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54TH PLENARY MEETING REPORT
(PLEN-17-01)

PLENARY MEETING,
27-31 March 2017, JRC Ispra

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Abstract

Commission Decision of 25 February 2016 setting up a Scientific, Technical and Economic Committee for Fisheries, C(2016) 1084, OJ C 74, 26.2.2016, p. 4–10. The Commission may consult the group on any matter relating to marine and fisheries biology, fishing gear technology, fisheries economics, fisheries governance, ecosystem effects of fisheries, aquaculture or similar disciplines. The Scientific, Technical and Economic Committee for Fisheries hold its 54th plenary on 27-31 March 2017 at JRC Ispra (Italy).

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54th PLENARY MEETING REPORT OF THE SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (PLEN-17-01)

PLENARY MEETING

27-31 March 2017, JRC Ispra

1. INTRODUCTION

The STECF plenary took place at the Joint Research Centre (JRC), Ispra, Italy, from 27 to 31 March 2017. The chair of the STECF, Clara Ulrich, opened the plenary session at 09:00h. The terms of reference for the meeting were reviewed and discussed and consequently the meeting agenda agreed. The session was managed through alternation of plenary and working group meetings. Rapporteurs for each item on the agenda were appointed and are identified in the list of participants. The meeting closed at 15:30h on 31 March 2017.

2. LIST OF PARTICIPANTS

The meeting was attended by 30 members of the STECF, two invited experts and six JRC personnel. Five Directorate General Maritime Affairs and Fisheries (DG MARE) attended parts of the meeting. Section nine of this report provides a detailed participant list with contact details.

The following members of the STECF informed the STECF chair and Secretariat that they were unable to attend the meeting:

Massimiliano Cardinale

Luc van Hoof

3. INFORMATION TO THE PLENARY

3.1 STECF membership appointments

After the resignation of Martin Pastoors and Anton Paulrud from the STECF in early 2017, the Commission appointed Josep Lloret and Hans van Oostenbrugge as STECF members in March 2017. Both new committee members attended the plenary meeting.

3.2 Visit of Commissioner Vella

During his visit to the Joint Research Centre in the context of the Maltese Semester, the Commissioner for Environment, Maritime Affairs and Fisheries, Karmenu Vella visited the spring STECF spring plenary meeting. The Commissioner praised scientists for their role in providing sound data and evidence to underpin the European Commission's policy proposals. One of the topics intensively discussed were the particularities of small-scale fisheries in the Mediterranean Sea. Commissioner Vella's speech: <https://ec.europa.eu/commission/commissioners/2014->

3.3 JRC Presentation on database of STECF stock assessment results and online dashboard

Chato Osio presented the work done by the JRC Team (Chato Osio, Alessandro Mannini, Maurizio Gibin, Finlay Scott) to build a reference database of STECF stock assessments results.

Since 2007, the Scientific Technical Economic Committee for Fisheries (STECF), for which JRC runs the Secretariat and all the data collection process, started collecting and organizing the information on Mediterranean and Black Sea fisheries, and since 2009 performing standardized stock assessments on these fisheries. The stock assessment results have been documented in 36 reports (<https://stecf.jrc.ec.europa.eu/reports/medbs>) stemming from 36 meetings attended on average by 20 Mediterranean fisheries experts.

After almost 10 years of stock assessments in the Mediterranean Sea, JRC extracted the available stock assessment data from the digital repositories of the STECF expert working groups and compiled a new reference database, available online under the JRC Data dissemination web page (<https://stecf.jrc.ec.europa.eu/dd/medbs/ram>).

Stock assessments performed during the STECF working groups employ different approaches and tools, but models implemented in the Fisheries Libraries in R (FLR, <http://www.flr-project.org/>) were the most used.

Main features of the database:

- Since 2010, each assessment is fully documented, input/output/script are saved and checked against EWG report.
- Some discrepancies exist between the reports and the data in the digital repositories (not final run, errors in Fref)
- Each stock assessment can be rerun, and most are effectively rerun, to ensure traceability and foster reproducible scientific research.
- Stock assessment files and scripts can easily be shared with RFMOs/projects.
- The full data extraction and database compilation is in GitHub, version control system, any change to SA can be traced and different versions of the DB can be compiled in time. This part is currently not public.
- Results of each stock assessment are linked via a digital URL to the original .pdf report to ensure ease of access to the fully documented stock assessment reports.

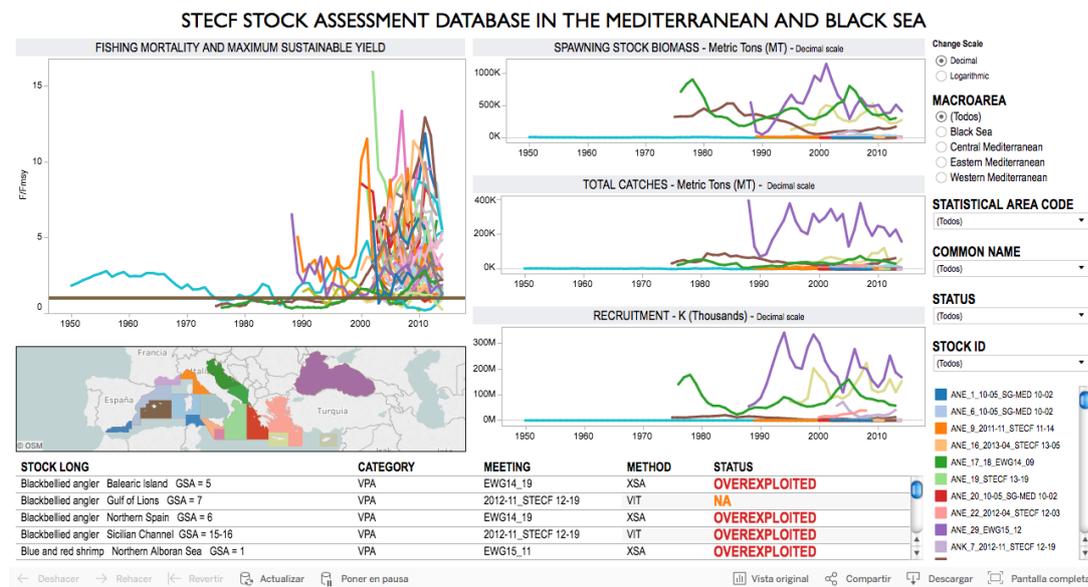
From each assessment contained in the STECF reports yearly time series of Total Catch, Recruitment, Spawning Stock Biomass and Fishing mortality were extracted. Version 0 was released on March 27 2017 and contains all the most recent stock assessments performed by STECF EWG's up until STECF EWG 16-13. The database will be updated to accommodate new stock assessment results as they are approved by the STECF.

The assessments data are made available through an online interactive dashboard that allows readers to compare and contrast several stock assessments variables such as: fishing mortality spawning biomass, recruitment and to filter by area, species or status. Currently the dashboard is accessible only in browsing mode, but different access wrights can be granted.

The target audience of the dashboard ranges from governments, fisheries institutes, stakeholders, NGO's and common citizens that want to check the status of marine resources.

The STECF database is the reference database for the computation of the Common Fisheries Policy monitoring indicators for the Mediterranean and Black Sea (https://stecf.jrc.ec.europa.eu/documents/43805/55543/2016-03_STECF+16-03+Monitoring+performance+CFP_JRC100814.pdf) and is at the core of the yearly presentations for the Status of European Seas (https://ec.europa.eu/fisheries/seminar-state-fish-stocks-and-economics-fishing-fleets-2016_en).

A copy of the Mediterranean and Black Sea STECF stock assessment database will be included, for the first time, in the next release of in the RAM legacy database: a voluntary contributed worldwide stock assessments database, RAM legacy, (<http://ramlegacy.org/>). The RAM Legacy database includes fish stock assessments from all around the world's oceans, and provides a unique source of information to make comparisons between fisheries and to perform global analysis of stock status. Until now the Mediterranean and Black Sea were not included in RAM Legacy.



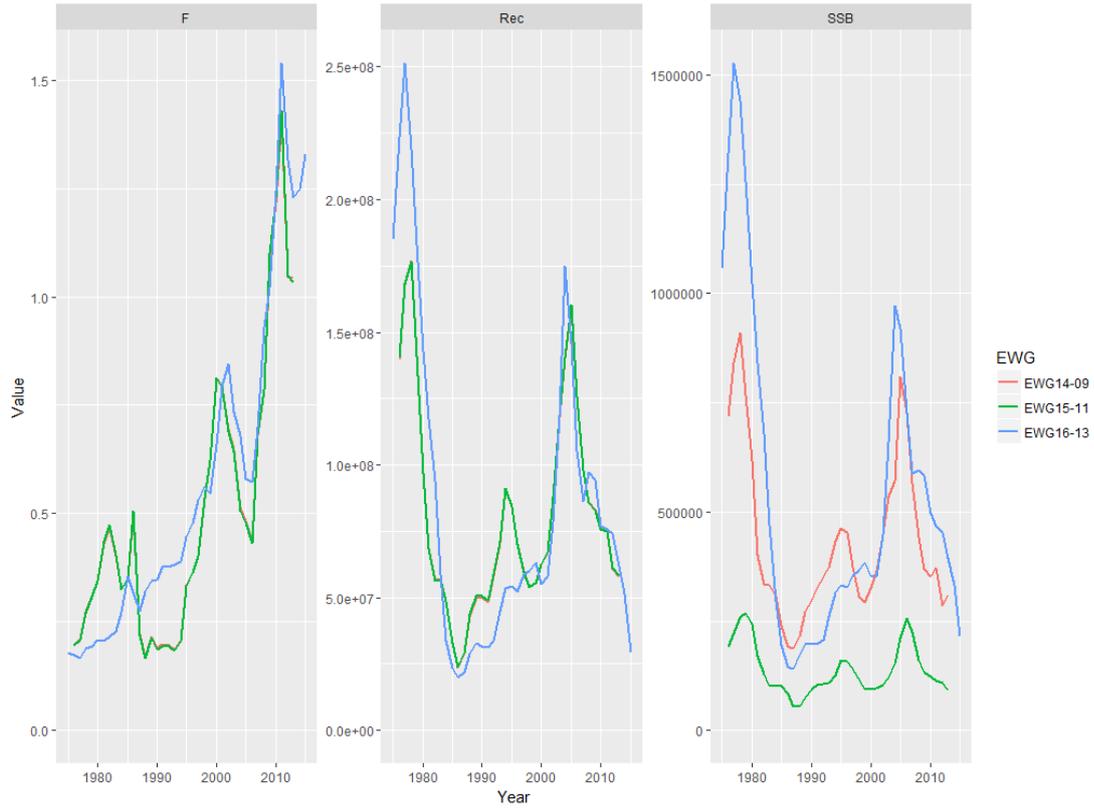
3.4 JRC Presentation on the stock status of the small pelagics in the Adriatic Sea

Alessandro Mannini shared with the Plenary what was present on behalf of the STECF during the Conference on the Regional Multiannual Plan for small pelagics in the Adriatic Sea held in Zadar (Croatia) on 20th of March 2017.

The presentation was agreed with the Scientific, Technical and Economic Committee for Fisheries (STECF) and it was focused in summarizing the health status of Anchovy and Sardine in the GSAs 17-18 (namely the Adriatic Sea).

The main findings obtained during the last three stock assessment expert working groups on small pelagic, describe an increasing trend in the fishing mortality and low values both in term of recruitment and spawning stock biomass.

ANCHOVY



SARDINE



This heavy level of exploitation has suggested a prompt action in reducing fishing mortality which should be more effectively achieved on introducing TAC rather than to the currently measures based on fishing closure in space or time, reduction in effort, changing age selectivity etc.

During the discussion was clear that many of the parties (Adriatic Member States delegates, MEDAC, Fishery sector representatives) were in disagreement on the implementation of the new MAP and TAC system for these two stocks and many questions were about the stock assessment results and their reliability.

The importance of the environment on the dynamics of these two species and the possibility to consider an ecosystem approach to evaluate the state of health of these resources were put on the table. Moreover, there were many doubts about the implementation of the TAC measure in a context of i) mixed species and ii) different behavior of the fishing fleet: in Italy pelagic trawlers and purse seiners and in Croatia purse seiners mainly targeting Sardine. It was also stressed the socio economic importance of these fisheries in the area and the fact that the MAP not provide enough information on how these activities can be preserved in its entirety with all of the existing local specifics.

One of the main point of discussion was about the need of this new MAP instead of waiting for the outcomes of some regulation measures taken through spatial and temporal measures (closed area) established in 2015 for which after only one year of implementation (stock assessment in the 2016 deal with last data coming from DCF in 2015) seems too early to expect any significant effect.

The discussion was actually a platform for exchanging of opinions, knowledge and experience, hoping to move toward a common agree final implementation of the MAP in the next future.

4. ASSESSMENT OF STECF EWG REPORTS

4.1 EWG 16-17: 17 Stock assessments in the Mediterranean Sea 2016 - part II

Request to the STECF

STECF is requested to review the report of the STECF Expert Working Group meetings, evaluate the findings and make any appropriate comments and recommendations.

STECF response

STECF observations

The working group was held in Ispra, Italy, from 19th to 25th November 2016. The meeting was attended by 19 experts in total, including 2 STECF members and 3 JRC experts.

The objective of the EWG 16-17 was the stock assessment of demersal species. The ToRs were based on the STECF-EWG16-14 (Methodology for the stock assessments in the Mediterranean Sea) report, where stocks were classified into levels according to the available information and stock assessments methods were proposed to determine stock status (https://stecf.jrc.ec.europa.eu/documents/43805/1446742/2016-07_STECF+16-14Methods+for+MED+stock+assessments_JRC102680.pdf).

STECF acknowledges that compared to the previous Mediterranean meeting (STECF-EWG16-13) EWG16-17 had two additional days to answer the ToRs. STECF notes that this additional time was of considerable help, allowing a full review of the work and agreement on conclusions during the meeting.

TERMS OF REFERENCE:

For the stocks given in Annex I, the STECF-EWG16-17 is requested to:

ToR 1. Data gathering

- 1.1.** Compile and provide the most updated information on stock identification, age and growth, maturity, feeding, habitat, and natural mortality.
- 1.2.** Compile and provide complete sets of annual data on landings and discards for the longest time series available up to and including 2015. This should be presented by fishing gear as well as by size/age structure (see Annex II for more details).
- 1.3.** Compile and provide complete sets of annual data on fishing effort for the longest time series available up to and including 2015. This should be described in terms of amount of vessels, time (days at sea, soaking time, or other relevant parameter) and fishing power (gear size, boat size, horse power, etc.) by Member State and fishing gear. Data shall be the most detailed possible to support the establishment of a fishing effort or capacity baseline (see Annex II for more details).

- 1.4. Compile and provide indices of abundances and biomass by year and size/age structure for the longest time series available up to and including 2015 (see Annex II for more details).

ToR 2. Stock assessments (Level 1)

- 2.1. Assess trends in fishing mortality, stock biomass, spawning stock biomass, and recruitment. Different assessment models should be applied as appropriate. Models should be compared using model diagnostics including retrospective analyses when the models can produce one. The selection of the most reliable assessment should be justified. Assumptions and uncertainties should be reported.
- 2.2. Propose and evaluate candidate MSY value, range of values and safeguard points in terms of fishing mortality and stock biomass. The proposed values shall be related to long-term high yields and low risk of stock/fishery collapse and ensure that the exploitation levels restore and maintain marine biological resources at least at levels which can produce the maximum sustainable yield.
- 2.3. Provide short and medium¹ term forecasts of spawning stock biomass, stock biomass and catches. The forecasts shall include different management scenarios, *inter alia*: zero catch, the status quo fishing mortality, and target to F_{MSY} or other appropriate proxy by 2018 and 2020 (by means of a proportional reduction of fishing mortality as from 2017). In particular, predict the level of fishing effort exerted by the different fleets which is commensurate with the short- and medium-term forecasts of the proposed scenarios.
- 2.4. Make any appropriate comments and recommendations to improve the quality of the assessments. Furthermore, advise on the ideal assessment frequency.

ToR 3. Stock assessments (Levels 2-4)

- 3.1. Assess trends in fishing mortality, stock biomass, spawning stock biomass, and recruitment. Based on the precautionary approach, determine proxies MSY reference points on the exploitation level and the status of the stocks. Different assessment models should be applied as appropriate, including retrospective analyses when the models can produce one. The selection of the most reliable assessment should be explained. Assumptions and uncertainties should be specified.

1 Medium term forecast only when an acceptable stock-recruitment relationship is identifiable.

- 3.2.** Make any appropriate comments and recommendations to improve the quality of the assessment and/or to upgrade the assessment level and/or improve the quality of the data. Furthermore, advise on the ideal assessment frequency.

ToR 4. Summary sheets

Provide a synoptic overview of: (i) the fishery; (ii) the most recent state of the stock (spawning stock biomass, stock biomass, recruits, and exploitation level by fishing gear); (iii) the source of data and methods and; (iv) the management advice, including MSY value or proxies, range of values and safeguard points.

ToR 5. Data quality check

Summarize and concisely describe all data quality deficiencies, including possible limitations with the surveys of relevance for stock assessments and fisheries. Such review and description are to be based on the data format of the official DCF data call for the Mediterranean Sea launched on the 28 April 2016. Identify further research studies and data collections which would be required for improved fish stock assessments.

STECF comments

STECF considers that the EWG successfully addressed all the ToRs. STECF notes that the EWG carefully reviewed the quality of the assessments produced. Some analyses were considered to be suitable for short term forecasts, others were only considered sufficiently reliable to estimate F-status, but no forecast was produced; and one assessment was judged to be too unreliable to determining stock status or to provide advice.

The report summarises the available data for each area/species combination; assessment or index analyses and catch options whenever suitable. Where possible, stock status and catch estimates are provided, as well as a short term forecast in terms of changes in F. The EWG carried out seven age-based analytical assessments with short term forecasts, F target and catch estimates for 2017.

STECF discussed the methodological approaches used by the EWG. Age-based approaches may not be the most suitable for shellfish for which direct age assignment is not possible and environmental forces may produce important changes in biological parameters such as growth over time. More advanced length-based methods now exist and are used for other shellfish stocks in the world. STECF notes that such methods could be explored in the future for Mediterranean shellfish stocks as well. STECF also acknowledges that the short time series of data for all these stocks results in some instability in the estimates, although such uncertainty is considered acceptable. When additional data become available some revision to the results and methods used will be performed. STECF considers nevertheless, that these current assessments are of a sufficient standard to be used as the basis for catch / fishing mortality estimates.

STECF agrees with the EWG statement that the time series of age based information for all stocks were too short and not enough contrasting to allow the evaluations of fishing mortality (F) reference points based on a reliable stock-recruitment relationship. Comparisons between current F and target Fs were based on the F_{MSY} proxy $F_{0.1}$ derived from yield per recruit (Y/R) analyses.

STECF notes that the EWG provided estimates for *Nephrops* in GSAs 17-18 combined, based on a long time series of catch and a surplus production model. The results show a relatively poor retrospective performance in estimation of F, while retrospectives on

Biomass are less problematic. In any case, all retrospective runs fall inside the uncertainty regions.

STECF also notes some uncertainty catches from the early part of the time series, but when testing the results with and without early historic catches the conclusions on stock status did not change. So the method is considered sufficiently robust to these issues and informative of stock status. STECF notes that the biomass of *Nephrops* in GSA 17-18 is estimated to be at $0.38B_{msy}$ (Table XX), close to the lowest observed of the time series. . The short term forecast carried out suggest that reducing fishing mortality at $F=F_{MSY}$ in 2017 and beyond are expected to lead to a slow increase in biomass, recovering to B_{MSY} in around 8 years . The forecast suggests that catches corresponding to $F=F_{msy}$ in 2017 could be slightly higher than in 2015 (+8%), but still substantially below the catches observed up to 2014.

STECF notes that in future, the EWG and GFCM are expected to continue to attempt to produce age or length-based assessments for this stock using multiple growth models that incorporate regional and sexual differences in growth, as referred to in EWG-16-17. Until then, STECF endorses the use of the surplus production approach for this stock and the main resulting conclusions. EWG noted that, in common with many assessment models, the model is sensitive to the choice of tuning series. STECF agrees with the EWG that the longest time series which used the maximum catch information and providing the narrowest confidence intervals resulted as the appropriate choice in this case.

STECF observes that there are some additional considerations for this stock. The spatial boundaries and the stock definition remain unclear. The specific project (STOCKMED) aimed at the definition of stocks units in the Mediterranean was not conclusive, especially for this area, due to a generalized lack of evidence on some aspects useful for stock discrimination as larval dispersal, connectivity, genetics, and also in detailed fisheries activities as spatial distribution of the fleets. Nevertheless, there was observed spatial variability in growth among *Nephrops* in GSA 17 and GSA 18, especially in the deep waters of the Pomo Pit.. Secondly, the possible underestimation of the catch in the early part of the time series.might overestimate SSB_{2016} Therefore to take a precautionary approach and deliver F_{MSY} in 2017, compared to the estimated F_{2015} , fishing mortality would need to be reduced to at least the 23% reduction indicated in the forecast table (Table 4.3.1).

Regarding the other *Nephrops* stocks, STECF considers the *Nephrops* XSA assessments (for GSA 9 and 11) give reliable results, based on the evaluation of residuals and retrospective performance. STECF notes that some issues associated with MEDITS data from 2011 in GSA 11 do not strongly affect the assessment results and associated catch estimates. Underwater TV survey observations are not available for these stocks.

STECF acknowledges the attempt to obtain a fully converged age based assessment for *Nephrops* in GSA 6. STECF agrees with the EWG that the XSA model gives rise to concern due to either methodological or more likely data issues for the MEDITS surveys. STECF endorses the general EWG conclusion that F in 2013 is above $F_{0.1}$ by a factor of about 4 and that all the evidences suggest a further increasing in F in 2014 and 2015. STECF therefore supports the EWG conclusions that F should be reduced.

STECF notes that the all four deep-water rose shrimp assessments (GSAs 1, 9, 10 separately and 9, 10 & 11 combined) give robust results with only minor retrospective revision and can be considered useful for catch estimates. STECF notes that assessment of deep-water rose shrimp in GSA 9 was undertaken by the GFCM in 2016 and was adopted unchanged by the EWG. The combined assessment of deep-water rose shrimp in GSAs 9, 10 and 11 shows a stock with exploitation close to MSY, and STECF considers the assessment provided for the whole area representative of the overall status at this wide scale. However, the comparison of the assessment performed on the combined area with the assessments performed in the single GSA might indicate that exploitation rates

could be higher in GSA 10 than in GSA 9 and 11. However, neither in this case, evidences of eggs and larvae dispersal necessary for assuming connectivity and supporting fusion are not available even though hypothesized.

STECF notes that the assessment for striped red mullet (GSA 9) using 6 age groups shows a slightly poorer retrospective performance than an alternative assessment based on 4 ages only. STECF supports the EWG conclusions that the 4+ assessment is of sufficient reliability to be used for catch forecast.

STECF also agrees with the EWG that considered not feasible to carry out analytical age based assessments for anglerfish, seabass, (GSAs 1, 5, 6, 7) sole and gilthead seabream (GSA 7). STECF endorses the use of the VIT model as an alternative. This method produces results which reliability and precision are limited as is based on a limited number of years and include strong assumptions as equilibrium status. It cannot estimate annual recruitment, and is not suited to assessing trends in F or SSB . However, STECF recognises that the model can supply a preliminary perception of the stocks status. In these cases variability in estimated parameters across years was small suggesting the values of F and $F_{0.1}$ are relatively stable and suitable for advice. STECF also agrees with the EWG warning that this method can be considered suitable for F estimates in these specific cases but not for short-term forecasts or precautionary biomass evaluations. For these assessments the precision of F values presented in the table below have been truncated to one digit of precision, to retain information of the general magnitude of the $F/F_{0.1}$ ratio, but to bring out the lower precision of these evaluations relative to the age base assessments.

Finally STECF supports the view of the EWG that stock status could not be provided for a number of stock units: -striped red mullet in GSA 11; European seabass in the combination of GSAs 1, 5, 6 & 7; and anglerfish in GSA 6 and GSA 7 separately due to data deficiencies. In the cases of anglerfish and seabass assessments are provided for GSA 1,5,6&7 combined and GSA 7 respectively. STECF also notes that the estimate of F for common sole in GSA 7 can only be indicative of the direction of change required to reach $F_{0.1}$ and the magnitude of the changes cannot be reliably identified. STECF would encourage the Commission to try to obtain more comprehensive data, particularly from Italy for GSA 11 and especially from France for GSA 7.

In addition STECF notes that for a number of species, alternative and potentially more efficient spatial scales of aggregation useful for management purposes should be evaluated based on clear evidence (genetics, fishery activity, connectivity, etc.).

STECF encourages the use of information derived from other sources (research projects, monitoring of MPAs), especially for coastal species for which an important part of the catch (particularly spawners) is made by artisanal (small-scale) or recreational fisheries in EU Mediterranean waters). The shallower portion of the coastal area is not covered by the routinely carried out trawl and echo-surveys.

The basis of all the evaluations discussed above are dependent on the type and quality of information available. The tables provided in Section 2 and Section 5 of the EWG report and summarized below show the assessment work that was attempted, and the basis for stock status and values of F and where possible catch at F_{MSY} that have been estimated for each stock.

STECF conclusions

STECF acknowledges that the EWG was able to address all the terms of reference, completing evaluations of all GSA/species combinations requested. However, due to shortage of data a full assessment of some stocks in certain areas or combinations of stock areas was not possible.

STECF concludes that the accepted assessment in Table XX below and the summary sheets in section 5 of the report provides the best information currently available on the status of the stocks and the trends in stock biomass and fishing mortality for the stocks concerned.

Finally, STECF noticed that in some cases assessments conducted at Med EWG remain different from those made at GFCM. This remains a point of concern considering that assessments are often used for giving quantitative advice on future fishing opportunities. The current efforts made by DGMare and GFCM to improve the quality and availability of assessment results contribute to improving the situation and should be sustained.

Table 4.3.1. Summary of results from EWG 16-17 by area and species, showing F in 2015, target F under exploitation at F_{MSY} proxy (=F_{0.1} for all stocks except for *Nephrops* 17-18 where an estimate of F_{MSY} is available) and the resulting catch, change in catch and change in predicted change in SSB from 2015 to 2018. F₂₀₁₅ is terminal F in the assessment. Change in F is the difference (expressed as a fraction "Fmultiplier" and in %) between F_{MSY} proxy and the estimated F in 2015. The change in is from recent catch₂₀₁₅ to based on F_{MSY} proxy in 2017 catch₂₀₁₇ expressed as Catch₂₀₁₇/Catch₂₀₁₅ -1 (in %). Recent biomass status is given relative to B_{MSY} where available, (*Nephrops* in 17&18 only) and as an indication of trend over the last 3 years for stocks with time series analytical assessments. Biomass₂₀₁₈/ Biomass₂₀₁₅ expresses the predicted change in biomass if fishing is carried out at the specified F_{MSY} proxy (expressed in ratio and in %)

Species	Area	Method / basis	F ₂₀₁₅	F _{MSY} Proxy	F _{mult} = F _{MSY} /F _{status quo}	Catch ₂₀₁₅	Catch ₂₀₁₇ (MSY)	Catch ₂₀₁₇ /Catch ₂₀₁₅ -1	Recent Biomass	Biomass ₂₀₁₈ /Biomass ₂₀₁₅
European seabass	GSA 7	VIT	3*F _{0.1}	0.14	0.3 (-70%)	-	-	-		
European seabass	GSA 1-5-6-7	No advice	-	-	-	-	-	-		
Anglerfish	GSA 6	No advice	-	-	-	-	-	-		
Anglerfish	GSA 7	No advice	-	-	-	-	-	-		
Anglerfish	GSA 1-5-6-7	VIT	3*F _{0.1}	0.2	0.3 (-70%)	-	-	-		
Striped red mullet	GSA 9	XSA, STF	0.49	0.52	1.06 (+6%)	260	313	+20%	Declining	1.23 (+23%)
Striped red mullet	GSA 11	No advice	-	-	-	-	-	-		
Norway lobster	GSA 6	SepVPA,	>4*F _{0.1}	0.175	<0.25 (-75%)	-	-	-	Declining	

Norway lobster	GSA 9	XSA,	0.34	0.19	0.56 (-44%)	114	83	-27%	stable	1.53 (+53%)
Norway lobster	GSA 11	XSA,	0.39	0.19	0.49 (-51%)	18.2	8.3	-54%	Stable	0.96 (-4%)
Norway lobster	GSA 17-18	SPiCT	0.48	0.38	0.77 (-23%)	1185	1288	+ 8%	38%B _{MS} Y	1.63 (+63%)
Deep-water rose shrimp	GSA 1	XSA, STF	0.78	0.87	1.1 (+10%)	114	138	21%	Declining	1.78 (+78%)
Deep-water rose shrimp	GSA 9-10-11	XSA, STF	0.87	0.91	1.0	1536	1585	3%	Stable	0.92 (0-8%)
Common sole	GSA 7	VIT	Reduce F			-	-	-		
Gilthead seabream	GSA 7	VIT	2*F0.1	0.2	0.5 (-50%)	-	-	-		

4.2 EWG 16-20: Bio-economic methodology

Request to the STECF

STECF is requested to review the report of the STECF Expert Working Group meeting, evaluate the findings and make any appropriate comments and recommendations.

Background

DG Mare discussed with the STECF about the need for short- and long-term socio-economic assessments. The analysis of the TAC and quota proposal was of special interest and it was decided to organize an Expert Working Group to discuss and propose possible ways to assess the socio-economic impacts, with the following ToRs:

- 1) Assessment of social and economic impacts of TAC and quota proposals:
 - a) Review methods (e.g. the dependency analysis) and models for the short-term assessment of social and economic impacts on the fleets of the TAC and quota proposal. Part of these assessments shall be the testing of assumptions provided by DG Mare. The models should allow a straightforward, easily applicable assessment.
 - b) As the TAC and quota proposal is part of a longer-term approach to reach MSY assess under the same group of assumptions how a longer-term analysis can be performed.
- 2) Assessment of social and economic impacts of fisheries management options: Identify bio-economic models, which are available for social and economic impact assessments and list the fisheries for which they are applicable. Additionally, the EWG shall highlight important gaps.
- 3) For the AER: Following STECF advice of the July plenary of 2016, please analyse the way the economic projections (economic data is two years old and the projection shall give some information on the current year) are done in the AER against other approaches in order to propose a standard methodology to be used by STECF in the future.

Additionally, DG Mare provided the following explanation to the EWG:

There is an increasing need to integrate economic analysis in the scientific advice process of EU fisheries and conservation measures. Economic objectives were explicitly introduced in the Art. 2.1 of the reformed CFP (*"The CFP shall ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies"*). This need for further integration of economic analysis in the EU scientific advice process, in particular, includes:

1. The assessment of social and economic impacts of TAC and quota proposals. The economic advice for supporting DG MARE in the negotiation process for TACs requires robust estimates of the potential economic impacts to the EU fleets (in terms of profit margin, income, employment, etc...) of several TAC scenarios. The economic advice should satisfy, ideally, the following conditions: 1) to be produced in a short timeframe, limited for the delivery the scientific advice for all the EU stocks and the TAC negotiations in December, 2) complete coverage in terms of EU fleets and be based on the latest data available for the EU fleets under the DCF and DCMAP, 3)

provide a user-friendly interface that allows instantaneous simulations of TACs (for the short term analysis), 4) robustness of the results and be able to provide a sensitive analysis or uncertainty estimates to test key factors outside of TACs (e.g. fuel prices, phasing in of the landing obligation,...) that are significant to fleet performance. This economic advice should be conformed by two inputs:

1. Short term analysis: Short term projections (one year ahead) of different policy scenarios (e.g. TACs) as defined by DG MARE. The results in the study should be reliable estimates for the EU fleets economic performance in the following year. Such an analysis should use the latest available data on fuel prices and fish prices (e.g. EUMOFA, etc).
2. Long term analysis: The TAC and quota proposal should be considered as part of a longer-term approach to reach MSY. This calls for assessing under the same group of assumptions as applied for the short term projections how a longer-term analysis can be performed.

2 Assessment of economic impacts of fisheries management options. There is a need to provide scientific advice on the social and economic impacts of policy options or scenarios as defined by DG MARE (especially of long-term management plans).

3 Bring the economic performance results presented in the AER more up-to-date and complete (e.g. Mediterranean Sea region). The AER report is the main source of economic data and analysis at EU level that serves important policy uses. End-users and stakeholders of the AER report often need projections that give some information on the current year (as opposed to only reporting economic data two years old).

STECF response

STECF comments

The Expert Working Group 16-20 (EWG) convened in January 2017 in Ispra (Italy), to discuss the methodological approaches to address the needs of DG MARE for socio-economic assessments (short and long term), to give an overview on the available bio-economic models for impact assessments of long-term management plans or other management measures and to discuss the methods for projections in the Annual Economic Report (AER). The report reflects the work by 3 STECF members, 11 external experts, and 4 experts of JRC that attended the meeting.

STECF notes that all the ToRs were covered by the EWG.

STECF notes that to cover the assessment of social and economic impacts of TAC and quota proposals, 15 models were presented to the EWG. The EWG identified BEMEF as the only available model which covers almost all TACs within the EU in the Northeast Atlantic region. However, the EWG also identified some limitations on the economic and social advice provided using this model (i.e., the missing feedback between the biology and economy and missing uncertainty estimates). STECF notes that given these limitations identified, the economic assessment of the TACs proposal can be misleading, since such assessment would lack the long-term effects of the TAC proposals (driving the fisheries to F_{MSY}). Moreover, by not including fleet interactions, the limitations created by the landing obligation (i.e. choke effects, changes in swaps) will not be taken into account. Finally, STECF considers that all projections must be reported together with the margins of error, to avoid creating a perception of over-precision.

STECF also notes that the EWG considered that the multi-model approach (the integrated models currently available and used for the economic impact assessment of the multi-annual plans and new additions such as the SEAFISH-model and MACRO-Fish) is still the best approach to pair the short term and long terms perspectives of TACs proposals within the MSY objective. STECF also notes the limitations of this approach already identified by the EWG. Firstly, integrated models require a high amount of personal and financial resources to be updated, given the level of detail of their conditioning. Secondly, a single model conditioned for all the fisheries which is representative of all the TACs within the EU does not currently exist.

STECF notes that the EWG built a list of models which can be used for the quantitative assessment of the impact of fisheries management options. These are the models that were already used for the economic impact assessment of the multi-annual plans and new additions such as MACRO-Fish.

STECF notes that the EWG16-20 identified some gaps in regional/species coverage from the models used in the multiannual impact assessment EWGs. In the West of Scotland, Irish Sea, Ionian and Aegean Seas and the Black Sea, no models were available/parameterized during the meeting for demersal fisheries. Regarding small pelagics, except in the Adriatic, the gaps are unclear since dedicated EWG didn't take place yet. Finally, deep sea stocks were not covered.

STECF notes that the BEMEF model (the one used for projections in the AER of the years 2015 and 2016) was presented to the EWG. It also notes that the EWG identified some limitations from the information provided. STECF also notes that for the projections of the Mediterranean fleet segments two different approaches have been taken. In the years 2013 and 2015 projections were based on the HDA0.2 model, but in 2014, the equations derived from the conclusions of the STECF 11-19 (2014) were used. STECF also notes that these projections were not made for all of the Mediterranean Member States' fleet segments (due to lack of data availability). STECF agrees with the EWG that in order to achieve consistency across years, these projections should be done using a single model approach.

STECF conclusions

STECF concludes that a mixed approach based on a quick overview using short term forecasts complemented by detailed assessment of critical TAC changes could be achieved using integrated models. The EWG discussed this option, including a protocol proposal. STECF endorses the protocol proposed by the EWG and notes how this protocol should be further developed in detail, including all institutions involved in advisory process (ICES, DGMARE, STECF). STECF agrees with EWG proposal to have another bio-economic workshop to support the development of a coherent multi-model approach. Such an approach would allow for the challenges of providing operational decision support to be addressed (in terms of the required data, common assumptions to be made, common outputs and interface to be developed etc.), and would underline the need to create a framework for annual integrated assessment of TAC options, considering resources and time needed.

STECF concludes that a common database with stock assessment results and DCF data will be a relevant development on bio-economic modelling, given the time require to collate all the data coming from different sources. Development of calibration methods based on an integrated database gathering main data needed for bio-economic parametrisation would improve the ability to perform impact assessments in a short interval. STECF is aware that DG Mare is working on the so called 'Fish-Hub' which would

connect the different databases, and data will be available from the different sources in one place. This will most likely fulfil the role of a common database but should be further elaborated when the 'Fish-Hub' will be set up. STECF concludes that Fish-Hub should be tested by modellers, in order to check if it fits the bio-economic parametrisation requirements.

STECF concludes that the list of models provided by the EWG helps on understanding which models could be used to assess different management measures. STECF also concludes that this list could be further detailed in a follow up bio-economic modelling EWG.

STECF agrees with the EWG that all alternatives have limitations and that there will never be one model to cover all fisheries and be applicable for all management measures.

In terms of the projections of the AER, STECF concludes that updating economic variables 1 year (the year before the publication of the AER) to match the transversal variables can be carried out using the current methodology. STECF also concludes that 2 year projections (the publication year of the AER) can be performed if a clear statement of model limitations is provided alongside a description of the model assumptions. During the first meeting on the AER 2017, a group of experts will work on improvements of the BEMEF, which will address the relevant limitations identified in section 5 of the EWG report.

For the Mediterranean STECF agrees with the EWG on that, for consistency across years, these projections should be done using a single model approach. STECF concludes that the available possibilities should be reviewed by a follow up bio-economic modelling.

4.3 EWG 16-14: Technical measures

Background provided by the Commission

As part of the Commission proposal on Technical Measures, baseline measures that establish core selectivity standards are defined for each regional sea basin. These are included in a set of regional annexes. The baseline measures are based on the substance of the existing technical rules for mesh sizes and catch composition rules, minimum conservation reference sizes, closed areas and nature protection type measures.

These baselines or default technical measures would be applicable unless and until regionalised measures are designed and introduced into Union law (through Delegated Acts) as part of multiannual plans or temporary discard plans. The proposal envisages that regional groups of Member States would be able to introduce alternative technical measures to these baselines on the basis that it can be demonstrated that these measures deliver similar (equivalent) conservation benefits in terms of exploitation patterns and level of protection for sensitive species and habitats to those they are intended to replace. It is assumed that STECF would have the role to establish whether the evidence provided by Member States to justify the use of such alternative measures sufficiently demonstrates equivalence to the baseline measures.

The Commission proposal envisages two potential scenarios.

1. Where a baseline technical measure is to be replaced with an alternative gear based technical measure (e.g. replacing the *baseline gear* with an alternative selective gear incorporating a device such as a square mesh panel or sorting grid).
2. Where there is deviation from a *baseline technical measure* (i.e. change in baseline mesh size or change in mcrs) based on the introduction of an alternative measure such as an area or seasonal closure or a move to fully documented fishery approach where technical rules may not be needed.

Terms of Reference for EWG-16-14

The objective of EWG 16-14 was to develop guidelines for future evaluations by STECF of alternative technical measures that deviate from the baseline standards established at Union level. Recognising that such measures may impact differently on different species and have different environmental impacts, the EWG is asked to consider appropriate mechanisms to determine whether the alternatives in aggregate are equivalent to those they are replacing, cognisant that the measures may impact differently on some species or fisheries.

For both of the scenarios listed in section 1, the EWG was requested to:

- Provide guidance on the data and information needs for the two types of scenarios to demonstrate equivalence using practical examples from different sea basins;
- Identify appropriate procedures and metrics for determining equivalence between different technical measures; and
- Consider species specific and broader environmental consequences, which should be factored in when deciding whether equivalence has been demonstrated or not.

Request to STECF

STECF is requested to review the report of the STECF Expert Working Group (EWG) meeting, evaluate the findings and make any appropriate comments and recommendations.

STECF response

Introduction

EWG 16-14 has proposed a draft framework for the evaluation of proposed alternative technical measures on the basis that regional groups of Member States would want to introduce alternative technical measures to the baselines. The general principle is to set out a mechanism by which alternative technical measures to those defined as the baseline can be efficiently evaluated and implemented. The motivation to introduce alternative measures will include a preference for other measures that deliver similar (equivalent) or those that have enhanced conservation benefits, in terms of exploitation patterns and level of protection for sensitive species and habitats, to those they would replace.

In each of the regional annexes the following baseline technical measures have been drafted (http://eur-lex.europa.eu/resource.html?uri=cellar:41312a57-e771-11e5-8a50-01aa75ed71a1.0024.02/DOC_2&format=PDF):

- Mesh sizes
- Minimum Conservation Reference Sizes (MCRS)
- Closed or restricted areas
- Mitigation measures for protection of sensitive species and habitats
- Introduction of innovative fishing methods (only in the North Sea)

The EWG 16-14 provides an overview of the methods to compare technical measures. This constitutes the main focus of the EWG 16-14 report and includes a priori and ex-post evaluations of technical measures. The methods are intended to provide guidance for Member States, the Advisory Councils and the fishing industry on the methods and evidence needs to enable comparisons to be made between technical measures. EWG 16-14 identified four main criteria to establish equivalence. Depending on the measure involved these criteria have a greater or lesser importance. For example Real Time Closures could influence size composition in catches (e.g. by closing areas of high abundance of juveniles), but are not so readily applicable to situations where a habitat in a particular location requires to be protected. A matrix summarising the potential relative impacts of different types of technical measure change on features of target and other fish populations and benthic habitat is provided, Table 3.2.2 of the EWG.

These criteria are in terms of:

- Exploitation pattern
- Exploitation rate
- Species Composition
- Habitat effects

The EWG 16-14 report comprehensively reviews the methods by which fishing gears can be compared. The methods of determining equivalence between gears are well established and direct. To establish equivalence or likely outcome of other technical measures (MCRS, closed or restricted areas, mitigation measures for protection of sensitive species and habitats, introduction of innovative fishing methods) is more challenging, the methods are less direct and this is reflected in the report. The EWG 16-14 report provides tables on the types of technical measures and the associated impacts. The EWG emphasises the need to define a clear management aim as a first step when considering alternative technical measures:

- Step 1: Defining the objective and setting the criteria for measuring equivalence
- Step 2: Evaluation of supporting information (A priori assessment)

- Step 3 (if positive assessment in step 2): Monitoring requirements for the alternative gear introduced (ex post assessment)

The EWG 16-14 states that it attempted to balance the need for a robust assessment without being overly prescriptive on the types or amount of supporting evidence that is required to support a proposal to use alternative measures. The importance of not stifling innovation is stated. For example, it is envisaged that, in the event of a limited initial trial, implementation could progress but there would be a greater requirement to put in place close monitoring of the outcome together with the ability to rapidly halt the use of the measure. This would compare with a situation where a high quality and exhaustive trial had demonstrated the suitability of a new measure and where ongoing monitoring was more 'light touch' and less demanding.

STECF comments

STECF acknowledges that the EWG addressed all the Terms of Reference under a tight time schedule. It is recognised that the aim of this EWG complements the broader work being undertaken to address the recognised weaknesses in the existing technical measures (http://eur-lex.europa.eu/resource.html?uri=cellar:41312a57-e771-11e5-8a50-01aa75ed71a1.0024.02/DOC_1&format=PDF), which have been summarised as:

- Sub-optimal performance as the technical rules do not incentivise selective fishing
- Difficult to measure effectiveness
- Prescriptive and complex rules
- Lack of flexibility
- Insufficient involvement of key stakeholders in the decision-making process
- difficult, lengthy and unclear process by which a new gear can be agreed

In terms of assessing equivalence or performance of technical measures relative to baselines, STECF notes that there is a requirement to have clearly defined, unambiguous details of the baseline technical measures. Details of the regional baseline measures were supplied separately and are available at http://eur-lex.europa.eu/resource.html?uri=cellar:41312a57-e771-11e5-8a50-01aa75ed71a1.0024.02/DOC_2&format=PDF. The baseline technical measures follow the same format as in earlier regulations that describe these measures for, i) Minimum Conservation Reference Sizes (MCRS), previously Minimum Landing Sizes, ii) closed or restricted areas, iii) mitigation measures for protection of sensitive species and habitats and iv) introduction of innovative fishing methods (only in the North Sea).

These definitions include the technical requirements associated with fishing operations, however, they do not identify a measurable impact of the individual measures and more importantly, they do not specify the management aim of the measures. In proposing any alternative measure it would be necessary to provide some context to the baseline measures which the alternative measures amend or replace to clarify their purpose. Without this information, STECF would not be able to evaluate the alternative measure as there would be nothing to base their evaluation on.

For the baseline technical measure relating to static net and cod end mesh sizes, STECF recognises the need to simplify the existing detailed and prescriptive regulations on fishing gear and to remove the link with catch composition regulations, as required with the implementation of the Landing Obligation. The gear-based technical regulations are presented in a format that differs from previous documents. The mesh size baselines are defined by region, for cod end or static gear, and by the conditions under which a smaller mesh sizes can be used. These conditions refer to 'directed' fisheries, for example, for cod end mesh sizes in the North Sea and Skagerrak/Kattegat, directed fishing for

Nephrops norvegicus can use cod mesh of 80mm. The fine detail regarding the construction and operation of gears is proposed to be developed in Commission Implementing Acts rather than contained in the framework proposal. This is to make it easier and quicker to amend technical details.

STECF observes that in the Commission proposal, the mesh sizes proposed for each region in most cases are defined in terms of "directed" fisheries. "Direct fishing" is defined in the proposal as "*fishing for a defined species or combination of species where the total catch of that/those species makes up more than 50% of the economic value of the catch*". This is currently under negotiation with the Council and the European Parliament so this definition may change. Regardless, STECF considers there is a requirement to link the baseline mesh sizes to some form of metric. A clear definition of 'directed fishing', to understand precisely the conditions when this mesh size is being used is important, and this will need to be confirmed before the EWG guidance can be applied; the effect of an alternative measure can only be understood once it is known to which vessels and fisheries it will apply.

STECF observes that the EWG has not considered socio-economic implications of the implementation of alternative technical measures. The successful implementation may depend on possible negative or positive economic impacts of a change in measures. The EWG participants expect that the proposal for a change in technical measures will only be issued after the assessment of socio-economic impacts. STECF notes that only the inclusion of stakeholders in particular from the fishing sector in the development process of the new technical measures and in a possible assessment of socio-economic impacts would most likely fulfil such an expectation.

STECF strongly supports the importance of not stifling innovation and providing guidance that will assist regional groups to evaluate options and enable flexibility in applying technical measures. STECF agrees that while there is substantial material in the EWG 16-14 report on the evidence requirements for comparing fishing gears, comparisons with and between other technical measures is more challenging. Further development of the EWG 16-14 report is thus needed to generate clear guidance that would assist regional groups in evaluating technical measures. The guidance would aim to facilitate regional groups in the selection and assessment process for alternative technical measures, avoid unnecessary evidence collection and assist STECF in evaluating proposed alternative measures. As a central part of the guidance, it would be useful to emphasise the balance of risk and evidence need, whereby evidence requirements should balance the likelihood of negative impact. Specifically, this guidance should include ecosystem indicators and gear impact evidence from research projects such as EU FP7 BENTHIS. There would be benefit in presenting the guidance as a simple stepwise process or decision tree that assist regional fisheries managers in formulating proposals. This would include:

- the requirement for a clear management aim of the alternative measure in the context of the aim of the existing measure
- a quantified objective of the alternative technical measure
- the basis for selecting the alternative measure (appropriateness, practical suitability, control mechanism, industry support)
- precise details of the measure
- assessment of risk against the four evaluation criteria to determine the a priori need for evidence (could be very low where risk is low)
- an evaluation based on a priori evidence of performance/equivalence
- an economic assessment
- an ex post evaluation plan
- post implementation assessment in the context of the quantified objective and management aim

STECF conclusions

STECF concludes there is a requirement to ensure there is clear definition of what constitutes “directed fishing” to allow evaluation of alternative gears to the baseline technical measures related to mesh size. STECF suggests that defining what constitutes “directed fishing” would be best defined regionally and aligned with the conditions in of the baselines as these may differ between regions.

STECF concludes that the EWG 16-14 report would benefit from refinement and could be presented in a more end-user friendly guidance format. Revised guidance would aim to be a useful tool for regional groups, to identify risk, avoid unnecessary evidence collection, and assist STECF in evaluating proposed alternative technical measures. STECF stresses that new measures need to be an improvement or at least an equivalent to the baseline.

STECF emphasises that, to allow evaluation by STECF, the objectives of the baseline measures are clearly defined in any application for an alternative measure. Without this information there is no basis against which to assess an alternative measure.

STECF suggests that further enhancement to the guidance is needed on evaluating non-gear based technical measures considering ecosystem indicators and known habitat impacts of gears. This would need to be linked with the indicators from the Marine Strategy Framework Directive MSFD (Table 2 of Annex III).

STECF concludes that the Advisory Councils ACs should be included in the process of the development of the alternative technical measures. The quality of the proposed new measures would benefit from direct inclusion of stakeholders in the development process within the regional groups. Within this process an assessment of the socio-economic impacts should be conducted.

STECF concludes that further work is needed to complete a final draft guidance document (including guidance on how to evaluate the socio-economic impact) that can be used by regional groups. STECF proposes that a follow-up EWG could be set up for this purpose.

4.4 EWG 16-19: European data for North Atlantic and Mediterranean Albacore

Request to STECF

STECF is requested to review the report of the STECF Expert Working Group meeting, evaluate the findings and make any appropriate comments and recommendations.

STECF response

STECF comments

The European Union is the main producer of albacore tuna in the Mediterranean and the North Atlantic, catching 90% and 80% of the total catch of each of the stocks during the last decade, respectively. Thus, the EU has a particular responsibility for the provision of good quality data for these stocks.

However important data gaps, concerns on data quality and a lack of relative abundance indices exist for the Mediterranean albacore. In consequence, the stock assessment relies on data poor methods and is the only major tuna stock at ICCAT that currently lacks an estimate of MSY (ICCAT, 2016). In addition, scientists from the main EU fishing countries do not participate in the stock assessment process, making it difficult for the group to interpret the data available in ICCAT datasets and to make decisions around those.

Regarding the North Atlantic albacore, data gaps are minor. The main issue is that the available indices of abundance are noisy and often show opposite trends.

The ICCAT albacore tuna working group as well as the Standing Committee for Research and Statistics have drafted many recommendations to try to improve the situation. The last assessment of the Mediterranean stock was conducted in 2011, and the next stock assessment will take place between 5th to 9th of June 2017, so it is important to address these ICCAT recommendations by then, to the extent possible.

The EWG 16-19 on European albacore tuna data met in March 2017 in order to (i) review the completeness of EU data in ICCAT datasets, (ii) identify available Mediterranean data not submitted to ICCAT, (iii) review the new abundance index for the French mid water trawl fleet, (iv) explore additional data sources to improve the situation regarding indices of abundance and (v) identify available information on bycatch species in albacore fisheries.

The STECF considers that all ToRs were properly addressed by the EWG, which achieved some significant outcomes. Regarding the Mediterranean stock, the EWG focussed mostly on data from Italy (which caught around 60% of the total catch during the last decade) and identified additional information, mostly biological data, that would be useful for the ICCAT working group.

The STECF plenary compiled a more complete set of information regarding the data collected by Italy under DCR/DCF during 2003-2015 (Table 1). The STECF noted that in the ICCAT database there is no effort information before 2009. The data identified in Table 1 should thus be submitted to ICCAT to fill in this data gap between 2003 and 2008. At the same time, it is desirable to explore additional sources of information to cover data holes prior to 2003. The identified dataset would also allow for a complete revision of the Task 2 data (catch, effort and size) that exists in ICCAT, with special focus

on the size distribution for the year 2003 that has a size range beyond biological expectations (>150cm).

Table 4.4.1 Data availability for *Thunnus alalunga*, DCF - Italy.

Source: Italian Annual Reports on the activities performed under the National Data Collection Programs.

Year	Landings by month and by gear*	Effort by month, by gear and by GSA**	Number of sampled individuals for:				
			Length	Weigth	Age	Sex	Maturity
2003	x		1093				
2004	x	x	728				
2005	x	x	1785				
2006	x	x	819				
2007	x	x	278	278			
2008	x	x	3079	3079			
2009	x	x	1077	1077			
2010	x	x	2486	2486	263		
2011	x	x	366	366			
2012	x	x	252	252			
2013	x	x	72	72	352	352	352
2014	x	x	638	638			
2015	x	x	169				

* Landings data are available by month, at fleet segment level and at métier level 6. Landings data refer to the métier and they are not species - specific.

**The following effort variables are available for longliners by month and by GSA from 2004:

Effort: Days, GTDays, KWDays, GTHours, Hours, KWHours, number of vessels, number of hooks. 2003 data available by fleet segment (prevalent fishing technique) and not by gear. Effort data refer to the métier and they are not species - specific.

ICCAT also recommended splitting the catch assigned to "unclassified" gears (mostly for Italy and Greece). The identified dataset for Italy will also be helpful for this task. According to the EWG, unfortunately there is no data for Greece in the past on gear specific landings, but expert knowledge could be used to accomplish this task.

The STECF acknowledges the availability of biological data for Italy that might allow to substantially improve the biological parameters (growth, maturity and length weight relationship) used by the ICCAT albacore tuna working group. However, STECF notes that similar data are also available in other countries (e.g. Spain, Cyprus, Greece). The STECF considered therefore most appropriate to conduct a joint analysis of all the datasets, to estimate a maturity ogive, a growth model and a length weight relationship that represents the whole stock.

Regarding the North Atlantic stock, the STECF welcomes the catch and effort data collected for the French mid water trawl fleet (one of the main fisheries targeting the stock, with 15% of the total catch during the last years), and the derived relative abundance index. The new data are already submitted to ICCAT and incorporated into the datasets. The new index is comparable to the baitboat index (the only EU index used in the last assessment), and the STECF recommends to present it in the next albacore meeting, for its consideration in future assessments. The STECF also welcomes the efforts made by Portuguese scientists to use swordfish targeting longline fishing operations as a potential source of albacore relative abundance information. Given the wide geographic extension of these longline operations, substantially overlapping with the North Atlantic albacore tuna distribution, the STECF encourages that efforts continue to standardize these data. Moreover, and considering the low amount of albacore caught by this fleet, it would be desirable to extend these efforts to the Spanish longline fleet.

STECF conclusions

The STECF recommends DG MARE to make sure that, in order to improve the EU data and participation issues identified by ICCAT for Mediterranean albacore, the following actions are taken by Member States before the next stock assessment to be conducted between 5th and 9th of June:

- Submit to ICCAT, following official formularies, the Italian Task 2 data (catch, effort and size disaggregated in time and space) collected under the DCF and DCR, for the missing years. This involves primarily effort data for the period 2004 to 2008. However, a complete revision of all the Italian Task 2 data series is also recommended to address ICCAT concerns on data quality.
- Disaggregate the task 1 (total annual catch) data associated to "unclassified" gears for Italy (2003-2015) and Greece (1996-2002), and submit a gear specific Task 1 revision to ICCAT.

Additionally, STECF encourages the following actions

- To conduct a joint biological analysis for Mediterranean albacore, using data collected through DCR/DCF by the different Member States on maturity, growth and length-weight relationship, to update the biological parameters used for this stock at ICCAT.
- Assure participation of EU scientists from the most relevant Member States in albacore landings (Italy, Greece, Spain and Cyprus) in the forthcoming stock assessment, providing standardized cpues for their fisheries and contributing to the understanding of the fisheries and stock dynamics.

Regarding the North Atlantic albacore stock, the STECF acknowledges the recent improvements regarding task 2 data for the French mid water trawl fishery and supports that the newly developed relative abundance index for this fishery is presented to the ICCAT albacore working group. Likewise, in the longer term, the STECF suggests to

continue exploring the possibility to obtain relative abundance of albacore tuna using swordfish oriented longline fishing operations by Portugal and Spain.

5. ADDITIONAL REQUESTS SUBMITTED TO THE STECF PLENARY BY THE COMMISSION

5.1 Landing obligation in non-EU waters

Background provided by the Commission

Since the entry into force of the Article 15 of the landing obligation established by the new CFP (Regulation (EU) 1380/2013), the Commission has adopted delegated regulations providing derogations from this new policy. However, there are many other fisheries in non-EU waters that fall or will fall under the landing obligation and for which the landing obligation will apply with no exemptions, unless discard plans are established.

In accordance with Article 15(1d) of the CFP, the next steps of the landing obligation will be: "from 1 January 2017 at the latest for species which define the fisheries and from 1 January 2019 at the latest for all other species in fisheries not covered by point (a) in the Mediterranean, in the Black Sea and in all other Union waters and in non-Union waters not subject to third countries' sovereignty or jurisdiction".

According to Article 15(7) of the CFP, where there are no de minimis provisions established in a multiannual plan or a discard plan, the Commission shall adopt delegated acts, in accordance with Article 46, setting de minimis exemptions, subject to the conditions set out in Article 15(5c). For non-EU waters not subject to other countries' sovereignty or jurisdiction there is neither EU discard plan, nor de minimis provisions adopted in a multiannual plan and, according to the most recent information, Member States do not plan to adopt Joint Recommendations for non-EU waters before the end of 2016. Hence, the Commission has to adopt a delegated regulation establishing such de minimis provisions as appropriate.

The delegated regulation will have to rely on the best scientific advice available concerning in particular the identification of the species that define the fisheries, the rationale for de minimis exemptions and the choice of de minimis percentages. However, due to the lack of time and the number of species/fisheries concerned the STECF will be re-requested to perform an in depth analysis on a fishery by fishery basis. Once the final STECF advice will be received, the Commission will consider revising the delegated regulation and adapting the de minimis percentages if needed.

Request to the STECF

Assuming that Member States will not develop joint recommendations to assist the Commission to analyse and validate the justification of de minimis provisions for fisheries in non-Union waters not subject to third countries' sovereignty or jurisdiction and not covered already by a Commission delegated regulation, the STECF is requested to:

1. Based on the list provided in Annex 1, provide rationale and proposals for the identification of the species that define the fisheries and that are not covered already by a Commission delegated regulation or a discard plan and if possible update this list to cover all the fisheries in non-Union waters not subject to third countries' sovereignty or jurisdiction, where the EU fleet operates. (Step 1)
2. Provide, where possible, reasons for discarding, estimates of discard rates and other relevant information for the fisheries defined in point 1 and the species included in Annex 1.

3. Assess if any of the species/fisheries defined in point 1 should be exempted from the landing obligation based on Article 15/4a&b (prohibited species and high survival rates) taking into account the relevant parameters.
4. Taking account of the previous point, advice for each species/fishery defined in point 1 on whether there is sufficient biological, technical and/or economic evidence to support a de minimis exemption on the basis that either in-catches in selectivity are very difficult to achieve, or handling unwanted catches would create disproportionate costs, and propose a meaningful percentage (or range) of discards, within the limits established in Article 15.7.]

STECF response

Summary of reports prepared by Ad hoc contracts SI2.725694 and SI2.749882

The first report prepared under contract SI2.725694 deals with TOR 1 presented to STECF and contains a comprehensive review of the EU fisheries in non-EU waters. The authors drew on published literature, RFMO documentation and also consulted 6 experts. The report describes stocks and fishing conducted under the remit of 11 RFMOs and identifies species which define fisheries and which are subject to TAC or minimum landing sizes.

The second report (SI2.749882) deals with TORs 2, 3 and 4 and provides detailed information in a table. The table includes reasons for discarding and estimates of discard rates, relevant management measures and regulations in existence, reasons for potential exemptions from the landing obligation, and whether there is evidence to justify a case for de minimis exemption from the landing obligation based on difficulty to increase selectivity and to avoid disproportionate costs of handling unwanted catches (the Article 15.5.c 'conditionalities').

Based on the reports of the ad hoc contracts STECF identified, for each RFMO, the stocks which would come under the landing obligation in January 2017 based on them being subject to a catch limit or to a minimum size and also could be considered to define the fisheries (Article 15.1.d).

The reports of the ad-hoc contracts are available at <https://stecf.jrc.ec.europa.eu/plen1701> under "documents".

STECF comments

STECF notes that the work conducted for this TOR builds on earlier work in which the Commission produced a list of 176 possible candidate species and/or fishery. This list was reviewed by STECF (PLEN 15-02 report) and a shorter list (142 cases) was then produced by the Commission which identified species and/or fisheries more likely to fall under the landing obligation.

To address TOR 1, a thorough review of this revised candidate list was carried out under the ad hoc contract, making use of publicly available information and expert knowledge. In many of the fishery cases reviewed in the ad hoc reports, the quality and quantity of information and quantitative data available on discarding was rather limited and STECF recognises that the overall body of information on this aspect of fishing in non-EU waters is not fully comprehensive. In many cases, however, the information on fishery statistics and fishing methods employed suggests that

discarding has been at low rates in recent years. STECF considers that the report provides a suitable basis for identifying and considering cases which may require de minimis exemption to the landing obligation.

STECF notes that TORs 2-4 are addressed in a table containing detailed information on reason for discarding, discard rates, relevant management measures of the RFMO, exemptions for discards due to prohibited species and/or high survival rates, and 'conditionalities' of de minimis application. This table can be found in ad-hoc contract report SI2.749882.

STECF has produced a summary table based on the table in the ad hoc contract report which contains the stock cases most relevant to the TOR, and this is presented below, table 2.1.1. STECF notes that there are a total of 61 stock cases in table 5.1.1 (below), and they can be grouped in the following categories:

- i) cases for which there is no data to support the need for a de minimis exemption from the landing obligation (21 cases).
- ii) cases which could not qualify for a de minimis exemption from the EU landing obligation because there are RFMO regulatory provisions in place that provide an obligation to discard certain catches making it necessary to adopt delegated acts for the purpose of implementing international obligations into EU law, including, in particular, derogations from the landing obligation (21 cases).

The main sub-groups under this category (ii) include:

- a. the 9 stocks in NAFO which may eventually be covered by a delegated act.
 - b. 3 ICCAT stocks which are already covered by delegated act (Delegated Regulation (EU) 2015/98).
 - c. 1 ICCAT stock (Southern Atlantic swordfish) which may potentially need to be covered by a delegate act as case ii.b above
 - d. 8 stocks under the GFCM.
- iii) cases where fish are damaged by parasites (5 cases). Although parasites in fish should not be considered predators (paragraph 16 of the EU Regulation 2015/812), the effects of these parasites on fish flesh quality may be similar to that of predators and therefore could be a case for an exemption to the landing obligation (Article 15.4.d of the consolidated Regulation 1380/2013), if justified with specific data on intensity and prevalence of parasites in this fish, on the risk to consumers and on the damage inflicted on fish flesh.
 - iv) cases for which there are zero or negligible discards (7 cases)
 - v) cases for which there is evidence of discarding and where a de minimis exemption from the EU landing obligation may be appropriate, if evidence is provided to support an exemption (7 cases). These cases include:
 - a. Northern Albacore Tuna, which is caught in non-EU waters and in EU waters, under a de minimis exemption in EU waters. In this case, extension of the existing de minimis exemption for EU waters (EU Regulated act 1393/2013 and 1394/2013) to non-EU waters could be considered.
 - b. Jack Mackerel in SPRFMO,

- c. Yellowfin and Bigeye Tuna in ICCAT. Vessels not authorized to fish bigeye tuna do not qualify for a de minimis exemption because there is an ICCAT regulatory provision in place that provide an obligation to discard (Delegated Regulation (EU) 2015/98). The same provision should be included for vessels non-authorized to fish yellowfin. For vessels in the ICCAT list of authorised vessels for bigeye and yellowfin discards rates are very low, < 3%
- d. Yellowfin and Bigeye tuna in IATTC and yellowfin tuna in IOTC. For these stocks, there are resolutions in place which prohibit discards except for fish unfit for human consumption or if there is not enough space to store the fish during the last set of a fishing trip.

Table 5.1.1. Most relevant fisheries and stocks that could fall under the LO.

RFMO	Species/stock that could fall under the landing obligation	Category viz possibility of de minimis	STECF comment
CCAMLR	Patagonian toothfish 48.3,48.4 and 58.5.2	iii	Discarding is due to fish flesh being adversely affected by parasitic infections. This might be considered to fall under article 15.4.d of 1380/2013 2013 if justified with data on intensity and prevalence of parasites in this fish, on the risk to consumers and on the damage inflicted on fish flesh. In addition, Conservation measure 41-01(2016) ² may imply a legal obligation to discard.
	Antarctic toothfish 48.4	iii	As above
	Mackerel icefish 48.3 and 58.5.2	i	No relevant information available. No evidence to support need for de minimis exemption
	Krill (6 zones)	i	As above
SEAFO	Patagonian toothfish	iii	Discarding due to fish flesh adversely affected by parasitic infections. This might be considered to fall under article 15.4.d of 1380/2013 if justified with data on intensity and prevalence of parasites in this fish, on the risk to consumers and on the damage inflicted on fish flesh. Not fished in recent years.

² Commission for the Conservation of Antarctic Marine Living Resources. <https://www.ccamlr.org/en/measure-41-01-2016>

	Deep sea red crab (Div B1 and other)	i	No information available. Not fished in recent years therefore de minimis not considered necessary.
SPRFMO	Jack mackerel	v	Limited information available. Discards 1-3%. Case for de minimis could be made on the same basis as for Albacore trawl fishery, damage would be caused during catch, processing and storage, but information to indicate how this relates to conditionalities in Article 15 is not available
GFCM (Med)	hake, red mullet, small pelagic, DW rose shrimp, sole, scallop, carpet clams, Venus shells	ii	Stocks already covered by (EU)2017/86
GFCM (Black Sea)	Sprat and turbot	i	No relevant information available. No evidence to support need for a de minimis exemption
NEAFC	Redfish (2 stocks)	iv	Negligible discard rates - no need for de minimis exemption
	Haddock VIb	i	No evidence to support de minimis exemption in EU waters, unlikely could be supported in non-EU waters
	Anglerfish, small pelagics, Greater silver smelt (2 stocks)	i	No information, no basis for de minimis
NAFO	Cod	ii	These species fished in the NAFO region would not be eligible for a de minimis exemption since a delegated act to establish derogations of Article 15 is being prepared to implement NAFO Regulations that will allow discarding under certain circumstances.
	Witch flounder	ii	
	Greenland halibut	ii	
	Skate	ii	
	Redfish (4 stocks)	ii	
	White hake	ii	
WCPFC	Swordfish	iv	Discards extremely low - no need for de minimis
	Bigeye Tuna	iv	As above
IOTC	Yellowfin tuna	v	Generally small proportions of discards (less than 1 %). IOTC resolution 15/06 prohibits discards except fish unfit for human consumption or if there is not enough space to store the fish during the last set of a fishing trip. This may justify a de minimis exemption but no information is available to evaluate any potential de minimis.
CCSBT	Southern Bluefin Tuna	i	No information, no basis for de minimis

ICCAT

Eastern Bluefin Tuna (3 fisheries), North Atlantic Swordfish, Bigeye (non authorised vessels)	ii	For these species, Regulation (EU) 2015/98 already transposes ICCAT Rec. 2014-04, 2011-01, 2013-02 into Union law allowing discards so no need for a de minimis exemption
Northern Albacore Tuna	v	Discarding is due to damaged fish. A de minimis exemption exists for this species in Union waters in ICES zones VII and VIII (Regulation (EU)1393/2014 and Regulation (EU) 1394/2014), so an extension of this de minimis for this fishery in non-Union waters could be justified.
S Atlantic swordfish	ii	ICCAT Rec 16-03 exempts this species from the landing obligation. It might be useful if a delegated act were developed to address inconsistencies between ICCAT Rec 16-03 and Article 15 of LO as has been done for North Atlantic SWO (Regulation (EU) 2015/98.
Southern Albacore Tuna	i	No EU vessels currently targeting southern albacore. Negligible bycatch in other fisheries and fish are not discarded.
Bigeye Tuna	v	Discard rates around 3% of catch in the purse seiner fishery, mainly for economic reasons. Information to indicate how this relates to conditionalities in Article 15 are not available. For non- authorised vessels, Reg (EU) 2015/98 already transposes ICCAT Rec 2014/04 into Union law so no need for a de minimis for this group of vessels.
Yellowfin Tuna	v	Discard rates around 2% of catch in the purse seiner fishery, mainly for economic reasons. Information to indicate how this relates to conditionalities in Article 15 are not available. For non-authorized vessels the ICCAT Rec 16/01 on yellowfin tuna, should be transposed into Reg (EU) 2015/98.

	Mediterranean swordfish(2 fisheries)	i	ICCAT Rec 16-05 contradicts the Landing Obligation and it would be helpful to transpose it into (EU) 2015/98. There is no detailed information to support a de minimis exemption
	Sailfish	i	As above, except ICCAT Rec 16-11 applies.
	North Atlantic blue shark	iv	Discarding is negligible in long line fishery. High survival rates are observed for discards: 65% survival based on hooking mortality and post-release survival. No need for a de minimis provision
	Blue and white marlin	iv	Negligible bycatch and no discards.
IATTC	Yellowfin Tuna and Bigeye	v	IATTC (C-04-05) prohibits discards except under certain circumstances (non fit for human consumption or final set of the trip with limited space onboard), which may justify a de minimis exemption but no information is available to evaluate any potential de minimis. Discards negligible in this fishery.

STECF conclusions

STECF concludes that there is one stock (Northern Albacore Tuna) for which an existing de minimis exemption applies in EU waters which could be extended to non-EU waters. Three stocks (yellowfin and bigeye tuna in ICCAT, and jack mackerel in SPRFMO) in non EU waters might potentially require a de minimis provision provided that information to evaluate the conditionalities (increases in selectivity very difficult to achieve or disproportionate costs of handling) for the de minimis in Article 15 are made available. Discards estimates for these fisheries are provided in the table above, however STECF does not propose a meaningful percentage (or range) of catch that may be discarded in these fisheries. STECF considers that choosing a permitted rate of discarding for a de minimis exemption is not a technical or scientific question and is a choice more appropriately made by fishery managers.

STECF could evaluate any future proposal for a de minimis exemption based on relevant supporting information provided by the EU fishery interests in the RFMOs affected. This task would reflect the EU's approach relating to ongoing STECF reviews of the Joint Recommendations.

5.2 CFP monitoring

Background provided by the Commission

Article 50 of the Common Fisheries Policy (CFP; Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013) stipulates: "The Commission shall report annually to the European Parliament and to the Council on the progress on achieving maximum sustainable yield and on the situation of fish stocks, as early as possible following the adoption of the yearly Council Regulation fixing the fishing opportunities available in Union waters and, in certain non-Union waters, to Union vessels."

Request to the STECF

STECF is requested to report on progress in achieving MSY objectives in line with the Common Fisheries Policy.

STECF response

STECF observations

STECF notes that to address the above Terms of Reference the JRC Expert Group (EG) developed a large set of analyses, presented in several technical reports dealing with: generating the sampling frame, (used to identify which stocks are of interest for the EU) in the North-East Atlantic (Scott et al., 2017a) and in the Mediterranean region (Mannini et al., 2017); checking the quality of the ICES stock assessment data (Vasilakopoulos and Jardim, 2017); and analysing how the Fisheries Management Zones used by EU to set up TACs is matching (or not) the stock limits used by ICES to provide scientific advice (Scott et al., 2017b). Core indicators were presented in the EG report, while the additional indicators requested by the last STECF plenary were presented in a separate background document. These indicators were added to the EG report afterwards, following the STECF plenary request. STECF notes that the ad hoc Expert Group published all the data and code used, which is an important aspect for ensuring transparency.

All technical reports are available at <https://stecf.jrc.ec.europa.eu/plen1701> .

Based on the results presented in these Expert Group reports, STECF first drew a synthetic overview of what is currently known regarding the achievement of the MSY objectives, and then secondly made more general comments on methods used and possible developments.

Trends towards the MSY objectives in the North-East Atlantic and Mediterranean Sea

The overview below describes the trends observed until 2015 for the set of stocks included in the sampling frame described in the technical reports, i.e. primarily the stocks with a full analytical assessment (Category 1).

Stock status in the ICES area

The indicators provided by the JRC EG show that many stocks are still overexploited in the NE Atlantic, but also that stocks status is significantly improving (Figure 5.2.1).

In the ICES area, among the 61 to 69 stocks which are fully assessed, the proportion of overexploited stocks (i.e. $F > F_{MSY}$, red line) decreased from more than 70% to close to 40%, over the last ten years. The proportion of stocks outside the safe biological limits ($F > F_{pa}$ and/or $B < B_{pa}$, blue line), computed for the 40 stocks for which both reference points are available, follows the same decreasing trend, from 65% in 2003 to 38% in 2015.

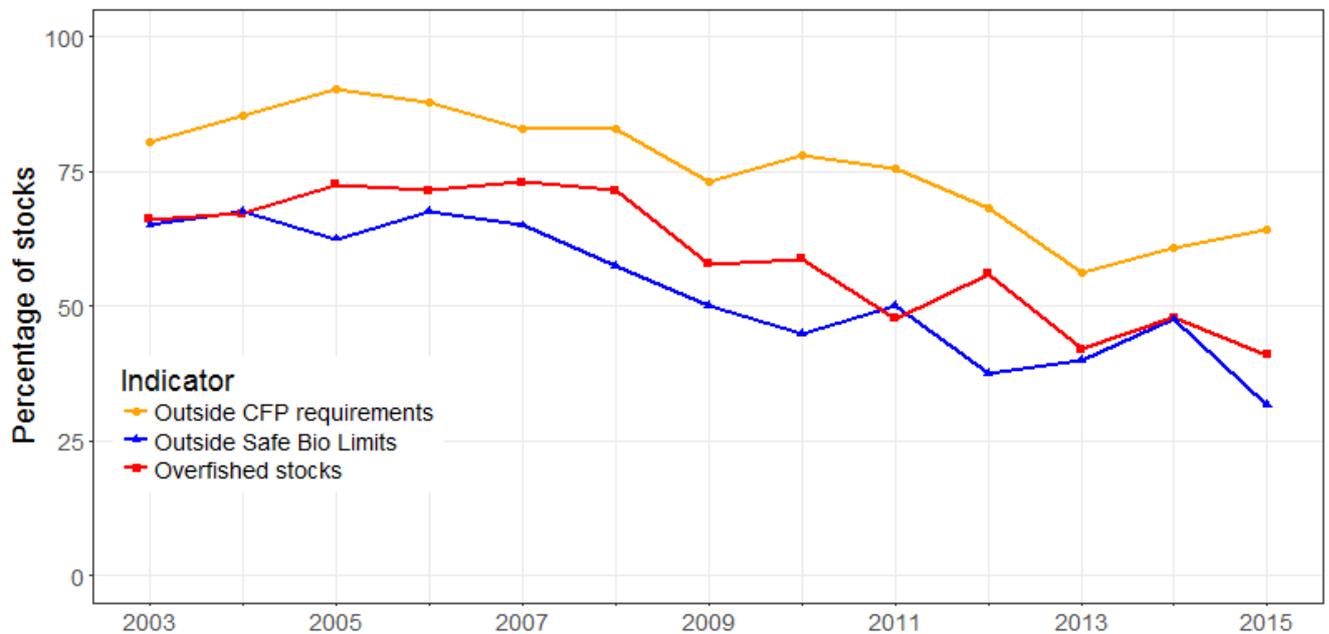


Figure 5.2.1 - Trends in stocks status, 2003-2015. Three indicators are presented: Red line: the proportion of overexploited stocks ($F > F_{MSY}$) within the sampling frame (61 to 69 stocks fully assessed in the NE Atlantic, depending on year); Blue line: the proportion of stocks outside safe biological limits ($F > F_{pa}$ or $B < B_{pa}$) (40 stocks); Orange line: the proportion of stocks outside the current CFP requirements ($F > F_{MSY}$ or $B < B_{pa}$) (41 stocks).

Nevertheless, some stocks now managed according to F_{MSY} may still be outside safe biological limits, or conversely some stocks inside safe biological limits may still be overfished. The CFP regulation refers to both F_{MSY} and safe biological limits. Thus, the EG calculated an additional indicator, which is the proportion of stocks outside the CFP requirements (i.e. overfished or outside the safe biological limits, or both, with $F > F_{MSY}$ or $B < B_{pa}$, orange line). For the 41 stocks for which the required information was available, this proportion decreased from almost 90% to around 60% over the last ten years.

STECF notes that the recent slope of the three indicators suggests that progress until 2015 has been too slow to allow all stocks to be maintained or restored at the precautionary B_{pa} level or above, and managed according to F_{MSY} by 2020.

STECF also notes that the number or proportion of stocks above/below B_{MSY} is still unknown, because an estimate of B_{MSY} is only provided by ICES for very few stocks. Nevertheless, since B_{MSY} is generally well above B_{pa} , the proportion of stocks *maintained or restored above a biomass level capable of producing maximum sustainable yield*, according to Article 2 of the CFP Regulation (EU 1380/2013), is expected to be lower

than the 2015 level (on the orange line) of 40% stocks that are not overfished and are above B_{pa} .

Trends in the fishing pressure (Ratio of F/F_{MSY})

STECF notes that the Expert Group computes the trends in fishing pressure both using a simple arithmetic mean over all stocks and using a more robust statistical model (Generalised Linear Mixed Effects Model, GLMM) accounting for the variability of trends across stocks and including the computation of a confidence interval around the median. A large confidence interval means that different stocks have different trends. The arithmetic mean indicator is not presented for the Mediterranean, as it is too noisy and cannot capture trends; therefore, only the model-based indicator can be used for regional comparison between the NE Atlantic and Mediterranean Sea.

In the ICES area, the model-based indicator of the fishing pressure (F/F_{MSY}) shows an overall downward trend over the 2003-2015 period (Figure 5.2.2). In the early 2000s, the median fishing mortality was more than 1.5 times larger than F_{MSY} , and is now stabilised around 1.0. This is to be interpreted as that around half of the stocks (median) have reached F_{MSY} . Reaching F_{MSY} for most stocks would require the upper bound of the confidence interval in figure 3.13 in the Expert Group to be around 1. STECF also note that this indicator of fishing pressure has not decreased since 2011.

The same model-based indicator was computed by the EG for an additional set of 11 stocks located in the NE Atlantic, but outside EU waters. This indicator seems to confirm the positive overall trend observed in EU waters, with a median value of the F/F_{MSY} indicator lower than 1 in recent years. However, the EG noted that this last indicator is based on 11 stocks only and thus should be considered with care.

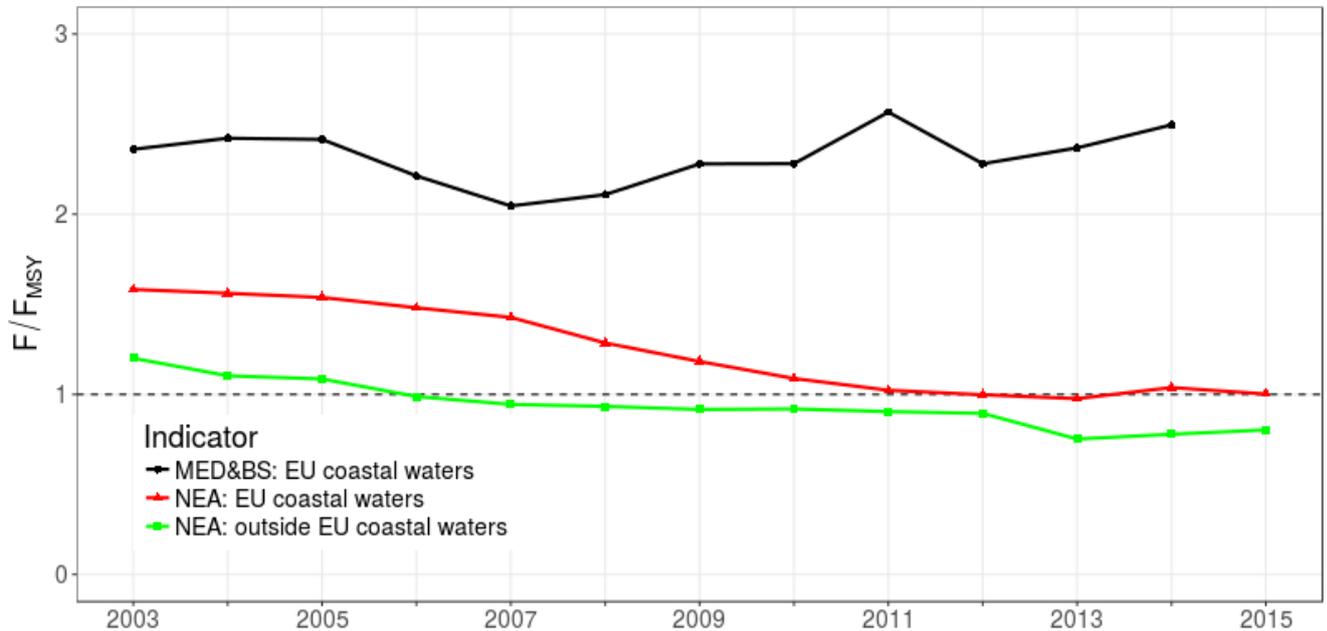


Figure 5.2.2 - Trends in the fishing pressure. Three model based indicators F/F_{MSY} are presented (all referring to the median value of the model): one for the sampling frame of 61 to 69 EU stocks included in the ICES area (red line); one for an additional set of 11 stocks also located in the NE Atlantic

but outside EU waters (green line), and one for the 33 assessed stocks from the Mediterranean and Black Sea region (black line).

In contrast, the indicator computed for stocks from the Mediterranean Sea and Black Sea remained at a very high level during the whole 2003-2014 period, with no decreasing trend. Since 2007 there has even been an increase in the median F/F_{MSY} with the two highest points (around 2.5) in 2011 and 2014. Median value of F/F_{MSY} varies around 2.3 indicating that the stocks are being exploited on average at rates well above the CFP objective of exploitation at rates that will deliver MSY.

Trends in Biomass

The model based indicator of the trend in biomass shows improvement in the ICES area, but not in the Mediterranean and Black Sea (Figure 5.2.3). In the ICES area the biomass has been increasing since 2006. For the fully assessed stocks, the median value in 2015 was around 35% higher than in 2003.

A less pronounced but still improving trend is also observed for data poor stocks, according to the preliminary indicator computed by the EG (**Error! Reference source not found.** in the EG report, an exploratory indicator based on partial information regarding 26 ICES Category 3 stocks).

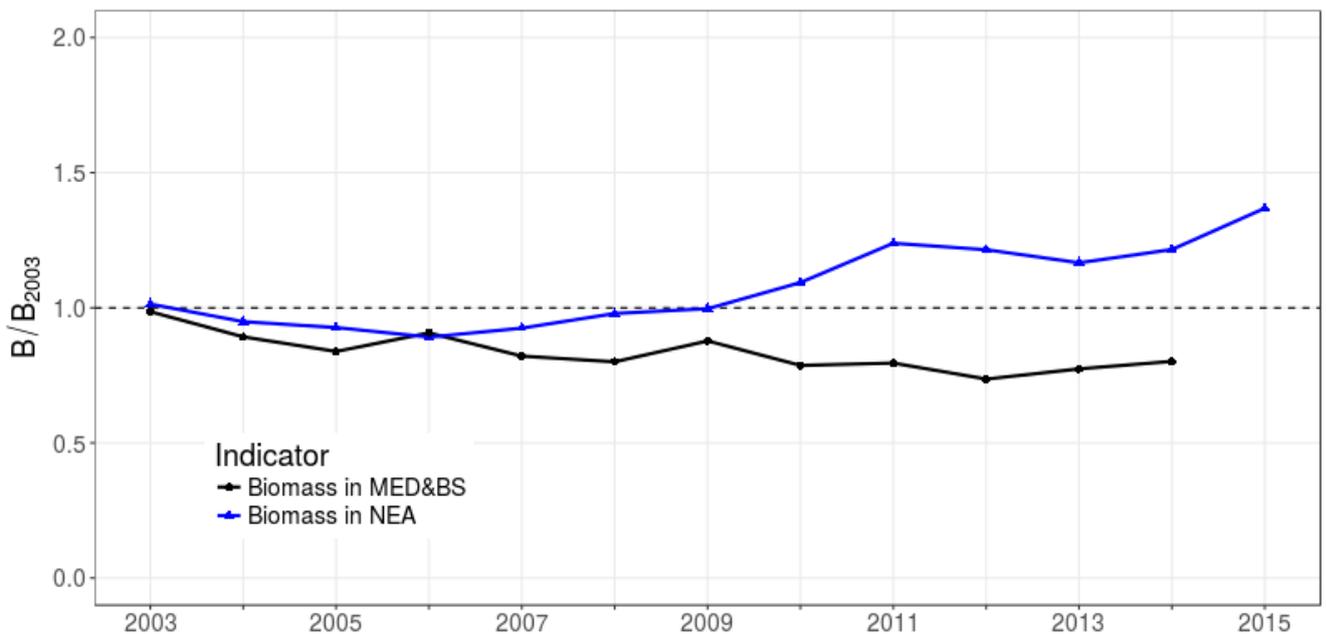


Figure 5.2.3 - Trends in the indicators of stock biomass (median values of the model-based estimates relatively to 2003). Two indicators are presented: one for the ICES area (50 stocks considered, blue line); one for the Mediterranean region (33 stocks, black line).

In the Mediterranean and Black Sea, the biomass indicator exhibits a reduction of about 25% over the period. The EG noticed that a large uncertainty is associated to these estimates, coming from the fact that the biomass estimates are quite variable from one year to the next.

Trends per Ecoregion

For the ICES area, the EG provides some information and figures broken down by Ecoregion. The main trends are summarised here.

The fishing pressure has decreased and the stocks status has improved in all Ecoregions. In 2015, the proportion of overexploited stocks was close to 40 - 45% in all Ecoregions, while the arithmetic mean of the F/F_{MSY} ratio was between 1.05 and 1.25.

Nevertheless, some contrasts in trends can be noticed. According to the indicators presented in the EG report, the fishing pressure decreased consistently over the whole period and the stock status improved in the greater North Sea, in the Baltic Sea and for the widely distributed stocks. In the Celtic Sea, the fishing mortality was at a very high level at the beginning of the time series ($F/F_{MSY} > 2.2$) and decreased significantly; but the proportion of stocks which are outside the CFP requirements has remained around 80%, with no improvement observed over the period. In the Bay of Biscay and Iberian Ecoregion, the situation improved at the beginning of the period, but since 2007 the mean fishing mortality has slightly increased and the stock status has not improved anymore.

Coverage of the scientific advice

Coverage of biological stocks by the CFP monitoring

As stated by the last STECF plenary (STECF PLEN 16-03), the analyses of the progress in achieving MSY objectives in the ICES area should consider all stocks advised by ICES, on the condition of being distributed in EU waters, at least partially. STECF PLEN 16-01 estimated that ICES provides a scientific advice for 183 biological stocks included in EU waters (at least in part). Of these, most stocks are data-poor, without an estimate of MSY reference points (ICES category 3 and above). This means that the present CFP monitoring analysis is restricted to stocks with a TAC and for which estimates of fishing mortality, biomass and biological reference points are available. As detailed in the EGs technical reports, the EG was able to compute indicators for 40 to 69 stocks of category 1 depending on indicators and years. These stocks represent the vast majority of catches. Nevertheless, a large number of biological stocks present in EU waters are still not included in this CFP monitoring.

STECF notes however that the EG computed some additional indicators of trends in abundance index for 26 data poor stocks of category 3. Such indicators are still considered preliminary by the EG and were not yet included in the current synthesis. STECF notes also that MSY reference points are expected to be computed by ICES for a large number of data-poor stocks over the coming years, which will increase the coverage of the CFP monitoring.

In the Mediterranean region, the EG selected 230 stocks (Species/GSA) in the sampling frame (Mannini et.al 2017), of which 57 have been covered by a stock assessment in recent years. In the Mediterranean region, stocks status and trends can be monitored only for a minority of stocks.

Coverage of TAC regulation by scientific advice

According to the EG report, STECF notes that 156 TACs (combination of species and fishing management zones) have been set up in 2015 in the EU waters of the NE Atlantic.

STECF underlines that in many cases, the boundaries of the TAC management areas are not aligned with the biological limits of stocks used in ICES assessments.

The EG computed therefore an indicator of advice coverage, where a TAC is considered to be “covered” by a stock advice when at least one of its divisions matched the spatial distribution of a stock for which reference points have been estimated from an ICES full assessment. Based on this indicator, 51% among the 156 TACs are covered, at least partially, by stock advices that have F_{MSY} (or a proxy e.g. HR_{MSY}) estimates (66 stocks covering 80 TACs) and 43% by advices that have Bpa or a proxy (45 stocks covering 67 TACs).

STECF notes that, using this index, some TACs can be considered as “covered” even if they relate to several assessments aggregated in a single TAC (e.g. *Nephrops* functional units in the North Sea) or to a scientific advice covering a different (but partially common) area (e.g. whiting in the Bay of Biscay). Thus, such an approach overestimates the real advice coverage (i.e. the proportion of TACs based on a single and aligned assessment). This means that the majority of TACs are currently not supported by scientific advice based on F_{MSY} or Bpa reference values. As noted above, this coverage is expected to improve over the next years following ICES progress to derive MSY proxies for data-poor stocks.

Methodological issues

STECF notes that the EG has to a large extent followed the protocol adopted in November 2015 (Jardim et al, 2015) agreed by STECF (2016a) and updated following the discussion in STECF (2016b). However, as a result of problems related to data availability, especially in the Mediterranean and Black Sea region, the protocol was not strictly adhered to.

Sampling frame

STECF suggests that the number of stocks by category for which ICES issued an advice, in the last year of the analysis, to be computed and published in next year's EWG report, in order to assess to which extent the CFP monitoring is covering biological stocks within EU.

STECF notes also that when the new Mediterranean sampling frame (PLEN-16-03) was applied by the EG, 10 stocks assessed by STECF-EWG on Mediterranean assessment were not included, because they were not pre-defined in the sampling frame. As stated during the last plenary, it is agreed that indicators should be calculated taking into account as many stocks as possible, provided that they are of interest for the EU. STECF notes that the sampling frame is a useful process to stabilise the number of stocks included in the annual analysis. Nevertheless, stocks assessed by STECF-EWG may per definition be considered to be of importance to the EU.

Thus, STECF considers that these stocks should be included in the CFP monitoring for 2018, and suggests that all stocks assessed by STECF-EWG should be added to the reference list, if not already included. Criteria used to define the sampling frame should be revised accordingly, and will be discussed in a next STECF plenary meeting.

STECF decided (STECF16-01) to consider a time period of three years, in the selection of stocks included in the analysis, using for each stock the parameters of the last available assessment. STECF recommends that, in case the assessments do not cover the very last year (or the two last years), the time series should be extended with the final year estimates over these years.

Indicators

Based on the current assessment, STECF advises for the next report on CFP monitoring that:

- The three indicators of stock status are useful and should be regularly computed in the coming year (expressed in stock numbers in the detailed report and in proportion in the synthesis)
- As soon as a representative number of B_{MSY} estimates become available from ICES assessments, the proportion (and number) of stocks below or above this reference point should be computed, together with an indicator of trends in the B/B_{MSY} ratio.
- Regarding trends in fishing mortality and biomass, all indicators should be computed in a consistent way. Because the arithmetic mean estimates appeared sensitive to outliers (even if easier to communicate), STECF considers that the model-based indicators should be adopted as the standard method to be used for every time series (including indicators per Ecoregion and indicators for stocks outside EU waters).
- In order to be more readable, indicators of biomass trends should be rescaled with regards to the starting year. Indicators based on fully assessed stocks could be completed by an additional index computed jointly for all stocks of DLS categories 1 to 3 after standardization. The EG is encouraged to explore such extended abundance indicators, which could be discussed during a next plenary meeting.
- According to STECF PLEN16-01, the proportion of stocks from EU waters assessed by ICES for which reference values (F_{MSY} , B_{pa} and B_{MSY}) are known should also be computed, at least for the least year. According to STECF-PLEN16-03, analyses based both on stock numbers and catches would be useful.
- As much as possible, according to data availability, the same indicators should be computed in the ICES area and in the Mediterranean region.
- Finally, following STECF-PLEN16-03, JRC experts are encouraged to explore other aggregations in order to provide indicators by stock categories (e.g. pelagics versus demersals).

STECF conclusions

STECF acknowledges that monitoring the performance of the CFP is a comprehensive study, which presents a number of methodological challenges due to the annual variability in the number and categories of stocks assessed (especially in the Mediterranean) and due to the large variations in trends across stocks. As a result, the choice of indicators and their interpretation is being discussed, expanded and adjusted over time, as duly documented in the suite of STECF plenary reports and in the JRC EG technical reports. In particular, STECF notes that the CFP monitoring has improved this year thanks to the addition of several new indicators. Guidance is provided for further improvements in the coming years.

Regarding the progress made in the achievement of F_{MSY} in line with the CFP, STECF notes that the above results are in line with those reported in the 2016 CFP monitoring and confirm a reduction in the overall exploitation rate for the ICES area. On average the stock biomass is increasing and stock status is improving. Nevertheless, based on the set

of assessed stocks included in the analyses, STECF notes that many stocks remain overfished and/or outside safe biological limits, and that progress achieved until 2015 seems too slow to ensure that all stocks will be rebuilt and managed according to F_{MSY} by 2020.

STECF also concludes that stocks from the Mediterranean Sea and Black sea remain in a very poor situation, with even a deterioration observed over the last period.

Finally, STECF noted that the CFP monitoring has improved this year thanks to the addition of several new indicators. Guidance is provided for further improvements in the coming years.

5.3 Monitoring the Landing Obligation

Background provided by the Commission

Regulation (EU) No 2015/812 (the so-called Omnibus Regulation), introduced an obligation for the Commission to report annually on the implementation of the landing obligation, based on information transmitted by the Member States, the Advisory Councils and other relevant sources.

According to Article 9 of the Omnibus Regulation, Commission report should include the following elements:

- steps taken by Member States and producer organisations to comply with the landing obligation;
- steps taken by Member States regarding control of compliance with the landing obligation;
- information on the socioeconomic impact of the landing obligation;
- information on the effect of the landing obligation on safety on board fishing vessels;
- information on the use and outlets of catches below the minimum conservation reference size of a species subject to the landing obligation;
- information on port infrastructures and of vessels' fitting with regard to the landing obligation; for each fishery concerned; and
- information on the difficulties encountered in the implementation of the landing obligation and recommendations to address them.

In order to facilitate the reporting, and in line with the outcome of STECF EWG 16-04, in 2016 Member States were invited on a voluntary basis to complete questionnaires seeking more detailed information on the impact of the landing obligation and national steps taken to assist with its implementation. Information so submitted has been reviewed, summarised and compiled in 3 ad-hoc contracts (The Terms of Reference of the ad-hoc contracts are annexed).

Request to the STECF

Based on:

- The reports of the ad hoc contracts for Evaluation of Member States Annual Reports on the Landing Obligation
- Annual reports received by Member States, the Advisory Councils, EFCA
- Any other relevant sources of information

STECF is requested to:

- 1) To advise the Commission on the elements appropriate to meet the reporting requirements of Article 9 of Regulation 2015/812, review and summarise the main findings of the reports highlighting, in a structured manner, key salient

points raised by each MS and to provide an overview of them at the sea basin level.

- 2) Identify specific actions where MS have made adjustments to support the introduction of the landing obligation.
- 3) Identify the most important gaps or weakness in implementation and the lessons to be learned from best practices. Where available, identify specific fleets and stocks where the landing obligation has had a direct impact on fishing activity;
- 4) Highlight the most important weaknesses in reporting and the lessons to be learned from best practices.
- 5) Make any further recommendations as appropriate to improve implementation and reporting.

STECF response

STECF comments

STECF notes that for 2016, the Commission has received reports from 21 Member States, 3 advisory Councils as well as the European Fisheries Control Agency (EFCA). No reports were received from Italy or Portugal. The Member States answered a questionnaire, which was provided by the Commission. These received reports were first reviewed and synthesised by an ad-hoc contract, which report was presented to the STECF.

The ad-hoc contract report is available on the plenary meeting website: <https://stecf.jrc.ec.europa.eu/plen1701> under "documents".

Summary of background information

This section provides a synthesis of the background information received from Member States, Advisory Councils, European Control Agency (EFCA) as well as of the report of the Ad-hoc contract (No.SI2.749882).

Steps taken by Member States and Producer Organisations to comply with the landing obligation

The reports indicate that Member States have continued to make significant efforts into disseminating information to fishers through industry meetings, information notes and through government websites. Member States have also increased their level of engagement with the relevant Advisory Councils and in the case of the Mediterranean, have largely followed the advice provided by the MEDAC in developing the discard plan for this sea basin.

Some Member States have investigated specific studies and pilot projects to test selective gears or avoidance strategies, assess the impacts of the landing obligation on specific fisheries or to provide data to support de minimis and high survivability exemptions under discard plans. Fewer actions have been taken by Member States in the Mediterranean and Black Sea where less difficulty with implementing the landing obligation have been stated in the Member States reports.

Member States have applied for de minimis and high survivability exemptions included under the regional discard plans. Only a few Member States have found it necessary to amend their national quota management systems. No Member State has used the inter-

species quota flexibility included under the landing obligation whereas six Member States report using the inter-annual flexibility mechanism.

Steps taken regarding control of compliance with the landing obligation

The reports show that most Member States have provided specific training and dedicated workshops for inspectors on control and enforcement elements of the landing obligation. In most cases these have been facilitated by EFCA. In addition, most Member States have moved towards a risk-based approach to control and monitoring. EFCA has demonstrated how the “last haul analysis” can facilitate the evaluation of compliance with some of the landing obligation provisions and provide information on catch composition across different fisheries.

While there has been extensive dialogue between inspectors at regional level this has translated into relatively few concrete measures being taken towards compliance of the Landing obligation. New control tools such as CCTV and Remote Electronic Monitoring (REM) have been tested in several countries although there is little evidence of them being used and none on a mandatory basis.

Socio-economic impacts

The Member State reports state that it remains difficult for Member States to assess the socio-economic impacts of the landing obligation given the still early stage of implementation. The majority of Member States indicate that problems so far have been minimal but indicate that these will increase as more species and fisheries become subject to the landing obligation. In particular, difficulties with the handling and storage of unwanted catches on board and limited opportunities for disposing of such catches on shore are highlighted as potential problems.

Safety issues on board fishing vessels

STECF observes that there continues to be no evidence of the landing obligation causing safety issues on board fishing vessels. No Member State reports any incidents or accidents although many continue to highlight potential issues of overloading and additional workload leading to tiredness. Several Member States have provided funding under the EMFF to improve safety on board although these are not directly related to the landing obligation. One Member State has carried out a specific study funded under the EMFF to measure the potential impacts on safety but did not report on the findings.

Landings of fish below Minimum Conservation Reference Sizes (MCRS)

Landings of fish below MCRS reported by Member States are generally low across the different regions. According to the Member States reports, all unwanted catches that have been landed have been used for fish meal, pet food or as bait for pot fisheries. The limited volume of unwanted catches seems to have restricted the level of investment required to develop alternative uses for such catches in most Member States. However, several Member States do report ongoing projects to look at other potential uses for example silage. Several Mediterranean Member States report concerns about the existence of illegal markets for fish below the MCRS.

Infrastructure of ports as well as modifications on board fishing vessels

The use of funding under the EMFF to improve the infrastructure of ports as well as modifications on board fishing vessels to handle unwanted catches is reported as low to date, reflecting the low levels of unwanted catches below MCRS that have been landed. Several Member States highlight however that some specific actions have been taken. These include the provision of cold storage facilities in fishery harbours and ports to facilitate fishers with the storage of unwanted catches on landing and modifications on board vessels to allow for the storage of unwanted catches on board.

Difficulties encountered

STECF recognises that, overall, Member States indicate that difficulties encountered so far have been minimal but several reports have highlighted that the most significant issue they face is the industries' reluctance to implement the landing obligation, despite considerable efforts to disseminate information to them. They also report that fishers seem slow to change fishing practices; and in many areas, a "business as usual" mentality seems to prevail.

Member States also indicate a lack of reporting by vessel operators of fish discarded under exemptions (i.e. de minimis and high survivability), discards of fish currently not subject to the landing obligation and catches of fish below MCRS.

The issue of choke stocks also continues to be highlighted in the reports as a major anticipated issue, and several Member States report that a number of analyses have been carried out to identify potential choke stocks. Three Member States reported some concrete examples of situations that they considered as "choke" in 2016.

Specific gaps and weaknesses

STECF observes that a number of specific gaps and weaknesses have been identified by the ad-hoc contract report.

The majority of Member States have pointed to operational and implementation problems. There are issues with the reporting of de minimis catches and fish below MCRS in the electronic logbooks system, in paper logbooks and also in reporting these to the Commission.

Despite the efforts of regional groups and EFCA, there are concerns that there are different interpretations between Member States within regions and also across sea basins in the implementation of the landing obligation. These differences have created confusion and a level of mistrust among fishers which might have hindered compliance.

The Omnibus Regulation allows for the modification of the technical measures regulations through discard plans. However, changes to the technical rules have been very few and regional groups have tended to focus on seeking de minimis and high survivability exemptions rather than measures to improve selectivity.

Similarly, the uptake of the exemption and flexibility provisions available to Member States has been low. No Member State has reported to use the inter-species quota flexibility mechanism.

STECF conclusion

ToR 1

STECF concludes that the Member States reports relating to 2016 include more information and in a more structured manner than the reports for 2015. The questionnaire sent out by the Commission and the answers of the Member States contribute to obtain information on the implementation of the landing obligation. However, since the reporting is mostly qualitative and not verified with data it cannot alone form a basis for a quantitative assessment of the impact of implementing the landing obligation.

The questionnaire in its current version is somewhat long and could benefit from being shortened. In order to avoid repetition of information, certain elements of the questionnaire could also be answered by the regional groups rather than by the individual Member States.

STECF observes that recent scientific publications (e.g. Veiga et al. 2016)³ show that the effects of the landing obligation on small-scale is poorly understood despite the fact that small-scale fisheries could be particularly affected by the landing obligation. STECF notes that small-scale fisheries are not specifically referred to in the Member States reports. STECF suggests that the forthcoming EWG 17-03 on the landing obligation could be asked to provide suggestions for including these aspects in the questionnaire.

ToR 2

STECF concludes that Member States have continued to make significant efforts into disseminating information to fishers through industry meetings, information notes and through government websites. Member States have also increased their level of engagement with the relevant Advisory Councils.

Some Member States have investigated specific studies and pilot projects to test selective gears or avoidance strategies, to assess the impacts of the landing obligation on specific fisheries or to provide data to support de minimis and high survivability exemptions under discard plans.

STECF notes that most Member States have provided specific training and dedicated workshops for inspectors on control and enforcement as well as moved towards a risk-based approach to control and monitoring. STECF concludes that the last hauls analysis, as applied by many Member States, has provided a useful indicator of catch composition and the results are being taken as specific actions in Joint Deployment Plans (JDPs)⁴.

ToR 3

STECF concludes that the reporting of fish discarded under exemptions as well as of catches of fish below MCRS by all Member States is extremely low and it is highly doubtful that they reflect the true quantities actually being caught based on available observer data and last haul analysis. The low levels of reported catch results in a low level of confidence in catch data which may have significant impact in the quality of the

³ Veiga et al (2016). *The EU landing obligation and European small-scale fisheries: What are the odds for success?* *Marine Policy* 64 : 64–71

⁴ <http://www.efca.europa.eu/en/content/joint-deployment-plans>

scientific advice in 2017 and hereafter. STECF underlines that accurate reporting of unwanted catches is vital to understanding the impact of the landing obligation and that increased efforts are needed to ensure better reporting of all catches.

Furthermore, STECF underlines that if discarding continues in some fisheries while an additional quota top-up was allocated, this may represent an increase of fishing mortality. Continued discarding may thus compromise the achievement of the MSY objective.

STECF notes that observer coverage has not increased, and in several Member States there are rather indications that it has actually reduced due to increased refusal to take observers on board. Given the above arguments the quality of the data is deteriorating. STECF concludes that since the reporting of observers' refusal rates is part of Commission implementing decision (EU) 2016/1701, a request for this information should be included in the forthcoming questionnaires.

STECF concludes that Member States still rely on traditional port based enforcement tools to enforce the landing obligation. There are no indications that monitoring at sea, such as CCTV and Remote Electronic Monitoring (REM), which would be a more effective means to enforce the landing obligation (STECF EWG 13-17), has been used by any Member States except as pilot studies.

STECF concludes that many Member States report few problems with the implementation of the landing obligation and a sense of "business as usual" appears to persist. It is also often stated that there is a lack of engagement by the industry to adapt to the landing obligation. Since there is so far little evidence for a change in behaviour STECF cannot identify specific fleets or stock where the landing obligation has had a direct impact on fishing activity.

ToR 4

STECF concludes that many of the concerns with the implementation of the landing obligation highlighted in the reports of several Member States are anticipated and not necessarily observed. The inexistence of difficulties reported in some regions such as Mediterranean and Black Sea may also be related to non-implementation of the landing obligation, rather than because the landing obligation does not pose any issue. These statements must thus be interpreted with caution.

ToR 5

It is apparent that the questionnaire provided to Member States by the Commission has helped to structure the responses supplied by Member States compared to the first year of reporting. However, much of the information supplied remains largely qualitative and any increase in the level of quantitative information would provide a better means of assessing the implementation of the landing obligation.

5.4 Joint Recommendation on Belgian fisheries management measures

Background provided by the Commission

In accordance with Article 11 and 18 of Regulation 1380/2013 Member States having direct management interest in certain areas or fisheries may submit joint recommendations for fisheries management measures to be adopted by the Commission that are necessary to comply with their environmental obligations.

Belgium initiated the procedure with the Netherlands, France, United Kingdom, Germany and Denmark for adopting a joint recommendation for improving the Seafloor Integrity in four sites to reach Good Environmental Status under the Marine Strategy Framework Directive 2008/56/EC. The overall aim of the proposed fisheries management measures is to improve seafloor integrity by reducing fisheries with bottom contacting gears, and thereby contribute to the obligation of achieving good environmental status under the Marine Strategy Framework Directive.

After several consultations amongst these Member States, stakeholders and experts, the MS submitted the final joint recommendation to the Commission. It is now necessary to evaluate the various elements of the joint recommendation on fisheries measures necessary for compliance with environmental obligations and to identify areas if and where additional supporting information may be required. In particular, it has to be assessed whether the measures in the joint recommendation are compatible with the requirements referred to in Article 11(1) and 18(5) of Regulation 1380/2013. This calls for the review of the supporting scientific information provided.

Request to the STECF

In this context the Commission requests STECF to:

- 1) 1. Assess if the proposed conservation measures could minimise the negative impacts of fishing activities on the marine ecosystem and provide for that fisheries activities avoid the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013.
- 2) 2. Assess if the proposed conservation measures would contribute to achieving the good environmental status of the seafloor integrity as stipulated under Article 10(1) of Marine Strategy Framework Directive 2008/56/EC.
- 3) 3. Comment on if a good environmental status in proposed zones as set out in descriptor (6) of Annex I of Marine Strategy Framework Directive 2008/56/EC referred to in the joint recommendation could be achieved without the proposed fisheries measures.

STECF response

Overview of the proposal and summary of the background information provided

In accordance with Articles 11 and 18 of Regulation 1380/2013, Belgium initiated the procedure with the Netherlands, France, United Kingdom, Germany and Denmark for adopting a joint recommendation for improving the Seafloor Integrity in four sites to reach Good Environmental Status under the Marine Strategy Framework Directive 2008/56/EC.

The overall aim of the proposed fisheries management measures is to improve seafloor integrity by reducing fisheries with bottom contacting gears, and thereby contribute to

the obligation of achieving good environmental status under the Marine Strategy Framework Directive.

Following the obligation under the Marine Strategy Framework Directive (MSFD), Directive 2008/56/EC, the Good Environmental Status (GES) and the environmental targets for the Belgian marine waters were defined on the basis of the eleven qualitative descriptors listed in Annex I of the MSFD. Specifically in relation to descriptor 6 "sea-floor integrity", MSFD defines the GES as follows:

"Seafloor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected." Belgium further specified that the GES for seafloor integrity will only be reached if, amongst other things, "physical disturbance of the seafloor is minimised to a sustainable level, taking account of the relative sensitivity of habitat types".

Four zones on the Belgian Continental shelf have been selected for improving seafloor integrity by reducing fisheries with bottom contacting gears (Figure 5.4.1).

Zones 1 and 2 are places where the *Abra alba* community is found. This community comprises various so-called 'ecosystem engineers'. These habitat-structuring species create biodiversity hotspots and are sensitive to bottom- impacting fishing gear. The bivalve *A. alba* community represents the ecologically most important and diverse macrobenthic community in shallow soft-bottom sediments in the southern North Sea (Van Hoey et al., 2004 ; 2005)

Zones 3 and 4 comprise the gravel beds: the gravel beds are home to a rich fauna and flora with high species richness, both of infauna and of epifauna on the rocks. These rich communities can only develop if the habitat is not strongly subject to natural and/or anthropogenic disturbance. The methodology used for sand bank scoring and potential delineation of is based on four scenarios, guided by an indication of the potential Habitat Directive areas with respect to Habitat type 1110 (sandbanks which are slightly covered by seawater all the time), as well as the *Lanice conchilega* aggregations and gravel beds (including refuge areas) (Degraer et al. 2009). The *Lanice* reefs and the gravel beds are the hotspots of benthic biodiversity within the Belgian Continental shelf and occur effectively within the proposed zones.



Fig 5.4.1. Map of the 4 proposed zones (blue areas) for improving the Seafloor Integrity, as well as the fishing zone limits for 3, 4.5 and 12 nautical miles

(Translation of the legend: Visserij en mariene aquacultuur: Fisheries and mariculture - Limiet visserijzone 3M: 3NM limit of the fisheries zone - Limiet visserijzone 4,5 NM: 4,5 NM limit of the fisheries zone - Limiet visserijzone 12M: 12NM limit of the fisheries zone - Vaarverbod munitiestortplaats "Paardenmarkt": Closure of area for shipping munition disposal site "Paardenmarkt" - Speciale zone voor bodemintegriteit: Special zone for seabed integrity - Zone voor aquacultuur: Zone for aquaculture)

The proposal stipulates the following:

- In Zone 1 all fishing vessels currently present in the area may continue their activities on condition that beams with wheels ("roller shoes") are incorporated into the fishing equipment. For shrimp fishing a sieving net is obligatory. Existing vessels may be replaced. New vessels are allowed to fish in the area using non-seabed-disturbing fishing gear. This means that vessels that were up until now not active in this area cannot use seabed-impacting gear.
- In Zone 2 only non-seabed-impacting fishing gear is allowed. Moreover, testing of alternative seabed- impacting fishing gear is allowed under a permit system. A three-year transition period is established during which existing fishing gear in the area are still allowed.
- In Zone 3 only non-seabed-impacting fishing gear and Danish seining are allowed.
- In Zone 4 only non-seabed-impacting fishing gear and Danish seining is allowed. Moreover, testing of alternative seabed-impacting fishing gear is allowed under a permit system. A three-year transition period is established during which existing fishing gear in the area are still allowed.

An overview of the gear codes restrictions is provided in Table 1.

Table 5.4.1. Overview gear codes in the 4 proposed zones

Gear Type	Gear Code	Zone 1	Zone 2	Zone 3	Zone 4
Beam trawls	TBB	*			
Bottom otter trawls	OTB				
Bottom pair trawls	PTB				
Danish seines	SDN				
Scottish seines	SSC				
Gill nets	GN				
Static gear	GT				
Hand/pole line	LHP				

Yellow: banned under conditions; red: banned; green: allowed.

*beam trawl only allowed for existing vessels and use of roller shoes and sieve nets for shrimp fisheries

The control and enforcement are stipulated as follows:

- The proposed fisheries management measures do not require additional control and enforcement measures as control of the proposed fisheries management measures will be covered by current control systems.
- The control and authorization to enter zones 2 and 4 with alternative bottom contacting gear is done through a specific authorization procedure that has been agreed upon by all Member States having a fisheries management interest and by an independent review through ICES.
- Control and enforcement of the proposed fisheries management measures will be based on a combination of procedures: VMS, aerial and marine control and technical control on board of vessels. The use of AIS will be limited: it will only be used when there is a suspicion of infringement.
- The enforcement is taken care of by Flemish (Sea Fisheries Department) and federal (Directorate-General for the Environment) officials, who derive their respective powers from the Decree of 28 June 2013 on the Agriculture and Fisheries Policy and the 1999 Marine Environmental Protection Act (MEPA).

A summary of the fishing activity of Belgian, Dutch, French, German, UK and Danish fleets on the Belgian Continental Shelf, are summarised below:

- The Belgian fleet is rather limited (89 vessels in 2011) and is mainly active in non-Belgian waters. During the period 2010-2012 only 9.4% of the total number of 'active' VMS signals from the Belgian fishing fleet came from the Belgian Continental shelf. Belgian vessels are operational in all 4 zones with a higher effort deployment in zone 1.
- The Dutch fleet is much larger as compared to the Belgian fleet (831 vessels in 2008). In the period 2010-2012, VMS pings of 125 Dutch fishing vessels were recorded. An ILVO study showed that the Dutch fishing fleet is mainly active in (i) shrimp fishing and (ii) beam trawling for demersal fish using nets with a mesh size between 80 and 99 mm. Other métiers present within the Flemish Banks were beam trawling with a different mesh size than 80 to 99 mm, otter trawling and gill netting, pelagic fishing and pot fishing. Dutch vessels have a high effort deployment in zones 2, 3 and 4, whereas in zone 1 the activity is less important but still substantial.
- The majority of the French fleet activity on the Belgian Continental Shelf concerns trawling (91.5% OTB gear type), while other gears are almost not represented. French effort deployment takes only place in parts of the zones 3 and 4 but is substantial.
- The German fleet activity on the Belgian Continental Shelf is minimal. German effort deployment is minimal in the four zones.

- The activity of the British fleet on the Belgian Continental Shelf is very limited. Effort deployment of British vessels occur only sporadic in zones 2, 3 and 4.
- The only fisheries activities of the Danish fleet take place in the EEZ and consist entirely of gill net fisheries. There is no bottom impacting gear used on the Belgian Continental Shelf by Danish vessels. Danish effort deployment comes only from gill nets in zones 3 and 4.

The activity of the Belgian (2010-2012), Dutch (2010-2012), French (2010-2012), UK (01/01/2014-12/04/2015) and Danish (2012-2015) fleet operational on the Belgian Continental Shelf are plotted below.

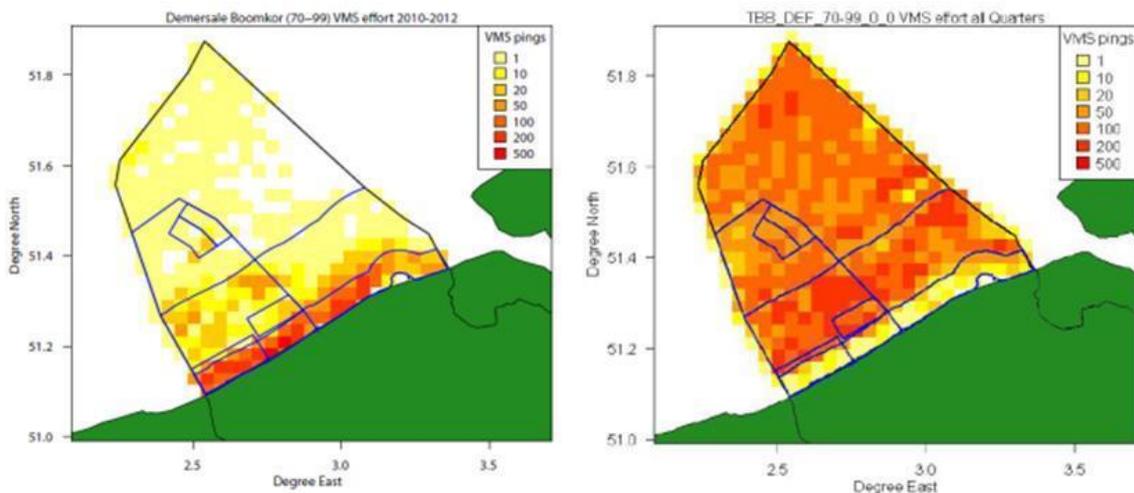


Fig 5.4.2. Spatial distribution of VMS effort for demersal beam trawls (80-99 mm mesh size) of the Belgian (left) and Dutch (right) fleet in 2010-2012.

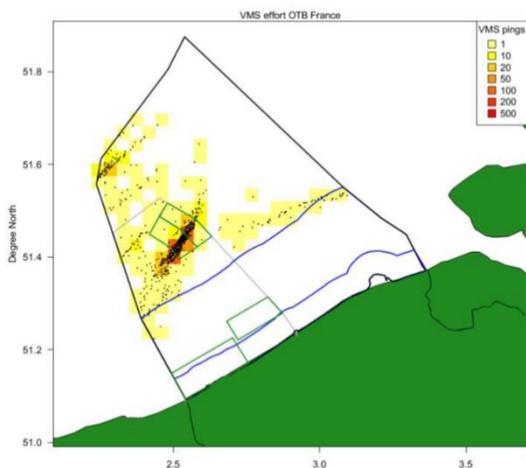


Fig 5.4.3. VMS effort of French OTB vessels on the Belgian Continental Shelf for 2010-2012.

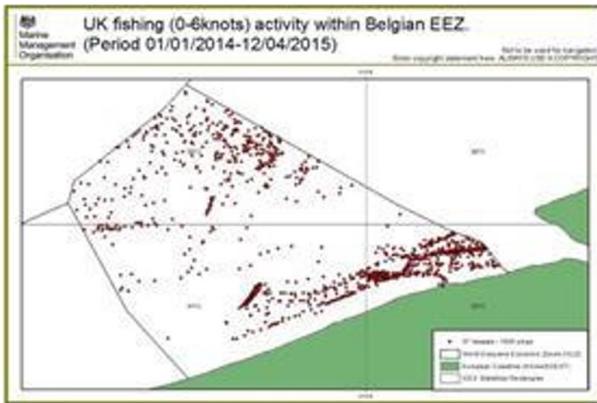


Fig 5.4.4. UK Fishing fleet activity on the Belgian Continental Shelf (period 01/01/2014-12/04/2015).

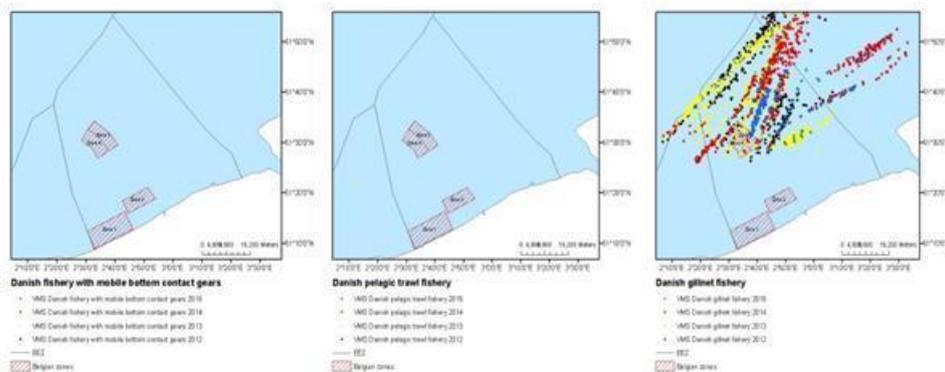


Fig 5.5.5. Danish Fishing fleet activity on the Belgian Continental Shelf 2012-2015.

STECF comments to the proposal

STECF notes that the biological evaluation method is based on “marine biological value” and defined as “the intrinsic value of marine biodiversity, without reference to anthropogenic use”, i.e. the socio-economic value of biodiversity was not taken into account.

STECF further notes that, based on existing literature, the following five valuation criteria were selected:

- **Rarity:** distinguishes subzones which are characterized by unique, rare or distinct features for which no alternatives exist
- **Aggregation:** distinguishes subzones where most individuals of a species are aggregated
- **Fitness consequences:** distinguishes subzones where natural activities take place which contribute significantly to the survival or reproduction of a population or species.

- Naturalness: distinguishes subzones which are pristine and characterised by native species; and
- Proportional importance: measures the proportion of the national, regional and/or global resource of a species or feature which occurs within a subzone of BPNS.

STECF considers that the marine biological valuation map of the Belgian Continental Shelf (Figure 5.4.6) presented, which integrates seabirds, macrobenthos, epibenthos and demersal fish provides a comprehensive and adequate overview.

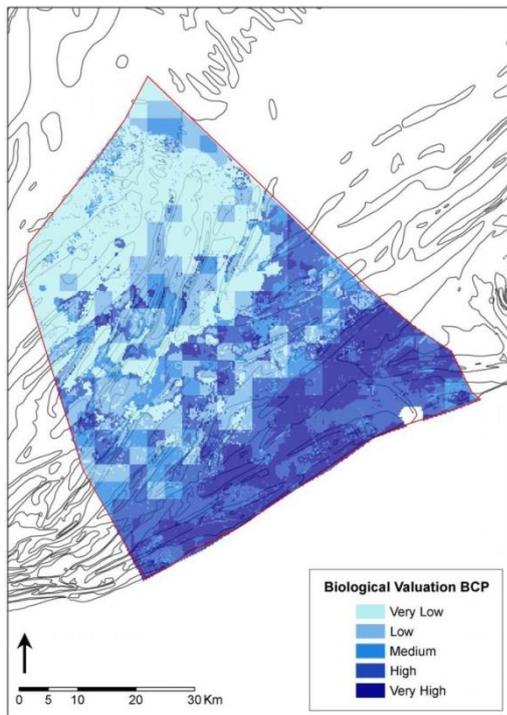


Figure 5.4.6 - Marine biological valuation map of the Belgian Continental Shelf, which integrates the seabird, macrobenthos, epibenthos and demersal fish valuation.

STECF notes that the original proposal included a fifth zone (Ecological valuable coastal zone of 4.5 NM) in light of the apparent high to very high biological valuation of the coastal area, and this zone was not included in the final joint recommendation.

It was argued by the AD HOC group (Annexes 2, 3, 4 & 6 to the Joint Recommendation) that “*The weak link between the measure and the expected result together with strong management interest in the coastal zone*” lead to the abandonment the original proposal for the 4.5 NM zone. However, according to the documentation provided together with the Joint Recommendation, the wider coastal zone is identified as biologically highly-valuable, and largely coincides with the *Abra alba* biotope and biogenic reef potential. Extending the proposed management zone to a wider area would therefore be likely to increase the potential to improve the seafloor integrity.

It was also argued by the AD HOC group (Annexes 2, 3, 4 & 6 to the Joint Recommendation) that “the Scottish and Danish seines have different impacts” hence Danish seines are to be permitted in zones 3 and 4 while Scottish seines are not permitted. STECF notes however that there is no evidence provided to support this assertion. Both gears are operated in a very similar way, and are both considered to have relatively low impact on the seafloor; this type of fishing is reported to have zero

impact at the subsurface level, while beam trawls have 100% subsurface level impact (Eigaard et al., 2016).

STECF notes that testing of alternative seabed-impacting fishing gear is allowed under a permit system for zones 2 and 4. The use of an alternative less-impacting gear is allowed if scientific testing of impacts is guaranteed for which a specific authorisation is required. ICES was requested to review the procedure. The ICES review (Annex V to the JR) lists numerous concerns regarding the procedure to allow the use of alternative seabed-impacting fishing gear in zones 2 and 4. The main concerns emitted by ICES are: (i) The absence of clearly specified "impact indicators" (i.e. pressure and biotic indicators), in either the eligibility or the selection criteria against which to measure whether alternative gears have a lower impact than the standard gear; (ii), there is a need to specify the thresholds to determine whether, based on the outcome of the alternative gear trials that such gears can continue to operate in the areas. In other words, what is the required reduction in impacts, e.g. 10, 20% 50%?

Regarding concern (i), the criteria are described in qualitative terms such as "significant" and "relevant and realistic". If the intention is for these to be defined by the selection committee, then this should be stated explicitly in the procedure. It should be clear to applicants whether the authorization will be for a specific time, location within area, or whether they can be flexible once authorization has been given.

STECF acknowledges that these issues linked to the testing of bottom impact of alternative gears are difficult to resolve, and are generic. STECF notes that there are ongoing progresses in the methods and procedures for monitoring the MSFD. These issues are also discussed in the STECF EWG on technical measures (STECF-17-02).

STECF notes that the Joint Recommendation is based on information on the Belgian and Dutch fleet fishing patterns for the period 2010-2012. It is questionable whether this information is representative for the recent exploitation patterns in the area. The transition in the Dutch fishery from the traditional beam trawl to the pulse trawl has caused a decrease in the effort of traditional beam trawl vessels and an increase in the effort of pulse vessels in the Belgian coastal zone and mainly in the 12 mile zone (Turenhout et al 2016). STECF notes that it would be appropriate to take the most recent effort distribution into account.

Additionally, the effects of pulse trawls on seabed and on the non-target species have been widely studied, and these effects could have been taken into account in the Joint Recommendations.

The proposal refers to granting access to beam trawls which are fitted with wheels (roller shoes) for zone 1, however, there is no description of this modification. It most likely refers to wheels on the beam ends that replace the "shoes" that are pulled across the seafloor (but could also refer to bobbins on the ground gear that are replaced with rolling balls). In either case, the impact on the seabed will likely be reduced, however, it is the tickler chains and chain mats that cause most of the seabed disturbance (e.g. Depestele, 2016) and so the overall reduction in seafloor impact is likely to be limited where beam trawls are operating.

STECF conclusions

The STECF conclusions relating to each of the requests specified in the Terms of reference are as follows:

1. STECF concludes that the proposals in the Joint Recommendation on Belgian fisheries conservation measures may reduce the impact of fisheries with bottom

contacting gears and help to maintain and/or improve seafloor integrity in the specified management zones. The proposed measures represent a positive step towards minimising the negative impacts of fishing activities on the marine ecosystem and if effectively implemented, will likely contribute to the aim of avoiding the degradation of the marine environment as stipulated under Article 2(3) of Regulation 1380/2013. Given the information available however, it is not possible to quantify the extent of any potential reduction in seabed impacts or the associated effects on seafloor integrity. Furthermore, STECF observes that the fishing activities have changed, compared to the reference period (2010-2012, e.g. transition from traditional beam trawl to pulse trawl) and that this alone might have affected the seabed impacts of the fisheries.

2. If effective, the proposed conservation measures would contribute to achieving good environmental status as prescribed under Article 9 of the Marine Strategy Framework Directive 2008/56/EC (Descriptor 6). Four zones are proposed, for Zone 3 there is clarity that high-impact fishing gears are not permitted; in Zone 1, beam trawls with wheels are permitted, which deliver relatively little reduction in seabed impact; and in Zones 2 and 4, alternative gears can be used, although the criteria for assessing these are not defined. The uptake of the permitted exceptions and the accepted alternative gears will determine the effectiveness of the measures.
3. STECF was requested to determine whether good environmental status in proposed zones as set out in descriptor (6) of Annex I of Marine Strategy Framework Directive 2008/56/EC referred to in the joint recommendation could be achieved without the proposed fisheries measures. Given the data and information available, a response to this request can only be speculative. There are a variety of pertinent factors that need to be taken into consideration, especially information on the other descriptors and indicators prescribed in the MSFD to determine good environmental status. Such information is not available to the STECF at present.

STECF has additional conclusions on this Joint Recommendation:

STECF notes that, although the proposed fisheries measures have the potential to improve the seafloor integrity in the nominated zones, there is clear scientific evidence of a wider vulnerable coastal area (within 6 NM of the Belgian coast). The justification to restrict management measures to the western part of the coastal zone (zone 1 of the Joint Recommendation) is based on the grounds that it is an area where the *Abra alba* community is found. However, according to the information provided together with the Joint Recommendation, the wider coastal zone is also biologically highly-valuable, and largely coincides with the *Abra alba* biotope and biogenic reef potential. Including a management zone to a wider area (e.g. a 4.5 NM or 6 NM for the whole coastline) would therefore be likely to increase the potential to improve the seafloor integrity.

STECF notes that the Joint recommendation does not specify which indicators or metrics are to be used to assess the impacts of alternative gears in zones 2 and 4. STECF assumes that such indicators will be those specified in Table 2 in Annex III of

the MSFD. Clarification should be given in the Joint Recommendation whether this is the case.

Finally, in relation to the proposal to allow alternative less-impacting gear in zones 2 and 4 the STECF notes the following:

- The description of the measures for zones 2 and 4 are ambiguous and are not consistent with the procedure described in Annex 5 to the Joint Recommendation which indicates that impacts of alternative seabed-disturbing fishing techniques will be tested against those for the classic trawlers, whereas the measures specified in the Joint Recommendation specify that only non-seabed impacting fishing gear is allowed (zone 2) or only non-seabed impacting fishing gear and Danish seining will be allowed (zone 4); but in both zones testing of alternative seabed-impacting gear is allowed under a permit system. STECF notes thus that according to the Joint Recommendation, alternative seabed-impacting gears in zone 2 would therefore need to have no impact and those in zone 4 would need to have less impact than Danish seines in order to be permitted.
- Furthermore, in both zones the proposed measures are to establish a three-year transition period during which **existing** fishing gears in the area are still allowed for zone 2 and 4. STECF notes that this implies no change in which gears can be used in either of the zones 2 and 4 for three years, which would then delay the achievement of the objectives of the Joint Recommendation.
- Regarding the procedure to allow the use of alternative seabed-impacting fishing gears in zones 2 and 4, STECF considers that the lack of clearly specified “impact indicators” (i.e. pressure and biotic indicators), in either the eligibility or the selection criteria against which to measure whether alternative gears have a lower impact than the standard gear is of major concern. It needs to be clarified whether such indicators are those specified for Descriptor 6 in the MSFD and how they will be measured. Furthermore, there is a need to specify the thresholds that will be used to determine whether, based on the outcome of the alternative gear trials, such gears can continue to operate in those areas. STECF acknowledges that these issues are generic and that progress is still ongoing in developing the methods and procedures for implementing and monitoring the MSFD.

References

- Degraer, S., U. Braeckman, J. Haelters, K. Hostens, T. Jacques, F. Kerckhof, B. Merckx, M. Rabaut, E. Stienen, G. Van Hoey, V. Van Lancker & M. Vincx (2009). Studie betreffende het opstellen van een lijst met potentiële Habitatrichtlijn gebieden in het Belgische deel van de Noordzee. Eindrapport in opdracht van de Federale Overheidsdienst Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu, Directoraat-generaal Leefmilieu. Brussel, België. 93 pp. The original version of this document is in Dutch, but the relevant parts of this study have been translated into English for the purpose of the fisheries measures proposal.
- Depestele, J., Ivanović, A., Degrendele, K., Esmaeili, M., Polet, H., Roche, M., Summerbell, K., Teal, L.R., Vanelslender, B. and O'Neill, F.G., 2016. Measuring and assessing the physical impact of beam trawling. ICES Journal of Marine Science: Journal du Conseil, 73(suppl 1), pp.i15-i26.

Turenhout, M.N.J., B.W. Zaalink, W.J. Strietman, K.G. Hamon, 2016. Pulse fisheries in the Netherlands; Economic and spatial impact study. Wageningen, Wageningen Economic Research, Report 2016-104. 32 pp.; 18 fig.; 1 tab.; 5 ref.

http://www.seafish.org/media/Publications/BFM_August_2015_update.pdf

Eigaard, Ole Ritzau ; Bastardie, Francois ; Breen, Mike ; Dinesen, Grete E. ; Hintzen, Niels T. ; Lafargue, Pascal ; Mortensen, Lars O. ; Nielsen, J. Rasmus ; Nilson, Hans C. ; O'Neil, Finbarr G. ; Polet, Hans ; Reid, David G. ; Sala, Antonello ; Sköld, Mattias ; Smith, Chris ; Sørensen, Thomas Kirk ; Tully, Oliver ; Zenging, Mustafa ; Rijnsdorp, Adriaan D.
in journal: ICES Journal of Marine Science (ISSN: 1054-3139) (DOI: <http://dx.doi.org/10.1093/icesjms/fsv099>), vol: 73, issue: Suppl. 1, pages: 27-43, 2016

Van Hoey et al., 2004 Macrobenthic community of soft-bottom sediments at the Belgian Continental Shelf. *Estuar. Coast. Shelf Sci.*, 59 (2004), pp. 599–613

Van Hoey et al., 2005. Small-to large-scale geographical patterns within the macrobenthic *Abra alba* community. *Estuar. Coast. Shelf Sci.*, 64 (2005), pp. 751–763

5.5 Management plan for marine commercial fishing in the territorial waters of the Republic of Slovenia

Background provided by the Commission

Under Article 19 of Council Regulation (EC) No 1967/2006 (hereafter referred to as "MEDREG"5), Member States are expected to adopt management plans for fisheries conducted by trawl nets, boats seines, shore seines, surrounding nets and dredges within their territorial waters.

In 2013, the Common Fisheries Policy (CFP6) introduced new elements for conservation such as the target of maximum sustainable yield (MSY) for all the stocks by 2020 at the latest, the landing obligation and the regionalisation approach.

In line with these two regulations, the plans 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 maximum sustainable yield or MSY. Where targets relating to the MSY (e.g. fishing mortality at MSY) cannot be determined, owing to insufficient data, the plans shall provide for measures based on the precautionary approach, ensuring at least a comparable degree of conservation of the relevant stocks.

The plans shall also contain specific conservation measures based on the ecosystem approach to achieve the objectives set. In particular, they may incorporate any measure included in the following list to limit fishing mortality and the environmental impact of fishing activities: limiting catches, fixing the number and type of fishing vessels authorized to fish, limiting fishing effort, adopting technical measures (structure of fishing gears, fishing practices, areas/period of fishing restriction, minimum size, reduction of impact of fishing activities on marine ecosystems and non-target species), establishing incentives to promote more selective fisheries, conduct pilot projects on alternative types of fishing management techniques, etc.

In 2013, Slovenia submitted a consolidated management plan to the European Commission (EC), after examination by the STECF in 20127.

In December 2016, Slovenia submitted an updated management plan which should be examined by the STECF.

5 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.](#)

6 Regulation (EU) No 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. [OJ L 354, 28.12.2013, p. 22-61.](#)

7 Scientific, Technical and Economic Committee for Fisheries (STECF) – 2012. Evaluations of Slovenian and Spanish Management Plans (STECF-OWP-12-02) , 17 pp.

Documentation: The management plan for marine commercial fishing in the territorial waters of the Republic of Slovenia (ENG). Background documentation can be found on: <https://stecf.jrc.ec.europa.eu/plen1701>

Request to the STECF

- 1)** To assess and advice whether the management plan for marine commercial fishing in the territorial waters of the Republic of Slovenia contains adequate elements in terms of:

The description of the fisheries

- Recent and historical data on catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit-effort (or CPUE).
- Data on length-frequency distribution of the catches, with particular reference to the species subject to minimum sizes in accordance with Annex III of the MEDREG.
- An updated state of the exploited resources.
- Information on economic indicators, including the profitability of the fisheries.

Objectives, safeguards and conservation/technical measures

- Objectives consistent with article 2 of the CFP and quantifiable targets, such as fishing mortality rates and total biomass.
- Measures proportionate to the objectives, the targets and the expected time frame.
- Safeguards to ensure that quantifiable targets are met, as well as remedial actions, where needed, including situations where the deteriorating quality of data or non-availability places the sustainability of the main stocks of the fishery at risk.
- Other conservation measures, in particular measures to fully monitor catches of the target species, to gradually eliminate discards and to minimise the negative impact of fishing on the ecosystem.

Other aspects

- Quantifiable indicators for periodic monitoring and assessment of progress in achieving the objectives of the plan.

- 2)** If deemed necessary, provide any recommendations and guidance on how to obtain improved scientific/technical supporting material for the plan. This could be done in terms of collection of data, evaluation of the status of the target stocks, evaluation of conservation measures, impact on the marine ecosystem and monitoring programme.

STECF response

STECF observations

The newly submitted Management Plan (MP) for commercial fishing in Slovenia provides a detailed presentation on the current fleets and fleet segments, known spatial

distribution for fishing activities and seasonality for the various fishing gear including landings and landing incomes for a fishing gear.

STECF notes that the area covered by Slovenian fishing zones as presented in the MP (Fig. 1-9), might include fishing grounds which are outside the territorial waters of Slovenia.

The description of the fisheries

Recent and historical data on catches (landings and discards) of the species concerned, fishing effort and abundance indices such as catch-per-unit-effort (or CPUE).

In the period 2008-2015, the number of fishing days increased by 28%, while there is no detailed information on the national total landings trend, apart from one figure and statement that the weight of total landing in that period decreased by 72% (Fig. 21). Consequently, the average value of landing per fishing day dropped by more than 50% in the 2008-2015 period. There are no details on recent total catch trends (landings and discards) of the species concerned neither catch-per-unit-effort (or CPUE).

Data on length-frequency distribution of the catches, with particular reference to the species subject to minimum sizes in accordance with Annex III of the MEDREG.

STECF notes that there are no data on length-frequency distribution of the catches, with particular reference to the species subject to minimum sizes in accordance with Annex III of the MEDREG.

An updated state of the exploited resources.

The main target species of the Slovenian fleet are all shared stocks, so the assessment refer to the evaluations performed in the frame of the GFCM. Thus, management measures proposed in the MP are those arising from the GFCM. Five species were observed as priority species for Slovenia in 2015 (the SAC plan - Scientific Advisory Committee): European pilchard (*Sardina pilchardus*), gilt-head bream (*Sparus aurata*), European anchovy (*Engraulis encrasicolus*), common sole (*Solea solea*), and whiting (*Merlangius merlangus*). In terms of current fishing mortality (F), the state of stocks of pilchards and European anchovies is not within the safe biological limits in the GSA17-18 area, and fishing mortality is excessive. The management objective for both species is to reduce fishing mortality. The stock assessments of demersal species for the entire analysed period (2013-2015) also show excessive exploitation or high overfishing of species. Thus, the objective proposed for all these priority species in the MP is to reduce fishing mortality.

Information on economic indicators, including the profitability of the fisheries.

Detailed information on the fishing fleet by segment, is given in the MP (tonnage, engine power, employees, days at sea, fuel consumption, total income, etc.), including information on economic indicators and profitability. The latest figure of Slovenian fleet capacity is 675 GT and 8867 kW which is a decrease by 382 GT (36.1%) and 2107 kW (19.2%) compared to the fleet capacity ceiling determined on 1 May 2004 (1057 GT and 10974 kW), due to the decommissioning of eight fishing vessels in 2012 and 2013. As of 1 January 2014, Slovenia could not exceed this capacity (Regulation (EU), No 1380/2013).

The Slovenian fishing fleet consists mostly of small vessels that are considered "small-scale" fisheries (<12 m length). There is no vessel that exceeds a length of 18 meters. In 2015, 82 vessels (48%) were shorter than six meters, 73 (42.7%) were in the length class from 6 to 12 meters and 16 (9.3%) in the length class from 12 to 18 meters. In 2014, 15% more people were employed in the Slovenian marine fisheries sector than in 2008.

The revenue of the Slovenian fishing fleet in 2014 was EUR 2.83 million (10% less than in 2013). In the total, the value of landing was EUR 1.29 million, the value of state aid EUR 0.07 million and the value of other revenue was EUR 1.48 million. Most other revenue was generated by tourist activities, such as renting vessels for sport fishing or transporting tourists in the summer season. The value of landing in the 2008-2014 period showed a decline, while on the other hand an increasing trend of other revenue by more than 130% in 2014 compared to 2008 is noticed.

Objectives, safeguards and conservation/technical measures

Objectives consistent with article 2 of the CFP and quantifiable targets, such as fishing mortality rates and total biomass.

Management measures proposed within MP are based on regional GFCM assessments and GFCM recommendations. On a national level MP stated 3 main objectives that are focused on managing fishing effort:

- Removal of non-active vessels from the fishing vessel register,
- Implementation of sustainable fisheries.
- Issue of licences for commercial fishing for a limited time.

Measures proportionate to the objectives, the targets and the expected time frame.

STECF notes that these national objectives have no biological and reference points targets as they are focused only on managing fishing effort.

It is also unclear how the various objectives are consistent with each other.

It is stated that the purpose behind the objective to remove non-active vessels from the fishing vessel register is to replace old vessels with new and the entering of new vessels in the fishing fleet.

The objective of issuing of new fishing licenses might mean the increase of fishing capacity for vessels that catch small pelagic stocks (purse seines (PS)) to the level determined in point 12 of Recommendation GFCM/40/2016/3. This level is up to 50% higher than current in number of vessels and in terms of gross tonnage (GT) and/or gross registered tonnage (GRT) and engine power (kW). This increase in capacity might not be consistent with the objective of implementing sustainable fisheries.

STECF notes that it is not clear whether renewal of the fleet will make the fishing activity more profitable because of the small market and limited fishery resources.

Safeguards to ensure that quantifiable targets are met, as well as remedial actions, where needed, including situations where the deteriorating quality of data or non-availability places the sustainability of the main stocks of the fishery at risk.

STECF notes that apart of regionally defined, by GFCM, quantifiable targets, no other targets or remedial actions have been provided.

Other conservation measures, in particular measures to fully monitor catches of the target species, to gradually eliminate discards and to minimise the negative impact of fishing on the ecosystem.

STECF notes that there are no planned measures to eliminate discards and to minimise the negative impact of fishing on the ecosystem, while target species are monitored solely as a part of total catch, without length frequencies, species specific CPUE or any other value (excluding economic indicators).

Other aspects

Quantifiable indicators for periodic monitoring and assessment of progress in achieving the objectives of the plan.

STECF notes that quantifiable indicators for periodic monitoring and assessment of progress in achieving the objectives of the plan are not provided by MP.

Request for derogations

The MPs resubmits the request for the derogation regarding the size of the surrounding nets and the derogation for bottom trawls that should be permitted to trawl in the stretch between 1.5 and 3 nautical miles from the coast, except for "tartana" demersal trawls.

Regarding the request for derogation related to the size of the surrounding nets it must be noted that the fishery targets Annex III species, sardine and European anchovy. The request is largely based on the study "*Technical properties of purse seines targeting small pelagic species in the Adriatic Sea and impact of their use on the seabed*". During 52nd Plenary Meeting (PLEN-16-02) STECF already discussed this request and concluded that the reason for regulating the drop of the net is that if the drop of the net is higher than the given depth: (i) the lower part of the net could act as a towed net catching non-pelagic species and; (ii) the net could also damage the seabed. STECF noted that the aforementioned study included most of the elements in support of the requested derogations. STECF PLEN 16-02 concluded that according to this study, the physical impact of the leadline on the seabed seems to be negligible for the seines operating in the Central-Southern Adriatic Sea (e.g. mean depth around 80 m). However, it is unclear whether these conditions are met for the purse seines used in shallow waters (e.g. <25 m depth). This consideration is directly relevant for this request as Slovenian fleet operates within the Gulf of Trieste (at max depth of 25 m). As a general comment, STECF noted that this derogation should not only be evaluated with regards to the MEDREG conditions, but also with regards to the CFP objectives. In particular, it should be evaluated whether the derogation bears a risk for an increase in catch efficiency and thus in fishing mortality, considering that the target species caught (sardine and European anchovy) are already exploited above the levels compatible with MSY. Moreover, around 13% of the total catch of purse seiners operating in shallow Slovenian waters of the Gulf of Trieste, is bycatch such as mackerel (*Scomber scombrus*), sparids (*Sparus aurata*, *Pagellus spp*, *Lithognathus mormyrus*), horse mackerel (*Trachurus spp*), squid (*Loligo vulgaris*) and grey mullets. *Scomber scombrus*, *Trachurus spp*, *Sparus aurata*, *Pagellus spp* and *Lithognathus mormyrus* are species mentioned in Annex III. It is not known whether the fish species in the by-catch correspond to juveniles.

STECF notes that some discrepancies in number of vessels operating and fishing days need to be clarified (Table 38 vs Table 61 of the MP).

With regards to the request for derogation for trawls STECF notes that this request was also discussed during 52nd Plenary Meeting (PLEN-16-02) when it was concluded that the reports contain a lot of useful information for the evaluation of the fulfilment of the MEDREG conditions, but it is not possible to distinguish activities and landings between the 1.5-3 NM zone and beyond 3 NM. STECF also notes that it cannot be considered that the fleet does not target cephalopods, especially squid which has the highest landing value of all species caught, implying that the condition 10 of Article 13 MEDREG is not fully fulfilled. Finally, STECF notes that in the MP the description of the gear ("volantina" and "tartana") is not clearly detailed. Thus, it is unclear how one gear will be prohibited and other allowed if a distinction between those gear is uncertain. This issue is considered in more details in the ToR 2.6 of the STECF Plenary.

STECF also notes that no information on the assessment of socio-economic consequences in case of not granting the derogations is provided in the management plan.

If deemed necessary, provide any recommendations and guidance on how to obtain improved scientific/technical supporting material for the plan. This could be done in terms of collection of data, evaluation of the status of the target stocks, evaluation of conservation measures, impact on the marine ecosystem and monitoring programme.

MP should have clear biological and socioeconomic objectives, especially if those are not determined on a regional level, e.g. for demersal species. Hence, proper explanation and justification of actions to achieve the objectives is needed. A Monitoring programme should collect data on total landing trends as well as CPUE trends for a fishing gear on a yearly basis as well as length frequencies of caught species, especially target ones. MP should also determine a proper quantifiable trigger points and related remedial actions. With regards to derogations for trawls detailed technical characteristics of *tartana* and *volantina* are required, as well as catch comparison throughout a whole fishing season related to the different gear and zone (1.5-3NM vs >3NM).

STECF conclusions

Many of the elements that should be considered in a management plan has been now included in the Slovenian MP but some information, that were presented in previous MP are now lacking, e.g. there are not detailed information on length-frequency distribution of the catches (especially of species subject to minimum sizes in accordance with Annex III of the MEDREG), recent total catch trends (landings and discards) of the species concerned neither catch-per-unit-effort (CPUE) trends.

On the other hand, limited information presented in the MP are showing that in the period 2008-2015, the number of fishing days was increased by 28%, while weight of total landing decreased by 72%. Consequently, the average value of landing per fishing day dropped by more than 50% in the 2008-2015 period.

STECF also notes that apparently there is a switch in fisheries activities from commercial to touristic/sport fishing as the total value of commercial landings in the 2008-2014 period showed a significant decline (more than 40%), while on the other hand there is an increasing trend by more than 130% in 2014 compared to 2008 of revenue related to sport fishing/touristic activities. However, there are no further details on the impact of those activities to fishing stocks.

Since the main targets of the Slovenian fleet are shared stocks and the fishing activity of the Slovenian fleet is low compared to the catches of the neighboring countries, and mainly conducted by small scale fisheries, STECF consider that the management of fishery resources exploited by the Slovenian fleet should be undertaken at the regional level rather than at the national level, as it is proposed by the MP. However, some objectives proposed on the national level are not proportionate to related measures, thus, those management actions need further clarification.

STECF concludes, as previously, that purse seines in the shallow waters may not fulfill all the conditions for exemptions specified in the MEDREG.

Regarding the exemption for Volantina trawl, STECF answers and conclusions are detailed in section 5.6 of this report.

5.6 Derogation for 'Volantina' demersal otter trawls in the territorial waters of Slovenia

Background provided by the Commission

In accordance with Article 13 (1) of Regulation (EC) No 1967/2006 (hereafter "MEDREG"8)) the use of towed gears is prohibited within 3 nautical miles (nm) of the coast or within the 50 m isobath where that depth is reached at a shorter distance from the coast.

Commission Implementing Regulation 277/20149 provides that Article 13(1) of the Mediterranean Regulation does not apply in the territorial waters of Slovenia, irrespective of the depth, between 1,5 and 3 nm from the coast, to 'volantina' demersal otter trawls which are used by vessels:

- (a) bearing the registration number mentioned in the Slovenian management plan;
- (b) having a track record in the fishery of more than five years and not involving any future increase in the fishing effort deployed; and
- (c) holding a fishing authorization and operating under the management plan adopted by Slovenia in accordance with Article 19(2) of Regulation (EC) No 1967/2006.

This derogation applies until 23 March 2017.

Slovenia's Management Plan (November 2013) provides the detail on what will be reported to the Commission:

"Monitoring of catch composition will be performed on an annual basis and reported to the European Commission. [The] Report will include data on retained/discarded length composition by species, as well [as] share and composition of juvenile organisms. The Report will include also a list of vessels subject to the derogation that were active in particular year, together with a number of fishing days spent at sea."

The Commission received the Annual Reports for Slovenia on this derogation covering the years 2014 and 2015.

In June 2016, Slovenia expressed its interest to prolong this derogation after its expiry on 27 March 2017. Subsequently, STEFC was requested to review and provide any appropriate comments on the 2014 and 2015 Annual Reports provided by the Slovenian authorities to support the request to prolong the derogation from Article 13(1) of the Mediterranean Regulation.

8 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.](#)

9 Commission Implementing Regulation (EU) No 227/2014 of 19 March 2014 derogating from Council Regulation (EC) No 1967/2006 as regards the minimum distance from coast and the minimum sea depth for the 'volantina' trawlers fishing in the territorial waters of Slovenia. OJ L 82, 20.3.2014, p. 1-2.

In the 52nd Plenary Meeting Report (PLEN-16-02) under Point 5.10, STECF concludes that the reports contained a lot of useful information for the evaluation of the fulfilment of the conditions for a derogation set out in the MEDREG, but highlighted that:

- it was not possible to distinguish activities and landings between the 1.5-3 nm zone and beyond 3nm;
- it could not be considered that the fleet does not target cephalopods (point 10);
- the annual reports provided the vessels registration numbers respectively for the years 2014 and 2015 (track record of at least 2 years) which did not allow to assess whether the vessels concerned had a track record of more than 5 years (point 6);
- STECF was not in a position to evaluate the statement that the Volantina fishery does not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets (point 8).

In addition, STECF considered that the management plan should be revised to align with the 2013 CFP, including the achievement of the MSY objective.

In light of the outcome of the evaluation, Slovenia submitted additional information to the Commission on 15 September 2016 (Study on the protection of natural resources: the assessment of abundance and biomass of demersal species caught by Slovenian commercial fishermen) and on 27 December 2016 (revised draft management plan).

Request to the STECF

The STECF is requested to review and make any appropriate comments and recommendations to the additional documents provided by the Slovenian authorities in support of its request to prolong the derogation to Article 13(1) of the Mediterranean Regulation.

In particular, STECF is asked to evaluate:

- the information on catch composition and size structure resulted from the sampling made within the 1,5 to 3 nautical miles zone;
- whether the following conditions set out in the Mediterranean Regulation are met: the vessels concerned have a track record of more than 5 years; the fisheries do not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets; catches of species mentioned in Annex III, with the exception of mollusc bivalves, are minimal; the fisheries do not target cephalopods.

STECF response

STECF comments

According to MEDREG, Mediterranean Member States have to adopt MPs for fisheries conducted with trawl nets, boats seines, shore seines, surrounding nets and dredges within their territorial waters. MEDREG sets conditions of minimum distance from the coast and minimum depths for these fisheries. Derogations are possible only under a

number of conditions, and provided that there is no significant impact on the marine environment.

In December 2012, Slovenia submitted to the Commission a revised MP, which contained a request for bottom otter trawlers to derogate from the minimum distance/depth requirements set by the Regulation (4.9.9, p. 160-166). The MP was submitted to the STECF for opinion. During the **PLEN13-01** [0], STECF noted that, according to the information provided in the MP, there are no protected areas, phanerogams, coralligenous habitats or maërl beds in the 1.5-3 nm zone. Furthermore, it was noted that prohibition of bottom trawling in the 1.5-3 nm zone, is considered to cause a drastic reduction of available trawling area in the territorial waters of Slovenia. However, there were no quantitative information in the MP concerning the extent or proportion of the area that would be affected. Given the available information, STECF was unable to conclude on the potential impact of the requested derogation to allow fishing by the trawlers indicated in the MP in the 1.5-3 nm zone within the Slovenian territorial waters. In order to fully assess the impact of the requested derogation, STECF suggested a trial fishery undertaken with limited fishing effort to collect:

- a) estimates of monthly catch volumes separated into landed and discarded shares by species (including non-target organisms) and corresponding size compositions from catches taken inside the 1.5-3 nm zone and fishing grounds beyond the 3 nm zone;
- b) quantitative information about monthly fishing effort deployed under the requested derogation inside the 1.5-3 nm zone in units of fishing time or Km² and on fishing grounds beyond the 3 nm zone;
- c) an assessment of the socio-economic impacts of not granting the request for a derogation to fish in the 1.5-3 nm zone.

The Commission approved nevertheless the Slovenian request and the derogation was granted (Commission Implementing **EC Reg. 277/2014** of 19 March 2014). This derogation was valid until 23 March 2017. In June 2016, Slovenia expressed their interest to prolong this derogation after it expires in March 2017 and prepared a report on the activity of the fishery in 2014 and 2015. During the **PLEN16-02** [0], STECF was requested to review and provide appropriate comments on the 2014 and 2015 Annual Reports provided by the Slovenian authorities to support their request to prolong the derogation to Article 13(1) of the MEDREG. Related to the general conditions requested by the Commission for the approval of the derogation, which are based on the MEDREG, STECF considered that:

1. the particular geographical limitations which motivated the derogation request in 2013 still applied;
2. phanerogam beds (sea grass) or other critical areas are mostly placed at lower (<1.5 nmiles) distance from the coast. The fishery activities were thus mainly located outside of the sensitive marine habitats;
3. the fishery involved a limited number of small vessels (12), and in the MP it was stated that the authorized vessels will not increase. Fishing activity (number of days) remained close to the activity before the derogation. A 5 % increase in the number of daily trips for the whole fleet was observed after the derogation (from 783 in 2014 to 815 in 2015), but effort remains at the level of the years 2005-2015 where activity fluctuated from 660 to 850 days without trend;
4. alternative gears potentially suitable for targeting the same species may have a larger impact on the benthic community because of the use of heavier gears specially the ground rope. STECF noted though that in the MP the description of the gear ("volantina") was not clearly detailed;

5. the MP was enforced and also the monitoring of activity using logbooks that include information of each daily trip. Sampling of catches was regularly done including species composition and size frequencies. Information, however were not structured as suggested by STECF in 2013 (see [0,0] for details);
6. the Annual report provided the vessels registration numbers, which are the same in 2014 and 2015 (track record of at least 2 years). It is not known if the vessels concerned have a track record of more than 5 years;
7. the fisheries did not operate above seagrass beds of, in particular, *Posidonia oceanica* or other marine phanerogams;
8. it is stated that this fishery does not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets, but STECF was not in a position to evaluate this statement;
9. regarding landings, the quantities were limited overall. In 2014 the main landed species was whiting (*M. merlangius*) with 18 t (25 % in weight of the total landings), followed by octopus *Eledone moschata* with 17 t (23 %), squid *Loligo vulgaris* with 11 t (15 %), and red mullet *Mullus barbatus* with 3 t (4.6 %). In 2015 results were similar: 11 t *M. merlangius* (17 %), 10 t *L. vulgaris* (16 %), 8 t *E. moschata* (12 %), 4 t bream *Sparus aurata* (6 %), and *M. barbatus* 3 t (5 %). The share of Annex III species is about 6-7 % of the total landings, sometimes include some substantial proportions of juveniles. STECF noted that it was not possible to distinguish whether catch composition nor juveniles proportions were similar for vessels fishing within the 1.5-3 miles zone and for vessels operating beyond 3 nm;
10. it was unclear whether the requested condition regarding the non-targeting of cephalopods is fulfilled. It was stated that the only target species of the fishery was whiting (*Merlangius merlangius*). Whiting was the main species in the landings (24 % in 2014 and 17 % in 2015), but the cephalopods complex (*Loligo vulgaris*, *Sepia officinalis* and *Eledone moschata*) together represented a much more important fraction (almost twice) of the overall landings (about 41 % in 2014 and 30 % in 2015). In such mixed-fisheries it was difficult to classify species as being either a target or a by-catch. STECF noted furthermore that whiting had a low commercial value (about 4 euros/kg) compared to cephalopods (about 10 euros/kg for squid).

In the present PLEN17-01, regarding the additional information provided by Slovenia with the report [0], STECF was requested to check whether the following conditions set out in the MEDREG are met:

- a) the vessels concerned have a track record of more than 5 years (condition 6 above);
- b) the fisheries do not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets (condition 8);
- c) catches of species mentioned in Annex III, with the exception of mollusc bivalves, are minimal (condition 9);
- d) the fisheries do not target cephalopods (condition 10).

STECF notes that regarding **conditions (a)**, it is not known if the vessels concerned have tracks record of more than 5 years by the time the derogation was first granted. Vessels monitored in 2014 and 2015 had a track record of at least since 2012, , which will thus be at least five years by the time of the expiry of the derogation.

On the basis of the additional information submitted by Slovenia [0], **condition (b)** is not provided with any evidence.

Regarding catch composition and size structure (**conditions c**), 25 hauls were sampled in a zone at a distance from 1.5 to 3.0 nautical miles from the coast [0]. There were 16 species in the catch from Annex III of Council Regulation (EC) No 1967/2006. Undersized organisms were found in ten species. The share of mature organisms of Annex III species represented 3.74 % of all the specimens of commercial species caught. However, samples were only taken during the months from January to July, while catch information from the period August-December are missing. STECF notes however that, according to the MP provided by Slovenia [0], this second period is the most productive.(Figure 5.6.1). Therefore, the overall catch of Annex III species remains unclear.

Considering Table 36 in the Slovenian MP [0], where the 2013-2015 seasonal activity of fishing vessels that used demersal otter trawls (OTB) has been reported, the cephalopods catch represents more than 33 % of the overall catch in kg and 50 % in value. Therefore the **condition (d)** regarding the non-targeting of cephalopods is likely not fulfilled and the rate of 9.93 % (page 29 in [0]) of cephalopods in the overall catch is likely an underestimation.

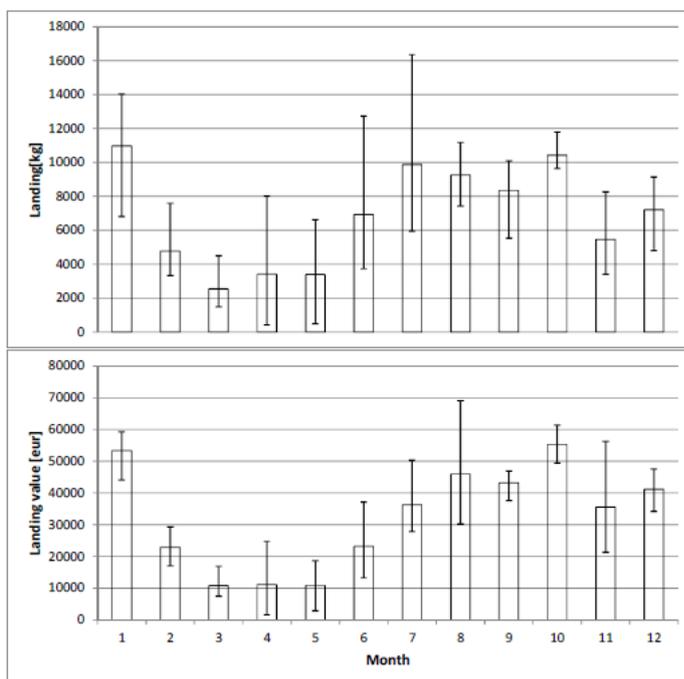


Figure 5.6.1. The 2013-2015 seasonal activity of fishing vessels that used demersal otter trawls (OTB) in the OTB_DEF_>=40_0_0 metier (see Figure 47, page 75 on 3rd reference listed below).

The submitted information in [0] (as well as in in the Slovenian MP [0]) the description of the "volantina" trawl reads: *"the net is a modernised version of traditional Italian bottom trawls [omissis] construction differs from traditional Italian demersal trawls mainly in the wings, which are split in "volantina" like dovetail. This wing shape, together with the longer sweep line of the wings is permitting that the vertical opening of the mouth is more than 1.2 meters, which makes the nets more suitable for catching fish"*. STECF notes that this can change the percentage of species composition without necessarily changing the absolute quantities caught: catching more fish than a traditional demersal trawl may result in lowering the percentage of non-fish species, like cephalopods for example. However, the total volume of catches by species may remain comparable or even higher than that of the traditional trawls, implying that the impact of Volantina on cephalopods might not be different from a traditional trawl. STECF suggests therefore

that a comparison of catches between traditional and volantina-like trawl is conducted, and that more detailed gear characteristics are provided.

STECF has also additional comments to the request.

First, the documents [0] [0] read: "*The net is also less weighted, so during the drag there is milder contact with the seabed*". STECF note that this information is not supported by scientific evidence and data; actually according to the available literature (see for example [0]), volantina-like trawls are more weighted than traditional bottom trawls. Since volantina trawls operate with an increased vertical net opening and higher towing speeds more weights or chains are required to keep the trawl on the sea bottom, hence a higher physical impact on the seabed (comprising scraping of the seabed, sediment mobilization, and penetration).

STECF notes that the area covered by Slovenian fishing zones and subject of the derogation, as presented in the MP [0] and in the additional document [0], might include disputed fishing grounds which might affect the interpretation of the MEDREG constraints with regards to the quantification of e.g. catch and effort data.

STECF conclusions

STECF concludes that the evidence provided does not support that any of the four conditions for the derogation extension were fully met.

STECF notes that no evidence was provided to support the condition that the OTB fishing vessels do not interfere with activities of vessels using other gears.

STECF notes that catch data is provided only for the months January to June, but none from July to December, which is the period of fishing indicated to be the most productive, based on [0].

STECF concludes that, based on the evidence provided, it cannot be concluded that the fleet does not target cephalopods, which is a requirement of the Slovenian MP. In the period when catches were reported, cephalopods represented 50 % of the value of the landings of OTB fishing vessels.

STECF notes that catch statistics should be separated between Volantina and traditional trawls.

STECF notes that no assessment of the socio-economic impacts of not granting the request for a derogation to fish in the 1.5-3 nm zone has been undertaken as suggested in STECF PLEN 13-01.

References

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.

Commission Implementing Regulation (EU) No 227/2014 of 19 March 2014 derogating from Council Regulation (EC) No 1967/2006 as regards the minimum distance from coast and the minimum sea depth for the 'volantina' trawlers fishing in the territorial waters of Slovenia. OJ L 82, 20.3.2014, p. 1-2.

Study of protection of natural resources: The assessment of abundance and biomass of demersal species caught by Slovenian commercial fishermen. Fisheries Research Institute of Slovenia, Ljubljana, April 2016, 87 pp (ENG).

- Scientific, Technical and Economic Committee for Fisheries (STECF) – 42nd Plenary Meeting Report (PLEN-13-01), 2013. Publications Office of the European Union, Luxembourg, EUR 25969 EN, JRC 81549, 82 pp.
- Scientific, Technical and Economic Committee for Fisheries (STECF) – 52nd Plenary Meeting Report (PLEN-16-02), 2016. Publications Office of the European Union, Luxembourg; EUR 28106 EN; doi:10.2788/6958
- Anonymous, 2016. Management plan for shore seine nets fishing in the Republic of Croatia (Draft), 195 pp.
- Sala, A., Brčić, J., Conides, A., De Carlo, F., Klaoudatos, D., Grech, D., Lucchetti, A., Mayans, A., Notti, E., Paci, N., Salom, S., Sartor, P., Sbrana, M., Soler, I., Spedicato, M.T., Virgili, M., 2013. Technical specifications of Mediterranean trawl gears (myGears). Final project report, financed by the European Commission through the Framework service contract for Scientific Advice and other services for the implementation of the Common Fisheries Policy in the Mediterranean (Contract MARE/2009/05-Lot 1), 519 pp.

5.7 Small pelagic stocks in the Adriatic Sea

Background provided by the Commission

On 24 February 2017, the Commission adopted a proposal for the establishment of an EU multiannual plan for small pelagic stocks (sardine and anchovy) in the Adriatic Sea.

The scientific basis of the proposal was provided by several STECF Expert Working Groups and, particularly, the reference points were done by the STECF-15-14 [1].

On the other hand, the Scientific Advisory Committee (SAC) of the GFCM also assesses the status of anchovy and sardine in the Adriatic Sea. Its latest validated advice, which includes reference points, dates from March 2016 [2, 3]. This work took account some methodological modifications and an exhaustive revision of the input data, which was not available at the time of the STECF-15-14.

In the light of the large differences between the reference points of the STECF and the GFCM (see table below), the Commission would need clarifications on whether the STECF reference points might need to be updated/reviewed taking into account the changes in methodology and the review of input data. Note that an update of the status of these stocks including the reference points is not expected before the end of the year (in the best case scenario, the advice could be validated at the STECF winter plenary, 6-10/11/2017).

		Fmsy	Blim (tonnes)	Bpa (tonnes)
Anchovy	STECF	0.30	99,285	139,000
	GFCM	0.55	45,936	91,872
Sardine	STECF	0.08	223,000	446,000
	GFCM	0.71	125,318	250,636

Request to the STECF

STECF is asked to assess and advice whether:

1. the methodological modifications and the new data applied by the GFCM-SAC led to improved reference points for sardine and anchovy in the Adriatic Sea. In particular, identify and describe the reasons (e.g. data sets, methods) that could explain the large differences of the reference points;
2. the reference points in the aforementioned table are comparable with reference points adopted for small pelagic stocks in other EU waters; and
3. the use of the reference points done by the GFCM would result in unsustainable exploitation rates with respect to Fmsy and/or stock sizes outside safe biological limits.

STECF response

Approaches to estimating F_{MSY} based on a stock-recruit relationship

On previous occasions STECF (STECF 2016c) has discussed the problems of providing robust estimates of F_{MSY} for sardine and anchovy stocks in GSAs 17 and 18 (Adriatic Sea). Such estimates are sensitive to the assumptions made in the estimation procedure, especially with regard to the stock-recruitment relationship.

The time-series of stock and recruitment data indicate that for sardine and anchovy in the Adriatic, there is a strong unbounded linear relationship between spawning stock biomass (SSB) and recruitment (Fig. 2.7.1); and conversely, there is also a strong correlation between recruitment and the following SSB: high recruitment gives rise to a large stock in subsequent years, but when the recruitment declines, so does the stock. This pattern is also evident in the time series prior to the mid-1990s, which was a period of relatively lower fishing mortality compared to the current level (although the historical mortality level remains uncertain because of a possible underestimation of historical catch data). This indicates that the subsequent decline in recruitment may have been partly in response to environmental changes, and not only a result of declining SSB. This is in line with a large number of published studies that indicate that environmental conditions have a strong influence on recruitment success of small pelagic fish species. In this situation, it is difficult to resolve the issue of how dependent recruitment is on SSB and hence the form and the breakpoints of the stock-recruit relationship.

Both the STECF and the GFCM Expert Groups (STECF 2015a, GFCM 2015 a,b) have approached this issue by fitting a segmented regression ('hockey stick') to the Stock-Recruit (S-R) data (Fig. 2.7.1). In this case, a single S-R relationship form has been selected, and the breakpoint (above which the recruitment becomes less driven by the SSB level and fluctuates around the average) has been arbitrarily assumed as it cannot be statistically fitted from the data. Below the breakpoint, recruitment is primarily dependent on SSB.

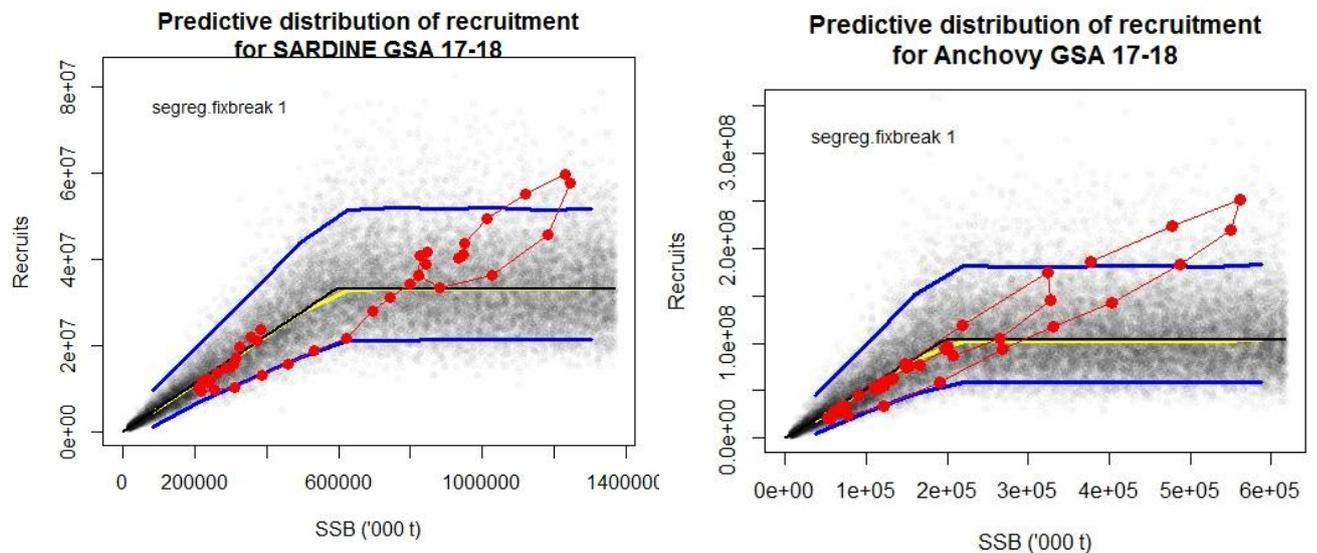


Fig. 5.7.1 Segmented 'hockey stick' relationship between SSB in one year and the corresponding recruitment at age 0 in the same year, with a fixed breakpoint at average SSB = 594 000 t for sardine and 195 000t for anchovy, based on revised assessment results from the STECF EWG 16-22 (STECF 2016c).

Estimating an alternative proxy for F_{MSY} for small pelagics

Early work on MSY (Gulland 1971) suggested that fishing mortality (F) equal to natural mortality (M) could provide a proxy for F_{MSY} , although this approach did not account for biomass considerations. An alternative approach is the choice of a target value at $F=0.66M$ (where M is the natural mortality) as an empirical target for management of small pelagic fish. This target was calculated by Patterson (1992), who analysed the historical behaviour of 27 exploited small pelagic fish stocks. Patterson (1992) defined an exploitation rate ($E=F/Z$, the ratio between fishing mortality and total mortality) of 0.4. as an appropriate upper limit to the exploitation rate for small pelagic stocks. STECF(2016c) has previously used the Patterson (1992) approach to estimate a proxy for F_{MSY} for a number of such stocks (Table 2.7.2).

Natural mortality estimates (variable by age) weighted by exploitation pattern over the ages in the fishery are estimated to be $M=0.6$ for sardine and $M=0.72$ for anchovy (STECF 2016, Table 2.7.1). Using the Patterson (1992) approach, the corresponding F_{MSY} proxies were 0.40 for sardine and 0.48 for anchovy (Table 2.7.1).

Revisions to previous stock assessments and estimates of F_{MSY}

During the plenary, STECF reviewed and evaluated the data and methods used in previous assessments undertaken by STECF EWG 15-14 (STECF 2015a), GFCM (GFCM 2015a,b) and STECF EWG 16-22 (STECF 2016c).

The underlying data used for the 2015 assessment of Adriatic sardine and anchovy by the STECF EWG 15-14 (STECF 2015a) were subsequently revised extensively by GFCM (2015a,b), with new parameterization for maturity at age and catch numbers at age. This revised dataset was also used afterwards by STECF in 2016 (STECF, 2016c). As a result of these changes, the estimates for F_{MSY} derived by STECF 15-14 for sardine $F_{MSY} = 0.08$ and anchovy $F_{MSY} = 0.3$ are therefore outdated and should not be used.

The STECF EWG 16-22 (STECF 2016c) estimated F_{MSY} for sardine and anchovy using the Patterson's (1992) approach (Exploitation Rate equal to 0.4). This approach does not make use of the Stock-Recruitment relationship and no assumptions on the SSB breakpoint .are therefore required

A new set of reference points were computed by the STECF Plenary, based on the revised assessment carried out by the STECF EWG 16-22, but using the method adopted in 2015 (STECF 2015a). This method follows the approach taken by the ICES (ICES 2015b)

The STECF 15-14 had set the breakpoint of the segmented 'hockey stick' S-R model as the mean SSB from the assessment time-series. Using such an approach, the breakpoints were set at $SSB= 594\ 000t$ for sardine, and $SSB=195\ 000t$ for anchovy (Fig. 2.7.1, Table 2.7.1). In contrast, GFCM (2015a,b) chose to place the breakpoints with reference to the lowest observed biomass: The biomass breakpoints were set at twice the lowest observed SSB, which correspond to $SSB=250\ 000\ t$ for sardine and $SSB=91\ 872\ t$ for anchovy (GFCM 2015ab, Table 2.7.1). The SSB breakpoints selected by GFCM are thus around 60% lower than the breakpoints selected by STECF. Both choices are to some extent arbitrary, but they have important consequences for the estimates of F_{MSY} . A lower breakpoint means that the stock can be fished harder, as it is assumed to remain productive without recruitment impairment at lower SSB levels. Sensitivity evaluations undertaken by the STECF plenary have indeed identified this arbitrary choice to be the main source of the discrepancies between the GFCM and STECF estimates of F_{MSY} .

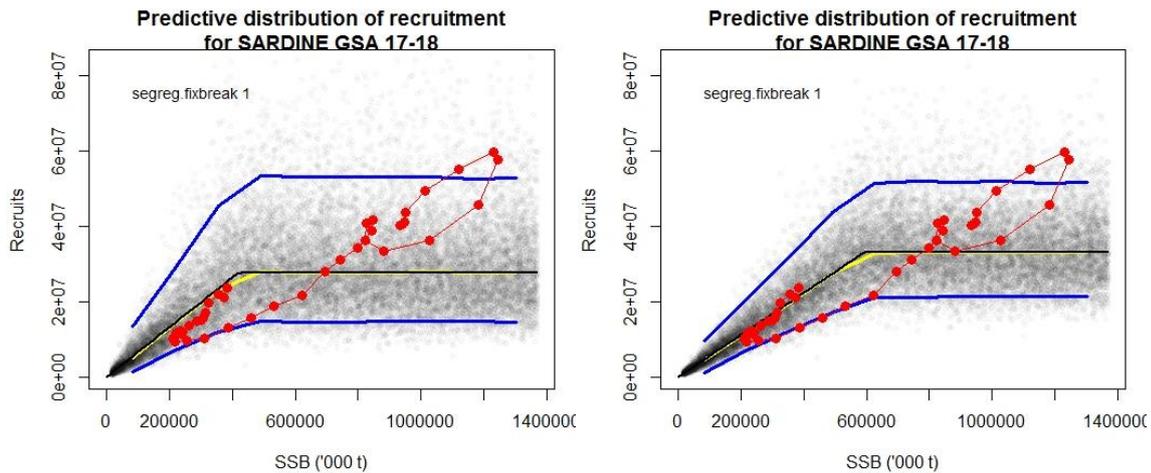


Fig. 5.7.2. Segmented 'hockey stick' SRR for sardine based on revised assessment results from the STECF EWG 16-22 (STECF 2016c), for two breakpoints choices. Left: with a fixed breakpoint at SSB = 250,000 t (as used in GFCM 2015), Right: The same plot but with the fixed breakpoint at SSB = 594,000 t (same plot as on Figure 2.7.1, reproduced here for comparison)

STECF notes that the fitted S-R relationships adopted by the GFCM have a relatively steep slope to the origin below the breakpoint, steeper than the slope shown by the actual S-R data pairs (black line above the red dots in figure 2.7.2, left). The slope is a particularly important parameter, because it also determines the highest F that the stock can safely withstand to avoid stock collapse. A stock with a low steepness is less productive at low SSB levels and is thus less resilient to overexploitation with higher risks of stock collapse. The line determining the slopes below the breakpoints adopted by the STECF (Figure 2.7.2, Right) lie within the observed S-R data pairs and give rise to more precautionary estimates for F_{MSY} than those estimated by the GFCM.

In undertaking its review, STECF plenary has thus re-estimated the F_{SMY} reference points for the various breakpoints options as follows.

Sardine:

1. The STECF 2016c assessment was repeated with identical settings and using the GFCM approach (breakpoint at SSB = twice the lowest observed SSB = 250 000t). The estimate of $F_{MSY} = 0.7$ was obtained (Fig. 2.7.2), which is very close to the one ($F_{MSY} = 0.71$) obtained by the GFCM (2015b).
2. Using the STECF approach (breakpoint at SSB at the average of the time series = 594 000 t) an estimate of $F_{MSY} = 0.36$ was obtained.

Anchovy

The STECF 2016c assessment was re-parameterised to take into account an alternative proportion of fishing and natural mortality before spawning time, as in the GFCM assessment, thus achieving closer estimates of SSB between the two assessments. Using the STECF approach with breakpoint at the mean SSB from the assessment time-series resulted in an estimate for F_{MSY} at 0.5. This value is close to both the STECF (2016c) estimate at 0.48 and GFCM (2015a) estimate at 0.55.

The estimates of F_{MSY} obtained from each of the above assessments and those previously obtained are given in Table 2.7.1.

Table 2.7.1. Fmsy reference points for sardine and anchovy in the Adriatic Sea

	Assessment method	M	Fcurr	Fmsy	M/Fmsy	F/Fmsy	Method	SSB (t) at breakpoint
Sardine								
STECF 15-14 (2015a)	SAM	0.6	1.1	0.08	7.50	13.75	EqSim	446000
GFCM 2015b	SAM	0.6	1.087	0.71	0.85	1.53	EqSim	250000
STECF 16-22 (2016c)	SAM	0.6	1.95	0.4	1.50	4.88	E=0.4	
STECF PLEN 17-01 (2017)	SAM	0.6	1.95	0.36	1.67	5.42	EqSim	594 000
Anchovy								
STECF 15-14 (2015a)	SAM	0.72	0.6	0.3	2.40	2.00	EqSim	139000
GFCM 2015a	SAM	0.72	0.99	0.55	1.31	1.80	EqSim	91872
STECF 16-22 (2016c)	SAM	0.72	1.33	0.48	1.50	2.77	E=0.4	
STECF PLEN 17-01 (2017)	SAM	0.72	1.33	0.5	1.44	2.66	EqSim	195 000

F_{MSY} reference points for small pelagics elsewhere in EU waters

Estimates of F_{MSY} for other small pelagic stocks are available in STECF and ICES reports and have been tabulated in Table 2.7.2. The values for sardine and anchovy fall in a similar range to the recent values given in Table 2.7.1.

STECF notes that many small pelagic stocks assessed in the ICES area do not have an estimate of F_{msy} , as advice is given based on an escapement strategy.

Table 2.7.2. Fmsy reference points for sardine, anchovy and sprat stock adopted in EU waters

	Species	Area	Assessment method	Fcurr	Fmsy	F/Fmsy	Method
STECF-15-16 (2015b)	Sprat	Black Sea	ICA	0.512	0.64	0.8	E=0.4
STECF-15-16 (2015b)	Anchovy	Black Sea	XSA	0.528	0.4	1.32	E=0.4
STECF 16-22 (2016c)	Sardine	GSA 6	XSA	1.77	0.7	2.53	E=0.4

STECF (2016c)	16-22	Anchovy	GSA 6	ASPIC	0.34	0.39	0.87	ASPIC	
STECF (2016c)	16-22	Anchovy	GSA 9	XSA	1.1	0.52	2.12	E=0.4	
ICES 2013		Sprat	Baltic Sea			0.25 –0.32		Multispecies SMS	model
ICES 2015a		Sprat	Baltic Sea			0.26		Stochastic simulations	

Appropriate exploitation rate for Adriatic anchovy and sardine

Given the observed pairs of SSB and recruitment data, there is no obvious statistical fit of a S-R relationships. There is thus little empirical basis to determine which of the different assumptions is the most appropriate to derive a SRR fit to the data for Adriatic sardine and anchovy. It is therefore not clear whether any of the associated estimates of F_{MSY} are reliable candidates as management reference points for these stocks. Given such uncertainty, and in accordance with its previous advice for a number of small pelagic stocks (see Table 2.7.2), STECF considers that until objective means to determine the most appropriate stock-recruitment relationships are decided upon, proxies for F_{MSY} for Adriatic sardine and anchovy could be derived using Patterson's (1992) method and adopted as an upper limit for the exploitation rate on these stocks.

In considering suitable exploitation rates for small pelagic stocks, ICES scientists have relied on management strategy evaluations (MSE) and escapement strategies rather than a F_{MSY} reference point (ICES 2015c). This approach was discussed in detail during the STECF EWG on Methodology for the stock assessments in the Mediterranean Sea (STECF-16-14, STECF 2016a) and 2016 summer plenary of the STECF (STECF 2016b). While STECF agrees that such approaches may be useful in developing alternative candidate management reference points, the present request relates to proposing F_{MSY} values for anchovy and sardine in the Adriatic Sea and hence such alternatives were not explored.

STECF conclusions

1. STECF concludes that reported differences in the estimates of F_{MSY} for Adriatic sardine and anchovy can be attributed to the data and parameters used in alternative assessments and the assumptions underlying the fitted stock and recruitment relationships. Furthermore, there is no empirical basis to determine whether the methodological modifications and the new data applied by the GFCM-SAC led to improved reference points for sardine and anchovy in the Adriatic Sea.

2. STECF is unable to reliably determine whether the use of the reference points proposed by the GFCM would result in unsustainable exploitation rates on anchovy and sardine in the Adriatic Sea with respect to F_{MSY} , and/or stock sizes outside safe biological limits. STECF underlines nevertheless that the GFCM assumptions on lower breakpoints and steeper slopes mean that the stocks are assumed to be more productive at low SSB levels than under the STECF assumptions, and thus more resilient to high exploitation rates. Given these differences in assessment results and given the uncertainty associated with the estimates of F_{MSY} , that are dependent on these assumptions made in fitting a

stock-recruit relationship, STECF suggests an alternative approach. STECF considers that until objective means to determine the most appropriate stock-recruitment relationships are decided upon, proxies for F_{MSY} for Adriatic sardine and anchovy be derived using Patterson's (1992) method and adopted as an upper limit for the exploitation rate on these stocks. This is a pragmatic approach based on Patterson's (1992) findings that the pelagic stocks investigated appeared to be in equilibrium for an exploitation rate $E=F/Z=0.4$. STECF therefore considers that $E=F/Z=0.4$ be adopted as an upper limit on the exploitation rate for the stocks of sardine and anchovy in the Adriatic Sea (GSAs 17 and 18). The corresponding values for proxies for F_{MSY} are as follows:

Anchovy in the Adriatic (GSAs 17&18)	$F_{MSY} = 0.48$
Sardine in the Adriatic (GSAs 17&18)	$F_{MSY} = 0.4$

STECF concludes that the proposed proxies for F_{MSY} for anchovy and sardine in the Adriatic Sea fall within the range of F_{MSY} (or proxy) estimates for small pelagics reported elsewhere (Table 2.7.2). Noting that the estimates for Adriatic sardine and anchovy fall towards the lower end of that range, and given the uncertainty regarding the most apposite F_{MSY} estimates, they probably represent a suitably precautionary approach to the management of the exploitation rate on these stocks.

References

- GFCM, 2015a Stock Assessment Form for Anchovy in the Adriatic Sea, 40 pp
- GFCM, 2015b Stock Assessment Form for Sardine in the Adriatic Sea, 40 pp
- Gulland J.A. 1971 The Fish Resources of the Ocean. Fishing News Books, West Byfleet, UK
- ICES. 2013. Report of the Benchmark Workshop on Baltic Multispecies Assessments (WKBALT 2013), 4-8 February 2013, Copenhagen, Denmark. ICES CM 2013/ACOM:43. 399 pp
- ICES. 2013. Report of the Benchmark Workshop on Baltic Multispecies Assessments (WKBALT 2013), 4-8 February 2013, Copenhagen, Denmark. ICES CM 2013/ACOM:43. 399 pp.
- ICES. 2015a. EU request to ICES to provide FMSY ranges for selected North Sea and Baltic Sea stocks. In Report of the ICES Advisory Committee, 2015. ICES Advice 2015, Book 6, Section 6.2.3.1.
- ICES 2015b. Report of the joint ICES -MyFISH workshop to consider the basis for fmsy ranges for all stocks (WKMSYREF3), 17-21 november 2014, charlottenlund, denmark. ICES CM 2014/ACOM:64 2(4): 156pp.
- ICES 2015c. Report of the Fifth Workshop on the Development of Quantitative Assessment Methodologies based on Life-history Traits, Exploitation Characteristics and other Relevant Parameters for Data-limited Stocks (WKLIFE V), 5-9 October 2015, Lisbon, Portugal. ICES CM 2015/ACOM:56. 157 pp.
- Patterson, K (1992) Fisheries for small pelagic species: an empirical approach to management targets. Reviews in Fish Biology and Fisheries, 2, 321-338.
- STECF 2015a. Small pelagic stocks in the Adriatic Sea. Mediterranean assessments part 1 (STECF-15-14). Publications Office of the European Union, Luxembourg, EUR 27492 EN, JRC 97707, 52 pp.

- STECF 2015b. Black Sea assessments (STECF-15-16). 2015. Publications Office of the European Union, Luxembourg, EUR 27517 EN, JRC 98095, 284 pp. ISSN 1831-9424 (online), ISSN 1018-5593 (print), ISBN 978-92-79-52737-1, doi:10.2788/29417, <http://stecf.jrc.ec.europa.eu>
- STECF 2016a. Methodology for the stock assessments in the Mediterranean Sea (STECF-16-14); Publications Office of the European Union, Luxembourg; EUR 27758 EN; doi:10.2788/227221 166 pp
- STECF 2016b. Scientific, Technical and Economic Committee for Fisheries (STECF) – 52nd Plenary Meeting Report (PLEN-16-02); Publications Office of the European Union, Luxembourg; EUR 28106 EN; doi:10.2788/6958. 162 pp
- STECF 2016c. Mediterranean assessments part 1 (STECF-16-22) Publications Office of the European Union, Luxembourg; JRCXXXXX EUR XXXXX EN227221 500 pp

5.8 Management Plan for Purse Seines fishing in the Republic of Croatia

Background provided by the Commission

Under Article 19 of Council Regulation (EC) No 1967/2006 (hereafter referred to as "MEDREG"10), Member States are expected to adopt management plans for fisheries conducted by trawl nets, boats seines, shore seines, surrounding nets and dredges within their territorial waters.

In 2013, the Common Fisheries Policy (CFP11) introduced new elements for conservation such as the target of maximum sustainable yield (MSY) for all the stocks by 2020 at the latest, the landing obligation and the regionalisation approach.

In line with these two regulations, the plans 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 maximum sustainable yield or MSY. Where targets relating to the MSY (e.g. fishing mortality at MSY) cannot be determined, owing to insufficient data, the plans shall provide for measures based on the precautionary approach, ensuring at least a comparable degree of conservation of the relevant stocks.

The plans shall also contain specific conservation measures based on the ecosystem approach to achieve the objectives set. In particular, they may incorporate any measure included in the following list to limit fishing mortality and the environmental impact of fishing activities: limiting catches, fixing the number and type of fishing vessels authorized to fish, limiting fishing effort, adopting technical measures (structure of fishing gears, fishing practices, areas/period of fishing restriction, minimum size, reduction of impact of fishing activities on marine ecosystems and non-target species), establishing incentives to promote more selective fisheries, conduct pilot projects on alternative types of fishing management techniques, etc.

During recent years, Croatia has submitted various draft management plans to the European Commission (EC). The STECF has provided advice in two occasions.

Request to the STECF

- 1.** STECF is asked to evaluate whether the plan provides adequate and up-to date scientific and technical justifications to support the request for derogation on the minimum distance and depths for the use of the purse seines fishing gears "Ciplarica" and "Palamidara" as set out by the MEDREG (Article 13). In the event that a condition is not entirely supported, the experts shall provide recommendations on the additional information needed and on the likely mitigation measures to counteract possible nonfulfillment. In answering to this ToR, it shall be considered the table provided in Annex I.

10 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.](#)

11 Regulation (EU) No 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. [OJ L 354, 28.12.2013, p. 22-61.](#)

2. Croatia envisages to implement, as precautionary measure, a trigger reference point. For each fishing gear, the reference point will be estimated as a 15% decrease of the average landing per unit of effort (LPUE) over the period 2009-2013. STECF is requested to:

- to evaluate whether the plan provides adequate scientific and technical information to implement such a measure;
- what would be, in term of conservation standards, the most adequate methodology to estimate the LPUE reference point (e.g. timeframe of the time series, effort unit, and cumulated total catches vs catches of relevant targeted species, etc.);
- to evaluate whether such a LPUE reduction, including also the reference period/level, could be considered a sufficiently adequate precautionary measure for the stocks exploited by the different purse seiners. Advantages and drawbacks of this measures should be highlighted in terms of both conservation and implementation aspects.

STECF response

Request for derogation on the minimum distance and depths for the use of the purse seines "Ciplarica" and "Palamidara"

For the evaluation of these derogations, STECF used the Table provided in Annex II of this report.

Table 5.8.1. Minimum distances and depths for the use of the fishing gears Article 13 for the TORs on Management Plan for Purse Seines fishing in the Republic of Croatia.

Conditions	STECF assessment of their fulfilment	
	Ciplarica (purse seine for grey mullets)	Palamidara (purse seine for bonito)
<i>Paragraph 5</i>		
There are particular geographical constraints	Yes. The mugilids & <i>Oblada melanura</i> targeted by this gear are mainly distributed in the coastal zone prohibited by the MEDREG.	Yes. The species targeted by this gear can only be effectively caught seasonally when fish schools approach the coast.
The fisheries have no significant impact on the marine environment and affect a limited number of vessels.	-This purse seine has a big net height (85 m) and could potentially affect phanerogams. The plan does not specify specifically that fishing will not take place over phanerogam beds. The appearance of benthic species in the catch indicates that the net enters into contact with the sea bottom during deployment. -According to the information	- This purse seine has a big net height (120 m) and could potentially affect phanerogams. The plan does not specify specifically that fishing will not take place over phanerogam beds. The appearance of benthic species in the catch indicates that the net enters into contact with the sea bottom during deployment. -According to the information

	<p>presented in the plan (see Table below), discards are low (1.3-2.2%) and catches of undersized fish are also low due to mesh size (52 mm). According to the results of an experimental survey carried out in 2015 and presented in the plan, few undersized specimens of <i>Diplodus vulgaris</i> (<18 cm) are caught in winter. The gilthead seabream (<i>Sparus aurata</i>) species included in Annex III of the MEDREG is an important by-catch (see below).</p> <p>-Number of authorized vessels: 33</p>	<p>presented in the plan (see Table below), discards are low (1.0-4.8%) and catches of undersized fish are also low due to mesh size (68 mm).. Bycatches are low (2-12%). .</p> <p>-Number of authorized vessels: 28</p>
Those fisheries cannot be undertaken with another gear and are subject to a management plan.	There are no other fisheries in Croatia targeting the same species. The target species can be by-catch of static nets.	There are no other fisheries in Croatia targeting the same species. The target species can be by-catch of other purse seines.
<i>Paragraph 9</i>		
Vessels have a track record in the fishery of more than five years.	Yes. Authorization to using this gear will only be given to license holders having a historical record of catch, but it is not specified if this record is of more than five years. The number of licenses will therefore decrease from 126 to 33.	Yes. Authorization to using this gear will only be given to license holders having a historical record of catch, although it is not specified if this record is of more than five years. The number of licenses will therefore decrease from 88 to 28.
Not involve any future increase in fishing effort provided.	Yes. The number of authorized vessels will not increase in the future.	Yes. The number of authorized vessels will not increase in the future.
Fishing activities fulfil the requirements of Article 4, Article 8(1)(h), Article 9(3)(2) and Article 23;	<p>- This purse seine has a big net height (85 m) and could potentially affect phanerogams. The plan does not specify specifically that fishing will not take place over sea grass beds..</p> <p>-Article 8(1)(h) and Article 9(3)(2) not applicable for purse seines.</p> <p>-All species caught have to be recorded in the logbook regardless of quantity.</p>	<p>- This purse seine has a big net height (120 m) and could potentially affect phanerogams. The plan does not specify specifically that fishing will not take place over sea grass beds.-Article 8(1)(h) and Article 9(3)(2) not applicable for purse seines.</p> <p>-All species caught have to be recorded in the logbook regardless of quantity.</p>
Fisheries do not interfere with the activities of vessels using gears other than trawls, seines	The MP states that " <i>given the fact that fishing with purse seine nets is in practice</i>	The MP states that " <i>given the fact that fishing with purse seine nets is in practice</i>

or similar towed nets.	<i>performed only locally when fish appears or it is attracted by light, this type of fishing is not a direct competitor to other fishing gears (mainly gillnets, traps and angling gears) since it targets different species and in different fishing conditions".</i>	<i>performed only locally when fish appears or it is attracted by light, this type of fishing is not a direct competitor to other fishing gears (mainly gillnets, traps and angling gears) since it targets different species and in different fishing conditions".</i>
Fisheries are regulated in order to ensure that catches of species mentioned in Annex III, with the exception of mollusc bivalves, are minimal.	According to the results of an experimental survey carried out in 2015 and presented in the plan, catches of species mentioned in Annex III are very low (1.3–1.5%), except for gilthead seabream (<i>Sparus aurata</i>) which can be a significant bycatch (6.9–62.8%).	According to the results of an experimental survey carried out in 2015 and presented in the plan, catches of species mentioned in Annex III are very low (few specimens of <i>Diplodus vulgaris</i> and <i>Trachurus</i> spp).
Fisheries do not target cephalopods.	Yes. According to the results of an experimental survey carried out in 2015 and presented in the plan, the by-catch of cephalopods was 0-0.84 %.	Yes. According to the results of an experimental survey carried out in 2015 and presented in the plan, the by-catch of cephalopods was zero.
Fisheries are subject to a monitoring plan.	Yes. The plan includes scientific as well as monitoring of fishing, catch and trade. The target species (<i>Mugilidae</i> , <i>Sarpa salpa</i> , <i>Oblada melanura</i>) are not covered by the DCF. Data must therefore be collected specifically for them in the frame of the management plan.	Yes. The plan includes scientific as well as monitoring of fishing, catch and trade. Some of the target species (<i>Seriola dumerili</i> , <i>Euthynnus alletteratus</i> , <i>Auxis rochei</i>) are not covered by the DCF. Data must therefore be collected specifically for them in the frame of the management plan.

STECF comments

STECF notes that according to the MEGREG, a purse seine shall not be deployed at depths less than 70% of overall drop of the purse seine itself. The reason for this is that if the drop of the net is bigger than the given depth: (i) the bottom of the net could act as a towed net catching non-pelagic species and; (ii) the net could also damage the seabed. In accordance with the conclusions of STECF in PLEN-16-02 ("Derogation for purse seiners operating in the Adriatic"), the small purse seiners fishing in shallow waters of the Adriatic Sea should reduce the size of their nets.

Data should be collected for the target species of of Ciplarica and Palamidara in the frame of the present management plan (target species, except bonito, are not currently covered by the DCF). STECF notes that amendments to include these species in the DCF national work program have already been undertaken by Croatia.

LPUE reference points based on the 2009-2013 period

STECF observations

A. General comments on LPUE reference points

Rational. The use of a LPUE level as a reference point for management is based on the assumption that the average (or median) value of a historical LPUE time series is a reasonable target for a high long term yield. Setting the trigger point at e.g. 75% of the average LPUE is thus akin to B_{trigger} in the MSY approach – i.e. the lower bound of LPUEs associated with high long term yield. At LPUEs below the trigger point, the fishing effort should be reduced in order to aid recovery to levels above the trigger point. In cases that there have been no signs of impaired recruitment at the lowest observed historical LPUEs, it would be reasonable to set the limit reference point at these values (mean or median) plus a precautionary buffer.

Drawbacks. The use of LPUE as an indicator for the current stock abundance has several important drawbacks. LPUE data can often be highly variable or compromised by:

- Changes in fishing efficiency (effective fishing effort): improvements in catching efficiency through e.g. technological development may mask stock decline over the longer term.
- Changes in stock contraction: If periods of low stock abundance lead to the stock concentrating in smaller areas, these areas will be targeted by the fleet, and thus LPUE will not decrease at the same rate as the abundance.
- Changes in sorting of the catch: sorting may cause LPUEs to be unreliable if these are taken from the marketable fraction after sorting of the catch onboard and discarding or at the landing sites.
- Changes in catchability: catchability is affected by environmental conditions, gear efficiency, seasonal migrations of fish and other factors. Changes in any of these can affect landings/catch rates.
- Shifts in management schemes: the implementation of new regulations may alter the catch rate-abundance relationships.
- Changes in market demands: market driven mechanisms or pre-determined amounts to be harvested based on market needs, fish sizes desired, and other consumer driven determinants for targeting of fish can affect the catch rates.
- Changes in targeting behavior: if more than one species is targeted catch rates of individual species may be affected.
- Schooling behavior: fishing effort is not randomly distributed, but rather concentrated on good fishing grounds. This pattern is common for fisheries targeting schooling fish in which searching is highly efficient and can lead to hyperstability (when abundance declines faster than CPUE decline).

In a number of fisheries where survey data are not available, LPUEs time series are used as abundance indices, like for the tunas fisheries. In such cases, great care is given to the standardization of fishing effort (e.g. to account for area and monthly effects) to adjust the annual LPUE series. It remains uncertain whether the resulting estimates truly reflect stock abundance given the numerous pitfalls listed above.

B. Relevant information in the Croatian management plan and proposal for trigger reference points at 15% decrease in average 2009-2013 LPUEs.

There are no CPUEs or LPUEs data presented in the Croatian management plan.

According to the information presented (see table 5.8.2 below and report of PLEN-16-03), the Croatian purse seines generally target more than one species and/or present high bycatch rates which can both introduce imprecision and high uncertainty in the CPUEs/LPUEs of individual species. Furthermore, the mugilids, belonids, carangids and scombrids targeted by certain purse seines are highly mobile, migratory and widely distributed species and their catchability by the small purse seines operating very close to the coast may fluctuate largely and irrespectively of the wider stock abundance.

Finally, the MP postulates a severe reduction in the number of vessels licensed to use the traditional mullet-, garfish-, smelt- and bonito-purse seines (see table below). These reductions may further invalidate the use of LPUEs of periods (e.g. 2009-2013) prior to the implementation of the plan to derive LPUE-based reference points.

Table 5.8.2. Information presented

Traditional name of purse seine	Target species	Landings in 2014	Bycatch (%)	Discards (%)	Total number of licensed vessels	Number of authorized vessels after adoption of the plan
Ciplarica	<i>Mugilidae, Sarpa salpa, Oblada melanura</i>	32 t	10% - 66%	1.3% - 2.2%	126	33
Igličara	<i>Belone belone</i>	3.5 t	37% - 96%	0	35	5
Oližnica	<i>Atherina hepsetus</i> and <i>A. boyeri</i>	20.5 t	9% - 27%	0	56	14
Palamidara	<i>Seriola dumerili, Sarda sarda, Euthynnus alletteratus, Auxis rochei</i>	99 t	2% - 12%	1.0% - 4.8%	88	28
Lokardara	Mackerels, horse mackerels, <i>Belone belone, Sardinella aurita</i>	NA	NA	NA	20 (first license issued in 2015)	up to 250

STECF comments

The period considered for estimating average LPUEs (five years, 2009-2013) is very short for defining trigger points. Within a precautionary framework, and assuming that LPUEs are reasonable indicators of stock abundances, the LPUE series should be species specific, the effort values be adequately standardized (e.g. to account for regional and seasonal variability unrelated to stock sizes) and the time period used to derive LPUE averages and set trigger points should be reasonably long and correspond to periods of high LPUEs (presumably high stock levels) rather than low LPUEs (low stock levels).

STECF conclusions

STECF notes that, when used in the coastal zone prohibited by the MEDREG, and with current net dimensions, the Ciplarica and Palamidara purse seines are highly likely to touch the sea bed and could act as a towed net. From the information provided in the plan, STECF is unable to evaluate if their use has impacted or will affect the seagrass beds distributed in Croatian territorial waters and at which extent (percentage).

The proposal for a trigger reference point at 15% decrease of average 2009-2013 LPUEs is not supported by any data or other information presented in the plan, which could have helped analyse whether LPUEs are reasonable indicators of stock sizes of target species and whether the recent LPUEs correspond to a period of high stock levels, which can be considered as a requisite for defining precautionary LPUE-based trigger points. The period considered (five years, 2009-2013) is very short and no data are provided to assess variability and trends in such LPUE series.

It is unlikely that the use of reference points based on past LPUE series of target species be suitable for the management of the small-scale purse seine fisheries in Croatia mainly due to inevitably variable catchability of pelagic/schooling species by these coastal métiers, potentially changing targeting behavior of fishers and the shift in management regime prescribed in the plan (drastic reduction of authorized licenses).

STECF suggests that all available information on catches, effort, discards, CPUE/LPUEs of target species and main by-catch species, as well as length frequency distributions of the catches (separated into landed and discarded fractions) be compiled for the longest available yearly time series in order to assess variability and trends in e.g. the LPUEs of target species.

Finally STECF notes that stock boundaries of the species targeted by the small purse seine fisheries in Croatia are largely unknown. It is highly likely that many of these species (e.g. pelagic species) have wide stock distributions and are therefore shared between Croatia and other counties in the Adriatic Sea. Management of such shared stocks should be carried out at an international level.

6. STECF RECOMMENDATIONS FROM STECF-PLN-17-01

Section 4.4 EWG 16-19: European data for North Atlantic and Mediterranean Albacore

STECF recommendation

The STECF recommends DG MARE to make sure that, in order to improve the EU data and participation issues identified by ICCAT for Mediterranean albacore, the following actions are taken by Member States before the next stock assessment to be conducted between 5th and 9th of June:

- Submit to ICCAT, following official formularies, the Italian Task 2 data (catch, effort and size disaggregated in time and space) collected under the DCF and DCR, for the missing years. This involves primarily effort data for the period 2004 to 2008. However, a complete revision of all the Italian Task 2 data series is also recommended to address ICCAT concerns on data quality.
- Disaggregate the task 1 (total annual catch) data associated to "unclassified" gears for Italy (2003-2015) and Greece (1996-2002), and submit a gear specific Task 1 revision to ICCAT.

7. BACKGROUND DOCUMENTS

Background documents are published on the meeting's web site on:
<https://stecf.jrc.ec.europa.eu/plen170101>

8. ANNEXES

ANNEX I

Terms of reference of ad-hoc contracts on Evaluation of Member States Annual Reports on the Landing Obligation

Background

Regulation (EU) No 2015/812 (the so-called Omnibus Regulation), introduced an obligation for the Commission to report annually on the implementation of the landing obligation, based on information transmitted by the Member States, the Advisory Councils and other relevant sources. According to Article 9 of the Omnibus Regulation, Commission report should include the following elements:

- steps taken by Member States and producer organisations to comply with the landing obligation;
- steps taken by Member States regarding control of compliance with the landing obligation;
- information on the socioeconomic impact of the landing obligation;
- information on the effect of the landing obligation on safety on board fishing vessels;
- information on the use and outlets of catches below the minimum conservation reference size of a species subject to the landing obligation;
- information on port infrastructures and of vessels' fitting with regard to the landing obligation; for each fishery concerned; and
- information on the difficulties encountered in the implementation of the landing obligation and recommendations to address them.

In order to facilitate the reporting, and in line with the outcome of STECF EWG 16-04, in 2016 Member States were invited on a voluntary basis to complete questionnaires seeking more detailed information on the impact of the landing obligation and national steps taken to assist with its implementation.

Request for ad hoc contract

Based on the annual reports received by Member States, the Advisory Councils, EFCA and other relevant sources, the ad hoc contract should undertake the following:

1. Provide a detailed report together with an overall summary (max 2 pages) that can be used in support of Commissions annual reporting requirements on the landing obligation. The report should:
 - a) Review and summarise the main findings of the reports highlighting, in a structured manner, key salient points raised by each MS and to provide an overview of them at the sea basin level.
 - b) Identify specific actions where MS have made adjustments to support the introduction of the landing obligation;

c) Identify key areas of concern and difficulties regarding implementation of the landing obligation. Where available, identify specific fleets and stocks where the landing obligation has had a direct impact on fishing activity;

d) Identify specific gaps or weakness that should be brought to the attention of the Commission.

ANNEX II

Minimum distances and depths for the use of the fishing gears Article 13 for the TORs on Management Plan for Purse Seines fishing in the Republic of Croatia

Conditions	Assessment of their fulfilment
<i>Paragraph 5</i>	
There are particular geographical constraints.	
The fisheries have no significant impact on the marine environment and affect a limited number of vessels.	
Those fisheries cannot be undertaken with another gear and are subject to a management plan.	
<i>Paragraph 9</i>	
Vessels have a track record in the fishery of more than five years.	
Not involve any future increase in fishing effort provided.	
Fishing activities fulfil the requirements of Article 4, Article 8(1)(h), Article 9(3)(2) and Article 23;	
Fisheries do not interfere with the activities of vessels using gears other than trawls, seines or similar towed nets.	
Fisheries are regulated in order to ensure that catches of species mentioned in Annex III, with the exception of mollusc bivalves, are minimal.	

Fisheries do not target cephalopods.	
Fisheries are subject to a monitoring plan.	

9. CONTACT DETAILS OF STECF MEMBERS AND OTHER PARTICIPANTS

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