JRC SCIENCE FOR POLICY REPORT

Scientific, Technical and Economic Committee for Fisheries (STECF)
-
Evaluation of mandatory surveys under the DCF (STECF-19-05)

Edited by David B. Sampson and Hendrik Doerner

EUR 28359 EN

Contact information

Name: STECF secretariat

Address: Unit D.02 Water and Marine Resources, Via Enrico Fermi 2749, 21027 Ispra VA, Italy

E-mail: stecf-secretariat@jrc.ec.europa.eu

Tel.: +39 0332 789343

JRC Science Hub

https://ec.europa.eu/jrc

JRC117485

EUR 28359 EN

PDF ISBN 978-92-76-09516-3 ISSN 1831-9424 doi:10.2760/2860

STECF ISSN 2467-0715

Luxembourg: Publications Office of the European Union, 2019

How to cite: Scientific, Technical and Economic Committee for Fisheries (STECF) – Preparation for the evaluation of the list of mandatory research surveys at sea (STECF-19-05). Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-09516-3, doi:10.2760/2860, JRC117485

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. This report deals with the evaluation of mandatory research surveys at sea.

Authors:

STECF advice:

Abella, J. Alvaro, Bastardie, Francois, Borges, Lisa, Casey, John, Catchpole, Thomas, Damalas, Dimitrios, Daskalov, Georgi, Döring, Ralf, Gascuel, Didier, Grati, Fabio, Ibaibarriaga, Leire, Jung, Armelle, Knittweis, Leyla, Kraak, Sarah, Ligas, Alessandro, Martin, Paloma, Motova, Arina, Moutopoulos, Dimitrios, Nord, Jenny, Prellezo, Raúl, O'Neill, Barry, Raid, Tiit, Rihan, Dominic, Sampedro, Paz, Somarakis, Stylianos, Stransky, Christoph, Ulrich, Clara, Uriarte, Andres, Valentinsson, Daniel, van Hoof, Luc, Vanhee, Willy, Villasante, Sebastian, Vrgoc, Nedo

EWG-18-04 report:

David SAMPSON, Angeles ARMESTO, John CASEY, Alessandro LIGAS, Josep LLORET, Alessandro MANNINI, Marina PANAYOTOVA, Tiit RAID, Katja RINGDAHL, Stylianos SOMARAKIS, Christoph STRANSKY, Willy VANHEE, Sieto VERVER, Lotte WORSØE CLAUSEN

TABLE OF CONTENTS

SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF) - Evaluation of mandatory surveys under the DCF (STECF-19-05)

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 provided by the Commission to EWG 19-05

Member States (MS) regularly conduct research surveys of marine fish resources to provide fundamental data for assessing the condition of exploited fish stocks and for monitoring general conditions of the marine ecosystem. A number of these surveys are included in the Data Collection Framework (DCF). They have been consequently supported financially by direct management (2002-2013) and EMFF (2014-2020). The list of mandatory research surveys at sea (Appendix IX of the Multiannual Community Programme) was first reviewed in 2007 (Sub-Group of Research Needs (SGRN) 07-01). This meeting was followed by two other EWGs (SGRN 09-04 which developed the TORs and roadmap for SGRN 10-03). However, the resulting 2010 Scientific, Technical and Economic Committee for Fisheries (STECF) recommendations did not lead to modifications in the data collection legal framework of 2011, because the specific elements were incorporated in the National Programmes of MS. The ensuing legal revisions of the Data Collection Framework (DCF) (roll over 2014-2016 and current EU MAP) have kept the original list of surveys intact, as reviewed in 2007.

STECF recommended that surveys should be subject to frequent evaluation (at least once every 5 years). To prepare for a new evaluation of surveys, a scoping meeting was conducted (EWG 18-04) in order to develop and agree on the TORs and the methodology to be followed. The EWG 18-04 considered and developed a fundamentally different approach compared to the previous evaluations in 2007 and 2010, in line with the new legal DCF framework (Recast, EU MAP). This new approach, which is end-user driven, requested the input of MS and end users in a set of new tables ('Stock' and 'Survey') to inform the evaluation. The Regional Coordination Groups (RCGs), MS and main end users (Scientific, Technical and Economic Committee for Fisheries – STECF; International Council for the Exploration of the Sea – ICES; General Fisheries Commission for the Mediterranean – GFCM) engaged in a process for finalising the requested information on the proposed future surveys in preparation for EWG 19-05. This exercise was to be finalised prior to the EWG 19-05.

Tasks for the EWG

The EWG was tasked with the following terms of reference.

TOR #1. Evaluate the list of surveys.

a) to evaluate a list of candidate surveys at sea to be supported by the DCF based on the Stocks database, Surveys database, and Decision Support Tool (DST), which are described in the EWG 18-04 report (and below);

b) to provide quality assurance of the information contained in the Stocks database and Surveys database;

c) to produce a set of tables that summarize the DST results;

d) to produce a list of surveys proposed for inclusion on the list of mandatory surveys (a revision to Table 10 of the EU MAP) based on the application of the DST; and

e) to identify potential duplicate surveys that need evaluation.

TOR #2. Identify fishery management needs.

The EWG is requested to provide analyses of the Stocks database:

a) that identify stocks not covered by surveys and

b) that identifies duplicate surveys and compares this list of duplicates with the list of duplicates identified under TOR 1e.

The analyses for this TOR should be conducted after completing TOR 1b (to provide quality assurance of the two databases).

TOR #3. Identify survey information relating to an ecosystem-based approach to fishery management.

The surveys review EWG is requested to provide an analysis of the Surveys database that identifies contributions by the surveys of ecosystem data supporting Marine Strategy Framework Directive (MSFD) descriptors 1, 3, 4, 6, and 10.

The analyses for this TOR should be conducted after completing TOR 1b (provide quality assurance of the two databases).

The EWG should take into account relevant information from previous STECF meetings (e.g. SGRN 07-01, 09-04, 10-03, STECF Plenary 18-01, 18-02, 18-03, EWG 18-04), relevant end users (e.g. GFCM WGSAD/ WGSASP reports, ICES WGs) and steering committees of surveys (e.g., ICES WGs, Pan-Mediterranean Acoustic Survey (MEDIAS), International Bottom trawl survey in the Mediterranean(MEDITS)), RCM/RCG reports, MS DCF programs, CFP priorities, CFP and DCF Regulatory Framework (CFP, Recast, EU MAP, Work Plan template, Annual Report template), with particular reference to data requirements, survey implementation, data transmission failures linked to current surveys and any relevant scientific publications and meetings.

Main findings of the EWG

The Expert Working Group EWG 19-05 met during 13-17 May 2019 to evaluate research surveys of marine fish resources and propose surveys to be included on the list of mandatory surveys, as a revision to Table 10 of the EU Multiannual Programme for data collection (EU MAP). The EWG was able to fully address its Terms of Reference (TOR). The primary tasks were to evaluate a list of candidate surveys at sea to be supported by the DCF based on the Stocks database, Surveys database, and Decision Support Tool (DST) and to produce a list of surveys proposed for inclusion on the list of mandatory surveys (a revision to Table 10 of the EU MAP) based on the application of the DST. The list of surveys proposed for inclusion on the list of mandatory surveys is Table 5 in the report and is also appended to this Plenary meeting report (see below).

Two databases are needed for application of the DST and for use by the surveys review. The Stocks database provides general information about each fish stock and the research vessel surveys at sea that provide information to support the assessment or provision of management advice for the stock. The Stocks database, by design, contains information for all fish stocks of interest to the Commission, as listed in Tables 1A and 1C of the EU MAP. The Surveys database provides detailed information about the characteristics of EU research vessel surveys at sea used to collect data needed for stock assessment or the provision of management advice, either with respect to fisheries or to the ecosystem;

it contains information for all surveys at sea listed in Table 10 of the EU MAP and additional research vessel surveys at sea proposed by Member States and the RCGs.

The DST starts with a specific stock for which advice is needed and couples that stock with each relevant survey and follows a sequence of questions leading either to (a) a proposal to include the survey in the list of mandatory surveys or (b) a proposal to terminate data collection for that specific stock by the particular survey. Prior to ending up at either of these extremes, questions must be answered to address the following criteria for each stock and its associated surveys.

- Fishery management advice is provided for the stock.
- Indices from the survey are used in the assessment or TAC calculation for the stock.
- The survey is internationally coordinated and is harmonized.
- Data from the survey are accessible and available for scientific use.
- The survey provides the basis for the assessment or management advice for the stock.
- The survey provides adequate coverage for the stock.
- There is no duplication of this survey with another survey for this stock.

Embedded in the DST are various loops allowing for end-user input (through associated expert groups) and the possibility of improving and adjusting a survey before taking a "drastic" decision to terminate the data collection.

The EWG produced a set of cleaned up and harmonized Stocks and Surveys databases and the associated DST Output file derived from the information in the two databases. The DST Output file was the primary resource for completing the remaining tasks associated with TOR 1.

The EWG also produced an electronic annex to the EWG report with the completed Stocks and Surveys databases and the completed DST Output file. All the files are Excel workbooks and provide information that is likely to be useful to DG MARE, the RCGs, and the Member States[1].

When completing the DST Output file, the EWG members, working in regional teams, identified stocks for which there were two or more surveys and evaluated the corresponding information in the Surveys database to gauge whether the surveys were potential duplicate surveys. Four surveys associated with one particular stock (Cod in the Kattegat) were flagged as needing further expert evaluation to gauge the possibility of survey duplication. For all other stocks, the EWG determined that the surveys (if there were two or more) were not duplicates, because (in general) the surveys did not overlap in terms of spatial or seasonal coverage or gear used.

With regard to stocks not covered by surveys (TOR 2a), Table 3 in the report provides a summary by survey of the number of stocks for which the survey provide information used for assessment or advice (412 stocks) and the number of stocks for which the survey information is currently not used (430 stocks). This table also provides a summary by regional RCG of the number of stocks for which there are no surveys (208 stocks).

In the Mediterranean, the MEDITS survey represent the main tuning information used to perform stock assessment of the priority demersal stocks. MEDIAS is used for anchovy and sardine. Most of the stocks that are not covered by surveys are coastal and rocky bottom species, mostly exploited by coastal small-scale fisheries and recreational fisheries.

For TOR 3, the report provides a brief summary of the Surveys database that identifies contributions by the surveys of ecosystem data supporting Marine Strategy Framework Directive descriptors 1, 3, 4, 6, and 10. Information is provided in the database by survey for the five descriptors in simple Yes/No format.

[1] https://stecf.jrc.ec.europa.eu/reports/dcf-dcr

The DST has primarily been developed to identify those surveys that are used for stock assessment purposes and the provision of advice on fisheries management, and identify which should be candidates for inclusion in the list of mandatory surveys in revisions to the EU MAP. By design, the output from the DST does not rank or prioritise the surveys in terms of importance to the advisory process.

STECF comments

STECF notes that the work done to map the European surveys at sea and populate the stocks and surveys databases took more than a year and involved inputs from end users (e.g. GFCM WGSAD/WGSASP, ICES WGs, STECF), the steering committees of surveys (e.g., ICES WGs, Pan-Mediterranean International Acoustic Survey (MEDIAS), International Bottom Trawl Survey in the Mediterranean (MEDITS)), the RCGs and the Member States. In addition to addressing the ToRs, the EWG made also considerable work in order to scrutinize, and produce a set of cleaned-up, quality-checked and harmonized Stocks and Surveys databases for transfer to the DST Output file. These inventories and the completed DST Output file are available in electronic form and will be very useful to DG MARE, the RCGs, and the Member States as a source of information regarding the surveys and the stocks that these surveys provide, or could provide information for the purposes of assessment and management.

STECF notes the specific challenges linked with the naming and the evaluation of the combined or internationally coordinated surveys. Prior to the evaluation of surveys using the DST, those surveys, the results of which are combined with those from other surveys for stock assessment purposes, were grouped together and labelled under a single heading. For example, Member State surveys carried out as part of the 1st quarter International Bottom Trawl Survey in the North Sea, were all labelled as IBTS_Q1 and treated as a single survey from the perspective of the DST. Similarly, Member State components of the MEDITS survey are all labelled as MEDITS and the same for MEDIAS. STECF notes that such an approach was adopted by the EWG because for most stocks, it is the combined results from all survey components that are used for stock assessments. A similar approach was adopted for Underwater TV surveys (UWTV) for *Nephrops*, in that the separate surveys undertaken for each functional unit were each labelled simply as UWTV. Finally, three surveys listed separately in the Stocks and Surveys databases (PELACUS_ESP, PELAGO_PRT, and SAHMAS_FRA) were all sub-surveys of the survey labelled as the "Sardine, Anchovy, Horse Mackerel Acoustic Survey" in the current EU MAP Table 10; database rows associated with these sub-surveys were reassigned with Survey_ID = "SAHMAS)".

STECF notes furthermore that there is currently no uniquely explicit way to list the individual surveys that are carried out under the label IBTS (International Bottom Trawl Survey) in the ICES area. Such a situation arises because in many cases different actors in the system (ICES Expert groups, National experts, STECF Expert Groups, individuals, etc.) have assigned non-unique identifiers to the same survey or in some cases two groups use the same identifier to refer to two different surveys. Additionally, the label IBTS is used in different ecoregions.

STECF notes that a corresponding Regional Coordination Group (RCG) was allocated by the EWG to each specific stock:survey combination. This allocation was mostly based on the spatial coverage of a survey or based on specific stocks in the case of the large pelagic species. This link was created in anticipation that the new EU-MAP Table 10 list of mandatory surveys will be based on the RCG regions. The DST output thus clarifies the RCG responsible for a specific survey, which will ensure continuity, quality, Member States involvement, and will set up cost-sharing agreements in line with DCF where and when applicable.

STECF notes that if a survey had been proposed for inclusion in the EU MAP Table 10 list of mandatory surveys but had never been conducted, it was included in the Surveys database but the information for this survey was not transferred to DST Output because there were no corresponding

data available in the Stocks database for this survey since the survey had never been used in an assessment. Particularly in the Mediterranean, although EWG 19-05 could not use the DST to perform a quantitative evaluation of the extension of MEDIAS in GSAs 11 and 19, and of a second MEDITS survey in the 4th quarter (MEDITS_Q4), the EWG recognized the important contribution that these proposed surveys are expected to provide to improve data availability and quality for stock assessment purposes, as well as for environmental monitoring. These surveys will still be included in EU-MAP Table 10 but will only be evaluated in the next review.

The EWG report and electronic files provide data and summarized tables by RCG region on the stocks having no surveys as well as on the stocks that each survey provides data for. Stocks for which the information available from surveys is not used in stock assessments can also be identified (implying a potential for better utilization of the survey information in the future). STECF notes that the evaluation is only based on the binary criteria of whether the survey is used or not, but does not investigate the quality and consistency of the survey data themselves. Determining whether the survey actually provides usable information (or not) requires technical analysis and advice from experts familiar with the characteristics of the stock and the survey, and this must be performed during e.g. benchmark processes. The whole time series of data should be available to facilitate the use of survey information for assessment purposes.

STECF notes that the contribution of surveys to ecosystem data supporting the MSFD descriptors 1, 3, 4, 6 and 10 could not be fully evaluated by EWG 19-05 since the information requested was not sufficiently detailed. STECF considers that a detailed review of MSFD reporting deliverables by Member States (including in particular the initial assessments / determination of good environmental status of marine waters and the establishment and implementation of coordinated monitoring programmes) should be carried out separately, with the objective of identifying the contribution of specific surveys to ecosystem data in different Member States. Such work may require coordination with the Directorate-General for the Environment (DG-ENV). STECF further notes that survey data is required to report on the wider ecosystem objectives of the Common Fisheries Policy. In fact STECF EWG 18-15 on 'CFP Monitoring - Expansion of Indicators' shortlisted indicators which rely on survey data, including for example mean maximum length of fish and fishing litter. The current version of the DST does not consider the contribution of surveys to such ecosystem data.

The EWG report provides summary outputs in terms of number of stock assessments informed by a single survey (e.g., Table 3 in the EWG report). STECF agrees with the conclusion of the EWG that using the number of stock assessments informed by a single survey as the sole criterion to rank or prioritise the list of candidate surveys would be entirely misleading and should be discouraged.

Surveys proposed for the new list of mandatory surveys

The list of surveys proposed for inclusion in the new list of mandatory surveys is provided in Table 5a of the EWG report and reported here. The second column of the table includes the name in the current EU MAP Table 10 (if any) that corresponds to each given proposed survey. Any proposed surveys that are not in the current EU MAP Table 10 (i.e., new candidate surveys) have explanatory comments in the third column. The third column also indicates other changes relative to the current list of mandatory surveys in the current Table 10.

Region / *Survey ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
Baltic (including Skagerrak and Kattegat)		
BIAS	BIAS	

Region / *Survey ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
BITS_Q1 <1>	BITS Q1	
BITS_Q4	BITS Q4	
CODS_Q4 <1>		**Not in current EU MAP Table 10.** Joint Danish/Swedish bottom trawl survey. The full name is "Kattegat Cod Survey".
FEJUCS		**Not in current EU MAP Table 10.** The full name is "Fehmarn Juvenile Cod Survey".
GRAHS	GRAHS	
IBTS_Q1 <1>	IBTS Q1	
IBTS_Q3 <1>	IBTS Q3	
NSSS	NSSS	
RHLS_DEU	RHLS	
SPRAS	SPRAS	
North Sea & Eastern Arctic		
ASH	International ecosystem surveys in the Nordic Seas	
BTS	North Sea beam trawl survey (BTS)	
DYFS	Demersal young fish survey (DYFS)	
FCGS	Flemish Cap groundfish survey (FCGS)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA.
GGS	Greenland Groundfish survey (GGS)	
IBTS_Q1	International bottom trawl survey (IBTS Q1)	
IBTS_Q3	International bottom trawl survey (IBTS Q3)	

Region / *Survey ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
IBTS_Q4	IBTS Q4	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic".
IHLS	International herring larvae survey (IHLS)	
NHAS	NHAS	
NSMEGS	Mackerel egg survey (triennial) (NSMEGS)	
NSSS	North Sea sandeels survey (NSSS)	
PLATUXA_ESP	3LNO groundfish survey (PLATUXA)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA. See report section *Change to an existing survey – Splitting the NAFO 3LNO Groundfish Survey*.
REDTAS	International redfish trawl and acoustic survey (biennial) (REDTAS)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA.
SNS_NLD	Sole net survey (SNS)	
UWTV	*Nephrops* TV survey (FU 3&4) (NTV3&4)	**Consolidation of surveys.** Included in current EU MAP Table 10 as separate surveys in various FUs.
	Nephrops TV survey (FU 6) (NTV6)	
	Nephrops TV survey (FU 7) (NTV7)	
	Nephrops TV Survey (FU 8) (NTV8)	

Region / *Survey ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
	Nephrops TV Survey (FU 9) (NTV9)	
	Redfish survey in the Norwegian Sea and adjacent waters (REDNOR)	**Current EU MAP Table 10 survey flagged for possible rejection.** <2> No EU Member State participation (see section 3.1.5 of the EWG report).
North Atlantic		
BIOMAN	Biomass of anchovy	
CSHAS_IRL		**Not in current EU MAP Table 10.** Full name is "Celtic Sea Herring Acoustic Survey".
ECOCADIZ_ESP		**Not in current EU MAP Table 10.** Acoustic survey (sardine and anchovy). Spanish survey.
IBTS_Q1	Scottish western IBTS	
IBTS_Q4	Western IBTS 4th quarter (including Porcupine survey)	
IBWSS	Blue whiting survey	
IESSNS		**Not in current EU MAP Table 10.** Trawl survey for mackerel - swept area. Danish and Norwegian survey.
ISBCBTS	ISBCBTS September	
JUVENA_ESP		**Not in current EU MAP Table 10.** Acoustic survey for juvenile anchovy in the Bay of Biscay.
MEGS	International mackerel and horse mackerel egg survey (triennial)	
ORHAGO_Q4_FRA		**Not in current EU MAP Table 10.** Full name is "Observation des Resources Halieutiques benthiques du Golfe de Gascogne", Bay of Biscay Demersal Resources Survey.

Region / *Survey ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
PALPRO_ESP		**Not in current EU MAP Table 10.** Deep-water longline survey, Spain.
SAHMAS	Sardine, anchovy, horse mackerel acoustic survey	
SCO-IV-VI-AMISS-Q2		**Not in current EU MAP Table 10.** Dedicated industry–science survey index.
SDEPM	Sardine DEPM (Triennial)	
SIAMISS_GBS	Anglerfish surveys	
SWECOS_GBE	WCBTS, WCBTS Q1	**Change in name.** WCBTS in EU MAP Table 10 was discontinued in 2014 and replaced by the WCBTS Q1 (= SWECOS_GBE).
UWTV	*Nephrops* UWTV survey (offshore)	**Consolidation of surveys.** Included in current EU MAP Table 10 as separate surveys in various FUs.
	UWTV (FU 11-13)	
	Nephrops UWTV Irish Sea – UWTV (FU 15)	
	Nephrops UWTV survey Aran Grounds (FU 17)	
	Nephrops UWTV survey Celtic Seas (FU 20-22)	
	Nephrops UWTV survey Offshore Portugal Neps (FU28-29)	
WESPAS_IRL	Spawning/pre-spawning herring/boarfish acoustic survey	
Mediterranean & Black Sea		
BTSBS	BTSBS	
MEDIAS [<3>]	MEDIAS	
MEDITS [<4>]	MEDITS	

Region / *Survey ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
PTSBS	PTSBS	
SOLEMON		**Not in current EU MAP Table 10.**
Large pelagics		
TUNIBAL		**Not in current EU MAP Table 10.**

[1] Possible duplication with other surveys. Needs further review by WGBFAS.

[2] Needs further review by AFWG to gauge impact of stopping the time series and by ICES to gauge impact on management.

[3] Not including the proposed extension into GSAs 11 and 19.

[4] Not including the proposed extension into the 4th quarter (MEDITS_Q4).

The surveys with the following Survey ID values did not fully satisfy the criterion for no survey duplication (No_Survey_Dupl = "?"): BITS_Q1, CODS_Q4, IBTS_Q1, IBTS_Q3. The stocks associated with these possibly duplicate surveys are all in the Skagerrak and Kattegat region, which has complex geography that may require a number of smaller surveys to achieve adequate coverage of the stock. STECF suggests that the results of this evaluation be discussed by ICES and evaluated in future benchmarks for that region.

One survey from the current EU MAP Table 10 (Survey_ID="REDNOR") was considered to be outside the scope for evaluation by the DST as this survey is fully carried out by non-EU countries (Norway, Russia, Faroes Islands). The REDNOR survey provides information for stock assessments that are relevant for the EU, but since it is not operated by EU member states that survey should be removed from Table 10.

STECF conclusions

The EWG 19-05 cleaned up and harmonized the Stocks and Surveys Databases and successfully applied the DST to evaluate the candidate surveys at sea to be supported by the EU-MAP. The work was comprehensive and all ToRs have been addressed.

The STECF agrees with the EWG proposals for changes in the revision to EU-MAP Table 10 (e.g. RCG-based listing of surveys, relabelling) and endorses the suggested updated list of mandatory surveys.

It is anticipated that this surveys list shall be evaluated again before inclusion in future revisions of EU-MAP. On the assumption that the DCF criteria remain unchanged, the DST can provide a renewed insight in the stock/survey needs at that time. Considering the time-consuming process of compiling both the Surveys as well as the Stocks database experienced by the EWG 19-05, STECF supports that the data sets are updated prior to the next evaluation exercise. Standardized survey names and standardized application of these names throughout the advisory process would ease the process of reviewing the surveys based on their applicability in the process.

STECF suggests that a more detailed analysis be undertaken to identify the contribution of each survey to obtaining ecosystem data supporting the Marine Strategy Framework Directive (MSFD) descriptors 1, 3, 4, 6, and 10. Relevant ways to incorporate this aspect in the DST should be reconsidered.

Contact details of STECF members

[1] - Information on STECF members' affiliations is displayed for information only. In any case, Members of the STECF shall act independently. In the context of the STECF work, the committee members do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members also declare at each meeting of the STECF and of its Expert Working Groups any specific interest which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting's website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: http://stecf.jrc.ec.europa.eu/adm-declarations

Name	**Affiliation[1]**	Email
Abella, J. Alvaro	Independent consultant	aabellafisheries@gmail.com
Bastardie, Francois	Technical University of Denmark, National Institute of Aquatic Resources (DTU-AQUA), Kemitorvet, 2800 Kgs. Lyngby, Denmark	fba@aqua.dtu.dk
Borges, Lisa	FishFix, Lisbon, Portugal	info@fishfix.eu
Casey, John	Independent consultant	blindlemoncasey@gmail.com
Catchpole, Thomas	CEFAS Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk, UK, NR33 0HT	thomas.catchpole@cefas.co.uk
Damalas, Dimitrios	Hellenic Centre for Marine Research, Institute of Marine Biological Resources & Inland Waters, 576 Vouliagmenis Avenue, Argyroupolis, 16452, Athens, Greece	shark@hcmr.gr
Daskalov, Georgi	Laboratory of Marine Ecology, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences	Georgi.m.daskalov@gmail.com
Döring, Ralf (vice-chair)	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Economic analyses Herwigstrasse 31, D-27572 Bremerhaven, Germany	ralf.doering@thuenen.de

Name	Affiliation[1]	Email
Gascuel, Didier	AGROCAMPUS OUEST, 65 Route de Saint Brieuc, CS 84215, F-35042 RENNES Cedex, France	Didier.Gascuel@agrocampus-ouest.fr
Grati, Fabio	National Research Council (CNR) – Institute for Biological Resources and Marine Biotechnologies (IRBIM), L.go Fiera della Pesca, 2, 60125, Ancona, Italy	fabio.grati@cnr.it
Ibaibarriaga, Leire	AZTI. Marine Research Unit. Txatxarramendi Ugartea z/g. E-48395 Sukarrieta, Bizkaia. Spain.	libaibarriaga@azti.es
Jung, Armelle	DRDH, Techopôle Brest-Iroise, BLP 15 rue Dumont d'Urville, Plouzane, France	armelle.jung@desrequinsetdeshommes.org
Knittweis, Leyla (vice-chair)	Department of Biology, University of Malta, Msida, MSD 2080, Malta	Leyla.knittweis@um.edu.mt
Kraak, Sarah	Thünen Institute of Baltic Sea Fisheries, Alter Hafen Süd 2, 18069 Rostock, Germany.	sarah.kraak@thuenen.de
Ligas, Alessandro	CIBM Consorzio per il Centro Interuniversitario di Biologia Marina ed Ecologia Applicata "G. Bacci", Viale N. Sauro 4, 57128 Livorno, Italy	ligas@cibm.it; ale.ligas76@gmail.com
Martin, Paloma	CSIC Instituto de Ciencias del Mar Passeig Marítim, 37-49, 08003 Barcelona, Spain	paloma@icm.csic.es
Motova, Arina	Sea Fish Industry Authority, 18 Logie Mill, Logie Green Road, Edinburgh EH7 4HS, U.K	arina.motova@seafish.co.uk
Moutopoulos, Dimitrios	Department of Animal Production, Fisheries & Aquaculture, University of Patras, Rio-Patras, 26400, Greece	dmoutopo@teimes.gr
Nord, Jenny	The Swedish Agency for Marine and Water Management (SwAM)	Jenny.nord@havochvatten.se
Prellezo, Raúl	AZTI -Unidad de Investigación Marina, Txatxarramendi Ugartea z/g 48395 Sukarrieta (Bizkaia), Spain	rprellezo@azti.es

Name	Affiliation[1]	Email
O'Neill, Barry	DTU Aqua, Willemoesvej 2, 9850 Hirtshals, Denmark	barone@aqua.dtu.dk
Raid, Tiit	Estonian Marine Institute, University of Tartu, Mäealuse 14, Tallin, EE-126, Estonia	Tiit.raid@gmail.com
Rihan, Dominic	BIM, Ireland	rihan@bim.ie
Sampedro, Paz	Spanish Institute of Oceanography, Center of A Coruña, Paseo Alcalde Francisco Vázquez, 10, 15001 A Coruña, Spain	paz.sampedro@ieo.es
Somarakis, Stylianos	Institute of Marine Biological Resources and Inland Waters (IMBRIW), Hellenic Centre of Marine Research (HCMR), Thalassocosmos Gournes, P.O. Box 2214, Heraklion 71003, Crete, Greece	somarak@hcmr. gr
Stransky, Christoph	Thünen Institute [TI-SF] Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Sea Fisheries, Herwigstrasse 31, D-27572 Bremerhaven, Germany	christoph.stransky@thuenen.de
Ulrich, Clara (chair)	Technical University of Denmark, National Institute of Aquatic Resources (DTU-AQUA), Kemitorvet, 2800 Kgs. Lyngby, Denmark	clu@aqua.dtu.dk
Uriarte, Andres	AZTI. Gestión pesquera sostenible. Sustainable fisheries management. Arrantza kudeaketa jasangarria, Herrera Kaia - Portualdea z/g. E-20110 Pasaia – GIPUZKOA (Spain)	auriarte@azti.es
Valentinsson, Daniel	Swedish University of Agricultural Sciences (SLU), Department of Aquatic Resources, Turistgatan 5, SE-45330, Lysekil, Sweden	daniel.valentinsson@slu.se
van Hoof, Luc	Wageningen Marine Research Haringkade 1, Ijmuiden, The Netherlands	Luc.vanhoof@wur.nl
Vanhee, Willy	Independent consultant	wvanhee@telenet.be

Name	**Affiliation**[1]	Email
Villasante, Sebastian	University of Santiago de Compostela, Santiago de Compostela, A Coruña, Spain, Department of Applied Economics	sebastian.villasante@usc.es
Vrgoc, Nedo	Institute of Oceanography and Fisheries, Split, Setaliste Ivana Mestrovica 63, 21000 Split, Croatia	vrgoc@izor.hr

REPORT TO THE STECF

EXPERT WORKING GROUP ON Evaluation of mandatory surveys under the DCF (EWG-19-05)

Brussels, 13-17 May 2019

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

EXPERT WORKING GROUP EWG-19-05 REPORT

1 INTRODUCTION.

The Expert Working Group EWG-19-05 met in Brussels, Centre Borschette during 13-17 May 2019. The EWG consisted of five members of the STECF, one expert from the Joint Research Center (JRC), and nine invited experts. Three staff of DG MARE attended parts of the meeting. The list of EWG-19-05 participants is in section 9 (*List of participants*) and their contact details are provided in section 10 (*Contact details of EWG-19-05 participants*).

1.1 Terms of Reference for EWG-19-05.

The aim of this Expert Working Group (EWG) is to evaluate a list of candidate scientific surveys at sea, to be proposed for inclusion on the list of mandatory surveys (a revision to Table 10 of the EU Multiannual Programme (EU MAP)). A copy of Table 10 of the EU MAP is included as Annex 1 to this report.

Background provided by the Commission.

Member States (MS) regularly conduct research surveys of marine fish resources to provide fundamental data for assessing the condition of exploited fish stocks and for monitoring general conditions of the marine ecosystem. A number of these surveys are included in the Data Collection Framework (DCF). They have been consequently supported financially by direct management (2002-2013) and EMFF (2014-2020). The list of mandatory research surveys at sea (Appendix IX of the Multiannual Community Programme[2]) was first reviewed in 2007 (Sub-Group of Research Needs (SGRN) 07-01[3]). This meeting was followed by two other EWGs (SGRN 09-04[4] which developed the TORs and roadmap for SGRN 10-03[5]). However, the resulting 2010 Scientific, Technical and Economic Committee for Fisheries (STECF) recommendations did not lead to modifications in the data collection legal framework of 2011[6], because the specific elements were incorporated in the National Programmes of MS. The ensuing legal revisions of the Data Collection Framework (DCF) (roll over 2014-2016[7] and current EU MAP) have kept the original list of surveys intact, as reviewed in 2007.

STECF recommended that surveys should be subject to frequent evaluation (at least once every 5 years). To prepare for a new evaluation of surveys, a scoping meeting was conducted (EWG 18-04) in order to develop and agree on the TORs and the methodology to be followed. The EWG18-04 considered and developed a fundamentally different approach compared to the previous evaluations in 2007 and 2010, in line with the new legal DCF framework (Recast[8], EU MAP[9]). This new approach, which is end-user driven, requested the input of MS and end users in a set of new tables ('Stock' and 'Survey') to inform the evaluation. The Regional Coordination Groups (RCGs),

---

[2] COM Decision of 6 November 2008 adopting a multiannual Community programme pursuant to Council Regulation (EC) No 199/2008 establishing a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy

[3] Scientific, Technical and Economic Committee for Fisheries (STECF). Report of the Working Group on Research Needs: Review of list of surveys at sea (Appendix XIV OF EU Commission Regulation N°1581/2004) with their priorities (SGRN 07-01), Brussels, 12-16 February 2007.

[4] Scientific, Technical and Economic Committee for Fisheries (STECF) Framework and a Roadmap for the Review of Surveys. Report of the Subgroup on Research Needs (SGECA/SGRN 09-04) Joint Subgroup on Economic Affairs (SGECA) and on Research Needs (SGRN) of the Scientific, Technical and Economic Committee for Fisheries (STECF), 07-11 December 2009, Hamburg.

[5] Scientific, Technical and Economic Committee for Fisheries (STECF). Sub-Group on Research Needs: SGRN 10-03. Review of needs related to surveys. 4 - 8 October 2010, Brussels, Belgium.

[6] COM Decision of 18 December 2009 adopting a multiannual Community programme for the collection, management and use of data in the fisheries sector for the period 2011-2013.

[7] COM Implementing Decision of 13.8.2013 extending the multiannual Union programme for the collection, management and use of data in the fisheries sector for the period 2011-2013 to the period 2014-2016.

[8] Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017 on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008 (recast).

[9] COM Implementing Decision (EU) 2016/1251 of 12 July 2016 adopting a multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019

MS and main end users (Scientific, Technical and Economic Committee for Fisheries – STECF; International Council for the Exploration of the Sea – ICES; General Fisheries Commission for the Mediterranean – GFCM) engaged in a process for finalising the requested information on the proposed future surveys in preparation for EWG 19-05. This exercise was to be finalised prior to the EWG 19-05.

Tasks for the EWG

The EWG was tasked with the following terms of reference.

TOR #1. Evaluate the list of surveys.

The EWG is requested:

a) to evaluate a list of candidate surveys at sea to be supported by the DCF based on the ***Stocks*** database, ***Surveys*** database, and Decision Support Tool (DST), which are described in the EWG 18-04 report[10] (and below);

b) to provide quality assurance of the information contained in the ***Stocks*** database and ***Surveys*** database;

c) to produce a set of tables that summarize the DST results;

d) to produce a list of surveys proposed for inclusion on the list of mandatory surveys (a revision to Table 10 of the EU MAP) based on the application of the DST; and

e) to identify potential duplicate surveys that need evaluation.

TOR #2. Identify fishery management needs.

The EWG is requested to provide analyses of the ***Stocks*** database:

a) that identify stocks not covered by surveys and

b) that identifies duplicate surveys and compares this list of duplicates with the list of duplicates identified under TOR 1e.

The analyses for this TOR should be conducted after completing TOR 1b (to provide quality assurance of the two databases).

TOR #3. Identify survey information relating to an ecosystem-based approach to fishery management.

The surveys review EWG is requested to provide an analysis of the ***Surveys*** database that identifies contributions by the surveys of ecosystem data supporting Marine Strategy Framework Directive (MSFD) descriptors 1, 3, 4, 6, and 10.

The analyses for this TOR should be conducted after completing TOR 1b (provide quality assurance of the two databases).

The EWG should take into account relevant information from previous STECF meetings (e.g. SGRN 07-01, 09-04, 10-03, STECF Plenary 18-01, 18-02, 18-03, EWG 18-04), relevant end users (e.g. GFCM WGSAD/ WGSASP reports, ICES WGs) and steering committees of surveys (e.g., ICES WGs, Pan-Mediterranean Acoustic Survey (MEDIAS), International Bottom trawl survey in the Mediterranean(MEDITS)), RCM/RCG reports, MS DCF programs, CFP priorities, CFP and DCF Regulatory Framework (CFP, Recast, EU MAP, Work Plan template, Annual Report template), with particular reference to data requirements, survey implementation, data transmission failures linked to current surveys and any relevant scientific publications and meetings.

[10] https://stecf.jrc.ec.europa.eu/reports/dcf-dcr/-/asset_publisher/6Xw3/document/id/2195694

2 DESCRIPTION OF THE REVIEW MEETING (EWG 19-05).

The meeting began the afternoon of 13 May with a series of presentations to provide context for the work and products of the EWG. Many members of the EWG had previous experience with issues relating to the evaluation of research surveys. Members of EWG 19-05 included eleven individuals who had participated in EWG 18-04 and four who had participated in SGRN 10-03. Three members of EWG 19-05 had been members of both EWG 18-04 and SGRN 10-03. The chair of the EWG 19-05 had also chaired EWG 18-04 and SGRN 10-03. Despite the depth and breadth of knowledge of the EWG 19-05 members, it was important that all members have a shared understanding of what was to be accomplished during the meeting.

Apart from the dedicated input to its meeting, EWG 19-05 noted the request in the document "Consultation of RCGs and PGECON on the potential revision of EU-MAP biological data and socio-economic data" (DG MARE, Dec 2018) requesting specific input on the concrete points of revision for Table 10 of the EU MAP. This EWG report addresses these points based on the Terms of Reference in the various sections of the report.

Day 1 presentations

The Chair of the EWG (Dr David Sampson) presented slides that summarized the activities and results of EWG 18-04, which had produced the Terms of Reference for EWG 19-05 and the general plan for its activities. EWG 18-04 had produced a prototype Decision Support Tool (DST) that would evaluate from the perspective of individual fish stocks whether a survey proposed for inclusion in the list of mandatory surveys (Table 10 of the EU MAP) would satisfy various criteria established as part of the Data Collection Framework (DCF). The primary output from the DST would be a list of surveys proposed for inclusion in a revision to the list of mandatory surveys. The information input to the DST would take the form of two databases, a ***Stocks*** database with stock-by-stock information indicating all at-sea research vessel surveys that provide supporting information and an associated ***Surveys*** database with survey-specific information. During EWG 18-04 there was limited development of the ***Stocks*** and ***Surveys*** databases and limited testing of the DST. The roadmap developed by EWG 18-04 anticipated that various activities would be completed before an EWG would formally evaluate the surveys proposed for inclusion in the list of mandatory surveys.

Ms Venetia Kostopoulou presented slides describing the historical context for reviews of EU fishery resources surveys and asked the EWG to consider next steps that might be taken using the anticipated products of EWG 19-05. She also described and provided a written summary of the numerous steps taken by DG MARE to complete the activities specified in the EWG 18-04 roadmap, which included asking MS, end users (e.g., GFCM, STECF, JRC, ICES), and RCGs to fill in information in the ***Stocks*** and ***Surveys*** databases and asking STECF to test the DST.

Dr Christoph Stransky, who reported on EWG 18-04 to the STECF July 2018 plenary meeting (STECF 18-02), provided additional comments regarding EWG 18-04 and work relevant to EWG 19-05 that was undertaken at the STECF July 2018 plenary meeting. Dr Stylianos Somarakis described work undertaken at the STECF November 2018 plenary meeting (STECF 18-03) to evaluate the DST, from an end-user perspective, using ***Stocks*** and ***Surveys*** databases that had been filled in by Member States and the Mediterranean and Black Sea RCG.

Dr Lotte Worsøe Clausen presented slides describing the process the ICES Secretariat undertook to provide additional information in the ***Stocks*** and ***Surveys*** database and check the databases for accuracy and completeness. The Secretariat had asked stock coordinators to evaluate information for each stock they were responsible for, to verify that the information was complete and accurate. The Secretariat had asked coordinating survey groups to evaluate the information in the ***Surveys*** database for the surveys they were responsible for, to verify that the information was complete and accurate.

Dr Ken Patterson posed questions to the EWG about developing ecosystem data from EMFF supported surveys. Although outside of the EWG's Terms of Reference, some members of the EWG prepared a response, which is presented in Annex 2.

Inter-sessional tasks specified in the EWG-18-04 roadmap.

The EWG 18-04 roadmap included six steps that were supposed to precede the evaluation of the list of surveys proposed for inclusion in a new Table 10 (EU MAP) list of mandatory surveys, with the notion that the evaluation process would provide an independent review of the application of the DST to the information in the ***Stocks*** and ***Surveys*** databases. It turned out that several steps in the roadmap had to be undertaken by EWG 19-05 before the EWG could begin to focus on its Terms of Reference.

Roadmap actions undertaken and completed.

- Review outcome from EWG 18-04. The EWG 18-04 report was presented to the STECF Plenary 18-02, which endorsed the report and provided a limited review of the database files and the corresponding DST outputs. The database files had information for a very limited number of stocks and surveys. Completed July 2018.
- Present outcome from EWG 18-04 to the RCGs. Completed September 2018.
- RCGs to populate the two databases. Work on this action occurred during October and November 2018. Review of the database files by MS and end users (STECF, GFCM, ICES) was not completed until April 2019.
- Status of populating the databases to be reported through Liaison Meeting. Completed October 2018.

Roadmap actions not undertaken, not completed.

- Develop guidance document with details on how to populate the databases and apply the DST.
- Analysis to be done by applying the DST, resulting in a suggested list of surveys to be included in the new Table 10.

The second roadmap action not completed prior to EWG 19-05 (application of the DST to the completed ***Stocks*** and ***Surveys*** database) was a crucial step for the successful development of a list of surveys proposed for inclusion in the list of mandatory surveys (a new Table 10 for the EU MAP). EWG 19-05 could not complete any of its Terms of Reference until this preliminary work had been completed.

2.1 Description of the Stocks and Surveys databases

Two databases are needed for application of the DST and for use by the surveys review. The ***Stocks*** database provides general information about each fish stock and the research vessel surveys at sea that provide information to support the assessment or provision of management advice for the stock. The ***Stocks*** database, by design, contains information for all fish stocks of interest to the Commission, as listed in Tables 1A and 1C of the EU MAP. Stocks for which there are no surveys at sea are included in the database to assist the future review of surveys in identifying potential needs for additional surveys (e.g., stocks for which there are no or limited surveys). The ***Stocks*** database includes an entry (a row of information) for each and every stock listed in Tables 1A and 1C of the EU MAP as well as additional entries to identify all surveys that provide information used in the provision of advice (one entry for each stock and associated surveys). To facilitate data entry and cross-referencing, the database includes information for each stock on its regional association and responsible advisory body and associated working group. The ***Stocks*** database is the primary source of information to which the DST is applied for evaluating whether surveys should be included in the future proposed list of mandatory surveys. The ***Stocks*** database is also used to identify possible duplicate surveys and stocks that are not covered by surveys.

It is important to understand that there are several different possible definitions for the term "stock", with different definitions targeted to different purposes (e.g., population biology versus stock assessment versus fishery management). For the ***Stocks*** database and the DST results, the EWG defined a stock as a combination of a species code (e.g., COD for Atlantic cod) and a code to indicate the stock area (e.g., 27.25-32). The codes were generally aligned with the stock assessment codes used by the advice providers (GFCM and ICES), which seemed the preferred approach given that the DST focuses on end-user needs. Stock assessment remains the primary use of the survey information collected under the DCF.

The ***Surveys*** database provides detailed information about the characteristics of EU research vessel surveys at sea used to collect data needed for stock assessment or the provision of management advice, either with respect to fisheries or to the ecosystem; it contains information for all surveys at sea listed in Table 10 of the EU MAP and any additional research vessel surveys at sea proposed by Member States and the RCGs. The ***Surveys*** database contains one entry (row of information) for each survey and associated information such as the type of gear/methodology used in the survey, the areas covered, the time period covered by the existing data series, coordination and standardization of survey, and some of the types of data collected. The ***Surveys*** database provides information to the DST on whether a survey is internationally coordinated and harmonized and whether its data are accessible. Also, this database is the primary source of information for identifying surveys that provide ecosystem information to support the Marine Strategy Framework Directive as well as to identify needs for expanding the area and time coverage of existing or new proposed surveys.

2.2 Description of the Decision Support Tool (DST)

The DST starts with a specific stock for which advice is needed and couples that stock with each relevant survey and follows a sequence of questions leading either to (a) a proposal to include the survey in the list of mandatory surveys or (b) a proposal to terminate data collection for that specific stock by the particular survey. Prior to ending up at either of these extremes, questions must be answered to address the following criteria for each stock and its associated surveys.

- Fishery management advice is provided for the stock.
- Indices from the survey are used in the assessment or TAC calculation for the stock.
- The survey is internationally coordinated and is harmonized.
- Data from the survey are accessible and available for scientific use.
- The survey provides the basis for the assessment or management advice for the stock.
- The survey provides adequate coverage for the stock.
- There is no duplication of this survey with another survey for this stock.

Embedded in the DST are various loops allowing for end-user input (through associated expert groups) and the possibility of improving and adjusting a survey before taking a "drastic" decision to terminate the data collection. A flow-chart diagram depicting the logic underlying the DST is provided in Figure 1.

The DST takes the form of an Excel worksheet (referred to below as the ***DST_Output*** file) with a series of columns that define each stock and survey combination (possibly including a stock with no survey), with additional columns that store information on traits associated with each stock and survey combination and Y/N scores regarding the criteria described above.

2.3 Process used for completing the *Stocks* and *Surveys* databases

The EWG 19-05 was provided with the ***Stocks*** and ***Surveys*** databases that had been compiled by the RCGs and Member States. Although the files had been reviewed by ICES and other end-users, there had been no comprehensive screening of the databases to detect inconsistencies in the use of codes or other anomalies that might interfere with the application of the DST.

After considerable discussion of what would be the best approach for screening the databases during the EWG meeting, it was agreed that it would most efficient to allow small groups of regional experts to work independently to clean up the database entries for their respective regions. This clean-up process consumed almost two days of the EWG meeting, which left greatly reduced time available for analysis and discussion of the DST results.

The group reviewing the information for the Mediterranean and Black Sea regions checked the quality and format of the ***Stocks*** and ***Surveys*** databases provided for these regions. From the ***Stocks*** database they first defined the stocks uniformly taking into consideration all species listed in Tables 1A and 1C of the EU MAP and the associated GFCM geographic subareas, or, in the case of large pelagic species, the entire Mediterranean region. They then harmonized the two databases with regard to the codes and acronyms used in the different fields. This process

resulted in a new ***Stocks*** database containing 558 stocks for the Mediterranean and the Black Sea comprising demersal species and small and large pelagic species targeted by both professional and recreational fisheries.

The situation for stocks in the ICES region is more complex than in the Mediterranean and Black Sea because often, there is a mismatch between the species and stock-area combinations in Table 1A and the stock definition used for stock assessments, which hampers a 1:1 correspondence between the stocks as defined in the ***Stocks*** database versus as defined in formally in EU MAP Tables 1A and 1C, which refer to data collection from commercial fisheries.

For the stocks in the NAFO region, all the stocks in the EU MAP Table 1C were included in the ***Stocks*** database.

Relabelling of surveys

Prior to the evaluation of surveys using the DST, those surveys, the results of which are combined with those from other surveys for stock assessment purposes, were grouped together and labelled under a single heading. For example, Member State surveys carried out as part of the 1st quarter International Bottom Trawl Survey in the North Sea, were all labelled as IBTS_Q1 and treated as a single survey from the perspective of the DST. Similarly, Member State components of the MEDITS survey are all labelled as MEDITS and the same for MEDIAS. Such an approach was adopted because for most stocks, it is the combined results from all survey components that are used for stock assessments. A similar approach was adopted for Underwater TV surveys (UWTV) for Nephrops, in that the separate surveys undertaken for each functional unit were each labelled simply as UWTV.

While double-checking results from the ***DST_Output*** file (after the EWG meeting) it was found that three surveys listed separately in the ***Stocks*** and ***Surveys*** databases (PELACUS_ESP, PELAGO_PRT, and SAHMAS_FRA) were all sub-surveys of the survey labelled as the "Sardine, Anchovy, Horse Mackerel Acoustic Survey" in the current EU MAP Table 10; database rows associated with these sub-surveys were reassigned with *Survey_ID* = "SAHMAS)".

As a result of such relabelling, it is implicit that surveys that currently contribute to MEDITS, MEDIAS, IBTS and UWTV, should continue to be carried out, since the DST evaluation was carried out on the use of the combined survey results and each survey meets the criteria for inclusion in the proposed list of mandatory surveys.

A drawback with the approach taken for the ICES area is that there is currently no uniquely explicit way to list the individual surveys that are carried out under the label IBTS. Such a situation arises because each actor in the system (ICES Expert groups, National experts, STECF Expert Groups, individuals, *et cetera*) in many cases assigns non-unique identifiers to the same survey or in some cases two groups use the same identifier to refer to two different surveys.

Additional details on the process for completing the *Stocks* and *Surveys*

The revision of the Northwest Atlantic Fisheries Organization (NAFO) ***Stocks*** and ***Surveys*** databases provided by the North Sea and Eastern Arctic RCG took into consideration the information contained in document NAFO SCS 18/17[11]. This document is a compilation of research vessel surveys on a stock-by-stock basis that is completed annually by the designated stock experts. The NAFO Advice summary sheets were also consulted (available at https://www.nafo.int/Science/Stocks-Advice).

2.4 Process used for applying the DST

Application of the DST involves filling in columns of information in the ***DST_Output*** file for each stock for which a fishery management advisory body provides management advice, usually meaning there is provision of a recommended Total Allowable Catch (TAC). There were multiple associated surveys for many stocks, thus the number of rows of information in the ***DST_Output*** file was much larger than the number of stocks. The core information for each and every stock:survey combination involves filling in Y/N responses to a series of questions relating to six

[11] NAFO Secretariat (2018), *A Compilation of Research Vessel Surveys on a Stock-by-stock Basis*. NAFO SCS Doc. 18/17.

of the seven criteria specified in the DCF that determine whether a survey is eligible for the list of mandatory surveys. Stocks that do not receive management advice were not included in the ***DST_Output*** file.

Before one can begin answering the core questions in the DST, one has to have a list of stocks for which management advice is provided and the surveys (if any) associated with each stock. For EWG 19-05, this meant that the DST could not be applied until the ***Stocks*** and ***Surveys*** databases had been cleaned and quality-checked. The process of applying the DST, which did not begin until the fourth day of the five-day EWG meeting, involved members of the EWG working in pairs to complete the entries for the stock:survey combinations assigned to them. The teams were instructed to flag any stock:survey combinations that were problematic to score (e.g., it was unclear if survey coverage was adequate or if there were multiple surveys that might be duplicates). The problematic rows in the ***DST_Output*** file were discussed during plenary sessions and the issues were resolved. The set of teams evaluated information for 1062 stock:survey combinations during the EWG.

Analyses of the DST results were not fully completed during the EWG meeting. Instead, the work was finalised after the meeting by email correspondence following discussion of the results and resolution of issues.

3 TASKS ADDRESSED BY EWG 19-05.

All of the Terms of Reference for EWG 19-05 were competed, with the possible exception of TOR 2b. Work by the EWG on this activity (aimed at identifying duplicate surveys) would have been redundant given that earlier in the meeting the EWG had carefully considered whether surveys were duplicates when filling in the ***DST_Output*** file.

The sections below describe how the EWG approached the work needed to evaluate the surveys and note any deviations from the process outlined by EWG 18-04.

3.1 TOR #1. Evaluate the list of surveys.

This TOR was the primary focus of the EWG. Because various tasks had not been completed prior to the EWG, as had been specified in the EWG 18-04 roadmap leading to EWG 19-05, several crucial tasks (described briefly above in section *Inter-sessional tasks specified in the EWG-18-04 roadmap*) fell to EWG 19-05 to complete before the group could begin directly working on any of its TORs.

3.1.1 TOR 1a. Application of the DST to the *Stocks* and *Surveys* databases.

EWG 18-04 produced Excel template files for the ***Stocks*** and ***Surveys*** databases and the ***DST_Output*** file. During the completion of the two databases by the MS, RCGs, and end-users, various changes were made to the structure of the files, mostly taking the form of adding columns with information to clarify the meaning of codes or to provide informative comments. Changes were also made to the ***DST_Output*** file during the EWG 19-05 meeting. Changes to the file structures are described below.

Revisions to the *Stocks* and Surveys database structures

Relative to the ***Stocks*** database structure defined by EWG 18-04, EWG 19-05 added a *Seq_no* column to provide a unique identifier for each row of information. No revisions were made to the core variables of the ***Surveys*** database.

Revisions to the *DST_Output* file

The ***DST_Output*** file was expanded with a column (*RCG_Region*) allocating a designated RCG to each specific stock:survey combination. This allocation was mostly based on the spatial coverage of a survey or based on specific stocks in the case of the large pelagic species. This change was made in anticipation that the new EU MAP Table 10 list of mandatory surveys will be based on the RCG regions. The ***DST_Output*** thus clarifies the RCG responsible for a specific survey, which will ensure continuity, quality, MS involvement, and to set up cost-sharing agreements in line with DCF where and when applicable.

Also, a column for *Species_code* was added to ***DST_Output*** to enable an analysis of the target species associated with each survey. Finally, a *Seq_No* column was added to provide a unique identifier for each stock included in the file.

To begin the process of using the DST to evaluate the stocks and surveys, the ***DTS_Ouput*** file first needed to be populated with information on the stock:survey combinations to be evaluated. The required information was obtained from the regional ***Stocks*** database files. Rows from the ***Stocks*** databases were not transferred to ***DST_Output*** if no advice was provided for the stock in question. Also, if a survey had been proposed for inclusion in the EU MAP Table 10 list of mandatory surveys but had never been conducted, it was included in the ***Stocks*** database but the information for this survey was not transferred to ***DTS_Output*** because there were no data available from this survey and the survey had never been used in an assessment. Discussion of proposed new surveys included in the ***Stocks*** database is provided below (section 4.1.1 *Evaluating extensions to existing surveys, new surveys, and changes to existing surveys*).

After evaluating all the stocks, the information in ***DST_Output*** was screened to detect potential coding errors and inconsistencies. Also, any surveys included in ***DST_Output*** that were not based on research vessels at sea (e.g., in river surveys for salmon) were treated as "no survey" during analysis.

Overview of the data fields in the revised structures for the *Stocks* and *Surveys* database and the *DST_Output* file

A list of the fields associated with the ***Stocks*** and ***Surveys*** databases and how they relate to the fields in the ***DST_Output*** file is provided in Table 1. Revisions were made to the descriptions of some fields in the ***DST_Output*** file with the aim of providing clearer guidance on how to fill in (and how to interpret) the Y/N responses. Changes to the descriptions were made as a result of points raised during plenary discussions.

Rules for filling in the core DST criteria

For filling in information into the ***DST_Output*** file the EWG agreed to use the following descriptions for evaluating each stock:survey combination for each of the core criteria.

Adv_given: Y / N. Y if the advisory body (in *Adv_body*) normally provides advice; N otherwise.

Survey_used: Y / N. Y if survey used in stock assessment; Y if survey used in setting TAC (e.g., based on survey trend) or providing spawning biomass indices and/or advising for specific measures for sensitive habitats (e.g., nursery, spawning areas), especially in the Mediterranean; N otherwise. Include brief text description of the information type(s) used (e.g., abundance index, weight-at-age, maturity). Examples: "Y Age 1-4 index, weight-at-age", "Y maturity".

Int_coordination: Y / N. Y if survey is coordinated by specific expert group, bilaterally coordinated or in direct cooperation with relevant RFMO and the survey uses a harmonized protocol. N otherwise. Include the name of the international coordination group. Note partial harmonisation in the Comments column. Examples: "Y WGBIFS", "Y WGNEPS", "Y MEDITS".

Data_access: Y / N. Info to be found in Table 1G in MS workplan. Y if survey database is mentioned or alternative information is given ensuring that the data are available; N otherwise.

Survey_as_basis: Y / N. Y if ICES assessment category is 1-4 or if TAC is based on the survey. Corroborate with information in *Survey_used* and *Advice_input*. For Mediterranean or Black Sea stocks, the default is Y.

Coverage_OK: Y / N. Y If this survey is sufficiently covering one or more management areas for the stock; Y if this survey is part of an overall coordinated survey that provides adequate coverage; Y for highly migratory species and stocks shared with third countries and full coverage cannot be anticipated; Y if this survey provides adequate coverage of part of a management area or the areas where a certain life stage is concentrated. N if coverage is not sufficient. If there is a 'P' or 'U' in the *Stock_coverage* field, put in a 'Y' and use the *Comment* field to explain the deviation from the full coverage.

No_survey_dupl: Y / N. Y If this survey is sufficiently covering one or more management areas for the stock; Y if this survey is part of an overall coordinated survey that provides adequate coverage; Y for highly migratory species and stocks shared with third countries and full coverage cannot be anticipated; Y if this survey provides adequate coverage of part of a management area or the areas where a certain life stage is concentrated. N if coverage is not sufficient. If there is a 'P' or 'U' in the *Stock_coverage* field, put in a 'Y' and use the *Comment* field to explain the deviation from the full coverage.

The EWG also agreed to use the following description for *Proposed_survey*, to flag surveys proposed for inclusion in the list of mandatory surveys.

Proposed _survey: Y / N. Y if all 5 preceding 'blue' columns = Y; Y if *Coverage_OK* = N while all other columns = Y and information is provided on actions to be taken (e.g., to be discussed by a relevant expert group). If *Int_coordination* is 'N', put in a 'Y' and provide a comment on what is needed to fulfil this criterion.

These descriptions (above and in Table 1) include a few small changes and clarifications from what was specified in the EWG 18-04 report.

3.1.2 Results for TOR 1a

Activities by the EWG produced a set of cleaned up and harmonized ***Stocks*** and ***Surveys*** databases and the associated ***DST_Output*** file derived from the information in the two databases. The ***DST_Output*** file was the primary resource for completing the remaining tasks associated with TOR #1. An example of the information contained in the ***DST_Output*** file is provided in Table 2.

The EWG also produced an electronic annex to this report with the completed ***Stocks*** and ***Surveys*** databases and the completed ***DST_Output*** file. All the files are Excel workbooks and each includes an "Overview of Data Fields" worksheet that provides an overview table of the data fields (similar to Table 1) listing each field in the associated ***Stocks*** and ***Surveys*** worksheets. The electronic ***Stocks*** and ***Surveys*** databases were organized into three regional sets to facilitate data clean-up and the transfer of information to the ***DST_Output*** file (which combines the information from all three regional files). There are slight differences in the file structures of the regional workbooks. For example, there are additional data fields in the workbooks for the ICES region.

In the electronic databases (Electronic Annex files 2-4) the ICES and NAFO segments of the ***Stocks*** and ***Surveys*** databases include several additional columns that provide clarifying information (e.g., "National Survey Reference" and "TAC stock" in the ***Stocks*** worksheets; "Acronym used in assessment" and "National Acronym" in the ***Surveys*** worksheets). Users of the Electronic Annex files should consult the "Overview of Data Fields" worksheet embedded in each Excel file for definitions of the variables associated with each of the associated electronic databases.

3.1.3 TOR 1b. Quality assurance of the *Stocks* and *Surveys* databases.

Considerable work was required during the EWG meeting to prepare the information in the ***Stocks*** and ***Surveys*** databases for transfer to the ***DST_Output*** file. The database files were screened for coding errors and inconsistencies, which were corrected as needed. Also, the process of working in teams to fill in the ***DST_Output*** exposed some additional coding errors and inconsistencies that were corrected in the ***Stocks*** and ***Surveys*** databases.

It goes without saying that the ***Stocks*** and ***Surveys*** databases could still contain some incorrect information, despite careful screening of the data before and during the EWG. Cleaning data files is endless and thankless work. That said, the experts during the EWG meeting did as much quality control of the information as they could in the time available. Also, the number and types of errors encountered in the databases were modest and readily fixed, thus providing further assurance that the data are high quality.

Considerations regarding the *Stocks* and *Surveys* databases.

Surveys in the Baltic for fish stocks not assessed by ICES

The Baltic Sea, which receives significant freshwater input, has estuarine traits and contains a mixture of marine and freshwater species. Freshwater species are not assessed by ICES. Freshwater species (together with diadromous species and flounder) are utilized primarily by small scale fisheries. Several Member States have national coastal surveys (several originally initiated by HELCOM) to generate information on the status of these stocks. These stocks were included in the ***Stocks*** database but the information required for some fields was unclear because the stocks are not assessed by ICES. Also, it was also unclear how these surveys should be treated from a DCF perspective.

The following table provides some information about these national coastal surveys. Additional details are contained in the ***Stocks*** and ***Surveys*** databases for the ICES region.

Survey ID	Survey Name	Country	Int. coord.	Survey_target	Survey_type	In DST_ Output?
CFM_LTU	Coastal fish monitoring	LTU	N	multispecies	gillnets	No
CFM_LVA	Coastal fish monitoring	LVA	N	Multispecies	fishing nets, hydrology	No
CFS_EST	Coastal fish survey	EST	N	FLE, FPE, FPP, PLN, ELE	gillnet, fykenet	Yes
GORDEM_LVA	Gulf of Riga Demersal Fish survey	LVA	N	Multispecies	demersal trawl, hydrology, zooplankton	Yes
GORFS_EST	Gulf of Riga Fish survey	EST	N	FPE, FPP	demersal trawl	No
JM_SWE	SLU in Muskö and Kvädöfjärden	SWE	N	FLE	gillnet	Yes
LFJS_LVA	Latvian Flatfishes Juvenile Survey	LVA	N	FLE, TUR	beach seine, hydrology,	Yes
MU_SWE	SLU in Muskö & Kvädöfjärden	SWE	N	FLE	gillnet	Yes
SAVS	Swedish Acoustic Vendace Survey	SWE	N	Vendace	acoustic, pelagic trawl	No

In-river surveys in the Baltic for salmon

Status of salmon stocks are primarily monitored through in-river surveys (e.g., for parr, spawners, and smolts) that also constitutes the basis of management advice. Although information for these stocks is included in the ***Stocks*** database, the in-river surveys are not included in the ***Surveys*** database.

Sampling according to EU MAP Table 1A of the DCF

EWG 19-05 notes the following:

- Some species that appear in EU MAP Table 1A are rare in the Mediterranean, such as species of the *Istiophoridae* family.
- In the Black Sea (GSA 29) 10 stocks are selected for biological sampling according to EU MAP Table 1A of the DCF but two of the species, Horse mackerel (*Trachurus trachurus*) and Poor cod (*Trisopterus minutus*), do not occur in the EU waters of the Black Sea and therefore cannot be sampled.

- STECF PLEN-18-03 noted that the surveys in the Black Sea (GSA 29) are performed by different vessels/gears in different years and areas. To be useful for stock assessment the surveys should be standardized. A survey manual specifying use of the same gear, sampling protocols, and methodology for the surveys in the Black Sea is not currently available. However, GFCM has almost finalized "Technical guidelines for Scientific Surveys in the Mediterranean and Black Sea. Procedures and sampling for demersal (bottom and beam) trawl surveys and pelagic-acoustic surveys".
- The species *Anguilla anguilla* (in EU MAP Table 1A) does not appear to be covered by any research survey at sea, although this species may be monitored in the frame of national programs. Monitoring this species (a target of small-scale fisheries) is important because it is categorized as a critically endangered species by the IUCN.
- There is a need to consider surveys designed to collect data on coastal species listed in EU MAP Table 1A that are not sampled by any of the current surveys in the Mediterranean.

3.1.4 TOR 1c. Tables summarizing the DST results.

Survey coverage of stocks and species

The ***DST_Output*** file is organized into one row for each stock:survey combination, including stocks for which there are no corresponding surveys It is a relatively large file (1062 rows of stock:survey information) but can be condensed into a relatively short list of surveys and the associated number of stocks that each survey provides information for. Recall that a stock is defined in terms of a species and a distinct stock assessment area in the DST. For many species, there are assessments in multiple areas.

Table 3 provides a summary of the surveys by *RCG_region* with columns to the right indicating the numbers of stocks that each survey provides data for. One column is for the surveys that provide information used in stock assessments or fishery management (*Survey_Used* = Y). The next column is for surveys for which the information available from the survey is not used in stock assessments (*Survey_Used* = N), implying a potential for greater utilization of the survey information. The column labelled "no survey", which is only relevant at the *RCG_region* level, is for stocks having no surveys. The column labelled "No EU part" indicates the limited number of surveys that do not cover EU waters (e.g., national or international waters). The column labelled "?" indicates surveys for which the EWG members were unsure whether data from the survey was used for assessment or management.

Table 4 provides descriptions of the *Survey* codes used in the ***DST_Output*** file, Table 3, and in other tables in this report.

In addition to examining the information in Table 3, readers are encouraged to explore the ***DST_Output*** file in the Electronic Annex. The file is an Excel file that can be easily queried by applying filters using the header row of labels or by inserting a pivot table. The file includes several pivot tables that were used to generate summary information for this report.

3.1.5 TOR 1d. Surveys proposed for the new list of mandatory surveys.

Given the logic of the DST, the field *Proposed_Survey* in the ***DST_Output*** file will have been filled in as a Y (Yes) only by satisfying all seven of the criteria for inclusion in the mandatory surveys, with two possible exceptions.

(1) The *Proposed_survey* value for a stock:survey combination could be set to Y if all criteria except *Coverage_OK* are Y and information is provided on actions to be taken (e.g., to be discussed by a relevant expert group).

(2) If all criteria except *Int_coordination* are Y and information is provided in the *Comment* field on what is needed to fulfil this criterion.

A third exception arises if exceptions (1) and (2) occur together, that is:

- (*Coverage* = N and actions to be taken are specified) AND
- (*Int_coordination* = N and information is provided on what is needed to fulfil this criterion).

This special case did not arise during the EWG's completion of the ***DST_Output*** file. The "Overview of the data fields" (Table 1), which does not address this special case, should be revised if the DST is used in the next EU MAP revision.

It is a simple exercise to use the ***DST_Output*** file to produce the surveys proposed for the new list of mandatory surveys (a new Table 10 for the EU MAP). Filter the *Proposed_survey* column to select all the rows having *Proposed_survey* = Y, then remove the duplicate rows. The list of surveys proposed for inclusion in the new list of mandatory surveys is provided in Table 5a. The second column of the table includes the name in the current EU MAP Table 10 (if any) that corresponds to each given proposed survey. Any proposed surveys that are not in the current EU MAP Table 10 (i.e., new candidate surveys) have explanatory comments in the third column. The third column also indicates other changes relative to the current list of mandatory surveys in the current Table 10. Table 5b is a subset of the rows in Table 5a that highlights only those surveys that are new candidates or surveys that have changed compared to the current Table 10.

One survey from the current EU MAP Table 10 (*Survey_ID*="REDNOR") was considered to be outside the scope for evaluation by the DST as this survey is carried out by non-EU countries (NO, RU, FO). As indicated in the flow-chart depicting the DST's logic (Fig.1), termination of a survey occurs only if a survey fails two additional steps: (1) reviewing the impact of stopping the survey on the stock assessment time-series and (2) reviewing the impact of stopping the survey on management plans and ecosystem variables. The REDNOR survey provides information for stock assessments that are relevant for the EU.

Translating current list of mandatory surveys to proposed list of mandatory surveys.

Table 6 provides a translation from the survey names and acronyms in the current EU MAP Table 10 to the *Survey_ID* in the proposed list of mandatory surveys (a new Table 10 for the EU MAP). The acronyms associated with the current EU MAP Table 10 surveys are identical to the acronyms used in the DST in many cases. There are exceptions however. For example, the "Nephrops TV Survey (FU 3&4)" in the current Table 10 is part of a combined survey with the associated acronym (*Survey_ID*) "UWTV". Several Nephrops surveys that were treated as separate surveys under the current EU MAP Table 10 are considered to be part of the UWTV survey in the ***Stocks*** and ***Surveys*** database and the ***DST_Output*** file. Table 7 provides additional information on the relationship amongst the sub-surveys that make up the UWTV survey.

Also included in Table 6 is a column with the *OLD_Survey_Link* values that are in the ***Surveys*** databases for identifying component surveys that compose a larger survey. For example, the current EU MAP Table 10 survey with the acronym "IBTS Q1" has two different component surveys in the ***Surveys*** database, IBTS_Q1_ESP and IBTS_Q1_GBN. Table 8 provides additional information on the sub-surveys that form the surveys IBTS_Q1 and IBTS_Q4.

Proposed surveys needing further expert review.

The DST includes provisions for identifying surveys that could be considered as candidates for the list of mandatory surveys pending further review by expert groups. This is the case for eight surveys in the ***DST_Output*** file.

- The surveys with the following *Survey_ID* values did not fully satisfy the criterion for international coordination: CFS_EST, JM_SWE, MU_SWE, and ADLS_PRT. The survey ADLS_PRT is conducted by a single Member State. The other three surveys are for a stock (Fle.27.2829-32) that has wide spatial distribution. The national (EST, SWE) surveys together cover most of the stock area. Although these surveys were initiated by HELCOM, there is no regular international coordination. Given the national interests, it is anticipated that MS will continue to conduct these surveys, regardless of their inclusion in a new list of mandatory surveys. However, from an end-user perspective, securing the execution of one or all of these surveys might be desirable. Each of these surveys could seek a form of cooperation that aligns and cross-checks its methodology, discusses timing of the survey, as well as formally reviewing the survey's results. Should this form of coordination be established, the criterion for coordination could be considered as satisfactory and the survey could be considered for future inclusion in Table 10 of the EU-MAP.

- The surveys with the following *Survey_ID* values did not fully satisfy the criterion for no survey duplication (No_Survety_Dupl = "?"): BITS_Q1, CODS_Q4, IBTS_Q1, IBTS_Q3. The stocks associated with these possibly duplicate surveys are all in the Skagerrak and Kattegat region, which has complex geography that may require a number of smaller surveys to achieve adequate coverage of the stock. The assessment group responsible for these stocks is WGBFAS.

Variables to include in a new Table 10 for the EU MAP.

When revising Table 10 for the EU MAP, ideally the entire table would be revised and set-up appropriately to cater for future use. Apart from providing the legal obligations for Member States to undertake the surveys, Table 10 also forms the basis for task- and cost-sharing between the MS having a share in the target species of a survey. Setting up sharing agreements is a task for the Regional Coordination Groups (RCG). Based on this task, it is crucial to specify which survey falls under the remit of which RCG. This can be done by organizing EU MAP Table 10, based on the respective RCGs (including the pan-regional Large Pelagics RCG) and allocate the surveys under the respective headers.

For each survey, the full name, its acronym and the target species would then be listed. Note that period would not be included in the new version of EU MAP Table 10 and the current area code needs to be updated for all surveys (e.g., to identify the various surveys under the same name but executed in different areas). These variables are often incorrect or restrictive in the current version of EU MAP Table 10. The target species for a survey would follow from the DST (see section *Target species in a new Table 10 for the EU MAP*, directly below) and would list all species. Species would not be excluded *a priori* as all species might be relevant for future cost-sharing exercises and these should not be obstructed by a limited list. On a case by case basis, the MS involved in cost-sharing agreements would decide which target species to consider for cost-sharing (Article V.7, Impl. Dec. 2016/1251).

Target species in a new Table 10 for the EU MAP.

Although many surveys were originally designed to cover the exploration of a certain species or group of species, many surveys now have evolved into surveys delivering crucial information for many more species also sufficiently covered by that survey. Even though these species may not be covered to the full extent in survey manuals (for example), the surveys coordination groups should take the data collection for these species into consideration when adapting aspects such as the survey design and spatial/temporal coverage. From a DCF perspective, the target species of a survey is of relevance in the light of task-sharing and/or cost-sharing as Member States are obliged to contribute to a survey when having a (TAC) share in the subject of the survey. Based on the DST results, the various individual species to which a survey contributes would be listed and reviewed (for example) for the above mentioned cost-sharing between MS. To be able to effectively do this, the target species should be linked to a TAC set for that specific species for a specific TAC area, or, in case of no set TAC, to total landings from the RCG area. This should however be decided at the RCG level. The information from the new Table 10 can then be used as input for the discussion regarding the setup of appropriate models/cost-sharing keys on a survey by survey basis. The current Table 10 of the EU MAP does not sufficiently cater for that discussion as the responsible RCG has not been determined and moreover, the target stocks are not unambiguously defined.

For the Mediterranean and Black Sea, however, cost-sharing is not expected to be of direct relevance as surveys in general do not overlap in terms of regional coverage.

Analysis of the information in the ***DST_Output*** file identified target species for the surveys in the proposed list of mandatory surveys. The associated target species codes by *Survey_ID* are provided in Table 9.

Countries contributing to a survey

Based on the ***Surveys*** database, an overview of the countries contributing to a specific survey in a specific region can be determined. This overview encompasses both EU as well as non-EU countries in some cases when surveys are conducted together with third countries. This information can be used by the RCGs when discussing the mandatory cost (or task) sharing of

surveys. Table 10 (in this report, not in the EU MAP) provides a snapshot of the information available.

3.1.6 TOR 1e. List of potential duplicate surveys requiring further evaluation.

When completing the ***DST_Output*** file, the EWG members, working in regional teams, identified any stocks for which there were two or more surveys and evaluated the corresponding information in the ***Surveys*** database to gauge whether the surveys were potential duplicate surveys. Of the 850 distinct stocks in ***DST_Output***, there were 66 stocks (7.8%) with no associated surveys, 685 stocks (80.6%) with one survey, 58 stocks (6.8%) with two surveys, and 41 stocks (4.8%) with three or more surveys.

Four surveys associated with *Stock_ID* = "cod.27.21" were flagged as needing further expert evaluation to gauge the possibility of survey duplication (see the section *Proposed surveys needing further expert review*, above). For all other stocks with two or more associated surveys, the EWG determined that the surveys were not true duplicates, because (in general) the surveys did not overlap in terms of spatial or seasonal coverage. See the section *Issues associated with evaluating whether two surveys are duplicative* (below) for further discussion.

3.2 TOR #2. Identify fishery management needs.

This TOR asked the EWG to provide two analyses of the ***Stocks*** database.

3.2.1 TOR 2a. Identify stocks not covered by surveys.

The stocks included in the ***DST_Output*** file are those stocks for which advice is given. These stocks fall into two categories relevant to TOR 2a: (1) stocks for which there is no associated survey (*Survey_used* = "no survey") and (2) stocks for which there is a survey providing information that is not used for assessment or for management advice (*Survey_used* = N). These two categories represent different types of gaps in survey coverage. Developing a survey when a survey does not exist (category 1) will likely require considerable new funding, careful planning, and may involve several years of data collection before one can ascertain whether the survey provides useable information. If a survey is available for a given stock (category 2), it may be possible to modify the survey in a way that will permit the survey to provide information that can be used. Determining whether the survey provides usable information (or not) will require technical analysis and advice from experts familiar with the characteristics of the stock and the survey.

It is a simple task to extract information from the ***DST_Output*** file regarding the stock:survey combinations falling into either of these two categories. For example, to generate a list of all the stock:survey combinations for which the survey information is not used, one sets a filter on the *Survey_used* column and selects rows with a value of "N". To generate a list of stocks for which there are no surveys, one sets a filter with *Survey_used* = "no survey".

Table 3 provides a summary by *RCG_Region* of the number of stocks for which there are no surveys (category 1). The table also provides a summary by *Survey_ID* of the number of stocks for which the survey does not provide information (category 2).

It is important to realize that there are many reasons why an available survey might not be used for assessing any given stock. The survey may not cover a large enough expanse of the stock area to be considered reliable. The survey gear may be ineffective at capturing the particular species. The timing of the survey may match badly with the seasonal movements or behaviour of the stock. The ***Stocks*** database provides information in the *Comments* column for some stock:survey combinations regarding why the survey was not used in the assessment.

An unusual situation exists in the Mediterranean and Black Sea region. The two major surveys (e.g., MEDITS in the Mediterranean and Black Sea and MEDIAS in the Mediterranean) have extensive spatial coverage and collect information for a large number of stocks. However, there are survey data available for many stocks and yet no stock assessment or provision of management advice based on the surveys (i.e., *Advice_given* = N and *Survey_used* = N).

In the Mediterranean and Black Sea, from the 556 stocks (53 species), there were 409 stocks covered by surveys (74% of the total), with the bottom trawl surveys covering the biggest

proportion of stocks and species (382 stocks and 33 species). From the 409 stocks covered by surveys, in 301 cases (74% of the total) the survey information has not been used yet for assessment purposes. The lack of assessments for these stocks may be because the stocks are considered to be commercially unimportant or because the survey data are not usable in an assessment.

It is noteworthy that advice has been provided for only 115 stocks in the Mediterranean and Black Sea region (21% of the total) have been assessed.

Additional considerations regarding stocks not covered by surveys.

The EU surveys in the NAFO area take place in international waters of Divisions 3M, 3N, 3L and 3O and therefore do not cover areas inside the EEZs of the coastal states (Canada and/or DK-Greenland) where some stocks are also distributed. This explains why some stocks (mainly coastal but some also distributed in the limits between the ICES and NAFO areas) are not covered by the NAFO - EU surveys. Advice for these stocks is provided by the coastal states (Canada and/or DK-Greenland). The principal reason why EU surveys are not used for some stocks in the NAFO region is that other surveys in the area provide more robust indices for advice.

3.2.2 TOR 2b. Identify potential duplicate surveys.

The ***Stocks*** database does not contain any information on stocks and surveys that is independent of what was used under TOR 1e to determine potential duplicate surveys. If the DST worksheet been completed prior to the EWG meeting (as specified in the EWG 18-04 roadmap), then for TOR 2b, the EWG 19-05 would have provided a double-check on the accuracy of the information on duplicate surveys in the DST variable *No_survey_dupl*. However, because the EWG had completed the DST worksheet during the meeting, conducting additional analyses of potential duplicate surveys would have been redundant and a poor use of time.

3.3 TOR #3. Survey information (MSFD indicators) relating to an ecosystem-based approach to fishery management.

The surveys review EWG was requested to provide an analysis of the ***Surveys*** database that identifies contributions by the surveys of ecosystem data supporting Marine Strategy Framework Directive (MSFD) descriptors 1, 3, 4, 6, and 10. Information was provided by survey (or sub-survey) for the five descriptors in simple Yes/No format.

The ***Surveys*** database has information for a total of 259 surveys, including sub-surveys if more than one country is involved in conducting the survey or if multiple survey areas are covered. There are 97 unique *Survey_ID* values in the ***Surveys*** database.

For D1 (Biodiversity): 47 surveys of the 259 surveys in the ***Surveys*** database indicated "N". These were mainly pelagic/acoustic, UWTV, demersal trawl, and icthyoplankton surveys (in decreasing order of occurrence).

For D3 (Commercial fish): Only four surveys indicated "N", two gillnet surveys and two UWTV surveys.

For D4 (Foodwebs): 70 surveys indicated "N". These were mainly pelagic/acoustic, demersal trawl, and UWTV surveys (in decreasing order of occurrence).

For D6 (Seabed integrity): 161 surveys indicated "N". These were mainly pelagic/acoustic and demersal trawl surveys, but also included more than 10 ichthyoplankton surveys and dredge surveys (in decreasing order of occurrence).

For D10 (Litter): 107 surveys indicated "N". These were mainly pelagic/acoustic surveys, but included demersal trawl and icthyoplankton surveys (in decreasing order of occurrence).

In summary, for most surveys the ***Surveys*** database indicates that the surveys collected MSFD relevant data for all five indicators, and particularly D3. Acoustic/pelagic surveys were the most likely to not address the other four descriptors, probably reflecting the midwater nature of their task and the tendency to address only a few species. Possibly also because MSFD does not emphasise pelagic ecosystem GES. Some UWTV and plankton/egg surveys also tended to

indicate not being used for D1, D4, D6 & D10. However, it should be noted that other such surveys did.

These data are very difficult to interpret in an evaluation of the surveys. The binary response does not allow any deep exploration. The responses by surveys often seem contradictory. Also, when DG Mare and DG Env colleagues joined the EWG meeting, it was made clear that a simple Yes/No response was of little help for their purposes.

3.3.1 Additional ecosystem considerations.

The traditional surveys being carried out in the Mediterranean (PTSBS, SOLEMON, BTSBS, DRES, MEDIAS, MEDITS, TUNIBAL) do not cover a number of species and taxa that are mandatory in the Data Collection Framework (EU MAP Table 1A: *Coryphaena hippurus*; *Coryphaena equiselis*; *Dicentrarchus labrax*; *Istiophoridae*; *Mugilidae*; *Sparus aurata*; *Aphia minuta*; and *Atherina spp*). The lack of this information renders it more difficult to determine the Good environmental status indicator. It must be considered also that some of these species are included in the IUCN Red List-Mediterranean assessment, such as *D. labrax* (category Near Threatened).

4 DISCUSSION OF THE DST AND DST RESULTS.

The subsections below discuss some details regarding application of the DST and points to consider when interpreting results from analyses of the ***DST_Output*** file.

4.1 Surveys incompatible with the DST.

The DST was designed to evaluate surveys that could be considered for inclusion in Table 10 of the EU MAP, which specifically focuses on "research surveys at sea". Given this focus, EWG 19-05 decided to exclude surveys from DST evaluation any surveys in the ***Stocks*** and ***Surveys*** databases that were not based on research surveys at sea. Such surveys included in-river surveys of various life stages of salmon.

Furthermore, the DST was designed from the perspective of the individual stocks for which management advice is provided. If a survey is new and therefore has not produced any information that could be used in a stock assessment or for management, the survey will fail when evaluated against the criteria *Survey_used*, *Data_access*, and *Survey_as_basis*. The new survey will not have any demonstrated capabilities relative to these criteria. This being the case, application of the DST to a new survey will result in a decision of No for inclusion in the list of mandatory surveys until such time as the survey has demonstrated its qualifications for inclusion. Similarly, application of the DST to evaluate proposed changes to an existing survey will also result in a decision of No until the positive effects of the changes have been demonstrated.

4.1.1 Evaluating extensions to existing surveys, new surveys, and changes to existing surveys.

The ***Stocks*** and ***Surveys*** databases included information for several surveys that were extensions to existing surveys or new surveys.

Extensions and new surveys in Italian waters

In addition to the MEDIAS and MEDITS surveys, Italy proposed additional surveys and provided information in the ***Surveys*** database:

(a) an extension of MEDIAS to GSA 11 (Sardinia) and 19 (western Ionian Sea) which are not currently covered by the existing acoustic survey (MEDIAS 11 and MEDIAS 19), and

(b) a second bottom trawl survey in autumn (November-December), named MEDITS_Q4, for all Italian GSAs.

In PLEN 19-03, STECF noted that the extension of MEDIAS to GSA 11 and GSA 19 will contribute to the full coverage of the areas of distribution of the anchovy and sardine stocks in the western and eastern Italian waters and concluded that the proposed MEDIAS 11 and MEDIAS 19 are suitable candidates for inclusion in the EU MAP list of mandatory surveys. STECF PLEN 19-03 also noted that inclusion of an autumn-winter bottom trawl survey (such as the MEDITS_Q4 proposed

by Italy) in addition to the ongoing MEDITS (spring-summer survey) would be beneficial for the assessment and management of Mediterranean demersal stocks.

The proposed MEDITS_Q4 is planned to be carried out in the 4th quarter in GSA9, GSA10, GSA11, GSA16, GSA17, GSA18, and GSA19. It will follow the MEDITS protocol and will be harmonized with the MEDITS survey and internationally coordinated within the MEDITS coordination group. Data will be made available for use in stock assessments and for the needs of the Marine Strategy Framework Directive and the GFCM Essential Fish Habitat identification (GFCM-SAC, 2018).

Although EWG 19-05 could not use the DST to perform a quantitative evaluation of the extension of MEDIAS in GSAs 11 and 19, and the extension of MEDITS into the 4th quarter (MEDITS_Q4), the EWG recognized the important contribution that these proposed surveys could provide to improve data availability and quality for stock assessment purposes, as well as for environmental monitoring.

An evaluation of these new surveys using the DST could be performed in the future to assess whether the surveys could be considered for inclusion in the list of mandatory surveys.

Italian dredge survey, DRES

Italy included in the ***Surveys*** database a national hydraulic dredge survey, called DRES, in GSAs 9-10 and GSAs 17-18, for striped venus clam and/or razor clam. This survey was included in the Italian National Work Plan for 2018-2019. The DRES is currently not coordinated internationally and has not been used in stock assessments. It therefore cannot be evaluated by the DST tool and cannot be considered at this time for inclusion in the list of mandatory surveys.

Change to an existing survey – Splitting the NAFO 3LNO Groundfish Survey

According to information sent by Member States through the RCG for the North Sea and Eastern Arctic (RCG NS&EA) and based on information in NAFO document SCS 18/17 (*ibid*.), the survey named as "3LNO Groundfish survey" (*Survey_ID* = PLATUXA) could be split into two separate surveys, one covering the international waters of NAFO Division 3NO and the other covering the international waters of NAFO Division 3L.

Currently, PLATUXA appears in the Spanish DCF work plan as two parts of the same survey. However, in the NAFO SCS document these two parts are clearly differentiated as two different surveys. Besides, in the "National Names" column shown in the compilation by the RCG NS&EA, the MS also uses different names for each part.

The 3L survey was included in the DCF as an extension of the 3NO survey (PLATUXA), because before 2014, no new surveys were allowed to be included in the list of eligible surveys established in the Commission Decision 2010/93/EU. This situation is no longer in place since the EMFF Regulation (Reg. 508/2014) and revised DCF entered into force. For this reason, there is no longer any need to keep PLATUXA as a single survey.

During EWG 19-05 the DST was not used to evaluate the separate portions of PLATUXA. The benefits or penalties associated with splitting this survey should be evaluated by a suitable expert group familiar with the stock assessments potentially affected by splitting the survey.

4.2 Pitfalls associated with gauging the importance of a survey.

The DST has primarily been developed to identify those surveys that are used for stock assessment purposes and the provision of advice on fisheries management, and identify which should be candidates for inclusion in the list of mandatory surveys in the forthcoming revision to the EU MAP. It is important to note that, by design, the output from the DST does not rank or prioritise the surveys in terms of importance to the advisory process (EWG 18-04).

Table 3 summarises the output from the DST in terms of candidate surveys and the number of stocks for which their assessments and management advice are influenced by the survey data. The number of stocks for which a survey has provided assessment data or advice may be viewed as a tempting basis for ranking a set of surveys. However, such an approach is far too simplistic and in many circumstances could be wholly misleading. The importance of a survey comes not only from the number of stock assessments that have been informed through the survey's data,

but also the potential for the survey to provided information on other stocks and other uses of the data collected on the surveys. For example, a survey may have been collecting data on all species caught, whereas to date only a proportion of the data collected have been used to inform management advice under the CFP.

Similarly, a survey may be designed to provide relevant information on only a single species, but without that survey, there would be no reliable assessment or management advice for that species. An example is North Atlantic mackerel. The stock assessment is reliant on more than one survey, each of which is primarily to provide input to that assessment.

Furthermore, how survey data are used to inform fisheries management is also important in determining the importance of a survey. In general the use of survey data to inform on fisheries management advice can be classified in three main ways: i) the data are used in conjunction with fishery-dependent data and other fishery-independent data to provide a so-called 'tuning index'; ii) the survey data are the sole source of information for an assessment; iii) a combination of i) and ii).

To ascertain the importance of a survey to inform management is therefore complex and requires in-depth technical analysis e.g., through a benchmark procedure. What is clear, however, is that using the summary outputs in terms of number of stock assessments informed by a single survey (e.g., Table 3) as the sole criterion to rank or prioritise the list of candidate surveys would be entirely misleading and should be discouraged.

4.3 Issues associated with evaluating whether two surveys are duplicative.

Very often several surveys are used to tune the assessment of a stock. This does not imply that the surveys are duplicates, even if carried out at the same time or on the same life-stages. The gear used or even the depth of where the surveying is carried out can provide different inputs to the assessment, completing the information needed on the stock. Some assessments select only certain well-sampled age-classes from a survey and supplement information on the remaining age-classes from a different survey. Thus despite apparent duplication of surveys, in the actual application in an assessment, the information from two surveys may be complementary rather than duplicative.

The discussion regarding duplicative surveys should focus on the cost-benefits associated with either having one survey covering all necessary information for a stock versus having several surveys complementing each other. This technical analysis would need to be done with the particular tuning settings for a given stock. Furthermore, because many surveys are multispecies in nature, the costs associated with conducting such surveys are "shared" across many stocks.

4.3.1 Example of cod in the Skagerrak

In order to provide advice on Kattegat cod (cod.27.21), ICES is currently using four surveys as a source for fisheries-independent information: IBTS_Q1 (for ages 1-6); IBTS_Q3 (for ages 1-4); BITS_Q1 (for ages 1-3); CODS_Q4 (for ages 1-6). Additionally, annual maturity data for assessments is obtained from IBTS-Q1. The IBTS_Q1, IBTS_Q3, and BITS_Q1 surveys are internationally coordinated. CODS_Q4 is a joint survey by Sweden and Denmark that aims to provide additional fishery independent data with improved spatial coverage for estimating abundance, biomass, recruitment index, and distribution of Kattegat cod. The CODS_Q4 survey is not listed in the current EU MAP Table 10 list of mandatory surveys. These four surveys were flagged in the ***DST_Output*** file as needing further expert review to determine if any of them are duplicates. It is anticipated that the expert review will find there is no duplication because the surveys appear to cover either different periods, areas, or have differences in their design.

4.3.2 Example of mackerel in the North Atlantic

In the ***DST_Output*** file, there are five surveys that all provide information for the mackerel stock assessment: MEGS, NSMEGS, IESSNS, IBTS_Q1, and IBTS_Q4. These might superficially appear to be duplicates. The first two are annual egg production method surveys to provide a biomass estimate for the stock.

- MEGS covers western waters from Portugal to the Faroe Islands, and is spatially and temporally adaptive to allow it to cover the whole spawning area and season, and hence the

whole stock (Western and Southern spawning components of the NE Atlantic mackerel). It is carried out once every three years. Data from this survey are used in the assessment.

- NSMEGS follows the same pattern but only for the North Sea spawning component of the NE Atlantic mackerel stock. The survey takes place every three years in the year after MEGS. Data from this survey are used in the assessment.
- The IESSNS is a swept area surface trawl survey, combined with acoustics. The design is based on mackerel feeding very close to the surface in this period (summer) and they are easily captured in surface trawls. The survey provides a biomass estimate for all mackerel that have entered the Norwegian Sea region, but may not cover the whole stock distribution in summer, particularly to the south. Data from this survey are used in the assessment, but the survey has a much shorter (8-yr) time series than the MEGS (which started in 1977). IESSBS has been very useful for charting the substantial distribution spread of the mackerel stock in recent years during the summer feeding season.
- The two IBTS surveys are used to quantify the abundance of mackerel pre-recruits on the shelf when they are generally accessible to bottom trawls. The data are used in the projections from the assessment and to help set future TACs. Both surveys have key roles in the assessments for many demersal surveys, but also provide useful data for the mackerel assessment. MEGS, NSMEGS and IESSNS all quantify the adult part of the mackerel stock.

4.4 Future use of the DST and its associated databases.

Considerable time and effort was invested in producing the databases associated with the DST. The EWG considers this time and effort well-spent and encourages DG MARE to consider the continued use of the DST, including investment in maintaining the databases.

4.4.1 DST use for future evaluations.

The DST has been applied to evaluate the list of (potential DCF) surveys currently in use for providing fisheries advice. Based on this evaluation, a new list of mandatory surveys is proposed for inclusion in the revised EU-MAP. In itself, the DST has been designed to be robust enough to address future requests, if any, for inclusion of a specific survey under the list of mandatory surveys. Vice versa, the DST can be used to scrutinize a request to withdraw a survey from the list of mandatory surveys. In the latter case, the DST will provide guidance on whether or not a survey still classifies for inclusion in the list of surveys as well as guidance regarding additional data collection (e.g., additional ecosystem variables) that should be considered before removing the survey from the list of mandatory surveys.

It should, however, be noted that a given stock forms the starting point for the DST. Surveys should therefore always be considered in relation to the stock(s) the survey delivers data for as the survey might not qualify for one stock, but may qualify for many others. For single target surveys, this effect is or course negligible, while multi-species surveys affect many species when terminated, though this is unlikely to happen. On the other hand, by design, the DST is suitable to justify the addition or removal of a target species as listed for a respective survey.

4.4.2 Databases and future explorations.

For future revisions of EU-MAP (in 3 to 5 years), it is anticipated that the then current surveys shall be evaluated again before inclusion in a revised version of EU-MAP. On the assumption that the DCF criteria remain (at least closely related to the current criteria), the DST can provide a renewed insight in the stock/survey needs at that moment. Given that the current exercise was hampered by the time-consuming process needed to compile both the ***Surveys*** as well as the ***Stocks*** database, future explorations would benefit from up-to-date datasets as the current sets will soon be outdated as new insights emerge based on benchmark outcomes for example. Standardized survey names and standardized application of these names throughout the advisory process would ease the process of reviewing the surveys based on their applicability in the process.

5 ACKNOWLEDGMENTS

Compiling comprehensive databases of information on the stocks and surveys that fall under EU jurisdiction was a very substantial task. The work by EWG 19-05 would not have been possible if not for the hard preparatory work by the Members States, the RCGs, and end-users (especially ICES).

Also, the productivity of the EWG would have been badly diminished if not for the diligence and hard work of Dr Sieto Verver during EWG 18-04 and again during EWG 19-05. Sieto was an enthusiastic proponent of the DST approach for evaluating surveys and he provided excellent guidance to the group on why it was sensible to use the DST and how to accomplish the task.

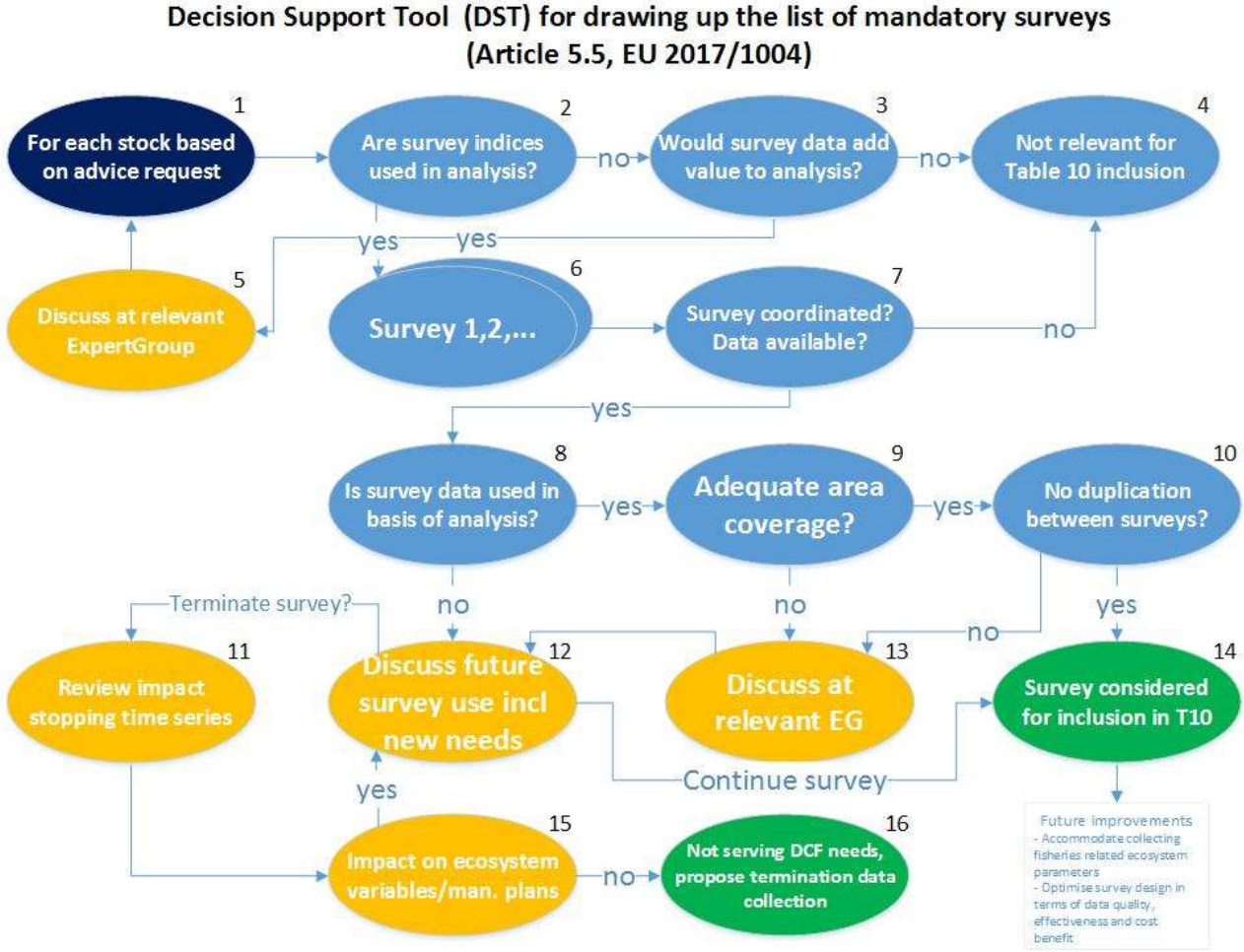
6 LIST OF ACRONYMS USED IN THE REPORT TEXT AND THEIR DEFINITIONS.

Acronym	Definition
CFP	Common Fisheries Policy
DCF	Data Collection Framework
DG MARE	Directorate General for Maritime Affairs and Fisheries
DST	Decision Support Tool
EMFF	European Maritime Fisheries Fund
EU MAP	European Union Multiannual Programme
EWG	Expert Working Group
GES	Good Environmental Status
GFCM	General Fisheries Commission for the Mediterranean
HELCOM	Baltic Marine Environment Protection Commission - Helsinki Commission
ICES	International Council for the Exploration of the Seas
JRC	Joint Research Centre
MS	Member State
MSFD	Marine Strategy Framework Directive
NAFO	North Atlantic Fisheries Organization
RCG	Regional Coordination Group
SGRN	Study Group on Research Needs
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total Allowable Catch
TOR	Term(s) of Reference
UWTV survey	Underwater television survey

7 FIGURES.

7.1 Figure 1. Schematic diagram of the Decision Support Tool (DST), from EWG-18-04.

The Decision Support Tool uses a sequence of Yes/No questions to evaluate whether or not a survey for a given stock is proposed for inclusion in the list of mandatory surveys. The ovals in the diagram below represent either actions or questions. If there are several surveys associated with the given stock, each such survey is evaluated. Oval 1, which is the normal entry point, is for a stock for which there is a request for management advice. For this stock the tool asks a series of questions (ovals 2-10, with light blue fill) that evaluate the information the survey provides for the given stock. The series of questions is repeated for each associated survey (represented in oval 6). Ovals 5, 11-13, and 15 (with yellow fill) represent actions involving discussions and decisions by relevant experts.



8 TABLES.

8.1 Table 1. Overview of the data fields in the *Stocks* and *Surveys* databases and the decision support tool file *DST_Output*.

Field Name	Short Description	Detailed Description or Example or Notes or Instructions	***Stocks*** Database	***Surveys*** Database	***DST_Output*** File	Foot-note
Seq_No	Sequence number	Sequential number identifier for each data row.	XXXX	XXXX	XXXX	
Region	Region name	For ***Stocks*** database: Region name refers to EU MAP - Tables 1A and 1C. For ***Surveys*** database: Region name refers to EU MAP - Table 10	XXXX	XXXX	Input (***Stocks***)	
Sub-region	Sub-region name	E.g., Eastern, Western, as applicable, following the nomenclature of the GFCM. For Mediterranean and Black Sea only.	XXXX	XXXX		
RCG_Region		Regional Coordination Groups responsible for the stock.			Input	
GSA	GFCM geographic sub-area	For Mediterranean and Black Sea only. When a joint assessment has been carried out, refer to the adopted combination of GSAs.	XXXX			
Adv_body	Advisory body	Advisory body acronym (e.g., ICES, GFCM, STECF) for stocks that have been assessed. If no assessment, leave blank.	XXXX		Input (***Stocks***)	
Assess_EG	Assessment expert group	Assessment expert group acronym (e.g., hawg, wgbfas, EWG MedAssess, WGSAD) for stocks that have been assessed. If no assessment, leave blank.	XXXX		Input (***Stocks***)	
Stock_ID	Stock reference	Standard reference ID used by RFMO to identify a stock. Species and Area combined. Various rules used for defining the code.	XXXX		Input (***Stocks***)	
Adv_given	Advice given	Y / N. Y if the advisory body (in Adv_body) normally provides advice; N otherwise.	XXXX		Input (***Stocks***)	
Survey_ID	Survey Identifier	Acronym of the survey, according to EU MAP Table 10 or MS Annual Work Plans.		XXXX		
Sub-survey	Sub-survey ID	Sub-survey name under the large coordinated survey, where applicable, following standard naming conventions. This may not be necessary with the naming convention adopted in the Northern Regions.	XXXX			

Field Name	Short Description	Detailed Description or Example or Notes or Instructions	***Stocks*** Database	***Surveys*** Database	***DST_Output*** File	Foot-note
Survey_used	Survey indices used in assessment or for TAC calculation.	Y / N. Y if survey used in stock assessment; Y if survey used in setting TAC (e.g., based on survey trend) or providing spawning biomass indices and/or advising for specific measures for sensitive habitats (e.g., nursery, spawning areas), especially in the Mediterranean; N otherwise. Include brief text description of the information type(s) used (e.g., abundance index, weight-at-age, maturity). Examples: "Y Age 1-4 index, weight-at-age", "Y maturity".	XXXX		Input (***Stocks***)	
Assess_cat	Assessment category	ICES categories (1 to 6) or similar classification, if any. Not available for the Mediterranean or Black Sea; leave blank.	XXXX		Input (***Stocks***)	
Advice_input	Input data from advisory sheet	Input data identified on ICES advisory sheet, STECF-EWG MedAssess reports, STECF-EWG BSAssess reports, GFCM Assessment Form of the WGSAD and WGSASP, or similar source, to aid in Y/N choice for Survey_as_basis in DST.	XXXX			
Int_coordination	International coordination & harmonized	Y / N. Y if survey is coordinated by specific expert group, bilaterally coordinated or in direct cooperation with relevant RFMO ***and*** the survey uses a harmonized protocol. N otherwise. Include the name of the international coordination group. Note partial harmonisation in the Comments column. Examples: "Y WGBIFS", "Y WGNEPS", "Y MEDITS".		XXXX	Input (*Surveys*)	
Data_access	Data accessible and available for scientific use	Y / N. Info to be found in Table 1G in MS workplan. Y if survey database is mentioned or alternative information is given ensuring that the data are available; N otherwise.		XXXX	Input (***Surveys***)	
Survey_as_ basis	Survey provides the basis for the assessment or management advice	Y / N. Y if ICES assessment category is 1-4 or if TAC is based on the survey. Corroborate with information in Survey_used and Advice_input. For Mediterranean or Black Sea stocks, the default is Y.			Output	<1>

Field Name	Short Description	Detailed Description or Example or Notes or Instructions	***Stocks*** Database	***Surveys*** Database	***DST_Output*** File	Foot-note
Stock_coverage	Stock area covered fully	Y / N / P(artly) / U(nknown). Is the stock distribution area fully covered by the survey? In the Mediterranean and Black Sea stock boundaries (unit stocks) have not yet been fully defined and agreed for many species. In addition, in some areas the stock distribution is only partially covered, because the stock is shared with non-EU countries. Thus the components in the European waters are fully covered, but the entire distribution is only partially covered. In such cases mark as Y.	XXXX			
Coverage_OK	Adequate coverage	Y / N. Y If this survey is sufficiently covering one or more management areas for the stock; Y if this survey is part of an overall coordinated survey that provides adequate coverage; Y for highly migratory species and stocks shared with third countries and full coverage cannot be anticipated; Y if this survey provides adequate coverage of part of a management area or the areas where a certain life stage is concentrated. N if coverage is not sufficient. If there is a 'P' or 'U' in the Stock_coverage field, put in a 'Y' and use the Comment field to explain the deviation from the full coverage.			Output	<2>
No_survey_ dupl	No duplication between surveys	Y / N based on analysis of information found in the *Stocks* database, complemented by expert knowledge. Y if survey does not overlap with any other survey with the same target stocks in space, season (month) or survey gear; Y if survey has partial overlap with any other survey in space, season or survey type; N otherwise. Include details in the Comments column as needed.			Output	

Field Name	Short Description	Detailed Description or Example or Notes or Instructions	***Stocks*** Database	***Surveys*** Database	***DST_Output*** File	Foot-note
Proposed_ Survey	Survey proposed for inclusion	Y / N. Y if all 5 preceding 'blue' columns = Y; Y if Coverage_OK = N while all other columns = Y and information is provided on actions to be taken (e.g., to be discussed by a relevant expert group). If Int_coordination is 'N', put in a 'Y' and provide a comment on what is needed to fulfil this criterion.			Output	<3>
Comments	Comments	Notes to flag and describe special conditions. Indicate the Field Name that each comment applies to. Write each item as a separate sentence. Examples: "Stock_coverage only for Area XXX", "Adaptation_plan will be evaluated by group HAWG."	XXXX	XXXX	Output	
Benefit_from_ survey	Would assessment benefit	Y / N / U(nknown), based on analysis of ***Stocks*** and ***Surveys***. Y if the assessment would benefit from the survey data; N if the assessment would not benefit; U if unknown.			Output	<4>
Actions_by_ whom	Actions to be taken / responsible for action	Describe here what actions are to be taken and by whom (e.g., name the responsible group) for all issues identified and described in the Comments column. If a survey is a clear Yes or a clear No, then no further action needs to be described here.			Output	<5>
Country	Country ID	Standard three-character abbreviation.		XXXX		
EU_member	EU Member State	Y / N. This information may be important for highly migratory species that are jointly managed by EU and non-EU countries.		XXXX		
Survey_area	Area covered by the survey	ICES area, GSAs, NAFO divisions etc.		XXXX		
Survey_target	Stock targeted by survey	Stock ID if single target. "Multispecies" if not single target. Check manual.		XXXX		
Target_stages	Life stages of target	Eggs, larvae, juveniles, adults		XXXX		
Starting_year	Starting year of the survey	Starting year of the survey (YYYY)		XXXX		
Ending_year	Ending year of the survey	Ending year of the survey (YYYY) or "ongoing" if the survey continues		XXXX		
Qtr	Quarter	Quarter of the year the survey begins in.		XXXX		

Field Name	Short Description	Detailed Description or Example or Notes or Instructions	***Stocks*** Database	***Surveys*** Database	***DST_Output*** File	Foot-note
Month	Month	Month of the survey (1,2, …, 12) or the sequence of month numbers (e.g., 3,4,5). Check the survey manuals.		XXXX		
Survey_type	Survey type	Name of the gear/methodology used during the survey (e.g., acoustic, demersal trawl).		XXXX		
MSFD_desc_D1	Data could contribute to MSFD desc. D1	Y / N.		XXXX		
MSFD_desc_D3	Data could contribute to MSFD desc. D3	Y / N.		XXXX		
MSFD_desc_D4	Data could contribute to MSFD desc. D4	Y / N.		XXXX		
MSFD_desc_D6	Data could contribute to MSFD desc. D6	Y / N.		XXXX		
MSFD_desc_ D10	Data could contribute to MSFD desc. D10	Y / N.		XXXX		
Time_series_ gap	Time series interruption/gap	Y / N. Place explanation of the interruption/gap in the Comments column.		XXXX		

<1> The Detailed Description for *Survey_as_basis* is an interim measure that will allow the surveys review to proceed in a timely manner. Evaluating the degree to which a survey provides data that are essential will require collecting information from stock assessment experts or requesting sensitivity analyses during future benchmark assessments. *Survey_as_basis* is not a direct input from the ***Stocks*** database. Its Y/N value is determined by the person applying the DST.

<2> The future use of the survey for the stock should be discussed by the relevant expert group leading to a decision whether or not to continue collecting information for the stock with this survey.

<3> If a survey is proposed for inclusion in the list of mandatory surveys, the survey should be seen as a possible platform for collecting fisheries related ecosystem parameters in line with the CFP.

<4> The future potential for a stock to benefit from a survey should be discussed by the relevant expert group and lead to a decision whether or not to consider using this survey's information for the stock.

<5> Within the review process the experts should consider the criterion "avoid disruption of the survey time series".

8.2 Table 2. Example of the Decision Support Tool file *DST_Output.*

Decision Support Tool Inputs and Outputs										Survey used for advice = Yes						= No	
Seq_No	Region	RCG_Region	Adv_Body	Assess_EG	Stock_ID	Species_Code	Survey_ID	Survey_used	Assess_Cat	Int_Coordination (Y/N)	Data_Access (Y/N)	Survey_as_Basis (Y/N)	Coverage_OK (Y/N)	No_Survey_Dupl (Y/N)	Proposed_Survey (Y/N) Comments	Benefits_from_survey	Actions_by_Whom
1	Mediterranean Sea and Black Sea	Med&BS			ELE_GSA7	ELE		no survey	NA							U	
2	Mediterranean Sea and Black Sea	Med&BS			ELE_GSA8	ELE		no survey	NA							U	
3	Mediterranean Sea and Black Sea	Med&BS			ELE_GSA9	ELE		no survey	NA							U	
4	Mediterranean Sea and Black Sea	Med&BS			ELE_GSA10	ELE		no survey	NA							U	
5	Mediterranean Sea and Black Sea	Med&BS			ELE_GSA11	ELE		no survey	NA							U	
6	Mediterranean Sea and Black Sea	Med&BS			ELE_GSA15	ELE		no survey	NA							U	
7	Mediterranean Sea and Black Sea	Med&BS			ELE_GSA16	ELE		no survey	NA							U	
18	Mediterranean Sea and Black Sea	Med&BS			ARS_GSA7	ARS	MEDITS	N	NA							U	To be explored by responsible group when applicable
19	Mediterranean Sea and Black Sea	Med&BS			ARS_GSA17	ARS	MEDITS	N	NA							U	To be explored by responsible group when applicable
20	Mediterranean Sea and Black Sea	Med&BS			ARS_GSA8	ARS	MEDITS	N	NA							U	To be explored by responsible group when applicable

Decision Support Tool Inputs and Outputs

										Survey used for advice = Yes							= No	
Seq_No	Region	RCG_Region	Adv_Body	Assess_EG	Stock_ID	Species_Code	Survey_ID	Survey_used	Assess_Cat	Int_Coordination (Y/N)	Data_Access (Y/N)	Survey_as_Basis (Y/N)	Coverage_OK (Y/N)	No_Survey_Dupl (Y/N)	Proposed_Survey (Y/N)	Comments	Benefits_from_survey	Actions_by_Whom
590	Baltic Sea	Baltic	ICES	WGBFAS	bll.27.22-32	BLL	BITS_Q4	Y	3	Y	Y	Y	Y	Y	Y	Partial spatial overlap with BITSQ1, but in different season		
591	Baltic Sea	Baltic	ICES	WGBFAS	cod.27.22-24	COD	BITS_Q1	Y	1	Y	Y	Y	Y	Y	Y	Spatial overlap with BITSQ4, but different season		
592	Baltic Sea	Baltic	ICES	WGBFAS	cod.27.22-24	COD	BITS_Q4	Y	1	Y	Y	Y	Y	Y	Y	Spatial overlap with BITSQ1, but different season		
593	Baltic Sea	Baltic	ICES	WGBFAS	cod.27.22-24	COD	FEJUCS	Y	1	Y	Y	Y	Y	Y	Y	GER survey for age 0 estimates in Fehmarn Belt, covering the retention area of juveniles		
594	Baltic Sea	Baltic	ICES	WGBFAS	cod.27.25-32	COD	BITS_Q1	Y	3	Y	Y	Y	Y	Y	Y	Partial spatial overlap with BITSQ4, but in different season.		
595	Baltic Sea	Baltic	ICES	WGBFAS	cod.27.25-32	COD	BITS_Q4	Y	3	Y	Y	Y	Y	Y	Y	Partial spatial overlap with BITSQ1, but in different season		

Decision Support Tool Inputs and Outputs

										Survey used for advice = Yes							= No	
Seq_No	Region	RCG_Region	Adv_Body	Assess_EG	Stock_ID	Species_Code	Survey_ID	Survey_used	Assess_Cat	Int_Coordination (Y/N)	Data_Access (Y/N)	Survey_as_Basis (Y/N)	Coverage_OK (Y/N)	No_Survey_Dupl (Y/N)	Proposed_Survey (Y/N)	Comments	Benefits_from_survey	Actions_by_Whom
630	North-East Atlantic and Western Channel	NorthAtl	ICES	WGEEL	ele.2737.nea	ELE		N	3									
631	East Arctic, Norwegian Sea and Barents Sea	NorthAtl	ICES	WGWIDE	her.27.1-24a514a	HER	ASH	Y	1	Y	Y	Y	Y	Y	Y			
633	East Arctic, Norwegian Sea and Barents Sea	NorthAtl	ICES	WGWIDE	whb.27.1-91214	WHB	BS-NoRu-Q1	n	1							no EU MS participating		
634	East Arctic, Norwegian Sea and Barents Sea	NorthAtl	ICES	WGWIDE	whb.27.1-91214	WHB	IBWSS	Y	1	Y	Y	Y	Y	Y	Y			
635	North-East Atlantic and Western Channel	NorthAtl	ICES	WGWIDE	whb.27.1-91214	WHB	IESSNS	n	1									
636	North East Atlantic and Western Channel	NorthAtl	ICES	WGHANSA	ane.27.8	ANE	SAHMAS_FRA	Y	1	Y	Y	Y	Y	Y	Y	partial coverage		
646	North Sea and Eastern Channel	NorthAtl	ICES	HAWG	spr.27.7de	SPR	PELTIC_GBE	Y	3	Y	Y	Y	Y	Y	Y			
649	North Sea and Eastern Channel	NorthAtl	ICES	WGCSE	ldb.27.7b-k8abd	LDB	IBTS_Q4	Y	5	Y	Y	Y	Y	Y	Y			
650	North Sea and Eastern Channel	NorthAtl	ICES	WGCSE	meg.27.7b-k8abd	MEG	IBTS_Q4	Y	1	Y	Y	Y	Y	Y	Y			
652	North Sea and Eastern Channel	NorthAtl	ICES	WGDEEP	bli.27.nea	BLI		no survey	5									

Decision Support Tool Inputs and Outputs

Seq_No	Region	RCG_Region	Adv_Body	Assess_EG	Stock_ID	Species_Code	Survey_ID	Survey_used	Assess_Cat	Survey used for advice = Yes							= No	
										Int_Coordination (Y/N)	Data_Access (Y/N)	Survey_as_Basis (Y/N)	Coverage_OK (Y/N)	No_Survey_Dupl (Y/N)	Proposed_Survey (Y/N)	Comments	Benefits_from_survey	Actions_by_Whom
554	NAFO	NS&EA	NAFO		Alfonsinos (Beryx sp.) 6G	ALF		no survey	NA									
555	NAFO	NS&EA	NAFO		American plaice (Hippoglossoides platessoides) 3LNO	AME	PLATUXA_ESP	Y	NA	Y	Y	Y	Y	Y	Y	Although stock is not fully covered by the survey (11% 3NO survey and unknowun 3L survey), the coverage is adequate because this stock is distributed in a broaden area including third country's waters (Canada) and is not possible to cover all stock.		
556	NAFO	NS&EA	NAFO		American plaice (Hippoglossoides platessoides) 3M	AME	FCGS	Y	NA	Y	Y	Y	Y	Y	Y			
557	NAFO	NS&EA	NAFO		Atlantic halibut (Hippoglossus hippoglossus) SA1	ATL		no survey	NA									

8.3 Table 3. Summary of the *DST_Output*: Number of stocks covered by each survey, organized by RCG region.

RCG Region / *Survey_ID*	Number of stocks					
	Survey_Used = Y	N	no survey	No EU part	?	Totals
Baltic	42	7	3			52
BIAS	4					4
BITS_Q1	12	2				14
BITS_Q4	10	2				12
CFS_EST	1					1
CODS_Q4	1					1
FEJUCS	1					1
FFS_DNK	1					1
GORDEM_LVA		1				1
GRAHS	1					1
IBTS_Q1	3					3
IBTS_Q3	3					3
JM_SWE	1					1
LFJS_LVA		2				2
MU_SWE	1					1
NSSS	1					1
RHLS_DEU	1					1
SPRAS	1					1
Large Pelagics	3		6			9
BFTindex_ESP	1					1
TUNIBAL	2					2
Med&BS	110	299	141			550
BTSBS	3	3				6
DRES		2				2
MEDIAS	21					21
MEDITS	82	291				373
PTSBS	1	3				4
SOLEMON	3					3
None	3					3
ISQSS_GBN	1					1
NCQSS_GBN	1					1
NIKSD_GBN	1					1
NorthAtl	149	101	45	2	2	299
7.aNSpawn	1					1
AC(7.aN)	1					1
ADLS_PRT	1					1
BIOMAN	3					3
BS-NoRu-Q1		1				1
CSHAS_IRL	1					1
DEPM_Achovy_ESP		1				1
ECOCADIZ_ESP	1	4				5
ECOCADIZ-RECLUTAS_ESP		5				5

RCG Region / *Survey_ID*	Number of stocks					
	Survey_Used = Y	N	no survey	No EU part	?	Totals
FSP_Q3_GBE_7a	2				1	3
FSP_Q3_GBE_7e	2					2
HERAS		1				1
IAMS_IRL		1				1
IBTS_Q1	20	10				30
IBTS_Q4	54	28				82
IBWSS	1					1
IESSNS	1	1				2
ISBCBTS	10					10
IS-SMH				2		2
JUVENA_ESP	1					1
JUVESAR_PRT		3				3
MEGS	3	3				6
MIK_GBN	2					2
NINEL_GBN		1				1
NSSS		1				1
ORHAGO_Q4_FRA	1					1
PALPRO_ESP	1	8				9
PELTIC_GBE	2					2
SAHMAS	6	5			1	12
SBTS_Q3_GBE	1					1
SCO-IV-VI-AMISS-Q2	1					1
SDEPM	2					2
SIAMISS_GBS	2					2
SWECOS_GBE	9					9
UWTV	16					16
UWTV28-29		1				1
WESPAS_IRL	3					3
NS&EA	105	23	13	6		147
ASH	1					1
BS-NoRu-Q1 (BTr)				1		1
BTr Q1 and Q4				1		1
BTS	14	4				18
DYFS	1	1				2
FCGS	7					7
GGS	4	1				5
IBTS_Q1	19	3				22
IBTS_Q3	18	1				19
IBTS_Q4	6	2		1		9
IHLS	1					1
NHAS	3					3
NOcoast-Aco-Q4	1			2		3
NOSS	1					1
NSMEGS	1					1

RCG Region / *Survey_ID*	Number of stocks					
	Survey_Used = Y	N	no survey	No EU part	?	Totals
NSSS	4	2				6
PLATUXA_ESP	12	3				15
REDNOR				1		1
REDTAS	2					2
SNS_NLD	2	1				3
UWTV	8	1				9
Totals	412	430	208	8	2	1060

8.4 Table 4. Descriptions of the *Survey_ID* codes used in the *Stocks* and *Surveys* databases and in the *DST_Output* file.

RCG Region / Survey_ID	Survey Description
Baltic	
BIAS	Baltic International Acoustic Survey
BITS_Q1	Baltic International trawl survey - Q1
BITS_Q4	Baltic International trawl survey - Q4
CFS_EST	Coastal fish survey
CODS_Q4	Cod survey in Kattegat
FEJUCS	Fehmarn Juvenile Cod Survey
FFS_DNK	Fishermen-DTU Aqua (soleS)
GORDEM_LVA	Gulf of Riga Demersal Fish survey
GRAHS	Gulf of Riga Acoustic Herring Survey
IBTS_Q1	Scottish Western IBTS
IBTS_Q3	International Bottom Trawl survey (North Sea) - 3Q
JM_SWE	SLU in Muskö and Kvädöfjärden
LFJS_LVA	Latvian Flatfishes Juvenile Survey
MU_SWE	SLU in Muskö and Kvädöfjärden
NSSS	North Sea Sandeels Survey
RHLS_DEU	Rügen Herring Larvae Survey
SPRAS	Baltic Acoustic Spring Survey
Large Pelagics	
BFTindex_ESP	Acoustic index for juvenile bluefin tuna in the Bay of Biscay (BFT Index)
TUNIBAL	Bluefin Tuna Larval survey
Med&BS	
BTSBS	Bottom trawl survey in the Black Sea
DRES	Italian hydraulic dredge survey
MEDIAS	Pan-Mediterranean acoustic survey
MEDITS	International bottom trawl survey in the Mediterranean
PTSBS	Pelagic trawl survey in the Black Sea
SOLEMON	Solea Monitoring. Rapido trawl survey in the Northern Adriatic Sea.
None	
ISQSS_GBN	Irish Sea queen scallop survey
NCQSS_GBN	VIa queen scallop survey
NIKSD_GBN	VIa & VIIa Scallop survey
NorthAtl	
7.aNSpawn	SSB Acoustic Survey
AC(7.aN)	Northern Ireland Acoustic Surveys
ADLS_PRT	Azores demersal longline survey
BIOMAN	Biomass of Anchovy
BS-NoRu-Q1	Norwegian bottom-trawl survey in the Barents Sea (BS-NoRu-Q1(Btr))
CSHAS_IRL	Celtic Sea Herring Acoustic Survey
DEPM_Achovy_ESP	BOCADEVA triennial DEPM survey (eggs)
ECOCADIZ_ESP	Acoustic Survey (sardine, anchovy)
ECOCADIZ-RECLUTAS_ESP	Acoustic survey for recruits (sardine, anchovy)
FSP_Q3_GBE_7a	Fishery Science Partnership - 7E Flatfish Beam trawl survey

RCG Region / Survey_ID	Survey Description
FSP_Q3_GBE_7e	Fishery Science Partnership - 7E Flatfish Beam trawl survey
HERAS	Spawning/Pre-spawning Herring acoustic_Sco
IAMS_IRL	Irish Anglerfish and Megrim Survey
IBTS_Q1	Scottish Western IBTS
IBTS_Q4	Western IBTS 4th quarter (including Porcupine survey)
IBWSS	Blue whiting survey
IESSNS	Mackerel trawl survey (swept area survey)
ISBCBTS	Irish Sea and Bristol Channel Beam Trawl Survey
IS-SMH	Icelandic bottom trawl survey - Autumn
JUVENA_ESP	Acoustic survey for juvenile anchovy in the Bay of Biscay
JUVESAR_PRT	Sardine and Anchovy Recruitment
MEGS	International Mackerel and Horse Mackerel Egg Survey (Triennial)
MIK_GBN	Northern Irish MIK net survey
NINEL_GBN	Spawning/Pre-spawning Herring
NSSS	North Sea Sandeels Survey
ORHAGO_Q4_FRA	Observation des Ressources HAlieutiques benthiques du GOlfe de Gascogne - Bay of Biscay Demersal Resources Survey
PALPRO_ESP	Deep-water longline survey
PELTIC_GBE	Western Channel Celtic Sea Pelagic survey
SAHMAS	Sardine, Anchovy, Horse Mackerel Acoustic Survey
SBTS_Q3_GBE	Solent Bass Trawl Survey
SCO-IV-VI-AMISS-Q2	Dedicated industry–science survey index
SDEPM	Sardine DEPM (Triennial)
SIAMISS_GBS	Anglerfish surveys III
SWECOS_GBE	Western Channel Beam Trawl Survey, VIIe, 1st quarter
UWTV	Nephrops Survey Offshore Portugal NepS
UWTV28-29	Nephrops Survey Offshore Portugal NepS
WESPAS_IRL	Boarfish Acoustic Survey
NS&EA	
ASH	International ecosystem survey in the Nordic Seas
BS-NoRu-Q1 (BTr)	Norwegian bottom-trawl survey in the Barents Sea (BS-NoRu-Q1(Btr))
BTr Q1 and Q4	NoRu-BTr-Q1 and Q4, NoRu-Aco-Q1 and Q4
BTS	North Sea Beam Trawl Survey
DYFS	Demersal Young Fish Survey
FCGS	Flemish Cap Groundfish survey
GGS	Greenland Groundfish Survey
IBTS_Q1	Scottish Western IBTS
IBTS_Q3	International Bottom Trawl survey (North Sea) - 3Q
IBTS_Q4	Western IBTS 4th quarter (including Porcupine survey)
IHLS	Herring Larvae survey
NHAS	NS Herring Acoustic Survey
NOcoast-Aco-Q4	Norwegian acoustic survey
NOSS	Norwegian shrimp survey
NSMEGS	North Sea Mackerel egg Survey (Triennial)
NSSS	North Sea Sandeels Survey
PLATUXA_ESP	3LNO Groundfish survey

RCG Region / Survey_ID	Survey Description
REDNOR	Redfish survey in the Norwegian Sea and adjacent waters
REDTAS	International Redfish Trawl and Acoustic Survey (Biennial)
SNS_NLD	Sole Net Survey
UWTV	Nephrops Survey Offshore Portugal NepS

8.5 Table 5a. Surveys proposed for the new list of mandatory surveys.

Region / *Survey_ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
Baltic (including Skagerrak and Kattegat)		
BIAS	BIAS	
BITS_Q1 <1>	BITS Q1	
BITS_Q4	BITS Q4	
CODS_Q4 <1>		**Not in current EU MAP Table 10.** Joint Danish/Swedish bottom trawl survey. The full name is "Kattegat Cod Survey".
FEJUCS		**Not in current EU MAP Table 10.** -The full name is "Fehmarn Juvenile Cod Survey".
GRAHS	GRAHS	
IBTS_Q1 <1>	IBTS Q1	
IBTS_Q3 <1>	IBTS Q3	
NSSS	NSSS	
RHLS_DEU	RHLS	
SPRAS	SPRAS	
North Sea & Eastern Arctic		
ASH	International ecosystem surveys in the Nordic Seas.	
BTS	North Sea beam trawl survey (BTS)	
DYFS	Demersal young fish survey (DYFS)	
FCGS	Flemish Cap groundfish survey (FCGS)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA.
GGS	Greenland Groundfish survey (GGS)	
IBTS_Q1	International bottom trawl survey (IBTS Q1)	
IBTS_Q3	International bottom trawl survey (IBTS Q3)	
IBTS_Q4	IBTS Q4	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic".
IHLS	International herring larvae survey (IHLS)	
NHAS	NHAS	
NSMEGS	Mackerel egg survey (triennial) (NSMEGS)	
NSSS	North Sea sandeels survey (NSSS)	
PLATUXA_ESP	3LNO groundfish survey (PLATUXA)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA. See report section *Change to an existing survey – Splitting the NAFO 3LNO Groundfish Survey*.
REDTAS	International redfish trawl and acoustic survey (biennial) (REDTAS)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA.

Region / *Survey_ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
SNS_NLD	Sole net survey (SNS)	
UWTV	Nephrops TV survey (FU 3&4) (NTV3&4)	**Consolidation of surveys.** Included in current EU MAP Table 10 as separate surveys in various FUs.
	Nephrops TV survey (FU 6) (NTV6)	
	Nephrops TV survey (FU 7) (NTV7)	
	Nephrops TV Survey (FU 8) (NTV8)	
	Nephrops TV Survey (FU 9) (NTV9)	
	Redfish survey in the Norwegian Sea and adjacent waters (REDNOR)	**Current EU MAP Table 10 survey flagged for possible rejection.** <2> No EU Member State participation (see section 3.1.5).
North Atlantic		
BIOMAN	Biomass of anchovy	
CSHAS_IRL		**Not in current EU MAP Table 10.** Full name is "Celtic Sea Herring Acoustic Survey".
ECOCADIZ_ESP		**Not in current EU MAP Table 10.** Acoustic survey (sardine and anchovy). Spanish survey.
IBTS_Q1	Scottish western IBTS	
IBTS_Q4	Western IBTS 4th quarter (including Porcupine survey)	
IBWSS	Blue whiting survey	
IESSNS		**Not in current EU MAP Table 10.** Trawl survey for mackerel - swept area. Danish and Norwegian survey.
ISBCBTS	ISBCBTS September	
JUVENA_ESP		**Not in current EU MAP Table 10.** Acoustic survey for juvenile anchovy in the Bay of Biscay.
MEGS	International mackerel and horse mackerel egg survey (triennial)	
ORHAGO_Q4_FRA		**Not in current EU MAP Table 10.** Full name is "Observation des Resources Halieutiques benthiques du Golfe de Gascogne", Bay of Biscay Demersal Resources Survey.
PALPRO_ESP		**Not in current EU MAP Table 10.** Deep-water longline survey, Spain.
SAHMAS	Sardine, anchovy, horse mackerel acoustic survey	
SCO-IV-VI-AMISS-Q2		**Not in current EU MAP Table 10.** Dedicated industry–science survey index.
SDEPM	Sardine DEPM (Triennial)	
SIAMISS_GBS	Anglerfish surveys	
SWECOS_GBE	WCBTS, WCBTS Q1	**Change in name.** WCBTS in EU MAP Table 10 was discontinued in 2014 and replaced by the WCBTS Q1 (= SWECOS_GBE).
UWTV	Nephrops UWTV survey (offshore)	**Consolidation of surveys.** Included in current EU MAP Table 10 as separate surveys in various FUs.
	UWTV (FU 11-13)	

Region / *Survey_ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
	Nephrops UWTV Irish Sea – UWTV (FU 15)	
	Nephrops UWTV survey Aran Grounds (FU 17)	
	Nephrops UWTV survey Celtic Seas (FU 20-22)	
	Nephrops UWTV survey Offshore Portugal Neps (FU28-29)	
WESPAS_IRL	Spawning/pre-spawning herring/boarfish acoustic survey	
Mediterranean & Black Sea		
BTSBS	BTSBS	
MEDIAS [<3>]	MEDIAS	
MEDITS [<4>]	MEDITS	
PTSBS	PTSBS	
SOLEMON		**Not in current EU MAP Table 10.**
Large pelagics		
TUNIBAL		**Not in current EU MAP Table 10.**

[<1>] Possible duplication with other surveys. Needs further review by WGBFAS.

[<2>] Needs further review by AFWG to gauge impact of stopping the time series and by ICES to gauge impact on management.

[<3>] Not including the proposed extension into GSAs 11 and 19.

[<4>] Not including including the proposed extension into the 4th quarter (MEDITS_Q4).

8.6 Table 5b. Changes relative to the current list of mandatory surveys.

Region / *Survey_ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
Baltic (including Skagerrak and Kattegat)		
CODS_Q4 [<1>]		**Not in current EU MAP Table 10.** Joint Danish/Swedish bottom trawl survey. The full name is "Kattegat Cod Survey".
FEJUCS		**Not in current EU MAP Table 10.** -The full name is "Fehmarn Juvenile Cod Survey".
North Sea & Eastern Arctic		
FCGS	Flemish Cap groundfish survey (FCGS)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA.
GGS	Greenland Groundfish survey (GGS)	
IBTS_Q4	IBTS Q4	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic".
PLATUXA_ESP	3LNO groundfish survey (PLATUXA)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA. See report section *Change to an existing survey – Splitting the NAFO 3LNO Groundfish Survey*.
REDTAS	International redfish trawl and acoustic survey (biennial) (REDTAS)	**Change in region.** Included in the current EU MAP Table 10 in the "North Atlantic" region, but allocated here to the "North Sea & Eastern Arctic" due to regional competence of the RCG NS&EA.
UWTV	Nephrops TV survey (FU 3&4) (NTV3&4)	**Consolidation of surveys.** Included in current EU MAP Table 10 as separate surveys in various FUs.
	Nephrops TV survey (FU 6) (NTV6)	
	Nephrops TV survey (FU 7) (NTV7)	
	Nephrops TV Survey (FU 8) (NTV8)	
	Nephrops TV Survey (FU 9) (NTV9)	
	Redfish survey in the Norwegian Sea and adjacent waters (REDNOR)	**Current EU MAP Table 10 survey flagged for possible rejection.** [<2>] No EU Member State participation (see section 3.1.5).
North Atlantic		
CSHAS_IRL		**Not in current EU MAP Table 10.** Full name is "Celtic Sea Herring Acoustic Survey".
ECOCADIZ_ESP		**Not in current EU MAP Table 10.** Acoustic survey (sardine and anchovy). Spanish survey.
IESSNS		**Not in current EU MAP Table 10.** Trawl survey for mackerel - swept area. Danish and Norwegian survey.
JUVENA_ESP		**Not in current EU MAP Table 10.** Acoustic survey for juvenile anchovy in the Bay of Biscay.
ORHAGO_Q4_FRA		**Not in current EU MAP Table 10.** Full name is "Observation des Resources Halieutiques benthiques du Golfe de Gascogne", Bay of Biscay Demersal Resources Survey.

Region / *Survey_ID* of proposed survey	Current EU MAP Table 10 name or acronym	Comments
PALPRO_ESP		**Not in current EU MAP Table 10.** Deep-water longline survey, Spain.
SCO-IV-VI-AMISS-Q2		**Not in current EU MAP Table 10.** Dedicated industry–science survey index.
SWECOS_GBE	WCBTS, WCBTS Q1	**Change in name.** WCBTS in EU MAP Table 10 was discontinued in 2014 and replaced by the WCBTS Q1 (= SWECOS_GBE).
UWTV	Nephrops UWTV survey (offshore)	**Consolidation of surveys.** Included in current EU MAP Table 10 as separate surveys in various FUs.
	UWTV (FU 11-13)	
	Nephrops UWTV Irish Sea – UWTV (FU 15)	
	Nephrops UWTV survey Aran Grounds (FU 17)	
	Nephrops UWTV survey Celtic Seas (FU 20-22)	
	Nephrops UWTV survey Offshore Portugal Neps (FU28-29)	
Mediterranean & Black Sea		
SOLEMON		**Not in current EU MAP Table 10.**
Large pelagics		
TUNIBAL		**Not in current EU MAP Table 10.**

[<1>] Possible duplication with other surveys. Needs further review by WGBFAS.

[<2>] Needs further review by AFWG to gauge impact of stopping the time series and by ICES to gauge impact on management.

8.7 Table 6. Translation of Surveys in the current Table 10 to corresponding *Survey_ID* in the proposed list of mandatory surveys.

Current Table 10		New proposed Table 10	
Region / Survey Name	Acronym	*Survey_ID* identifier in ***DST_Output***, ***Stocks***, and ***Surveys***	*OLD_Survey_Link* in ***Surveys*** database
Baltic Sea			
Baltic International Acoustic Survey (Autumn)	BIAS	BIAS	
Baltic International Trawl Survey	BITS Q1 BITS Q4	BITS_Q1 BITS_Q4	BITS_Q1 BITS_Q4
Gulf of Riga Acoustic Herring Survey	GRAHS	GRAHS	GRAHS_EST GRAHS_LVA
Rügen Herring Larvae Survey	RHLS	RHLS_DEU	RHLS_DEU
Sprat Acoustic Survey	SPRAS	SPRAS	SPRAS
North Sea and Eastern Arctic (ICES areas I and II)			
Demersal Young Fish Survey	DYFS	DYFS	DYFS_BEL DYFS_DEU DYFS_NLD
Herring Larvae survey	IHLS	IHLS	IHLS_DEU IHLS_NLD
International Bottom Trawl Survey	IBTS Q1	IBTS_Q1	IBTS_Q1_ESP IBTS_Q1_GBN
International Bottom Trawl Survey	IBTS Q3	IBTS_Q3	IBTS_Q3
International Ecosystem Survey in the Nordic Seas	ASH	ASH	ASH
Mackerel Egg Survey (Triennial)	NSMEGS	NSMEGS	NSMEGS
Nephrops TV survey (FU 3&4)	NTV3&4	UWTV	UWTV3-4_DNK UWTV3-4_SWE
Nephrops TVsurvey (FU 6)	NTV6	UWTV	UWTV6_GBE
Nephrops TVsurvey (FU 7)	NTV7	UWTV	UWTV7_GBS
Nephrops TVsurvey (FU 8)	NTV8	UWTV	UWTV8_GBS
Nephrops TVsurvey (FU 9)	NTV9	UWTV	UWTV9_GBS
North Sea Beam Trawl Survey	BTS	BTS	BTS_BEL BTS_DEU BTS_GBE BTS_NLD
North Sea Sandeels Survey	NSSS	NSSS	NSSS_DNK NSSS_GBS
NS Herring Acoustic Survey	NHAS	NHAS	NHAS
Redfish Survey in the Norwegian Sea and adjacent waters [<1>]	REDNOR	**Not proposed for new Table 10.**	
Sole Net Survey	SNS	SNS_NLD	SNS_NLD

Current Table 10		New proposed Table 10	
Region / Survey Name	Acronym	*Survey_ID* identifier in ***DST_Output***, ***Stocks***, and ***Surveys***	*OLD_Survey_Link* in ***Surveys*** database
North Atlantic (ICES Areas V-XIV and NAFO areas)			
3LNO Groundfish survey	PLATUXA	PLATUXA_ESP (See report section *Change to an existing survey – Splitting the NAFO 3LNO Groundfish Survey*.)	PLATUXA_ESP
Biomass of Anchovy	BIOMAN	BIOMAN	BIOMAN_ESP
Blue whiting survey	IBWSS	IBWSS	IBWSS IBWSS_DEU IBWSS_ESP IBWSS_GBS IBWSS_IRL
Flemish Cap Groundfish survey	FCGS	FCGS	FCGS_ESP
Greenland Groundfish survey	GGS	GGS	GGS_DEU
International Mackerel and Horse Mackerel Egg Survey (triennial)	MEGS	MEGS	MEGS_ESP_8abd MEGS_ESP_8c9a_H MEGS_ESP_8c9a_M
International Redfish Trawl and Acoustic Survey (Biennial)	REDTAS	REDTAS	REDTAS_DEU
ISBCBTS September	ISBCBTS	ISBCBTS	ISBCBTS_GBE
Nephrops Survey Offshore Portugal NepS	UWTV (FU 28-29)	UWTV	NepS28-29_PRT
Nephrops UWTV Irish Sea	UWTV (FU 15)	UWTV	UWTV15_GBN
Nephrops UWTV survey (offshore)	UWTV (FU 11-13)	UWTV	UWTV11-13_GBS
Nephrops UWTV survey Aran Grounds	UWTV (FU 17)	UWTV	UWTV_IRL_7
Nephrops UWTV survey Celtic Sea	UWTV (FU 20-22)	UWTV	UWTV_IRL_7
Sardine DEPM (triennial)	DEPM PIL	SDEPM	DEPM_ESP
Sardine, Anchovy Horse Mackerel Acoustic Survey		SAHMAS	SAHMAS_FRA PELACUS_ESP PELAGO_PRT
Scottish Western IBTS	IBTS Q1	IBTS_Q1	NA_IBTS_Q1_GBS
Spawning/Pre-spawning Herring / Boarfish acoustic survey		WESPAS_IRL	BFAS_IRL
WCBTS **(old name)**	VIIe BTS	SWECOS_GBE **(new name)**	SWECOS_GBE

Current Table 10		New proposed Table 10	
Region / Survey Name	Acronym	*Survey_ID* identifier in ***DST_Output***, ***Stocks***, and ***Surveys***	*OLD_Survey_Link* in ***Surveys*** database
Western IBTS 4th quarter (including Porcupine survey)	IBTS Q4	IBTS_Q4	IBTS_Q3_ESP_7bk IBTS_Q4_ESP_8c9aN IBTS_Q4_ESP_9aS NA_IBTS_Q4_CGFS_FRA NA_IBTS_Q4_FRA NA_IBTS_Q4_GBS NA_IBTS_Q4_IRL NA_IBTS_Q4_PRT
Mediterranean waters and Black sea			
Bottom trawl survey in Black Sea	BTSBS	BTSBS	na
International bottom trawl survey in the Mediterranean	MEDITS	MEDITS	na
Pan-Mediterranean Acoustic Survey	MEDIAS	MEDIAS	na
Pelagic trawl survey in Black Sea	PTSBS	PTSBS	na

<1> No EU commitment.

8.8 Table 7. Underwater TV (UWTV) surveys for Nephrops included in the *Stocks* and *Surveys* database and stocks having no coverage by an underwater TV survey.

Shaded rows indicate sub-surveys that are included in the set of UWTV surveys that are included in the proposed for new mandatory surveys.

SubSurveyName[1]	"Old" Survey Name	Stock	Country	Comments
UWTV10	Nephrops TV survey (FU 10)	nep.fu.10	GBS	
UWTV11-13	Nephrops UWTV survey (offshore)	nep.fu.11, nep.fu.12, nep.fu.13	GBS	
UWTV14	Nephrops UWTV Irish Sea east	nep.fu.14	GBN	
UWTV15	Nephrops UWTV Irish Sea west	nep.fu.15	GBN	
UWTV16+17, 19, 20-22	NEP-UWTV-Subarea7 Ireland	nep.fu.16, nep.fu.17, nep.fu.19, nep.fu.2021, nep.fu.22	IRL	fu 17 and 20-22 included in table 10
UWTV28-29	Nephrops Survey Offshore Portugal NepS	nep.fu.2829	PRT	Probably not only UWTV survey
UWTV30	ISUNEPCA	nep.fu.30	ESP	
UWTV33	UWTV-FU33	nep.fu.33	DNK	
UWTV34	Nephrops TV survey (FU 34)	nep.fu.34	GBS	
UWTV3-4	UWTV-FU3&4	nep.fu.3-4	DNK, SWE	
UWTV5	Nephrops TV survey (FU 5)	nep.fu.5	GBE	
UWTV6	Nephrops TV survey (FU 6)	nep.fu.6	GBE	
UWTV7	Nephrops TV survey (FU 7)	nep.fu.7	GBS	
UWTV8	Nephrops TV survey (FU 8)	nep.fu.8	GBS	
UWTV9	Nephrops TV survey (FU 9)	nep.fu.9	GBS	
UWTV23-24	Nephrops TV survey (FU 2324)	nep.fu.2324	FRA	
		nep.fu.25		No UWTV survey included in the ***Surveys*** database
		nep.fu.2627		No UWTV survey included in the ***Surveys*** database
		nep.fu.31		No UWTV survey included in the ***Surveys*** database

SubSurveyName[1]	"Old" Survey Name	Stock	Country	Comments
		nep.fu.32		No UWTV survey included in the ***Surveys*** database

[1] Field name in the ***Stocks*** databases

8.9 Table 8. International Bottom Trawl Surveys (IBTS) included in the Stocks and Surveys database.

Region	*Survey_ID*	Survey Name	Int. coordination	Country
North Atlantic (ICES Areas V-XIV and NAFO areas)	IBTS_Q1	Quarter 1 Irish Sea Groundfish Survey	Y, IBTSWG	GBN
		Scottish Western IBTS	Y, IBTSWG	GBS
		Western IBTS 1st quarter	Y, IBTSWG	ESP
	IBTS_Q4	Quarter 4 Irish Sea Groundfish Survey	Y, IBTSWG	GBN
		Rockall Haddock survey	Y, IBTSWG	GBS
		Scottish Western IBTS	Y, IBTSWG	GBS
		Western IBTS 4th quarter (including Porcupine survey)	Y, IBTSWG	ESP, FRA, GBS, IRL, PRT
North Sea and Eastern Arctic (ICES areas I and II)	IBTS_Q1	International Bottom Trawl Survey (North Sea) - 1st quarter	Y, IBTSWG	DEU, DNK, FRA, GBS, NLD, SWE
	IBTS_Q3	International Bottom Trawl survey (North Sea) - 3rd quarter	Y, IBTSWG	DEU, DNK, GBE, GBS, SWE

8.10 Table 9. Target species associated with surveys in the list of proposed mandatory surveys.

RCG Region / *Survey_ID*	Species codes of assessed stocks
Baltic	
BIAS	HER SPR
BITS_Q1	BLL COD DAB FLE HER PLE TUR
BITS_Q4	BLL COD DAB FLE HER PLE
CODS_Q4	COD
FEJUCS	COD
GRAHS	HER
IBTS_Q1	COD HER PLE
IBTS_Q3	COD HER PLE
NSSS	SAN
RHLS_DEU	HER
SPRAS	SPR
North Sea & Eastern Arctic	
ASH	HER
BTS	DAB PLE RJC RJE RJM SDV SOL SYC SYT TUR
DYFS	SOL
FCGS	AME COD GRE NOR RED ROU SHO
GGS	COD RED REG
IBTS_Q1	COD FLE GUG HAD HER NOP PLE RJC RJM RJN RJR SPR SYC TUR WHG WIT
IBTS_Q3	COD HAD HER NOP PLE POK RJC RJH RJM RJN RJR SPR SYC TUR WHG WIT
IBTS_Q4	HOM MUR RJN RJR RJU SYC
IHLS	HER
NHAS	HER SPR
NSMEGS	MAC
NSSS	SAN
PLATUXA_ESP	AME COD GRE NOR RED ROU THO WHI WIT YEL
REDTAS	REB
SNS_NLD	SOL TUR
UWTV	NEP
North Atlantic	
BIOMAN	ANE PIL
CSHAS_IRL	HER
ECOCADIZ_ESP	ANE
IBTS_Q1	OCT COD CTL HAD HER HOM LEZ MAC NEP PLE RJC RJM RJN SDV SHO SYC WHG
IBTS_Q4	OCT MON ANK BOC BSS COD CTL DGS GAG GFB HAD HER HKE HOM LDB MAC MEG NEP PLE RJC RJM RJN RNG SDV SHO SQZ SYC WHG
IBWSS	WHB
IESSNS	MAC
ISBCBTS	PLE RJC RJE RJH RJM SDV SOL SYC
JUVENA_ESP	ANE
MEGS	HOM MAC
ORHAGO_Q4_FRA	SOL
PALPRO_ESP	GFB

SAHMAS	ANE BOC HOM PIL
SCO-IV-VI-AMISS-Q2	LEZ
SDEPM	HOM PIL
SIAMISS_GBS	ANF LEZ
SWECOS_GBE	RJB RJC RJE RJH RJM SDV SOL SYC
UWTV	GFB LDB NEP SHO
WESPAS_IRL	BOC HER
Mediterranean & Black Sea	
BTSBS	DGS TUR WHG
MEDIAS	ANE PIL
MEDITS	ANE ANK ARA ARS CTC DPS HKE HOM MUR MUT NEP PAC WHB
PTSBS	SPR
SOLEMON	CTC MTS SOL
Large Pelagics	
TUNIBAL	ALB BFT

8.11 Table 10 (*in this report, not the EU MAP*). Countries contributing to some of the surveys[<1>] proposed for the new list of mandatory surveys.

[<1>] The full list of surveys is very long.

A value of "1" indicates the country is actively contributing to the survey.

		EU_member	RCG Region		
Survey_ID	Country	(Yes/No)	Baltic	North Atlantic	North Sea and Eastern Arctic
ASH	DEU	Yes			1
	DNK	Yes			1
	GBE	Yes			1
	GBS	Yes			1
	IRL	Yes			1
	NLD	Yes			1
	SWE	Yes			1
BITS_Q1	RUS	No	1		
	DEU	Yes	1		
	DNK	Yes	1		
	LTU	Yes	1		
	LVA	Yes	1		
	POL	Yes	1		
	SWE	Yes	1		
IBTS_Q1	DEU	Yes			1
	DNK	Yes			1
	ESP	Yes		1	
	FRA	Yes			1
	GBN	Yes		1	
	GBS	Yes		1	1
	NLD	Yes			1
	SWE	Yes			1
IBWSS	DEU	Yes		1	
	DNK	Yes		1	
	ESP	Yes		1	
	GBS	Yes		1	
	IRL	Yes		1	
	NLD	Yes		1	
SDEPM	ESP	Yes		1	
	PRT	Yes		1	

9 LIST OF PARTICIPANTS

Angeles ARMESTO	Tiit RAID
John CASEY	Dave REID
Hendrik DOERNER	Katja RINGDAHL
Blanca GARCIA ALVAREZ	David SAMPSON (EWG chair)
Venetia KOSTOPOULOU	Stylianos SOMARAKIS
Alessandro LIGAS	Christoph STRANSKY
Josep LLORET	Willy VANHEE
Allesandro MANNINI	Sieto VERVER
Marina PANAYOTOVA	Lotte WORSØE CLAUSEN
Kenneth PATTERSON	

10 CONTACT DETAILS OF EWG-19-05 PARTICIPANTS

[1] - Information on EWG participant's affiliations is displayed for information only. In any case, Members of the STECF, invited experts, and JRC experts shall act independently. In the context of the STECF work, the committee members and other experts do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members and experts also declare at each meeting of the STECF and of its Expert Working Groups any specific interest which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting's website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: http://stecf.jrc.ec.europa.eu/adm-declarations

STECF members		
Name	Address[1]	Email
Raid, Tiit	Estonian Marine Institute, University of Tartu, Mäealuse 14, Tallin, EE-126, Estonia	Tiit.raid@gmail.com
Somarakis, Stylianos	Hellenic Centre for Marine Research, Greece	somarak@hcmr.gr
Stransky, Christoph	Thuenen Institute of Sea Fisheries, Germany	christoph.stransky@thuenen.de
Vanhee, Willy	Independent consultant	wvanhee@telenet.be

Invited experts		
Name	Address	Email
Angeles ARMESTO	Instituto Español de Oceanografia, Spain	angeles.armesto@ieo.es
John CASEY	Independent expert	blindlemoncasey@gmail.com
Alessandro LIGAS	Consorzio per il Centro Interuniversitario di Biologia Marina ed Ecologia Applicata "G. Bacci", Viale N. Sauro 4, I-57128 Livorno	ligas@cibm.it

	(Italy)	
Lloret, Josep	University of Girona (UdG), Spain	josep.lloret@udg.edu
Marina PANAYOTOVA	Institute of Oceanology – BAS, Bulgaria	mpanayotova@io-bas.bg
Dave REID	Marine Institute, Rinville, Oranmore, Co. Galway, Ireland	David.Reid@Marine.ie
Katja RINGDAHL	Swedish University of Agricultural Sciences, Uppsala (SLU), Sweden	katja.ringdahl@slu
David SAMPSON (EWG chair)	Oregon State University, USA	David.Sampson@oregonstate.edu
Siebrand VERVER	Centre for Fisheries Research, Netherlands	sieto.verver@wur.nl
Lotte WORSØE CLAUSEN	International Council for the Exploration of the Sea (ICES), Denmark	lotte.worsoe.clausen@ices.dk

JRC experts		
Name	Address	Email
Allesandro MANNINI	DG Joint Research Centre JRC	Alessandro.MANNINI@ec.europa.eu

European Commission		
Name	Address	Email
Hendrik DOERNER	DG Joint Research Centre JRC, STECF secretariat	Jrc-Stecf-secretariat@jrc.ec.europa.eu
Blanca GARCIA ALVAREZ	DG MARE C3	Blanca.GARCIA-ALVAREZ@ec.europa.eu
Venetia KOSTOPOULOU	DG MARE C3	Venetia.KOSTOPOULOU@ec.europa.eu
Kenneth PATTERSON	DG MARE D3	Kenneth.PATTERSON@ec.europa.eu

11 LIST OF BACKGROUND DOCUMENTS

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

https://stecf.jrc.ec.europa.eu/ewg1905

List of background documents:

EWG-19-05 – Doc 1 - Declarations of invited and JRC experts (see also section 10 of this report – List of participants)

12 LIST OF ANNEXES

1. Table 10 of EU Multiannual Programme.
2. EWG response to questions from DG MARE (K. Patterson).

12.1 Electronic annexes.

Electronic annexes are published on the meeting's web site on:

https://stecf.jrc.ec.europa.eu/ewg1905

List of electronic annex documents:

File name	Description
1.DST_OUTPUT-02Jun2019.xlsx	Excel file with the DST information that forms the evaluation of the surveys. An example is provided in Table 2.
2.DST_INPUT-ICES-02Jun2019.xlsx	Excel file with the input information for the DST for ICES stocks. The file has one worksheet with the ***Stocks*** database, a second worksheet with the ***Surveys*** database, and a third worksheet with the names of and descriptions for the database variables.
3.DST_INPUT-NAFO-02Jun2019.xlsx	Similar to the second file but for NAFO stocks.
4.DST_INPUT-Med&BS-02Jun2019.xlsx	Similar to the second and third files but for stocks in the Mediterranean and Black Sea.

13 ANNEXES

13.1 Annex 1. Table 10 of EU Multiannual Programme (*Research surveys at sea*).

Name of the survey	Acronym	Area	Period	Main targeted species
Baltic Sea				
Baltic International Trawl Survey	BITS Q1 BITS Q4	IIIaS, IIIb-d	1st and 4th Quarter	Cod and other demersal species
Baltic International Acoustic Survey (Autumn)	BIAS	IIIa, IIIb-d	Sep-Oct	Herring and sprat
Gulf of Riga Acoustic Herring Survey	GRAHS	IIId	3rd Quarter	Herring
Sprat Acoustic Survey	SPRAS	IIId	May	Sprat and herring
Rügen Herring Larvae Survey	RHLS	IIId	March-June	Herring
North Sea and Eastern Arctic (ICES areas I and II)				
International Bottom Trawl Survey	IBTS Q1 IBTS Q3	IIIa, IV	1st and 3rd Quarter	Haddock, Cod, Saithe, Herring, Sprat, Whiting, Mackerel, Norway pout.
North Sea Beam Trawl Survey	BTS	IVb,IVc,VIId	3rd Quarter	Plaice, Sole
Demersal Young Fish Survey	DYFS	Coasts of NS	3rd and4th Quarter	Plaice, sole, brown shrimp
Sole Net Survey	SNS	IVb, IVc	3rd Quarter	Sole, Plaice
North Sea Sandeels Survey	NSSS	IVa, IVb	4th Quarter	Sandeels
International Ecosystem Survey in the Nordic Seas	ASH	IIa	May	Herring, Blue whiting
Redfish Survey in the Norwegian Sea and adjacent waters	REDNOR	II	August- September	Redfish
Mackerel egg Survey (Triennial)	NSMEGS	IV	May-July	Mackerel egg production
Herring Larvae survey	IHLS	IV,VIId	1st and 3rd Quarter	Herring, Sprat Larvae
NS Herring Acoustic Survey	NHAS	IIIa, IV,VIa	June, July	Herring, Sprat
Nephrops TVsurvey (FU 3&4)	NTV3&4	IIIA	2nd or 3rd Quarter	Nephrops
Nephrops TVsurvey (FU 6)	NTV6	IVb	September	Nephrops
Nephrops TVsurvey (FU 7)	NTV7	IVa	2nd or 3rd Quarter	Nephrops
Nephrops TVsurvey (FU 8)	NTV8	IVb	2nd or 3rd Quarter	Nephrops
Nephrops TVsurvey (FU 9)	NTV9	IVa	2nd or 3rd Quarter	Nephrops
North Atlantic (ICES Areas V-XIV and NAFO areas)				
International Redfish Trawl and Acoustic Survey (Biennial)	REDTAS	Va, XII, XIV; NAFO SA 1-3	June/July	Redfish
Flemish Cap Groundfish survey	FCGS	3M	July	Demersal species
Greenland Groundfish survey	GGS	XIV, NAFO SA1	October/November	Cod, redfish and other demersal species
3LNO Groundfish survey	PLATUXA	NAFO 3LNO	2nd and 3rd Quarter	Demersal species

Name of the survey	Acronym	Area	Period	Main targeted species
Western IBTS 4th quarter (including Porcupine survey)	IBTS Q4	VIa, VII, VIII, IXa	4th Quarter	Demersal species
Scottish Western IBTS	IBTS Q1	VIa,VIIa	March	Gadoids, herring, mackerel
ISBCBTS September	ISBCBTS	VIIa f g	September	Sole, Plaice
WCBTS	VIIe BTS	VIIe	October	Sole, Plaice, Anglerfish, Lemon sole
Blue whiting survey		VI, VII	1st and 2nd Quarter	Blue whiting
International Mackerel and Horse Mackerel Egg Survey (Triennial)	MEGS	VIa, VII,VIII, IXa	January-July	Mackerel, Horse Mackerel egg production
Sardine, Anchovy Horse Mackerel Acoustic Survey		VIII, IX	March-April-May	Sardine, Anchovy, Mackerel, Horse Mackerel abundance indices
Sardine DEPM (Triennial)		VIIIc, IXa	2nd and 4th Quarter	Sardine SSB and use of CUFES
Spawning/Pre spawning Herring/Boarfish acoustic survey		VIa, VIIa-g	July, Sept, Nov, March, Jan	Herring, Sprat
Biomass of Anchovy	BIOMAN	VIII	May	Anchovy SSB (DEP)
Nephrops UWTV survey (offshore)	UWTV (FU 11-13)	VIa	2nd or 3rd Quarter	Nephrops
Nephrops UWTV Irish Sea	UWTV (FU 15)	VIIa	August	Nephrops
Nephrops UWTV survey Aran Grounds	UWTV (FU 17)	VIIb	June	Nephrops
Nephrops UWTV survey Celtic Sea	UWTV (FU 20-22)	VIIg,h,j	July	Nephrops
Nephrops Survey Offshore Portugal NepS	UWTV (FU 28-29)	IXa	June	Nephrops
Mediterranean waters and Black sea				
Pan-Mediterranean Acoustic Survey ()	MEDIAS	GSA 1, 6, 7, 9, 10, 15, 16, 17, 18, 20, 22	Spring-summer (qtrs 2-3)	Small pelagic species
Bottom trawl survey in Black Sea,	BTSBS	GSA 29	Spring - autumn (qtrs 2,3,4)	Turbot
Pelagic trawl survey in Black Sea,	PTSBS	GSA 29	Spring-autumn (qtrs 2,3,4)	Sprat and Whiting
International bottom trawl survey in the Mediterranean (),	MEDITS	GSA 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 15, 16, 17, 18, 19, 20, 22, 23, 25	Spring-summer (qtrs 2-3)	Demersal species

13.2 Annex 2. EWG response to questions from DG MARE (K. Patterson).

Could DCF surveys provide data to address the following?

1. Data needs of cetacean, sea turtle and seabird abundance monitoring.
2. Monitoring the abundance of "prohibited" fish species (e.g., the "prohibited" list in Article 14 of the Fishing Opportunities) for which it is difficult to obtain information otherwise. These species are not included in the "stocks" database used by STECF
3. Can surveys also provide information on important sensitive species of fish?
4. Additional ecosystem data from surveys including for MSFD D1,3,4,6 & 10.

1. Data needs of cetacean, sea turtle and seabird abundance monitoring

Cetacean, sea turtle, and seabird abundance monitoring can be carried out on most DCF surveys, subject to berth space for monitoring teams. The primary survey method would be the use of sight (visual) surveys. Conventionally, these require at least one, and usually two observers working on the foredeck or bridge top. Observation is with binoculars and sightings are recorded by species, distance, and angle off course. This can only be done in daylight and reasonable weather conditions. The method is also applicable for seabirds and for floating litter. The constraints would mainly be space on board for the observers. Probably the best surveys for this work would be transect-based surveys, e.g., acoustic or icthyoplankton surveys, but the work is feasible on station-based surveys such as bottom trawl surveys, possibly with modifications.

A key caveat will be that many of these surveys will not cover the full distribution range of the target cetacean or seabird species.

Cetaceans can also be monitored using Passive Acoustic Monitoring (PAM). PAM uses hydrophones to detect the noises made by the animals and can be identified to species. Most surveys could also be used as platforms for this work, but the key issue is that the vessel needs to stop and stop its engines to do this, and so would require more sea time to carry out the core survey work and the PAM together.

2. Monitoring of abundance of "prohibited" fish species

For most of the species on this list this type of data can be, and usually are, collected on the trawl surveys (e.g., otter trawl surveys such as IBTS, MEDITS, and beam trawl surveys such as BTS). In some cases the data may not be fully disaggregated, e.g., by sex, length etc. However, this could easily be amended. Two major caveats need to be considered:

a. The surveys may not cover the full distribution of the species of interest, and so abundance estimates could be partial or biased. This may not be a problem for a number of these species, such as some of the skates and rays, but this should be considered on a species by species basis.

b. There may be issues of catchability for these species. The trawl surveys generally provide CPUE (relative abundance) rather than actual abundance. CPUE can be converted to abundance using swept-area data (which are generally available) and catchability data, which may be more difficult to source. Catchability corrections have been provided for some species in Walker et al. (2017). This would be a particular issue if there was a requirement to use both otter trawl and beam trawl survey CPUE data.

Some species will not be caught in the trawl surveys, most obviously the pelagic sharks and deep water sharks. Some of these are caught in long line surveys on the Azores and Portuguese waters and may be useable for abundance information, although some of these species are much more widely distributed than the survey coverage. Basking sharks may also be monitored with sight surveys as with the cetaceans (above).

There may be a need to provide additional taxonomic information to the survey analysts and possibly training in identifying some species accurately.

3. Can surveys also provide information on important sensitive species of fish?

As with the "prohibited" species, the trawl surveys can also provide evaluations of the "sensitive" species, subject to a list of these being available, for instance Table 1d of the Dec Comm EU 1251/2016 or GFCM-DCRF Appendix E. The same caveats regarding distribution ranges and catchability would apply to these species. The taxonomic and identification issues may be greater with these species, depending on which species are being targeted. It is also likely that some of the sensitive (and indeed prohibited) species may also be rare in the surveys. This makes identification more of an issue, and also means that CPUE corrections may be misleading, and presence/absence approaches may be more appropriate. Notwithstanding these issues, it should be possible to provide some form of abundance monitoring for most of these species. It should be noted that expanding the species list for detailed monitoring may increase the number of staff needed on the surveys, and increase costs.

4. Other ecosystem data – mentioned by KP but not in the text question.

Research Vessel surveys have long been identified as suitable platforms for the collection of additional ecosystem data pursuant to the EBAFM, and for the MSFD. In many cases this had been already set in place, such as the PELGAS surveys in Biscay, and the blue whiting acoustic surveys west of the shelf break. The potential of these surveys for provision of ecosystem data has been examined in depth by the ICES Working Group on Integrating Surveys into the Ecosystem Approach (WGISUR). Published reports from this group are available at: http://www.ices.dk/publications/library/Pages/default.aspx#Default=%7B%22k%22%3A%22wgisur%22%2C%22r%22%3A%5B%7B%22n%22%3A%22ReportAcronymOWSCHCS%22%2C%22t%22%3A%5B%22%5C%22%C7%82%C7%82574749535552%5C%22%22%5D%2C%22o%22%3A%22and%22%2C%22k%22%3Afalse%2C%22m%22%3Anull%7D%5D%7D

An extensive analysis of what could potentially be collected was carried out by WKCATDAT (ICES 2010). In the tables provided, the possible products were broken down by MSFD descriptor and by the degree to which the survey would need to be altered to accommodate that sampling. Expressed simply, some data could be collected without additional survey time or personnel, but probably with extra equipment and possibly post-cruise analysis (e.g., stomach contents). Some data would require additional personnel and/or ship time, such as where on-board analysis needed or where the vessel would need to stop for significant periods to take samples, and so on. It was also noted that even when a data stream did not require additional personnel or ship time, this did not mean that a survey could include all data streams of that type.

The group also carried out an examination of some existing "ecosystem" surveys in the context of the MSFD and the EBAFM summarised in the WKECES report (ICES 2012). This looked at how close we can get to an "ideal" ecosystem survey.

One further workshop looked at the design of an "integrated survey" based on a design where the survey was targeted on a series of related ecosystem processes in the North Sea (below).

- Food-web relations from primary production to fish (via phytoplankton and/or macrobenthic in- and epifauna).
- Effect of physical-chemical environment on the biota; temperature, salinity, suspended particulate matter, humic acid, and oxygen.
- Relation demersal fish/macrobenthic fauna and sediment.
- Life cycle of herring and sprat.

This process is reported in ICES (2016).

There are some initiatives in place under the framework of the MEDITS Coordination Group aimed at providing data on the spatial distribution and abundance of vulnerable benthic species. These initiatives operate in line with the requirements of th MSFD (MSFD recognized the fragility of deep-sea habitats, recommending the protection of deep-sea coral species) and in cooperation with the activities of the GFCM Working Group on Vulnerable Marine Ecosystems (WGVME) (GFCM 2018).

Final considerations and a way forward

The bottom line here is that there are a wide range of possibilities for ecosystem and MSFD based data collection using the DCF funded surveys as platforms. A considerable amount of such data collection is already being carried out on DCF surveys, although this is often quite ad hoc, and based on the operator's perception of needs rather than specific needs and priorities for the MSFD or for progressing of EBAFM. The specific questions asked of the EWG referred to: cetaceans and seabirds; prohibited species; and sensitive species. It is quite possible to provide information on these, particularly the prohibited and sensitive fish species. Cetaceans and seabirds are already monitored to some degree, but could benefit from specific questions and requests in the context of MSFD requirements.

The surveys have considerable potential to provide other data streams into the MSFD, but it would greatly help if priorities could be identified for immediate action, if feasible. Action on this is made more difficult by the different responsibilities between the DCF (EC competency) and MSFD (MS competency), and that DCF and MSFD fall under different EC DGs, and often different departments within the MS. ICES WGISUR would be the obvious forum to take this forward, perhaps holding a workshop in Brussels with DG MARE and DG ENV involvement. It should be noted that WGISUR in their last meeting provide a similar advice for the US and Canadian authorities (ICES 2018).

WGISUR would technically not have a role for surveys in the Mediterranean. However, the issues and potentials are likely to be the same for both the Mediterranean and northern European countries involved in ICES, and collaboration via STECF and GCFM should be considered. In this respect, GFCM is in the process of publishing a manual providing a range of guidelines on how to implement programmes for the monitoring of the by-catch of vulnerable species in the Mediterranean and Black Sea (GFCM 2019), including the use of experimental surveys as platforms for collecting data on catches and sightings. This initiative took advantage of the results of the EU project "Strengthening regional cooperation in the area of fisheries data collection in the Mediterranean and Black Sea" (MARE/2014/19 - SI2.705484; see Spedicato 2016) and was implemented in cooperation with the ongoing EU project STREAM "Strengthening Regional cooperation in the area of fisheries biological data collection in the Mediterranean and Black Sea" (MARE/2016/22 - SI2.770115).

References

GFCM. 2018. Report of the second meeting of the Working Group on Vulnerable Marine Ecosystems (WGVME). FAO headquarters, Rome, Italy, 26-28 February 2018. FAO, Rome. 57 pp.

GFCM. 2019. Monitoring the incidental catch of vulnerable species in the Mediterranean and the Black Sea: methodology for data collection. FAO, Rome. In press.

ICES. 2010. Report of the Workshop on Cataloguing Data Requirements from Surveys for the EAFM (WKCATDAT), 26-28 January 2011, Dublin, Ireland. ICES CM 2010/SSGESST:09. 38 pp.
http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGESST/2010/wkcatdat10.pdf

ICES. 2012. Report of the Workshop on Evaluation of current ecosystem surveys (WKECES), 20-22 November 2012, Bergen, Norway. ICES CM 2012/SSGESST:23. 59 pp. http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGESST/2012/WKECES12.pdf

ICES. 2016. Report of the Workshop to plan an integrated monitoring Programme in the North Sea in Q3 (WKPIMP), 22-26 February 2016, ICES HQ, Copenhagen, Den-mark. ICES CM 2016/SSGIEOM:11. 48 pp.
http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGIEOM/2016/WKPIMP/WKPIMP2016.pdf

ICES. 2018. Report of the Working Group on Integrating Surveys for the Ecosystem Approach (WGISUR). 29 May - 1 June 2018. St. Andrews, Canada. ICES CM 2018/EOSG:16. 17 pp.

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/EOSG/2018/WGISUR/WGISUR%20Report%202018.pdf

Spedicato, M.T. 2016. Strengthening regional cooperation in the area of fisheries data collection in the Mediterranean and Black Sea. Contract MARE/2014/19 -SI2.705484, Final Report. 34 pp. + Annexes.

Walker, N. D., D. L. Maxwell, et al. 2017. Estimating efficiency of survey and commercial trawl gears from comparisons of catch-ratios. ICES Journal of Marine Science 74(5): 1448–1457.

KJ-AX-19-006-EN-N

STECF

The Scientific, Technical and Economic Committee for Fisheries (STECF) has been established by the European Commission. The STECF is being consulted at regular intervals on matters pertaining to the conservation and management of living aquatic resources, including biological, economic, environmental, social and technical considerations.

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent, evidence throughout the whole policy cycle.

EU Science Hub
ec.europa.eu/jrc

@EU_ScienceHub
EU Science Hub - Joint Research Centre
Joint Research Centre
EU Science Hub

Publications Office
of the European Union

doi:10.2760/2860

ISBN 978-92-76-09516-3