stocks where landings are negligible in comparison to discards and stocks that are primarily caught as bycatch species in other targeted fisheries.

6.11 ICES analysis has helped us to move towards a more tailored approach. Nevertheless, annual TAC reductions for Category 3 to 5 stocks through the application of the precautionary approach have the potential to create chokes, as this approach could mean that the quota is not in line with actual abundance levels.

6.12 Collecting and collating data in a cost-effective and proportionate way to underpin management decisions should remain a priority to fill the data gaps thereby reducing the choke issue. However, in many cases for the Category 3 to 5 stocks it will be some time before these data gaps are addressed and an analytical assessment possible. For some stocks, the data deficiency issue may never be resolved. In these situations, other approaches may be necessary, as outlined below.

The use of F_{MSY} ranges

6.13 In addition to setting constraints on the level of harvesting, the level at which TACs are set annually can alleviate or intensify the likelihood of chokes developing in mixed fisheries.

6.14 The concept of F_{MSY} ranges has been developed by ICES, upon the Commission's request to provide fisheries managers with a degree of flexibility to minimise the scope for chokes by optimising harvesting across a range of stocks. Particularly in relation to the nine primary demersal species in the North Sea, F_{MSY} ranges ought to provide an important tool to mitigate chokes where these are considered likely to arise.

6.15 NSAC believes the applicability of F_{MSY} ranges is likely to be different for secondary species, particularly if stocks are data limited as it may be more difficult to establish F_{MSY} ranges. As a result, managers are reliant on the precautionary approach in such cases, and have the option of setting F in line with F_{MSY} proxy reference points where these are provided by ICES, or follow precautionary advice from ICES

Grouping of TACs

6.16 In some situations one option to address chokes might be to consider the grouping of secondary species currently subject to individual TACs so that they are covered by just

one ‘group TAC’. While the stocks involved will remain regulated and subject to the LO, the restrictive individual TACs that often result in chokes will be removed. Grouping is already used to some extent under the current rules, for instance for turbot and brill, and to provide a by-catch quota in certain fisheries. The use of a grouping method can also be seen in the fisheries management system in the Norwegian zone, which applies an ‘others’ quota in relation to several stocks not previously covered by quota. In this approach, only the main commercial species are subject to individual TACs.

6.17 An inherent problem with grouped TACs is that they do not allow for species-specific, targeted management. This is a problem where stocks within the grouped TACs are in different conditions, displaying not only positive trends with on-going improvement but also negative trends in terms of depletion or are data limited. The existing group TACs of different skates and rays species is an example of this. Grouped TACs are not capable of accounting for these differences and where data limited stocks display negative trends, the ICES advice is precautionary. In addition, with a lack of targeted management there is risk of localised depletion of a particular species. Calculating mortality for each species, all of which, as harvested species, are subject to the CFP’s MSY objective, is maybe more problematic when the grouping method is used.

6.18 Grouping potentially reduces risk of chokes by reviewing individual TAC status, but not without individual problems. This deserves detailed discussion between the NSAC, Member States and the Commission; for example, whether it is more desirable and more effective to use the grouping of TACs as opposed to other methods such as interspecies flexibility or a more adaptive approach which applies different groupings periodically.

Removing TACs

6.19 The NSAC considers that it will be important to review whether all the TACs applied by the EU within the North Sea mixed demersal fisheries are compatible with a workable LO. A recent example of TAC status being reviewed was the TAC for dab and flounder. Based on ICES advice[8], the Commission and Member States concluded that the TAC for dab and flounder could be removed as they considered the risk of having no catch limits for the dab and flounder stocks to be low and not inconsistent with the objectives of the CFP, thus mitigating one of the more intractable choke issues in the North Sea.

6.20 The NSAC is adamant that a review of the TAC status of any harvested species, should not abrogate responsibility to manage these fisheries sustainably, in line with the CFP’s objectives and that monitoring of these species is part of the ICES advice cycle. In cases where it is decided to remove a TAC a scientifically validated, monitored and enforced management strategy should be in place and should include appropriate safeguards that are responsive to stock biology and catching patterns. This will enable

8 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/Greater_North_Sea_Ecoregion_Fisheries_Overview.pdf

decision-makers to fulfil their responsibility to manage the stock and report on stock status each year.

6.21 It is worth recalling that several North Sea TACs were introduced in 2002 not from concern over the conservation status of these stocks but for purely political considerations. These included:

- Dab and flounder
- Lemon sole and witch
- Turbot and brill
- Megrim

Bycatch Limits

6.22 Unavoidable bycatch of some species caught in the North Sea mixed demersal fisheries presents a potential choke. In the past, these have at times been given zero TAC or highly restrictive TACs. Both scenarios are incompatible with the Landing Obligation as they would lead to choking of fisheries early in the year.

In dealing with these species we think that careful consideration should be given to bycatch limits as a potential solution.

Bycatch limits could take the form of:

1) percentage of total catches

2) maximum permitted tonnages

3) a permit system which limits the landings of the particular species

4) other options.

The specifics of each fishery would need to be taken into account in deciding which of these options would be most relevant.

We consider that most deep-sea species caught in the North Sea could be candidates for this type of approach. This list includes round-nose grenadier, silver smelt and semi deep-sea species such as ling or tusk that are generally caught as unavoidable bycatch.

In establishing bycatch limits it would be important to take the most recent ICES advice into account.

Prohibited species

6.23 Removing species from the TAC management system and adding them to the prohibited species list would mean that there is no longer a requirement to land that species under the LO. Entry onto this list means that it is prohibited to fish for, retain on board, tranship or land the species and if it is accidentally caught, it must not be harmed and must be promptly released. This could be a method that is relatively easy

to control, in comparison to other measures outlined in this paper. The prohibited species list does prevent targeting of a species and so could apply to those bycatch species that are not targeted by the vessels but likely to cause a choke. When a species is on the list, accidental bycatch of that species can be discarded, which would address choke issues for the stocks in question.

6.24 However, the NSAC acknowledges that to use this measure as a tool to address chokes is not compatible with the intention of this list, which is to protect species at risk of extinction or extirpation. On this basis, NSAC supports the development of criteria regarding under which circumstances a species can be added to the list and a clear protocol for adding species that is reviewed by independent scientists. The use of this list is unlikely to lead to better management of the species as it reduces incentives to increase selectivity and avoidance. Therefore, any addition to the list should be accompanied by a full recording of catches as well as continued development of selectivity and avoidance measures to reduce the incidence of accidental catches and ensure that such catches are released unharmed

7.0 Quota Management Considerations

Quota Management

7.1 Even though domestic quota management is a Member State competence, the NSAC acknowledges that the management of quota at the domestic level is an area where changes could be made to mitigate the problems caused by choke species, most notably for Category 1 chokes. Quota managers face new challenges in helping their members to avoid the risk of chokes. Tools that can be used include internal allocations of domestic systems, as well as improvements to allocations, domestic and international swaps.

7.2 International quota swaps, have an important role to play. In addressing the challenges of the LO at domestic level, it will be necessary for Member States to look at historic and current quota allocations and map this against the LO and quota uptake, considering the varying risks of choke species.

Quota Uplifts

7.3 Another issue arising from the introduction of the LO is the distribution of quota uplift. Whilst the absolute amount of the uplift is calculated based on fleet-specific data, they are set at EU-level and by default distributed amongst Member States according to their respective relative stability shares. This means that the uplifts are not automatically given to those vessels that need them to cover their previous discards, i.e. those whose catch is subject to the LO. It is also crucial to ensure that quota uplifts do not result in unsustainable fishing levels. Quota swaps and transfers could play a key role in the appropriate distribution of quota uplifts across the relevant fleets. The methodology for calculating uplifts and the data on which they are based will be of

critical significance in determining if chokes will arise. The discard atlas provides ample warning about the potential misalignment of discard estimates and reality in specific fisheries. Political decisions within Member States regarding quota management decisions and rules will directly impact on the ability to mitigate chokes.

Quota swaps and transfers

7.4 Relative stability is regarded as a cornerstone of the CFP (Recital 35 of the CFP basic regulation) and has provided much-needed security of quota allocations for decades. Underneath this overarching system, quota swaps and transfers, as provided for in the CFP, have been a useful tool for introducing in year flexibility to help meet the regular - or changing - needs of the fishing industries. However, the LO, exposes a disconnect between historic quota allocations and actual catches and while it is difficult to predict the behaviour of fishermen under full implementation of the LO, there may be more incentive to hold on to quota to ensure they can cover catches that were previously discarded. This will reduce the motivation to engage in swaps with other Member States.

8.0 Conclusions

8.1 In the period before the adoption of the LO in 2013, many in the fishing industry supported the concept of a Fisheries Policy that would prioritise the minimisation of regulatory discards. However at the time, there was also considerable anxiety that a ban at EU level, in the form of a LO, would be difficult to apply, given the diversity of the fleets and fisheries in EU waters.

8.2 Since the adoption of the LO as part of the 2013 reform of the CFP, those concerns have not diminished but increased, particularly in relation to the risk of chokes in mixed fisheries which potentially prevent vessels, fleets and Member States from catching their main economic quotas. We believe that this concern is shared by fisheries managers, fisheries scientists and other stakeholders.

8.3 The purpose of the LO is to incentivise the reduction of unwanted catch through the adoption of selective gear and avoidance fishing strategies. The NSAC supports this purpose and recognises the need for the continued development of such selectivity and avoidance measures, particularly in view of the CFP objective to avoid and reduce, as far as possible, unwanted catches. It is also true that the CFP basic regulation (1380/2013) provides a number of important flexibilities and exemptions designed to facilitate the implementation of the LO.

8.4 Our close work with the Scheveningen group of North Sea Member States, fisheries administrators and fisheries scientists has already led to some significant changes in management that will facilitate the implementation of Article 15. Several *De minimis* exemptions, the postponement of plaice falling under the LO and the scrapping of the TAC for dab and flounder all work to help create a workable situation. This has shown us that these various measures in the "toolbox" may indeed be effective in minimising chokes for the primary target species.

8.5 Based on previous analysis, NSAC is also of the view that the measures in the "tool box" will be highly unlikely to be able to deal adequately with chokes caused by the application of the LO to the range of secondary species caught in most mixed fisheries. It may be that the number of variables involved mean that chokes when these species/fisheries are included under the LO on 1st January 2019, will be both frequent and essentially unpredictable. This carries serious implications for the economic viability of the fleets and the credibility of the management system.

8.6 Recognising the need to avoid such choke situations, in this advice one option NSAC has considered is the possibility of treating primary stocks and secondary stocks differently, although as all harvested species are subject to CFP requirements they must be fished in line the CFP's objectives and in a way, that is in line with the same level of monitoring as primary stocks.

8.7 We note that the full implementation of the LO is likely to remain problematic until coherence between the various components of the CFP is ensured. At present, some technical measures, TAC setting rules, operational programmes under EMFF, and quota distribution arrangements conflict with the LO. Although some progress has been made, more needs to be done at EU, regional and Member State level to align these processes.

8.8 Monitoring, control and enforcement of the LO will pose challenges, not least because it involves a shift in control from the point of landing to widely dispersed vessels operating at sea. Notwithstanding various technical advances, it is not difficult to see that unless the problem of chokes can be resolved there will be a lack of support for the LO from fishing industry and an increased risk of non-compliance at sea. Resolving the problem of chokes must therefore be treated as a matter of urgency and prioritised at political level.

8.9 In this paper we have outlined several options for minimising chokes, in some cases these go beyond the existing toolbox. These range from sophisticated real time avoidance by fishing vessels to, at the other end of the scale, considering removing TACs where this is supported by scientific advice.

8.10 We have set out in our advice, and summarise below, that all parties, from the deck and wheelhouse of each fishing vessel, to the Commission, Member States and the co-legislators, all have their specific responsibilities to deliver the objectives of the CFP.

RESPONSIBILITIES PREVENTING CHOKES UNDER THE LANDING OBLIGATION

IN BRUSSELS

EUROPEAN COMMISSION

Make legislative proposals to deliver a workable LO

CO-DECISION

Achieve coherence between different EU regulations & achieve overarching CFP objectives

MEMBER STATES

Work in council on delivering CFP objectives

SCIENCE

IN THE CAPITAL

MEMBER STATES

Develop and apply quota flexibilities through national legislation & regional cooperation

EUROPEAN COMMISSION

Communicate with regional groups on joint strategies and objectives

PRODUCER ORGANISATIONS

Quota management aimed at minimising choke

NGOS

Work constructively on finding solutions through Advisory Councils

SCIENCE

IN THE HARBOURS

PRODUCER ORGANISATIONS

promoting compliance and voluntary measures

FISHERMEN

At sea application of selectivity & avoidance strategies.

SCIENCE

Appendix 1

Ongoing Selectivity Trials and Research

Projects Ongoing	**Expected Completion Date**
Belgium	
Combituig The development and fine tuning of technical innovations to reduce the catch of choke species and other bycatch in the beam trawling and to improve survivability. The project has two approaches. The first approach will test several innovations to prevent choke species and other bycatch entering the fishing net. The second approach focuses on the improvement of the selectivity of the net to allow choke species and other bycatch escaping the net. ILVO	December 2019
Adaption plan for the LO Aims at ensuring a stable market supply of fishery products after the implementation of the LO. This project has the goal to underpin the requests for European derogations from the LO such as survivability and de-minimis through scenario analyses developed during the project. More specifically, through the RAMP-method the survivability of plaice will be further monitored regarding a derogation of plaice from the LO. ILVO	January 2019
Denmark	
COPE – Caught and Released. An overview of fish sensitivity to being discarded as a tool to aid pursuing ecosystem-based management. DTU Aqua	December 2017
Survival in gill net and Danish seine fisheries. To estimate the discard survival for plaice and cod: To identify the main factors for high survival and to develop guidelines for how discard of these fish should take place to minimize mortality. University of Aalborg and University of Copenhagen.	
Netherlands	
Best Practices II 1. A series of 13 commercial fishing trips during which all discards are collected on board and analysed in detail on shore. 2. Analysis of the relation between survivability and stock size for plaice and sole, to inform the consequences of discarding versus landing undersize fish.	Q4 2017

3. Analysis of spatial and temporal distribution of discards, combining information from part 1 and existing monitoring data. 4. Two fishing trips during which catches and discards of 80 and 90 mm mesh size will be compared. 5. Analysis of the consequences of a theoretical reduction of the Minimum Conservation Reference Size of plaice. Wageningen Marine Research http://www.visned.nl/nl/best-practices-ii	
'Increase of selectivity 2 Will provide a concise overview of current results and hypotheses of ongoing selectivity projects, including separator panels, selectivity grids, use of so called 'Flemish panel' etc.	Interim results Q4 2017
Discard Survivability II • Further quantification of survivability of discards of sole and plaice. • Quantification of survivability of discards of additional species ray, turbot, and brill. • Literature study investigating the applicability of survivability estimates obtained in other European waters to the Dutch *Nephrops* fishery. • Further development of innovations for improvement of survivability. A combination of self-sampling for rapid optimization of innovations on board during commercial trips, and research trips for captive observation will be used. The research trips are due to commence in May 2017. Wageningen Marine Research http://www.visned.nl/nl/overleving-ii	Q1 2018
Use of SEP net with grids in TR 2 fishery	Q2 2017
Trawl innovation cutter fisheries II. Aim to reduce discards through trawl innovations. Wageningen Marine Research and ILVO	
Exploring alternative markets for below mls Plaice (H&G deep frozen) Pilot testing markets	Q3 2017 Q4-2017

Appendix 2

Areas Discussed at the NSAC Chokes Symposium 2nd Nov 2016

Improving selectivity

- Innovation in gears and fishing methods
- Further studies on fish behaviour to inform selectivity
- When and where – looking at distribution

Information sharing (gear technology, fishing areas etc.)

TACs and quotas

- Grouping of TACs
- Replacing zero-TAC with bycatch quota
- 'others' TAC or quota
- Address domestic quota management deficiencies, including through quota pooling

Survivability

Improving survivability

High survival with best technical constraints

Real time closures

Spatial/temporal closures

Technical measures

Increased flexibility between zones

Prohibited species list

Learning from the Norway approach

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