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Implementation of the Technical Measures Regulation (Article 31 of Regulation (EU) 2019/1241)

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CONTENTS

1. THE OBJECTIVES AND TARGETS OF THE REGULATION 4

1.1. Measuring the progress 6

1.2. Choosing a selectivity indicator 8

1.3. Considerations for future approaches on selectivity 10

2. SENSITIVE SPECIES AND HABITATS 12

2.1. General Considerations 12

2.2. Sensitive Species 13

2.2.1. State of knowledge 13

2.2.2. Baltic Sea 17

2.2.3. North Sea 18

2.2.4. North-western waters 19

2.2.5. South-western waters 20

2.2.6. Mediterranean and Black Seas 22

2.2.7. Macaronesia 23

2.2.8. Widely distributed species 23

2.3. Sensitive habitats 26

2.3.1. State of knowledge 26

2.3.2. Baltic Sea 27

2.3.3. North Sea, north western waters and south-western waters 28

2.3.4. Mediterranean and Black Seas 29

2.3.5. Macaronesia 31

3. IMPLEMENTATION OF THE REGULATION AND CONSULTATION OF MEMBER STATES, ADVISORY COUNCILS AND STAKEHOLDERS 31

3.1. The objectives and the targets 31

3.2. Implementation of common technical measures 32

3.3. Protection for sensitive habitats (Article 12) 34

3.4. Additional measures to protect sensitive species. 35

3.5. Regionalisation (Article 15) 37

3.6. Regional technical measures concerning selectivity (Articles 16-27) 38

3.6.1. Species and size selectivity of fishing gear (Article 16) 38

3.6.2. Closed or restricted areas (Article 17) 38

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3.6.3. Minimum Conservation Reference Sizes (Article 18)....39
3.6.4. Real-time closure and moving-on provisions (Article 19)....40
3.6.5. Conditions for derogations to permitted minimum mesh sizes (Article 27)....40
4. IMPLEMENTATION OF AND CONSULTATION ON REGIONAL TECHNICAL MEASURES....41
4.1. Baltic Sea....41
4.1.1. Minimum conservation reference sizes (Articles 13 and 18)....42
4.1.2. Selective gears to reduce unwanted catches....43
4.1.3. Closed areas and seasons to protect juveniles and spawning aggregations (Article 17)....43
4.1.4. Real time closures and moving on provisions....44
4.1.5. Sensitive species....44
4.1.6. Sensitive habitats....45
4.2. North Sea (including the Skagerrak, Kattegat, Belt Sea and eastern Channel)....45
4.2.1. Minimum conservation reference sizes (Articles 13 and 18)....47
4.2.2. Selective gears to reduce unwanted catches....47
4.2.3. Closed areas and seasons to protect juveniles (art 17)....48
4.2.4. Real time closures and moving on provisions (Article 19)....49
4.2.5. Sensitive species....50
4.2.6. Sensitive habitats....51
4.3. North Western Waters....51
4.3.1. Minimum conservation reference sizes (Articles 13 and 18)....52
4.3.2. Selective gears to reduce unwanted catches....53
4.3.3. Closed areas and seasons to protect juveniles....53
4.3.4. Real time closures and moving on provisions....54
4.3.5. Sensitive species....55
4.3.6. Sensitive habitats....55
4.4. South Western Waters....55
4.4.1. Minimum conservation reference sizes (Arts 13 and 18)....56
4.4.2. Selective gears to reduce unwanted catches....56
4.4.3. Closed areas and seasons to protect juveniles (art 17 and Part C of Annex VII))....57
4.4.4. Real time closures and moving on provisions....58
4.4.5. Sensitive species....58
4.4.6. Sensitive habitats....59

4.5. Mediterranean and Black Sea. 59
4.5.1. Minimum conservation reference sizes (Articles 13 and 18) 62
4.5.2. Selective gears to reduce unwanted catches 63
4.5.3. Restrictions on the use of fishing gear (part C of Annex IX)) 64
4.5.4. Real time closures and moving on provisions 65
4.5.5. Sensitive species 65
4.5.6. Sensitive habitats 67
4.6. Outermost regions 67
5. PROMOTION OF RESEARCH AND INNOVATION 68
5.1. Pilot projects 68
5.2. Scientific research (Article 25) 69
5.3. Innovative fishing gear (Article 20) 70
6. SUMMARY AND CONCLUSIONS. 73
APPENDIX I IMPLEMENTATION OF THE SEABIRD ACTION PLAN 75
APPENDIX II: SYNOPSIS OF THE CONSULTATION. 77
APPENDIX III: SUMMARY TABLE OF JOINT RECOMMENDATIONS RECEIVED 79

This staff working document accompanies the 'Report from the Commission to the European Parliament and Council on the implementation of the Technical Measures Regulation'. It looks in greater depth at:

1. The objectives and targets of the Regulation (EU) 2019/1241[1] ("the Regulation") and how to measure progress towards these objective and targets;
2. General considerations regarding sensitive species and habitats;
3. Overview of the implementation of the Regulation and the consultation of Member States, Advisory Councils and stakeholders, looking with detail to commonly applicable measures.
4. Implementation and consultation on regional technical measures, by sea basin, and considering the main findings since the Regulation came into force.
5. Research and innovation.
6. Final considerations, including some reflections on the implementation.

1. THE OBJECTIVES AND TARGETS OF THE REGULATION

The objectives of the Regulation are to contribute to protecting juveniles and spawning aggregations, minimising incidental catches of sensitive species, minimising negative impacts of fishing on marine habitats and to contribute to compliance with the Habitats[2], Birds[3] and Marine Strategy Framework Directives ('MSFD')[4], in particular with the achievement of good environmental status (GES).

The Regulation sets out basic requirements and a regionalised framework for implementing technical measures provided by Article 7(2) of Regulation on the Common Fisheries Policy ('CFP Regulation')[5] concerning:

- characteristics of fishing gears and their use,
- specifications on the construction of fishing gear,
- limitations or prohibitions on the use of certain fishing gears and fishing activities,

[1] Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1224/2009 and Regulations (EU) No 1380/2013, (EU) 2016/1139, (EU) 2018/973, (EU) 2019/472 and (EU) 2019/1022 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005 (OJ L 198, 25.7.2019, p. 105).

[2] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, *OJ L 206, 22.7.1992, p. 7–50*

[3] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ L 20, 26.1.2010, p. 7–25

[4] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive. OJ L 164, 25.6.2008, p. 19–40

[5] Regulation 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC

- and requirements to cease operating in defined areas in order to protect temporary aggregations of endangered species, spawning fish, fish under minimum conservation reference sizes and other vulnerable resources.

Article 3 of the Regulation provides that technical measures must contribute to the objectives of the CFP set out in the applicable provisions of Article 2 of the CFP Regulation. Moreover, it has to contribute to achieving the following objectives:

(a) optimise exploitation patterns to provide protection for juveniles and spawning aggregations of marine biological resources;

(b) ensure that incidental catches of sensitive marine species, including those listed under the Birds and Habitats Directives, that are a result of fishing, are minimised and where possible eliminated so that they do not represent a threat to the conservation status of these species;

(c) ensure, including by using appropriate incentives, that the negative environmental impacts of fishing on marine habitats are minimised;

(d) have in place fisheries management measures for the purposes of complying with the Birds and Habitats Directives, in particular with a view to achieving good environmental status in line with the MSFD.

In line with these objectives, Article 4 of the Regulation sets out the concrete targets to be achieved:

(a) catches of marine species below the minimum conservation reference size are reduced as far as possible.

(b) incidental catches of marine mammals, marine reptiles, seabirds and other non-commercially exploited species do not exceed levels provided for in Union legislation and international agreements that are binding on the Union.

(c) the environmental impacts of fishing activities on seabed habitats are coherent with the Union environmental legislation, in particular with the objective of achieving a good environmental status as set out in Article 1(1) of the MSFD, as well as with other Union policies.

In order to contribute to the target under point (a), the Regulation sets out minimum mesh sizes and associated conditions for towed nets in Parts B of each of Annexes V to X and XII, and Part A of Annex XI. These vary from a basic 120mm in the northeast Atlantic, with various alternative mesh sizes permitted for fishing directed at various species and areas, the smallest being 14mm for surrounding nets in the Mediterranean Sea.

To achieve the targets set out under points (b) and (c), the Regulation includes four types of environmental protection provisions.

i. General prohibitions (Article 7) on the use of techniques likely to cause excessive environmental harm (explosives, poisons, pelagic drift nets etc.)
ii. Prohibitions on catching (and associated handling) of marine mammals, seabirds and reptiles (Article 11)

iii. Areas where fishing is restricted in order to protect sensitive habitats (Article 12 and Annex II)
iv. Measures to monitor and reduce incidental catches of sensitive species, including specific measures for harbour porpoise (Article 15 and Annex XIII)

Measures in points iii. and iv. above may be modified according to joint recommendations from Member States. These provisions complement the specific framework provided under Article 11 of the CFP Regulation that allow Member States, acting jointly, to develop conservation measures necessary for the purpose of complying with their obligations under the Birds and Habitats Directives and the MSFD related to marine protected areas (Natura 2000 sites and spatial measures under the MSFD).

Specific measures and obligations are discussed in more detail in the following regional chapters.

The Regulation is an important instrument contributing to the sustainable management of fisheries resources and contributing to environmental objectives. It is complemented by other EU legislation such as for example the Regulation (EC) No 1967/2006[6] ('Mediterranean Regulation') and Regulation (EC) No 734/2008 ('VME Regulation')[7] concerning the protection of such "Vulnerable Marine Ecosystems" (VMEs) and Regulation (EU) 2016/2336 ('Deep Sea Regulation')[8]. While those regulations are not part of this report, their application is of relevance for the overall assessment on the overall contribution to and achievement of the CFP objectives.

The scope and objectives of the Regulation also include actions related to sharks and sea birds. Regarding the former, it is particularly relevant to take note of the 2009 EU Plan of Action for the Conservation and Management of Sharks (EUPOA sharks[9]) inspired by the Food and Agriculture Organization (FAO) "IPOA (International Plan of Action) Sharks". The EUPOA aims at broadening the knowledge on shark fisheries, on shark species and their role in the ecosystem, ensuring that directed fisheries for shark are sustainable[10]. As for the seabirds, the Regulation also provides the legal framework to

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[6] Council Regulation (EC) No 1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 1626/94. *OJ L 409, 30.12.2006, p. 11–85*

7 COUNCIL REGULATION (EC) No 734/2008 of 15 July 2008 on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing gears

[8] Regulation (EU) 2016/2336 of e European Parliament and of the Council of 14 December 2016 establishing specific conditions for fishing for deep-sea stocks in the north-east Atlantic and provisions for fishing in international waters of the north-east Atlantic and repealing Council Regulation (EC) No 2347/2002. OJ L 354 p.1, 23.12.2016.

[9] Communication with EUPOA https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52009DC0040 IA accompanying Communication https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52009SC0103

[10] STECF PLEN 19-03 incl. Sharks: https://stecf.jrc.ec.europa.eu/reports/plenary/-/asset_publisher/oS6k/document/id/2634955?inheritRedirect=false&redirect=https%3A%2F%2Fstecf.jrc.ec.europa.eu%3A443%2Freports%2Fplenary%3Fp_p_id%3D101_INSTANCE_oS6k%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_pos%3D1%26p_p_col_count%3D2

follow up and address problems still outstanding and as reported in the 2012 Action Plan for reducing incidental catches of seabirds in fishing gear[11].

1.1. Measuring the progress

Measuring progress is vital to check whether measures put in place are adequate and fit for purpose, and consequently, to assess where and how changes should be made. The impact assessment[12] preparing the Commission's proposal[13] for the Regulation confirmed the absence of clear objectives and the absence of a system allowing to assess whether the measures put in place were actually addressing the traditional collateral effects of the harvesting activity.

Measuring the extent to which the Regulation is reaching the targets requires clarity on the specifics of each target. Some targets are precisely defined, such as the target of Maximum Sustainable Yield ('MSY[14]') as defined under the CFP Regulation. However, environmental targets under the Habitats and Birds Directives are in very many cases not yet expressed quantitatively. Development of quantified environmental targets, such as threshold values for good environmental status, is a work in progress under the MSFD and in most cases such targets are not yet available.

As noted in the report on the implementation of the MSFD[15], progress in setting threshold values for determining good environmental status has so far been slow, and there seems to be a reluctance to set ambitious levels, as that would prevent Member States from reaching good environmental status within the deadline established in the Directive.

Member States did not link their targets with their measures, so as to have a measurable record of how they are progressing towards achieving good environmental status.

Technical measures help optimise exploitation patterns by providing protection for juveniles of fish using selective fishing gears. The objective of improving size-selectivity of fishing is to improve yield (or catch). Improving selectivity is key to reducing the impact of fishing on the younger fish, thus allowing more productivity from fish growth. There is a trade-off between F (fishing mortality) and selectivity; catching larger fish generally allows stocks to sustain a higher F without collapsing, while catching too many small fish can lead to stock depletion even at moderate levels

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[11] COM (2012) 665 final

[12] MRAG et al. (2014). A study in support of the development of a new Technical conservation measures framework within a reformed CFP. Lot 2: retrospective and prospective evaluation on the Common fisheries policy, excluding its international Dimension.

[13] COM(2016) 134 final

[14] Maximum Sustainable Yield, as defined in Article 4(1) point 7 of the CFP Regulation: 'maximum sustainable yield' means the highest theoretical equilibrium yield that can be continuously taken on average from a stock under existing average environmental conditions without significantly affecting the reproduction process;

[15] Report from the Commission to the European Parliament and the Council on the implementation of the Marine Strategy Framework Directive (Directive 2008/56/EC). COM(2020) 259 final, 25.06.2020.

of F. Both MSY and F_{msy}[16] are selectivity-dependent; for most exploited stocks, catching larger fish would lead to a higher MSY attainable at higher F levels. The biological mechanism through which improved selectivity promotes sustainability is by **preventing** growth overfishing (i.e. by allowing fish to realise their growth potential). In mixed fisheries exploiting species of different body sizes it is difficult to select for an optimum length for all species using a single mesh size.

Despite the absence of quantified targets, qualitative assessment can in many cases be sufficient to establish whether the environmental objectives referred to in the Regulation are met. Member States, besides their reporting on the MSFD, also report every six years to the European Commission their assessments of the conservation status of marine species and marine habitats according to Article 17 of the Habitats Directive. In addition, assessments of species classed as endangered in the European area are maintained by IUCN under financial support from the EU[17] ("European Red List").

The state of marine habitats under the Habitats Directive has also been reviewed[18] and indicates that 1% of habitats are critically endangered, 9% endangered and 9% are vulnerable (EU-28 figures). However, 49% are classed as data deficient. Habitats in any of these classifications are not consistent with the objectives referred to in the Regulation, and urgent measures are needed both to improve knowledge and to protect threatened habitats.

1.2. Choosing a selectivity indicator

As expressed in the Regulation, "*the indicators and the values used for their application should be requested from appropriate scientific bodies for a number of key indicator stocks which would also take into account mixed fisheries and recruitment spikes*"[19]. Likewise, Article 31(2) states that the "*report may include, inter alia, as a selectivity performance indicator for the key indicator stocks for the species listed in Annex XIV the length of optimal selectivity (Lopt) compared to the average length of fish caught for each year covered*".

The Regulation introduced "*selectivity performance indicators*" based on the optimal exploitation pattern, a well-established concept in fisheries management.

Such an indicator should facilitate monitoring progress towards minimising unwanted catches. Even though the Regulation refers to length of optimal selectivity (L_{opt}) in its Recital 39, it does not prescribe any specific indicator, and mentions that "*those indicators are not binding targets, but monitoring tools which may inform deliberations or decisions at regional level*".

[16] Fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield (MSY) and an average biomass corresponding to BMSY. Defined as "FMSY point value' the value of the estimated fishing mortality that with a given fishing pattern and under current average environmental conditions gives the long-term maximum yield as defined in the Multiannual Plans for demersal stocks in Western Waters, demersal stocks in western Mediterranean Seas, demersal stocks in North Sea and for cod, herring and sprat stock in the Baltic Sea.

[17] https://ec.europa.eu/environment/nature/conservation/species/redlist_en.htm

[18] Gubbay, S. et al. (2016). European red list of habitats. Part 1. Marine habitats. Publication Office of the European Union, ISBN 978-92-79-61586-3.

[19] Recital 39 of the Regulation.

Population selectivity describes the differential vulnerability to fishing of the demographic components of an exploited fish population, as a result of the gear used (e.g., choice of mesh size) and availability (e.g., choice of fishing timing and location)[20]. In age-structured stock assessments, population selectivity is usually expressed as the distribution of fishing mortality over the different age-classes of an exploited fish stock (Sampson & Scott 2012). Population selectivity is important because it affects both MSY and F_{msy}, as well as stock resilience to overfishing (Scott & Sampson, 2011).

STECF concluded in previous work[21] that population independent metrics such as Catch and Catch per Unit of Effort (CPUE) at age allow a direct comparison between fleets. It is, however, not possible to disentangle whether inter-annual changes in catch or CPUE at age are a consequence of changes in population (e.g. weak or strong recruitment) or due to changes in technical or tactical strategies of the fleet, including improvements in selectivity.

Population dependent metrics potentially provide a more robust means of comparing changes in exploitation pattern (i.e. using fleet-specific partial fishing mortality vector) both between and within fleets over time as they are less susceptible to changes in the underlying population. They could therefore be more useful to assess the efficacy of technical and/or tactical measures aimed at avoiding certain age groups (e.g. juveniles).

Based on these, catch-based and F-based indicators were further assessed (STECF EWG 18-15; Vasilakopoulos et al. 2020) to provide managers with a metric describing changes in selectivity, in relation to uptake by fleets of various technical measures. The ratio Frec/Fbar (where Frec is F on the first recruited age-class and Fbar is the average fishing mortality on fully-recruited ages) proved to be an informative selectivity metric for fisheries management and advice[22]. It was shown to be able to track selectivity changes in the fishery and was robust to both recruitment variability and changes in overall fishing pressure.

However, STECF has also identified the need for further investigation of selectivity indicators. Linking changes in technical measures to concurrent changes in Frec/Fbar, or any other indicator, is a very challenging task, given that selectivity is variable within a fishery and the result of multiple co-occurring factors, such as the gears used, the fishers' behaviours, the spatio-temporal distribution of both the exploited stock and fishery, and other, variable local factors.

STECF has provided an analysis of selectivity changes over time for certain stocks but only at the level of entire fisheries. It has not been proven possible to assess selectivity changes in detail by individual fishing fleet segments using different gears within the fishery, due to the scarcity of partial F-at-age data for most fleet segments.

[20] STECF 20-02, (Millar & Fryer, 1999 citation).

[21] STECF has discussed the weakness of catch-based metrics (due to their sensitivity to population structure) and 'pilot' indicators discussed were typically F-based as early as in STECF 12-20, STECF 13-04. STECF 18-15 work illustrated that F-based indicators were the most informative of those investigated

[22] Vasilakopoulos, P., Jardim, E., Konrad, C., Rihan, D., Mannini, A., Pinto, C., Casey, J., Mosqueira, I. & O'Neill F.G. (2020). Selectivity metrics for fisheries management an advice. Fish and Fisheries 21, 621–638. doi: 10.1111/faf.12451

STECF tested the selectivity indicator by stock and by fleet segment, where relevant F-at-age data were available. The fleet segment level analysis was designed to investigate the extent to which every fleet is responsible for the variations in selectivity as shown by the selectivity indicators applied to the stock level.

After this test, it was decided to work at stock level taking into consideration the stocks listed in the MAPS[23]; the stocks listed correspond to individual ICES stock assessments in the North East Atlantic and STECF stock assessments in the Mediterranean Sea.

ICES was requested to provide F-at-age data by stock and by fleet/fishery. For the Mediterranean, it was agreed to extract F at age data from the stock assessment done by the STECF Expert Working Group ('EWG') on Mediterranean stock assessments.

During the first week of October 2020, the EWG of STECF[24] examined the possibilities to measure progress in selectivity. The working group considered it impossible either to evaluate the performance of the Regulation (in particular due to its recent entry into force) or to clarify the contribution of technical measures towards achieving the objective of the Regulation. Nevertheless, the working group made progress in developing time-series that allow identifying trends in selectivity.

The working group provided time-series of trends in selectivity for selected fish stocks and areas. However, for reasons mentioned above, the results need to be interpreted with caution.

STECF pointed out that for those stocks where no changes were detected over time, the absence of change in indicator should not be seen as proof that the technical measures had no effect at all, but at least that the effects were not strong enough to be detected at population level by standard stock assessment procedures using standard data. For the stocks where changes in selectivity of recruiting year-classes appear to be coincidental with the timing of the introduction of certain technical measures, STECF noted that it remains difficult to ascertain that this change is caused directly by the introduction of the technical measure.

Additionally, although many technical measures relate to specific gears and/or fisheries, no fleet-specific evaluations were undertaken for stocks in different regions. Hence, the results presented in the working group report provide an overview of temporal trends in relative selectivity for the recruiting year-classes **at the population level only.**

1.3. Considerations for future approaches on selectivity

The STECF attempted to assess the extent to which technical measures in general, from the former Technical Measures Regulation[25], the Baltic Technical Measures

[23] Multi annual plans. https://ec.europa.eu/oceans-and-fisheries/fisheries/rules/multiannual-plans_en

[24] EWG 20-02

[25] Regulation (EC) No 850/98, of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms (OJ L 125, 27.4.1998, p.1).

Regulation[26] and the Mediterranean Regulation onwards, have contributed to achieving the objectives and targets of the Regulation.

Considering that the **next report on the implementation of the Regulation** is due in three years, some elements on how to proceed in the future need to be taken into consideration.

- Given the complexity of the exercise, it is necessary to adopt a concrete and targeted approach regarding what specific aspects of the regulation need to be examined. It has been underlined that given the high number of different technical measures that may have an impact, and the great variability between fleets and areas, it is impossible to examine and assess each and every measure.
- Specific adjustments of the Frec/Fbar metric could be explored (e.g. adjusting Frec to incorporate all juveniles; link the ratio to Lopt etc.).
- Relevant reference points for this indicator could be also explored (analogous to F_{msy}; to have an idea of where selectivity stands rather than just saying 'improving/deteriorating').
- Additionally, in order to check the effect of specific technical measures, it is necessary to narrow down the resolution to the specific fleet segment(s) expected to be affected; in which case, segment's partial F-at-age (or at least catch-at-age), are needed, which is not always available.
- A way forward could be to assess the extent to which the targets set in the current regulation are being achieved, using a gear and area approach. This could provide a risk-based analysis, highlighting where more detailed assessment of the effects of the Regulation is a priority. Those species for which the MSY has not been reached or with high discard rates could be an approach that needs to be discussed with experts and Member States.
- In trying to assess the effectiveness of the measures included in the Regulation there is a need to assess the incentives for fishers to adapt, adopt and buy-in to specific technical measures.
- In order to develop the policy it is crucial to have reliable information. In this respect, a key control component is the system of joint deployment plans (JDPs) coordinated by the European Fisheries Control Agency (EFCA), based on the relevant specific control and inspection programmes (SCIP). The most significant suspected infringements found in 2019 confirm that misreporting of catches and cases related with technical measures remain the most common non-compliance issues. These are generally considered to be the main threats together with possible non-compliance with the requirements of the landing obligation, which were however very difficult to detect.

To address these issues, **the discussion must now focus on the scope of future assessments, identification of data sets that could be used** to carry out these assessments and identification of who should provide this data.

For example, F-at-age, data on growth parameters and natural mortality per stock (to calculate Lopt) and the maturity-at-age to put the focus on juveniles. For analysis at the

[26] Regulation (EC) No 2187/2005, Council Regulation (EC) No 2187/2005 of 21 December 2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the Sound, amending Regulation (EC) No 1434/98 and repealing Regulation (EC) No 88/98, *OJ L 349, 31.12.2005, p. 1–23*

level of fleet segment it would be necessary the respective partial F-at-age or at least catch-at-age.

Eliminating discards by reducing and avoiding, as far as possible, unwanted catches is one of the main objectives of the CFP, and as such, improvements of selective fishing techniques and technical measures in place shall be aimed at achieving this objective. Unwanted catches involve fish that either have a low market value or cannot be sold because the CFP rules do not allow their retention or landing: they are below the minimum size, their quota is exhausted, they are damaged, their capture is prohibited.

STECF[27] notes that quantitative discard data for EU fishing fleets is provided by EU Member States to ICES and via the STECF Fisheries Dependent Information (FDI) data calls. Currently, there are several sources of data on discards relying on the information that Member States submit to the Commission in the framework of the FDI data call[28]. This information is publicly available in the JRC databases[29]. However, STECF is not able to comment on discard trends arising from FDI.

STECF also notes that each year discards under exemptions permitted under the landing obligation ('LO') are calculated by the FDI EWGs and the methodology used is considered to be appropriate. However, for some cases, the low level of sampling or the absence of sampling by Member States, can lead to imprecise estimates not fully representative of the actual level of discarding by the relevant fleets, noting that the actual levels of discarding are largely unknown at present. To improve the quality of these estimates, increased monitoring and accurate reporting by Member States is required.

STECF notes that the last-haul information compiled by EFCA and the discard information provided to ICES and under the FDI data call represent the best and most detailed information available and highlights the need for Member States to provide data that are representative of the level of discarding and are statistically sound.

For stocks with data available on landings and discards, ICES provides catch advice with information on the corresponding landings and discard numbers, assuming an unchanged fishing pattern. For stocks where a discard ban or landing obligation has been introduced recently ICES may use the terminology "wanted" and "unwanted" catch until reliable information on discards and landings becomes available. "Wanted catch" refers to the part of the catch that would be landed in the absence of a discard ban or landing obligation. "Unwanted catch" refers to the part of the catch that would be discarded in the absence of a discard ban or landing obligation. It is worth to note that according to ICES figures, the level of discard/unwanted catches in certain areas and for certain stocks seems to be high.

[27] STECF 21-01

[28] This datacall contains detailed information on species, vessel length, fishing techniques, gear type, mesh size range, supra region, region and EEZ indicator

[29] https://stecf.jrc.ec.europa.eu/dd/fdi

2. SENSITIVE SPECIES AND HABITATS

2.1. General considerations

All fisheries have the potential to incidentally catch protected, endangered, or threatened species. Under the Treaty, the EU has exclusive competence concerning the conservation of marine resources, which also covers fisheries management measures aimed at reducing incidental catches of sensitive species and reducing impacts on marine habitats and particularly on sensitive marine habitats.

Under the Regulation "sensitive species" means any species whose conservation status, including its habitat, distribution, population size or population condition is adversely affected by pressures arising from human activities, including fishing activities. They include in particular the species listed in Annexes II and IV of the Habitats Directive and those covered by the Birds Directive as well as those whose protection is necessary to achieve good environmental status under the MSFD.

"Sensitive habitats" means habitats whose conservation status is adversely affected by human activities including fishing. These include habitat types listed in Annex I of the Habitats Directive, the habitats of species listed in Annex II of that Directive, habitats of species listed in Annex I to the Birds Directive, habitats whose protection is necessary to achieve GES according to the MSFD and vulnerable marine ecosystems as defined in the VME Regulation.

The Regulation sets out general measures that will need to be developed by Member States to adapt better to the real impact that the different fleets have on these species and habitats. The measures set out under the Regulation bring together different regulations and action plans previously in force, such as for example regarding cetaceans and seabirds.

Concerning by-catches of cetaceans, the Regulation builds on the measures previously set out in Regulation (EC) No 812/2004 (hereinafter referred to as the Cetaceans Regulation). That regulation put in place, for certain high-risk fisheries, a system of specialist on-board observation of cetacean by-catches and required the placement of acoustic deterrent devices (ADDs)[30] on demersal static nets. These devices deter harbour porpoises from approaching static nets and so reduce incidental catches.

The Cetaceans Regulation, which contained detailed prescriptions on observer-based sampling was repealed in 2019 and replaced with the provisions in Articles 11 and 12 of the Regulation and obligations on Member States to monitor by-catches and implement, through regionalisation and on the basis of science advice, mitigation measures to reduce incidental catches of all sensitive species (Points 2 and 3 of Annex XIII). Development and modification of mitigation measures is to be pursued through regionalisation but can also be implemented by individual Member States concerning vessels flying their flag.

The ADD obligations previously included in the Cetaceans Regulation are now included in Annex XIII to the Regulation, to be applied in certain areas. In addition, the Commission established the relevant technical specifications in Commission

[30] As defined in Article 6.44 of the technical measures regulation.

Implementing Regulation (EU) 2020/967[31]. This implementing regulation gives Member States the possibility to use alternative devices, provided they are at least equally effective in the reduction of incidental catches of cetaceans and that that had been duly documented.

The use of pelagic gill and trammel nets (drift nets) is already largely prohibited under the Regulation because of important incidental catches of cetaceans, seabirds, large pelagic sharks and turtles. Since that prohibition there have been important signs of recovery of certain populations such as common dolphin in the Mediterranean Sea, for example. The use of ADDs is already required in certain static net fisheries and is a useful measure to reduce (but not eliminate) incidental catches of harbour porpoises.

Certain habitats are known for their uniqueness or rarity, their functional significance in ecosystems, their fragility, life-history traits of component species that make recovery slow or difficult, and structural complexity. Examples of this habitat type include seamounts, seagrass beds, sea-pen meadows and both warm-water corals and deep-water cold coral reefs, and hydrothermal vents. Measures to protect such marine habitats have been in place under the CFP since at least 2002.

The measures are necessary for Member States to meet their obligations under the Habitats Directive (Natura 2000 network, Article 3 et seq. of Directive 92/43/EC). While the implementation of the Habitats Directive is a responsibility of the Member States, any fisheries conservation measures form part of the CFP and are thereby under EU competence. The CFP Regulation provides that measures can be decided by individual Member States where only the fisheries of that Member State are affected and provided that they are at least as stringent as the measures in EU law.

The Regulation serves, amongst others, to contribute to the environmental legislation, including the protection of marine habitats (Sections 2.2 and 2.3). The Regulation provides for protection of sensitive habitats by specifying a set of areas where certain kinds of fishing gear are prohibited (Article 12) and by providing for those measures to be adapted or amended through regionalisation.

2.2. Sensitive Species

2.2.1. State of knowledge

While it is well documented that there are shortcomings in the monitoring of incidental catches of sensitive species and impacts on sensitive habitats there are several reliable sources of information indicating areas of serious conservation concern and possible applicable mitigation measures.

[31] Commission Implementing Regulation (EU) 2020/967 of 3 July 2020 laying down the detailed rules on the signal and implementation characteristics of acoustic deterrent devices as referred to in Part A of Annex XIII of Regulation (EU) 2019/1241 of the European Parliament and of the Council on the conservation of fisheries resources and the protection of marine ecosystems through technical measures. C/2020/4348. *OJ L 213, 6.7.2020, p. 4–6*

STECF-2020-02 (as updated in STECF-PLEN-21-01) provides an up-to-date compendium of knowledge on marine environmental issues in relation to fishing and is the basis for the Commission's assessment of this topic. Highlights from that report are presented here, supplemented with some detail from additional sources.

While substantial knowledge exists about the threats, impacts and interactions of fishing gear and ecosystems, the available information on incidental catches of marine mammals, seabirds, reptiles and non-commercial fish species in EU fisheries is not sufficient to calculate reliable mortality estimates for a large number of susceptible species[32] . For example, Member States did not report any estimates of incidental by-catches of cetaceans by vessels under 15m despite a requirement to do so in the Cetaceans Regulation[33] and despite analysis from ICES indicating that increased sampling was required on smaller vessels[34]. In their reporting to ICES in 2020 (WGBYC 2020), 6 Member States did not report any observation scheme for sensitive species outside the Data Collection Framework ('DCF'), whereas 5 others reported having dedicated sampling schemes. For one Member State the distinction between the two types of observation was unclear.

However, there are also reports from Member States, scientific studies of a local or short-term nature and reports of time-limited projects in certain specific areas.

Monitoring of incidental catches of sensitive species is required under Annex XIII points 1 to 4 of the Regulation. Current advice from ICES and STECF is that such monitoring needs to be targeted at those fisheries most likely to make such catches and requires the deployment of observers trained for this task and specifically assigned to this task alone (at least for defined periods), or the deployment of closed circuit television ('CCTV') or remote electronic monitoring ('REM') tools designed for this purpose. However, many Member States rely on incidental reporting from observers dedicated to sampling commercial fish catches and discards. This entails several disadvantages.

Observers assigned to fish sampling and fish measurement may miss incidental catch events as sensitive species may not be brought on deck with other catches. It is not possible to adjust observed by-catch rates for these unknown losses.

Commercial fish observers may lack the necessary skills to identify sensitive species, which by their nature can be rare observations.

Incidental catches may not take place in fisheries taking the largest amounts of fish, and so may be under-sampled in schemes designed to concentrate on commercial fish catches.

CCTV/REM trials have been carried out by 3 Member States even on smaller vessels. Further trials are being started by two other Member States. These show that monitoring incidental catches even on smaller vessels is practical and feasible.

[32] STECF-2020-02, p. 179

[33] STECF 19-07 report p. 30

[34] Reports of the ICES working Group on Bycatches of protected species, 2013 to 2020.

The marine species in EU waters which are most threatened by incidental bycatch are generally those species which are so large-bodied that even in their juvenile stages they are easily caught by fishing gear designed to catch the adult stages of common demersal fish. This includes the angel sharks (*Squatina* spp.), spiny butterfly rays (*Gymnura altavela*), skate (including *Dipturus batis* and *D. flossada*), and manta rays (*Mobula* spp.). Also at risk are species that live in the very low energy environment of the deep sea and therefore grow very slowly and produce few offspring. In addition, some whales, seals, dolphins, porpoises, turtles and seabirds are threatened by entanglement in fishing gear.

Some of these species have become functionally extinct where once they were common in EU seas.

STECF PLEN 20-03 also notes that, as reported by the EWG, although by-catch mortality of sensitive species is likely to have decreased in Atlantic waters (including Baltic Sea) due to a decrease in fishing pressure (a general reduction in fishing mortality rates), this does not necessarily relate to changes in technical measures. In the Mediterranean no such effort reduction has been observed.

STECF further notes that estimating by-catch thresholds is not straightforward and estimates rely on several aspects including i) the conservation objectives and targets for the sensitive populations, ii) the timescale over which such objectives and targets are to be met and iii) available estimates of population size.

The report EWG 2020-02 lists sensitive species that are impacted by fisheries, identifies problematic fisheries and provides a preliminary assessment whether by-catch rates have changed over time. Nevertheless, significant knowledge gaps remain, notably in reliable population estimates for many species and areas.

A semi-quantitative **analysis of the impacts of fishing gears on different groups of sensitive species** has been prepared by STECF.

Table 3.1.. Identified risk (by expert opinion) for species groups by each fishing gear. 1: low risk, 2: medium risk, 3: high risk. From STECF EWG 2020-02.

GEAR	LAMPREYS	ROUND FISH	TURTLES	DIVING BIRDS	SURFACE BIRDS	SEALS	DOLPHINS	HARBOUR PORPOISE	LARGE WHALES
Boat dredge [DRB]	1	1	1	1	1	1	1	1	1
Bottom otter trawl [OTB]	2	2	3	1	2	2	1	1	1
Multi-rig otter trawl [OTT]	2	2	3	1	1	1	1	1	1
Bottom pair trawl [PTB]	2	2	3	1	1	1	1	1	1
Beam trawl [TBB]	2	1	3	1	1	1	1	1	1
Midwater otter trawl [OTM]	1	3	2	2	2	2	2	1	2
Pelagic pair trawl [PTM]	1	3	2	2	2	2	2	1	2
Hand and Pole lines [LHP] [LHM]	1	1	1	1	1	1	1	1	1
Trolling lines [LTL]	1	1	1	2	3	1	1	1	1
Drifting longlines [LLD]	1	1	3	2	3	1	1	1	2
Set longlines [LLS]	1	1	3	2	3	1	1	1	2
Pots and Traps [FPO]	2	1	1	1	1	1	1	1	2
Fykenets [FYK]	3	2	1	2	1	3	1	1	1
Stationary uncovered poundnets [FPN]	1	1	1	1	1	2	1	1	1
Trammelnet [GTR]	1	3	3	3	1	3	2	3	2
Set gillnet [GNS]	1	3	3	3	1	3	2	3	2
Driftnet [GND]	1	3	3	3	3	3	3	3	3
Purse-seine [PS]	1	1	1	1	1	1	2	1	1
Lampara nets [LA]	1	1	1	1	1	1	1	1	1
Fly shooting seine [SSC]	2	2	1	1	1	1	1	1	1
Anchored seine [SDN]	2	2	1	1	1	1	1	1	1
Pair seine [SPR]	2	2	1	1	1	1	1	1	1
Beach and boat seine [SB] [SV]	2	2	1	1	1	1	1	1	1
Glass eel fishing	2	1	1	1	1	1	1	1	1

STECF EWG 2020-02 provides a direction for future work, including among others, measures such as an increase in monitoring (métiers, spatial and temporal coverage), species identification, abundance estimation and thresholds.

Despite these deficiencies in national sampling programmes and the absence of quantitative analysis, a variety of historical studies provide compelling evidence that certain species, once abundant or common in European seas, are critically endangered and are now rare, absent or extirpated. Such information has been reviewed and compiled in the EU red list, the most relevant elements of which are summarised below and in the regional chapters.

Concerning seabirds, in 2019 the European Commission invited Member States to review their actions undertaken under this plan to address the concerns and improve the implementation (Appendix I). Only ten Member States replied. These replies and other scientific reports (see review in STECF-20-02) indicate that knowledge remains poor due to lack of targeted monitoring of these incidental catches, even though a number of short-term studies indicate that large numbers are caught in longline fisheries and in static net fisheries, particularly in the Baltic Sea (e.g. Žydelis et al. (2009) estimated 100 000 to 200 000 seabird deaths per year in the North Sea and Baltic Seas, and Žydelis et al.(2013) estimated 72 000 deaths per year in the Baltic Sea alone[35]). Known

[35] Žydelis, R., J. Bellebaum, H.Osterblom, M. Veternaa, B. Schirmeister, A. Stipniece, M. Dagys, M. van Eerden and S. Garther (2009). Bycatch in gillnet fisheries- An overlooked threat to waterbird populations. Biological Conservation 142(7): 1269-1281

Žydelis, R., C. Small, and G. French (2013). The incidental catch of seabirds in gillnet fisheries: a global reviex. Biological Conservation 162(2013) 76-88

mitigation measures exist for longlines but the Commission has not received reports that they are being implemented. STECF-20-02 reports that the use of bird-scaring "tori" lines is mandatory in longline fisheries in Spanish national law but no data on such use has been provided. Despite a number of trials to reduce incidental catches in static net fisheries in the Baltic Sea, no technical gear-based solution has yet been found. However, seasonal closures of fishing in areas and periods of high seabird abundance have shown success in reducing incidental catches.

2.2.2. Baltic Sea

The Baltic Sea population of the harbour porpoise (*Phocoena phocoena*), the only cetacean species to occur regularly in the Baltic Sea, has declined greatly in the past 50–100 years. With the most recent estimation at around 500 individuals, this population is critically endangered. Static-net fisheries in particular create a risk of incidental catches that threaten the survival of this population. ICES[36] has recommended a set of measures to mitigate incidental catches, including the use of ADDs and closed areas to prevent fishing in areas of high harbour porpoise abundance. The Commission and Member States are currently examining the implementation of those measures.

It is also required to use ADDs on static nets in sub-division 24 and a sea area near the south coast of Sweden in order to mitigate harbour porpoise by-catches (Annex XIII Part A of the Regulation).

The need for more permanent fisheries closures for sensitive species in the Baltic and more specifically for harbour porpoise areas was also raised by a large number of stakeholders in the online consultation, who see these measures as important tools for protection of sensitive species.

Important incidental catches of diving ducks occur in the shallow-water static-net fisheries of the Baltic Sea and declining population trends have been reported. ICES has also advised that diving waterbirds are especially vulnerable to being entangled in gillnets and other types of static nets. Drowning in fishing gear is a significant source of anthropogenic mortality for long-tailed duck (*Clangula hyemalis*), scoters (*Melanitta spp.*), divers (*Gavia spp.*), and some other waterbirds, especially in wintering areas with high densities of waterbirds. Work on technical mitigation measures to scare ducks away from static nets has not yet found a working solution and so needs to be continued. In the absence of a technological solution, the use of closed areas to prevent fishing with static gear in the main feeding seasons and grounds for the waterbirds has proven a useful solution. More survey work to identify the right areas and times for such closures is needed, as well as more consultation and extension work with the fishing sector.

The Baltic Sea is also an important habitat for two particularly sensitive fish species, the European eel (*Anguilla anguilla*) (on its migration out to the Atlantic) and the sturgeons (Acipenseridae) an iconic brackish-water fish. Sturgeons became regionally extinct in the 1950s but efforts are being made to reintroduce them (HELCOM, 2019[37]). ICES has

[36] https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2020/Special_Requests/eu.2020.04.pdf

[37] HELCOM/Gessner et al. (2019). HELCOM Action Plan for the protection and recovery of Baltic sturgeon Acipenser oxyrinchus oxyrinchus in the Baltic Sea area. Baltic Sea Environment Proceedings n°168

advised that all anthropogenic impacts on eels should be reduced to as close to zero as possible to conserve this critically endangered species. It is prohibited to retain on board any eel caught with active gear in the Baltic Sea (Annex VIII Part C point 6 of the Regulation) and when accidentally caught, eel shall not be harmed and shall be promptly released.

As noted in the ICES Fisheries Overviews for the Baltic Sea Ecoregion issued in 2020[38], abandoned, lost, or otherwise discarded fishing gear (ALDFG) are an unsolved and "silent" problem. Such gear may continuously catch fish, birds, and marine mammals for a long time. It was estimated that 0.1% of nets are lost annually in the Swedish Baltic Sea gillnet fishery. The impact on the environment is not quantified. However, there is information that fishing pressure exerted by lost static nets could range from 20% of its usual net capacity after three months, down to a maximum of 6% after two years.

Including designated Natura 2000 areas, the Baltic Sea basin is one of the basins with the widest coverage of Marine Protected Areas (MPAs). According to the Baltic Marine Environment Protection Commission – Helsinki Commission (HELCOM), there are 176 HELCOM MPAs, covering 49 016 km² of marine surface, which is roughly equivalent to 11.8% of the Baltic Sea marine area.

The area restricted for fisheries in point 1 of Part C of Annex VIII to the Regulation contains all-year closure for towed gear to fish in the "Oderbank plateau" in order to protect spawning turbot and juvenile flatfish nurseries. This was introduced in 1991.

The closure mentioned in point 4.1 cover parts of the historic main eastern Baltic cod spawning areas (parts of the Bornholm, Gdansk and Gotland Deeps) during the main spawning period (May to October).

Disturbance and abrasion of seabed habitats by mobile bottom-contacting fishing gears occurs mostly in the southern Baltic Sea (see Figure 11 of the ICES Ecosystem Overview for the Baltic Sea) and may reduce benthic diversity and biomass. Abrasion may affect the surface (top 2 cm of sediments) or the subsurface (> 2 cm). Little is known about the sensitivity of different Baltic Sea organisms and communities to these fishery-induced impacts. From neighbouring regions, such as the North Sea and Kattegat, it is known that frequent disturbance by bottom trawls reduces benthic diversity and biomass and changes the composition of benthic species. Some of the trawled parts of the Baltic Sea are also affected by low oxygen concentrations at the seabed (Figure 15).

2.2.3. North Sea

In the North Sea, OSPAR (Convention for the Protection of the Marine Environment of the North-East Atlantic) has identified several species of seabirds as being in low conservation status, but knowledge about the state of these populations is generally poor. Overall, there is a significant need to improve the protection of these species. This will require investment in existing and new approaches to monitoring and mitigation of by-catches.

38 ICES Fisheries Overviews - Baltic Sea Ecoregion – Fisheries overview

Seabirds on the north-east coast of the UK depend for their feed during the breeding season on banks of juvenile sandeel (*Ammodytes* spp.) distributed near the UK coast. The breeding success of these seabirds, and notably of kittiwakes (*Rissa tridactyla*) was shown to depend on the average annual abundance of sandeels near the coast. In order to safeguard the breeding success of these birds, the fishing of sandeels in the relevant area and time period was prohibited (Annex V Part C point 1 of the Regulation).

Fishing for deep-water sharks is prohibited in areas of the North Sea deeper than 600m (Annex V Part C point 6.2 of the Regulation).

It is required to use ADDs on static nets in the North Sea and Skagerrak from 1 August to 31 October, for nets shorter than 400m or using meshes over 220mm in order to mitigate harbour porpoise by-catches (Annex XIII Part A of the Regulation).

The North Sea is a former habitat for a number of large fish species that were once widely distributed and abundant but which are now critically endangered, extirpated or found in very low abundance in the North Sea, notably sturgeons, tope (*Galeorhinus galeus*), skates and angel sharks.

In historical times, the large whale populations of the North Sea were depleted or extirpated by hunting. Whilst the impact of these removals on the ecosystem functioning is not clearly understood, it should be assumed that the North Sea ecosystem is currently in a perturbed state. While the presence of large whales remains scarce, such whales are frequently reported as entangled or in contact with fishing gear, notably buoy ropes of creels and pots. Such events are likely to present a barrier to these species re-establishing themselves in this habitat.

The seabird population showed an overall increasing trend until 2000, after which it declined. Recent changes in fisheries management policy (e.g. reduction in effort and the landing obligation) will likely affect seabirds as well as other parts of the ecosystem.

There have been few significant changes in the cetacean populations of the North Sea. The centre of distribution of the harbour porpoise population moved southwards from off the east of Scotland to the southern North Sea between the mid-1990s and the mid-2000s. Bycatch in bottom-set gillnets is probably the greatest anthropogenic activity affecting population abundance of harbour porpoises in the North Sea, but the status of this species, either in the North Sea or in the Kattegat, is not of immediate concern.

The abundance of grey seals (*Halichoerus grypus*) has been increasing for at least 30 years.

In 2017, 18% of the North Sea region was covered by MPAs. But the key challenge remains that for a number of MPAs, fisheries management measures are still pending.

2.2.4. North-western waters

The abundance of breeding seabirds has shown a broad downward trend since the early 2000s. Populations of grey seals have also been increasing in this area over at least the

past thirty years, though the populations are becoming more stable now. Trends in the abundances of cetaceans and harbour seals are not known[39].

Annual incidental catches of common dolphins (*Delphinus delphis*) and other dolphin species are frequently taken in winter fisheries in the Bay of Biscay and adjacent seas, up to some 8 500 individuals per year. ICES has advised on measures to reduce these, and their recommendations are being examined by the Commission and Member States.

Fisheries with high risk of cetacean bycatch in the Celtic Sea are bottom set-nets (bycatch of harbour porpoises) and pelagic trawls, particularly those for bass (bycatch of common dolphin*)*. Modelling indicates that it is likely that the bycatch of harbour porpoises in gillnets on the Celtic shelf has affected population abundance at least in some past periods. Bycatch in both fisheries may have reduced in recent years due to less fishing activity and the use of ADDs on static nets, as required in areas 7 d,e,f,g,h and j (Annex XIII Part A of the Regulation).

Longline fisheries pose the greatest threat to seabirds offshore, while inshore net fisheries may catch diving species. Largescale bycatch of great shearwaters *Puffinus gravis* has been reported from the hake longline fishery on the Great Sole fishing bank, and based on information from elsewhere, longline fisheries in waters west of Scotland would likely catch northern fulmars *Fulmarus glacialis*. Knowledge of catches is poor due to incomplete reporting but estimates of mortalities of the order of 200 000 per year have been reported.

One seabird species is critically endangered (Balearic shearwater, *Puffinus mauretanicus*), three are endangered and three are vulnerable.

Several fish species have been depleted by fishing in the past and are now threatened or declining species, including spurdog (*Squalus acanthias)*, the common skate, angel shark, porbeagle (*Lamna nasus)*, mostly caught in static nets and some deep-water sharks. Although there are zero TACs or prohibited listings for these species, several of them remain vulnerable to existing fisheries. Spurdog and the common skate complex are caught as bycatch in mixed demersal trawl fisheries and gillnet fisheries, and deep-water sharks are caught in the mixed deep-water trawl fishery.

A number of protected areas have been put in place where the use of bottom-contacting fishing gear has been prohibited in order to protect sensitive demersal and benthic habitats (Annex II Part A of the Regulation): the Belgica Mound, Hovland Mound Province, northwest Porcupine Bank (two areas), southwest Porcupine bank, and the Darwin Mounds.

2.2.5. South-western waters

ICES (2019)[40] reported that the Portuguese fleet using static gear (longlines and gillnets) captured 3639 cetaceans per year (13.24% of the harbour porpoises 7.34% of the common dolphins and 5.10% of the bottlenose dolphins (*Tursiops truncatus*) respectively over the period 2010-2015). These values are well in excess of simple

[39] https://www.ices.dk/advice/ESD/Pages/Celtic-Seas_description.aspx

[40] P. 42 of ICES (2019). Report of the working group on marine mammal ecology. ICES Scientific Reports 1(22).

markers of sustainability (STECF-19-07). Beach-seine fisheries removed 1.4% of the harbour porpoise population. Purse seine fleets, bottom trawlers, deep-sea longliners fisheries also caught cetaceans but in smaller numbers. These results were obtained from the LIFE+ MarPro project[41].

In recent years, the very high numbers of common dolphin incidental catch in fisheries in the Bay of Biscay are a cause for concern. Such catches of common dolphins have been recorded in several fisheries off France, Spain, and Portugal. The mean annual bycatch of common dolphin across all métiers for the period 2016–2018 amounted to 3973 individuals. Trammel nets account for the largest bycatch.

Interactions also occur with gears such as set-net, pelagic trawls, and bottom trawls. It was estimated from stranded common dolphin along the French coastlines of the Bay of Biscay and the western English Channel that bycatch mortality of the species was 5800–17 900 individuals in 2017 and 3400–10 500 individuals in 2018. The available incidental catch mortality estimates for common dolphin in the Northeast Atlantic (based on at-sea monitoring and on stranded animals) are either close to or exceed the potential biological removal (PBR) threshold (4927 individuals per year).

The winter distribution of the critically endangered Balearic shearwater (*Puffinus mauretanicus*) extends from Gibraltar to the Celtic Seas and is vulnerable to incidental catching in longline fisheries. In addition, several other seabird species have declined in abundance. Kittiwake and Iberian guillemot *Uria aalge ibericus* breeding populations are locally extinct. Coastal driftnets may have contributed to the loss of other seabird species in areas such as central and northwestern Portugal. Species affected by fishing also include Cory´s shearwater (*Calonectris borealis*), and Northern gannet (*Morus bassanus*). The European shag (*Phalacrocorax aristotelis*) is also widely affected, particularly by gillnets, in northwest Spain. The mean seabird bycatch in bottom trawl, demersal longline, purse-seine, beach seine, set-net, and trap fisheries along the mainland Portuguese coast was estimated at 0.05 individuals per fishing event.[42]

Observer programmes in Azorean fisheries have found few or no seabirds as bycatches. However, data on the incidental catch of seabirds are lacking for fisheries that use pole and line. There are negligible effects on marine mammals from Azorean fisheries, although interactions have been reported. Pelagic sharks, toothed whales, and cephalopods were identified as potential keystone species, highlighting their importance in the ecosystem structure. Angel shark, also critically endangered, are widely extirpated in EU waters but remaining populations exist in the Celtic Sea as well as around the Canary Islands. In addition, sturgeons European eel, gulper shark (*Centrophorus granulosus*), skates and rays (the common skate complex, thornback ray (*Raja montagui*), and white skate (*Rostroraja alba*)), spurdog, and salmon (*Salmo salar*) have been adversely affected by fishing[43].

Common skate and spurdog are caught as bycatch in demersal trawl fisheries, while deep-water sharks are caught in the mixed deep-water fishery. Bottom trawls and static

[41] Vingada, J. and Eira, C. 2018. Conservation of cetaceans and seabirds in continental Portugal. Report of Project LIFE+ MarPro NAT/PT/00038

[42] ICES Bay of Biscay and Iberian coast ecoregion overview, 10 December 2020

[43] ICES Ecosystem Overview for the Azores ecoregion

nets are responsible for bycatch of skate, small-eyed ray (*Raja microocellata*), sandy ray (*Leucoraja circularis*), undulate ray (*Raja undulata*), and spurdog, while bluntnose six-gilled shark (*Hexanchus griseus*) and basking shark (*Cetorhinus maximus*) only occur in static nets.

Deep-water sharks are taken as bycatch in the bottom longline fishery and drifting longline fishery, accounting for a respective 4.9% and 15.2% of the total catch of those fisheries. Many of those species are under fishing prohibition under EU regulations (Regulation (EU) 2021/91[44]), and several are listed as threatened under the IUCN Red List of Threatened species. The Regulation includes prohibitions on deep-sea trawling and gillnetting though not on longlining. In the pelagic longline fisheries in which an important part of the catch is composed by blue sharks (*Prionace glau*ca) which can be the target species, and to a lesser extent shortfin mako (Isurus oxyrinchus) which remains a less abundant bycatch, catches can also occasionally include species under fishing prohibition such as bigeye thresher (*Alopias superciliosus*) and smooth hammerhead sharks (*Sphyrna zygaena)*, as well as the protected loggerhead turtle (*Caretta caretta*).

2.2.6. Mediterranean and Black Seas

The population of monk seal (*Monachus monachus*) has been very heavily depleted. Once a very common animal, it is now critically endangered and very restricted in distribution. It is subject to entanglement in static fishing gear and has been reported to be subject to illegal directed killing. It is also vulnerable to loss of its breeding sites on touristic beaches. In 2009, it was estimated that only some 250 individuals remained in the Mediterranean Sea, from a single breeding population. This is the most threatened seal species in the world.

Green turtle (*Chelonia mydas*) is endangered worldwide and is present in the eastern Mediterranean where it requires protection, notably around Cyprus and Turkey and some islands in the Cretan Sea. In contrast the population of loggerhead turtle in the Mediterranean is of least concern.

The breeding sites of Balearic shearwater are limited to the islands of the Balearic group, but these shearwaters spread out widely in the Mediterranean and Atlantic to feed during the winter months. They are also critically endangered and are subject to incidental catches in longline fisheries as well as vulnerable to capture in static nets both in the western Mediterranean and in the eastern Atlantic Ocean.

Harbour porpoise in the Black Sea is reported to experience incidental catches at an unsustainable rate (~208 individuals/year or 2.6% of the population). These incidental-catches occur in coastal gill-net fisheries.

Entanglement of sperm whales (*Physeter microcephalus)* has been reported as a problem, particularly in the Ligurian Sea which is problematic for this vulnerable species.

[44] Council Regulation (EU) 2021/91 of 28 January 2021 fixing, for the years 2021 and 2022, the fishing opportunities for Union fishing vessels for certain deep-sea fish stocks, *OJ L 31, 29.1.2021, p. 20–30*

A separate population of blue shark exists in the Mediterranean but its abundance has declined by ~78–90% over the past 30 years[45].

Maltese skate (*Leucoraja melitensis*) is an endemic Mediterranean species that is critically endangered. It used to be distributed over one-quarter of the Mediterranean Sea but is now restricted to the Sicilian channel around Malta, where it is threatened by intensive demersal fisheries in that area, in which it is taken as incidental by-catch. Two species of guitarfish, are also endangered and are vulnerable to catches particularly in bottom trawls. The kitefin shark (*Dalatias licha*), the sandy ray (*Leucoraja circularis*), and the gulper shark (*Centrophorus granulosus*) are all by-caught in bottom trawlers (Table 12 in ICES, 2019b).

Spiny butterfly ray and large-bodied rays and sharks are critically endangered in the Mediterranean Sea, as elsewhere in their oceanic and coastal distributions, e.g. Angel shark, Manta rays, white shark (*Carcharodon carcharias*).

STECF PLEN-19-03 notes that in the Mediterranean Sea in particular, the status of the elasmobranchs is of particular concern since many sharks populations are considered to be severely depleted, and that new efforts are required for shark conservation. STECF EWG 19-07 considers that the regional management plan, including regional fisheries organisation i.e. GFCM, would offer management and conservation opportunities for shared stocks, migratory species and species of highest conservation concern.

2.2.7. Macaronesia

Local impacts on marine mammals and seabirds are now believed to be low, and in consequence these island groups may serve as refuges for widely-distributed species that are generally depleted, such as angel shark. A colony of some 30 monk seal individuals inhabits Ilhas desertas in the Madeira group. Several species of whale including the endangered blue whale (*Balaenoptera musculus*), the loggerhead and leatherback turtles and many species not found elsewhere may be more common near these island groups.

There are many species of deep-water sharks, some of which (e.g. Portuguese dogfish and leaf-scale gulper shark) are severely depleted. Amongst the pelagic shark species occurring in the ecoregion, three are considered more vulnerable to fishing: blue shark (*Prionace glauca*), shortfin mako (*Isurus oxyrinchus*), and porbeagle (*Lamna nasus*). Porbeagle is considered to be severely depleted and the stock of northern mako is considered overfished and subject of overfishing. Discussions are ongoing in ICCAT to adopt conservation measures aiming to rebuild the stock. On the other hand, the stocks of northern and southern Atlantic blue sharks are sustainably exploited and managed under a TAC in ICCAT. This TAC for northern blue sharks has been allocated to a limited number of fishing countries.

The main fishing gears used are pelagic gears including purse seine and pelagic longlining. Deep-sea longlining has been important and has contributed to the depletion of deep-sea sharks around the islands.

[45] From IUCN assessment information: https://www.iucnredlist.org/species/39381/16553182#assessment-information

2.2.8. Widely distributed species

Certain widely distributed and critically endangered species are faced with common pressures across different sea areas. The following critically endangered widely distributed species have been identified. Further detail is addressed also in the following regional chapters.

2.2.8.1.Cetaceans

Five species of cetaceans are listed as critically endangered, endangered or vulnerable: North Atlantic right whale, *Eubalaena glacialis* (critically endangered), sei whale *Balaenoptera borealis*, blue whale, harbour porpoise and sperm whale. STECF 2020-02 notes that insufficient information on incidental catches exists.

2.2.8.2.Turtles

Hawksbill turtle (*Eretmochelys imbricata*) is critically endangered and has a worldwide distribution in tropical and warm temperate seas. Kemp's Ridley turtle (*Lepidochelys kempii)* is also critically endangered.

Leatherback turtle (*Dermochelys coriacea*) is globally vulnerable and has a distribution that extends to the European Atlantic coast from Gibraltar to the north of Ireland and the Mediterranean Sea. Green turtle (*Chelonia mydas*) has a similar distribution and is endangered.

Loggerhead turtle is also widely distributed and endangered along the European Atlantic coastline but is classed as "least concern" in the Mediterranean Sea. None of these turtles are distributed in the Black Sea. Green turtle are classed as endangered on the EU Atlantic coastline due to various anthropogenic impacts including fishing.

Various threats affect turtles: loss of breeding beaches due to tourism, taking of eggs or adult turtles for food, incidental catches in longline and gill-net fisheries. STECF has advised that current monitoring does not provide enough information on sea turtle populations and conservation.

2.2.8.3.Migratory pelagic species

Several large pelagic sharks are critically endangered, the main threats being incidental catches in pelagic longline fisheries mostly targeting tuna.

White shark is distributed along the European Atlantic façade from the Bay of Biscay to Gibraltar as well as around the Macaronesian Islands. A genetically distinct population exists in the Mediterranean Sea, especially in the Adriatic and Aegean Seas and the strait of Sicily. Targeted killing by fishers has been reported as this species preys on bluefin tuna. Habitat degradation may have also reduced the abundance of another prey, the monk seal.

Porbeagle are distributed from Greenland to Morocco but appear to have been extirpated from the Mediterranean Sea. Targeted fisheries have ceased and this is now a protected species in EU fisheries law, but incidental catches occur in fisheries for large pelagic fish using longlines (and previously driftnets).

2.2.8.4.Coastal species

A second group of more sedentary, inshore and coastal species that are also critically threatened include the sand tiger or grey nurse shark (*Carcharias taurus*) and the smalltooth sand tiger shark (*Odontaspis ferox*).

Sand tiger shark are slow-moving, slow-growing and late-maturing sharks with a low reproductive rate (1 or 2 pups every 2 years) and therefore very vulnerable. They are distributed around the Canary Islands but now are extremely rare in the Mediterranean Sea and may even be extirpated from that area. Key pressures include a variety of anthropogenic disturbances including coastal fishing. Smalltooth sand tiger shark is a similar species, distributed from the Bay of Biscay to the Azores and the Mediterranean seas. It too is critically threatened by incidental catches, particularly in gillnets and longlines set at night over rocky bottoms in depths over 300m.

Spiny butterfly ray (*Gymnura altavela*) is a large (up to 2m or even 4m) ray that was once locally abundant in the Mediterranean Sea and off the coasts of Portugal, Madeira and the Canary Islands. It is now close to extinction in the Mediterranean. The main threat to this species is bottom trawling where it is an incidental bycatch.

Bull ray (*Pteromylaeus bovinus*) is another large (1.5 to 2.2m) ray distributed in coastal waters (shallower than 30m). In European waters its distribution extends from the Bay of Biscay to Madeira and the Mediterranean but not the Black Sea. It too has become extremely rare in the Mediterranean though a breeding population is known to exist. Its decline is imputed to overfishing in the coastal zone with a variety of artisanal fishing gear.

Two species of sawfish (*Pristis pectinata* and *Pristis pristis*) are widely distributed in warmer European waters. They were previously caught in targeted fisheries, but abundance is now very low, and information is scarce. Sawfish are easily entangled in fishing gear, especially static nets and this gear is considered a threat to them. These are now prohibited species in the Regulation.

The natural distribution of common skate including blue skate and flapper skate), another very large skate, extends from Iceland to the Mediterranean Sea, but is now highly depleted and is absent from much of that range. It has now been extirpated by fishing from most inshore and coastal areas though some remain on shelf breaks. It is threatened by multispecies trawl fisheries in which it is vulnerable due to its large size, even as a juvenile. White skate (*Rostroraja alba*) has a similar distribution and is also extirpated in many parts of its distribution.

Three species of angel shark are critically endangered. *S. squatina* used to be common in coastal European waters throughout the northeast Atlantic, Mediterranean and the Black Sea, but is now close to extinction over most of its previous range and restricted to a small population around the Canary Islands. Sawback angel shark *S. aculeata* is an endemic Mediterranean species. Once an important fisheries resource, they have now declined to an extremely low level.

Like the skates and large rays, angel sharks are threatened by multispecies trawl and static net fisheries where they are taken as incidental catches and they are also very vulnerable due to slow growth, late maturity, infrequent reproduction and small number of offspring. Because of the large body size even the youngest fish are caught in fishing gear.

The abundance of gulper shark, distributed in deep waters of the Atlantic, has declined by some 80 to 95% due to fishing. This is a slow-growing deep-water species that is taken as incidental catch in many kinds of deep-sea fisheries (trawls, static nets, longlines etc.). Although deep-sea fishing effort has declined, such incidental catches are still of concern. Endangered species of deepwater sharks, as defined under the Council Regulation (EU) 2016/2285 (EU, 2016a) are widespread in incidental-catch in the deep-water bottom trawls in subareas 6–9, static nets in Biscay (Subarea 8), and longlines in the Azores (Subdivision 10.a.2).

In addition to these critically endangered cases, a further 22 fish species are classed as "endangered": Roundnose grenadier *Coryphaenus rupestris*, northern wolf-fish *Anarhichas denticulatus*, dusky grouper *Epinephelus marginatus*, Tortonese's goby *Pomatoschistus tortonesei*, beaked redfish *Sebastes mentella*, oceanic whitetip shark *Carcharhinus longimanus*, sandbar shark *Carcharinus plumbeus*, bigeye thresher shark *Alopias superciliosus*, common thresher shark *Alopias vulpinus*, whale shark *Cetorhinus maximus*, giant devil ray *Mobula mobular*, sandy ray *Leucoraja circularis*, rough ray *Raja radula*, blackchin guitarfish *Glaucostegus cemiculus*, common guitarfish *Rhinobatos rhinobatos*, lowfin gulper shark *Centrophorus lusitanicus*, leafscale gulper shark *Centrophorus squamosus*, birdbeak dogfish *Deania calcea*, kitefin shark *Dalatias licha*, bramble shark *Echinorhinus brucus*, portuguese dogfish *Centroscymnus coelolepis* and spurdog *Squalus acanthias*.

2.2.8.5.Seabirds

Particularly in North-western waters, three species of seabirds are near threatened (Little gull, *Larus minutus*, horned grebe, *Podiceps auritus*, Fea's petrel, *Pterodroma feae*), three are listed as vulnerable (common loon, *Gavia immer*, Leach's storm-petrel *Hydrobates leucorhous*, Steller's eider *Polysticta stelleri*), two are endangered (white-faced storm petrel, *Pelagodroma marina*, Zino's petrel *Pterodroma madeira*) and one is critically endangered (Balearic shearwater). Of the six red-listed species none has an assessment of either population size or of incidental catch mortality.

2.3. Sensitive habitats

2.3.1. State of knowledge

Different fishing activities are appropriate to catching different species of commercial fish and can be appropriate to different social and economic situations. For example, bottom trawling, demersal seining and dredging is an appropriate method for the capture of demersal fish and benthic species such as *Nephrops* and scallops but also may cause disturbance of the seabed, sediment and benthic species. It can be very destructive to certain hard habitats such as shellfish and coral beds, and to most sediment habitats. In contrast, pelagic and demersal gill and trammel netting has much less seabed disturbance effect, but may cause significant incidental catches of large sharks, porpoises, dolphins, seabirds and marine turtles. Fisheries targeting pelagic species such

as mackerel, herring and sardine have much lower impacts on seabed but may also cause incidental catches of seals, porpoises and dolphins and even whales.

For this reason, consideration must be given when designing measures to protect seabed habitats from towed demersal gear that diverting fishing to alternative fishing methods or areas can have different but important environmental effects.

The Regulation includes measures to protect sensitive habitats in its Article 12 and Annex II. Most of these were adopted over a decade ago and originate from decisions taken in OSPAR or on a national basis and implemented into EU fisheries law thereafter. The main focus is on the protection of complex deep-water seabed communities such as deep-water corals, sponges or the iconic Darwin Mounds. A review and updating of the measures in a regionalised context is now appropriate in the light of the most recent information.

The EU red-list (Gubbay *et al.,* 2016) covers the state of European marine habitats according to three principal categories. "Data deficient" habitats are those where insufficient information was available to make an assessment. "Green" categories are habitats of least concern or near threatened. The "Threatened" category is subdivided into three: "Critically endangered", "Endangered" and "Vulnerable". The assessment of which category a habitat is placed depends on the overall trend (declining or stable), the current geographic distribution (restricted in occurrence or occupancy, or present in few locations), any reduction in biotic or abiotic quality, and an analysis of the probability of collapse. Extinctions or collapses of habitats are also recorded. European marine habitats were examined against these criteria within 10km x 10km hydrographic grid squares. Results are summarised in Table 2.4.2.1.

Overall, 247 habitats were assessed in the EU-28 area, of which 19% were classed in the three "threatened" categories. The highest proportion of threatened habitats was in the Mediterranean Sea (32%) followed by the Northeast Atlantic (23%), the Black Sea (13%) and the Baltic Sea (8%). An EU-27 analysis is not yet available.

Knowledge about habitat status is far from complete. Knowledge was insufficient to assess the state of 49% of habitats overall (5% in Baltic Sea, 60% in Northeast Atlantic, 49% in the Mediterranean Sea and 83% in the Black Sea). Knowledge is therefore good in the Baltic Sea and very poor in the Black Sea, but also poor in the Mediterranean and North east Atlantic. Outside the Baltic Sea, improved knowledge about the state of habitats is clearly necessary in order to achieve nature protection objectives.

Table 2.4.2.1. Overall EU red list categories for marine habitats in EU28. CR, critically endangered. EN, endangered. VU, vulnerable. NT, near threatened. LC, least concern. DD, data deficient. Source: Gubbay et al. 2016.

EU 28	Baltic Sea	North-East Atlantic	Mediterranean Sea	Black Sea	TOTAL	
CR	0	1	0	1	2	
EN	2	10	5	5	22	
VU	3	9	10	1	23	
NT	16	8	5	1	30	
LC	37	6	4	1	48	
DD	3	52	23	44	122	
Total	61	86	47	53	247	
Threatened %	8	23	32	13	19	%
Threat % (excl.DD)	9	59	63	78	38	%

2.3.2. Baltic Sea

Of 61 habitats assessed, 8% were classed as threatened by Gubbay et al. (2016). These were habitats characterised by coarse or muddy sediments with a restricted geographical distribution in the western Baltic Sea. The Baltic marine habitats are especially threatened by eutrophication due to nutrient enrichment, followed by sediment removal and disturbance of the seabed by demersal trawl fisheries. The following habitats were classed as endangered:

- Infaunal communities on infralittoral shell gravel
- Sparse epibenthic communities of Baltic upper circalittoral muddy sediment

And the vulnerable habitats were:

- Infaunal communities in Baltic upper circalittoral coarse sediment and shell gravel dominated by bivalves
- Infaunal communities of Baltic upper circalittoral muddy sediment dominated by bivalves
- Communities of Baltic lower circalittoral soft sediments (mud and sand)

Fishing ranked as the fourth most important pressure on these habitats after pollution, natural system modifications and climate change. Three habitats were classed as data deficient:

- Sparse or no macrocommunities on Baltic infralittoral shell gravel;
- Epibenthic macrocommunity on Baltic infralittoral sand;
- Infaunal communities in Baltic upper circalittoral mixed sediment

2.3.3. North Sea, north western waters and south-western waters

The extent, magnitude, and impact of mobile bottom-contacting fishing gear on the seabed and benthic habitats varies geographically across the North Sea. Using vessel monitoring system (VMS) and logbook data ICES estimates that mobile bottom trawls

used by commercial fisheries in the 12 m+ vessel category have been deployed over approximately 490 185 km2 of the ecoregion in 2018, corresponding to ca. 73.1 % of the ecoregion's spatial extent (Figure 7 of the ICES Ecosystem Overview for Greater North Sea issued in 2020).

The extent, magnitude, and impact of mobile bottom-contacting fishing gear on the seabed and benthic habitats varies geographically across the Celtic Seas. Fishing is concentrated along the shelf edge, i.e. around the southern shelf regions and on fishing grounds in the Irish Sea and to the west of Scotland but is widespread across the entire region where bottom fishing is permitted (i.e. less than 800m depth).

According to the Oslo Paris Convention for Protection of the Marine Environment of the North-East Atlantic (OSPAR), 5.9 % of the Bay of Biscay and Iberian Coast are covered by MPAs, a percentage that is close to the European average.

In the EU red-list, Gubbay et al. (2016) identified seagrass beds on Atlantic infralittoral sand as critically endangered habitats. In addition the following habitats were classed as endangered:

- Polychaete/bivalve-dominated mid-estuarine Atlantic littoral mud
- Polychaete/oligochaete-dominated upper estuarine Atlantic littoral mud
- Marine Atlantic littoral mud with associated communities
- Mussel beds in the Atlantic littoral zone
- Atlantic upper circalittoral fine sand
- Atlantic upper circalittoral muddy sand
- Atlantic lower circalittoral sand
- Atlantic upper circalittoral fine sandy mud
- Atlantic upper circalittoral fine mud
- Atlantic lower circalittoral mud

The following habitats were classed as vulnerable:

- Faunal communities in marine Atlantic infralittoral coarse sediment
- Atlantic upper circalittoral coarse sediment
- Atlantic lower circalittoral coarse sediment
- Atlantic upper circalittoral mixed sediment
- Atlantic lower circalittoral mixed sediment
- Atlantic maerl beds

- Seagrass beds on Atlantic infralittoral sand (Macaronesian)

The threats to these habitats arise from various pressures. Fishing is an important pressure in the circalittoral and infralittoral zones, but less so in the littoral and estuarine zones. Pollution is an important pressure on the littoral and infralittoral habitats. In general, the pressures resulting in threats to marine habitats are very site-specific and habitat-specific.

2.3.4. Mediterranean and Black Seas

The assessment of marine habitats in the Mediterranean Sea was possible only for 51% of habitats, the remainder being data deficient. Fifteen out of 23 assessed habitats in EU waters were endangered (5) or vulnerable (10). No habitats were critically endangered.

The endangered habitats are:

- Communities of Mediterranean mediolittoral estuarine mud
- Photophilic communities with canopy-forming algae in Mediterranean infralittoral and upper circalittoral rock
- Algal dominated communities in the Mediterranean infralittoral sediment
- Mediterranean infralittoral mussel beds
- Mediterranean infralittoral oyster beds

And the vulnerable habitats:

- Communities of Mediterranean mediolittoral sands
- Communities of Mediterranean mediolittoral mud
- Biogenic habitats of Mediterranean mediolittoral rock
- Photophilic communities dominated by calcareous, habitat-forming algae
- Communities of Mediterranean infralittoral estuarine rock
- Communities of Mediterranean soft circalittoral rock
- Communities of Mediterranean lower circalittoral sand
- Communities of Mediterranean infralittoral estuarine mud
- Communities of Mediterranean infralittoral muddy detritic bottoms
- Posidonia beds in the Mediterranean infralittoral zone

The principal pressures on these habitats are pollution, fishing, aquaculture, coastal urbanisation, climate change and invasive non-indigenous species. Eutrophication is a problem in heavily populated coastal regions and particularly in the northern Adriatic. The infralittoral and circalittoral communities are partıcularly vulnerable to

impacts from fishing; 25% of habitat types were reported to be under threat from demersal trawling.

Knowledge of Black Sea habitats is very poor. 83% of habitat types were classed as data deficient and could not be assessed. Of the 17% that could be assessed, one habitat was critically endangered: the Pontic circalittoral biogenic detritic bottoms with dead or alive mussel beds, shell deposits, with encrusting corallines (*Phymatolithon*, *Lithothamnion*) and attached foliose sciaphilic macroalgae.

Five habitat types are endangered in the Black Sea:

- Turf algae on Pontic moderately exposed lower mediolittoral rock
- Pontic mediolittoral caves and overhangs
- Fucales and other algae on Pontic sheltered upper infralittoral rock, well illuminated
- Seagrass meadows in Pontic lower infralittoral sands
- Mussel beds on Pontic circalittoral terrigenous muds

And one was classed as vulnerable:

- Invertebrate-dominated Pontic circalittoral rock

In the Black Sea, pollution was classed as affecting the most habitats, followed by urbanisation (in the littoral and infralittoral zones) and fishing (in the infralittoral and circalittoral zones).

2.3.5. Macaronesia

The Azores, Canaries and Madeira island groups are volcanic islands surrounded by narrow bands of upper bathyal sediment of upper bathyal rock and biogenic reefs, with occasional small patches of sand. Gubbay et al. (2016) classed Macaronesian communities of eulittoral rock moderately exposed to wave action and Macaronesian communities of lower eulittoral rock sheltered from wave action as vulnerable.

The key habitats in these areas are deep-sea habitats (lower bathyal sediment, rock and biogenic reefs) constituting the steep volcanic slopes, and large expanses of abyssal mud. Cold corals form important habitats. Seabed impacts from trawling are limited or absent because the extremely rocky and irregular volcanic seabeds make trawling impactical. Below 800m trawling is prohibited. Impacts on marine demersal habitats are therefore likely to be limited.

Maerl beds and meadows of *Avrainvillea canariensis* are atypical habitats of particular interest in the Canaries and Madeira group. Molluscs (*Patella spp*. and *Megabalanus azoricus*) have been heavily exploited commercially in the Azores ecoregion, and are now on the OSPAR list of threatened and declining species[46].

[46] https://www.ospar.org/work-areas/bdc/species-habitats/list-of-threatened-declining-species-habitats

In the Azores ecoregion, abrasion pressure is low because bottom trawling is banned, as is also the case around Madeira and the Canary Islands.

The Azores ecoregion is known as a hotspot for cold-water corals. Mostly medium-sized, three-dimensional, and branched colonies of coral often occur as bycatch in bottom longlining fisheries, with *Leiopathes* spp., *Errina dabneyi*, and *Dendrophyllia* sp. most frequently encountered. Given the high incidence of coral bycatch in bottom longline fisheries around the Azores and the decrease in corals bycatch in traditional fishing grounds, conservation measures may be required[47].

A decline in habitat-forming macroalgae has been observed in the north-western Iberian Peninsula. ICES Fisheries Overview for Bay of Biscay and the Iberian Coast ecoregion informs that protected areas have been designated for habitats and species listed by EU Nature Directives. Fishery regulations are in place to restrict certain fisheries that may affect vulnerable habitats.

3. IMPLEMENTATION OF THE REGULATION AND CONSULTATION OF MEMBER STATES, ADVISORY COUNCILS AND STAKEHOLDERS

The European Commission consulted Member States, Advisory Councils and stakeholders by means of a specific questionnaire ('the questionnaire'). Further details on the consultation process are explained in Appendix II (Synopsis).

3.1. The objectives and the targets

Regarding the general assessment of the **achievement of the objectives and targets** of the Regulation, the scientists as well as most contributions from Member States and Advisory Councils underlined the fact that the recent entry of the Regulation into force does not allow to come to a measurement of its impact in the light of these objectives and targets.

Member States also pointed out to difficulties in how to **incorporate the environmental objectives when drafting joint recommendations under the Regulation.**

Other Member States felt that the Regulation had not achieved its goal in **streamlining and simplifying legislation** in the area of technical measures, with provisions contained in multiannual plans, fishing opportunities legislation and the landing obligation also imposing certain technical measures.

Member States and Advisory Councils from the Mediterranean Sea basin also pointed out that given the particular situation of shared stocks and the close relation with non-EU countries, technical measures should be adopted at international level, thus avoiding duplicating efforts.

At the same time, most of the stakeholders who participated in the online consultation consider that the measures adopted under the Regulation have not contributed to the objectives and targets set out. Some pleaded for the adoption of a result-based approach

[47]https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2020/2020/FisheriesOverview_Azores_2020.pdf

from an environmental point of view rather than focusing on gears. It seems to be a common view that technical measures fail to prevent negative environmental impacts of fishing and that there is a need to align the technical measures adopted under the Regulation with the ambitions of the European Green Deal and the EU Biodiversity Strategy 2030. A small majority of stakeholders call for ban of bottom trawl and dredges. Similarly, several stakeholders in the online consultation consider that the Regulation fails to protect juveniles and does not contribute to decreasing incidental catches of sensitive species. Stakeholders also criticized the insufficient monitoring, control and enforcement of the measures.

Some Advisory Councils refer to the **importance of data collection**, which is necessary in order to evaluate the contribution of the Regulation in the future.

3.2. Implementation of common technical measures

Articles 7 to 9 of the Regulation set out general restrictions on the use of fishing gear. Articles 10 to 11 set out measures to protect sensitive species. These measures apply to all EU waters and EU fishermen.

Regarding the fishing activity carried out by the trawlers using electric pulse, the Commission's proposal, allowing this fishing technique subject to specific control requirements, was based on both the 2006 ICES and 2012 STECF advice[48] .

However, this proposal was not retained in the Regulation as adopted by the co-legislators and the Regulation now prohibits electric pulse fishing as from 1 July 2021.

The prohibition introduced by the Regulation has been contested by the Netherlands before the European Court of Justice, which dismissed the action on 15 April 2021[49].

Since the entry into force of the Regulation, ICES at the request of the Netherlands, issued a new advice in May 2020[50], specifically addressing the impacts on the ecosystem and environment in the sole (*Solea solea*) fishery.

In this advice, ICES underlines several positive effects as for the use of this technique, and some remaining uncertainties regarding the physiological impacts to marine organisms not caught in the fishery, however not expected to affect the potential of the populations under study, give the low probability of exposure to pulse stimuli.

However, currently the prohibition applies and the Regulation does not foresee a possibility for amendment through regionalisation on the proposal of Member States.

Some stakeholders that replied to the online consultation were opposed to the general prohibition of the use of electric pulse trawling, and in particular to the fact that it was not possible to allow wider use of this fishing method through regionalisation. They referred to the ICES advice of May 2020, in answer to a request from the Netherlands, which stated that the change from conventional beam trawling to pulse trawling when

[48] https://stecf.jrc.ec.europa.eu/documents/43805/319250/PLEN+12-01.pdf. Page 74.

[49] Judgment of 15 April 2021, *The Netherlands v Council and Parliament*, C-733/19, ECLI:EU:C:2021:272

[50] ICES, 2020. https://www.ices.dk/news-and-events/news-archive/news/Pages/PulseTrawlAdvice.aspx

exploiting the total allowable catch of North Sea sole contributes to reducing the ecosystem/environmental impacts of the sole fishery. Another contributor supported the maintenance of the restrictions on electric fishing.

Article 8 of the Regulation sets out the general restrictions for towed gears. In particular, Article 8(5) provides that the Commission may adopt, by means of implementing regulation, detailed rules for some technical specifications that have direct impact in the size-selectivity for example those affecting cod-end specifications (twine thickness, cod-end circumference) and escape panels design. These measures are intended to be incorporated into the future implementing regulation, which is under discussion with Member States.

Regarding Article 10 (Prohibited fish and shellfish), no major problems have been reported by Member States. All Member States consider the Annex I list as adequate, although other species listed in CITES which could be included in this Annex if scientific advice demonstrates a conservation benefit.

Several Member States called for better alignment of the Regulation with the CFP Regulation and with the Birds and Habitats Directives as well as the MSFD, in particular the alignment of the list of protected species in Annex I with the annual "Fishing Opportunities" Regulations. Some Member States suggested the development of criteria by EU scientific bodies to justify the choice of species to be protected. Some regional groups have suggested the addition of more species to the list.

Some Advisory Councils who participated in the consultation suggested to split the list into two, with a fixed part in the Regulation and a variable part fixed each year in the annual Fishing Opportunities Regulations in order to provide flexibility. As for some Member States, some of the Advisory Councils also considered that there should be defined scientific criteria for inclusion in the Prohibited Species list.

MEDAC members suggested including 18 additional species (sharks and rays) to ensure compatibility with recommendations of GFCM, ICCAT and the Barcelona Convention. Furthermore, they also suggested to add some other species on the basis of updated stock assessments.

In reply to the online consultation, half of respondents thought that the list of species in Annex I is not complete. Many stakeholders suggested adding the critically endangered European eel (*Anguilla anguilla*) to the list. It was also suggested to include 18 additional species (sharks and rays) in the Mediterranean Sea in order to align with Recommendations 36/2012/3, 42/2018/242/2018/2 and Article 11 (2) of the Protocol to the Barcelona Convention, because of their conservation status as listed on the EU Red List as endangered or critically endangered and for alignment with ICCAT regulations.

Article 11: In relation to catches of marine mammals, seabirds and marine reptiles, Member States did not report any overall difficulty in the implementation of its provisions.

A majority of stakeholders in the consultation consider that the measures which are in place to ensure that species in Article 11 of the Regulation are not harmed and are promptly released when they are caught are not adequate. Most of these see as a problem that the measures applied through this article are decided per Member States for their own vessels. However, some measures should apply regionally/ union wide.

Most of these stakeholders also agree that providing fishers with training in safe handling practices and useful general principles can significantly improve post-capture survival of the species.

3.3. Protection for sensitive habitats (Article 12)

Where several Member States have interests in fishing in an area, they should coordinate using regionalisation in order to design common measures to protect certain species and habitats (Article 21 and Annex XIII to the Regulation).

Regarding Article 12 and Annex II to the Regulation, which concern the protection of sensitive habitats, no Member State has reported any problem or infringement. Two Member States informed that following the conditions of Regulation (EC) No 1224/2009 ('Control regulation'[51]), some vessels have been allowed to operate in these areas and have been constantly monitored. Member States also provided information on protected areas set in their national legislation.

Member States were asked whether they intend to take additional habitat conservation measures in the coming three years. A majority of Member States intended to increase the extent of the protected areas. Some of them commented that they are starting to work regionally to propose protection areas beyond national jurisdiction.

The views of Advisory Councils differ regarding additional technical nature conservation measures for the protection of sensitive habitats. A majority of Advisory Councils either do not see the need for these additional technical nature conservation measures or do not consider it relevant. On the other hand, some Advisory Councils see the need to link technical measures with efforts to protect and restore habitats and species. Weak salmon stocks need further protection and technical measures in line with ICES recommendations, such as moving the fishery closer to rivers of origin, and more protection of sensitive coastal habitats by prohibiting bottom trawling in these areas was suggested.

Regarding the Annex II to the Regulation, most of stakeholders in the online consultation think that measures in this Annex are not adequate. Stakeholders suggest much broader application of spatial gear restrictions. More specifically, a majority call for a general prohibition of the most destructive fishing gear including bottom trawling and dredging, in all European MPAs; and the creation of an EU-wide ban of bottom-trawling in coastal areas.

3.4. Additional measures to protect sensitive species.

Regarding the measures to ensure that incidental catches of marine mammals, marine reptiles, seabirds and other non-commercially exploited species do not exceed levels provided for in EU legislation and international agreements that are binding on the EU, a clear majority of Member States commented that they follow current measures of the

[51] Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006 (OJ L 343, 22.12.2009, p. 1–50).

legislation. Those Member States operating in sea basins where the most of impact on certain species of cetaceans occur have offered more detailed information on their national programmes and measures.

A majority of ACs reported that they are aware of mitigation measures or restrictions on certain gears that Member States have put in place to minimise or where possible eliminate the catches of mammals, seabirds and marine turtles, for example the use of ADDs in the Bay of Biscay by French trawlers since 2019. A majority of ACs suggest to provide fishermen with a training on how to manage and release captured individuals to increase their chances of post-release survival. Others see the possibility to improve this issue by better use of electronic devices, such as ADD or pingers. A majority of ACs (6 out of 8) considered that additional technical nature conservation measures for the protection of sensitive species are needed. Better monitoring and control in marine protected areas is needed. More control over the placement of fixed nets in the Black Sea is needed to reduce the incidence of marine mammal capture. The use of FAD (Fish Aggregating Devices) needs to be reduced and controlled, as these put at risk juveniles of several sensitive species and of species of high commercial value. Careful consideration may be given to spatial and temporal closures for dolphin populations on scientific evidence.

Member States were invited to comment on measures to protect sensitive species as set out in Annex XIII to the Regulation, and inform whether, following point 3 of Annex XIII, any corresponding joint recommendations setting out additional mitigation measures were under preparation.

Concerning monitoring of sensitive species incidental catches and their reduction most Member States referred to the current provisions of the data collection framework. Most of them described additional measures such as trials with REM to improve control and good practice guides for fishers.

Annex XIII of the Regulation requires in points 2 and 3, to collect scientific data on incidental catches and to submit joint recommendations for additional mitigation measures for the reduction of incidental catches when as a result of scientific evidence validated, amongst others, by GFCM so indicates. However, when asked on the implementation of Annex XIII, some Member States considered that this Annex does not apply in the Mediterranean Sea.

ACs considered that additional regional mitigation measures for the reduction of incidental catches of sensitive species are currently not required. They emphasized that existing measures need to be fully monitored and evaluated before additional measures are adopted. There is however, a proposal for mitigation measures for harbour porpoise in the Baltic Sea (BSAC) and on spatial/temporal closures for cetaceans in the north western waters and in Bay of Biscay (NWWAC, MEDAC).

As for increasing knowledge and improving monitoring, a majority of Member States referred to current DCF, although some also recognized that this might not be enough. As in previous questions, some Mediterranean Member States commented that Annex XIII does not apply in that sea.

There are mixed views among ACs as to whether the additional steps to collect scientific data on incidental catches of sensitive species as required in Annex XIII are needed. Some of them suggest replacing sampling effort on incidental catches for

example through self-reporting using the electronic reporting in logbooks, use of smart-phone apps or SMS.

Regarding the need for additional steps to sufficiently monitor and assess the effectiveness of mitigation measures as set out in Annex XIII, a majority of Advisory Councils did not respond this question or did not see any need for such steps.

Regarding the mitigation measures or restrictions on certain gear that Member States have put in place to minimise or where possible eliminate the catches of mammals, seabirds and marine turtles, most of stakeholders are aware of such measures.

Regarding the nature conservation technical measures for the protection of sensitive species, most of the stakeholders think the additional measures are needed. Stakeholders here refer to different kinds of practices that should be applied. In this regard, they also widely support the EU Biodiversity Strategy target to allocate 30% of the sea areas as MPAs and to strictly protect 10% of those areas.

A large majority of stakeholders in the online consultation share the opinion that the collection of scientific data on incidental catches of sensitive species as set out in Annex XIII should be improved. Many of these stakeholders could support two suggestions – all vessel sizes should be monitored, not just those over 15 m and that available techniques such as automatic identification system ('AIS') and REM including cameras (e.g. CCTV) have to be implemented to achieve high enough coverage of monitoring in all marine areas of the EU.

3.5. Regionalisation (Article 15)

The main objective of regionalising the technical measures Regulation is to bring decision-making process closer to fishers and coastal communities in the respective sea basins. Instead of detailed and overly prescriptive top-down rules, Article 15 of the Regulation allows Member States together with stakeholders can, by means of joint recommendations, develop and identify the rules and provisions that are necessary and adequate to the local or regional situation. These rules and provisions can amend, supplement, repeal or derogate from the technical measures set out in the Annexes containing regional technical measures listed in Article 15(1) of the Regulation.

This change in governance means in particular that, through the possibility to propose joint recommendations, Member States and stakeholders also have a responsibility to contribute to achieving the objectives and targets set out in Articles 3 and 4 of the Regulation (Article 15(4)(a)). This is also a means for Member States to fulfil their obligations in respect of the Habitats, Birds and Marine Strategy Framework Directives.

Member States have already made use of this possibility to address some issues and to better align measures to regional conditions (for example, measures concerning gillnets in north-western waters, the plaice box[52] and the Baltic fishery for turbot and flounder).

To the date of publication of this document, there have been 21 joint recommendations agreed and submitted to the Commission (see list in Annex III). Article 15(7) provides

[52] Part C, point 4 of Annex V.

for the possibility of the Commission to ask the STECF to assess the joint recommendations submitted by Member States, which has been relevant for most cases.

Measures in joint recommendations must contribute to the achievement of targets and objectives of the Regulation, but in any case must not hinder the achievement of those objectives, either in size-selectivity or in the protection of sensitive species and habitats. In particular, the measures proposed in these joint recommendations '*should, as a minimum lead to such benefits for the conservation of marine biological resources that are at least equivalent to the ones provided by the baseline standards, in particular in terms of exploitation patterns and the level of protection provided for sensitive species and habitats*'[53] with respect to the conditions existing on 14 August 2019 (date of entry into force of the Regulation) is permitted.

Some Member States and Advisory Councils expressed concerns as to how to quantify or demonstrate how a Joint Recommendation would contribute to environmental objectives, such as achieving GES or reducing impacts on the environment or on sensitive species.

The online stakeholders considered that the regionalisation process was not working adequately. Member States often did not propose measures that were sufficiently effective and often failed to reach agreement on appropriate and adequate measures.

3.6. Regional technical measures concerning selectivity (Articles 16-27).

3.6.1. Species and size selectivity of fishing gear (Article 16)

The Regulation sets the baseline mesh size for each of the regions.

The purpose of regulating mesh size is to reduce the proportion of smaller fish in the catches in order to increase long-term yields, decrease incentives to discard fish, and improve the short-term value of the catch. Use of appropriate mesh sizes in each fishery is linked to the body sizes of the fish being caught which can span a wide spectrum in mixed fisheries.

The **elimination of discards by avoiding and reducing, as far as possible, unwanted catches** remain challenging.

Since the introduction of the landing obligation, some positive impacts on selectivity have been occurring. Some fishers have taken up more size-selective fishing gears, for instance the 'Flemish panel', which reduces unwanted catches of sole smaller than the MCRS by the beam trawl fleet.

Several contributions received within the online stakeholder consultation emphasized that as for the implementation of measures related to size selectivity and mesh size specification, if specifically related to avoid and reduce, as far as possible, unwanted catches and eliminate discards further measures are required to properly enforce the landing obligation and eliminate the practice of discarding. In particular, as they note that most vessels are not properly controlled, neither at sea nor at ports to properly monitor all catches. It was also pointed out that sorting grids or other similar physical

[53] Recital 25 of the Regulation.

sorting devices should be applied EU-wide to pelagic trawling where there are issues regarding by-catches, mixed catches and landing reporting, especially for salmon, cod, and flatfish. These devices can reduce fish by-catch and are, for example, already mandatory in Norway. Several online stakeholders considered that effective enforcement of the landing obligation was a prerequisite to creating an incentive for fishers to develop more selective fishing gear which would take less unwanted catch. They noted that catches on most vessels are not properly controlled, neither at sea nor in port.

Included in the replies to the consultation, it was stated that sorting grids should be applied EU-wide to pelagic trawling where there are issues regarding by-catches, mixed catches and landing reporting, especially for salmon, cod, and flatfish. These devices can reduce fish by-catch and are, for example, already mandatory in Norway.

3.6.2. Closed or restricted areas (Article 17)

Article 17 provides the possibility for Member States, though regionalisation, to introduce additional closed areas, provided that there is a potential benefit.

Several respondents to the online consultation pointed out that the Regulation and the regionalised approach it contains have not resulted in sufficiently improved protection of juveniles and spawning aggregations through area closures or other restrictions.

3.6.3. Minimum Conservation Reference Sizes (Article 18)

One of the key provisions regarding regional technical measures concerns the setting of MCRS to ensure that juveniles are not targeted. Where amendments to MCRS are proposed through joint recommendations, these need to be supported with a scientific justification that confirms that the adjustment conforms to the objective (Articles 13 and 18). The scientific justification should provide data on the length at first maturity.

Most respondents indicate that the current MCRS set by the Regulation are appropriate. The views of Member States as to whether the MCRS for commercial and recreational fisheries should be aligned are mixed. Some Member States consider that the alignment is needed. Others reported that they are applying the same MCRS for commercial and recreational fisheries through national legislation. Recreational fisheries can have a significant impact on fish resources and Member States are required to ensure that they are conducted in a manner that is compatible with the objectives of the CFP (Article 55 of the Control Regulation). Various measures relating to recreational fisheries are already foreseen in several EU legislative acts and continue to apply together with the measures specifically foreseen in the new Technical Measures Regulation. In cases where recreational fishing has a significant impact in a particular region, the Commission has the power to adopt delegated acts to provide that the relevant provisions of Article 13 (Minimum conservation reference sizes) or parts A (Minimum conservation reference sizes) or C (Closed or restricted areas) of Annexes V to X also apply to recreational fishing.

There is no clear opinion on this issue among the Advisory Councils. While some Advisory Councils think the MCRS should be aligned, others imply that there is no need for alignment and for the rest of the Advisory Councils this is currently not subject of discussions.

Stakeholders replying to the online consultation criticize the concept of MCRS. They point out that the MCRS are not functional or useful as management tools. First, MCRS should be adapted to size at maturity. According to these respondents, there are several examples where this is not happening (European sardine, European anchovy, horse mackerel, red mullet, hake, swordfish, Norway lobster and gilt-head sea bream). For some species (e.g. salmon), the MCRS is considered counterproductive, as it may be more important to protect large females to improve spawning and recruitment. For such species it was recommended to create a "catch window", which would allow not only landing of fish above a certain minimum size but also below a maximum size.

3.6.4. Real-time closure and moving-on provisions (Article 19)

Article 19 allows the temporary closing of fishery if a trigger catch level has been reached. This measure is aimed at protecting the spawning aggregations and sensitive species.

When addressing this, it is necessary to consider that effects are very difficult to predict. Therefore, it is important that STECF would also assess the potential negative consequences associated with effort displacement caused by closures.

Some more specific comments are added under the regional chapters.

3.6.5. Conditions for derogations to permitted minimum mesh sizes (Article 27)

The Regulation provides for the use of smaller mesh sizes to be used than the "baseline" mesh size for each area if fishing is directed at smaller-bodied fish, but Member States considered this to be complex to implement because it is difficult to define "directed fishing". Article 6(3) of the Regulation defines directed fishing as fishing effort targeted at a specific species or group of species and which may be further specified at regional level in delegated acts adopted pursuant to Article 27(7) of the Regulation. Article 27(7) provides for further definition of 'directed fishing' to be fixed in a Commission delegated act following a joint recommendation from the relevant Member States. Additional conditions could apply to the use of certain mesh sizes, notably those smaller than the baseline mesh sizes for each area.

Some Member States considered that further work is needed first to identify which fisheries needs to be defined, to ensure that the conditions associated with each mesh size can be monitored and controlled.

STECF has examined this issue and concluded that it is necessary to define *'directed fishing' for each exception from the baseline mesh sizes in each region to ensure that the conditions associated with each mesh size in use can be monitored and controlled. Without such a definition, permissible exception*[54] *from the base line mesh sizes cannot be defined.*[55]

[55] STECF PLEN 20-02.

STECF identified three elements to be considered:

i) the selectivity of the gears proposed for the directed fishery compared to the baseline gear in the Regulation, both for the targeted species and for the species to be avoided;

ii) the conditions for granting the derogation to use the proposed gear(s), and the proportion of the fleet that will be entitled to use them depending on catch threshold, and

iii) whether the combination of i) and ii) will help to achieve the MSY objectives, minimize unwanted catches and avoid discarding, and reduce the fishing impact on the seafloor habitats and the ecosystem.

STECF also noted that Member States should establish a definition of directed fisheries that is measurable and controllable. This presents a number of practical difficulties on controlling either the intention to capture a particular species, or the result of a particular fishing operation.

Member States should substantiate these elements when drafting the definitions.

While none of the regional groups managed to meet the deadline as set in Article 27(7) of the Regulation, to date four joint recommendations have been submitted:

- the South-Western Waters Regional Group submitted a joint recommendation in which similar catch composition percentages to those included in the previous "Technical Measures" Regulation No 850/98 were presented
- ADRIAMED, SUDESMED and PESCAMED each submitted a joint recommendation in August 2020 on definition of directed fishing for sardines and anchovies using trawl nets and a definition of directed fishing for red seabream (*Pagellus bogaraveo*).

Based upon the joint recommendations already submitted, STECF advised on the need for data supporting any proposed catch threshold, as well as information on monitoring and control measures, and information on how these thresholds would apply in the context of the landing obligation. The data needed by STECF are datasets of individual logbook and sea-sampling trip data to allow assessment of the robustness and the impact of the catch composition threshold. Information on the likely numbers of vessels that avail of these exemptions would also be required.

Half of the Member States who replied to the consultation on this issue reported that they are currently not involved in the preparation of a joint recommendation on 'directed fishing'. However, at the same time they stress that it is a matter of critical importance.

Even those Member States who reported that they are working on the joint recommendations, were not able, at this stage to indicate when these joint recommendations will be ready due to complexity of the task.

4. IMPLEMENTATION OF AND CONSULTATION ON REGIONAL TECHNICAL MEASURES

This chapter presents the general implementation for each of the sea basins. In each subchapter, it will be briefly explained the situation of most important technical

measures and a summary of the status of the most important stocks, **followed by the comments and contributions received as a result of the ad hoc consultation.**

4.1. Baltic Sea

Eight Member States have fleet segments in the basin: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden. The most important species (in volume and in terms of value) are herring, sprat, cod and flounder.

The stocks of herring in the Gulf of Riga, plaice in subdivisions 24-32 and sole are in good state (i.e. fished below F_{msy} and having a healthy biomass above MSY $B_{trigger}$). Eastern and western cod, central and western herring are exploited above the F_{msy} and have a low biomass, while sprat and plaice in subdivisions 21 to 23 have a healthy biomass but are exploited above F_{msy}. Finally, flounder and dab seem to be exploited at sustainable levels, but the status of their biomass is unknown. The status of brill and turbot are unknown.

The STECF size-selectivity indicator shows a selectivity improvement for western Baltic cod, eastern Baltic cod, and plaice but no trend has been observed for plaice in the Kattegat, Belts and the Sound.

Numerous changes in technical measures were implemented between 2010 and 2019, but some of these appeared to be conflicting and the extent of enforcement is uncertain. It was not possible for STECF to identify causal relationships between changes in technical measures and changes in the selectivity indicator.

Since the entry into force of the Regulation, Member States in Baltfish have submitted the joint recommendation with measures to protect Baltic harbour porpoise, which has been assessed by STECF Spring plenary 2021.

The technical correction of Delegated Regulation (EU) 2018/47[56] allowing the use of alternative 115mm mesh size for demersal trawlers, received in February 2019. This joint recommendation was rejected in April 2020 as STECF recalled its previous assessment that the gear changes would be expected to decrease selectivity, and hence further testing would be required to demonstrate concretely that the study results are valid. This should also be seen in the context of the severely deteriorated condition of the eastern Baltic cod stock and the struggling western Baltic cod stock.

4.1.1. Minimum conservation reference sizes (Articles 13 and 18)

In 2015, the MCRS changed for both Baltic cod stocks from 38 cm to 35 cm. Together with the introduction of the landing obligation for cod from 1 January 2015, this change should have reduced the amount of cod catches below the MCRS, though the effect on overall catches of small cod has not been reported. There has been no change in the MCRS for plaice.

[56] Commission Delegated Regulation (EU) 2018/47 of 30 October 2017 authorising the use of alternative T90 trawls in Baltic Sea fisheries, by way of derogation from Council Regulation (EC) No 2187/2005 C/2017/7101 *OJ L 7, 12.1.2018, p. 21–22*

Member States considered that current MCRS set for the Baltic are fit for purpose. This opinion is not fully shared by the industry, which does not seem to appreciate any benefit of having these MCRS, although they did not express strong opposition. Some Member States and some fisheries representatives in the Baltic Sea Advisory Council (BSAC) called for harmonization of the MCRS for sea trout (*Salmo trutta*) and salmon (*Salmo salar*). This issue of harmonization was also raised by other stakeholders in the online consultation.

Several respondents in the online consultation also pleaded for an increase of the MCRS for the most exploited species in the Baltic Sea (cod, plaice and flounder), as the current sizes were considered too low from an environmental point of view.

4.1.2. Selective gears to reduce unwanted catches

During the period 2010 to 2019, the most important gear related changes in technical measures with little influence on the size selectivity of cod were implemented (introduction of Swedish T90 codend or BACOMA gear).

In general, Member States indicated that they would work on additional selectivity measures if there was a proper scientific justification and recommendations to implement such measures.

As reported by Member States, the joint recommendation on a new type of gear (Nemos + ROOFLESS) is being developed under BALTFISH to tackle the current serious situation of both Baltic cod stocks and to reduce unwanted catches of cod while preserving the possibility to catch flatfish. The use of this selective device could contribute to the sustainable exploitation of Baltic fish stocks while protecting eastern cod stocks.

In the BSAC, a majority of members considers that there is no need for additional measures in relation to species and size selectivity of fishing gear and mesh size specifications. Rather they believe that fewer measures should be in place, thus allowing fishers to adapt to current conditions such as natural variations, climatic as well as distributional changes, and management decisions on TACs and by-catch rules. The fisheries representatives within the BSAC recall the need to delete or merge specific mesh sizes in pelagic fisheries in view of poor selectivity and high mortality of pelagic fish after being released from the gear.

Both Member States and BSAC have considered the possible use of Article 4(1)a of Regulation (EU) 2018/47[57], which stipulates the use of mesh size of the codend of at least 115 mm in T90 trawls, as a derogation from the current baseline. They considered that, due to errors in the text, the gear as it is described cannot be used.

On the other hand, a large number of stakeholders who participated in the online consultation (mainly NGOs) thought that there is a need for additional measures in relation to species and size selectivity of fishing gear. They propose to consider the

[57] Commission Delegated Regulation (EU) 2018/47 of 30 October 2017 authorising the use of alternative T90 trawls in Baltic Sea fisheries, by way of derogation from Council Regulation (EC) No 2187/2005. C/2017/7101, *OJ L 7, 12.1.2018, p. 21–22*

introduction of sorting grids or similar physical devices in pelagic fleets to avoid by-catches of eastern cod and salmon.

4.1.3. Closed areas and seasons to protect juveniles and spawning aggregations (Article 17)

Spawning closures for Baltic cod stocks (potentially relevant also for plaice) were already implemented since the late 1990s, but with varying spatial and temporal extent.

Most of the Member States considered that there is no need for additional closed or restricted areas. Member States rather pointed out that updates of existing closed areas and establishment of new areas need to be based on scientific advice. That opinion was shared by the BSAC. Most of its members think that these closed areas should be flexible and adapt to the dynamic changes of the environment.

Some respondents to the online consultation expressed the opinion that the closed or restricted areas to protect juveniles and spawning aggregations in the Baltic Sea are inadequate to protect Baltic cod.

4.1.4. Real time closures and moving on provisions

To date, no regional real time closures or moving-on provisions have been set for the Baltic Sea.

The majority of the Member States as well as the BSAC do not consider that there is any immediate need to establish such measures

However, some contributions by Member States indicated that closing areas with a high number of spawning cod for a limited period of time would be useful to achieve sustainable cod fisheries in the Baltic Sea and to protect spawning aggregations. The provisions concerning site closures in the Skagerrak could serve as a reference. In this respect, some Member States have informed of national measures.

On the other hand, a number of stakeholders in the online consultation (mainly NGOs) refer specifically to situation in the Baltic Sea, where the real time closures could be useful for sensitive species and in a coastal salmon fishery, where there is a set salmon migration target for a specific river. Fishing outside the river mouth should not be allowed until the required number of returning spawners has been reached.

4.1.5. Sensitive species

The replies to the questionnaire indicate that a majority of Member States foresee taking additional measures to protect sensitive species. Some joint recommendations have been already submitted to the Commission and others are under development. Member States referred to the joint recommendation on the reduction of incidental catches of Baltic Harbour Porpoise that was developed at BALTFISH and submitted to the Commission on 22 December 2020. BALTFISH has the intention supplement this joint recommendation with a second joint recommendation covering additional mitigation measures (including where appropriate the use of ADDs) outside Natura 2000 sites. Work on a second joint recommendation will continue in the months to come.

According to BSAC there is still scope for improving the protection of sensitive species. As expressed by fisheries representatives in BSAC there is a need to link the technical

measures with efforts to protect and restore habitats and species. In case of regional mitigation measures, BSAC refers to joint recommendation on the mitigation measures for harbour porpoise, when their recommendation was sent to BALTFISH.

As regards to steps taken by Member States to monitor and reduce incidental catches of sensitive species, several Member States reported that monitoring is carried out by onboard observers and that fishermen provide information on incidental catches of marine mammals and seabirds in the logbooks.

As reported by Member States, the collection of data on incidental catches of sensitive species is mainly conducted within the EU Data Collection Framework. According to BSAC, this issue is not directly relevant to the implementation of the Regulation but said that fishermen are willing to collect data on incidental catches of sensitive species, provided such an obligation does not create an additional workload for them.

Similarly, a majority of Member States reported that monitoring and assessing the effectiveness of mitigation measures is carried out within Data Collection Framework by providing onboard observers and also based on information in logbooks. BSAC considers that monitoring and assessing the effectiveness of mitigation measures set out in Annex XIII is a control issue, outside the scope of technical measures.

4.1.6. Sensitive habitats

A majority of Member States in the Baltic Sea consider that Annex II – Closed areas for protection of sensitive species is adequate. BSAC is not involved in any proposal to amend Annex II. On the other hand, in general a majority of stakeholders who participated in the online consultation think that the measures in the Annex II are not adequate. Annex II does not currently include any measures concerning the Baltic Sea.

Regarding the technical nature conservation measures for the protection of sensitive habitats, some Member States in the area reported that in the next three years they foresee the identification and development of potential marine protected areas. As reported by Member States, such discussion is already taking place in BALTFISH. Also, HELCOM is involved in developing strategies and guidelines for such activities.

BSAC in this regard consider that there is still scope for improving the protection of sensitive habitats and there is a need to link technical measures with efforts to protect and restore habitats and species.

In general, a majority of stakeholders in the online consultation think that there is a need for additional technical nature conservation measures to protect sensitive habitats. More specifically, a number of stakeholders (mainly NGOs) pointed out that the evidence shows that, bottom contacting gears create a range of problems and that MPAs are failing to curb the impact of damaging fishing gears on protected habitats. Also, the protection of the EU coastal areas from destructive fishing is critical to protect sensitive habitats and essential fish habitats (e.g. spawning and nursery grounds) of many commercial species.

4.2. North Sea (including the Skagerrak, Kattegat, Belt Sea and eastern Channel)

The most important species for fleets operating in the sea basin in terms of value include Norway lobster, herring, mackerel, cod, haddock, common shrimp, common sole and plaice.

Most North Sea stocks are currently managed sustainably – herring, Norway lobster, sole, plaice, haddock and saithe. The sustainable management of the stocks is further facilitated by the North Sea multiannual management plan, which covers about 70% of North Sea stocks. This introduced additional biomass safeguards that are not provided for in the CFP Regulation.

ICES (2020)[58] assessed that the fishing mortality for North Sea cod in 2019 was just over twice F_{MSY} and SSB is below $B_{lim.}$

STECF reviewed selectivity changes in the fisheries for North Sea cod, haddock, saithe, whiting and plaice. Selectivity improved in North Sea cod and saithe (which is also distributed in north-western waters), and to a less clear extent for North Sea plaice in recent years. STECF could not conclude whether these selectivity improvements were linked to changes in technical measures regulations.

No selectivity trend could be detected for North Sea haddock and North Sea whiting, as they show a variable indicator track over the span of the time series. For haddock the indicator has risen over the last few years and ends up at a relatively high level compared to the mean of the time series. For this species it cannot be concluded that the objective to protect juveniles has be reached. For whiting, on the other hand, the indicator is close to an all-time low during the most recent years indicating protection of juveniles. No correlations between the indicator and technical measures could be established

As the majority of the stocks in this area are shared with third countries (United Kingdom and Norway), the contribution of the Regulation to the exploitation pattern is important but is shared with that of the measures established by those countries as well as those agreed between the EU and the United Kingdom, the EU and Norway and/or trilaterally.

Since the entry into force of the Regulation, Member States have submitted nine joint recommendations. One has been adopted as a delegated act, concerning several measures concerning the discard plan for the North Sea[59]. One concerned the amendment of Delegated Regulation 2019/2201 regarding real time closures, and the rest of them dealt with several measures that Member States wished to modify as regards the plaice and sprat boxes, and additional gear specifications. These have been assessed by STECF and are scheduled for adoption as delegated acts. Lastly, it has been

[58] https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2020/2020/cod.27.47d20.pdf

[59] COMMISSION DELEGATED REGULATION (EU) 2020/2013 of 21 August 2020 amending Regulation (EU) 2019/1241 of the European Parliament and of the Council as regards technical measures for certain demersal and pelagic fisheries in the North Sea and in the South Western Waters. C/2020/5641 OJ L 415, 10.12.2020, p. 3–9

assessed by STECF[60] during the expert group on evaluation of joint recommendations on the Landing Obligation and Technical Measures, a joint recommendation concerning technical measures for conservation of fishery resources of the North Sea (Skagerrak).

4.2.1. Minimum conservation reference sizes (Articles 13 and 18)

Many Members States found the current MCRS appropriate, but some of them had adopted national measures to increase in MCRS for some species. For example, Belgium increased the MCRS for sole from 24 cm to 25 cm and for turbot and brill from 30 cm to 32 cm. Sweden increased the MCRS for European lobster in division 3a (Skagerrak and Kattegat), in order to protect juveniles for the benefit of rebuilding and long-term management of the stock.

At regional level, the Scheveningen Group submitted a joint recommendation[61] to increase the MCRS for European lobster in ICES division 3a and on harmonising the MCRS for seabass caught in recreational fisheries, which was approved by STECF.

Stakeholders who participated in the online consultation did not raise any specific suggestions for the MCRS in the North Sea, besides the general remarks about the concept of the MCRS (already described in section 4.4).

4.2.2. Selective gears to reduce unwanted catches

STECF experts signalled several events having an impact on selectivity. In 2009, the cod effort management plan was introduced to incentivise the use of more selective fishing gears. In 2015, an increase in the minimum mesh size to 120 mm (with specific derogations for mixed demersal fisheries including Norway lobster, and for northern prawn fisheries) was introduced in the Skagerrak. Selective devices (e.g. Seltra and sorting grids) were made mandatory in these fisheries. In 2019, the new technical measures regulation introduced 120 mm as baseline.

Electric pulse trawl fishing started in 2009 and the use of pulse trawls in the main fishery operating in the North Sea made it possible to fish on softer grounds and the spatial distribution of the main fisheries had shifted to the southern part of Division 4.c.

As is the case for the other sea basins, an important element of debate was the definition of directed fishing for the species that will use smaller mesh sizes than the baseline. From the consultation, it seems to be a widely-held view that the definition of a fishery is necessary in order not to undermine current standards, and also to grant a harmonised implementation of this provisions by all Member States. The Scheveningen Group has been working on the matter in an attempt to identify the fisheries in which a shift of effort may occur and proposes to continue working on the topic. Member States will need to deploy more control and monitoring assets to assess whether this is happening.

As for new selective measures, the North Sea Advisory Council (NSAC) believes that current measures are adequate.

[60] Final report STECF EWG 21-05 published at https://stecf.jrc.ec.europa.eu/ewg2105

[61] Measures adopted in the Regulation (EU) 2020/2013.

In the Scheveningen Group there have been discussions during 2019 and 2020 concerning increased selectivity for cod in order to rebuild the stock of the North Sea and Skagerrak. Consensus has not yet been reached.

Member States considered that there is still room to increase selectivity, and to harmonise better the measures in different areas of the North Sea. Member States anticipate that more joint recommendations will be tabled in the future.

The outcomes of the targeted online consultation did not include any specific suggestion for the North Sea in terms of selectivity of gears for specific species.

4.2.3. Closed areas and seasons to protect juveniles (art 17)

The current areas that this Regulation sets are the same as in the previous legislation.

The 2020 Fishing Opportunities Regulation[62] introduced the remedial measures to protect spawning cod in the form of seasonal closures introduced into the North Sea.

In this respect, Denmark has closed the area in Skagerrak 'Revet' for a period in the second half of the year, as part of their national cod plan provided for under Article 14 of the 2020 Fishing Opportunities Regulation.

One Member State stresses that there is a need to increase restrictions for beam trawl in the North Sea, including the Skagerrak. This concerns restrictions on the areas (e.g. to protect reefs), where beam trawl can be used, and restrictions on the gear specifications, e.g. restricting the use of chain mats.

Some Member States with fishing interests in the area do not see the need for additional closed or restricted areas but would welcome Commission's evaluation of the effectiveness of the established closed/restricted areas in achieving their objectives.

The NSAC is of the opinion that at present, there is no need for additional area restrictions. On the contrary, fewer closures would be preferred until more scientific documentation about the positive effects of closures is available. In this regard, NSAC asked the Commission to carry out a scientific evaluation of the plaice box closure in the North Sea.

One of the most discussed topics was the provisions of the plaice box (point 2 of part C of the Regulation). An issue which has been addressed by the concerned regional group by way of a joint recommendation. The NSAC supports the reintroduction of the use of the Danish Seine in the plaice box as suggested in the Joint Recommendation submitted by the Scheveningen Group. This joint recommendation intends to correct a procedural error in the Regulation. This joint recommendation was assessed by STECF in the last Plenary of 2020, and will soon be used as a basis for the adoption of a Commission delegated act, provided that it meets all the relevant requirements set out in accordance with Article 18 of Regulation (EU) No 1380/2013 and in accordance with the relevant Articles of Chapter III of the Regulation.

[62] Council Regulation (EU) 2020/123 of 27 January 2020 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, *J L 25, 30.1.2020, p. 1–156*

The number of stakeholders (mainly NGOs) in the online consultation pointed out that in the North Sea, sandeel has been declining dramatically due to overfishing and climate change. Yet the only measures for these fisheries are based on catch limits decided on annual basis. Sandeel are important food for the Atlantic Puffin and Black-legged Kittiwakes who have seen sharp declines as a result of a lack of sandeel. They see the need to assess how further closures of sandeel fisheries can help increase populations of seabirds and apply them. In particular, sandeel fishing in the Doggerbank should be restricted.

4.2.4. Real time closures and moving on provisions (Article 19)

The NSAC considers that the real-time closures and moving-on provisions are useful to serve a single objective – e.g. rebuilding of a stock (e.g. cod), and that the measures should not be applied in general terms but rather used on a case-by-case basis, with the objective to avoid unwanted catches.

After consulting the NSAC, the Scheveningen group prepared in 2019 a joint recommendation on the implementation of real-time closures for Northern prawn fisheries in the Skagerrak, which was adopted through Commission Delegated Regulation 2019/2201[63].

In Denmark's national cod plan, adopted in accordance with Article 14 of the 2020 Fishing Opportunities Regulation, real-time closure-inspections are part of the primary control tools. This has led to three real-time closures since the entry into force of the cod plan on 15 August 2020.

In light of the landing obligation, Denmark considers move-on provisions as a relevant control tool, if the level of unwanted catches or undersized fish is high. Therefore, Denmark has implemented a requirement for haul-by-haul recording in the logbook, which is necessary to be able to enforce move-on provisions. As the rules are today, inspectors can only recommend to the fishermen to move fishing ground.

In 2020, Belgium introduced for the year 2021 temporary additional measures in the form of moving-on provisions in order to protect juveniles of certain stocks and to ensure that the allocated quotas of these stocks are not exceeded in certain ICES areas. Among others, such provision is included for sole in the North Sea.

According to another Member State, real-time closures and move-on rules are in principle suitable to support, for example, the implementation of the landing obligation or to reduce the incidental catch of certain species or communities in general. In 2020, the protection measures for North Sea cod included real-time closures (including with Norway).

Some other Member States have not at this stage identified the need for any further real-time closures or moving-on provisions the North Sea.

[63] Commission Delegated Regulation (EU) 2019/2201 of 1 October 2019 supplementing Regulation (EU) 2019/1241 of the European Parliament and of the Council with detailed rules for the implementation of real-time closures for Northern prawn fisheries in the Skagerrak. OJ L 332, 23.12.2019, p. 3–11

Some stakeholders in the online consultation stressed that moving-on provisions and real time closures are only workable when they are based on real time scientific evidence, which is not currently available. With correct implementation, they could be effective to protect cod in the North Sea, Skagerrak and Kattegat and also for other species that are vulnerable or on the prohibited list).

4.2.5. Sensitive species

The replies received to the questionnaire launched regarding the technical nature conservation measures for the protection of sensitive species, several Member States foresee taking additional measures. In this regard, the joint recommendation with proposed management measures in accordance with Article 11 of Regulation (EU) No 1380/2013 in Natura 2000 areas in North Sea EEZ was submitted by Scheveningen Group to the Commission. Following evaluation by STECF, the Commission has proposed amendments to ensure the achievement of the protection objectives. Following the completion of the national consultation process, the revised draft joint recommendation is now being discussed in a Scheveningen Ad Hoc Working Group with other Member States having a direct management interest in the fisheries affected by the measures. The measures aim not only to protect the habitat types of sandbanks (H1110) and reefs (H1170), but also to protect sensitive species such as porpoise and seabird species.

Also, the joint recommendation on fisheries conservation measures in four MPAs in the Kattegat was submitted to the Commission in February 2020. These recommendations include mitigation measures aimed to protect Harbour porpoise and seabirds.

It has also been reported that some measures are proposed in several Natura 2000 areas and MSFD areas. These proposals are part of draft Joint Recommendations which will be submitted to the European Commission in the first half of 2021. One of these joint recommendation focuses specifically on the reduction of bycatches of seabirds in static nets on the Frisian Front.

In a similar manner as in the Baltic, Member States individually and in the waters under their jurisdiction are working to enhance the protection of sensitive species in their EEZ covering Natura 2000 sites.

The NSAC members generally agree that nature conservation measures should focus holistically on the ecosystem approach, and that any additional measures should be dealt with on a case-by-case basis. As for the regional mitigation measures for the reduction of incidental catches of sensitive species, the NSAC notes that any new measures would need to be fully evaluated prior to inclusion in the regulation. Currently, additional regional mitigation measures are not required, but wishes to be involved in the consultation process should they become necessary in future.

As regards to steps taken by Member States to monitor and reduce incidental catches of sensitive species, some Member States claimed that fishermen provide information on incidental catches of marine mammals and seabirds in the logbooks. Also, some Member States claimed to have stepped up controls on the use of ADDs.

With regard to the scientific data the NSAC notes that the industry is willing to contribute to the collection of scientific data.

Similarly, majority of Member States reported that monitoring and assessing the effectiveness of mitigation measures is carried out within Data Collection Framework by providing onboard observers and also based on information in logbooks. The industry representatives of the NSAC believe that the measures set out in Annex XIII are adequate and no additional steps are necessary.

4.2.6. Sensitive habitats

Regarding the technical nature conservation measures for the protection of sensitive habitats, almost all Member States in the area reported that in the upcoming three years they foresee taking additional measures. Member States are mainly considering measures in the MPAs and Natura 2000. Assessments are currently under way to estimate the impacts of fishing activities on protected habitats and species for regulatory action.

In this regard, a Joint Recommendation for protection of the remaining reef structures in the designated Natura 2000 sites (5 areas), located in the North Sea is currently being prepared. Focus has been on protecting the habitats with highest risk of irreversible damages – e.g. reefs (habitats code 1170) and bubbling reefs (habitat code 1180). Furthermore, a Joint Recommendation is expected during 2021, for the protection of a large area located in the Kattegat, combined of both a MSFD designated area and a Natura 2000 designated site (reefs 1170). The Joint Recommendation on fisheries conservation measures in four MPAs in the Kattegat was recently submitted to the Commission.

Also, the North Sea Regional Group (Scheveningen Group) submitted the joint recommendation on additional technical measure in accordance with Article 11 of the CFP Regulation to the Commission. Following evaluation by STECF, the Commission has proposed amendments to ensure the achievement of the protection objectives. The revised draft joint recommendation will be discussed in a Scheveningen Ad Hoc Working Group with Member States having a direct management interest in the fisheries affected by the measures. The measures aim not only to protect the habitat types of sandbanks (H1110) and reefs (H1170), but also to protect sensitive species such as porpoise and seabird species.

As regard to additional measures, the NSAC members generally agree that nature conservation measures should focus holistically on the ecosystem approach, and that any additional measures should be dealt with on a case-by-case basis.

In general, majority of stakeholders in the online consultation think that there is a need for additional technical nature conservation measures to protect sensitive habitats. More specifically for the North Sea, number of stakeholders pointed out that sensitive habitats, especially the seafloor need better protection against destructive fishing gears, in particularly bottom-trawling (in particular three Danish marine Natura 2000 sites have been mentioned in this regard).

4.3. North Western Waters

The main Member States operating in the sea basin are Spain, France, Portugal and Ireland. Belgium, Denmark, Germany, Lithuania, the Netherlands also have some fleet segments active in area.

The most important species in the North Western Waters include Atlantic mackerel, blue whiting, horse mackerel, hake, Norway lobster and monkfish.

Some stocks in the basin remain outside safe biological limits and additional measures need to be taken for their recovery. Recent advice from ICES also shows worrying decreases in key gadoid stocks such as the Celtic Sea cod and whiting in the Irish Sea and in the west of Scotland. This worrying situation led to the adoption of several measures functionally linked to and allowing setting of TACS below Fmsy and to aid the recovery. These measures have been taken within 2020 fishing opportunities, in order to bring the stocks above the level capable of producing MSY, in accordance with Article 8(2) of the Western Waters multiannual plan[64]. Such measures would improve selectivity by making use of gear that have lower levels of incidental catches of cod mandatory in the areas where cod catches are significant, thus decreasing the fishing mortality of this stock in mixed fisheries.

The diversity of catches, especially of demersal non-TAC species, presents a challenge to both mixed fisheries management and the implementation of the landing obligation in this region.

According to STECF 20-02, the species for which the selectivity indicator was tested were cod in ICES division 6a, whiting in ICES division 6a, west of Scotland haddock, west of Scotland saithe, Rockall haddock and Irish Sea cod.

The stocks for which the experts consider that fishing mortality on juveniles has been reduced are cod in ICES division 6a, west of Scotland saithe, Rockall haddock, Irish Sea haddock, Irish Sea whiting, Irish Sea plaice, Celtic Sea megrim and western Channel plaice. However, the experts found it difficult to link any of these changes to the technical measures that have been implemented.

For whiting in 6a, the indicator shows a steady deterioration in selectivity with respect to juveniles which corresponds to significantly reduced fishing effort and catches in the gadoid fisheries for whiting (with more selective gears) and increase catches and effort in the small mesh, less selective Nephrops fishery. In this fishery, unwanted catches of small whiting have continued at high levels for many years without any improvement in gear selectivity. This led to the experts to conclude that that the objective of the regulation is not being met and the exploitation pattern in the Nephrops fishery is sub-optimal.

For West of Scotland haddock, and Irish Sea cod, no indicator was produced due to the lack of data necessary.

Member States have submitted one joint recommendation, concerning remedial measures for cod. This is scheduled for adoption after assessment by STECF.

[64] Regulation (EU) 2019/472 of the European Parliament and of the Council of 19 March 2019 establishing a multiannual plan for stocks fished in the Western Waters and adjacent waters, and for fisheries exploiting those stocks, amending Regulations (EU) 2016/1139 and (EU) 2018/973, and repealing Council Regulations (EC) No 811/2004, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007 and (EC) No 1300/2008 OJ L 83, 25.3.2019, p. 1–17. This multiannual plan covers North Western and South Western waters.

4.3.1. Minimum conservation reference sizes (Articles 13 and 18)

Part A of annex VII sets the MCRS for the most important species in North Western Waters, which were the same as in previous technical measures legislation.

In principle, the MCRS are considered by the Member States in the North Western Waters to be appropriate.

The joint recommendation has been developed in the framework of the North and South Western Waters Regional Groups to increase the MCRS of red seabream to 36 cm instead of 33 cm in the Regulation. The joint recommendation on the Celtic Sea, adopted for 2021, specified minimum sizes for almost twenty species for recreational fisheries.

One Member State thinks that harmonisation of the MCRS for mackerel between NWW (20cm), SWW (20cm) and North Sea (30cm) would be sensible, given this MCRS applies to the same stock.

In its advice on fishing opportunities for 2021, the NWWAC suggest increasing the MCRS for sole to 25 cm, since the discard rate continues to be high in English Channel (ICES division 7d). This request by NWWAC to increase MCRS for sole was also supported by one stakeholder (business organization) in the online consultation.

Stakeholders who participated in the targeted online consultation did not raise any specific suggestions for MCRS in the NWW.

4.3.2. Selective gears to reduce unwanted catches

As in other sea basins, one of the most controversial topics has been the definition of a directed fishery, as described in the tables of the mentioned Annex. Likewise, to date, no joint recommendation has been submitted, and the discussions are ongoing within the NWW Member States group. In a similar manner as in the rest of sea basins, all Member States and the advisory councils concluded that this is a complicated topic that needs to be dealt with to avoid misuse of mesh sizes and to grant harmonised approach amongst Member States.

Regarding the species and size selectivity of fishing gear the NWWAC recommends to first assess the results of the current technical measures in place and their effectiveness in improving selectivity prior to considering additional measures. In this regard, the NWWAC asked for STECF evaluation of the current technical measures in place in the Irish Sea taking into account the results from the BIM and the Northern Ireland gear trials and to identify those gears which are most successful at eliminating whiting below MCRS in the Nephrops fisheries in the Irish Sea (Area 7a).

Regarding the actions of Member States in relation to species and size selectivity of fishing gear, some Member States have been working on the joint recommendations in this regard.

Discussions on the issue of Danish seine in the Eastern Channel have started in the North Western Waters Group. A future joint recommendation could contain provisions on the framework for seine fishing effort in the area, as well as provisions related to the minimum mesh size for directed squid fishing.

Member States Groups are working on the Joint Recommendation of technical measures, which affects for example the Celtic Sea, where some measures related to the mesh size specifications for year 2021 are applied in order to protect whiting and cod in this zone.

Another joint recommendation that is currently being prepared by Member States is related to plaice survivability in the Celtic Sea seine-net fishery and use of 100 mm T90 mesh in the Irish Sea haddock fishery.

In the online consultation, some contributions (from the fisheries sector) recommend to first assess the results of the current technical measures in place and their effectiveness in improving selectivity prior to considering additional measures. They consider that in the Celtic Sea, the remedial measures taken are overly prescriptive and do not represent a balanced or proportionate management response to the challenge of applying necessary rebuilding measures.

4.3.3. Closed areas and seasons to protect juveniles

Part C of Annex VI depicts these areas aimed at granting special protection for the resources; the intention was to preserve the status quo and take over the technical measures that were in force. These areas can be modified by joint recommendations if can be demonstrated that the results in selectivity characteristics are at least similar.

In the case of the Northern hake stock, the relevant applicable technical measures are currently included in parts B and, for some specific closed or restricted areas also in Part C, of Annexes VI (covering North Western Waters) and VII (covering South Western Waters) of the Regulation. In addition, the Regulation specifically refers to certain provisions of Commission Regulation (EC) 494/2002[65] that is still applicable. However, not all provisions of Commission Regulation (EC) 494/2002 that were applicable before the Regulation entered into force are explicitly referred to, as is the case of the mesh size applicable set by Regulation 494/2002 in 102 mm.

France, as one of the main Member States whose vessels target hake in the area covered by Annex VI of the Regulation, sought clarification on the currently applicable legal framework and rules to be applied for this hake fishery, specifically for the use of gillnets.

In general, most Member States in the area do not see the need for additional closed areas.

However, there are some suggestions for additional measures. The joint recommendation on scallops in the Eastern Channel, which provides in particular for the establishment of a fish stock recovery area (cf. Article 8 of the CFP Regulation) in the intermediate zone in the Eastern Channel was submitted. It also provides for prohibitions on fishing for dredges between 15 May and 30 September in Divisions VIId and in part of VIIe. This was assessed by STECF Summer Plenary 2021.

[65] Commission Regulation (EC) No 494/2002 of 19 March 2002 establishing additional technical measures for the recovery of the stock of hake in ICES sub-areas III, IV, V, VI and VII and ICES divisions VIII a, b, d, e OJ L 77, 20.3.2002, p. 8–10

Member States in the NWW group are also currently examining the possible introduction of closed/restricted areas in relation to scallops in the western Channel.

The NWWAC has not identified a need for additions to the closed or restricted areas included in Part C of Annex VI. However, in respect of other regulations containing to such areas, the NWWAC 2020 Fishing Opportunities 2021 advice contains a recommendation to consider measures to protect nursery areas in ICES division 7d as implemented by France elsewhere in ICES division 7d.

Stakeholders in the online consultation did not raise any suggestions for additional closed or restricted area in the NWW.

4.3.4. Real time closures and moving on provisions

Regarding the real time closures and moving on provisions, the NWWAC recommends in its 2020 advice on choke risk that the priority should be given to measures that aim at unwanted fish not entering the gear in the first place. This could include measures like spatial closures, real-time closures, mandatory move-on rules and gear modifications, which allow unwanted fish to escape as early as possible throughout the capture process to maximise survival. The same advice, additional measures for contributing to mitigating choke for cod and whiting in 6a includes accelerating the introduction of technical measures in directed demersal fisheries including spatial and temporal closures.

Some Member States have introduced this kind of measures at national level.

Spain laid down in its national Regulation (Order 514/2019) a mandatory moving-on rule in order to comply with catch composition rules established at EU level and the landing obligation. On this provision after a haul not pursuant to the catch composition rules or where there was presence of a high concentration of limiting species (i.e. prohibited species or undersized and juvenile fish) the vessel must change its location, moving away at least 3 miles from the point where the fishing activities were carried out. Also, a move on rule was implemented in relation to the incidental bycatches of cetaceans.

Belgium introduced move-on provisions in its Ministerial Order of 24 December 2020 laying down temporary additional measures for the year 2021 in order to protect juveniles of certain stocks and to ensure that the allocated quotas of these stocks are not exceeded in certain ICES areas. This Ministerial Order states: “If a certain threshold is likely to be exceeded during a sea trip, the fishing activity shall be immediately suspended and the activities shall be redirected at least ten nautical miles.” This provision is among others included cod in the Eastern English Channel, plaice and whiting in the Irish Sea.

Other Member States in the area do not see a need for additional closures and real-time provisions.

Stakeholders in the online consultation did not raise any suggestions for additional real-time closures or moving on provisions in the NWW.

4.3.5. Sensitive species

From the replies received to the consultation, Member States in this area are implementing measures individually in areas under their national jurisdiction.

The NWWAC advice on incidental cetaceans bycatch in the North Western Waters suggests considering spatial/temporal closures, assuming that the responsible fleets could be identified reliably and that the state of common dolphin population needs such drastic measures. These must be based on scientific evidence.

4.3.6. Sensitive habitats

From the replies received to the consultation, MS in this area implementing measures individually in areas under its national jurisdiction.

No joint recommendation is under preparation to adopt transnational measures

4.4. South Western waters

The main Member States operating in this area are Belgium, France, Portugal, Netherlands and Spain.

Many stocks in the basin are fished inside safe biological limits and have generally progressed towards MSY. As from 2020, for all target stocks, listed as such in the Western Waters Multiannual Plan[66] fishing opportunities are established in line with MSY ranges.

Some stocks in the basin remain outside safe biological limits and additional measures need to be taken for their recovery. In south western waters, examples of stocks outside safe biological limits are sardines and Norway lobster in the south of the Bay of Biscay. Stocks in the south western waters tend to have precautionary scientific advice (as is the case of southern hake since 2020). This, coupled with the high species richness and diversity of non-TAC catches, has made mixed fisheries management challenging.

Evaluation of STECF EWG in the south western waters focused on six stocks of the geographical area of south western waters (SWW) – two stocks of hake, three of megrim and one of whiting.

However, for southern hake and due to absence of F at age data, no assessment of selectivity indicator could be made for the hake stocks.

For megrim (*Lepidorhombus whiffiagonis*) and four-spot megrim (*Lepidorhombus boscii*) the selectivity indicators (Frec/Fbar) have been highly volatile along the years, which indicates a relatively unstable situation. Since 2010/2011, there has been a gradual improvement for these species, but there are no technical measures specifically focused on the protection of megrim, so the reason behind the improvement remains unclear. In case of whiting (*Merlangius merlangus*) no data was available to calculate selectivity indicator.

[66] Western Waters multiannual plan also includes north western waters.

4.4.1. Minimum conservation reference sizes (Arts 13 and 18)

The MCRS set in the Regulation are the same as in the previous set of legislation.

As expressed in other sea basins, in general, Member States consider adequate the current MCRS.

However, to satisfy regional specificities, some the SWW regional group tabled a joint recommendation to change the MCRS of short necked clams (*V. philippinarum*) in the French waters of Bassin d'Arcachon. This joint recommendation was sent early 2021 and assessed by STECF in the first plenary meeting of 2021. The assessment was negative. The experts considered that more scientific information needs to be presented to justify the measures

This proposal was supported by the SWWAC, which also thinks that measures with recreational fisheries should be aligned.

For red seabream, a joint recommendation[67] has been developed by North and South Western Waters Regional Groups to increase the MCRS to 36 cm instead of 33 cm currently applicable.

4.4.2. Selective gears to reduce unwanted catches

The STECF experts considered that the major technical measure implemented in this area (ICES 8abd) was the square mesh panel of 100 mm in the upper plan of the codend to reduce gadoids' discards.

The SWWAC stress that with the landing obligation being in force, it is necessary for the industry to work on selectivity in order to avoid unwanted catches that could lead to choke species.

Member States share the opinion that currently there is no need for additional measures but agree that more discussion is needed on the "directed fishing".

In this context, in summer 2020 the SWW group submitted a joint recommendation on directed fisheries, which has been sent to STECF in order to evaluate if they consider that the mesh size specifications and the improvements in selectivity of the gears proposed are enough for the sustainability of some species. However, considering that what was proposed followed similar catch composition percentages as included in the annexes of the former Technical Measures Regulation, and with no additional information that supported these suggestions, STECF concluded that it was not possible to assess the joint recommendation submitted and if it would serve to the consecution of objectives and targets. SWW group is working on a new joint recommendation, trying to take on board the comments by STECF.

This regional group is also preparing a joint recommendation specifying the details of implementation of the landing obligation in which Member States try to justify the adoption of some exemptions to the landing obligation related to some stocks fished by specific gears with particular mesh size specifications.

[67] This JR was sent to be assessed by STECF EWG 21-05. Conclusions have not been published when this report was drafted.

Stakeholders in the targeted consultation did not raise any suggestion specific for South Western Waters in terms of selectivity. However, the majority of them share the opinion that in general, additional selectivity measures are needed.

4.4.3. Closed areas and seasons to protect juveniles (art 17 and Part C of Annex VII))

The current areas closed to fishing are not new, they are the same as in previous legislation.

The SWWAC does not consider that there is currently a need for additional closed areas or seasons in the south western waters, since they have no new information revealing such aggregations in area not already covered. Some members of the Advisory Council suggest permitting to fish anglerfish with scraps in waters of VIIIc with depths from 600 m to 850 m, bearing in mind that studies show that shark catches at these depths are relatively small.

To improve the biological situation of Red Seabream stock, SWW and NWW Member States have submitted joint recommendation[68] that includes some restricted areas for the fishing of Red Seabream. The closures affect both longliners (LLS) and bottom trawlers (OTB) and are in place from 1 of February to 30 of September. These closures are located in the very western area of Cantabrian Sea opposite Asturias and Galicia. The aim of these closures is mainly to protect spawners.

In the online consultation, some stakeholders call for modification of the closure in Annex VII – south western waters, Part C.1. (a), both in space (recruitment seems to occur predominantly in areas where trawler with net, Danish nets or similar nets are forbidden) as well as in time (large part of the year 10-11 months in a 12-month period, there are no specimen of juvenile size in the nets). Stakeholders refer here to the latest official research data on recruitment and observations made by official bodies and the fishing industry itself.

4.4.4. Real time closures and moving on provisions

Currently, there are no specific rules regarding this technical measure at regional level in the area.

In order to comply with catch composition rules established at EU level and the landing obligation, Spain laid down in national Regulation (Order 514/2019) a mandatory moving-on rule, as mentioned in NWW.

The other Member States in the area think there is no need for additional real-time closures and moving on provisions to be established in the south western waters.

In contrast, the majority of stakeholders in the online consultation are of the opinion that additional real time closures and moving on provisions are needed. More specifically, they point to the Bay of Biscay, for which they consider that except for spatial and temporal fisheries closures, there are currently no other proven measures that effectively

[68] This JR was sent to be assessed by STECF EWG 21-05. Conclusions have not been published when this report was drafted.

reduce bycatch of common dolphin. In this case, providing a requirement for real-time closures and trailing innovative measures, such as moving-on provisions might be an effective although time-limited bycatch prevention method.

Some members of the SWWAC point to the Bay of Biscay, where there are currently no proven measures that are effective to adequately reduce common dolphin bycatch – other than spatial and temporal fisheries closures which are recommended by ICES in their Advice on emergency measures.

4.4.5. Sensitive species

The South Western Waters regional group in 2020, prepared a draft joint recommendation that was sent on October 2020 and that has been evaluated by STECF.

Some of MS with importance presence in the area, such as France and Spain have also taken actions.

France has taken several regulatory measures since 2018:

- the compulsory fitting of pingers throughout the year for all trawlers interacting with cetaceans (pelagic trawlers and demersal trawlers in pairs) by order of 27 November 2020;
- the obligation to report incidental catches of marine mammals by all French fishermen since 1 January 2019.
- setting a threshold of good environmental status for common dolphin and harbour porpoise species. The incidental catch mortality by fishing gear shall not exceed 1 % of the best available estimate of population abundance. This threshold relied on the work of ASCOBANS in the second round of the MSFD for the period 2020-2026. The review will be carried out in 2026.

Spain has adopted national regulation (Orden APA 1200/202054) for the establishment of mitigation measures and the improvement of scientific knowledge to reduce incidental catches of cetaceans during fishing activities according to the SWW Joint Recommendation compromise of reducing incidental catches of cetaceans. These measures can be summarised as follows:

- Collection of scientific information in relation with incidental catches of cetaceans in order to know if the measures in force are enough or not to meet the objectives of the national and EU regulation. Establishment of a specific annual program of onboard observers in order to improve the scientific information available on incidental catches of cetaceans by the Spanish fishing fleet in the Cantabrian Northwest national fishing grounds and in non-Spanish European Union waters of the Gulf of Biscay. The monitoring system must record at least the activities of trawlers with a large vertical opening and vessels using bottom gillnets or entanglement nets, with a mesh size equal to or greater than 80 mm, according to the indications of scientific institutes.
- carry out an experimental project to check the suitability of using monitoring cameras on board in order to monitor the use of acoustic deterrent devices (pingers) in fishing gears to avoid catches of these cetaceans; assess the effectiveness of the move on rules; To carry out a pilot project with closed circuit television cameras on board fishing vessels to complete the information collected with the specific observer program.

- Data collection of the incidental catches in monitoring systems to grant access to accurate information about incidental catches of cetaceans.
- Incidental catch reduction measures: Spanish vessels operating with bottom trawls in area 8c and under special authorization in EU waters of the Bay of Biscay, are required to use acoustic deterrent devices during their fishing activities in these areas. The acoustic deterrent devices required, have to be in accordance with the provisions of the Commission's Implementing Regulation (EU) 2020/967[69], of July 3, 2020.
- Management of incidental catches of cetaceans: When an incidental capture of any species of cetacean occurred, and the individual remains alive, the members of the crew will, in the most careful way possible, avoiding its suffering and further stress, immediately release the individual or individuals from the fishing gear. If possible, pictures have to be taken to be reported to the Administration. In case the cetacean arrives dead or dies during releasing, they will endeavour to keep it on board, so that it can be delivered for scientific analysis once landed. The Ministry of Agriculture, Fisheries and Food will prepare and make available to the fishing sector guidelines of good practices for the management of these incidental catches.
- Move-on rule: When, during fishing activities with bottom trawl gears, more than three specimens of cetaceans in the same fishing haul appear among the captures, or they capture a specimen of cetacean in two consecutive hauls, the fishing vessels will move a minimum of 5 miles from the relevant point before continuing their fishing activities.

4.4.6. Sensitive habitats

From the replies received to the consultation, Member States in this area implementing measures individually in areas under its national jurisdiction.

No joint recommendation is under preparation to adopt transnational measures.

4.5. Mediterranean and Black Sea.

The Mediterranean comprises the maritime waters of the Mediterranean to the East of line 5º 36' W. Eight[70] out of its 25 coastal countries are EU Member States: Croatia, Cyprus, France, Greece, Italy, Malta, Portugal, Slovenia and Spain, all of them but Portugal, Spain and France completely reliant on this sea basin.

The Black Sea region covers FAO fishing area 37.4. Two EU Member States, Bulgaria and Romania, are coastal states.

Over 70% of the vessels belong to small-scale coastal fleets, with a strong imbrication in the social and cultural tissue of coastal areas. Overall reported landings oscillate around 800 000 tonnes, mostly concentrated in the western Mediterranean and Adriatic Sea.

[69] Commission Implementing Regulation (EU) 2020/967 of 3 July 2020 laying down the detailed rules on the signal and implementation characteristics of acoustic deterrent devices as referred to in Part A of Annex XIII of Regulation (EU) 2019/1241 of the European Parliament and of the Council on the conservation of fisheries resources and the protection of marine ecosystems through technical measures OJ L 213, 6.7.2020, p. 4–6

[70] While not a coastal Mediterranean Member State, Portugal has few fishing vessels in the Mediterranean

Concerning the situation of the stocks, according to a recent report on the State of Mediterranean and Black Sea Fisheries (SoMFi 2020), while 75 percent of fish stocks remain subject to overfishing, this percentage fell by more than 10 percent between 2014 and 2018. Exploitation ratios are down by a similar proportion. Taking into account newly assessed stocks, the number of fish stocks with high relative biomass has doubled since the last edition published in 2018.

Some of the most important stocks, such as hake and Norway lobster, are declining in several geographical sub-areas and are overfished. Stocks of deep-water rose shrimp, sole, spot tail mantis shrimp and red mullet have increased in recent years, but fishing mortality is still above sustainable mortality levels. Although the European anchovy is not overfished in the Aegean Sea, small pelagic species (anchovies and sardines) show a negative trend in all the geographic sub-areas assessed. Even if Bluefin tuna appears to be recovering, swordfish is overfished and the stock of Mediterranean albacore is also considered to be in a precarious state.

Many assessed stocks are fished considerably above the Fmsy target estimates. Overall, 17% of the assessed stocks are fished sustainably. They include red mullet in the South Tyrrhenian Sea, Adriatic Sea, and Aegean Sea, striped red mullet in the Balearic islands along with deep-water rose shrimp in the Ligurian and North Tyrrhenian Seas, and the common cuttlefish in the northern Adriatic.

After the peak in 2011-2013, the EU stocks and EU shared stocks in the Mediterranean and Black Seas have seen the fishing mortality indicator decreased to around 2.1 in recent years. Although the stocks remain exploited on average at rates well above the CFP management objectives, there has been slight improvement in terms of fishing pressure and stock biomass. Working to strengthen this positive trend became a priority in the agendas of all involved countries.

The shared nature of the stocks makes it indispensable to coordinate with non-EU countries and with international regional fisheries management organisations such as the General Fisheries Commission for the Mediterranean (GFCM) and the International Commission for the Conservation of Atlantic Tuna (ICCAT).

An important milestone was the adoption of the MedFish4Ever declaration in 2017[71], which sets out a number of actions in order to rebuild Mediterranean fish stocks, protect the region's ecological and economic wealth and boost the sustainable development of aquaculture through a wide range of measures. These commitments were renewed at the High-Level Conference held in Marrakech in June 2019.

The fisheries management is focused on the implementation of the technical measures laid down by EU law, by the GFCM and ICCAT and on the implementation of management measures, including management plans adopted at EU level, by Member States, under regionalisation or nationally, and by the GFCM. However, in line with the objective of the MedFish4Ever declaration and the GFCM mid-term strategy, further measures will need to be developed with the aim of reducing over-exploitation levels, including measures to fight against IUU (such as traceability schemes) and establishing a regional capacity plan ensuring a good balance between resources and fleet capacity of all Mediterranean riparian countries, including EU Member States.

[71] https://ec.europa.eu/fisheries/sites/fisheries/files/2017-03-30-declaration-malta.pdf

At EU level, the Mediterranean Regulation (1967/2006) contains specific management measures for the exploitation of fishery resources, and some of them have been incorporated into the Regulation. However, measures such as the obligation for Member States to establish national management plans or the possibility for the Commission to grant derogations to certain rules have remained within the remit of the Mediterranean Regulation.

Under the Mediterranean Regulation, Member States have adopted more than 40 national management plans. Those management plans are always reviewed by STECF to ensure that they are in line with the CFP principles. Furthermore, they have been including technical measures, in line with the Technical Measures Regulation objectives.

The national management plans aim at regulating certain fisheries (in particular: trawl nets, boat seines, shore seines, surrounding nets and dredges) in the Member States' territorial waters. They shall be based on scientific, technical and economic advice, and shall contain conservation measures to restore and maintain fish stocks above levels capable of producing MSY. The plans shall also contain specific conservation measures based on the ecosystem approach to achieve the objectives set. In particular, they may incorporate any conservation and technical measure, such as limiting catches, fixing the number and type of fishing vessels authorised to fish, limiting fishing effort, adopting technical measures, establishing incentives to promote more selective fisheries, conduct pilot projects on alternative types of fishing management techniques.

The Mediterranean Regulation also provides for fisheries restrictions in coastal areas (ban on trawling within 3 nm from the coast / 50m isobath) and above certain habitats (e.g. Posidonia beds, maërl, coralligenous).

The adoption of further technical measures shall be based on the Technical Measures Regulation, which needs to be applied along with the Mediterranean Regulation.[72]

The adoption of the Western Mediterranean Multiannual Plan ('West Med MAP'[73]), and its entry into force in 2019, meant an important milestone towards more sustainable management of resources.

The West Med MAP provides that Fmsy should be achieved on a progressive, incremental basis by 2020 where possible, and by 1 January 2025 at the latest, and establishes fisheries closure areas. Continued efforts are needed to achieve the goal of a total reduction of up to 40% of the fishing effort within 5 years, with a mandatory reduction of 10% in the first year of implementation (2020). Effort reductions can be supplemented by technical or other conservation measures in order to reach Fmsy.

The West Med MAP establishes in its Article 11 a temporary closure to trawling within 6 nm from the coast or 100 m deep, for 3 months every year in the coastal areas of Spain, France and Italy. The STECF has assessed those closure areas and concluded that

[72] Council Regulation (EC) No 1967/2006 of 21 December 2006 concerning management measures for the 129-142.No 2847/93 and repealing Regulation (EC)

[73] Regulation (EU) 2019/1022 of the European Parliament and of the Council of 20 June 2019 establishing a multiannual plan for the fisheries exploiting demersal stocks in the western Mediterranean Sea and amending Regulation (EU) No 508/2014 OJ L 172, 26.6.2019, p. 1–17

Member States should adopt additional measures. Furthermore, Member States may establish, under certain conditions and on the basis of the STECF's advice, other closure areas, provided that a reduction of at least 20 % of catches of juvenile hake in each Geographical Statistical Area ('GSA') is achieved. By 17 July 2021, Member States have the obligation to establish additional closure areas where there is evidence of a high concentration of juvenile fish, below the MCRS, and of spawning grounds of demersal stocks. It should be noted that, under the impulsion of the Commission, an inventory of the fisheries closures in the Western Mediterranean is ongoing, that will contribute to the ongoing GFCM work on this issue.

As regards the **indicators,** STECF 20-02[74] pointed at 2010 as a milestone in the introduction of technical measures, meaning a change in selectivity in all fisheries. In bottom trawl fisheries, for example, the diamond 40 mm codend mesh was replaced by a square-meshed net of 40 mm at the codend or, at the duly justified request of the ship-owner, by a diamond meshed net of 50 mm.

The results presented by the experts suggest that the indicator have the capacity to detect changes in population selectivity showing improvement for hake in GSAs, 5, 6 and 7 and red mullet in GSAs 17 and 18. For this specie, the experts consider that further follow up shall be done, considering the remarkable increase of the indicator in the last couple of years.

For stripped mullet in GSA 5 and hake in GSAs 9, 10, 11 the indicator didn't show any clear trend. For deep water rose shrimp in GSAs 9, 10, 11, the time series for the study starts in 2009, therefore the impact of the changes introduced in 2010 need to be taken with caution and further studies are needed.

4.5.1. Minimum conservation reference sizes (Articles 13 and 18)

No specific issues were raised regarding the application of these provisions to the Mediterranean from Member States' point of view.

Several members of the MEDAC raised different suggestions regarding the current MCRS. Some of its members do not agree with MCRS implying that multispecies fishery does not allow an effective selectivity in the whole Mediterranean Sea. Others think MCRS should be adapted to size at first maturity. On the other hand, majority of Member States in the Mediterranean consider the current MCRS adequate. Only one Member State suggests that Annex IX includes some species, which could be removed from the list since they are mainly by-catch with very low economic value, such as the *Trachurus spp*.

At the request made by Italy, and subsequent to the joint recommendation submitted on the basis of the STECF in 2019, and subsequent in 2020, the derogation on MCRS (now set on 22 mm) was granted for Venus spp, until the end of 2022.

Stakeholders in the online consultation suggested that sizes should be adapted to size at maturity.

[74] STECF 20-02, p. 129-142.

In the Black Sea, neither Member States nor the BlSAC raised any issues towards the current MCRS. Two contributions in the online consultation (from research institutions) point to the fact that except for the turbot, no MCRS are amended for the rest of the exploited species in the Black Sea.

Recreational fisheries form an integral part of Mediterranean coastal life and communities and could have an impact on coastal species. The majority of MEDAC members (67%) consider that there is a need to align the MCRS between recreational and commercial fisheries, on some specific species. There are also ongoing discussions in other fora whether technical measures, including MCRS should be applied to this activity. Within the West Med MAP implementation, the STECF has evaluated the impact of the recreational fisheries for stocks under management to be negligible.

4.5.2. Selective gears to reduce unwanted catches

In 2010, there was a change in selectivity in all fisheries. In bottom trawl fisheries, for example, the diamond 40 mm codend mesh was replaced by a square-meshed net of 40 mm at the codend or, at the duly justified request of the ship-owner, by a diamond meshed net of 50 mm. After 2010, and until the entry into force of the Regulation, no changes in technical measures influencing selectivity have been introduced.

STECF advice for 2021[75] recommended, in the context of gear selectivity within the West Med MAP, significant and urgent effort reduction combined with additional measures such as changes in mesh sizes for certain species. Further scientific effort will continue in order to identify other technical measures which could be implemented in the future. In order to allow the stocks listed in the MAP to recover, two Member States acknowledged, under the "Fishing Opportunities Regulation" for 2021[76], that it was urgent to improve the selectivity of the gear. For one Member State, additional trials are planned for Summer 2021 with vessels equipped with two different mesh sizes (50mm for deeper waters and 45mm for coastal areas). The final report is expected in October 2021, which will specify the catch composition and take into account the socio-economic impact of such further selectivity. For the other Member State, discussions are ongoing on the possibility to launch a pilot-project on trawlers selectivity.

At GFCM level, a working group gathered numerous stakeholders and officials to discuss and agree on concrete and directly implementable selectivity measures. This working group proposed among other measures the implementation of a multiannual pilot study for bottom trawl fisheries exploiting demersal stocks in the Strait of Sicily that will compare the efficiency of trawl nets with T90 mesh codend and with G1SM40.

Several GFCM projects are also on-going, to notably continue the development and adoption of more selective fishing gear in both sea basins. As an example, the project Implementation is building on previous results of the Minouw project to improve the selectivity of trawl gears and advance the sustainable exploitation pattern of trawl fisheries in the Mediterranean Sea.

[75] STECF 20-03, p. 41-46

[76] COUNCIL REGULATION (EU) 2021/90 of 28 January 2021 fixing for 2021 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas. OJ L 31, 29.1.2021, p. 1–19

Other projects are also of importance in this context. The Project MedBLand is a synthesis study on the landing obligation measures and discard rates for the Mediterranean and Black Seas. It will inter alia identify fishing gear improving the selectivity of several fisheries in the Mediterranean Sea. In parallel to region-wide studies, a project such as the Galion Project has also focused on fisheries in one specific area to integrate the local stakeholders knowledge in scientific models of the local stock dynamics, such as hake, and to understand the combined consequences of spatial structuration of hake, environment, fishing exploitation and management on hake population and the fleets harvesting the stock.

The MEDAC considered that the current measures on species and size selectivity were already adequate, however more controls should be carried out in order to ensure compliance. The same opinion was shared by all Member States in the area. The online consultation did not raise anything specific for the Mediterranean.

Regarding the additional measures in relation to species and size selectivity of fishing gear and mesh size specifications, the BlSAC believed that Union legislation had chosen the right direction for greater selectivity of fishing gear and considers necessary specifications for nets, not only for the type of fibre, but also for its thickness. Black Sea Member States in the area currently do not consider any supplementary measures. In the online consultation, one contribution (from research institution) suggests that the current list needs to be enlarged with the Black Sea fishes.

4.5.3. Restrictions on the use of fishing gear (part C of Annex IX))

The current technical measures Regulation has inherited the previous restriction to the use of fishing gear that the MEDREG had.

Regarding the measures to be taken to protect sensitive areas, the current provisions of the MEDREG apply.

In relation to additional closed or restricted areas some members of the MEDAC suggest that the success of the already existing Fisheries Restricted Areas (FRAs) underpins the replication of this measure in other areas of the Mediterranean. However, new scientific information on the relevant areas is needed before the establishment of new FRAs, both onshore and offshore. The spatio-temporal closures of nursery areas can provide better results than the reduction of fishing days in protecting natural resources. Some members also suggested the extension of the fishing ban in the coastal strip where the bathymetry allows it, especially to the most impacting gears.

Member States have no suggestions in this regard. The online consultation did not raise any suggestions.

Neither the BlSAC nor Member States in the Black Sea have currently any proposals for additional closed or restricted areas other than those defined in the Regulation. In the online consultation, two contributions (from research institutions) point to the fact that there are no restricted areas for the Black Sea.

4.5.4. Real time closures and moving on provisions

Majority of the MEDAC members think that there is currently no need for additional real time closures and moving on provisions. This opinion is shared by the majority of Member States in the area.

Spain refers to its national Regulation (Order 514/2019) as was the case for NWW and SWW, includes a mandatory moving-on rule in order to comply with catch composition rules stablished at EU level and the landing obligation. Malta has been proactive on this front and have enacted real-time closures such as the fishing period for Dolphinfish and Swordfish that have been enacted in the past and maintained up to present times. Malta also endorsed temporal closures (Recommendation GFCM/42/2018/5) for bottom trawlers between the coast and the 200 metres depth isobath in GSA 14 (Gulf of Gabès). This closure is applicable every year from 1 July until 30 September.

Stakeholders in the online consultation did not raise any suggestion in this regard.

In regard to additional real time closures and moving on provisions in the Black Sea, the BlSAC considers that detailed studies are needed to justify such measures and adapt them to the current situation. Romania suggests that modifications need to be made in this regard, at least for some stocks. To this extent, Black Sea Member States are cooperating within the WGBS GFCM. In the online consultations, the stakeholders did not raise any suggestion in this regard.

4.5.5. Sensitive species

As in the rest of the sea basins, Member States were asked on the set up measures to ensure that incidental catches of marine mammals, marine reptiles, seabirds and other non-commercially exploited species do not exceed levels provided for in Union legislation and international agreements that are binding on the Union.

All Member States coincide mentioning that current EU legislation as well as GFCM and ICCAT are followed. Some Member States mention partnerships with NGOs to investigate problems of by catch.

MEDAC suggest that taking measures for the protection of sensitive species needs to take into account the anthropogenic demographical pressure, water pollution, the alien species and maritime traffic, along with fishing activities. This AC suggests additional measures to protect sharks, while encouraging further research for future technological solutions, including pingers, to avoid incidental bycatches of cetaceans. Additional consideration to spatial/temporal closures should be assessed, considering the poor state of the common dolphin population.

Regarding the situation in the Black Sea, the BlSAC recommend greater control over the placement of fixed nets; with better management technique. This Advisory Council is of the opinion that nets properly spaced will create a passable corridor and thus reduce the incidence of marine mammal capture.

Several contributions received from stakeholders in the online consultation specifically pointed out that as a priority, management plans and measures are urgently required for the following cetacean populations: i) Harbour porpoise in gillnets: Baltic Proper, Iberian Peninsula, Celtic Sea, English Channel, Black Sea; ii) Common dolphin in gillnets and trawls: Bay of Biscay and Celtic Sea; iii) Bottlenose dolphin: Andalucia; iv) Strait of Gibraltar orca; v) Mediterranean sperm whale.

As regards to steps taken by Member States to monitor and reduce incidental catches of sensitive species:

Member States in general, are stimulating the installation of active ADDs to repel cetaceans on the marked static gillnets used to target for turbot, stepped up controls with observers on board and require electronic logbooks related to cetaceans. As reported by Romania, for the species concerning the Black Sea there is national legislation in place, based on EU legislation on protected species. However, this Annex (species and areas) is not applicable in the GSA 29.

Regarding regional mitigation measures needed for the reduction of incidental catches of sensitive species, majority of Member States in the region do not intend to take additional measures at the moment.

Majority of MEDAC members think that no additional regional mitigation measures is currently needed as the effects of the measures already in place have not been evaluated. In the Black Sea, BlSAC has a similar opinion. According to BlSAC, first it is necessary to carry out a pilot project in the Black Sea and to clearly define which are the sensitive species concerned and which are exactly their habitats and only then, implement the measures.

On the other hand, a number of stakeholders in the online consultation consider that additional regional measures in this regard are needed. More specifically for the Mediterranean, the fishing effort is too high in general. Fish sizes of landed fish are way too small to sustain fish stocks. Less fish seems to result in more effort per yield and this increases incidental catches of sensitive species. Also, a set of regional measures to tackle bycatch of shearwaters in the Mediterranean is needed, particular focus should be on the critically endangered Balearic Shearwater, and on other endemic breeders of the Mediterranean, such as the vulnerable Yelkouan shearwater and the Scopoli's shearwater. Measures should include already known gear modifications as well as other changes to the vessels for longlines, as well as spatial measures for gillnets and purse seiners.

At GFCM level, a working group gathered numerous stakeholders and officials to discuss and agree on concrete and directly implementable selectivity measures. This working group proposed among other measures:

- The development and implementation of a pilot project to test mitigation measures for the incidental catch of cetaceans in Black Sea turbot fisheries;

- The preparation of a regional repository of measures to share experiences on the mitigation of adverse impacts of fisheries on juvenile fish, discards and the incidental catch of vulnerable species (i.e. sea turtles, marine mammals, seabirds, sharks and rays). This follows the findings that in the case of mitigation measures to reduce the incidental catch of vulnerable species (i.e. sea turtles, marine mammals, seabirds, sharks and rays), measures could be fisheries- and area-specific. This repository could then be used as a toolbox for fisheries managers and decision-makers.

- The expansion of testing of fishing gear tagging with electronic sensors, in the context of a pilot project, to other Mediterranean countries.

Also at GFCM level, the GFCM has launched a number of initiatives to improve knowledge on bycatch: The participation in the MedBycatch project «Understanding Mediterranean multi-taxa bycatch of vulnerable species and testing mitigation – a collaborative approach» and the participation in the project «Mitigating dolphin

depredation in Mediterranean fisheries – Joining efforts for strengthening cetacean conservation and sustainable fisheries», aiming to reduce depredation by dolphins in fishing gear.

For the Black Sea, stakeholders called for more attention to the turbot. Stakeholders pointed out to Black Sea harbour porpoise, which deserves a toolbox of effective mitigation approaches.

In the field of data collection, as reported by Member States, the collection of data on incidental catches of sensitive species is mainly conducted within the Union Data Collection Framework. Some Member States are of the opinion that Annex XIII and its provisions do not apply to the Mediterranean and Black Sea.

In order to improve the collection of data on incidental catches of sensitive species, some MEDAC members suggest that to do adjustments of the selected areas in ANNEX XIII to the range of distribution of cetaceans, by adding restrictions and monitoring on vessels smaller than 12 m, by AIS and camera monitoring, by monitoring and developing bycatch mitigation measures especially to longline fisheries in general, but specifically in areas 8,9 and 10 both pelagic and demersal, namely deep sea. A common data collection protocol should be followed, an example is the methodology for data collection for Monitoring incidental catch of vulnerable species in the Mediterranean and the Black Sea.

Regarding the monitoring and assessing the effectiveness of mitigation measures, Member States mainly refer to Data Collection Framework, otherwise they do not take any specific actions. MEDAC and BLSAC did not provide any view whether the additional steps to sufficiently monitor and assess the measures are needed. On the other hand, majority of stakeholders in the online consultation think that the monitoring and assessment of mitigation measures from Annex XIII could be improved. More specifically, regarding the incidental catch, monitoring programmes for vulnerable species, bycatch by all member states in areas such as the Mediterranean, could be set and implemented following the pilot one set by the GFCM UNEP/MAP-SPA/RAC and other partners through the Project MedByCatch.

4.5.6. Sensitive habitats

From the replies received to the consultation, Majority of Member States in this area do not foresee additional conservation measures and at the moment they are not working on joint recommendations in this regard.

4.6. Outermost regions

The replies received to the consultation included under this chapter come from the Conseil Consultatif pour les Regions Ultrapériphériques (‘CC-RUP’).

This Advisory Council is of the opinion that sensitive habitats must take additional measures, for example by increasing the protection of sensitive coastal habitats by prohibiting bottom trawling in these areas. Similarly, the Advisory Council thinks that it is necessary to reduce and control exhaustively and transparently the use of FAD (Fish Aggregating Devices), as well as the implementation of MCRS for these species would help to its conservation.

It has also been suggested to ban on trap fishing in the Guyana EEZ because the loss of these gear is destructive and causes ghost fishing.

This Advisory Council do not think that additional regional mitigation measures are needed but believes that more detailed data on incidental catches of sensitive species in the outermost regions are needed in order to establish whether or not additional measures are necessary.

Additional steps to collect scientific data on incidental catches of sensitive species is necessary and where possible, animals should be preserved for scientific sampling, although we understand the impediment that may arise in certain fisheries with small scale vessels.

This Advisory Council supports the implementation of observation programs for all fisheries that have a high probability of accidentally catching mammals, reptiles and seabirds in order to obtain more detailed scientific data that will allow appropriate measures to be taken in the regions where they are needed and based on hard data.

Lastly, this Advisory Council wishes to draw attention to current situation of sharks. It pledges for more measures to gather knowledge of these species as well as conservation measures for species in a weaker conservation status.

5. PROMOTION OF RESEARCH AND INNOVATION

Along with measures aimed at promoting fishing practices that help rebuilding stocks and minimise their negative effects, the regulation contains provisions to facilitate scientific research, and most importantly, involvement of the industry in the research that will bring along results that will revert to its own benefit.

The Regulation includes provisions to encourage and facilitate scientific research in particular through pilot projects and its provisions on scientific research and innovative gear, described in the following sections.

5.1. Pilot projects

Pilot projects to reduce unwanted catches (Article 14)

The aim of Article 14 of the Regulation is to encourage Member States to move with projects aiming at reducing discards and thus improving the selectivity of the gears. It needs to be seen as a complement of Article 14 of the CFP Regulation. No specific derogations from the Regulation are foreseen for the implementation of this Article. Therefore, these projects can be implemented at any time and with no specific conditions.

If, as a consequence of these pilots the unwanted catches are of significance, the Member State concerned must “endeavour to establish technical measures to reduce those unwanted catches”.

As a result of the consultation, 13 Member States have informed on different projects involving commercial vessels aimed at the avoidance or reducing the unwanted catches of commercial species and sensitive species (up to 40 projects were informed).

All Advisory Councils reported that they are not directly involved in these pilot projects, but they usually get information about the projects through the relevant stakeholders that are members of the Advisory Council.

Pilot projects on full documentation of catches and discards (Article 23)

Article 23 of the Regulation provides for the adoption of delegated acts by the Commission that supplement the Regulation and define pilot projects to develop a system of full documentation of catches and discards based on measurable objectives. These pilot projects may enjoy a derogation of Part B of the regional annexes (the mesh sizes) but are limited in time and up to a maximum of vessels involved and shall be assessed by STECF.

When the specific projects involve the use of any means to achieve a full documented fishery, commercial vessels may participate, more than 7 but no more than 5% of a given metier per Member States. This part of the fleet may enjoy a derogation of mesh sizes. But in this case, in order to allow a relatively high number of vessels to derogate from mesh size, it has to be first, assessed by STECF and then, granted via a delegated act.

Member States have presented a wide variety of foreseen projects (up to 8 project carried out by 7 Member States), but have not submitted a joint recommendation as foreseen under Article 23(3). All Advisory Councils agree that development of these pilot projects can be beneficial, but some share the opinion that full documentation of catches is a control issue and does not need to be dealt within the Regulation.

5.2. Scientific research (Article 25)

Under this Article the regulation provides for a derogation of the measures applicable for commercial vessels if these are participating in research surveys, hence organised, carried out and concluded by a scientific institution of the Member States. The research may be aimed at finding new gear or modifications of the existing ones. The outcome of the research could be implemented by means of a joint recommendation on innovative gear, based on Article 20 (see 6.3).

Even before the entry into force of the Regulation, the Commission informed all Member States on the new conditions under which the scientific research would take place and how Member States intended to adapt to these conditions.

One of the provisions of Article 25 has raised some concerns of interpretation. Art 25(1)(e) sets out that the fishing operation carried out by commercial vessels shall be limited in time, and when the particular project involves **more than six commercial vessels**, the Commission may decide to consult STECF to assess if the level of participation is justified on scientific grounds. These strict conditions in terms of number of vessels and time limitation aim at avoiding the misuse of the derogations from the technical measures, granted by Article 25.

Following the provisions of this article, several Member States have prepared research projects that were sent to STECF to seek from this scientific body the confirmation that the level of participation was justified according to scientific grounds:

- Croatia request for scientific fishing authorisation of more than 6 volantina vessels in Western Istria waters (2019)[77]

- Italy request for scientific fishing authorization of more than 6 vessels beach seines in Italian territorial waters targeting (Italy request of scientific research on "SARDELLA" (*S. pilchardus*) in Liguria (GSA 9) (2020)[78]

In both cases, STECF concluded that it is not justified, on scientific grounds the number of vessels and that other options should be sought for the scientific purposes.

Despite the possibilities offered by Article 25, most Member States and industry still consider that these provisions are not enough to encourage the involvement of the industry in scientific research.

Many Member States provided a list of scientific research they have been conducting recently. It has to be noted, that most Member States are using the functional mailbox to send the notifications of this research (MARE-TECHNICAL-MEASURES@ec.europa.eu).

5.3. Innovative fishing gear (Article 20)

Any proposal for adoption of innovative gear presented in a joint recommendation should contain an assessment (conducted by the Member State concerned) of the potential impacts of the targeted species and on sensitive species and habitats. This should ensure that any new gear does not have any detrimental qualities in comparison to the gear that it is intended to replace. Preferably, the innovative gear performs better than the gear it is intended to replace.

The use of innovative fishing gear should not be permitted where scientific assessment indicates that their use would lead to significant negative impacts on sensitive habitats and non-target species and shall consider the potential impact on other fisheries where the introduction of such a technique may result in spatial movement into areas fished traditionally with other gears.

It should be noted however, that provided the new gear does not contradict any of the restrictions or prohibitions contained in the regulation (Article 7), there are no legal barriers to its introduction.

As specified in Article 31 of the Regulation, advice should be obtained from ICES on the progress made or impact of innovative gear. The report should draw conclusions about the benefits for, or negative effects on, marine ecosystems, sensitive habitats and selectivity.

The Commission requested ICES to prepare such advice and also specifically requested to the extent possible to provide information on what kind of innovative gears are being used, their objective, their technical specificities and the impact on both target species, non-target species and the environment in which they had been deployed.

[77] STECF PLEN 19-03

[78] STECF PLEN 20-02

An innovative gear is defined by the experts/by ICES as a *gear or a significant component of the gear that has not been used commercially and/or that is sufficiently different from the baseline in the current European Regulations, or in the absence of them, different from the commonly used gear in the specific sea basin (area) in EU waters*.

In response to the request by the Commission, ICES prepared a report from Workshop on innovative fishing gears (WKING)[79] in which it presented a catalogue of fishing gear innovations for EU fisheries. The catalogue provides an overview of relevant state-of-the-art technologies, innovations and their expected impact. It contains 33 example factsheets that are indicative of gear innovations in the sea basins as identified in the Regulation: North Sea (nine innovative gears), North western waters (six), South western waters (two), Baltic Sea (seven), and the Mediterranean Sea (nine). In addition, ICES also identified nine gear innovations outside of the EU area that may be potentially relevant for EU fisheries.

ICES introduced three criteria of assessment (CA): (a) catch efficiency, (b) selectivity on target species and reduction of catch of unwanted and incidental species, and (c) impacts on marine ecosystems, which include impacts on the seabed and benthic ecosystem, risk of gear loss, ghost fishing, and marine plastic pollution, as well as impacts on protected, endangered, and threatened species.

Changes in the catch efficiency and selectivity of a fishing gear can imply an impact in the structure of a target and non-target fish stocks. The innovations implemented can lead to the exploitation of larger or smaller quantities of some species and the extraction of new species that were not previously extracted from the ecosystem. Therefore, considering the impact of an innovation on the different stocks and/or the entire ecosystem is of high relevance.

Two additional criteria – the "complexity" and "technological readiness level" were used to evaluate the suitability, readiness and potential adoption of innovative fishing gear in a specific EU fishery.

For each criterion of assessment, ICES created an innovation matrix, which evaluated the potential performance improvement (no effect or negative, incremental, transformative, and disruptive), and the technological readiness level (low, moderate, high) compared to the baseline (conventional fishing gear).

Based on the results of this analysis, ICES concludes that high **technological readiness** exist for most innovative gears for all three criteria assessed. Technological readiness is important metrics in the process of transitioning of technology and therefore the high score may indicate candidacy for "speedy adoption" of the innovative gears.

In case of flying drones, echo-sensor detectors, controllable doors, electro-razors, crustacean BRDs, ADD, pontoon traps and PingMe the technological readiness was assessed as moderate.

[79] ICES Workshop on Innovative Fishing Gears (WKING) https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2020/WKING%20Report%202020.pdf

From the perspective of the **performance improvement**, the most relevant innovative gears are those that have transformative or disruptive effect on performance improvement. "No effect or negative effect" was not found in any factsheet on innovative gear.

The report by ICES provided examples of innovative fishing gear at various stages of development and an assessment of those innovations according to a set of criteria. The created catalogue of innovative fishing gear also provides an assessment of the benefits and potential negative impacts of these innovations.

On the basis of an assessment of the impacts of innovative gear, the use, or extending the use, of such innovative gear can be included as an option in joint recommendations from regional groups of Member States. However, as the Article 20 of the Regulation states, the use of innovative fishing gear should not be permitted where scientific assessment indicates that their use would lead to significant negative impacts on sensitive habitats and non-target species.

However, the report did not fully meet the Terms of Reference given by the Commission. One of the main drawbacks of ICES advice is too much focus on definition of "innovation" and missing comprehensive evaluation of uptake of innovative gears by fishers in European waters. The report focused on innovative fishing gear currently being developed rather than being used in EU waters. This is mainly caused by resource and time frame constraints. Moreover, evaluation of the impacts of gear innovations should include also socioeconomic aspects associated with innovations, such as financial aspects (investments, cost reductions), user friendliness and health and safety.

STECF considers the framework developed by ICES appropriate to assess the performance of innovative fishing gear, but also notes that current advice is only a first step into a longer time-frame process. In order to provide a more comprehensive review of gear innovations, the further work should include the level of gear uptake by fishers, since the extent to which innovative gears can contribute to reaching the objectives of the Regulation depends on these being first taken up by fishers and adequately monitored during a sufficient time before they can be evaluated. ICES itself considers the current advice a first step into a long-term process, where a more comprehensive review of gear innovations and their impacts could be provided to the EU on a triennial basis. Such review will require the involvement of experts with a broader array of competence.

A majority of Member States considered that the advice produced by ICES is comprehensive and contains a good catalogue of innovations. There is also consensus on the fact that further works needs to be done. It was in particular underlined that socio economic factors need to be better taken into account in order to ensure the final uptake of innovative gear by the industry.

Most Member States also sent relatively detailed information on their projects in the near future, most of them focusing on the implementation of the landing obligation, but some of them, will also include the situation of sensitive species.

All the Advisory Council consider that innovation should be encouraged, and that it has to be seen as a means to increase new more selective gears as well as to reduce the impact on the environment. The Advisory Council also consider that needs to be science

based, and that the process to have this innovations implemented should be shorten. Often, the way from a proposal tabled until it becomes a reality is too lengthy.

A vast majority of stakeholders that responded to the online targeted consultation think that this advice is a good starting point. However, some of them, also added that social and economic criteria should also be considered for future work. There's also a general thinking that the process should be encouraged and speeded; it is underlined that in general much time is needed for proposals to reach implementation.

6. SUMMARY AND CONCLUSIONS.

The Regulation was intended to provide a framework for Member States to make adjustments to permitted fishing gears and closed areas and seasons for several purposes. These adjustments, or introduction of new measures, can be carried out through the regionalisation arrangements of the CFP. Adjustments are possible in order to improve selectivity by size and by species in order to improve the yields from fish stocks and to reduce catches of unwanted fish that would have to be discarded or landed for purposes other than for human consumption. Adjustments are also possible in order to reduce incidental catches of sensitive species and to reduce impacts on sensitive habitats in order that Member States may comply with their obligations under environmental legislation. Such adjustments can be made starting from the legislative baseline in the Regulation, but only if it can be demonstrated that they will contribute to (or at least not prejudice) the attainment of the Regulation's objectives and targets.

In consultation, it has been recognised that the underlying legal mechanism for operating regionalisation is effective. It has been used extensively in particular in the design of exemptions from the landing obligation. However, it was also notes that the arrangements have not yet been used widely for the purpose of increasing yield (by reducing catches of juveniles) or for environmental protection (by reducing catches of sensitive species or impacts on sensitive habitats). No objectives have yet been set for size-selectivity for that purpose. Historical analysis indicates that some increases in size-selectivity has occurred over the medium term but these cannot be directly linked to changes in gear or in fishing practices driven by changes in legislation. Fishing practices and operation of fishing gear are believed to be instrumental in managing selectivity.

Under the 2013 reform of the CFP, it was recognised that changes to fishing gear driven by detailed technical legislation was not appropriate given the highly variable selectivity of fishing gear according to the operational choices made by the fishing master, and the need to make fishers active players in planning their activities including ending discards and optimising their quota uptake (section 2.5 of COM/2011/0417/final). Recognising these characteristics, the 2013 reform of the CFP instituted a results-based approach to selectivity improvement. By requiring all fish to be landed and counted against quotas, fishers would be incentivised to improve their selectivity in order to obtain the maximum economic benefit from the quotas allocated to them. This analysis confirms that view.

Levels of discards or unwanted catches remain high according to latest data used by ICES in its stock assessment analysis, specifically in many mixed demersal fisheries in EU waters. Member States have worked on submitting requests to allow the discarding of certain levels of unwanted catches but have not yet developed significant new

initiatives to improving selectivity. The uptake of more selective gears is increasing but still at very moderate pace. The progression from trialling selective gears to adoption into legislation remains a lengthy process, though it can be much accelerated by use of the regionalisation provisions.

The EU has already taken significant steps to protect marine habitats and species. Fishing with drift nets has been largely prohibited by EU vessels. Deep-sea fishing is very restricted with prohibitions on trawling and gillnetting in the deepest waters. Fishing with very high-impact methods such as explosives and poisons is prohibited. Numerous protected areas have already been adopted in order to conserve deep-sea corals, sea-grass beds and some other habitats. The catching and marketing of a range of sensitive species is prohibited.

However, there is still a substantial need for new measures to improve protection of sensitive species and habitats. Despite large shortcomings in monitoring of fisheries impacts, it is known reliably that many species of large fish have disappeared from much of Europe's seas. Some populations of cetaceans are endangered or critically endangered. Large incidental mortalities of seabirds and large catches of turtles occur. While the development of more marine protected areas is being actively pursued by Member States in some areas (e.g. the North Sea), this is not generally the case in all EU waters, despite significant concerns about the survival of some seabed habitats.

Evidence from a variety of sources indicates that monitoring, control and enforcement, especially the monitoring of unwanted catches such as small fish, sensitive species and the monitoring of impacts on sensitive habitats remains inadequate.

Close cooperation and follow up is necessary to further common understanding, especially in those cases where several relevant regulations apply, as is the case of the Mediterranean. As an example, some Member States are of the opinion that the provisions for sensitive species described in Annex XIII are not applicable, because the fisheries described in the annex are not affecting them.

Overall, this review exercise has indicated that the legislative structure of the Regulation is in general appropriate and fit for purpose. However, Member States have so far made relatively little use of the regionalisation possibilities in order to increase size-selectivity by reducing catches of juveniles, to reduce unwanted catches by improving species-selectivity, and by introducing measures to protect sensitive species and sensitive habitats. In consultation, few initiatives or intentions to these ends were announced. Substantial challenges exist in the protection of sensitive species and sensitive habitats, with some species being now wholly absent from areas that once they inhabited.

APPENDIX I Implementation of the Seabird Action Plan[80]

The objective of the Action Plan was to minimise and, where possible, eliminate the incidental catches of seabirds, with priority action focussing on individuals belonging to at least 49 threatened seabird populations by EU vessels operating in EU and non-EU waters, as well as by non-EU vessels operating in EU waters. For other seabirds where the populations were stable but bycatch was at levels that were a cause for concern, bycatch should be reduced as a first step towards bycatch elimination.

The Action plan set out 30 specific actions to be undertaken by Member States, NGOs, Advisory Councils and the European Commission.

Following the presentation of this Communication, no conclusions were drawn by either the Presidency or Member States.

In 2019 the European Commission invited Member States to provide information on the implementation of the Seabird Action Plan. Ten Member States provided no information. One further Member State provided information concerning only a part of its territory. The information made available is summarised below.

Two Member States reported making no implementation of the Seabird Action Plan because none was required in law, as the Seabird Action Plan was a voluntary approach. One further Member State reported without informing of any specific actions.

Monitoring: Very few Member States could provide estimates of numbers of seabirds taken by their fleets. Even where DCF coverage was implemented it was not found adequate due to the lack of a requirement to sample under-8m vessels and the lack of effort data specific to static gear. Overall DCF reports submitted under a data call to ICES in 2018 totalled 53 birds. One Member State reported efforts to implement seabird bycatch self-reporting as part of an electronic logbook system.

Three Baltic Member States reported a total of some 1400 seabirds per year in incidental catches from the Baltic Sea. One Member State estimated overall incidental catches in the North Sea and Baltic Sea at some 100 000 to 150 000 per year. Incidental catches in longlines were estimated at some 56 300 per year.

Mitigation: No new technical mitigation devices have been developed that are proven to reduce incidental catches in gillnet fisheries. Three Member States reported having proposed or implemented some closures or voluntary closures of gillnet fisheries in areas and times of high abundances of diving ducks in certain areas of the Baltic Sea.

Legislative transposition: No Member State had reported transposing the Seabird Action plan into national legislation.

[80] Communication from the Commission to the European Parliament and the Council. Action Plan for reducing incidental catches of seabirds in fishing gears. COM/2012/0665 final

Electronic monitoring: Studies by three Member States indicated that electronic monitoring on small vessels is feasible, but there was strong resistance from the fishing sector. A fourth Member State supported this approach.

Outreach: Voluntary closures were trialled in three Baltic Member States with good participation by fishers. Another Member State had attempted to institute voluntary reporting of seabird incidental catches but none had been recorded.

Financial support: A significant EU-funded project with NGO involvement operated in two Member States and involved self-reporting by fishermen and other activities.

As no appropriate technical measures had been identified to mitigate seabird bycatches in gillnet fisheries, issues of financial support were not applicable. However, one Member State reported using a conditionality incentive to respect closed areas: vessels not respecting closures to protect seabirds were deemed ineligible for compensation payments in respect of seal predation.

Research: Despite some trials in an EU-funded project with the participation of NGOs to find methods to reduce bycatches of diving ducks in gillnets by various means, no effective technical measure could be identified. One fisheries institute is still pursuing work on this topic. No research or testing of measures to deter seabirds from longlines (which are widely used elsewhere) was reported.

APPENDIX II: SYNOPSIS OF THE CONSULTATION.

1. Consultation strategy

The objective of the consultation was to gather the opinion of interested stakeholders in the Technical Measures Regulation (hereinafter, the TMR), Regulation EU 2019/1241.

Following the provisions of Article 31 of TMR, a necessary step to prepare the report mentioned in this article was to consult Member States and relevant Advisory Councils. Given the overall importance of the regulation also for other stakeholders, this consultation was complemented by an online targeted stakeholder consultation.

Therefore, the interested stakeholders identified where all Member States and all AC. As for the online consultation, it was intended to organizations with interest in fisheries management (environmental organisations, NGOs, academic, scientific, social and economic partners).

2. Methodology and tools to process the data.

The methodology used varied depending of the specific targeted group. Given that the Member States are the final authorities in charge of the enforcement of the TMR, a dedicated questionnaire was sent, attached to this note.

Likewise, considering the role of the AC a slightly different questionnaire (also attached) was prepared.

Lastly, for the online consultation, it was decided that another questionnaire was necessary to gather all the views of these interested parties.

In all cases, the possibility of including supporting documentation was provided.

In all cases, all the receptors of the consultations were informed on the launching of similar procedure to gather all opinions.

On 10 December 2020, two letters were sent to all Member States and AC, informing them of this procedure, and offering a deadline to receive the replies by15 February 2021.

In these two letters, it was requested to send all the replies to the functional mail box: MARE-TECHNICAL-MEASURES@ec.europa.eu.

In a similar manner, and helped by the Commission online tool “EUSurvey”, the online consultation was launched, offering the same deadline to send the replies. In this case, publicity was made through DGMARE website, newsletter and all DGMARE social networks, such as Twitter and Facebook.

3. Results.

The results of this consultation have been processed and analysed by the corresponding DGMARE services.

Due to the amount of work involved, it took considerably longer for some consultees to respond and the initial deadline was extended by two weeks – until the end of February. Overall, we received replies from 23 Member States and from 8 Advisory Councils.

Considering that the ultimate objective of this reporting obligation is to present the implementation of this legal text, the replies received have been summarised and included in the report itself, to the extent possible. Given that it was not specifically indicated in the letters sent to both Member States and Advisory Councils, the specific replies will not be displayed.

In any case, when a specific topic for which replies have been received is presented in the SWD/report, at the end of that particular chapter, all replies have been added.

Replies from Member States and Advisory Councils are presented with the specific mention of "MS" / "AC". When the comments come from the targeted online consultation, they are referred to as "stakeholders".

In total 37 responses were received in the online stakeholder consultation.

Table 1: Replies received in the targeted stakeholder consultation by the type of the stakeholders.

Type of stakeholder	**Number of answers**	**Ratio**
Non-governmental organization (NGO)	23	62.17%
Academic/research institution	3	8.11%
Business association	3	8.11%
EU citizen	3	8.11%
Company/business organization	2	5.41%
Non-EU citizen	1	2.7%
Public authority	1	2.7%
Other	1	2.7%
Total	**37**	**100%**

APPENDIX III: SUMMARY TABLE OF JOINT RECOMMENDATIONS RECEIVED

JOINT RECOMMENDATION	AREA	TM AFFECTED	ASSESSED
JR for Venus spp derogation for MCRS until end of 2022	MED	MCRS	Assessed by STECF 20-01
Directed fishing	MED	Directed Fishing	Assessed by STECF 20-03
Joint recommendation submitted before the entry into force of Regulation by the MED. However, the proposed technical measures would not fail to comply with the requirements established for technical measures in Article 15 of Regulation (EU) 2019/1241	MED	MCRS	Assessed by STECF 19-02, adopted by Commission Delegated Regulation (EU) 2020/3 of 28 August 2019 establishing a discard plan for Venus shells (Venus spp.) in certain Italian territorial waters
Baltic proper harbor porpoise, introduce regional mitigation measures to reduce incidental catches of Baltic Proper harbour porpoise	Baltfish	Protection of sensitive species	Assessed by STECF 21-01

JOINT RECOMMENDATION	AREA	TM AFFECTED	ASSESSED
Joint recommendation for the protection on cetaceans in the Bay of Biscay	SWW	Protection of sensitive species	Assessed by STECF 21-01
Joint recommendation on short-necked clam (Venus philipinarum).	SWW	MCRS, change the minimum size from 35mm to 32mm	Assessed by STECF 21-02
Joint recommendation on directed fisheries.	SWW	Directed Fisheries	Assessed by STECF 21-05 (EWG LO)
Joint recommendation submitted by the SWW concerning several TM	SWW	Maintain the MCRS of the horse mackerel caught by a small artisanal fishery in Xávega region in ICES division 8c and subarea 9	Assessed by STECF 20-04 and adopted by COMMISSION DELEGATED REGULATION (EU) 2020/2013 of 21 August 2020 amending Regulation (EU) 2019/1241 of the European Parliament and of the Council as regards technical measures for certain demersal and pelagic fisheries in the North Sea and in the South Western Waters
		Harmonize the MRCS in recreational fisheries with the one applicable to commercial fisheries: haddock, saithe, pollack, hake, megrim, sole, plaice, whiting, ling, blue ling, mackerel, herring, horse mackerel, anchovy and sardine. Increase MCRS for cod, red seabream and seabass for recreational fisheries	
Joint recommendation on scallops in the Eastern Channel.	NWW	Closed or restricted areas, the establishment of a fish stock recovery area in the intermediate zone in the Eastern Channel and for prohibitions on fishing for dredges between 15 May	Assessed by STECF 21-05 (EWG LO)

		and 30 September in Divisions VIId and in part of VIIe.	
Joint recommendation on technical measures for the Celtic Sea, Irish Sea and West of Scotland. Including T90 100 mm on the basis of equivalent selectivity than T0 120mm. minimum sizes were specified for almost twenty species for recreational fisheries	NWW	Specific technical measures for the Celtic Sea, Irish Sea and West of Scotland. MCRS	Last STECF assessment 21-05 (EWG LO)
SWW and NWW Member States have submitted a Joint for the fishing of SBR/678	SWW and NWW	Closed or restricted areas	Assessed by STECF 21-05 (EWG LO)
		MCRS	
Joint recommendation submitted by the North Western Waters Group on the reintroduction of a 20% haddock catch threshold for the mixed demersal fishing gears in the Celtic Sea 7b to 7k	NWW	Fishing gear restrictions	Assessed by STEC 21-02
Joint recommendation by the NWW assessed by STECF before the new technical measures regulation was adopted.	NWW	Gear specifications	Assessed by STECF 19-02, implemented by Commission Delegated Regulation (EU) 2019/2239 of 1 October 2019 specifying details of the landing obligation for certain demersal fisheries in North-Western waters for the period 2020-2021
JR submitted by the NS regional group concerning several TM	NS	Inclusion of berried lobster in Annex I (prohibited species)	Assessed by STECF 20-04 (EWG LO), and adopted by COMMISSION DELEGATED REGULATION (EU) 2020/2013 of 21 August 2020 amending Regulation (EU) 2019/1241 of the European Parliament and of the Council as regards technical measures for certain demersal and pelagic fisheries in the North Sea and in the South Western Waters
		Increasing the MCRS for European lobster in the Swedish exclusive economic zone (EEZ) in ICES division 3a	
		Harmonize the MCRS for seabass caught in recreational fisheries in ICES division 3a and	

		ICES subarea 4 with the MCRS of seabass for commercial fisheries	
		Several gear modifications aimed at increasing selectivity and reduce unwanted catches (Annex V)	
		Allow the use of SepNep	
		Seasonal closure for commercial and recreational fishery for European lobster in the Swedish exclusive economic zone (EEZ) in ICES division 3a	
		Prohibition to fish lobster with gears other than lobster pots in the Swedish exclusive economic zone (EEZ) in ICES division 3a	
Plaice Box additional measures, Inclusion of Danish seiners 100 mm	NS	Closed or restricted areas	Assessed by STECF PLEN 20-03
Sprat box (keep previous status of sprat box)	NS	Closed or restricted areas	
RTC for Northen prawn Amendment to Delegated Regulation (EU) 2019/2201 to ensure a correct implementation of real-time closures in the Skagerrak.	NS	RTC	Assessed by STECF PLEN 19-02 (before entry into force TMR; posterior JR with some modifications assessed by STECF 20-3)
JR to introduce the Excluder in the Norway pout fishery	NS	Gear selectivity	First time assessed by STECF 20-02. Posterior assessment by STECF 20-03
Joint recommendation submitted by the Scheveningen Group on the reintroduction of restrictions of the length of the beam in the beam trawl fishery in the North Sea	NS	Fishing gear restrictions	Assessed by STEC 21-02

Joint recommendation to equates to an amendment to the mesh sizes for the North Sea contained in point 1.1, Part B (Mesh Sizes), Annex V (North Sea) where a derogation from the baseline mesh size for towed gears of 120 mm to 90 mm is provided for vessels operating in the Skagerrak and Kattegat under specified conditions	NS	Fishing gear restrictions	Assessed by STECF 21-05 (EWG LO)
This joint recommendation was developed and submitted by the NS and assessed by STECF before the new technical measures regulation was adopted.	NS	Gear specifications	Assessed by STECF 19-03, adopted by Commission Delegated Regulation (EU) 2019/2238, specifying details of implementation of the landing obligation for certain demersal fisheries in the North Sea for the period 2020-2021
Joint Recommendation on RTC on Skagerrak, developed and submitted by the NS before the entry into force of Regulation (EU) 2019/1241.	NS	RTC	Assessed by STECF 19-02, adopted by Commission Delegated Regulation (EU) 2019/2201 of 1 October 2019 supplementing Regulation (EU) 2019/1241 of the European Parliament and of the Council with detailed rules for the implementation of real-time closures for Northern prawn fisheries in the Skagerrak