



**Regional Coordination Group**  
North Atlantic  
North Sea & Eastern Arctic



**Regional Coordination Group**  
Baltic

# Intersessional Subgroup (ISSG) 2020-2021 Reports

**RCG NANSEA AND RCG BALTIC REPORT**

**Part III**

**7 – 11 June 2021**

**Virtual Meeting**

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SECWEB

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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

Recommended format for purposes of citation:

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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### Contents

1. ISSG End-users and RCGs .....	4
2. ISSG RDB Catch, Effort and Sampling Overviews .....	32
3. ISSG Métier Issues .....	36
4. ISSG Surveys.....	43
5. ISSG Data Quality .....	46
6. ISSG Development of Draft Regional Work Plan/ FISHN´CO.....	80
7. ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group).....	119
8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic .....	126
9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic.....	151
10. ISSG Case Study of the Trawl Fishery in Iberian Waters.....	178
11. ISSG Evaluation of the Data Collected for SSF at EU level.....	201
12. ISSG Identification of Case Studies for PETS Bycatch Monitoring.....	204
13. ISSG Diadromous Fishes .....	238
14. ISSG Marine Recreational Fisheries .....	262
15. ISSG Regionally Coordinated Stomach Sampling.....	272
16. ISSG National correspondents .....	324
17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB.....	333



## I ISSG End-users and RCGs

The aim of the subgroup is to review and streamline dialogue between data providers (RCGs) and End-users (ICES) in order to identify effective processes to meet end-user needs and allow the RCG to prioritize its activity relating to future data collection, storage and transmission functions. The subgroup was established as a pan regional group in 2018.

During the RCG NANSEA and RCG Baltic Technical meeting (TM) in 2020 it was decided that the ToRs for this ISSG should be changed to have a more generic focus. It was therefore decided to keep the annual information meetings between ICES and the RCGs chairs to ensure the good cooperation and to be able to follow the progress over time.

### Participants in the group

Name	email	MS	RCG chair/ Corona overviews
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Maciej Adamowicz	madamowicz@mir.gdynia.pl	PL	Subgroup “Implications of the Corona Virus on Sampling”

### ToRs

Main tasks for 2020 – 2021 are:

1. Communication channel between ICES and RCGs chairs
  - define a mechanism for streamlining the recommendations put forward to the RCGs from ICES expert (it used to be a task for WGDATA, but the group disappears in 2021).
  - provide ICES with a summary of the mandate and remits of the RCGs in order to align recommendations from EG with what the RCGs actually can facilitate.
2. Communication channel between the COM and RCGs chairs
  - prepare a document explaining the need for a new RDBES.
3. Follow up on end-user needs on a general scale.
4. Update commercial sampling overview caused by Covid-19.
5. UK related issues.

### Outcome

During the season 2020-2021 the ISSG had two virtual meeting with ICES. During the first meeting (17<sup>th</sup> of March 2021) general issues were discussed, including a presentation of the implications of the Corona Virus

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

on Sampling in 2020. During the second meeting (5<sup>th</sup> of May 2021) ICES recommendations towards RCGs were discussed. A new set-up to streamline the recommendations put forward by ICES was generated and set out for testing. A document of RCG mandate and remit was produced.

For more details read the content below:

1. End-user Meeting MINUTES (17<sup>th</sup> March 2021).
2. Implications of the Corona Virus on Sampling in 2020 (presented during 17<sup>th</sup> March 2021 End-user meeting).
3. Recommendations Meeting MINUTES (5<sup>th</sup> May 2021).
4. Recommendations Meeting MINUTES (15<sup>th</sup> May 2021).

Annex I.I. Mandate and remits of the RCGs Baltic and NANSEA.

### I.1 End-user Meeting MINUTES (17th March 2021)

ICES: Lotte Worsøe Clausen, Ruth Fernandez (part time), Neil Holdsworth (afternoon), Rui Catarino (afternoon)

RCG Baltic: Elo Rasmann (co-chair), Sven Stötera (co-chair)

RCG NANSEA: Lucia Zarauz (co-chair), Harriet van Overzee (co-chair)

5

#### Morning session (11:00 – 12:10)

##### Communication between ICES and the RCGs

- 1) *Define a mechanism for streamlining the recommendations put forward to the RCGs from ICES expert (it used to be a task for PGDATA, but the group disappeared in 2021)*

What is the route of the recommendations? Any ICES group can make a recommendation, but try to limit to 5 per group. Recommendations are inserted into the ICES recommendation database. ACOM and SCICOM review the recommendations regularly. However, it is difficult to determine which recommendations are useful to communicate to the RCGs. Chairs of SGs Data Science and Technology (DST) and Ecosystem Observation are integral part of the screening process. A close link between these two SG chairs, the SCICOM chair and representative(s) of the RCGs could be very useful in the screening of the recommendations. Ideally ICES recommendations made to the RCGs are ready by the beginning of the year and can be filtered well before the technical meeting in June, e.g., during the end-user meeting, so they can be communicated back timely to the relevant ISSGs. After the technical meeting the RCG recommendations made to ICES can be filtered and communicated back to the relevant WGs.

##### Action point Lotte:

- will explain this idea to the SG/SCICOM chairs. Then she will provide RCGs chairs with



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

some dates (beginning of April, after Easter) for a meeting with SG/SCICOM chairs and RCGs chairs during which the process can be discussed and started.

- Provide RCGs chairs with the list of ICES recommendations to RCGs from previous years

**Action point RCGs chairs:** have a look at previous ICES recommendations to determine which ones were relevant for the RCGs and which ones were not.

- 2) Provide ICES with a summary of the mandate and remits of the RCGs in order to align recommendations from EG with what the RCGs actually can facilitate.

During last end-user meeting the mandate and remits of the RCGs was discussed and set as a task to develop this year. Lucia presented a draft document on the mandate and remits of the RCGs which could help EGs to make recommendations that the RCGs can answer/facilitate.

**Action point RCGs chairs:** proceed with the document, add some examples and then send around.

- 3) New point of contact in the Secretariat for RCGs and 4) 'beefing up' of the general support

New point of contact in the ICES secretariat for RCGs is Jan de Haes. As Jan is also linked to the benchmark overview group he can provide information on what is going on in the benchmarks. EU SecWeb project has just started and will run until December 2022. It is planned that the structure of the RCG secretariat will be ready at the end of 2021. There will be an update of the SecWeb project during the Technical meeting in June.

**Action point Lotte:** to invite Jan for the SecWeb update during the TM.

#### Covid-19 overviews

- 5) Covid-19 overview provided by RCG to ICES

The Covid-19 heatmaps are presented. ICES has discussed these heatmaps with the EG chairs and they would like to receive them. The ICES secretariat team can present the heatmaps to the EGs. In order to prepare, the ICES secretariat would possibly like to have Q&A with RCG representative on the heatmaps.

ICES would like the work on the heatmaps to continue in 2021. Some feedback from the EGs on the heatmaps would be nice. Lotte will ask and communicate back on this during the TM.

**Action point RCGs chairs:** provide Lotte with presentation of Covid-19 overviews.

**Action point Lotte:** Lotte will let RCGs chairs know whether a Q&A is needed.

**Action point Lotte:** Collate any feedback that is given by the EGs on the heatmaps and communicate back during the TM.

- 6) Recommendation from RCG NANSEA\_Baltic\_2020\_R01: Data gaps because of Covid-19 restriction





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

ICES to either provide explicit guidelines on how to address data gaps OR underscore clearly in 2021 data call that imputation should not be done. What is the status of this recommendation? No non-transparent raising should be done.

ICES has provided the EGs with guidelines on how to deal with data gaps. See: [https://www.ices.dk/about-ICES/Documents/Approaches\\_Missing\\_Data\\_2021\\_and\\_templates.pdf](https://www.ices.dk/about-ICES/Documents/Approaches_Missing_Data_2021_and_templates.pdf)

The presented heatmaps are included below as part of the report.

#### UK related issues

7) *Will UK continue delivering data? Is there an agreement between ICES and UK?*

ICES has got a MoU with the UK. In one of the annexes it is specified how the UK will continue to sample. DEFRA is the recipient of the data call and will respond to it. UK will also deliver data to RDBES. There will be/is discussion on access of the Commission to the UK RDB data.

UK is an ICES country which means they will continue to participate in the different groups. ICES is the main adviser to the UK and this will continue. UK specific requests will most probably increase.

The UK can be invited as an observer to the Technical meeting. ICES encourages to keep the link between RCGs and UK as open as possible.

#### **Afternoon session (13:00 – 14:00)**

##### Follow-up on Survey-related RCG recommendations from 2020

8) *Recommendation from RCG NANSEA\_Baltic\_2020\_R05: ICES to setup Workshop on a “pilot FIRMOG” in 2021.*

Maria Hansson and Lotte are working on this, ToRs for this Workshop have been drafted. The North Sea IBTS will be used as a case study. The Workshop will hopefully take place before the end of this year but definitely not before the TM in June.

9) *Recommendation from RCG NANSEA\_Baltic\_2020\_R06: Revision of the survey effort and coverage of the IBWSS.*

Lotte was not informed on this recommendation. This recommendation needs to be sent to ICES so it can be communicated to the relevant survey group.

**Action point RCGs chairs:** email recommendation on revision of the survey effort and coverage of the IBWSS to Lotte.

##### *Databases and reference lists: update, news and developments*

10) *Action 2020: ICES to review the latest acronyms from the STECF inputs evaluation survey list and to confer with Rie and Jon.*

ICES has taken the survey acronyms and added a unique code to it. This unique code is added to the advice sheets and will hopefully next year be linked to a database. In order to avoid all the information of the survey being put into the code, the code consists of a letter and a sequence number.





11) *SID Improving the variables listed on SID. Actions 2020: 1. Rui to circulate to group the proposed list of variables/template of variables for SID. 2. Rui to ask Colin what and if a description of the inputs could be derived from TAF.*

ICES has worked on improving the variables listed on SID. Rui circulated a spreadsheet with tentative fields to add to SID during the meeting. Any comments are welcome. The aim is to complete the list by the end of the summer after which SID can be populated which will be a longer-term process. Once active, SID will reflect the most recent advice given.

TAF has been a live system since 2019, but does not have all operating stocks in there. TAF has to be fully operational by 2023. All stocks on which ICES give advice one will then be runnable through TAF.

**Action point RCGs chairs:** Reserve moment during Technical meeting for Rui to present SID.

12) *Actions 2020: ICES to consider whether they can host a shiny R server?*

Would ICES consider to host the Shiny R app when catch, effort and sampling overviews are in the end phase (probably 2023)? The idea needs to be more concrete before it can be considered. Especially on data policy, privacy, aggregation level, server maintenance etc. Until a decision is taken, the shiny R app can remain hosted at AZTI server, as it is now.

**Action point RCGs chairs:** approach WGQUALITY chair (D. Curry) when Shiny R app is further developed.

13) *13) What is happening within ICES for monitoring and considering the use of new data?*

Two workshops have taken place around industry data: WKSCINDI (Workshop on Science with industry initiatives) in 2019 and WKDSG (Workshop on Standards and Guidelines for fisheries dependent data) in 2020. ICES is always considering new data.

**Action point RCGs chairs:** consider to include new data as item during Technical meeting

14) *14) Action: ICES to provide RCGs with standard PET bycatch species list to ensure consistency between RCGs guidance and ICES use.*

What is the status on the PET bycatch species list? Some progress has been made. Last year there was a workshop on determining which fish species should be added to the list (by ecoregion). This list will be revised by ICES, who plan to deliver a definitive list by the end of 2021. Ruth will let Sven and Lucia know when the report with the preliminary PETS bycatch species list is published. The list of birds and marine mammals are also being reviewed by ICES. Ruth will also send those lists.

The data call for WGBYC will be in April/ May, as the WG has been moved to September. In the data call, data from the last two years will be requested.

There is an OSPAR request for advice of mammal species, and data will be requested at a haul level.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

There is also a special request from DG Environment around PETS, but at the moment it is still in dialogue. Ruth will keep the RCGs chairs informed on this.

**Action point Ruth:** inform Sven and Lucia when the report with preliminary PETS bycatch species list is published

**Action point Ruth:** keep RCGs chairs informed on special request from OSPAR and DG Environment around PETS.

#### Any Other Business

Lotte would like to continue with this annual end-user meeting that is held in Q1 of each calendar year. Online works perfectly for this meeting.

#### Overview action points defined during End-user meeting 17-03-2021

Action point	Responsible
Explain the idea on filtering recommendations to the SG/SCICOM chairs. Provide some dates for a meeting with SG/SCICOM chairs and RCGs chairs during which the process can be discussed and started	Lotte
Provide RCGs chairs with the list of ICES recommendations to RCGs from previous years	Lotte
Have a look at previous ICES recommendations to determine which ones were relevant for the RCGs and which ones were not.	RCGs chairs
Proceed with RCG remits and mandate document, add some examples and then send around	RCGs chairs
Invite Jan for the SecWeb update during the Technical meeting	Lotte
Provide Lotte with presentation of Covid-19 overviews	RCGs chairs
Inform RCGs chairs on whether a Q&A is needed on the Covid-19 overviews	Lotte
Collate any feedback that is given by the EGs on the heatmaps and communicate back during the TM.	Lotte
Email recommendation on revision of the survey effort and coverage of the IBWSS to Lotte	RCGs chairs
Reserve moment during TM for Rui to present SID	RCGs chairs
Approach WGQUALITY chair (D. Curry) when Shiny R app is further developed	RCGs chairs
To consider to include new data as item during Technical meeting	RCGs chairs
Inform Sven and Lucia when the report with preliminary PETS bycatch species list is published	Ruth
Keep RCGs chairs informed on special request from OSPAR and DG Environment around PETS	Ruth

### I.2 Implications of the Corona Virus on Sampling in 2020 (presented during 17th March 2021 End-user meeting)

- Questionnaire was designed to provide information of Covid-19 on commercial sampling at the stock level by region.
- Information collected for March 2020 and Q2-Q4 2020 (all countries responded).

- Heat plot analysis carried out by region.
- Stocklists per country are taken from the RDB.
- Countries were able to add missing stocks.
- Questionnaire reworked during RCGs TM 2020 as there may have been issues with interpretation of the questions asked, also changed to a quarterly instead of a monthly overview:

*Fishing effort:* Was the effort for this stock reduced because of Covid-19?

*Landings:* Was your planned age sampling on landings for this stock reduced because of Covid-19?

Was your planned length sampling on landings for this stock reduced because of Covid-19?

*Unwanted catch:* Did Covid-19 impact your sampling to get estimates on discards weight?

Was your planned age sampling on the unwanted part of the catch reduced because of Covid-19?

Was your planned length sampling on the unwanted part of the catch reduced because of Covid-19?

- Scoring of Questions on the Overview of effects on commercial sampling caused by the Corona pandemia (Answers could be analysed numerically):
  - Extreme impacts (75-100%) **3**
  - Medium impacts (25-75%) **2**
  - Low/Null impacts (0-25%) **1**
  - Impacts not known (?%)
  - Not applicable

} Information included in heat plots

- Analysis:
  - The average score for every stock was calculated.
  - The number of countries that responded to each question were included in brackets for each stock.
  - The overview plots showing the impact of Covid-19 are presented by region.
  - Each stock was assigned to a region (following the classification of the regions used in the RCGs):
    - The Baltic Sea (ICES areas III b-d).
    - The North Sea (ICES areas IIIa, IV and VIId).
    - The Eastern Arctic (ICES areas I and II), the ICES divisions Va, XII, XIV and the NAFO areas.
    - The North Atlantic (ICES areas V-X, excluding Va and VIId).
    - The Northwest Atlantic (NAFO areas).
    - Pan-regional.

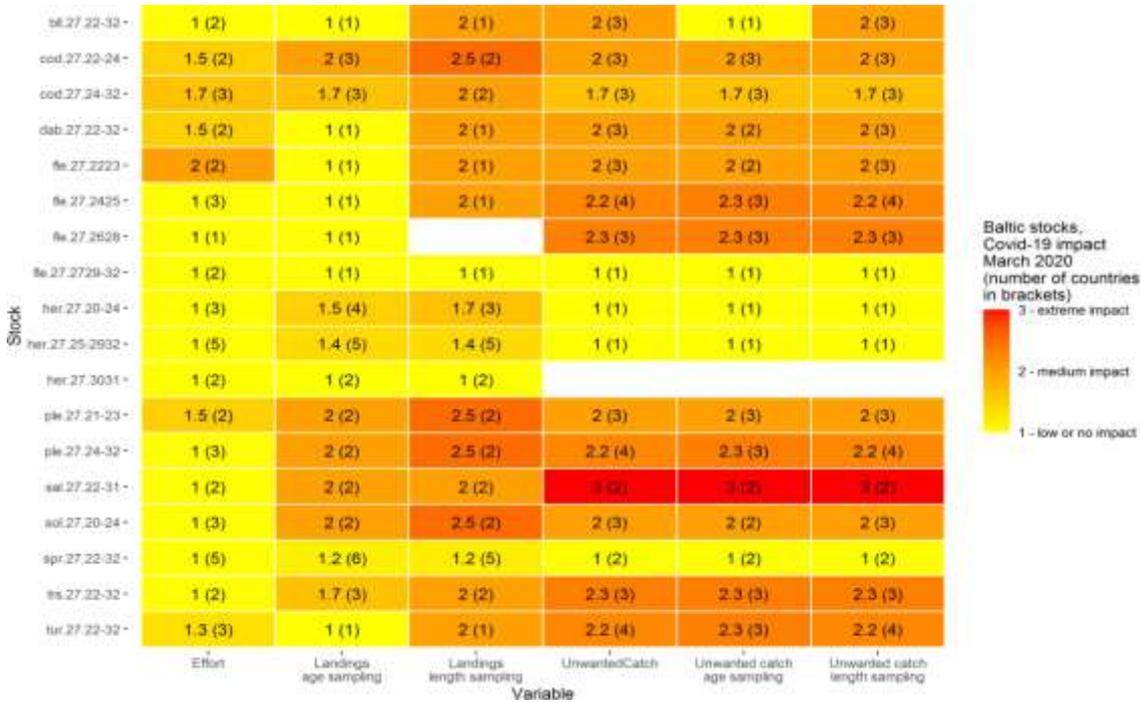


# RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

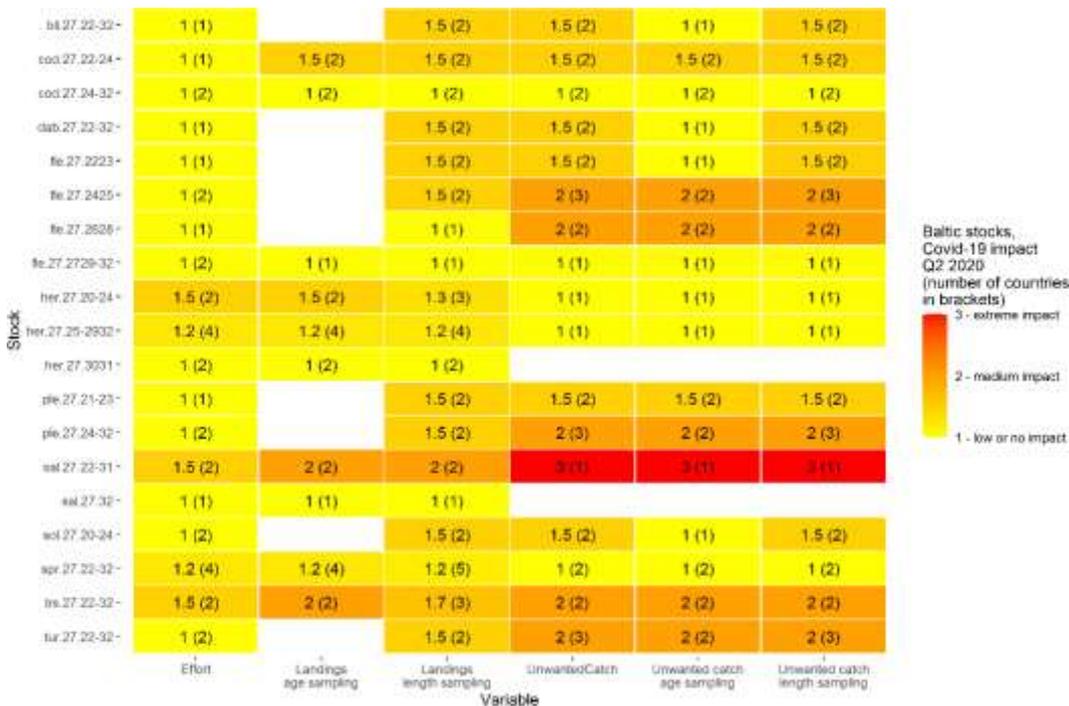
## I. ISSG End-users and RCGs

### Baltic stocks

Baltic stocks 2020 March:



Baltic stocs 2020 Q2:

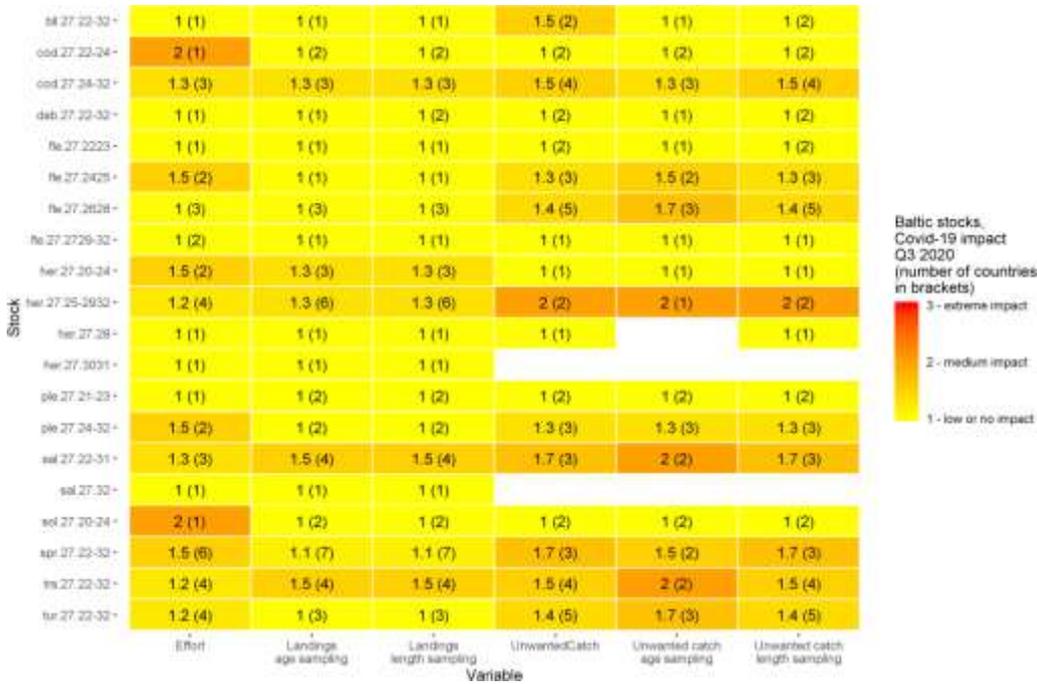




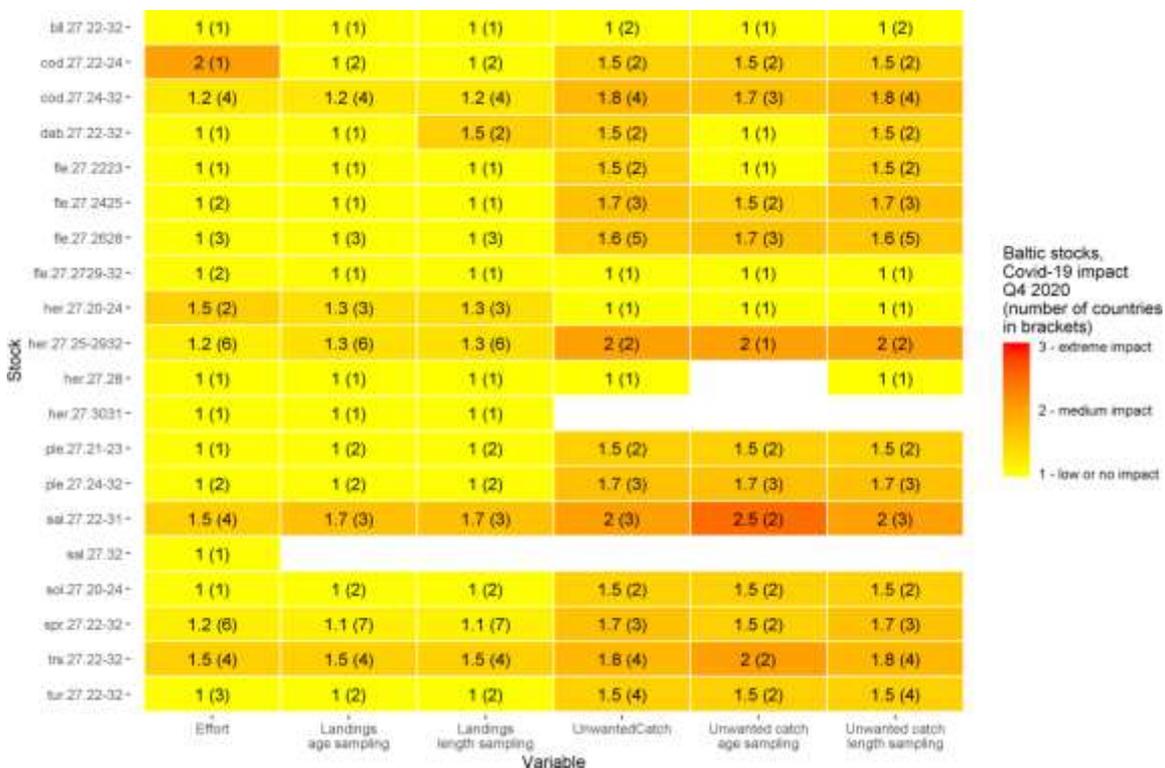
RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I. ISSG End-users and RCGs

Baltic stocs 2020 Q3:



Baltic stocs 2020 Q4:



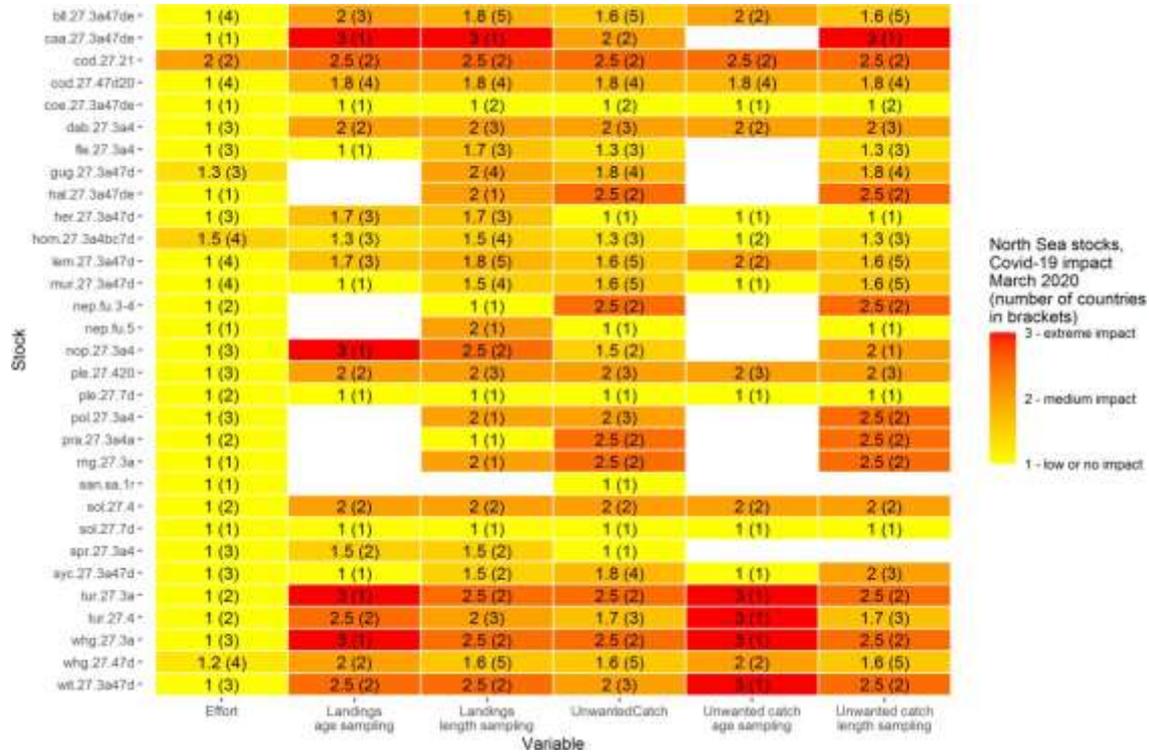


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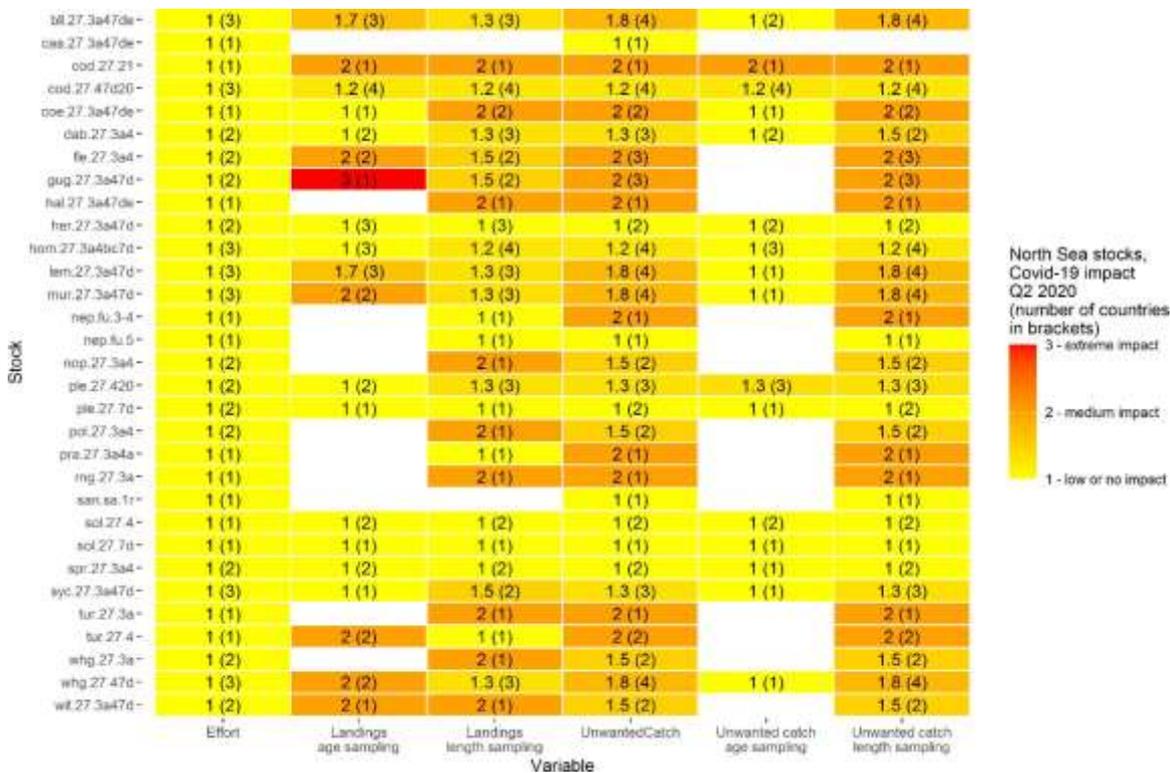
## I. ISSG End-users and RCGs

### North Sea

#### North Sea March 2020:



#### North Sea 2020 Q2:

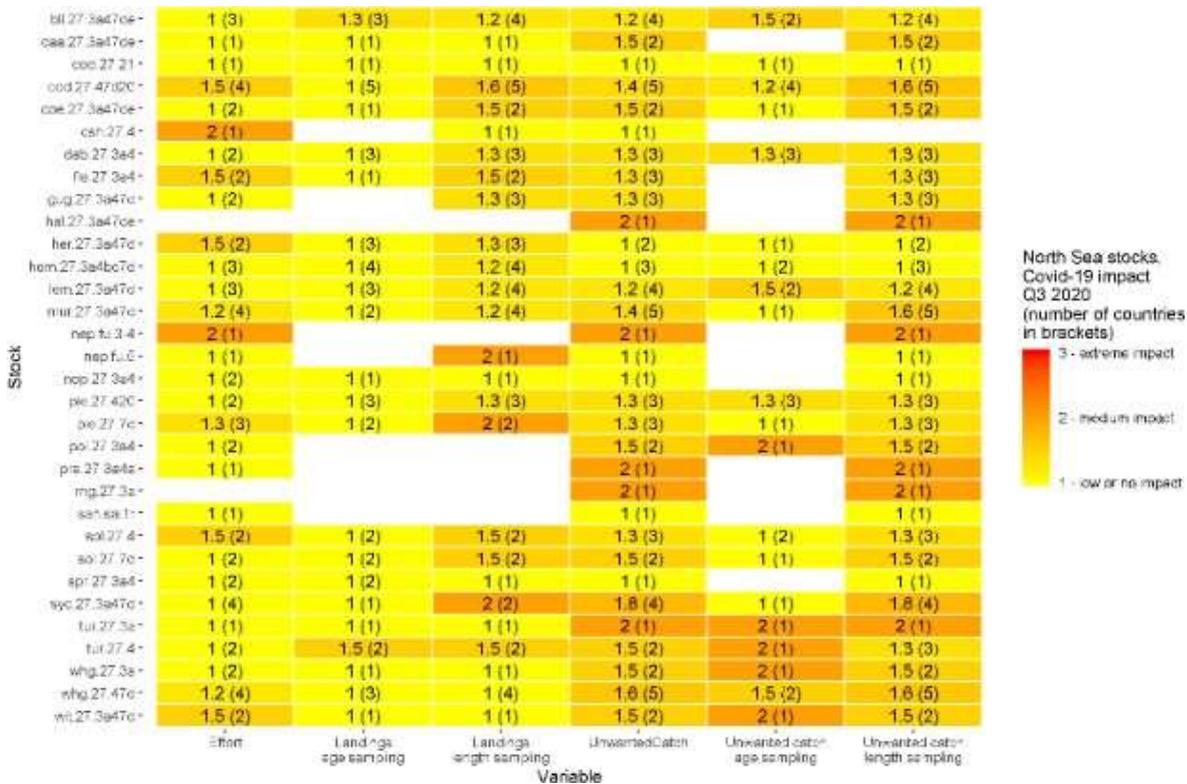




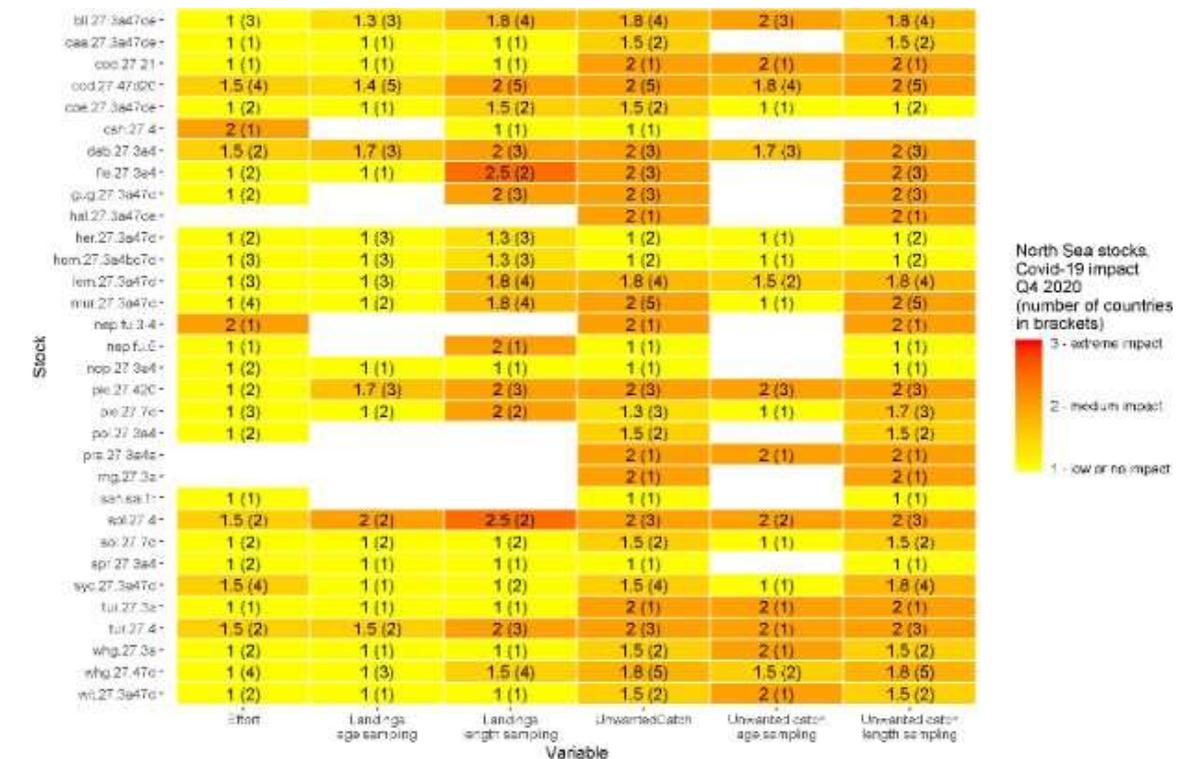
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## I. ISSG End-users and RCGs

### North Sea Q3:

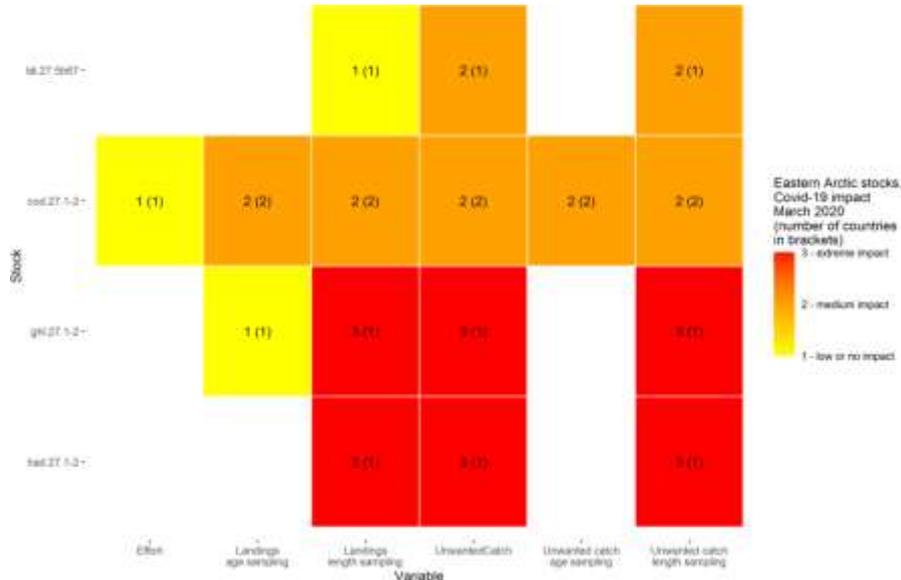


### North Sea Q4:



### Eastern Arctic

Eastern Arctic 2020 March:



Data for aru.27.5a14, POK.27.1.2, reb.27.1.2 and reg.27.1.2 in March there are either “Not applicable” or “Impact not known”

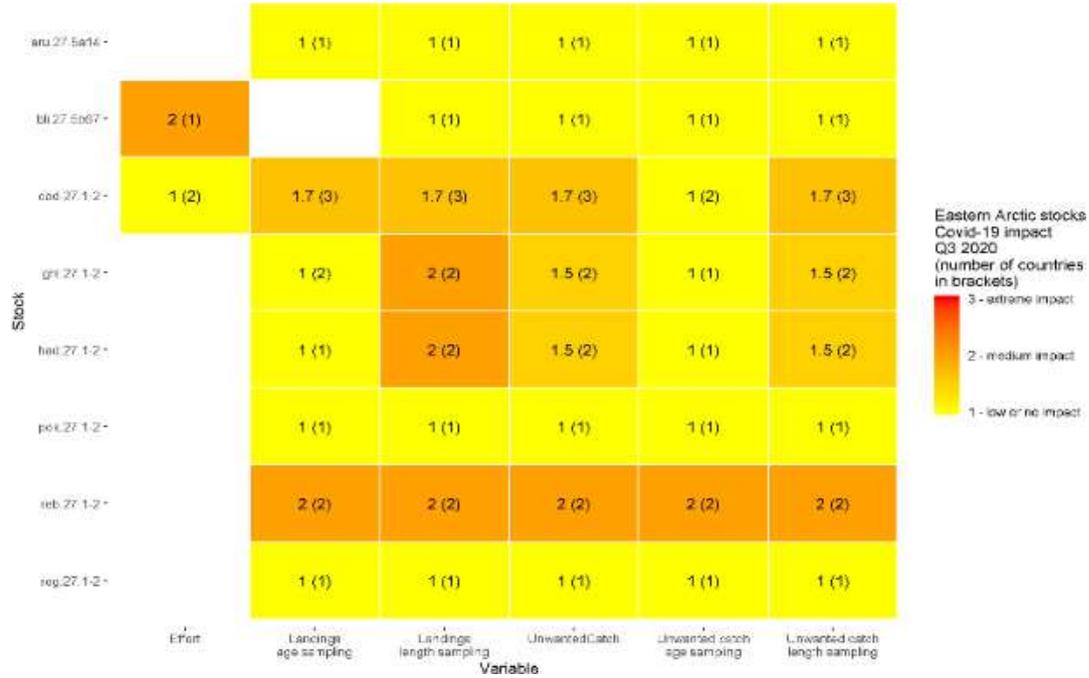
Eastern Arctic 2020 Q2:



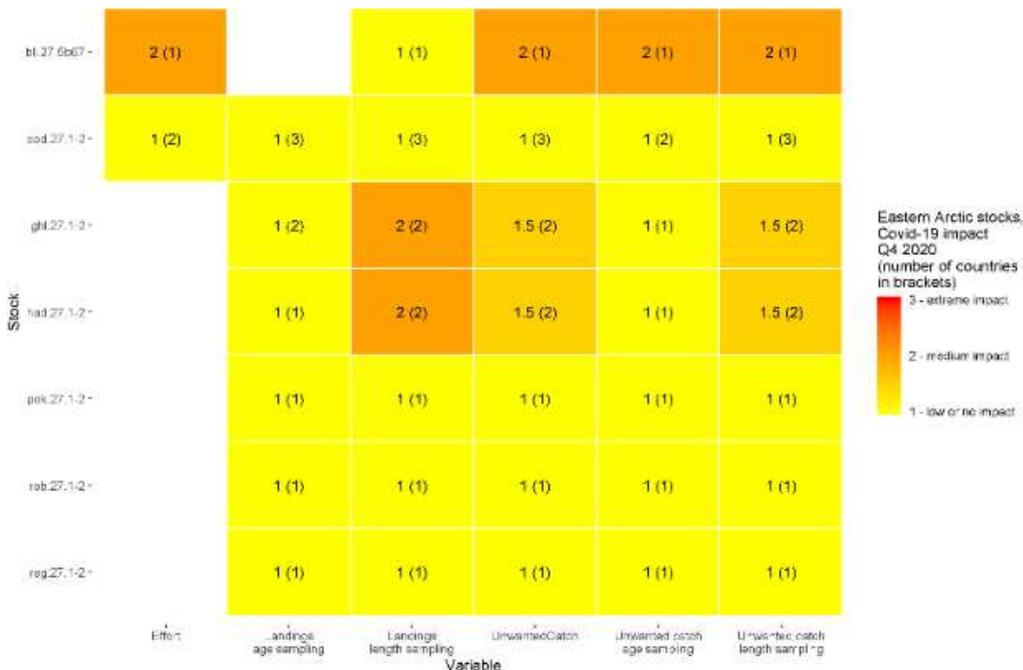
RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I. ISSG End-users and RCGs

Eastern Arctic 2020 Q3:



Eastern Arctic 2020 Q4:





RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I. ISSG End-users and RCGs

North Atlantic

North Atlantic 2020 March:

Stock	Effort	Landings age sampling	Landings length sampling	UnwantedCatch	Unwanted catch age sampling	Unwanted catch length sampling
ane.27.8-			2 (1)	2 (1)	2 (1)	2 (1)
ane.27.9a-	3 (1)	2 (2)	2 (2)	2 (2)	1 (1)	2 (2)
ank.27.78abd-		3 (1)	2 (1)	2 (1)		2 (1)
ank.27.8c9a-	1 (1)	2 (2)	2 (2)	2 (2)	1 (1)	2 (2)
anu.27.5b6a-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
boc.27.8-8-	1 (1)		3 (1)	2 (2)		3 (1)
bos.27.8ab-			3 (1)	3 (1)		3 (1)
bss.27.8c9a-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
cod.27.8a-	1 (2)	1 (2)	2 (2)	2.5 (2)	2 (1)	2.5 (2)
cod.27.8b-	1 (1)	1 (1)	1 (1)	2 (1)	2 (1)	2 (1)
cod.27.7a-	1 (3)	1 (2)	1 (2)	1.5 (2)	1.5 (2)	1.5 (2)
cod.27.7a-k-	1 (3)	1 (3)	1.7 (3)	2 (3)	1.5 (2)	2 (3)
had.27.8b-	1 (1)	1 (1)	1 (1)	2 (1)	2 (1)	2 (1)
had.27.7a-	1 (3)	1 (2)	1 (2)	1.5 (2)	1.5 (2)	1.5 (2)
had.27.7b-k-	1 (3)	1 (3)	1.8 (4)	2 (4)	1.5 (2)	2 (4)
hke.27.8c9a-	1 (1)	2 (2)	1.5 (2)	1.5 (2)	1 (1)	1.5 (2)
hom.27.9a-	2 (1)	2 (2)	2 (2)	2 (2)	1 (1)	2 (2)
jaa.27.10a2-	2 (1)	2 (1)	2 (1)			
kdb.27.8c9a-	1 (1)	1.5 (2)	2 (2)	2 (2)	1 (1)	2 (2)
meg.27.7b-kabd-	1 (2)	1.5 (4)	1.2 (4)	1.5 (4)	1.5 (2)	1.5 (4)
meg.27.8c9a-	1 (1)	2 (2)	2 (2)	2 (2)	1 (1)	2 (2)
mon.27.78abd-	1 (2)	1.7 (3)	1.2 (4)	1.5 (4)	1.5 (2)	1.5 (4)
mon.27.8c9a-	1 (1)	2 (2)	2 (2)	2 (2)	1 (1)	2 (2)
mur.27.67a-ce-89a-	1 (4)	1 (3)	1.5 (4)	1.8 (4)	1 (2)	1.8 (4)
nep.fu.15-	1 (1)		1 (1)	1 (1)		1 (1)
nep.fu.16-	1 (1)		3 (1)	3 (1)		3 (1)
nep.fu.17-	1 (1)		1 (1)	1 (1)		1 (1)
nep.fu.19-	1 (1)		1 (1)	1 (1)		1 (1)
nep.fu.20-21-	1 (1)		1 (1)	1 (1)		1 (1)
nep.fu.2021-			3 (1)	3 (1)		3 (1)
nep.fu.22-	1 (2)	1 (1)	1.7 (3)	1.7 (3)	1 (1)	1.7 (3)
nep.fu.2324-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
nep.fu.2627-			3 (1)	3 (1)		3 (1)
nep.fu.30-		1 (1)	3 (1)	3 (1)		3 (1)
pl.27.7-	1 (1)			1 (1)		1 (1)
pl.27.8abd-		1 (1)	2 (1)	2 (1)		2 (1)
pl.27.8c9a-		2 (2)	2 (2)	2 (2)	1 (1)	2 (2)
ple.27.7a-	1 (3)	1 (2)	1 (2)	1.5 (2)	1.5 (2)	1.5 (2)
ple.27.7bc-	1 (1)		1 (1)	2 (1)	2 (1)	2 (1)
ple.27.7e-	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
ple.27.7g-	1 (2)	1 (2)	1.7 (3)	2 (3)	1.5 (2)	2 (3)
ple.27.7h-k-	1 (1)	1 (1)	2 (2)	2.5 (2)	2 (1)	2.5 (2)
ple.27.89a-	1 (2)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
pok.27.7-10-	1 (2)	1 (2)	2.3 (3)	2.7 (3)	2 (1)	2.7 (3)
pok.27.87-	1 (2)	1 (3)	1.8 (4)	2 (4)	1 (1)	2 (4)
pot.27.89a-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
sbr.27.10-	2 (1)	2 (1)	2 (1)			
sbr.27.6-8-			3 (1)	3 (1)		3 (1)
sbr.27.9-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
sho.27.89a-	2 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
sol.27.7a-	1 (3)	1 (2)	1 (2)	1.5 (2)	1.5 (2)	1.5 (2)
sol.27.7bc-	1 (1)		1 (1)	2 (1)	2 (1)	2 (1)
sol.27.7e-	1 (1)	1 (2)	1.5 (2)	1.5 (2)	1 (1)	1.5 (2)
sol.27.7g-	1 (2)	1 (2)	1.7 (3)	2 (3)	1.5 (2)	2 (3)
sol.27.7h-k-	1 (1)	1 (2)	2.3 (3)	2.7 (3)	2 (1)	2.7 (3)
sol.27.8eb-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
sol.27.8c9a-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
sys.27.67a-ce-j-	1 (2)	1 (1)	1.5 (4)	1.6 (5)	1 (1)	1.8 (4)
sys.27.8abd-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
sys.27.8c9a-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
ysl.27.67-	1 (2)	1 (1)	1 (3)	1.2 (4)	1 (1)	1.3 (3)
usk.27.6b-			1 (1)	2 (1)		2 (1)
whg.27.8a-	1 (2)	1 (1)	2 (2)	2.5 (2)	2 (1)	2.5 (2)
whg.27.8b-	1 (1)	1 (1)	1 (1)	2 (1)	2 (1)	2 (1)
whg.27.7a-	1 (3)	1 (2)	1 (2)	1.5 (2)	1.5 (2)	1.5 (2)
whg.27.7b-ce-k-	1 (3)	1 (3)	1.5 (4)	1.8 (4)	1.5 (2)	1.8 (4)
whg.27.89a-	1.5 (2)	1 (2)	1.7 (3)	1.7 (3)	1 (2)	1.7 (3)

North Atlantic stocks, Covid-19 impact March 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact

North Atlantic stocks, Covid-19 impact March 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact







RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I. ISSG End-users and RCGs

North Atlantic Q3:

Stock	Effort	Landings age sampling	Landings length sampling	UnwantedCatch	Unwanted catch age sampling	Unwanted catch length sampling
ane 27.8-	3 (1)	1 (2)	2.5 (2)	2 (2)		2 (2)
ane 27.9a-	1 (1)	1.5 (2)	2.5 (2)	2.5 (2)	3 (3)	2.5 (2)
ank 27.78abd-	1 (1)	1 (1)	2 (1)	2 (1)		2 (1)
ank 27.8c9a-	1 (1)	1 (1)	2.5 (2)	2.5 (2)		2.5 (2)
aru 27.5c6a-	1 (1)	1 (1)	2 (2)	1.5 (2)		1.5 (2)
boc 27.6-8-	1 (1)		3 (3)	2 (2)	2 (1)	2 (2)
bss 27.8ab-	1 (1)	1 (1)	2.5 (2)	2 (2)		2 (2)
bee 27.8c9a-	1 (1)		2.5 (2)	2.5 (2)		2.5 (2)
cod 27.6a-	1 (1)	1 (2)	2 (2)	2.5 (2)	3 (3)	2.5 (2)
cod 27.6b-	1 (1)	1 (1)	1 (1)			
cod 27.7a-	1 (2)	2 (2)	2 (2)	1 (1)	1 (1)	1 (1)
cod 27.7e-k-	1 (3)	1 (4)	2.2 (4)	2 (4)	1.5 (2)	2 (4)
CODIN2J3K-		2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
CODIN3M-		2 (1)	2 (1)	3 (3)	3 (3)	3 (3)
CODIN3O-		2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
GHLAN3LMNO-		2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
had 27.6b-	2 (1)	1 (1)	1 (1)			
had 27.7a-	1.5 (2)	1.5 (2)	2 (2)	1 (2)	1 (2)	1 (2)
had 27.7b-k-	1 (3)	1 (3)	2 (4)	2.2 (4)	2 (2)	2.2 (4)
her 27.xls-	1 (1)	3 (3)	3 (3)	1 (1)	1 (1)	1 (1)
hke 27.8c9a-	1 (1)	1 (1)	2 (2)	2.5 (2)		2.5 (2)
HKWAN3NO-		1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
hum 27.9a-	1 (1)	1.5 (2)	2.5 (2)	2.5 (2)	3 (3)	2.5 (2)
jea 27.10a2-	2 (1)	2 (1)	2 (1)	3 (3)	3 (3)	3 (3)
ldb 27.8c9a-	1 (1)	1 (1)	2.5 (2)	2.5 (2)		2.5 (2)
meg 27.7b-k8abd-	1.3 (3)	1 (4)	1.8 (4)	2 (4)	1 (2)	2 (4)
meg 27.8c9a-	1 (1)	1 (1)	2.5 (2)	2.5 (2)		2.5 (2)
mon 27.78abd-	1 (3)	1 (4)	2 (4)	2 (4)	2 (2)	2 (4)
mon 27.8c9a-	1 (1)	1 (1)	2.5 (2)	2.5 (2)		2.5 (2)
mur 27.97a-ce-k89a-	1 (3)	1 (2)	2 (3)	2.2 (4)	2 (2)	2.2 (4)
nep.fu.15-	1 (1)		1 (1)	1 (1)		1 (1)
nep.fu.16-	1 (1)		3 (3)	3 (3)		3 (3)
nep.fu.17-	1 (1)		1 (1)	1 (1)		1 (1)
nep.fu.19-	1 (1)		1 (1)	1 (1)		1 (1)
nep.fu.20-21-	1 (1)		1 (1)	1 (1)		1 (1)

North Atlantic stocks, Covid-19 impact Q3 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact

Stock	Effort	Landings age sampling	Landings length sampling	UnwantedCatch	Unwanted catch age sampling	Unwanted catch length sampling
nep.fu.2021-	2 (1)	1 (1)	3 (3)	2.5 (2)		2.5 (2)
nep.fu.22-	1 (2)	1 (1)	1.7 (3)	1.3 (3)	1 (1)	1.3 (3)
nep.fu.2324-	1 (2)	1 (2)	2 (3)	1.7 (3)	1 (1)	2 (3)
nep.fu.2627-			3 (3)	2 (1)		2 (1)
nep.fu.30-		1 (1)	3 (3)	2 (1)		2 (1)
pk 27.7-	2 (1)	1 (1)	3 (3)	3 (3)		3 (3)
pl 27.6abd-	1 (1)	1 (2)	1.5 (2)	2 (2)		2.5 (2)
pl 27.8c9a-	1 (1)	1.5 (2)	2.5 (2)	2.5 (2)	3 (3)	2.5 (2)
PLAN3LNO-		2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
PLAN3M-		2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
ple 27.7a-	2 (2)	2 (2)	1.5 (2)	1.5 (2)	1.5 (2)	1.5 (2)
ple 27.7bc-	2 (1)	1 (1)	1 (1)	3 (3)	3 (3)	3 (3)
ple 27.7e-	1 (2)	1 (2)	2 (2)	2 (2)	1 (1)	2 (2)
ple 27.7g-	1 (2)	1 (2)	1.7 (3)	1.7 (3)	1.5 (2)	1.7 (3)
ple 27.7h-k-	2 (1)	1 (1)	2.5 (2)	2 (2)	2 (1)	2 (2)
ple 27.89a-	1 (2)	1 (1)	1.5 (2)	2 (2)	1 (1)	2 (2)
pok 27.7-10-	1.3 (3)	1 (2)	2 (3)	2.5 (2)		2.5 (2)
pol 27.67-	1.3 (3)	1 (2)	1.5 (4)	2 (3)	1 (1)	2 (3)
pol 27.89a-	1 (1)		2.5 (2)	2.5 (2)		2.5 (2)
PRA3NM-		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
RED3N3LN-		1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
RED3NM-		1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
RED3NO-		1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
RHGN.SA3-		2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
sbr 27.10-	2 (1)	2 (1)	2 (1)	3 (3)	3 (3)	3 (3)
sbr 27.6-8-			3 (3)	2 (1)		2 (1)
atr 27.9-	1 (1)		2.5 (2)	2.5 (2)		2.5 (2)
sto 27.89a-	1 (1)		2.5 (2)	2.5 (2)		2.5 (2)
SKAN3LNO-		1 (1)	3 (3)	3 (3)	3 (3)	3 (3)
sol 27.7a-	1.5 (2)	2 (2)	2 (2)	1 (1)	1 (1)	1 (1)
sol 27.7bc-	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)
sol 27.7e-	1 (2)	1 (2)	1.5 (2)	1.5 (2)	1 (1)	1.5 (2)
sol 27.7g-	1.5 (2)	2 (2)	1.7 (3)	1.5 (2)	1 (1)	1.5 (2)
sol 27.7h-k-	2 (2)	1 (2)	2.3 (3)	2.5 (2)		2 (1)
sol 27.8ab-	1 (2)	1 (2)	2 (3)	1.7 (3)	1 (1)	1.7 (3)

North Atlantic stocks, Covid-19 impact Q3 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact





RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I. ISSG End-users and RCGs

North Atlantic 2020 Q4:



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I. ISSG End-users and RCGs

North-west Atlantic

North-west Atlantic 2020 March:



North-west Atlantic 2020 Q2:



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

#### North-west Atlantic 2020 Q3:

Stock	Landings age sampling	Landings length sampling	Unwanted Catch	Unwanted catch age sampling	Unwanted catch length sampling
CODN2SKL-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
CODN3M-	2 (1)	2 (1)	3 (1)	3 (1)	3 (1)
CODN3NO-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
GHLN3LMNO-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
HKWN3NO-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
PLAN3LNO-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
PLAN3M-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
PRA3M-	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
REDN3LN-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
REDN3M-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
REDN3O-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
RHGN_SAT-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
SKAN3LNO-	1 (1)	3 (1)	3 (1)	3 (1)	3 (1)
SQIN3L-	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
WITN3L-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
WITN3NO-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
YELN3LNO-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)

Northwest Atlantic stocks, Covid-19 impact Q3 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact

Variable

#### North-west Atlantic 2020 Q4:

Stock	Landings age sampling	Landings length sampling	Unwanted Catch	Unwanted catch age sampling	Unwanted catch length sampling
CODN2SKL-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
CODN3M-	2 (1)	2 (1)	3 (1)	3 (1)	3 (1)
CODN3NO-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
GHLN3LMNO-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
HKWN3NO-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
PLAN3LNO-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
PLAN3M-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
PRA3M-	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
REDN3LN-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
REDN3M-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
REDN3O-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
RHGN_SAT-	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
SKAN3LNO-	1 (1)	3 (1)	3 (1)	3 (1)	3 (1)
SQIN3L-	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
WITN3L-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
WITN3NO-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)
YELN3LNO-	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)

Northwest Atlantic stocks, Covid-19 impact Q4 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact

Variable

#### Pan regional



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

#### Pan regional 2020 March:

Stock	Variable					
	Effort	Landings age sampling	Landings length sampling	Unwanted Catch	Unwanted catch age sampling	Unwanted catch length sampling
all.27.nea-	2 (1)	2 (1)	2 (1)			
anf.27.3a46-	1 (2)	3 (1)	2.5 (2)	2 (3)	3 (1)	2 (3)
aru.27.123a4-	1 (2)	1 (1)	1.5 (2)	1.5 (2)	1 (1)	1.5 (2)
aru.27.6b7-1012-			3 (1)	3 (1)		3 (1)
bil.27.nea-	1 (2)		2.5 (2)	2.7 (3)		2.7 (3)
bst.27.nea-	1 (1)	1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
bss.27.4bc7ad-h-	1 (2)	1 (1)	1.5 (2)	1 (2)	1 (1)	1 (2)
dgs.27.nea-	1 (3)		1.8 (4)	1.6 (5)		2 (4)
ele.2737.nea-	1 (3)	1 (2)	1 (2)	1 (1)		1 (1)
gag.27.nea-	2 (1)		1.8 (4)	2.2 (4)		2.2 (4)
gfb.27.nea-	1.2 (4)	1 (2)	1.8 (4)	2 (6)	1 (1)	2.2 (5)
ghi.27.561214-			1 (1)	2 (1)		2 (1)
gur.27.3-b-	1 (1)		1.8 (4)	1.8 (4)		1.8 (4)
had.27.46a20-	1 (4)	2 (2)	2.2 (4)	2.2 (5)	2.5 (2)	2.2 (5)
her.27.1-24a514a-	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
hke.27.3a46-8abd-	1 (5)	2 (4)	1.7 (6)	1.7 (7)	2 (2)	1.7 (7)
hcm.27.2a4a5b6a7a-ce-k8-	1 (3)	1.6 (5)	1.4 (5)	1.2 (4)	1 (3)	1.2 (4)
lez.27.4a6a/lez.27.4a6a-	1 (1)	1 (1)	1 (1)	2.5 (2)	2 (1)	2.5 (2)
ln.27.3a4a6-91214-	1.2 (5)	1.5 (4)	1.8 (6)	1.9 (7)	2 (3)	2 (6)
mac.27.nea-	1.3 (6)	1.5 (6)	1.5 (8)	1.3 (7)	1 (4)	1.3 (7)
pok.27.3a46-	1.2 (4)	2 (2)	2 (3)	2 (4)	2.5 (2)	2.3 (3)
por.27.nea-	1 (1)			1 (1)		
Rajdae-	1 (4)	1 (1)	2 (5)	2 (5)	2 (2)	2 (5)
mg.27.5b6712b-		3 (1)	2 (2)	2.5 (2)	3 (1)	2.5 (2)
sai.nesc.all-	1 (1)			1 (1)		
sdv.27.nea-	1 (2)	1 (1)	1 (3)	1.6 (5)	1 (1)	1.8 (4)
apr.27.7de-	1 (1)			1 (1)		
usk.27.3a45b6a7-912b-	1 (1)			3 (1)		3 (1)
whb.27.1-91214-	1.2 (5)	1.6 (5)	1.7 (6)	1.6 (5)	1 (3)	1.6 (5)

Pan-regional stocks, Covid-19 impact March 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact

#### Pan regional 2020 Q2:

Stock	Variable					
	Effort	Landings age sampling	Landings length sampling	Unwanted Catch	Unwanted catch age sampling	Unwanted catch length sampling
all.27.nea-	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)
anf.27.3a46-	1 (2)		2 (1)	1.5 (2)		1.5 (2)
aru.27.123a4-	1 (2)	1 (1)	1.5 (2)	1.5 (2)	1 (1)	1.5 (2)
aru.27.6b7-1012-			3 (1)	3 (1)		3 (1)
bil.27.nea-	1 (1)		2.5 (2)	2.5 (2)		2.5 (2)
bst.27.nea-	1 (1)	3 (1)	3 (2)	3 (2)	3 (1)	3 (2)
bss.27.4bc7ad-h-	1 (2)	1 (1)	1 (2)	1 (2)	1 (1)	1 (2)
dgs.27.nea-	1 (2)		2.8 (4)	2.4 (5)		2.8 (4)
ele.2737.nea-	1 (2)	1 (3)	1 (3)	1 (2)	1 (1)	1 (2)
gag.27.nea-	3 (1)		3 (4)	3 (4)	3 (1)	3 (4)
gfb.27.nea-	1.3 (3)	2 (2)	2.8 (4)	2.4 (5)	3 (1)	2.8 (4)
ghi.27.561214-		1 (1)	2 (2)	2 (2)	1 (1)	2 (2)
gur.27.3-b-	1 (1)		2.5 (4)	2.3 (3)		2.3 (3)
had.27.46a20-	1.3 (3)	1 (2)	2 (4)	1.8 (4)	1 (2)	1.8 (4)
her.27.1-24a514a-	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
hke.27.3a46-8abd-	1 (4)	1.7 (3)	2 (5)	1.8 (6)	1 (1)	1.8 (6)
hcm.27.2a4a5b6a7a-ce-k8-	1 (2)	1.3 (3)	1.3 (3)	1.8 (4)	1 (2)	1.8 (4)
lez.27.4a6a/lez.27.4a6a-	2 (1)	1 (1)	2 (1)	2 (1)	1 (1)	2 (1)
ln.27.3a4a6-91214-	1.2 (4)	1.3 (3)	2.2 (5)	2.2 (6)	1 (1)	2.4 (5)
mac.27.nea-	1 (4)	1.8 (5)	1.9 (7)	2 (8)	1.5 (4)	2 (8)
pok.27.3a46-	1.3 (3)	1 (2)	2 (3)	1.8 (4)	1 (1)	2 (3)
por.27.nea-	1 (1)			1 (1)		
Rajdae-	1.8 (4)	1 (1)	2.2 (5)	2 (5)	2 (2)	2 (5)
feb.2127.dp/reb.2127.sp/reb.27.14b-		2 (2)	2 (2)	2 (2)	2 (2)	2 (2)
mg.27.461214-		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
mg.27.5a10b12ac14b/mg.27.5b6712b-		3 (1)	3 (1)	3 (1)	3 (1)	3 (1)
mg.27.5b6712b-		3 (1)	3 (2)	3 (2)	3 (1)	3 (2)
sai.nesc.all-	1 (1)			1 (1)		
sck.27.nea-				3 (1)	3 (1)	3 (1)
sdv.27.nea-	1 (2)	3 (1)	3 (3)	2.3 (3)	3 (1)	3 (2)
apr.27.7de-	1 (1)			1 (1)		
whb.27.1-91214-	1 (4)	2 (4)	2 (5)	2.4 (5)	1.7 (3)	2.4 (5)

Pan-regional stocks, Covid-19 impact Q2 2020 (number of countries in brackets)

3 - extreme impact  
2 - medium impact  
1 - low or no impact



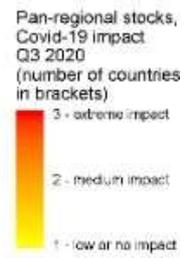


# RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

## I. ISSG End-users and RCGs

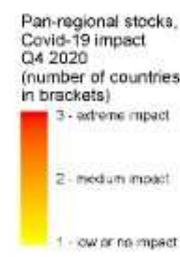
### Pan regional 2020 Q3:

Stock	Variable					
	Effort	Landings age sampling	Landings length sampling	Unwanted Catch	Unwanted catch age sampling	Unwanted catch length sampling
all.27.nea*	2 (1)	2 (1)	2 (1)	3 (1)	3 (1)	3 (1)
anf.27.3a4b*	1 (1)	1 (1)	1 (1)	1.5 (2)	2 (1)	1.5 (2)
aru.27.123a4*	1 (1)	1 (1)	1 (1)	1 (2)		1 (2)
atu.27.6a7-10*2*			3 (1)	2 (1)		2 (1)
bl.27.nea*	1 (1)		3 (1)	2 (2)		2 (2)
bst.27.nea*	1 (1)	2 (1)	2.5 (2)	2.5 (2)	3 (1)	2.5 (2)
bes.27.4bc7ad-h*	1 (3)	1 (2)	1.7 (3)	1.3 (3)	1 (1)	1.3 (3)
ogs.27.nea*	1 (2)		3 (2)	1.8 (4)	2 (1)	1.8 (4)
els.2737.nea*	1 (3)	1 (3)	1 (4)	1.3 (3)	1 (1)	1.3 (3)
gag.27.nea*	1.5 (2)		2.7 (3)	2.5 (4)	3 (1)	2.5 (4)
gb.27.nea*	1.3 (3)	1 (1)	2.7 (3)	1.8 (5)	1 (1)	1.8 (5)
ghl.27.5b12*4*		1 (1)	2 (2)	1 (1)	1 (1)	1 (1)
gur.27.3-8*	1 (2)	1 (1)	2.2 (4)	1.8 (4)	2 (1)	2 (4)
hac.27.4ba20*	1.3 (3)	1 (3)	1.5 (4)	1.4 (5)	1.3 (3)	1.4 (5)
hcr.27.-24a5*4a*	1 (1)	1 (2)	1 (2)	1 (2)	1 (1)	1 (2)
hke.27.3a4b-8abd*	1 (5)	1 (5)	1.4 (5)	1.5 (6)	1.3 (3)	1.7 (6)
hcm.27.2a4a5b6a7a-ce-k8*	1.2 (4)	1 (4)	1.2 (4)	1.2 (4)	1 (2)	1.2 (4)
hcz.27.4a8a_ez.27.4a8a*	2 (1)	1 (1)	2 (1)	2.5 (2)	2 (1)	2.5 (2)
in.27.3a4b-912*4*	1.4 (5)	1.2 (5)	1.6 (5)	1.8 (6)	2 (3)	2 (6)
mac.27.nea*	1 (6)	1.2 (6)	1.4 (7)	1.6 (7)	1.5 (4)	1.6 (7)
ook.27.3a4b*	1.2 (4)	1 (4)	1.5 (4)	1.5 (4)	1.5 (2)	1.8 (4)
por.27.nea*	1 (1)			1 (1)		1 (1)
Rajidae*	1.4 (5)	1 (1)	2 (6)	1.9 (7)	1.5 (2)	1.9 (7)
reb.2127_dp reb.2127.sp/so.27.14b*		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
reg.27.4b12*4*		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
mg.27.5a6712b*		3 (1)	3 (2)	3 (1)	3 (1)	3 (1)
sa.noa.all*	1 (1)			1 (1)		1 (1)
scr.27.nea*				3 (1)		3 (1)
sch.27.nea*	1.1 (3)		2 (3)	1.8 (5)	1 (1)	1.6 (5)
spr.27.7de*	1 (1)			1 (1)		1 (1)
usk.27.3a4b6a7-012b*	1 (1)			2 (1)		2 (1)
wrb.27.-912*4*	1.2 (5)	1.4 (5)	1.6 (5)	1.8 (4)	2 (2)	1.8 (4)



### Pan regional 2020 Q4:

Stock	Variable					
	Effort	Landings age sampling	Landings length sampling	Unwanted Catch	Unwanted catch age sampling	Unwanted catch length sampling
all.27.nea*	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)
anf.27.3a4b*	1 (1)	1 (1)	1 (1)	1.5 (2)	2 (1)	1.5 (2)
aru.27.123a4*	1 (1)	1 (1)	1 (1)	1 (2)		1 (2)
atu.27.6a7-10*2*			3 (1)	2 (1)		2 (1)
bl.27.nea*	1 (1)		3 (1)	2 (2)		2 (2)
bst.27.nea*	1 (1)	2 (1)	2.5 (2)	2.5 (2)	3 (1)	2.5 (2)
bes.27.4bc7ad-h*	1 (3)	1 (2)	1.7 (3)	1.3 (3)	1 (1)	1.7 (3)
ogs.27.nea*	1.3 (3)		2.5 (2)	1.8 (4)	2 (1)	1.8 (4)
els.2737.nea*	1 (3)	1 (3)	1 (4)	1.3 (3)	1 (1)	1.3 (3)
gag.27.nea*	2 (2)		3 (2)	2.3 (3)		2.3 (3)
gb.27.nea*	1.7 (3)	2 (2)	3 (2)	1.8 (5)	1 (1)	1.8 (5)
ghl.27.5b12*4*		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
gur.27.3-8*	1 (2)	1 (1)	2 (3)	2 (4)	3 (1)	2.2 (4)
hac.27.4ba20*	1.3 (3)	1 (3)	1.5 (4)	1.4 (5)	1 (3)	1.4 (5)
hcr.27.-24a5*4a*	1.3 (3)	1 (3)	1 (3)	2 (2)	3 (1)	2 (2)
hke.27.3a4b-8abd*	1 (5)	1 (5)	1.4 (5)	1.7 (6)	1.7 (3)	1.7 (6)
hcm.27.2a4a5b6a7a-ce-k8*	1.2 (4)	1 (5)	1.2 (5)	1.8 (4)	2 (2)	1.8 (4)
hcz.27.4a8a_ez.27.4a8a*	2 (1)	1 (1)	2 (1)	2.5 (2)	2 (1)	2.5 (2)
in.27.3a4b-912*4*	1.2 (5)	1 (5)	1.6 (5)	1.7 (6)	1.5 (2)	1.8 (6)
mac.27.nea*	1 (6)	1.1 (7)	1.5 (8)	2 (7)	2 (4)	1.9 (7)
ook.27.3a4b*	1.2 (4)	1.2 (4)	1.8 (4)	1.8 (4)	1.5 (2)	1.8 (4)
por.27.nea*	1 (1)			1 (1)		1 (1)
Rajidae*	1.6 (5)	1 (1)	2.2 (6)	2 (7)	2 (2)	1.9 (7)
reb.2127_dp reb.2127.sp/so.27.14b*		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
reg.27.4b12*4*		1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
mg.27.5a6712b*		3 (1)	3 (2)	3 (1)	3 (1)	3 (1)
sa.noa.all*	1 (1)			1 (1)		1 (1)
scr.27.nea*				3 (1)		3 (1)
sch.27.nea*	1.1 (3)		2 (2)	2 (4)		1.8 (4)
spr.27.7de*	1 (1)			1 (1)		1 (1)
usk.27.3a4b6a7-012b*	1 (1)			2 (1)		2 (1)
wrb.27.-912*4*	1.8 (5)	1.4 (5)	1.6 (5)	1.8 (4)	2 (2)	1.8 (4)



### I.3 Recommendations Meeting MINUTES (5th may 2021)

#### Minutes: RCGs chairs – ICES SCICOM & SG chairs meeting (Part I)

Wednesday 5 May 2021 (15:00–16:30)

*Aims:*

- Outline remit of RCGs in terms of recommendations, and the communication of these recommendations to & from ICES groups.
- Better understand (limitations of) current workflow and expectations of RCGs ↔ ICES.
- Discuss options for improving the process for future recommendations: e.g., screening recommendations? How can secretariat facilitate operational ‘requests’ from the ICES groups to RCGs? How can ICES groups can be more proactive with recommendations? etc.

*Participants:*

- RCGs chairs (BALTIC & NANSEA), former and current.
- ICES steering group chairs (DSTSG, FRSG, EOSG).
- ICES SCICOM chair.
- ICES secretariat staff.

*Agenda:*

Time/duration	Agenda item
15:00	Welcome, aim of meeting
15:05	Tour-de-table, Presentation of meeting participants and expectations of the meeting
15:15	RCGs outlining the remits of the RCGs as well as which recommendations they would actually like to handle
15:40	Discussion based on past recommendations. How can ICES screen the recommendations and facilitate operational ‘requests’ from the ICES groups to the RCGs?
16:05	Discussion of how the ICES groups can be pro-active in terms of recommendations?
16:20	Wrap-up, way forward and actions

#### I.3.1 Welcome

The ICES SCICOM chair was meeting facilitator and welcomed participants and gave a broad outline of the purpose of the meeting. Participants introduced themselves and gave a brief summary of their expectations. From the ICES side there was a general wish to improve recommendations so they are more meaningful and useful to the RCGs and to gauge what kind of recommendations RCGs can actually facilitate.

#### I.3.2 Presentation and discussion of RCG document (‘Objectives of the RCG’ version 2)



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

The RCGs chairs presented a draft document to summarize the remit of the RCGs (specifically BALTIC and NANSEA) and what types of issues they are able to deal with. The group as a whole decided this document would be a good starting point to better inform ICES groups in the future of how the RCGs work and creating guidance on how recommendations can be better formulated so the RCGs can work with them and/or answer them in a more meaningful way.

#### 1.3.3 *Discussions about workflow between RCGs and ICES groups*

General issues and concerns voiced by the RCGs chairs regarding recommendations included problems with the wording (vague language) and ambiguity about who the proper recipient is or should be. Recommendations are often addressed to many groups and tend to be quite broad. There was also uncertainty about the correct process to follow when RCGs do not fully understand what is being requested from them. Thus, in a next meeting, there should be a discussion of what recommendations should ideally look like according to the RCGs, and what the ideal workflow should be.

It was suggested a joint meeting between RCGs and ICES should take place to go over recommendations, and would be better earlier in the year to allow enough time before the end-user meeting and ISSG subgroups take place in the spring (whose outputs feed into the technical meeting June). Early January was suggested as the best time for this sort of meeting.

It was noted that the ICES member countries and RCGs do not overlap perfectly, so the issue of third party countries is a challenge that also needs to be kept in mind.

Data compilation workshops that come before actual benchmark workshops are both sites where ICES experts are really exploring data and data issues. Therefore, the benchmark oversight group (BOG) was discussed as a potential hub for coordinating recommendations between RCGs ↔ ICES. There were questions raised about the practicalities of this, including if it would require a new term of reference.

#### 1.3.4 *Summary of the meeting*



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I. ISSG End-users and RCGs

The ICES SCICOM chair summarized the main elements of the discussion:

*Key points:*

- ICES groups need a better understanding of what the exact remit of the RCGs is.
- It is important to streamline the process, i.e. not have too many lines of communication, and aim to have more direct communication (is more practical approach politically feasible?)
- Perhaps there needs to be stronger links with groups most actively involved in data issues, benchmarks, WGBIOP, WGCATCH, etc.
- A joint meeting in early January to review 10 to 15 recommendations

*Action points:*

- Further work on the draft 'Objectives of the RCG' document which in time can be communicated to ICES groups inform them about RCGs (add example of workflow, before and after)
- Explore adding agenda item to WGCHAIRS and SG meetings on mandate and remit of RCGs
- Explore adding item to expert group guidelines about RCGs (e.g., what can groups ask RCGs, etc.)
- Explore benchmark oversight group (BOG) to act as potential conduit/hub for recommendations
- Send out collated list of recommendations addressed to the RCGs to work on in next meeting
- Formulate an idealized example of an RCG-related recommendation to use in 'Objectives of the RCG' document in next meeting

### I.4 Recommendations Meeting MINUTES (15th May 2021)

#### Minutes: RCGs chairs – ICES SCICOM & SG chairs meeting (Part 2)

Friday 15 May 2021 (14:30–16:00)

*Aims:*

- Follow-up of 5 May meeting to discuss specific recommendations to the RCGs and how they can be improved.
- Formulate an example recommendation that can be used to demonstrate ideal workflow.

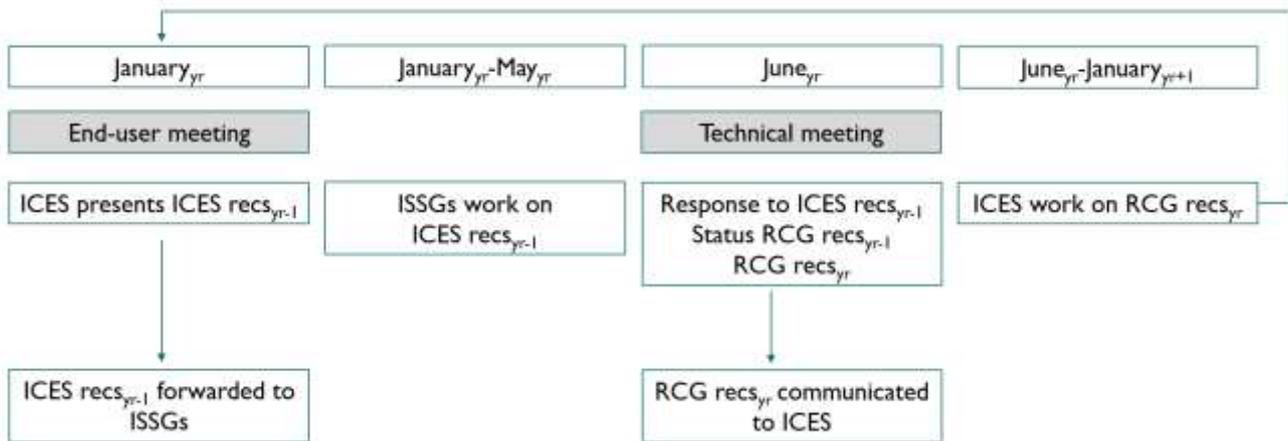
*Summary of the meeting*

During the meeting a table with ICES recommendations from 2021 to RCGs was revised. The RCG mandate and remits document was presented and clarified as a guidance to what type of recommendations could be operational for the RCGs and what information is needed to support the recommendations. The review of recommendations will be done annually (or if needed, ad hoc) in the early spring to feed the recommendations forward to the RCGs in due time before the June meeting. A workflow could be as follows:



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I. ISSG End-users and RCGs





## ANNEX I.I. Mandate and remits of the RCGs Baltic and NANSEA



Regional Coordination Group  
North Atlantic  
North Sea & Eastern Arctic



Regional Coordination Group  
Baltic

# Mandate and remits of the Regional Coordination Group North Atlantic, North Sea & Eastern Arctic and Regional Coordination Group Baltic (RCG NANSEA and RCG Baltic)

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The **objective** of this document is to summarize the mandate and remits of the RCG Baltic and RCG NANSEA) so that ICES Expert Groups may better target their recommendations to the RCGs.

- **What is an RCG?**

The Regional Coordination Group is the main hub for regional coordination and cooperation within the different sea basins or specific type of fisheries contributing to the EU fisheries Data Collection Framework (DFC)<sup>1</sup>. Each RCG consist of experts appointed by EU Member States (MS), MS national correspondents (NC) for data collection, and the Commission. End-users of data, other stakeholders and relevant non-EU countries may participate in RCGs meetings as observers, where necessary.

- **Which type of issues can RCG Baltic and RCG NANSEA deal with?**

RCGs are ultimately responsible to ensure coordination between MSs on national sampling programmes, and to design and implement regional sampling programmes. RCGs have the authority to engage MS through their NCs, and to recommend/agree changes in the sampling through the national and regional sampling programmes.

Therefore, RCGs are the appropriate fora to discuss and make decisions about the type of data to be collected, sampling effort, temporal and spatial resolution, data gaps, data quality and standardization of codes, with a regional approach. It is also the place to validate and implement new methodologies and best practices guidelines in the relevant national or regional sampling programmes.

RCGs can reach agreements about MS participation on surveys and other sampling programmes such as commercial and recreational fisheries sampling. End-users should inform RCGs about the need of major changes to data collection in terms of planning, effort and design than can have an impact on the DCF work plans, obligations and budgets of the MS involved

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<sup>1</sup> [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)



RCGs can also recommend and support the development of regional tools such as the RDBES or SmartDots, as well as other relevant projects related with regional coordination.

RCGs can evaluate and implement procedures, methods, quality assurance and quality control for collecting and processing data, to enable further improvement of scientific advice reliability. For that, RCGs liaise with the relevant end-user, ICES. RCGs do not develop sampling methods, guidelines and tools. Specific recommendations and requests such as how to sample, how much to sample, how to make imputations and raising, how to estimate catch, calibration of biological variables, etc. should be addressed to relevant ICES EG, such as WGCATCH, WGBIOP, WKBIOPTIM, WGRDBESGOV, WGMRFs, surveys EG, etc.

- **How do the RCG Baltic and RCG NANSEA work with recommendations?**

The RCG Baltic and RCG NANSEA work in thematic Intersessional Subgroups (ISSGs) throughout the year with assigned tasks. ICES recommendations are forwarded to the respective ISSGs depending on the topic, e.g., surveys, commercial sampling, PETSs sampling, stomach sampling, marine recreational fisheries, small scale fisheries, diadromous fishes, data quality, regional data bases, etc. ISSGs present their main results to be discussed in plenary at the RCG Baltic and NANSEA Technical Meeting.

- **General guidelines for the submission of recommendations to RCGs Baltic and NANSEA:**

- 1. Define what and who.** The recommendation should be self-explanatory and very clear about:
  - a. What is the requested action?
  - b. What is the motivation for the requested action?
  - c. Who is responsible for the action? Normally there is only one group responsible for an action.
- 2. Provide background information.** In order to understand the issue, it is important that the RCGs know the context and the rationale behind the recommendation. Be concise and clear. For further information, include a link to the relevant report.
- 3. One recommendation, one action.** Do not merge different recommendations in one, because it makes it more difficult to manage them and provide an answer.

## 2 ISSG RDB Catch, Effort and Sampling Overviews

### 2.1 Rationale

The intersessional subgroup (ISSG) on Catch, Effort and Sampling Overviews was established by LM 2018 to streamline and facilitate the work on the fisheries and sampling data of the MS and prepare data overviews in advance of the RCG meetings. Before the subgroup was set up, the different RCGs conducted data analysis and overviews separately with minimal exchange, resulting in redundancies and efficiency loss. Furthermore, a substantial part of the work was being carried out during the RCG meetings themselves and so not readily available to inform RCG preparation and meeting discussions. The ISSGs are intended to work throughout the year, self-organizing in terms of their work and having an RCG chair as point of contact. The pan regional subgroup on Catch, Effort and Sampling Overviews consists of members of all three RCGs (RCG NS&EA, RCG NA and RCG Baltic) and had Sven Stötera (chair RCG Baltic) as contact point during its activities.

The tasks and output from the subgroup fall into 2 main types of work i) To develop tools for internal RCG work and ii) Preparatory work for decision making, including input for regional work plans and working groups.

### 2.2 Work-plan

The chairs of the three RCGs agreed on a guideline for the ISSGs in October 2018, giving the chairs of the subgroups the possibility to define ToRs and work plans for the year ahead. The following conditions were set:

- The output of the subgroup including report/ scripts should be made available via SharePoint or github 1 month before the RCG June meeting.
- Each intersessional subgroup has a SharePoint folder on the ICES RCG SharePoint under “intersessional work” accessible via the following link [RCG Intersessional Work](#)

The subgroup chair decided on a work plan in consultation with the responsible RCG chair. The plan was elaborated in December 2020 (revised and adjusted in February and March 2021) and configure subgroup work divided into two main blocks, “development of catch and effort overviews” and “development of sampling overviews”.

The first block of work (“subgroup 1”) involved compiling the reviews on the annual catch and effort overviews that the different RCG groups, the LM and the NCs had done, comparing and organizing it, identifying synergies and redundancies and adjusting the documents accordingly. Moreover, the group created the first version of the multiannual overview from scratch and made a first attempt to include the stock overview part there. The group wanted to avoid creating a word document with over hundred of pages, as it is now with annual overviews, which might be overwhelming for the users. Therefore an html document was developed, much easier to read.

Codes and processes in the repository were updated, cleaned and new outputs integrated. In a last working step an updated scripts were generated that produced the annual overviews for the last year and multiannual overviews for last three years for all three RCG regions.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 2. ISSG RDB Catch, Effort and Sampling Overviews

The second block of work (“subgroup 2”) involved further development of shiny app containing sampling overview and inventory of the RDB data. Former work of the group was reviewed, as well the feedback was taken into account. It was decided to re-organize the structure of the app to avoid too long and hard to read scripts. A great deal of new functionalities have been added. The group also went through WKBIOPTIM2 achievements to find work that has already been done, especially concerning comparison of sampling and landings data. The last working step of the “development” involved the production of a draft document with exemplary graphs and outputs.

The group will use the same common format for RDB extraction that was agreed on in 2020 and is available on the intersessional groups SharePoint.

### 2.3 Progress during 2020/2021

The group met in weekly online conferences (via WebEx) since January 2020 dealing with specific tasks, reviewing progress and adjusting workloads. Minutes were circulated after each meeting that kept a record on progress achieved and tasks ahead. Also the GitHub Projects facility was found useful in recording the work progress.

In a first step, the group reviewed the feedback of the different RCGs and the LM regarding the data analysis, catch and effort overviews and sampling overview. Based on these review, the group updated and adjusted the structure for headings and graphical content of the overviews. The group also decided on keeping and updating the RCG [Github](#) (in the ICES EG section) as repository for the r-scripts developed. A restricted [SharePoint](#) was used to hold documents, protocols and RDB data extracts. The common extraction and preparation format defined for 2009-2019 RDB data was updated with regards to 2020 data and the graphical functions improved.

Concerning annual reports, all suggestions from the National Correspondents were taken into account. A more detailed introduction text was developed together with some text on data sources and information how to read the data. Also some changes in the document structure were implemented and the bugs, reported last year, were corrected. The group was also discussing how to limit the number of plots and tables, the only suggestions were either to split the catch group sections into separate documents or to transform the document into html format (would be more readable, but this process might be time-consuming). Finally, the overall structure didn't change, with exception of deleting a few plots. The group decided that if there is a plan to include the overviews in the shiny at some point in the future, so for now it's not so necessary to lose time on limiting the size of the document.

Regarding the multiannual overviews three separate html documents sharing the same structure, were created, one for each region. The multiannual overview contains Overall fleet evolution (based on the Fleet Register data) and RDB data analysis for the last three years. This document is divided into the following parts: Effort by country and fisheries, Landings by country and fisheries, Landings by species, country and fisheries for top 10 species and the last part covers the Stock analysis. Stock allocation used in the overviews represents variable stock which was adjusted by the group accordingly with procedures discussed within ICES community and therefore it does not come directly from the RDB. Moreover, this allocation was not straightforward in all the cases, like for example herring stock, which was reported by some countries as HER in area 27.3.d.28 – the group was not able to identify whether it is 'her.27.28' or 'her.27.25-2932'. As a temporary solution all these landings were assigned to 'her.27.25-2932'. If any country wants to convert it in another way, the group can correct it and prepare the next version of the overviews.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 2. ISSG RDB Catch, Effort and Sampling Overviews

Concerning the sampling overviews, it is presented in the shiny app, which allows for the creation of CS inventory files and interactive maps showing sampling effort and intensity in different aggregation levels. Since the last year a huge progress has been made. First the group worked on tidying up the scripts and fixing the existing bugs. A new layout was created, so now the app looks much more professional and user friendly. Also a bunch of useful messages to the users have been added together with variables explanations and spinners informing about data being loading so that user knows that he is supposed to wait a while. Interactive map part which was created last year, was developed by adding length variable and some others. Two parts were highly developed from scratch: static maps – with possibility of downloading a map, and interactive plots – with an option to define all needed parameters. Also the work has started regarding the sampling vs landings part – which the group was asked for in the last year feedback. Together with it the first attempts to upload CL data into shiny were done. The development of sampling vs landings analysis started from looking through the outcomes of WKBIOPTIM2 as a lot of useful functions were developed there. The group managed to implement matrix showing sampling (e.g., Number at length) vs Landings (weight). The work on another functionality is now in progress – presenting sampling vs landings on a map. The work on the app will be continued in the coming weeks. The whole code needed for running the app is stored on the subgroup GitHub. Moreover, as last year, the app will be launched on the AZTI shinyapps.io, where all the people with data access can run the app on their own. There is also download functionality, to allow the usage of these data for e.g., reports and data requests. Also some discussion has started regarding dealing with implementing multiannual analysis in the app – the main obstacle will be optimization issue. The group decided to start working on it after finalizing the current status of the app.

The document on sampling statistics was created. It contains exemplary overviews on sampling intensity and -distribution of the most recent year and an introduction on how to set up the shiny R application on personal devices.

At the beginning of work, there was also a plan to create national version of the overviews, but eventually the group resigned from it. Keeping in mind that soon the new RDBES will be launched, and that Core Group is working on preparing the quality checks of the CL and CE data uploaded, the group decided not to spend time on developing a document overlapping to extent with it.

The group has also decided not to work on creation of new word document with sampling overviews, as because of time limits, it was found more useful to continue developing of the shiny app.

The group is also planning to start the discussion on adjusting the existing overviews to the new RDBES format and new kinds of analysis based on the new RDBES variables. This discussion is planned to take place in the coming weeks.

No specific case studies or exemplary stocks/areas are presented this year.

RCG members are welcome to contribute ideas and help specifying, which sampling statistics they would like to see included in a later, more advanced version.

### 2.4 Roadmap/follow-up

The work of the subgroup will be presented during the 2021 RCG. It is expected that the updated RDB catch and effort overview document is reviewed and accepted as a routine document for future RCG usage. The multi-annual RDB catch and effort overview and the shiny app require further feedback from the RCG and

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 2. ISSG RDB Catch, Effort and Sampling Overviews

LM to enable specific development and improvement. ICES and MS are asked to pool expertise in debugging and improving the algorithm that matches ICES stocks to RDB CL data.

After receiving the feedback from RCGs, the subgroup aims to continue to improve the existing scripts, extending them to the remainder of the documents and new analytics.

It is also intended to further develop the Shiny app and include fisheries data (CL and CE) as well as stock overviews (e.g., age-length overviews, distribution, weight-length per area, etc.) as new elements. The markdown for the RDB catch and effort overviews could be integrated into the shiny R and thus allow more flexibility to the end-users and make the data gathering more easily accessible.

The subgroup will continue their work on a regular basis throughout the year to improve their achievements and give feedback to the RCG-chairs in regular intervals.

### 2.5 SG Participants

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## 3 ISSG Métier Issues

### 3.1 Introduction

#### Background

Since 2018, work has been ongoing to harmonize and standardize the methods and codes used when assigning métiers to transversal data. Reports can be found under <https://github.com/ices-eg/RCGs/tree/master/Métiers/Reports>.

In 2020, the RCG ISSG had an operational focus on métier list and development of a script to assign métiers. A métier list with suggested standardized and harmonized codes (especially with regards to mesh size ranges), and with references to métier codes uploaded to the RDB (2009-2017 data). Selection panel code numbers were suggested. Reference lists were revised, grouping areas to regions and species codes to target assemblage groups. The R script was further developed for assigning métier codes to transversal data, implementing the best practices agreed on and using an additional module that analyse vessel patterns.

#### The 2021 work

In the September 2020 LM it was agreed by the NCs that the new codes for métiers and reference lists can be used and implemented by MS. It was noted that “the RCG ISSG on Métier issues have worked on a common list of métiers, that list will be incorporated into the RDBES. Whether the métier list also will be used for other systems/data calls is up to the data requester.”

The 2021 work in the subgroup has been with focus on test and implementation of métier codes and script as well as to make a manual describing reference lists, input format for the script and the script description in order to make it possible to implement with countries.

### 3.2 Tasks for the ISSG on Métier issues 2021

#### Tasks

- Write a manual for use of the script and code lists and document the script with a flow chart.
- Further development on script.
- Following and assisting on implementation of the new métier codes and script.
- Compare the proposed métier list with EUMAP level 5.
- Reformatting the new métier list to get an easier reference with the old métier codes.
- Update métier code list, clarify connection between old and suggested métiers, provide reference lists if needed.
- Crosscheck EU MAP codes list with métier.
- When data are uploaded with the new métier codes to the RDB/RDBES, this year's ToR 2 will become relevant: Further develop métier descriptions based on new métier codes.

Ask RCG Mediterranean and Black Sea for participation.





### 3.2.1 Highlights and questions for RCG's to consider

#### Key points from the ISSG on Métier issues 2021

In 2021 the group focus was to produce a manual on the use of the script and reference lists used for assigning métiers to transversal data.

Addition of functions in the script to assign métiers where they were missing by the use of vessel pattern analysis to avoid “rare métiers” caused by catches of non-targeted species.

The group agreed to recommend that the new métier codes are to be requested for the ICES RDBES test data call in 2021, and for the ICES VMS and WGBYC datacalls and the STECF FDI data call in 2022.

#### Main outcomes of the ISSG on Métier issues 2021

- A manual with description of reference lists and the script is available at GitHub.
- Further development of the script, including functions to assign métiers when missing and to conduct a vessel pattern analysis to avoid “rare” métiers. The reference lists were updated if needed.
- Test of script and test that the métier codes needed are in the list.
- Métier list is updated when needed and forwarded to ICES vocabulary for the RDBES test data call.
- Agreed if métiers need to be added in the future, it should be approved by the group.

#### What needs to be decided

- That the group continues supporting implementation of the method, script and approving métier codes.
- Can the group get access to RDBES CE/CL data when new métier codes have been updated for the test data call, for evaluation?

37

#### Suggested for next step in intersessional work (tasks)

- Follow up on and support implementation of métier codes and script (it should also be possible to include participants from outside EU). Approve and update métier list if new codes are needed.
- When data have been submitted for the RDBES test data call, the codes used can be evaluated (if the group can get access to RDBES CE/CL data) and métier descriptions can be made (following up on 2019 work within the ISSG) and, in the future, it may be further developed in collaboration with the ISSG on Catch, Effort and Sampling Overviews.
- Continue testing the script on national data, and improve the script if needed.
- Collaborate with ISSG on SSF regarding métier assignment for the small-scale fishery to avoid MIS\_MIS\_0\_0\_0 métiers.

### 3.2.2 Manual

To assist in the use and implementation of the reference lists and script developed by the ISSG, a manual has been prepared, which includes a short background, description of reference files and where to find them on GitHub, a description of the input format for using the R script, a documentation of the script and a visualization of the procedure by a flow chart.





The manual can be found at:

<https://github.com/ices-eg/RCGs/blob/master/Métiers/Scripts/Manual/Main.pdf>

The manual has been coded as an R-markdown script, available at:

<https://github.com/ices-eg/RCGs/tree/master/Metiers/Scripts/Manual>

### 3.2.3 Script

The functionality of the script is documented in the manual. The main improvements of the script within in the 2021 subgroup have been:

- The validation of data types in the input data has been included in the beginning of the script.
- Now the métier codes for both level 5 and level 6 are assigned.
- Adding functions to assign métiers when they are missing, based on a series of search algorithms looking for métiers from the same vessel level, and if not found expanding to search wider, to métiers from similar groups of vessels with similar fisheries. The input information is by vessel, target species assemblage group, area, main gear from fleet register, month and quarter.
- In addition, the function to look at vessel pattern analysis, identify “rare métiers” which is only on a few fishing sequences for that vessel, and might be caused by an accidental non-targeted catch composition, has been improved.
- The script is using the gear reference list with re-coding of gear codes and also using the indication if a gear+RCG combination are applicable for DWS assignment.

38

A fleet register gear has been added to the input format as an optional field to allow for assigning métiers where logbook data are missing. There can be up to five gears specified per vessel in the fleet register, so the best guess should be added to the input format. The best guess can be assisted by expert knowledge, e.g., from observers.

### 3.2.4 Reference lists

#### Métier list

Codes MIS\_ANA\_0\_0\_0, MIS\_CAT\_0\_0\_0, MIS\_DEF\_0\_0\_0, MIS\_FWS\_0\_0\_0 and MIS\_SPR\_0\_0\_0 codes have been added to the list for all regions for when there is a known target assemblage but no gear information. It was agreed to add these, as they provide more information than MIS\_MIS\_0\_0\_0.

Métier codes added in the North Sea:

- Selection 2\_35 for bottom trawls OTT/OTB/PTB and CRU, (DEF) and MCD with mesh 90-99 and mesh 100-119.
- Selection 4\_35 for bottom trawls OTT/OTB/PTB and CRU, (DEF) and MCD in the north sea with mesh 90-99 and 100-119.
- OTB and OTT\_DEF\_>=120\_I\_120. Often the 120 mesh in the exit window is a square mesh



- type. OTB\_DEF\_>=120\_I\_120, OTT\_DEF\_>=120\_I\_120, PTB\_DEF\_>=120\_I\_120 added.
- OTB/OTT/PTB\_CRU\_32\_69\_4\_22 which is shrimp trawl with both grid and tunnel
  - DRB\_CRU\_>0\_0\_0: Dredge fishing for delta prawn
  - GNC\_DEF\_>0\_0\_0
  - SPR\_DEF\_>0\_0\_0
  - LA\_SPF\_>0\_0\_0

Métier codes added in the North Atlantic:

- GNC\_DEF\_>0\_0\_0
- SPR\_DEF\_>0\_0\_0
- LA\_SPF\_>0\_0\_0
- DRB\_CRU\_>0\_0\_0: Dredge fishing for delta prawn

Level 5 of the métier code has been added to the métier list to include in the script.

### Species list

Corrections to the species list have been discussed, but there are cases where the same species can be assigned to different target assemblages when they are fished in different areas, seasons or by different gears. It is recommended to add national corrections to the script for the species assignment based on the area or the gear.

It was discussed if the species *Coregonus albula*, *Coregonus maraena* and *Myoxocephalus quadricornis* should be changed to FWS in the species list. It was agreed to keep them as they are in the species list, and then they can be re-coded as national corrections.

In Portugal *Trachurus trachurus* (horse mackerel) can be caught as a pelagic fish in PS fishery and as demersal in OTB fishery. It was suggested that the species will be grouped based on the gear code as a national correction.

### Gear list

A gear reference list has been added to the GitHub ([https://github.com/ices-eg/RCGs/blob/master/Métiers/Reference\\_lists/Code-ERSGearType-v1.1.xlsx](https://github.com/ices-eg/RCGs/blob/master/Métiers/Reference_lists/Code-ERSGearType-v1.1.xlsx)). The list includes the gear code, description, group and the gear level 6 where there is a re-coding of gears to the gear codes that are used in the métier level 6 codes. For example, for trawls, the codes TBN and TBS are re-coded to OTB. In addition, there is a column indicating if the gear is used for deep water fishery and in which RCG regions. These columns are used by the script when assigning the DWS target species assemblage code.

Regarding use of the general gear codes GN and LX, they can be present in logbook data, but the group recommended that when allocating métier codes these should not be used, but to allocate them to GNS, GND, GTR, LLS, LLD etc. based on expert knowledge.

### Area list

Area 37 (Mediterranean and Black Sea) has been added to the area list with sub-areas.

### 3.2.5 Implementation

Métier codes are used in the following data calls: ICES WGBYC, ICES VMS/Logbook data, RDB, RDBES and STECF FDI. The aim is that the standardized métier codes are used in all data calls. It was agreed by the ISSG to recommend requesting the new métier codes in the RDBES test data call in 2021, and for the rest of the data calls in 2022. It would be good to get feedback on how it went in the RDBES test data call in 2021, and if the group can get access to the RDBES CE/CL data, the use of the new métier codes can be evaluated by the group.

The new métier codes were accepted for the RDBES at the LM, and were also presented at the RDBESGOV meeting in December, as there are countries outside EU that also answer the ICES data calls. It was agreed that experts outside EU MS can participate in the ISSG.

In 2021, the new system including métier codes, reference lists, script and manual should be presented and discussed at the expert groups responsible for the data calls (ICES WGSFD/WGSFDGOV, ICES WGBYC, STECF FDI), to discuss if it will be possible to request the new codes in 2022 data calls. For the data calls it needs to be considered if only new codes should be accepted, or both new and old codes, if there should be a transition period and if time series should be resubmitted with the new métier codes.

The persons responsible for data calls using métier codes and the ICES secretariat should be contacted. If relevant, expert groups could evaluate métier codes during benchmarks, in preparation for the shift from InterCatch to RDBES input data.

The métier code and the reference lists will be updated when needed. It is recommended that if a new code is requested, an e-mail should be sent to Josefine Egekvist (jsv@aqua.dtu.dk), and it will be discussed at the next ISSG on Métier issues meeting. The principles for the new métier list that will be considered when new métier codes are requested: harmonisation, non-overlapping mesh size ranges, not using general gear codes like LX, OT. The species, region, and fishery should be described.

40

### 3.2.6 Compare the proposed métier list with EUMAP level 5

This was done after the RCG meeting in 2020 and described in the 2020 Métier report page 8. Communication with MARE about adding following changes to EU MAP revision has been done. According to the ISSG Métier issues report following changes were proposed:

New gear codes have been suggested to be added to the métier level 4, as there is a fishery with these gears:

- LN – Lift nets: boat operated lift nets for smelts and European pilchard.
- DIV – Diving: a fishery for sea urchins, Murex, Great Atlantic scallop and octopuses in Mediterranean and Black Sea and North Atlantic
- FOO – Fishing on foot: a fishery for crustaceans and molluscs in North Atlantic and Mediterranean and Black Sea.
- FWR – Barriers, fences, wires etc.: a fishery for demersal fish in Mediterranean and Black Sea.
- GES – Glass eel gear.
- HMS – Harvesting gear seaweeds: a fishery in North Atlantic

For level 5 the following two target species assemblage groups have been suggested to be added:

- Demersal species split up into demersal fish (DEF) and demersal species (DES) for benthic species.
- Seaweeds (SWD) has been added.

### 3.2.7 Reference with the old métier codes

This was done after the RCG meeting. A suggestion is on [https://github.com/ices-eg/RCGs/blob/master/Métiers/Reference\\_lists/Link\\_new\\_old\\_métier\\_codes.csv](https://github.com/ices-eg/RCGs/blob/master/Métiers/Reference_lists/Link_new_old_métier_codes.csv).

When old métier codes overlap several métier codes in new list, a choice has been taken to in general assign to the lowest corresponding mesh size range.

### 3.2.8 Métier descriptions

As data with new métier codes have not been uploaded to the RDB/RDBES during the 2021 ISSG, this task has not been relevant yet. Scripts and a template for métier descriptions were developed at the ISSG 2019, giving an overview of countries using métier codes by regions, and sheet describing the métiers, including which countries are using them, in which years they have been reported, vessel lengths, main species landed from the métier, seasonal patterns of the fishing activity and a map showing the spatial distribution of the métier.

When data have been submitted for the RDBES test data call, the métier descriptions could be made if the ISSG can get access to the RDBES CE/CL data, and in the future could be further developed in collaboration with the RCG ISSG on Catch, Effort and Sampling Overviews.

## 3.3 Participants

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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 3. ISSG Métier Issues

Regarding involvement of participants from other RCGs, following chairs were contacted by email and invited to meetings, but didn't participate:

- RCG Med and Black Sea: Ivana Vukov (ivana.vukov@mps.hr) and Simona Nicheva (simona.nicheva@iara.government.bg)
- RCG Large Pelagics: Pedro Lino (plino@ipma.pt) and Josip Males (males@izor.hr)
- RCG Long Distance Fisheries: Ireneusz Wójcik (iwojcik@mir.gdynia.pl) and Sieto Verver (Sieto.Verver@wur.nl)



## 4 ISSG Surveys

### Progress report 2020-2021

**ISSG Lead:** Christoph Stransky (DEU), Sieto Verver (NLD)

**ISSG Members:** Els Torreele (replacing Loes Vandecasteele, BEL), Jørgen Dalskov (DNK), Ángeles Armesto (ESP), Florent Renaud (FRA), Louise Veron (FRA), Leonie O’Dowd (IRE), Maria Hansson (SWE).

**RCG responsible chair:** Harriet van Overzee (NLD)

**Establishment:** The ISSG on surveys 2020-2021 was established by integral agreement to the proposed list of ISSGs at the RCG NANSEA & Baltic DM in September 2020.

#### 4.1 Scope of RCG in relation to surveys

RCG NANSEA & Baltic 2020 specified the scope of the RCGs regarding surveys as follows:

*”Given the expectation that survey designs, planning and task-sharing might change in the foreseeable future, RCGs are expected to play a more substantial role in the decision making process when it comes to budget and/or national implications. The scope of the RCG will continue to focus on the budgetary aspects and national obligations in relation to proposed changes to a survey. It may be needed to rubberstamp and approve the current survey effort by MS to act as a baseline to measure and evaluate future modifications against. RCG mandates are described in the respective RoPs and these cover survey subjects as well.”*

Following this scope, the ISSG on surveys aimed to underpin the more substantial role of the RCGs in the future.

#### 4.2 Background and ToRs

The ISSG on surveys continued the tasks initiated during the RCG 2020 through subgroup meetings.

##### Generic ToRs and specific topics for 2020-2021

The parent RCGs did not specify generic ToRs for the ISSG surveys. Based on earlier experiences and identified needs, the following generic ToRs were defined by the ISSG:

1. Support the development and implementation of cost-sharing agreements related to Com.Dec 2019/909 Annex Chapter II (7).
2. Support and maintain the communication with survey end-users and act as focal point for RCG contacts regarding surveys.

3. Review and monitor survey aspects under (new) EU DCF legislation.
4. Monitor and react to external factors having an impact on surveys in the light of DCF obligations.

During the subgroup meetings, the following specific topics were addressed in line with the workplan for 2020-2021 and in relation to the generic ToRs:

- a) Renewal and finalisation of the multilateral agreements on cost-sharing of the two surveys: International Ecosystem Survey in the Nordic Seas (IESNS, also known as ASH under the EU-MAP) and International Blue Whiting Survey (addressing ToR 1).
- b) Monitor Covid-19 implications on surveys from a DCF perspective and react when appropriate and requested (addressing ToR 4).
- c) Monitor the follow-up of WKREO proposals and act as focal point for RCG contact (addressing ToR 2).
- d) Review survey aspects of the renewed EU-MAP in the light of cost-sharing and set up methods to identify candidate surveys for future cost-sharing (addressing ToR 3).

### 4.3 Progress during 2020-2021

At the time of writing, the ISSG on surveys met 3 times through videoconferences to discuss the outstanding topics as well as ad-hoc issues related to surveys.

**Topic A:** The multi-lateral agreements on the cost-sharing were renewed prior to the surveys in 2021. The agreements were signed by all previous partners, including the UK. By means of an addendum to the agreements, additional cost-sharing was agreed upon between DNK, GER, UK and NLD to cover for additional personnel costs, as Covid-19 measures prevented foreign staff to join the Dutch vessel.

**Topic B:** Early December 2020, the ISSG prepared a brief questionnaire to get an overview of the foreseen impact of Covid-19 on the planned 2021 surveys. The questionnaire was addressed to all NCs of the RCG NANSEA-Baltic and based on the format as used previously by the COM to collect Covid-19 related information from the MS. All MS responded to the request.

Mid December 2020, the ISSG met to discuss the outcomes of the questionnaire and concluded that the responses didn't lead to major general concerns regarding the planned surveys, though concerns were raised for individual surveys. No specific action was needed on regional level.

During other ISSG meetings, the topic was briefly addressed but no issues requiring intervention surfaced.

**Topic C:** ICES is planning to set up a WK Pilot FIRMOG (Fisheries Independent Regional Monitoring Groups) late 2022, as a follow up of the outcome from WKREO. ToRs for the WK are under preparation and ISSG surveys will give input and feedback during the planning of the WK.

**Topic D:** The proposed EU-MAP survey tables were discussed and based on the proposed inclusion of target species, the ISSG can review individual surveys and propose candidates for future cost-sharing. This review has not been carried out as the post- Brexit TAC and landing shares are yet unknown. Once the information is readily available, the review process can start intersessionally.

#### Additional topics:

*ICES WGQUALITY request:* The discussion on consistent naming of surveys was an ongoing topic over the last years, culminating during the STECF EWGs on the revision of the EU-MAP tables on mandatory surveys (STECF EWGs [18-04](#) and [19-05](#)). WGQUALITY (previous the PGDATA) requested feedback from the RCG how they are taking this further. The ISSG provided a draft response to WGQUALITY. The topic has been previously addressed in different RCGs as well, e.g., the RCG NSEA 2017 proposed a naming convention in its first recommendation.

Subsequently, the LM 2017 discussed the topic and ICES and RCGs planned further work to prepare the survey review in 2018 (STECF EWGs [18-04](#) and [19-05](#)). The naming has not been formalised after. The ISSG findings were that the RCGs/MS have a role in embedding standardised survey names in their respective workplans, not necessarily in standardisation itself. The need for standardised names is beyond discussion as we need these names in the ICES community for transparency and to relate to DCF obligations and output, e.g., automated reports. As ICES covers many more surveys than EU surveys alone, ICES seems to be the logical body to start the consistent naming of the surveys. In order to progress on the topic, the ISSG suggests to revisit the earlier 2017 recommendation to ICES and STECF during the technical RCG meeting and to discuss the best way forward.

*FISHN'CO:* The ISSG links to the EU Fishn'Co project and discussed the input to and from the project for the ISSG. The ISSG discussed the ambition levels and gaps to be addressed by the project. In comparison to other thematic areas within the RCGs, DCF surveys listed in the regulation (EUMAP table I) already have a high level of regional coordination with several surveys having joint data collection programmes and/or cost sharing agreements in place. Future tasks relate to the structure of future regional workplans including common descriptions of regionally coordinated surveys and agreement of the table structure for survey related information. The project can also assist in the technical preparation of the ISSG review to propose candidate surveys for cost sharing.

#### 4.4 Future ISSG work

Topic D has not been addressed by the ISSG while this is an important topic covering future cost-sharing options. This review can be done during the 2021-2022 intersessional work.

## 5 ISSG Data Quality

### 5.1 Sub-group Aim

To facilitate quality assurance of data and sampling programmes.

### 5.2 Tasks

1. Compile Quality Assurance indicators based on Table 5A. Decide whether to perform a full evaluation of Table 5A indicators every year.
2. Create sampling design document template for RWPs (linked to FishNCo project Objectives 1 and 2).
3. Look at creating templates/guidance for the other table 5A questions for RWPs (linked to FishNCo project Objectives 3, 4, 5, and 6).
4. Continue to catalogue software tools (not reports).
5. Compile the current RDB upload logs and work with the Overviews group to think about a new, machine-readable upload log format
6. Discuss data checks for the new RDBES.

### 5.3 Roadmap

ISSG Tasks 2 and 3 are closely linked to the Biological Data Quality Thematic Focus Area of WPI in the FishNCo project and the ISSG work-plan was drawn up with this in mind. The overall aim of the Biological Data Quality work is to create a common, standardised method of describing regional sampling programmes.

The following tables shows the 6 Objectives that were defined for the FishNCo project – Objectives 1 and 2 are linked to ISSG Task 2, whilst Objectives 3, 4, 5, and 6 are linked to ISSG Task 3. Where work is being out-sourced using the FishNCo project resources the role of the ISSG is to specify the work, and then review the results of it. This is shown in the time line in Fig. 5.3.1.

FishNCo Biological Data Quality Objectives	Who
<b>Objective 1) Produce guidance for Sampling Design</b>	
I.1 Collate further examples of sampling design documents from MS not already considered by PGData and the Data Quality ISSG	Data Quality ISSG Task 2
I.2 Incorporate these further documents into the analysis already performed by PGData and the Data Quality ISSG	
I.3 Produce a final template on how to structure a sampling design document. A trimmed down version of this template can be used to describe sampling schemes in Textbox 5A	
<b>Objective 2) Produce guidance for Sampling Implementation</b>	
Handling of "Non-responses & Refusals" will be incorporated in the outputs of Objective 1 so no additional work required	N/A

<p><b>Objective 3) Produce guidance for Data Checks</b></p>	
<p>3.1 Collate national examples of the types of data checks that are implemented</p>	
<p>3.2 Categorise these data checks (take into account existing concepts of data quality such as consistency, completeness). Identify any categories of data check that MS are not doing, based on standard data quality concepts.</p>	<p>Fishn´Co project. Work to be out-sourced to data expert.</p>
<p>3.3 Using the categories of data checks identified create a template that MS can use to identify which categories of data check they are implementing and, ideally, point to public code repositories of these checks (if they exist)</p>	
<p><b>Objective 4) Produce guidance for Data Storage</b></p>	
<p>Task 4.1 Summarise reasons why MS are not uploading to appropriate international databases</p>	<p>Data Quality ISSG Task 3</p>
<p><b>Objective 5) Produce guidance for Evaluating data accuracy (precision and bias)</b></p>	
<p>5.1 Identify the different types of estimation that are routinely being performed by MS, and those that would be suitable for regional estimation. Use existing sources of this information such as relevant ICES EG reports (e.g., WGCATCH, WKRDB-EST) and contact national experts as appropriate.</p>	<p>Fishn´Co project. Work to be out-sourced to statistical expert.</p>
<p>5.2 Using the R language specify the statistical functions required to allow MS to evaluate bias and estimate precision for regional estimation. This should include defining the prerequisites that a MS will need to meet to be able to use the tools (e.g., what types of data the MS must collect, and which data format to use).</p>	
<p><b>Objective 6) Produce guidance for Documenting methods of editing and imputing</b></p>	
<p>6.1 Collate national examples of the types of editing and imputing that are being performed e.g., identify the techniques and/or libraries that MS are using</p>	
<p>6.2 Categorise these methods.</p>	<p>FishNCo project. Work to be out-sourced to data expert.</p>
<p>6.3 Using the categories of methods identified create a template that MS can use to identify which methods of editing and imputation they are implementing and, ideally, point to public code repositories (if they exist)</p>	





#### 5.4 Task I: Compile Quality Assurance indicators

**Compile table 5A in the national work plans/annual reports for all the MS in the region and evaluate the overall documentation on quality of sampling programmes in the region using table 5A.**

**Develop indicators to monitor overall progress (based on table 5A) on quality assurance in the region over time.**

Based on the relatively small inter-annual changes seen in the previous year's analysis and the relatively large amount of work required it was decided not to repeat the evaluation of the Table 5A indicators this year.

Since the format of the national work-plans and annual reports is being changed and Table 5A will no longer be present<sup>2</sup> in future templates the methodology of this analysis will need to be re-thought.

For information, the previous work done for this task was presented at the IMDIS conference in 2021<sup>3</sup>.

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<sup>2</sup> Scientific, Technical and Economic Committee for Fisheries (STECF) –Revision of DCF Work Plan and Annual Report templates and guidelines (STECF-20-18) [https://stecf.jrc.ec.europa.eu/documents/43805/2788039/STECF+20-18+-+DCF+revision+of+WP+and+AR+templates\\_old.pdf/d4f5cd88-1009-4b28-8d55-12b76ea5f534](https://stecf.jrc.ec.europa.eu/documents/43805/2788039/STECF+20-18+-+DCF+revision+of+WP+and+AR+templates_old.pdf/d4f5cd88-1009-4b28-8d55-12b76ea5f534)

<sup>3</sup> Quantifying quality assurance in European fisheries biological data collection. David Currie and Jose Rodriguez. [https://imdis.seadatanet.org/files/IMDIS2021\\_poster\\_118.pdf](https://imdis.seadatanet.org/files/IMDIS2021_poster_118.pdf)



## 5.5 Task 2: Create sampling design document template for Regional Workplans

As discussed this ISSG Task is closely linked to the Fishn'Co Biological Data Quality Objectives 1, and 2. It is also related to the outputs of STECF EWG 20-18<sup>4</sup> - in particular the proposed Biological Data Quality documents in Annex 5.1.1 of the templates that MS will be required to submit as part of their national workplans / annual reports.

There has been a significant amount of previous work on developing a sampling design document template<sup>5 6</sup> but that work has concentrated on national sampling programmes. The focus of the current work is to see what changes, if any, need to be made to the existing template to allow it to be used for regional sampling programmes. The aim is to have a single document which describes the regional programme – this document will need to have input from all countries involved in the sampling. The initial audience for the complete documents will be national institutes, with an aim being to provide it to ICES benchmark groups in the future.

Since it can be confusing when there are a number of different templates being developed that cover similar concepts it is useful to review how they are related – this is shown in Fig. 5.5.2.

The Fishn'Co Baltic small pelagics case study was selected as an initial test case to evaluate how the existing data quality document and catch sampling summary templates can be used to describe a regional sampling programme. Once agreed at the RCG TM it is intended that the other regional case studies can use the completed documents as a guide when completing their own documents.

The initial draft of the Data Quality Document is shown in Appendix 5.2 Data Quality Document example, whilst the draft of the Catch Sampling Summary is shown in Appendix 5.3 Catch Sampling Summary example. These should be considered works in progress and will be worked on further before the RCG TM.

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<sup>4</sup> Scientific, Technical and Economic Committee for Fisheries (STECF) – Revision of DCF Work Plan and Annual Report templates and guidelines (STECF-20-18). EUR 28359 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-36157-2, doi:10.2760/748868, JRC124909.

<sup>5</sup> ICES. 2020. Planning Group on Data Needs for Assessments and Advice (PGDATA). ICES Scientific Reports. 2:105. 36 pp. <http://doi.org/10.17895/ices.pub.7571>

<sup>6</sup> RCG NA NS&EA RCG Baltic 2020. Regional Coordination Group North Atlantic, North Sea & East-ern Arctic and Regional Coordination Group Baltic. 2020. Part I Report, 110 pgs. Part II Decisions and Recommendations, 7 pgs. Part III, Intersessional Subgroup (ISSG) 2019-2020 Reports, 154 pgs. (<https://datacollection.jrc.ec.europa.eu/docs/rcg>)

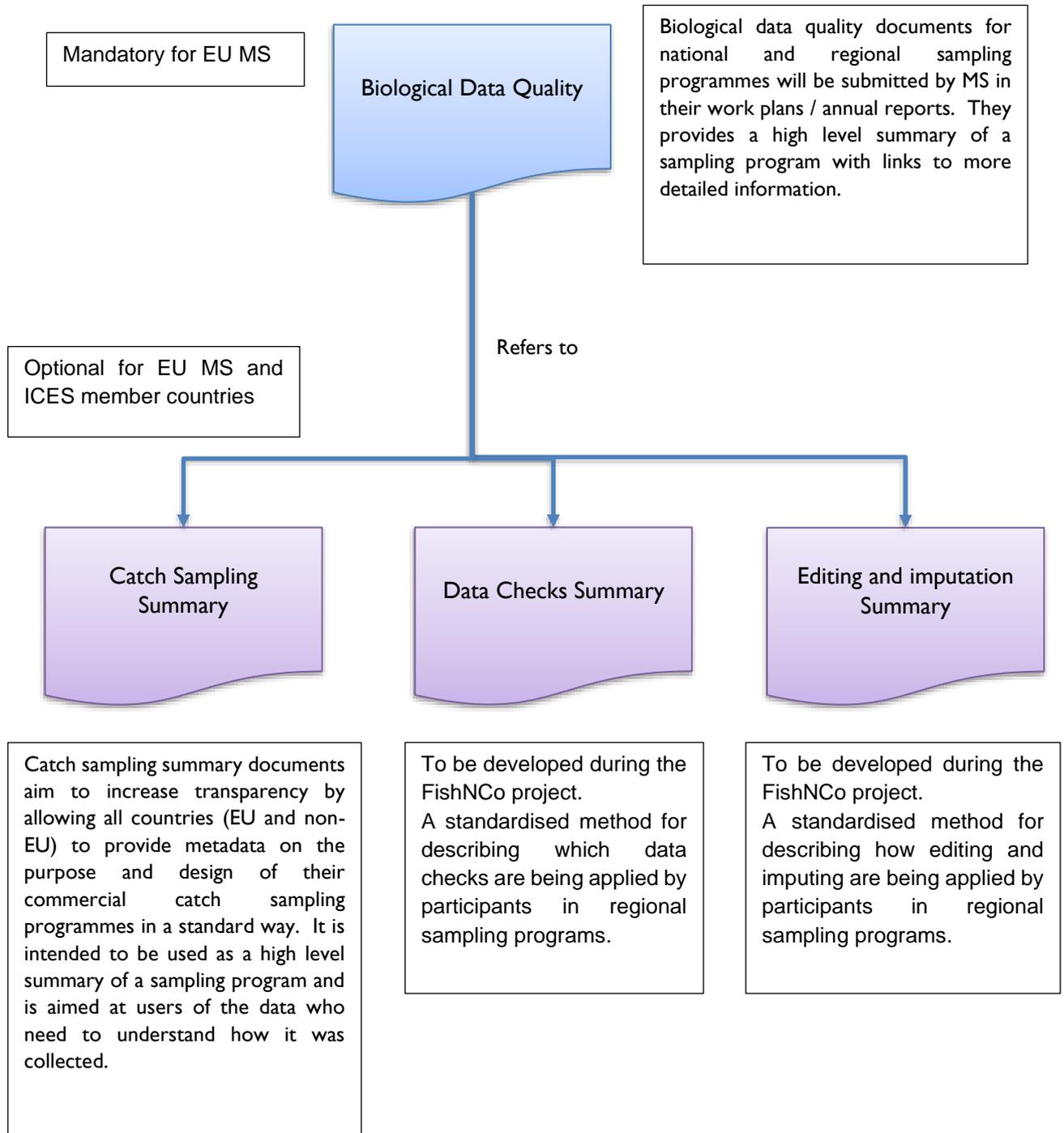


Fig. 5.5.2 Relationship between templates / documents



## 5.6 Task 3: Templates/guidance for the other data quality questions for Regional Workplans

As previously discussed, this ISSG Task is closely linked to the Fishn´Co Biological Data Quality Objectives 3, 4, 5, and 6.

### Objectives 3: “Produce guidance for Data Checks” and 6 “Produce guidance for Documenting methods of editing and imputing”

The aims of these Objectives are to produce:

1. A standardised method for describing which data checks are being applied by participants in regional sampling programs.
2. A standardised method for describing how editing and imputing are being applied by participants in regional sampling programs.

It was agreed to use the same methodology for Objectives 3 and 6:

1. The ISSG will design a questionnaire with the aim being to discover what types of data checks, editing, and imputation the institutes cooperating in the RCG and Fishn´Co project are regularly performing
2. The out-sourced resource from the Fishn´Co project will then:
  - a. Send the questionnaires to relevant people at the institutes.
  - b. Collate, categorise, and analyse the questionnaire results.
  - c. Using the questionnaire results design template(s) that that MS participating in regional sampling programmes can use to identify which data checks, and which methods of editing and imputation they are implementing
3. The ISSG will then review the templates and suggest any changes required.

52

The questionnaire designed can be seen in Appendix 5.4 Questionnaire about data checks, editing, and imputation.

To give more guidance to institutes when completing the questionnaire, it was decided to limit the scope to processes that are applied to biological sample data from commercial catches that will be used for an analytical stock assessment. The data measured will typically include length-frequency distributions, and common biological parameters such as sex, maturity, age, weight, and length. Data quality processes related to census data (e.g., logbooks, sales notes) are also within the scope of the questionnaire when they are used to produce outputs from the biological data (i.e. when the data is raised).

The relevant procurement process in the Fishn´Co project is currently under-way so no results are yet available.

### Objective 4: Produce guidance for Data Storage

The aim of this Objective is to create a summary of reasons why MS are not uploading detailed data to international databases.

The previously collated Table 5A from national work-plans / annual reports were examined to see what answers were given in the column “Data storage - In which international database are data stored?”. The different answers have then been summarized in the table below.



Type of detailed data	Reason for not uploading to international database	Comment
Eel	No database with common access exists	<p>WGEEL collect and store some types of data from member states for the use of the group. Data collected by WGEEL included landings, recruitment, yellow eel standing stock, silver eel time series, and recreational catches.</p> <p>There have been discussions about storing diadromous data in the RDBES but these are at an early state.</p>
Salmon	No database with common access exists	<p>Some aggregated salmon data (i.e. landings, BMS landings and number of fish damaged by seals) from recent years has been uploaded to InterCatch.</p> <p>WGBAST collect and store some types of data from member states for the use of the group. This includes biological sampling, number of fish from stockings, fish stocking magnitude, recreational catches, electrofishing data, fish ladder data, and smolt trapping results.</p> <p>There have been discussions about storing diadromous data in the RDBES but these are at an early state.</p>
Mediterranean	No database exists	An initiative to solve this is ongoing since an EU funded project to develop a regional database for the Mediterranean & Black Sea region has begun.
Freshwater	No database exists	Unknown if any international initiatives are ongoing or planned.
Southern waters and other regions	No database exists	Unknown if any international initiatives are ongoing or planned.
Recreational	No database exists	Aggregated data could end up in the new RDBES (if it is found possible and appropriate), but detailed data may often consist of questionnaires and are not currently planned to end up in a common international database.
National crustaceans, cephalopods, shellfish surveys	No database exists	Unknown if any international initiatives are ongoing or planned.

It can be seen that in general the reason why detailed data has not been uploaded to an international database is that a suitable database does not exist. It should be seen as a positive trend that where an international database does exist MS are generally submitting the relevant data to it.

For future work-plans / annual reports MS are advised to make a comment on why datasets are not in an international database, if that is the case.

### **Objective 5: Produce guidance for Evaluating data accuracy (precision and bias)**

The aims of this Objective are:

1. Create tools to allow the evaluation of precision for regional sampling programs (by extending previous work done in the “Background document for response to special request regarding precision and bias based on RDBES format”<sup>7</sup>).
2. Extend existing bias analysis work to regional sampling programmes.

The work on this Objective is planned for the second half of 2021 and will make use of out-sourced resources from the Fishn’Co project.

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<sup>7</sup> ICES. 2020. Background document for response to special request regarding precision and bias based on RDBES format. Available online as Annex 5.3 of the coming Report of the Second Workshop on Estimation with the RDBES data model (WKRDB-EST2). 77 pp



## 5.7 Task 4: Catalogue software tools

No further work was done on this task during the time period.



## 5.8 Task 5: RDB upload logs

With the aid of the RCGs chairs and ICES Data Centre our group has compiled the upload logs again. Upload logs were available for Belgium, Estonia, Finland, Germany, Ireland, Latvia, Lithuania, Netherlands, Poland, Portugal, Spain (IEO and AZTI), Sweden, UK (England/Wales, and Scotland). A file containing the collated upload logs is provided on the RCG SharePoint<sup>8</sup>.

It should be noted that not all countries have provided upload logs – at the 2021 RCG meetings all countries should be reminded of the need to submit RDB Upload Logs, even if the logs just state that all data was uploaded successfully.

The following important issues from the upload logs are highlighted, some of which have recurred for a number of years:

- Belgium have not uploaded the BMS fraction of the catch to the CL table for any regions due to a desire to maintain consistency with their submission to the ICES Stock Assessment data call.
- Ireland has only uploaded Nephrops discards data for 2017. If the samples could be uploaded with Functional Unit as the spatial identifier, then all Nephrops data could be uploaded.
- Ireland has not uploaded any effort data for U10m vessels because this information is not available to the trip level. Landings from U10m vessels have been uploaded with the MIS\_MIS\_0\_0\_0 métier.
- Ireland: In the CE table rectangles which would have 0 trips (when trips are assigned according to greatest effort) have the Number\_of\_trips variable set to 999 because 0 is not allowed.
- Ireland: Ireland has now included Statistical Rectangle in the 2020 CL data. It is intended to re-upload 2015 – 2019 CL data at the statistical rectangle resolution in the near future.
- Latvia: biological sample data is not collected for the NA region due to a derogation so is not uploaded (however landings and effort data for the NA region are uploaded)
- Netherlands: For pelagic species they perform catch sampling, however the RDB does not accept that (you can add it under TR, but then you'll end up with a consistency error later on). Catch sampling not allowed, only LAN/DIS etc
- Poland is not able to identify landing categories so "Human consumption" has been assigned to all records.
- Portugal (North Atlantic). Catches of Tracharus species are under reported due to a coding issue.
- Spain (all regions) have a recurring issue with commercial size categories. There is not a common size category scale - this means these categories are different between ports and, in many cases, categories within the same port change depending on different factors. This means that "Commercial size categories" can't be compared across different trips as they correspond to different size ranges.
- Sweden has not been able to upload some small fraction of Nephrops because the RDB only accepts maximum 3 subsampled fractions by catch category/species/station (Small, medium and large).

There has not been time to make any progress on developing machine-readable upload logs for the new RDBES.

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8

<https://community.ices.dk/ExternalSites/datacollection/Regional%20coordination%20meetings%202017/rcgnansea/2021%20Meeting%20Documents/03.%20Report%202021/Upload%20logs>



### 5.9 Task 6: Data checks for the new RDBES

No work has been done on this task yet.



## Appendix 5.1 Work

### Meetings held

- Online meeting 15<sup>th</sup> February 2021.
- Online meeting 18<sup>th</sup> March 2021.
- Online meeting 28<sup>th</sup> April 2021.

### Estimated work time by sub-group participants

Name	Institute	Days
David Currie (Chair)	Marine Institute, Ireland	10
Antanas Kontautas	Marine Research Institute, Klaipeda University, Lithuania	2
Els Torrelee	ILVO, Belgium	1
Henrik Kjems-Nielsen	ICES Secretariat	-
Jose Rodriguez	IEO Spain	1
Kirsten Birch Håkansson	DTU Aqua, Denmark	5
Maciej Adamowicz	National Marine Fisheries Research Institute, Poland	4
Malin Werner	SLU Aqua, Sweden	4
Marie Storr-Paulsen	DTU Aqua, Denmark	5
Remigijus Sakas	Marine Research Institute, Klaipeda University, Lithuania	2
Sofie Vandemaele	ILVO, Belgium	3
Vincent Badts	Ifremer, France	-
Zuzanna Mirny	National Marine Fisheries Research Institute, Poland	4



## Appendix 5.2 Data Quality Document example

**MS :** DK, SE, PL, FI, LT, EE, LV

**Region :** Baltic

**Sampling scheme name :** Baltic SPF regional

**Time period of validity :** from 2020 until future

**Short description (max 100 words) :** e.g., *sampling scheme aiming at collecting length samples from commercial landings on-shore for all species listed in Table 1 of the EU-MAP. The scheme covers mainland and all overseas islands (RUP).*

A regional sampling program on the larger vessels of the small-pelagic trawler fleet to obtain sprat and herring to estimate length-composition, numbers at age, and mean weight at age of commercial catches.

The sampling program is still a trial to test what and how much it is possible to standardize sampling procedures for this fleet at regional level and therefore most countries are running it in parallel with national sampling programs covering the same fleet / stocks

At the moment the upper hierarchies and selection within varies between countries, mainly due to practicalities, but the countries have agreed on standardized protocols for the lower hierarchy (sampling of hauls for biology).

### Description of the population

**Population targeted :** Member State shall specify which are the Primary Sampling Units, e.g., all national port\*days (information present in former Table 4B). For research surveys: specify the main target species from a survey perspective (as opposed to the table in the Annex to the Implementing Decision) and the main survey area.

All herring and sprat commercially caught in the Baltic Sea for which estimates of length or age composition are required.

In principle all herring stocks and the I sprat stock in the Baltic can be sampled in this sampling program, however, in reality not all MS fleets are covering all the stocks. The list highlights the stocks within the sampling programs and the main fishing country by stock.

- her.27.20-24 (DK)
- her.27.25-2932 (DK/EE/LT/LV/SE)
- her.27.28 (LV/LT)
- her.27.3031 (FI\*)
- spr.27.22-32 (DK/PO/SE/FI/EE/LT/LV)

\*The Swedish programme includes some vessels that catch her.27.3031 but this stock is not a target of the Swedish pilot programme. Still, samples from 30-31 are collected when vessels enlisted in the central Baltic programme happen to visit those areas.

The PSU varies by MS:

DK:...

SE:...





PL:…  
FI:…  
LT:…  
EE:…  
LV:…

**Population sampled** : Member State shall specify which part of the target population will be sampled and specify which part of the target population is unreachable for sampling or excluded for some reason to explain, e.g., *major ports being listed as auctions excluding all minor ports and no sampling during the week-ends*. For research surveys at sea describe target species in single-species surveys or ecosystem component (e.g., *demersal, pelagic*) in multispecies surveys.

The sampling area is the Baltic sea from Kattegat (SD 21) to northern Baltic (SD 32).

The vessels included in the sampling frame:

- >24 meters\*,
- vessel landing > 10 t of sprat/herring a year\*,
- threshold of 95 % relevant species by trip\*,

(\*with some exceptions)

Not all vessels are included in the frame – mostly those below 24 meters, gillnetters landing herring or vessels with a very mixed fishery.

**Stratification** : Member State shall explain which logic has been taken to stratify the population and the number of strata generated, e.g., *population stratified in 3 geographical lots (from A to B, from B to C and from C to D). Each lot is then stratified by auction.*

PSU are generally stratified by week / month. A minimum of 10 samples are targeted within each quarter with a minimum of one sample per week. Some countries have a higher effort allocation.

**AR comment** : Have there been any deviations?

### Sampling design and protocols

**Sampling design description** : Member State shall describe how the sampling allocation is defined; how PSU and SSU are selected for sampling; indicate for which catch fraction the sampling scheme applies.

A vessel list is created and randomly selected to take a self-sample. The vessel is contacted and refusals and non-responses recorded. The fisherman is asked to sample 1 sample / trip but presently there is no description on how this sample should be taken. Sweden has a more extended sampling strategy, involving a request to fishermen to collect samples from all hauls in trips contacted.

The pelagic fishery is considered an unsorted fishery where the different fish species are landed together. Therefore, the sampling strategy is to sample a 3-5 kg unsorted sample random from a specific haul and include logbook information from the same haul.





The subsample is sorted into the different species (sprat and herring). The fish is weighted whole. In Sweden, 2 hauls per subdivision are randomly selected per subdivision.

~50 fish / species is selected for otolith, length and individual weight (optional sex and maturity, parasite, stock ID, scales). This can be conducted by taking 10 fish take the weight and add up to the total weight in the sub sample. The fish should be measured in scm.

**Is the sampling design compliant with the 4S principle?** : Y/N/NA (NA for e.g., surveys and diadromous and recreational sampling schemes)

Y

**Regional coordination** : Member State shall indicate if the sampling design and protocols were developed as part of a regional or multi-lateral agreement, and if yes, refer to the agreement (table I.5) and list all MS participating.

Y - Baltic SPF regional

**Link to sampling design documentation** : Member State shall provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g., internal report). If no documentation on the sampling design exists, Member State shall provide some details in the textbox.

TBC

**Compliance to international recommendations** : Member State shall state 'Y' (yes) if the sampling design is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling design should be shortly explained in the text, and should be available upon request for the evaluators.

Y. The sampling programme has been designed through the Regional Coordination Groups and the FishNCo project.

**Link to sampling protocol documentation** : Member State shall provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g., internal report). If no documentation on the sampling design exists, Member State shall provide details on the sampling protocol in this textbox.

TBC

**Compliance to international recommendations** : Member State shall state 'Y' (yes) if the sampling protocol is in line with international recommendations, and 'N' if not. If no relevant expert or coordination groups exist, the sampling protocol should be shortly explained in the text, and should be available upon request for the evaluators.

Y

**AR comment** : Have there been any deviations?





### Sampling implementation

**Recording of refusal rate** : Member State shall indicate with 'Y' (yes) or 'N' (no), or 'NA' (not applicable, in case of research surveys). If 'N' (no), indicate when (year) documentation will be available.

Y

**Monitoring of sampling progress within the sampling year** : Member State shall indicate how sampling allocations are adjusted (if needed) and followed-up, what are the mechanisms in place to resolve issues and adopt mitigation measures during the sampling year?

TBC

**AR comment** : Have there been any deviations?

### Data capture

**Means of data capture** : short description (+ photo optionally). MS shall indicate what are the means for collecting the data, e.g., scales, measuring board, dedicated software, ...

TBC

**Data capture documentation** : Member State shall provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g., internal report). If no documentation on data capture (e.g., measuring protocols, maturity staging, manual for the data capture means, ...) exists, Member State shall provide some details in the textbox.

TBC

**Quality checks documentation** : Member State shall indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Member State shall provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g., internal report). If no documentation on the quality checks exists, Member State shall provide some details in the text box.

TBC (use template developed during FishNCo?)

**AR comment** : Have there been any deviations?

### Data storage

**National database** : Member State shall provide the name of national database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

MS	Database name	Location (e.g., host institute)	Format (database / spreadsheet)	Years of data stored
DK		DTU Aqua	Database	2020 -





RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

5. ISSG Data Quality (Appendix)

SE		SLU Aqua	Database	2020 -
PL		MIR	Database	2020 -
FI		LUKE	Database	2020 -
LT		APC	Database	2020 -
EE				2020 -
LV				2020 -

**International database** : Member State shall provide the name of international database(s) and the organisation hosting the database, if applicable. Otherwise, insert 'NA' (not applicable). Provide a link if the database is accessible through a website.

Database name	Location (e.g., host institute)	Format (database / spreadsheet)	Years of data stored
RDBES	ICES	Database	

**Quality checks and data validation documentation** :Member State shall provide link to webpage where the documentation can be found. Otherwise, provide some details in the text box.

TBC

**AR comment** : Have there been any deviations?

Data processing

**Evaluation of data accuracy (bias and precision):** Member State shall indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Member State shall provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g., internal report). If no documentation on the evaluation of data accuracy exists, Member State shall provide some details in the textbox.

TBC (use tools developed during FishNCo?)

**Editing and imputation methods:** Member State shall indicate with 'Y' (yes) or 'N' (no). If 'N' (no), indicate when (year) documentation will be available. Member State shall provide a link to a webpage where the documentation can be found. If no link is available, but documentation exists, Member State shall provide a literature reference (author(s), year and type of publication - e.g., internal report). If no documentation on the editing and imputation methods exists, Member State shall provide some details in the textbox.

TBC (use template developed during FishNCo?)

**Quality document associated to a dataset:** Is there a publication digital object identifier (DOI) created? Is there a document summarising the estimation process followed?

TBC





**Validation of the final dataset:** How are datasets validated (quality checked) before providing to end-user?

TBC

**AR comment :** Have there been any deviations?

**AR comment:** Use this text box for providing any additional comments if necessary.





## Appendix 5.3 Catch Sampling Summary example

### Program: Baltic SPF regional

The following information should be provided by the person(s) completing this template.

Document created date:	28.04-2021
Most recent document review date:	
Main contact name:	Marie Storr-Paulsen
Main contact email:	msp@aqua.dtu.dk

Country	Contact name:	Contact email:
<a href="http://vocab.ices.dk/?ref=337">http://vocab.ices.dk/?ref=337</a>		
DK	Marie Storr-Paulsen, Kirsten Birch Håkansson	msp@aqua.dtu.dk
EE		
FI		
LV		
LT		
PL		
SE		

### I. Purpose and scope of this document

The purpose of the template is to increase transparency by allowing all countries to provide metadata on the purpose and design of their commercial catch sampling programmes in a standard way.

It is intended to be used as a high level summary of **a sampling program** and is aimed at users of the data who need to understand how it was collected. It is not intended that all details of a program will be provided in this document - references and links should be provided to more detailed documentation as required e.g., detailed sampling protocols, or published guidelines and best practice. The description will not necessarily cover a whole stock as different sampling programs can cover different part of the stocks. In a regional context this will often be true were the regional sampling program often will cover the larger part of the fleet and national programs can cover more inshore or small scale segments.

This is a combined template for all countries participating in the regional sampling, with country specific details. For additional sampling schemes covering part of the same stock

Please note:

- The meaning of the statistical terms used in this report follow ICES WKPICS1 REPORT 2011 <https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2011/WKPICS/WKPICS%20report%202011.pdf>
- Information relating to the ICES Regional Database & Estimation System (RDBES) can be found at <https://github.com/ices-tools-dev/RDBES>
- Where possible links have been provided to ICES vocabularies – using values from these lists in your answers will make it easier to compare different sampling programmes.





## 2. Programme overview

### 2.1. Program name

[If the program is uploaded to the RDBES, then please use the same code <https://vocab.ices.dk/?ref=1664> ]

Baltic SPF regional

### 2.2. The objective of this commercial catch sampling program

A regional sampling program on the larger vessels of the small-pelagic trawler fleet to obtain sprat and herring to estimate length-composition, numbers at age, and mean weight at age of commercial catches.

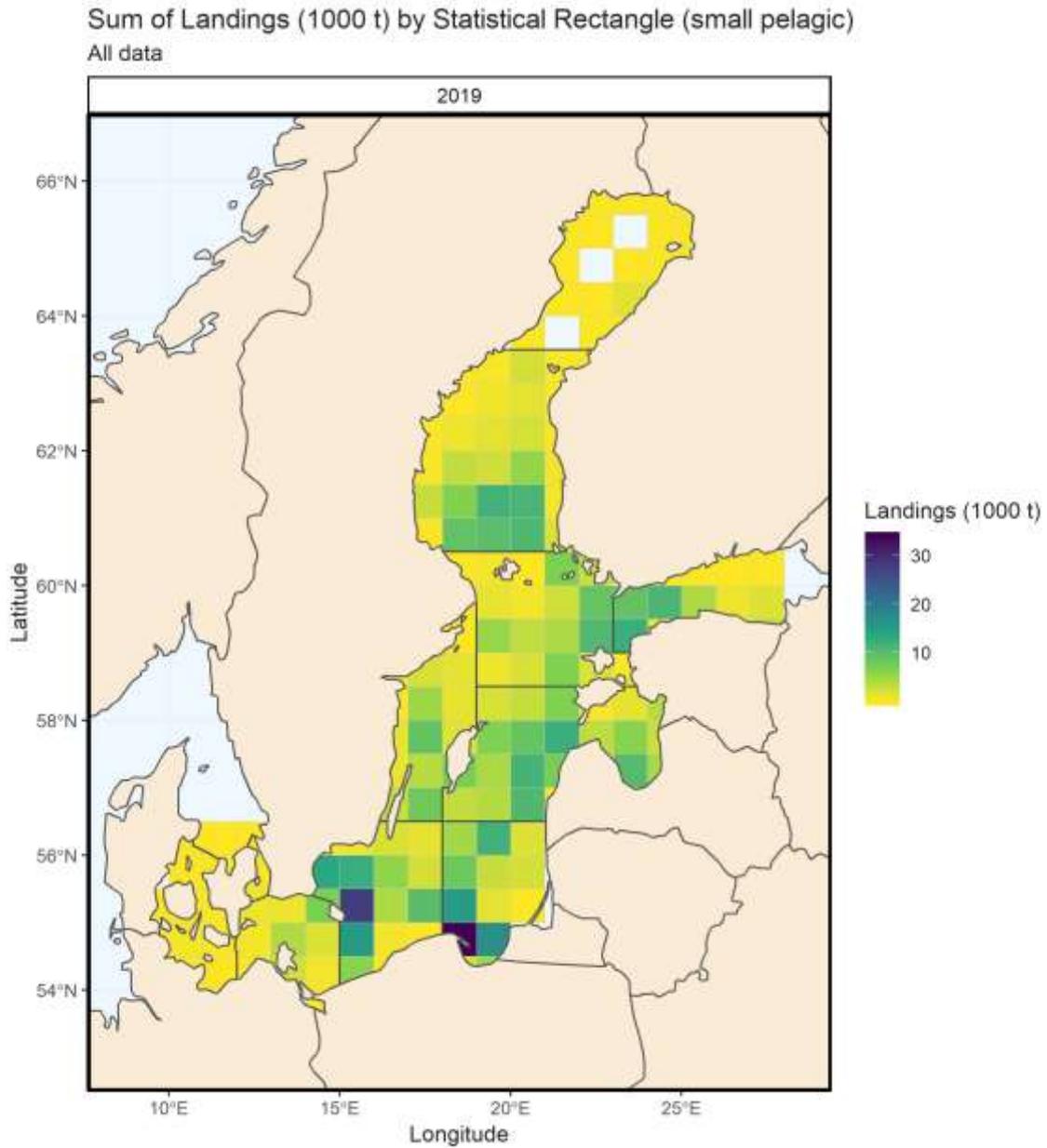
The sampling program is still a trial to test what and how much it is possible to standardize sampling procedures for this fleet at regional level and therefore most countries are running it in parallel with national sampling programs covering the same fleet / stocks

At the moment the upper hierarchies and selection within varies between countries, mainly due to practicalities, but the countries have agreed on standardized protocols for the lower hierarchy (sampling of hauls for biology)

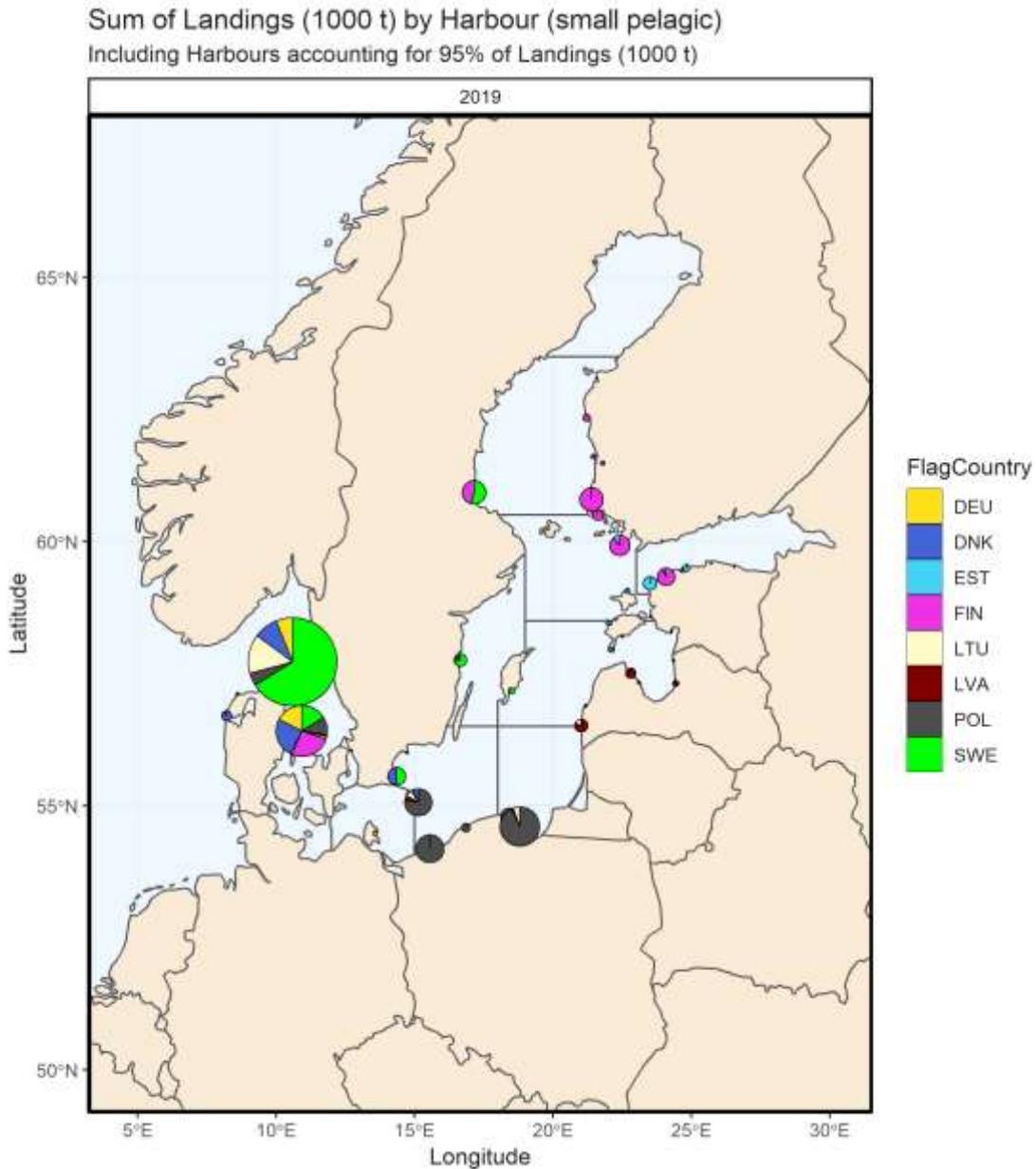
### 2.3. Spatial coverage and temporal resolution

Sampling area is the Baltic Sea from Kattegat (SD 21) to northern Baltic (SD 32). The combined landings by ICES square are shown in Fig. 5.A3.1). The landings in the 95% most important harbours by country are shown in Fig. 5.A3.2.





**Fig. 5.A3.I.** Sum of Landings (1000 t) in 2020 by Statistical Rectangle (small pelagic). All data. 0.77% of Landings (1000 t) - reported for missing Statistical Rectangle. From RCG 2021.



**Fig. 5.A3.2.** Sum of Landings (1000 t) in 2020 by Harbour (small pelagic). Including Harbours accounting for 95% of Landings (1000 t). From RCG 2021.

#### 2.4. Stocks targeted

[use [//vocab.ices.dk/?ref=260](https://vocab.ices.dk/?ref=260) for stock codes]

In principle all herring stocks and the I sprat stock in the Baltic can be sampled in this sampling program, however, in reality not all MS fleets are covering all the stocks. The list highlights the stocks within the sampling programs and the main fishing country by stock.

her.27.20-24 (DK)

her.27.25-2932 (DK/EE/LT/LV/SE)

her.27.28 (LV/LT)

her.27.3031 (FI\*)

spr.27.22-32 (DK/PO/SE/FI/EE/LT/LV)

\*The Swedish programme includes some vessels that catch her.27.3031 but this stock is not a target of the Swedish pilot programme. Still, samples from 30-31 are collected when vessels enlisted in the central Baltic programme happen to visit those areas.

## 2.5. Other sampling schemes targeting the same stocks

*[If possible, add link to Commercial Catch Sampling Summary for the other sampling schemes]*

Year	Country	Sampling scheme(s)
	<a href="http://vocab.ices.dk/?ref=337">http://vocab.ices.dk/?ref=337</a>	If relevant <a href="https://vocab.ices.dk/?ref=1664">https://vocab.ices.dk/?ref=1664</a>
xxxx-2019	DK	'At market - small pelagic', 'At sea - self-sampling, small pelagic'
2020-2021	DK	
	EE	
	FI	
	LV	
	LT	
	PL	
	SE	

## 2.6. Known quality issues

The sampling design has in the past been very different between MS, some countries has already shifted from an ad hoc sampling design to a probabilistic some years ago however this has not been coordinated.

Country	Issues
<a href="http://vocab.ices.dk/?ref=337">http://vocab.ices.dk/?ref=337</a>	
DK	The Danish sampling program was before 2020 an ad hoc sampling program where control agency sampled vessels based on a quota system to cover the main part of the landings. As the main part of the Danish landings in the Baltic are conducted in a few but very large trips this was not the optimal ways of sampling. Since 2020 Denmark has sampled the small pelagic in the Baltic according to the new regional design. An additional sampling program is used in Denmark where samples are collected from land (3-company samples), this sampling program is targeting both larger and smaller vessels and

	assure sampling from the vessels within this program that a'have refused to collect samples
EE	
FI	
LV	
LT	
PL	
SE	The Swedish sampling was before 2020 an species focused sampling program with quarter*area sampling targets expressed as number of fish and samples obtained from control and/or first-hand buyers with little control over sampling procedures.

## 2.7. Time-series

[Include a brief summary of the existing time-series (first survey year, e.g., 1994–present), including some brief information about significant changes in the methods over time that might affect the consistency of the time-series (e.g., ad-hoc sampling until 2015 thereafter probabilistic). More specific changes can be address in the sections below. Use a table for your answer if helpful e.g.

In 2020 this regional sampling program was initiated, different MS had different national programs before and some run parallel programs to day.

Time period	Description
2020	Regional trial -
2021	Regional trial -

## 3. Sampling design

### 3.1. Organisations conducting the sampling

[List all organisations sampling data. Identify any bilateral/multi-lateral agreements – for sampling conducted under these agreements it is preferred if only one country fully completes this form and other countries then refer to it. Identify RCG region when relevant. Use a table for your answer if helpful e.g.

Organisation	Country <a href="http://vocab.ices.dk/?ref=337">http://vocab.ices.dk/?ref=337</a>	Bi-lateral / multi-lateral agreement partners	RCG region <a href="http://vocab.ices.dk/?ref=1640">http://vocab.ices.dk/?ref=1640</a> (if relevant)
DTU Aqua	DK		BS
SLU Aqua	SE		BS
MIR	PL		BS
LUKE	FI		BS
APC	LT		BS
	EE		BS
	LV		BS

### 3.2. Sampling scheme type

The program is a self-sampling program for some and observer for others

Country	Sampler affiliation	Location
<a href="http://vocab.ices.dk/?ref=337">http://vocab.ices.dk/?ref=337</a>	<a href="https://vocab.ices.dk/?ref=1639">https://vocab.ices.dk/?ref=1639</a>	<a href="https://vocab.ices.dk/?ref=1667">https://vocab.ices.dk/?ref=1667</a>
DK	Self-sampling	At-Sea
EE		
FI		
LV		
LT		
PL		
SE		

### 3.3. ICES Regional Database & Estimation System (RDBES) Upper Hierarchy

[Specify which ICES RDBES Upper Hierarchy is used for data submission, if known. More details available at <https://github.com/ices-tools-dev/RDBES>]

#### Hierarchy 3 and Hierarchy 1

### 3.4. Target population

**All herring and sprat commercially caught in the Baltic Sea for which estimates of length or age composition is required**

71

### 3.5. Sampling frame

The vessel included in 2020 :

- >24 meters\*,
- vessel landing > 10 t of sprat/herring a year\*,
- threshold of 95 % relevant species by trip\*,

Country	Vessels included in the sampling frame
DK	8
SE	15
PL	30
FI	17
LT	5
EE	
LV	34 ?

\*with some exceptions

3.6. Under coverage of the sampling frame

**All vessels not included in the frame – mostly below 24 meters, gillnetters landing herring or vessels with a very mixed fishery.**

DK		tonnage in landings			% stock sampled in program
year	stock	no	yes	total	
2020	her.27.20-24	2044	2403	4447	54
2020	her.27.25-2932	1081	8193	9275	88
2020	spr.27.22-32	6084	20364	26448	77

3.7. Sampling units

**PSU : Vessel- trips in some and time in others**

3.8. Stratification of Primary Sampling Units (PSU)

**Stratified by Week / month**

3.9. Effort allocation

**10 sample with the selected quarter**

**A minimum of one sample per week. Some countries have a higher effort allocation**

3.10. Selection methods

*[Describe how units are selected within a PSU (e.g., selection of fishing operations within a trip in at-sea sampling programs ; selection of a vessel-trips within a port-day ; selection of boxes within market categories on a market-day visit). Use ICES vocabulary <https://vocab.ices.dk/?ref=1637> Note that if data from this program is being submitted to the RDBES then that data should include full information on selection methods.]*

A list with vessels filling the criteria's in 3.5 is conducted and randomly selected to take a self sampling. The vessel is contacted and refusals and non responses recorded. The fisherman is asked to sample 1 sample / trip but presently there is no description on how this sample should be taken. Sweden has a more extended sampling strategy, involving a request to fishermen to collect samples from all hauls in trips contacted.

3.11. Recording of non-responses and refusals

Refuses and non-responses are recorded. However, as this program is based on self-sampling it is not always straightforward to record if a given sample was collected on the selected trip or from another trip/ haul. Different MS are receiving different refusal rates.

Member state	Vessels in the frame	Refusal rate
<b>DK</b>	<b>8</b>	<b>38%</b>
<b>SE</b>	<b>15</b>	
<b>PL</b>	<b>30</b>	
<b>FI</b>	<b>17</b>	
<b>LT</b>	<b>5</b>	
<b>EE</b>		
<b>LV</b>	<b>34</b>	

### 3.12. Risks and mitigations

*[Are there known problems with acquiring satisfactory data (e.g., samplers not having access to landings) if so briefly describe them, along with any mitigations put in place.]*

In Finland there were problems with the quality of the self-sampled fish as most vessels did not have freezer capacity. The quality was higher when taken directly from the tanks (Jukka ?)

In Estonia and Lithuania there were problems with landings abroad and getting access to these samples.

### 3.13. Further information on sampling design

*[Insert references and links to any other publicly available documents related to the sampling plan (e.g., detailed sampling protocols published on an institute's web-site).]*

73

## 4. Biological sampling protocols

### 4.1. Species selection strategy

*[Describe the strategy used to select the species for this program (e.g., all fish species, all demersal fish in the commercial landings are sampled for biological data, all pelagic, all benthic fauna included or a specific list). For self-sampling programs include the requested sample size. Note that if data from this program is being submitted to the RDBES then that data should include full information on species selection. Different species can be sampled for different biological parameters and this should be noted in the following sections. Different processes might be used for samples from different areas – again please note this in the sections below.]*

The pelagic fishery is considered an unsorted fishery where the different fish species are landed together. Therefore, the sampling strategy is to sample a 3-5 kg unsorted sample random from a specific haul and include logbook information from the same haul.



#### 4.2. Sub-sampling procedure

*[Is the weight of the whole catch or just a component of it being recorded. Are catch and/or box weights measured or estimated? Are conversion factors used? Are fish weighed either whole, gutted or by individual components <https://vocab.ices.dk/?ref=1642> . This information might vary by species.]*

The subsample is sorted into the different species (sprat and herring). The fish is weighted whole. In Sweden, 2 hauls per subdivision are randomly selected per subdivision

#### 4.3. Length sampling

*[Specify if lengths are taken for every PSU or just for selected PSUs (provide details). Are the PSU's length stratified (e.g if a sample comes from market and has been size classified) or non-stratified? Number of fish/boxes (or other units/methods) to be measured by PSU; description of how the lengths are measured for each species (e.g., fork-length, total length <https://vocab.ices.dk/?ref=1606> ) and if estimated provide details, and accuracy, (e.g., by 1 cm or 0.5 cm <https://vocab.ices.dk/?ref=1608> ). This information might vary by species.]*

~50 fish / species is selected for otolith, length and individual weight (optional sex and maturity, parasite, stock ID, scales). This can be conducted by taking 10 fish take the weight and add up to the total weight in the sub sample. The fish should be measured in scm.

#### 4.4. Fish weight sampling

*[Specify if weight measurements of individual fish are taken for every PSU or selected PSU and provide details. Are the PSU's weight stratified (e.g if a sample comes from market fish are size classified) or non-stratified? Number of fish/boxes (or other units/methods) to be measured by PSU for weight-composition; description of how the weights are measured for each species (e.g., individual measurements recorded or average from subsample weight divided by number of fish in the subsample). This information might vary by species.]*

74

#### 4.5. Age sampling

*[Provide information on type and number of ageing structure collected <http://vocab.ices.dk/?ref=1507> (specify if more than one) and if these are taken from stratified or non-stratified samples. Provide details of any stratification e.g per length class. This information might vary by species.]*

The age sample is a non stratified sample with 50 random fish per sample selected for age, length and weight.

#### 4.6. Other biological parameters measured

*[Include details of other biological parameters which are routinely collected (e.g sex, maturity, fat content, stomach content, parasites, DNA) and if these are taken from stratified or non-stratified samples. Provide details on number of samples and level of stratification. Include the same level of details for other biological parameters that are taken on an ad-hoc basis.]*

#### 4.7. Further information on biological sampling protocols

*[Insert references and links to any other publicly available documents related to the biological parameter sampling (e.g., detailed biological sampling protocols published on a web-site). Provide detailed information on*





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 5. ISSG Data Quality (Appendix)

any changes which have occurred in relation to biological sampling back in time e.g., improved species identification or selection methods. Where information is not publicly available, document who should be contacted.]

#### 5. Data storage

##### 5.1. Programme data storage

[How is data stored nationally e.g., database, spreadsheets. If detailed data is stored internationally specify the name of the international database and number of years' data is available

International data storage			
Database name	Location (e.g., host institute)	Format (database / spreadsheet)	Years of data stored
RDBES	ICES		2020

##### 5.2. Further information on data storage

[Insert references and links to any other publicly available documents related to data storage and access policies (e.g., detailed information on an institute's database published on a web-site).]

#### 6. Data quality checks and validation

##### 6.1. National data checks

[Brief summary of data quality checks and validation performed at a national level. This could include those performed during or soon after data collection and those performed later (e.g., checks performed when combining data prior to submission to a data call). Provide a schematic if it is helpful.]

**Data validation against logbook data is implemented in some countries**

##### 6.2. International data checks

[Brief summary of data quality checks and validation performed at an international level e.g., during or after data submission to an international database. Provide a schematic if it is helpful.]

##### 6.3. National data flow

[Where there are multiple organisations involved in collecting and processing national data please show how the data flows between them. Provide a schematic if it is helpful.]





#### 6.4. Further information on data checks ad validation

*[Insert references and links to any other publicly available documents or code repositories related to data quality checks (e.g., links to publically available data checking source code or packages).]*

### 7. Estimation procedure

#### 7.1. Estimation procedures

*[Briefly describe the estimation procedure for each parameter. Identify whether model-based, model-assisted, or design-based estimation is being done. Is missing data imputed? Include a description of the process for estimating variance where this is done.]*

**Design-based estimation is the goal. Development of such routines will go hand-in-hand with the development of estimation scripts for RDBES, namely within WGRDBES-EST. Until development is complete, previously used methods of estimation are being implemented**

#### 7.2. Further information on estimation procedures

*[Insert references and links to any other publicly available documents or code repositories related to estimation (e.g., links to publically available source code or packages).]*



## Appendix 5.4 Questionnaire about data checks, editing, and imputation

### Aim

The aim of this questionnaire is to discover what types of data checks, editing, and imputation your institute are regularly performing. The responses will be collated and categorized in order to create a template that MS participating in regional work plans can use to concisely describe these aspects of their data quality processes. This work is part of the “Biological Data Quality” thematic working area of the Fishn’Co project and the RCGs Data Quality Intersessional SubGroup.

### Scope

When answering the questions please consider the processes that you apply to biological sample data from commercial catches that will be used for an analytical stock assessment. The data measured will typically include length-frequency distributions, and common biological parameters such as sex, maturity, age, weight, and length.

When statistical estimates are made from biological data (i.e. when the data is raised) it is usually necessary to make use of census data (e.g., logbooks and sales notes) so data quality processes related to this census data are also within the scope of this questionnaire when it is used to produce outputs from the biological data.

### Publication

We intend to publish a sub-set of the answers provided to this questionnaire to be used both as evidence to support the final template that will be created, and as a useful resource for MS. This publication will include all answers to questions in Sections 2, 3, 4, and 5. *Please do not include any confidential information or material which you do not want to be publically available in your answers to those questions.*

77

### Questions

**We’d like you to answer the following questions – please provide URLs to publically available resources where they are relevant to the answers.**

#### 1. About you (answers will not be published)

1.1. Who is completing this questionnaire? (Please include the names of all relevant people)

1.2. What is your role / are your roles?

#### 2. About your work-place

2.1. Which country do you work in?

2.2. Which institute or laboratory do you work in?

- 2.3. Has your institute achieved any accreditations or certifications which are relevant to these questions? If so, please list them. (e.g., ISO 9001:2015, CoreTrustSeal, IODE accreditation)
- 2.4. Which data have you thought about when answering these questions? E.g., it might be all data from a named sampling scheme, or data collected from a named stock(s).

### 3. Data checks

***When answering these questions please provide examples of graphical outputs or scripts if they would be informative***

- 3.1. When is the data entered into an electronic recording system such as a database? (e.g., it is captured electronically, it is captured on paper and then transcribed as soon as possible, it is entered monthly)
- 3.2. Do you constrain the values of properties in your data recording system to be physically realistic? (e.g., lengths can only in a plausible range). If yes, please describe the checks and at what points they are performed (e.g., at data capture, during data extraction, ad-hoc).
- 3.3. Do you use defined code lists for storing categorical information electronically? (e.g., No, free text; Yes, local code lists; Yes, international code lists such as ICES vocabularies)
- 3.4. Do you perform any outlier checks on your data? If yes, please explain:
  - Which properties do you check? (e.g., biological parameters, discards weights per haul, catch and sample weights, census data, discard rates)
  - How do you define an outlier?
  - How do you check for outliers? (e.g., graphically using expert judgement, R scripts)
  - At what points are the checks performed? (e.g., at data capture, during data extraction, ad-hoc).
- 3.5. Do you perform any cross checks of sample data with census data? (e.g., species composition, landing weights, unwanted catch weights). If yes, please describe the checks and at what points they are performed (e.g., at data capture, during data extraction, ad-hoc). If there is an inconsistency between the sample and census data how do you handle this?
- 3.6. Do you perform any missing values checks? (e.g., missing values vs. “true zeros”). If yes, please describe the checks and at what points they are performed (e.g., at data capture, during data extraction, ad-hoc).
- 3.7. Do you perform any spatial data checks? (e.g., coordinates, rectangles, areas). If yes, please describe the checks and at what points they are performed (e.g., at data capture, during data extraction, ad-hoc).

- 3.8. Do you perform any temporal consistency data checks? (e.g., checking the variation of data with quarters/years). If yes, please describe the checks and at what points they are performed (e.g., at data capture, during data extraction, ad-hoc).
- 3.9. Do you perform any duplication checks? (e.g., checking that the same sample is not entered into a database twice). If yes, please describe the checks and at what points they are performed (e.g., at data capture, during data extraction, ad-hoc).
- 3.10. Please let us know about any other relevant data checks which have not already been described in your answers
- 3.11. Do you have written processes or guidelines which define your approach to data checking?

#### 4. Editing

- 4.1. If data errors, inconsistencies, or discrepancies are found how do you deal with them? (e.g., do you correct the sample data, exclude the data from any outputs, replace with average values, correct data outputs such as InterCatch files?)
- 4.2. Do you have written processes or guidelines which define your approach to dealing with data errors, inconsistencies, or discrepancies?

#### 5. Imputation

***If you have different imputation processes for different end-users, please make these clear in your answers***

- 5.1. How do you deal with any gaps in your Age Length Key (ALK) and/or Weight Length Key (WLK)? (e.g., leave the gaps, impute missing values from averages/models/surveys)
- 5.2. How do you deal with any gaps in your sampling strata? (e.g., leave the gaps, impute missing values from other strata)
- 5.3. Do you have written processes or guidelines which define your approach to imputation? (Note that a written process could be in the form of a document or scripts e.g., structured R markdown scripts or similar)



## 6 ISSG Development of Draft Regional Work Plan/ FISHN'CO

### 6.1 Compiling, Identifying and Filling Information Gaps for elements to be considered for inclusion in a RWP (WP 1)

#### 6.1.1 Background and Introduction

##### 6.1.1.1 Objectives and Work Flow

The objectives of WPI are to work in close cooperation with the regional and pan regional Intersessional Subgroups of the RCGs NANSEA, Baltic, LP and PGECON and specifically to:

- a) Assess the current stages of regional coordination and define the level of ambitions for the content of their work for the defined RWP focus areas.
- b) Identify the elements that will go towards the development of the RWP in 2021 and 2022 and analyse the information and knowledge gaps.
- c) Agree on the core ISSG tasks to be carried out as part of the intersessional RCG work and the supporting tasks to be carried out as part of the Fishn'Co.
- d) Address these support tasks as distinctive pieces of work to be financed and completed within the Fishn'Co project.
- e) Communicate WPI outputs of RWP content to WP3 for the development of the RWP structures.

There are 10 thematic focus areas as outlined in section 6.1.1.2 with an additional three case studies and an umbrella group in the thematic focus area on commercial fisheries. Each of these areas underwent the same review process as outlined in the WPI work flow (Fig. 6.1). Each thematic focus area considered the elements to be included in a regional work plan. For these elements, the level of ambition was defined using Fig. 6.2 as guidance. Having identified the level of ambition, the gaps for each of the elements were described to progress towards a regional work plan. Having identified the gaps, the groups (project scientists and ISSGs) identified how the gaps are to be addressed through ISSG work and Fishn'Co support tasks. For the Fishn'Co tasks the groups described the work that needs to be carried out with associated timelines. An important aspect is the communication flow between WPI and WP3 on the template and proposal for RWPs. Elements that are ready to be included in a RWP plan are communicated to WP3 to further develop the structure and content for the RWP proposal.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO



Fig. 6.1 WPI Work flow for each thematic focus group.

#### 6.1.1.2 Thematic Focus Areas and related RCGs

Thematic Focus Areas	RCG
<b>Commercial Fisheries</b>	
The Baltic small pelagic case study	RCG Baltic
Freezer trawl case study	RCG NANSEA
Iberian trawl case study	RCG NANSEA
Large Pelagics	RCG Larage Pelagics
Umbrella Group: Coordination of Regional Sampling Plans	RCG NANSEA & RCG Baltic
<b>Recreational Fisheries</b>	RCG NANSEA & RCG Baltic
<b>Diadromous Species</b>	RCG NANSEA & RCG Baltic
<b>Activity Variables and Small-Scale Fisheries</b>	RCG NANSEA & RCG Baltic
<b>Incidental catches of PETS</b>	RCG NANSEA & RCG Baltic
<b>Additional data on Ecosystem Impacts: Stomach Sampling</b>	RCG NANSEA & RCG Baltic
<b>Social and Economic data on Fisheries</b>	RCGECON
<b>Social, Economic and Environmental data on Aquaculture</b>	RCGECON
<b>Research surveys at sea</b>	RCG NANSEA & RCG Baltic
<b>Biological Data Quality</b>	RCG NANSEA & RCG Baltic

For this first draft of the report, only gap analyses relating to RCG NANSEA and RCG Baltic thematic focus areas are included.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.1.1.3 Ambition Levels

The ambition levels in each thematic focus area were determined according to the following levels as presented in the diagram below. This concept was first introduced in the case study for small pelagics in the Baltic Sea and then applied to the other thematic focus areas. Not all RWP elements fit logically into this diagram.

#### Sampling programme

collecting data for common purposes (eg. stock assessment, international assessment of impact of fisheries etc)

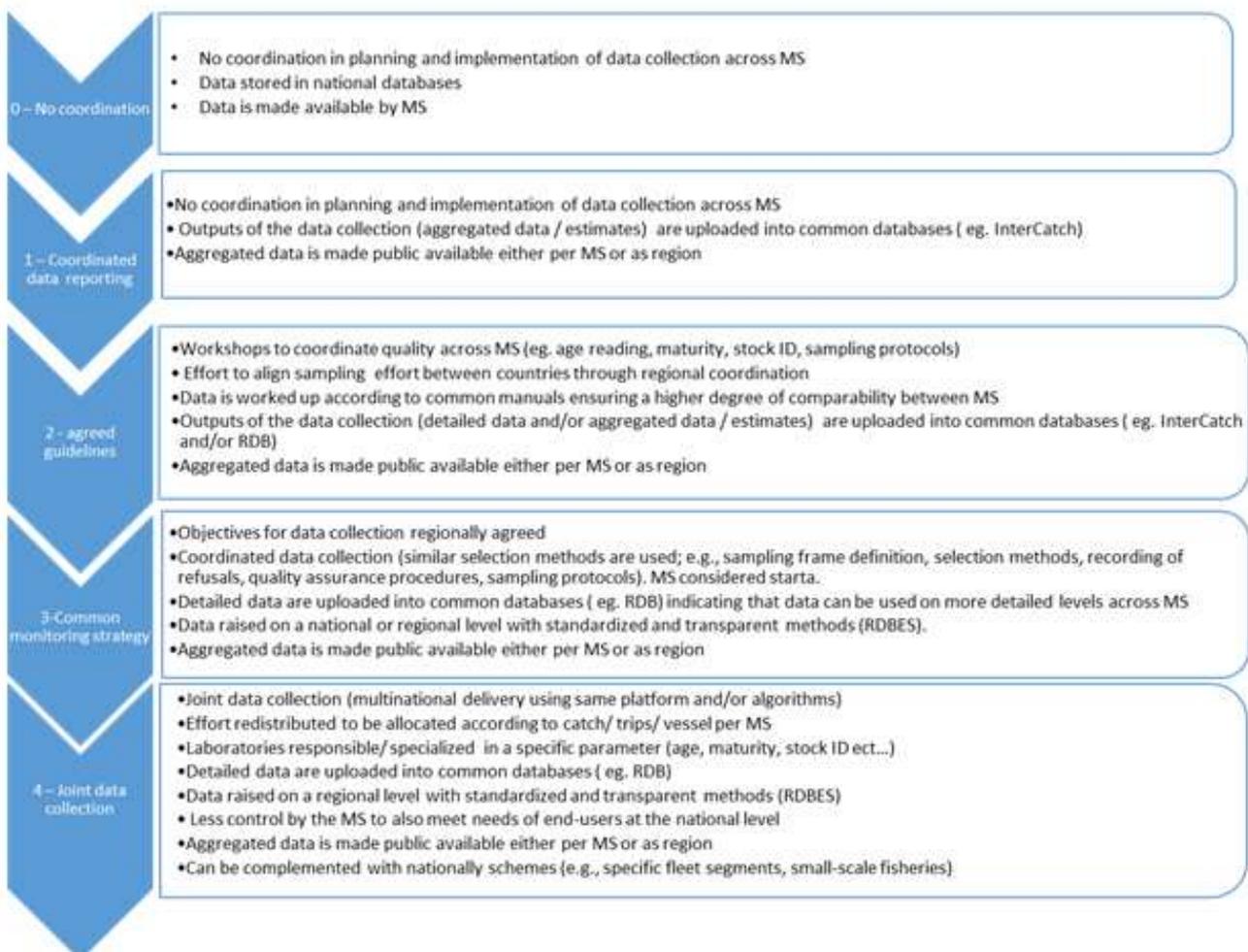


Fig. 6.2 Ambition levels for the regional coordination of data collection activities

#### 6.1.1.4 General Observations through the Process

WPI Task leaders for the thematic focus areas met monthly to update on progress, review example cases and share lessons learned. Synergies and dependencies were identified between different thematic focus areas, leading to closer cooperation and information exchange. IT was agreed that the level of ambition did not only vary among different thematic focus areas but also in different geographic regions and/or for different species.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

The mapping of scientific end-user was important in particular for thematic areas where the end-user is less defined or the role has evolved over recent years.

#### 6.1.2 Ambition levels and Gap Analysis for each Thematic Focus Area

Below, the steps taken in Task I are given for each of the focal areas. Because RCG ECON will only take place in September the outcomes of the exercise are not available yet for the focal areas Social and economic data on fisheries and Social, economic and environmental data on aquaculture.

##### 6.1.2.1 Optimized and Operational Regional Sampling Plans (Umbrella Group)

Thematic Focal Area: Optimized and Operational Regional Sampling Plans (Umbrella Group)		
<b>1. Level of Ambition</b>		
Elements for RWP	Level of Ambition <i>According to Fig. 6.2</i>	Comments/Rationale
Develop guidance for the development of optimized and operational regional sampling plans (RSPs)	3   4	<p>This is meant as support for the development of a RSP. The idea is to develop guidance that is readily available, easy to update and support the different types of regional sampling plans.</p> <p>The ambition level is set to 4, which implies that the guidance should consider all RSPs developed under Fishn'co.</p> <p>The ambition level is set to 3, as the guidance as a start will build on 4 of the RSPs under Fishn'co, the Iberian trawlers, Freezer trawlers, Baltic small pelagic and Long Distance fleet.</p>
<b>2. Gaps to reach Level of Ambitions</b>		
Elements towards RWP	Gaps to be addressed	Comments/Rationale
Guidance on <b>operational</b> regional sampling plans (RSPs)	Continue to develop guidance based on examples from the involved RSPs	This will be based on a questionnaire to the RSPs
Guidance on <b>optimized</b> regional sampling plans (RSPs)	Keep the overview of existing optimization tools updated, summarise the optimizations done in the RSPs, and summarise the 'theoretical gaps' encountered in the RSPs	This will be based on a questionnaire to the RSPs

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 3. Addressing the Gaps

Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through ISSG support tasks
Guidance on <b>operational</b> regional sampling plans (RSPs)		Continue to develop guidance based on examples from the involved RSPs. This will be based on a questionnaire to the RSPs
Guidance on <b>optimized</b> regional sampling plans (RSPs)		Keep the overview of existing optimization tools updated, summarise the optimizations done in the RSPs, and summarise the 'theoretical gaps' encountered in the RSPs. This will be based on a questionnaire to the RSPs

#### 4. Fishn'Co Tasks

Not determined

#### 6.1.2.2 Regional Sampling Plan for Small Pelagics in the Baltic

##### Thematic Focal Area:

The Baltic regional sampling program is covering a fleet segment and not all the stocks within the region. Presently, we have 4 herring stock and 1 sprat targeted by this fleet segment.

84

##### I. Level of Ambition

Elements for RWP	Level of Ambition <i>According to Fig. 6.2</i>	Comments/Rationale
A common protocol for working up samples	2	It is the intention to have a common protocol defining the minimum amount (kg) per sample, species selection, numbers of ages and length measured, the units used.
Vessel selection	3	Common protocols on vessel selection, agreement on which part of the fleet to cover (large trawlers). And which part is covered by a national sampling program.
Self sampling program	3	The program is a self sampling program
Age reading workshops	2	Systematic age reading workshops
Species mis-reporting	3	Try to ensure a common way to identify mis-reporting. Make control data available for other nations

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 2. Gaps to reach Level of Ambitions

Elements towards RWP	Gaps to be addressed	Comments/Rationale
Stock vs. Fleet  A RSP can either cover a stock or a fleet segment	How to ensure coverage of all stocks within a given area.  If the sampling plan is covering a fleet segment it is hard to ensure the best coverage of all stocks	It is always difficult to ensure that a given stock is covered perfectly within a common sampling program  It will be important to ensure that all stocks are covered before changing towards a new strategy.
Common sampling protocols (lab)	To analyse the optimal number to be measured / aged	ongoing
Species mis-reporting	Access to control data	Presently not easy
Self-sampling program	Access to samples	Not all MS have access to the port where the vessels are landing. Better coordination between MS
Self-sampling program	Access to samples	One MS have very small vessels and they do not have freezer capacity on board. An alternative solution needs to be developed.
If not all MS will be on the same ambition level	How to ensure	

85

#### 3. Addressing the Gaps

Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through ISSG support tasks
<b>Species mis-reporting</b>		<b>Control data ? EFCA</b>

#### 4. Description of Fishn'Co Tasks to be completed with time lines

Not determined

##### 6.1.2.3 Commercial Iberian trawl case study

1. Level of Ambition		
Elements for RWP	Level of Ambition According to Fig. 6.2	Comments/Rationale
Common sampling protocol for RSP	<b>3</b>	Identify similarities/differences in current sampling protocols of this fishery by institutions/countries (AZTI, IEO, IPMA) and assess if differences can be changed aiming at similar procedures.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

Define regional sampling plan to be implemented in a pilot study and allocation of sampling effort between institutions/countries	4	Define scenarios for sampling design of the RSP. In the simulation study of project FishPi2 several scenarios were defined and preferential scenarios were identified based on bias, precision, feasibility and suitability. The selected scenario to be implemented in a pilot study needs to be identified especially taking into account the output from FishPi2 and the sampling protocol. Allocation of sampling effort needs to be defined taking into account the final scenario selected.
Design, implement and assess results of pilot study of the RSP	4	Define aspects for the implementation of the pilot study (timing, costs, additional adjustments); Implement pilot study during one year; Compare results of the pilot study with results of the national sampling plans

#### 2. Gaps to reach Level of Ambitions

Elements towards RWP	Gaps to be addressed	Comments/Rationale
Common sampling protocol for regional sampling plan	Identify similarities/differences in current sampling protocols of this fishery by institutions/countries (AZTI, IEO, IPMA) and assess if differences can be changed aiming at similar procedures	
Define regional sampling plan to be implemented in a pilot study and allocation of sampling effort between institutions/countries	Define scenarios for sampling design of the Regional Sampling Plan. In the simulation study of project FishPi2 several scenarios were defined and preferential scenarios were identified based on bias, precision, feasibility and suitability. The selected scenario to be implemented in a pilot study needs to be identified especially taking into account the output from FishPi2 and the sampling protocol. Allocation of sampling effort needs to be defined taking into account the final scenario selected.	
Design, implement and assess results of pilot study of the regional sampling plan	Define aspects for the implementation of the pilot study (timing, costs, additional adjustments); Implement pilot study during one year; Compare results of the pilot study with results of the national sampling plans	



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 3. Addressing the Gaps

Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through ISSG support tasks
Common sampling protocol for RSP	Work is being developed simultaneously in the context of RCG ISSG and Fishn'Co	Work is being developed simultaneously in the context of RCG ISSG and Fishn'Co
Define RSP to be implemented in a pilot study and allocation of sampling effort between institutions/countries	Work will be developed in the context of Fishn'Co	Work will be developed in the context of Fishn'Co
Design, implement and assess results of pilot study of the RSP	Work is being developed simultaneously in the context of RCG ISSG and Fishn'Co	Work is being developed simultaneously in the context of RCG ISSG and Fishn'Co

#### 4. Description of Fishn'co Tasks to be completed with time lines

Elements towards RWP	Description of Fishn'Co Tasks	Time Lines
Common sampling protocol for RSP	Identify similarities/differences in current sampling protocols of this fishery by institutions/countries (AZTI, IEO, IPMA) and assess if differences can be changed aiming at similar procedure	2020-2021
Define RWP to be implemented in a pilot study and allocation of sampling effort between institutions/countries	Define scenarios for sampling design of the Regional Sampling Plan. In the simulation study of project FishPi2 several scenarios were defined and preferential scenarios were identified based on bias, precision, feasibility and suitability. The selected scenario to be implemented in a pilot study needs to be identified especially taking into account the output from FishPi2 and the sampling protocol. Allocation of sampling effort needs to be defined taking into account the final scenario selected.	2021-2022
Design, implement and assess results of pilot study of the regional sampling plan	Define aspects for the implementation of the pilot study (timing, costs, additional adjustments); Implement pilot study during one year; Compare results of the pilot study with results of the national sampling plans	2022-2023

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.1.2.4 Marine Recreational Fisheries

Thematic Focal Area: Marine Recreational Fisheries		
1. Level of Ambition		
Elements for RWP	Level of Ambition According to Fig. 6.2	Comments/Rationale
Common regional database (RDBES + MED & BS) and how the MRF data fit into it	4	<b>Current level 2.</b> Although the data base exists and includes MRF needs, specific issues need to be developed for these fisheries
Based on end-users needs, species list selection criteria at regional level	4	<b>Current level 1:</b> Although a mandatory list of species to collect data by region exist under the DCF, as a multispecies approach is asked to the different MS, it's important to agree at regional level what potential species to add under the RCGs umbrella based on end-users needs
Data collection of other variables (e.g., socioeconomic etc.) under the EUMAP	3	<b>Current level 1:</b> The impact of this fishery should not be considered from a biological impact side only. Other variables are also essential to consider.
Strong collaboration between RCG members and ICES WGRFS	3	<b>Current level 2:</b> RCG members expertise on DCF issues together with WGRFS expertise in different technical issues regarding the monitoring of this fishery is essential to improve the regional coordination. And move forward to regional work plans.
Incorporation of recreational fisheries data into the assessment WG.	3	<b>Current level 1:</b> The inclusion of the collected data for the MRF into the assessment WG is still very limited but one of the biggest challenges. The answer to these specific end-users needs specially when stocks are shared between different MS needs and important level of coordination.
2. Gaps to reach Level of Ambitions		
Not determined		
3. Addressing the Gaps		
Not determined		
4. Description of Fishn'Co Tasks to be completed with time lines		
Not determined		

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.1.2.5 Diadromous species: Salmon and Sea trout in the Baltic and NANSEA regions

#### Thematic Focal Area: Diadromous species: Salmon in the Baltic and NANSEA regions

##### 1. Level of Ambition

- a. In your thematic focal areas, consider the elements to be considered for inclusion in a RWP.
- b. For each of these elements, define the level of ambition using Fig. 6.2 as guidance.

Elements for RWP	Level of Ambition According to Fig. 6.2	Comments/Rationale
Harmonise methods and comparability of results for electrofishing survey programs	<b>1-2+</b>	Survey to map electrofishing methods used in EU MSs was carried out in spring 2021. In the <b>Baltic region</b> the data is utilised in ICES assessment and electrofishing surveys are included in the national work plan of most of MSs. In the <b>NANSEA region</b> the data is not utilised in the assessment model presently but will probably be used in foreseen future. Level of ambition is lower than in the Baltic. Apart from MSs also several non-EU states are involved in the ICES assessment of North-Atlantic salmon.
Harmonise procedures to designate and run monitoring programs index rivers	<b>1-2</b>	In the <b>Baltic region</b> index rivers are designated, but there is room for improved coordination. In the <b>NANSEA region</b> some index rivers but the criteria for designation of index rivers has not been evaluated.
Harmonisation of data collection of catch and effort data	<b>1-2</b>	Commercial catch and effort data are readily available. The coverage and quality of estimates/data on recreational catch and effort data in marine and inland waters could be improved. Assessment of both <b>Baltic and NANSEA</b> salmon are using these types of data.
Other biological sampling to be constructed in the RWP framework	<b>1-2</b>	There also other parts in the biological sampling (like catch sampling for ageing end genotyping) where is room for improved coordination in the <b>Baltic and NANSEA regions</b> .

##### 2. Gaps to reach Level of Ambitions

Elements towards RWP	Gaps to be addressed	Comments/Rationale
Harmonise methods and comparability of results for electrofishing survey programs	Identification of practices and methods that don't produce co-dimensional parr density data. Also identification of data that is potentially collected from nontypical rearing	Assessment models require co-dimensional data for parr densities. Collection of data by electrofishing according to some of the documented standards enables conversions or other potential processing of data to combine the data from different sources and MSs.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

	habitats (e.g., WFD monitoring)	ISSG Diad has conducted a questionnaire in MSs on electrofishing surveys, which produced data for a general evaluation. Data workshops by end-users are needed for defining the data needs for assessments and for planning the data collection on coordinated basis. This element can be expected to realise as RWP earliest in medium or long term. More probable to realise in the Baltic than NANSEA region.
Harmonise procedures to designate and run monitoring programs index rivers	Mapping of the criteria that is used for selecting the index rivers.	In the <b>Baltic region</b> index river are already designated and criteria for them specified. In the <b>NANSEA region</b> the index rivers have been selected and based on national competencies and according to what deemed appropriate, affordable and necessary for the management of salmon stocks on national level. Their actual definition and selection within the ICES context is open. Data workshops by end-users are needed for defining the data needs for assessments and for planning the data collection on coordinated basis. This element can be expected to realise as RWP earliest in medium or long term. More probable to realise in the Baltic than NANSEA region.
Harmonisation of data collection of catch and effort data	Evaluation of specifications for unit of effort for different gears in commercial and recreational fisheries	Collection of catch and effort data of commercial fisheries is regulated by EU legislation. Unit of effort, however, may have different specifications in the data MSs supply for the ICES expert groups. In recreational fisheries specification of unit of effort for different gears is needed. Also catches should be reported or estimated separately for retained and released catch. And all this for marine area and rivers. This element is linked to the thematic focus area Recreational fisheries. Data workshops by end-users are needed for defining the data needs for assessments and for planning the data collection on coordinated basis. This element can be expected to realise as RWP earliest in medium or long term. More probable to realise in the Baltic than NANSEA region.
Other biological sampling to be constructed in the RWP framework	There also other parts in the biological sampling (like catch sampling and ageing end genotyping of these) where is room for improved coordination.	Data workshops by end-users are needed for defining the data needs for assessments and for planning the data collection on coordinated basis. This element can be expected to realise as RWP earliest in medium or long term. More probable to realise in the Baltic than NANSEA region.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 3. Addressing the Gaps

Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through Fishn'co support tasks
Harmonise methods and comparability of results for electrofishing survey programs	ISSG Diad will act as a communication link towards ICES expert groups	Initiate discussion among end-users to make them consider improving the coordination of data collection through ICES workshops and working towards the RWPs in medium/long run.
Harmonise procedures to designate and run monitoring programs index rivers	same as above	same as above
Harmonisation of data collection of catch and effort data	same as above	same as above
Other biological sampling to be constructed in the RWP framework	same as above	same as above

#### 4. Description of fishnCo Tasks to be completed with time lines

Elements towards RWP	Description of Fishn'Co Tasks	Time Lines
Harmonise methods and comparability of results for electrofishing survey programs	So far surveys have been carried in National Programs (EU MSs) and planning has been based on national competencies and according to what deemed appropriate, affordable and necessary for the assessment of salmon stocks on national and international level.	At this point difficult to foresee how much can be moved towards RWP during Fishn'co term. End-users are encouraged to plan data workshops preferable already for year 2022. Potential need for Manon's work time is difficult to estimate at present but will probably be rather small.
Harmonise procedures to designate index rivers	same as above	same as above
Harmonisation of data collection of catch and effort data	same as above	same as above
Other biological sampling to be constructed in the RWP framework	same as above	same as above

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### Thematic Focal Area: Diadromous species – Sea trout in the Baltic and NANSEA regions

##### 1. Level of Ambition

Elements for RWP	Level of Ambition According to Fig. 6.2	Comments/Rationale
Harmonise methods and comparability of results for electrofishing survey programs	<b>I-2+</b>	Survey to map electrofishing methods used in EU MSs was carried out in spring 2021. In the <b>Baltic region</b> the data is utilised in ICES assessment and electrofishing surveys are included in the national work plan of most of MSs. In the <b>NANSEA region</b> there is no recognised international end-user for the data so far (only national ones). ICES WKTRUTTA is developing the assessment model that will use this data.
Harmonise procedures to designate and run monitoring programs in index rivers	<b>I-2</b>	In the <b>Baltic region</b> index rivers should be designated and monitoring programs get running. In the <b>NANSEA region</b> there is no recognised international end-user for the data so far. ICES WKTRUTTA is developing the assessment model that could take this data.
Harmonisation of data collection of catch and effort data	<b>I-2</b>	Commercial catch data are readily available. The coverage and quality of estimates/data on recreational catch and effort data in marine and inland waters could be improved. Assessment model for <b>Baltic sea trout</b> don't use this data as input, but the data is used as support information in formulation of ICES advice. In the <b>NANSEA region</b> there is no recognised international end-user for the data so far. ICES WKTRUTTA is developing the assessment model that potentially could take this data.
Other biological sampling to be constructed in the RWP framework	<b>I-2</b>	There also other parts in the biological sampling (like catch sampling for ageing end genotyping) where is room for improved coordination in the <b>Baltic and NANSEA regions</b> .

92

##### 2. Gaps to reach Level of Ambitions

Elements towards RWP	Gaps to be addressed	Comments/Rationale
Harmonise methods and comparability of results for electrofishing survey programs	Identification of practices and methods that don't produce co-dimensional parr density data. Also evaluation of data that is collected from nontypical rearing habitats (e.g., in WFD monitoring for other species)	Assessment models require co-dimensional data for parr densities. Collection of data by electrofishing according to some of the documented standards enables conversions or other potential processing of data to combine the data from different sources and MSs.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

		ISSG Diad has conducted a questionnaire in MSs on electrofishing surveys, which produced data for a general evaluation. Data workshops by end-users are needed for defining the data needs for assessments and for planning the data collection on coordinated basis. This element can be expected to realise as RWP earliest in medium or long term. More probable to realise in the Baltic than NANSEA region.
Harmonise procedures to designate and run monitoring programs in index rivers	Mapping of the criteria that is used for selecting the index rivers.	In the <b>Baltic region</b> ICES WGBAST has recommended to establish one index river per assessment unit. In the <b>NANSEA region</b> need for sea trout index rivers has not been raised so far. Data workshops by end-users are needed for defining the data needs for assessments and for planning the data collection on coordinated basis. This element can be expected to realise as RWP earliest in medium or long term.
Harmonisation of data collection of catch and effort data	Evaluation of catch data in commercial and recreational fisheries	Estimates of retained and released catch of recreational fisheries in marine area and rivers would be needed. This element is linked to the thematic focus area of Recreational fisheries.
Other biological sampling to be constructed in the RWP framework	There also other parts in the biological sampling (like catch sampling and ageing end genotyping of these) where is room for improved coordination.	Data workshops by end-users are needed for defining the data needs for assessments and for planning the data collection on coordinated basis. This element can be expected to realise as RWP earliest in medium or long term. More probable to realise in the Baltic than NANSEA region.

### 3. Addressing the Gaps

Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through Fishn'Co support tasks
Harmonise methods and comparability of results for electrofishing survey programs	ISSG Diad will act as a communication link towards ICES expert groups	At this point difficult to foresee how much can be moved towards RWP during Fishn'Co term. End-users are encouraged to plan data workshops preferable already for year 2022. Potential need for Manon's work time is difficult to estimate at present but will probably be rather small.
Harmonise procedures to designate and run monitoring programs in index rivers	same as above	same as above

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

Harmonisation of data collection of catch and effort data	same as above	same as above
Other biological sampling to be constructed in the RWP framework	same as above	same as above

4. Description of Fishn'co Tasks to be completed with time lines

Elements towards RWP	Description of Fishn'Co Tasks	Time Lines
Harmonise methods and comparability of results for electrofishing survey programs	So far surveys have been carried in National Programs (EU MSs) and planning has been based on national competencies and according to what deemed appropriate, affordable and necessary for the assessment of salmon stocks on national and international level.	At this point difficult to foresee how much can be moved towards RWP in the course of Fishn'co. Also, potential need for Manon's work time is difficult to estimate at present, but will probably be rather small.
Harmonise procedures to designate index rivers	same as above	same as above
Harmonisation of data collection of catch and effort data	same as above	same as above
Other biological sampling to be constructed in the RWP framework	same as above	same as above

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.1.2.6 Small Scale Coastal Fisheries

#### Thematic Focal Area: Small Scale Coastal Fisheries

##### I. Level of Ambition

Elements for RWP	Level of Ambition According to Fig. 6.2	Comments/Rationale
Make a characterization of the current representativeness of biological data collected within the DCF in each country ( <b>in terms of vessel length coverage obtained</b> ) and identify targets for needed/wanted representativeness	3	Current level 0. There is a lack of knowledge about the degree of similarity/difference between countries in what concerns DCF sampling of biological data from SSF especially regarding: <b>obtained coverage of vessel lengths, strategy/design (is vessel length considered in stratification for sampling or not, is there a separated programme for LSF and for SSF, etc).</b>
Promote a fishing effort monitoring plan for SSF	3	<b>Current level 0.</b> Fishing effort of SSF is less well characterized than LSF (which have mandatory VMS and electronic log books). It would be desirable to have at least 1/3 of the SSF fleet equipped with real time tracking devices, specifically developed for SSF, to determine spatialized fishing effort.
Standardization of methodologies for biological data at EU level for the SSF fleet.	3	<b>Current level 2.</b> Although this topic has been previously discussed, the implementation of a common procedure has not been reached.
Make a characterization of the current representativeness of biological data collected within the DCF in each country ( <b>in terms of species coverage obtained</b> ) and identify targets for needed/wanted representativeness	3	<b>Current level 0.</b> There is a lack of knowledge about the degree of similarity/difference between countries in what concerns DCF sampling of biological data from SSF, including regarding: <b>obtained coverage of species relevant in SSF (but not relevant in LSF).</b>
<b>Data Quality indicators</b> agreed at regional level	3-4	<b>Current level 2:</b> Some indicators are needed to evaluate/validate the SSF data. Not only for sampling data, also for transversal data collected by the Control Regulation
<b>Identify main end-users</b> and their needs	3-4	<b>Current level 1:</b>
<b>Common data base</b> adapted to SSF needs (RDBES + Med & BS)	4	<b>Current level 1:</b> Although some progress has been made, still there are relevant gaps. Some test is needed to check how SSF data fit to these data bases. Coordination between the different data bases is also essential (RDBES and Med & BS)

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

<b>Real active vessels vs active registered vessels and low active vessels</b>	<b>3</b>	<b>Current level 1:</b> In some preliminary analysis, several discrepancies were found. It's also to analyse what happens with the low active vessels, how they are covered etc as this could have in the general analysis made for this fishery.
<b>Transversal data deficiencies</b> for the SSF (e.g., 10m< , 8m Baltic) analysis	<b>3</b>	<b>Current level 0:</b> The proposed new Control Regulation could improve these deficiencies, but there is a need to improve in the mid-term.
<b>Spatial data deficiencies</b>	<b>3</b>	A regional overview about the spatial data availability based on the different devices used to collect this information.

2. Gaps to reach Level of Ambitions

Elements towards RWP	Gaps to be addressed	Comments/Rationale
Make a characterization of the current representativeness of biological data collected within the DCF in each country ( <b>in terms of vessel length coverage obtained</b> ) and identify targets for needed/wanted representativeness	There is a lack of knowledge about the degree of similarity/difference between countries in what concerns DCF sampling of biological data from SSF especially regarding: <b>obtained coverage of vessel lengths</b> , strategy/design ( <b>is vessel length considered in stratification for sampling or not, is there a separated programme for LSF and for SSF</b> , etc).	
Development of a common methodology for analysis of data from real time tracking devices in SSF	Unlike LSF where fishing effort is estimated by mandatory VMS and logbook, in the case of SSF there is a lack of information on the spatio-temporal distribution of fishing effort. Specific approaches for this fleet segment should be implemented.	
Introduction of real time tracking devices system	Unlike LSF where fishing effort is estimated by mandatory VMS and logbook, in the case of SSF there is a lack of information on the spatio-temporal distribution of fishing effort. Specific approaches for this fleet segment should be implemented.	
Guidance for data collection and analysis	Lack of standardization of methodologies for biological data at EU level for the SSF fleet.	
Make a characterization of the current representativeness of biological data collected within the DCF in each	There is a lack of knowledge about the degree of similarity/difference between countries in what concerns DCF sampling of biological data from SSF, including regarding: obtained coverage of species relevant in SSF (but not relevant in LSF).	



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

country (in terms of species coverage obtained) and identify targets for needed/wanted representativeness		
Regional data bases and SSF data testing	RCG SSF ISSG and WGCATCH to work on this	
Quality indicators	RCG SSF & Quality ISSG+PGECON and WGCATCH to work on this	

- 3. Addressing the Gaps**  
Not determined
- 4. Description of Fishn'Co Tasks to be completed with time lines**  
Not determined



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.1.2.7 PET Bycatch

I. Level of Ambition		
Elements for RWP	Level of Ambition According to Fig. 6.2	Comments/Rationale
Improve the protocols for scientific observers sampling PETS bycatch onboard fishing vessels	3	<b>Current 2:</b> Although these protocols exist there is a need to have an agreement at regional level
RDBES +Med & BS regional data bases suited for accommodation of PETSW bycatch data	3-4	<b>Current 2:</b> First steps and progress is been carried out but still there is room for improvement.
Identification of relevant fisheries regarding PETS bycatch and monitoring coverage	3	<b>Current 2:</b> It's essential to have identified the relevant fisheries concerning PETS bycatch issues to take decision regarding data collection and coordination level needed.
Coordinated regional identification of level of effort needed for PETS bycatch data collection	3	<b>Current 1:</b> In coordination with main end-users, this is an essential issue to cover considering the future RWP
Standardization of methodologies (e.g., effort estimates, raising procedures)	3	<b>Current 2:</b> It's essential that all the methodologies used when providing different type of estimates, to be standardize at regional level.
Data quality indicators agreed at regional level.	3	<b>Current 1:</b> Some quality indicators are needed at regional level.
3. Addressing the Gaps Not determined		
4. Description of Fishn'Co Tasks to be completed with time lines Not determined		

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.1.2.8 Stomach sampling

#### Thematic Focal Area: Stomach sampling

##### 1. Level of Ambition

Elements for RWP	Level of Ambition <i>According to Fig. 6.2</i>	Comments/Rationale
Shared methodology for collecting stomachs and analysing stomach contents	<b>2 to 4</b>	Most aspects of the workplan were covered by the WGSAM recommendation and used as a base by the Stomach Content ISSG in 2020/2021 to propose a first draft of regional work plan for the area covered by the North Sea IBTS. These recommendations may not be directly applicable in other areas where different protocols are in use for long period.

##### 2. Gaps to reach Level of Ambitions

Elements towards RW	Gaps to be addressed	Comments/Rationale
Species choice	Identification of potential overlaps for species already included in MSFD programmes Refining the species list recommended by WGSAM to consider species under conservation status (e.g., sharks and rays)	WGSAM provided a list of species that is focused on providing estimates of natural mortality by main predators in the North Sea. However, this list may not be comprehensive with regards to trophic interactions in the entire ecosystem.
On board collection of stomachs	Need to integrate two protocols: 2-3 individual per 5 cm size class per haul (WGSAM – FishPi) or species-specific size class Evaluation of the protocol by animal welfare committee (and cost associated)	
Stomach analysis protocol	One protocol at NANSEA level or one protocol in the IBTS area and another in the Bay of Biscay? 2-3 stomach analysis centers, receiving samples from all countries or each country process the stomach collected during national surveys? Agree on the taxonomic resolution	Two protocols coexist regarding the analysis of preys in stomachs, one based on visual determination of the preys at lab (recommended by WGSAM and FishPI <sup>2</sup> ) and one based on on-board analysis of the stomach volume.  Taxonomic resolution: all preys determined at the lowest taxonomic possible level or commercial fish and

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

		invertebrates species at lowest level or fish at lowest level only.
Data storage documentation	Define a common data format Ensure that stomach data can be integrated in ICES database Define rules regarding data property (embargo for a defined period after upload?)	
Cost issues	Secure funding, notably to fund extra work at sea, and lab work Define and agree on cost sharing Inclusion on non EU countries	

### 3. Addressing the Gaps

Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through ISSG support tasks
Species choice	Exchanges with NC and survey Pls/ WGIBTS to refine species lists Either ISSG or Fishn'co should contact most important stock assessment groups in ICES, asking the members to identify relevant species	
On board collection of stomachs	Agreement on the fact that the stomach collection scheme may differ between regions/countries	
Stomach analysis protocol	Agreement on the fact that the stomach analysis protocol may not be regionally coordinated	Discussion about the pros and cons of the methods before being included in a regionally coordinated work plan
Data storage documentation	Ongoing discussions with ICES	
Cost issues, inclusion of non EU countries	To be discussed with DG MARE during RCG plenary	

100

### 4. Description of Fishn'Co Tasks to be completed with time lines

Elements towards RWP	Description of Fishn'Co Tasks	Time Lines
Stomach analysis protocol	Discussion about the inclusion of this aspect under the regional coordination or not Specific discussion about the method: taxonomic level of the preys, number of preys, mass, other parameters (individual prey length etc.	3-4 days workshop (planned in October 2021)

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.1.2.9 Research Surveys at Sea

#### Thematic Focal Area: Research Surveys at Sea

##### 1. Level of Ambition

Elements for RWP	Level of Ambition <i>According to Fig. 6.2</i>	Comments/Rationale
Surveys as listed in <u>Table I</u> of EU MAP	3-4+	Surveys listed in Table I of EU MAPI are selected via the STECF 'Decision Support Tool' (DST) and fulfil criteria which brings them to a minimum of level 3, with several at level 4 displaying joint data collection programmes. Cost sharing agreements are considered as "4+" as they allow financial contributions to redistribute survey effort for MS who have monitoring obligations.
Common descriptions of EU MAP Table I surveys for work plan submission and reporting.	Level of ambition is to have commonly agreed survey descriptions for surveys in Table I of the EU MAP (Fig I of this template <i>not applicable</i> )	To reduce text in national work plans and ensure consistency with regional reporting
RWP table structure for surveys 2.6 final agreement for RWPs		

##### 2. Gaps to reach Level of Ambitions

Elements towards RWP	Gaps to be addressed	Comments/Rationale
Surveys as listed in <u>Table I</u> of EU MAP	MS consensus on which surveys should be included in cost sharing.	While some surveys already have cost sharing agreements, the new table I needs to be fully reviewed for consensus on surveys selected as candidates for cost sharing.
Agreed reporting templates for survey descriptions	Lack of template for describing surveys, no agreed survey descriptions that can be adopted in national and regional work plans;	

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

RWP Table 2.6 structure for surveys, final agreement for RWPs	Agreement of final table structure to capture survey elements of RWP (Table 2.6)													
<h3>3. Addressing the Gaps</h3> <table border="1"> <thead> <tr> <th>Elements towards RWP</th> <th>Gaps to be addressed through ISSG work</th> <th>Gaps to be addressed through Fishn'Co support tasks</th> </tr> </thead> <tbody> <tr> <td>Surveys as listed in Table I of EU MAP</td> <td>Development of Cost sharing agreements within the following process:                             <ol style="list-style-type: none"> <li>1. ISSG Expert review of Table I surveys and proposal for cost sharing candidates;</li> <li>2. MS consensus on cost sharing candidates</li> <li>3. Development of further cost sharing agreements by the ISSG</li> <li>4. Approval by implicated MS</li> <li>5. Incorporation into regional work plan</li> </ol> </td> <td>Preparation for survey review meeting to select candidate surveys for cost sharing</td> </tr> <tr> <td>Agreed reporting templates for survey descriptions</td> <td>Liaison with ICES to develop/modify common survey descriptions for inclusion in RWPs and NWP</td> <td></td> </tr> <tr> <td>RWP table structure for surveys 2.6 final agreement for RWPs</td> <td>Development and review of final proposal</td> <td>Working with WP3 of Fishn'co</td> </tr> </tbody> </table>			Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through Fishn'Co support tasks	Surveys as listed in Table I of EU MAP	Development of Cost sharing agreements within the following process: <ol style="list-style-type: none"> <li>1. ISSG Expert review of Table I surveys and proposal for cost sharing candidates;</li> <li>2. MS consensus on cost sharing candidates</li> <li>3. Development of further cost sharing agreements by the ISSG</li> <li>4. Approval by implicated MS</li> <li>5. Incorporation into regional work plan</li> </ol>	Preparation for survey review meeting to select candidate surveys for cost sharing	Agreed reporting templates for survey descriptions	Liaison with ICES to develop/modify common survey descriptions for inclusion in RWPs and NWP		RWP table structure for surveys 2.6 final agreement for RWPs	Development and review of final proposal	Working with WP3 of Fishn'co
Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through Fishn'Co support tasks												
Surveys as listed in Table I of EU MAP	Development of Cost sharing agreements within the following process: <ol style="list-style-type: none"> <li>1. ISSG Expert review of Table I surveys and proposal for cost sharing candidates;</li> <li>2. MS consensus on cost sharing candidates</li> <li>3. Development of further cost sharing agreements by the ISSG</li> <li>4. Approval by implicated MS</li> <li>5. Incorporation into regional work plan</li> </ol>	Preparation for survey review meeting to select candidate surveys for cost sharing												
Agreed reporting templates for survey descriptions	Liaison with ICES to develop/modify common survey descriptions for inclusion in RWPs and NWP													
RWP table structure for surveys 2.6 final agreement for RWPs	Development and review of final proposal	Working with WP3 of Fishn'co												
<h3>4. Description of Fishn'Co Tasks to be completed with time lines</h3> <table border="1"> <thead> <tr> <th>Elements towards RWP</th> <th>Description of Fishn'co Tasks</th> <th>Time Lines</th> </tr> </thead> <tbody> <tr> <td></td> <td>Preparation for survey review meeting to select candidate surveys for cost sharing: Information on Table I surveys with target species, relevant TAC shares by Member States and thresholds identifying MS obligations.</td> <td>Q3-4 2021</td> </tr> </tbody> </table>			Elements towards RWP	Description of Fishn'co Tasks	Time Lines		Preparation for survey review meeting to select candidate surveys for cost sharing: Information on Table I surveys with target species, relevant TAC shares by Member States and thresholds identifying MS obligations.	Q3-4 2021						
Elements towards RWP	Description of Fishn'co Tasks	Time Lines												
	Preparation for survey review meeting to select candidate surveys for cost sharing: Information on Table I surveys with target species, relevant TAC shares by Member States and thresholds identifying MS obligations.	Q3-4 2021												

#### 6.1.2.10 Biological Data Quality

Thematic Focal Area: Biological Data Quality

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 1. Level of Ambition

Elements for RWP	Level of Ambition <i>According to Fig. 6.2</i>	Comments/Rationale
Common, standardised method of describing regional sampling programmes	4	

#### 2. Gaps to reach Level of Ambitions

Elements towards RWP	Gaps to be addressed	Comments/Rationale
Sampling Design Documentation	Lack of template for describing regional sampling programs	
Data Capture checking documentation	No standardised methods to describe data checks	
Data storage documentation	Not all data is uploaded to international databases	
Guidance for evaluating data accuracy (precision and bias)	Lack of tools available for regional sampling programs	Existing work on national sampling schemes needs to be extended to regional schemes.
Documenting methods of editing and imputing	No standardised methods to describe editing and imputation	

#### 3. Addressing the Gaps

Elements towards RWP	Gaps to be addressed through ISSG work	Gaps to be addressed through ISSG support tasks
Sampling Design Documentation	Template on how to structure a regional sampling design document.	
Data Capture checking documentation		Standardised method for describing which data checks are being applied by participants in regional sampling programs.
Data storage documentation	A summary of reasons why MS are not uploading to appropriate international databases	
Guidance for evaluating data accuracy (precision and bias)		Evaluation of precision for regional sampling programs. Extend existing bias analysis work to the regional level.
Documenting methods of editing and imputing		Standardised method for describing how editing and imputing are being applied by participants in regional sampling programs.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 4. Description of FFishn'co Tasks to be completed with time lines

Elements towards RWP	Description of Fishn'Co Tasks	Time Lines
Data Capture checking documentation	Collate national examples of the types of data checks that are implemented	5 days Sub-contracting (included in proposal) May – June 2021
Data Capture checking documentation	Categorise these data checks (take into account existing concepts of data quality such as consistency, completeness). Identify any categories of data check that MS are not doing, based on standard data quality concepts.	3 days Sub-contracting (included in proposal) May – June 2021
Data Capture checking documentation	Using the categories of data checks identified create a template that MS can use to identify which categories of data check they are implementing and, ideally, point to public code repositories of these checks (if they exist)	2 days Sub-contracting (included in proposal) May – June 2021
Guidance for evaluating data accuracy (precision and bias)	Identify the different types of estimation that are routinely being performed by MS, and those that would be suitable for regional estimation. Use existing sources of this information such as relevant ICES EG reports (e.g., WGCATCH, WKRDB-EST) and contact national experts as appropriate.	10 days Sub-contracting (included in proposal) Sep – Nov 2021
Guidance for evaluating data accuracy (precision and bias)	Using the R language specify the statistical functions required to allow MS to evaluate bias and estimate precision for regional estimation. This should include defining the prerequisites that a MS will need to meet to be able to use the tools (e.g., what types of data the MS must collect, and which data format to use).	25 days Sub-contracting (included in proposal) Sep – Nov 2021
Documenting methods of editing and imputing	Collate national examples of the types of editing and imputing that are being performed e.g., identify the techniques and/or libraries that MS are using	5 days Sub-contracting (included in proposal) May – June 2021
Documenting methods of editing and imputing	Categorise these methods.	2 days Sub-contracting (included in proposal) May – June 2021
Documenting methods of editing and imputing	Using the categories of methods identified create a template that MS can use to identify which methods of editing and	2 days Sub-contracting (included in proposal)



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

	imputation they are implementing and, ideally, point to public code repositories (if they exist)	May – June 2021
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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.2 Establishing decision making structures/processes for RWP (WP 2)

*Minutes of the kick off meeting 18/05/2021.*

*Attendees: Els Torreele, Elo Rasmann, Lucia Zarauz, Maria Hansson, Marie Storr Paulsen, Simona Nicheva, Kolyo Zehlev, Christoph Stransky, Heikki Lehtinen, Manon Troucelier, Emilia Batista, Irek Wojcik, Rosa Fernández*

In order to take decision to implement a RWP, a process need to be in place to identify all topics needed to be taken into account to achieve decisions. However, it needs to be noted that the process for implementing a decision process, will be very much determined by the 'flowchart' *Ambition levels for the regional coordination of data collection activities* (see Fig. 6.2 under section 6.1.1.3)

#### Objectives WP2:

1. Develop methodology for creating RWP and determine the decision-making process on the implementation of RWP in accordance with the Rules of Procedures (RoPs) for the relevant RCGs and the Regulation 2017/1004 establishing Data Collection Framework (DCF).
2. Develop and describe processes needed in discussions among MS and in the RCGs about sharing responsibilities, expected contributions, decision making and adoption processes, and how to implement and manage RWP in a harmonized, cooperative and transparent way.
3. Consultation with:
  - the RCGs
  - National correspondentson the processes needed for the implementation of the RWPs including processes for discussions and decision making.

#### Identified tasks:

- Proposal for establishment of the communication process for the work for development of RWP.
- Providing a proposal for methodology for creating RWP.
- Providing of the proposal for the decision-making process to the RCG/NC.
- Establishment of consultation channels with the RCGs.

#### 6.2.1 A short description of the processes that needs to be taken into account when developing RWP.

Important to take into account is:

- ✓ to consider which **countries** each part is relevant to.
- ✓ How to share **responsibilities**
- ✓ Explanation of **who (which MS) is responsible for what.**

The implementation of the RWP will work as a **stepwise approach**. In the initial phase, only tables and text-boxes and further on more things will be added.

It is pointed out there is the need to look into what is actually going into the RWP and into the NWP and who is doing what and this comparison will help decisions on next steps.

The **stepwise approach** will have an impact on the decision process. Depending on what comes first, this needs to be considered for the design of the decision process.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### *The role of case studies:*

The first attempt is not as much about regional coordination but more about comparison. Case Studies (CS) could help in this comparison and implementation.

However, it is tricky to discuss the decisions issue until there is more known about the content of the RWP. A suggestion is to focus now on the outcome from Case Studies (CSs). A CS could help as a “benchmark” to then see how this can be used for other CSs. The approach to use CS by CS, could work better than trying to go for all the MS adopting a full RWP at once.

A crucial question in the decision process is what if even in the implementation of a CS in the RWP there may be countries not participating, how to deal with this? Can different MSs participate at different levels and paces? Who is allowed to take this decision? It would be wise to find the minimum level that everyone can agree.

There could be different situations in different regions. And this will allow defining who is where and how they want to progress to next level. There may also be some other factors conditioning decisions.

It is also mentioned that there's need to **harmonise language and terminology**. Programmes which are regional need to be named the same for those in the same region.

#### **6.2.2 Draft decision-making structures for developing the regional work plans.**

Approach:

*Steps to start with:*

- Establishment of a RWG by relevant experts appointed by NCs.
- Working process between relevant experts in the different sections of the RWP.
- These should present the proposal of the RWP to the MS.

*The steps to be taken in the next phase of process (not completed yet):*

Step 1: Justification/reporting: all the proposals will be collected and presented to the MSs. This could be made by experts from participant organizations.

Step 2: Request for additional comments in accordance with RoPs.

Step 3: there should be agreement and after that submitted for adoption.

#### **To be discussed in the RCG:**

1. MSs that don't agree should provide substantiated reasons for the disagreement. The EC could support steps for progress towards the achievement of an overall agreement. There's a way to bypass the problem if just one or two MS don't agree. When the MS, who don't enter yet into the RWP, agrees to the decision that the RWP is implemented by the other MS within the region, a consensus is reached within the region. A solution could also be that those non-agreeing countries, make progress through the NWP and implement some aspects of the RWP in their NWP, e.g., terminology, methodologies, etc.
2. In the decision-making process it should be thought also how to incorporate the follow up: as it is the RCG who submits the RWP to the Commission, it is expected that the COM will communicate with

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

the RCG about acceptance, non-acceptance and what needs to be changed. The role of the RCG needs to be clarified in this whole process, to be observed within the RoP.

3. What will be the impact on the MS involved in a RWP if the RWP is not accepted?
4. **There'll be need to revise and need to consider the procedures after the submission of the RWP with different possible scenarios.**
5. **Importance of having a final review of the RoP for RCG NANSEA and RCG Baltic.** Based on this revision, RCG ECON and RCG LP will be presented these RoP and be requested to accept it. After having been working on this for long, this could be a more practical approach. RCG ECON has now its own RoP and the comparative analysis could be done when there's a final version coming from the ISSG-NC.

**The objective is to have one version of RoP for all RCGs, i.e. with the focus on the decision process being similar for all regions and supra regions.**

### 6.3 6RWP templates and proposal (WP 3)

#### 6.3.1 General principles leading to the RWP template

In 2020 a test run RWP for the year 2021 was initiated for both the Baltic and NANSEA regions. These test runs RWP included a reconstruction of the following tables:

- Table 1A – List of required stocks.
- Table 1G – Research surveys at sea.
- Table 7A – Planned regional and international coordination.
- Table 7B – Recommendations.
- Table 7C – Bi and multilateral agreements.

STECF (EWG-20-16) commented the test run RWP and proposed ways forward. In general and in order to meet the needs and deadlines of a RWP, the EWG advised that **all MS needed to agree to change their WP in line with RCG proposals**, within a timescale that should be clear and achievable. The EWG mentioned that effort needed to be spent to **keep the process simple and avoid duplication of work**. The EWG pointed out that an online platform for the WP/AR submission and evaluation, combined with a database holding WP/AR information and relevant fisheries data, would **facilitate the production of an overview of planned regional sampling for inclusion in the RWP** and subsequent alteration of MS WP if needed. **Links to RWPs in MS WPs should be clearly defined**, especially for the management authorities.

Following is a combination of comments from RCG NANSEA and Baltic 2020 and STECF EWG-20-16:

On table 1.1 (ex 6A – Data availability), RCG NANSEA and Baltic demanded a clear link to National programme.

On Table 1.2 (ex 7A – planned international coordination), EWG noted that the RCG LDF has conducted regional coordination and cooperation for several years and was in fact the first RCG to establish multilateral agreements containing regional sampling plans that provide examples for important elements of RWPs. The multilateral agreements between the MS concerned include financial commitments and are signed by duly authorised persons. Thus, the **RCG LDF is already sufficiently prepared for the inclusion of the relevant regional elements into RWPs**.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

EWG found confusing having two tables in the same page, one for the meetings and one for the ISSG and suggested to accommodate the setting of the table so that both can be reported in a single table. EWG expressed it was not necessary to have the number of participants in this table, only an 'X' when a MS is participating to a meeting.

On Table 1.3 (ex 7B, Bi and multilateral agreements) EWG highlighted the fact that this table would need to be updated each year and proposed the addition of a column 'follow-up action'.

On Table 1.4 (ex 7C, Follow-up of recommendations), EWG encouraged a database compatible structure of table. EWG also suggested that each line of an agreement would deserve a separate line and proposed the addition of a column 'subject' (e.g., surveys, commercial sampling, ...). It was also mentioned that the process of the agreements was not always clear and should be included in Table 7C, e.g., the delivered age data for assessment purposes for the receiving country.

On Table 2.1 (ex 1A), EWG emphasized the **need for a regional approach**, with the total sum of MS landings to be the value used to estimate the share in EU landings. The TAC share is complex to assess with issues such as TAC before or after swaps between MS, allocation of TACs to stocks when the TAC is for combined stocks (e.g., turbot/brill) or mixed species (e.g., monks, megrims, ...). Regarding the table format, there was **confusion in understanding the multiple information in each cell, the shading does not view easily**, these should be clarified.

As a way forward, it is important that there was a consensus in the EWG on the fact that **Table 1A should be issued from a MS collaborative work**, coordinated by an RCG from data gathered through an RCG data call.

On Table 2.2 (ex 1C), RCG NANSEA and Baltic suggested that this table should include the sampling activities that are officially regionally coordinated with a link to the agreement(s). Comments can include the aging workshops, which are central to regional coordination. Two scenarios were proposed either 1.) include all the sampling and variables and specify in the comment box if there are formal agreements or 2.) only include the sampling variables that are included in formal agreement.

On table 2.3 (ex 1D, Recreational fisheries), EWG advised that the outcomes of projects funded by DG MARE (STREAM, FishPi<sup>2</sup>) should be considered together with the results of pilot studies on recreational fisheries when drafting future RWPs.

On Table 2.4 (ex 1E, diadromous), EWG advised to consider the outputs of the ICES WKFEA (Workshop on the Future of Eel Advice), initiated by WGEEL and the GFCM Liaison Action and associated Research Programme on European eel, for future Regional Work Plans.

On Table 2.5 (ex 4A), RCG NANSEA and Baltic suggested to include Regional Sampling plans ready to be implemented such as:

- Baltic Small Pelagics case study.
- Freezer trawlers.
- Iberian trawlers.

On Table 2.6 (ex 1G, Research Surveys at sea), the EWG considered that the RWP should be seen as a multi-lateral agreement on a regional level. As new stock configuration may emerge in the future, requiring cooperation from different countries, the RWPs should accommodate better for such situations. EWG questioned the presence of national surveys in the RWP and also proposed the addition of a column specific to RWP 'Added value of including surveys in the RWP' (e.g., cost sharing, exchange of knowledge, ...).

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

On the format proposed, the EWG encouraged a data-base compatible structure so more information (e.g., Days at sea planned, targets, ...) can be captured. Variables 'cost share' and 'task share' should be in separate columns. The 'task share' information in the test run RWP may be inconsistent and should be checked. Information contained in table IH should also be considered in a database structure. For the textbox, a coherent document structure for all surveys should be considered with text and maps presented the same way.

On Table 3.1 (ex 2A), RCG NANSEA and Baltic were of the opinion that transversal variables were mostly not relevant for a RWP except when there are regionally agreed studies on data collection.

On Tables 5, 6 and 7 (fishing activity, economic and social data), The EWG considered that **the presentation and implementation of the RWP should imply a clear added value and improvement** in the description of MS data collection activities. The common presentation of information already available in national WPs is not a sufficient purpose, but it should be complemented by **a clear commitment by the involved MS to coordinate methodological approaches or to share effort in data** collection activities. The procedure for the presentation of a RWP from the RCG ECON is also to be clarified. In particular, it should be determined if the "economic" sections should be part of the RWPs from other RCGs to avoid overlaps in regional plans, or **if the RCG ECON can prepare an additional RWP only dealing with economic and social variables**.

#### 6.3.2 Conclusions and ways forward

STECF EWG-20-16 came up with clear recommendations on modifications to be brought to the proposed RWP test run, in particular:

- The need to propose a collaborative approach in RCGs for filling table 2.1 (ex table 1A).
- the need to focus on database compatibility to all the tables.
- The need to avoid trying to display too much information in each cell (figure, grey background, bold, italic, ...).
- Table specific suggestions on addition of columns or clarification of information.

This feedback from STECF on the RWP test run is welcome and it was the objective of the test run to seek for such return of information. Taking stock of these suggestions, the Fishn'Co project proposes a new approach for the RWP to be discussed in the 2021 RCGs. This new approach moves away from the 'matrix' approach proposed in the test run and would indeed be entirely mirroring the NWP table template in a database like table. The benefits of this approach are:

- No need to discuss the template of the RWP since it is the exact NWP agreed template.
- There is already a column 'MS' in each of the table so all tables may accommodate the contribution of several MS.
- It is simple and all MS having appropriated the NWP template and guidance do not need to learn another template and guidance for RWP;
- RCG can easily develop the matrix approach based on the RWP tables by creating simple pivot tables a posteriori (this would deliver also a clear message on the fact that the matrix is an a posteriori construction and the initial tables are the agreements reached in RCG.;

As for the RWP textboxes, there were very few discussions and feedbacks and the NWP textboxes do not accompany all tables and thus all thematic areas (e.g., stomach sampling). Moreover, the paragraph headings

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

in the proposed NWP textboxes need to be reviewed in view of inserting agreements reached during RCGs for each individual tables. Question at this stage:

- if all agreements are positioned in the specific textbox where it belongs (e.g., sampling foreign landings in textbox 2.5), table 1.3 could serve as a synthesis of all of these agreements.
- A RWP textbox paragraph heading could be 'Agreements reached during RCG' and this could be anything from the ambitions specified in WPI to cost/task sharing and other arrangements.
- In the situation where RWP and NWP share exactly the same template, the table column 'Link to a RWP' within the RWP tables becomes weird and should deserve a second thought.

#### 6.3.3 RWP templates

Empty templates for RWP tables and textbox are given in separate files accompanying this document.

### 6.4 Communication aspects linked to RWP (WP 4)

Fishn'Co plans to contribute to communication aspects related to the work of the RCGs, among other things, by preparing contents and feeding the complementary project, Secweb. Actually, the Fishn'Co communication strategy is directly coordinated with Secweb's which is focusing on the visibility of RCG work. Fishn'Co is also planned to contribute to achieve that the outcomes towards the preparation of the RWP reach out to the relevant stakeholders. Among the activities carried out for these purposes we can highlight the following:

#### Dissemination and Communication Plan (DCP)

The DCP first draft was presented during Fishn'Co's kick off meeting for discussion and to plan further completion. It was decided that the DCP will be used and focus on maximising the RWP dissemination and its future implementation. Specific communication actions and products will be designed to achieve the highest possible impacts regarding stakeholders' engagement towards RWP successful design and implementation.

The DCP is meant to be a dynamic document, to be updated every six months. Communication and dissemination activities will be updated and adjusted as the project progresses; the first update is foreseen starting in June-July 2021 (right after the accomplishment of the RCG meeting for NANSEA and The Baltic to enable the incorporation of insights and feedback from the meetings)

The content of the DCP includes i) the identification and classification of the relevant **stakeholders** groups for receiving Fishn'Co outcomes; ii) a preliminary selection of **communication contents and materials**, and of the **suitable channels** to convey the project messages; and iii) a preliminary plan of dissemination and communication **actions** within the project timeline.

**i) Stakeholders' groups and database:** Set-up and permanent update of the stakeholder's contact database for the RWP.

A shared identification of specific stakeholders (contacts) is in progress in cooperation with the RCGs and ISSGs chairs. It will feed the planned stakeholders' contact database that is meant to be a basic tool for implementing the RWP as well as for carrying out consultation processes and stakeholders' workshops. At the moment of the preparation of this report it includes already some 100 directly linked stakeholders.

**ii) Specific communication and dissemination contents and materials**

A first **project leaflet** has been produced and distributed to all the project partners and participants, to all NCs and RCGs' chairs, and to the EC relevant officers. For general dissemination it has been uploaded to the website and shared in Twitter. ([www.fisheries-rcg.eu](http://www.fisheries-rcg.eu) and @fisheriesRCG)

According to the scheduled timing, **one leaflet, a set of infographics and guidelines** are due during the second project term (April-June 2021). The leaflet has already been released and the remaining actions are in progress as expected.

Dissemination activities will support all Fishn'Co WPs ensuring maximum visibility, accessibility and impact of the project activities. In particular, in *WPI.Compiling, identifying and filling information gaps*, the information gaps identified will be used to design a set of infographics to maximize stakeholders' understanding of the process and to contribute to their engagement for inputs and feedbacks from the various target groups.

Finally, regarding the Internet, it was decided to concentrate on-line efforts in Secweb and not to implement a particular website for Fishn'Co. However, from Fishn'Co communication WP there is a work being done for providing content to the RCGs website developers.

**iii) Actions** including stakeholder events and networking

Since January 2021, apart from "conventional work-launch and work-progress" meetings the partnership has promoted the accomplishment of one stakeholders' workshop, organised as an assembly meeting (March 21) where a general overview of the activities towards the preparation of the RWP was presented and feedback was gathered for clarifying the expectations of the network. Another good opportunity for the interaction with stakeholders was given by the invitation of the Fishn'co EC Officers to participate in a meeting with the National Correspondents. This took place on the 20<sup>th</sup> April, 2021.

Moreover, within the **2021 Technical Meeting of RCG NANSEA and RCG Baltic**, 7th -11th June, Fishn'Co project has a dedicated slot in the agenda to present progress on the development of the RWP draft and the opportunity to discuss the progress on plenary discussion.

**Finally, EC DG Mare Communication Team** has been contacted to request their support for increasing visibility of the RCGs and of the projects. This will be done through having the chance to agree and convey some key messages and communication contents prepared within the scope of the RCGs. Through coordination with Secweb the interaction will be conducted to explore on a case by case bases the chance to benefit from some of the DG Mare communication channels (the e-newsletter and social media). This work is part of the combined communication strategy between Fishn'Co and Secweb.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO

#### 6.5 Coordination and management supporting the RWP (WP 5)

Coordination and management activities of the Fishn'Co project are also expected to have a positive impact towards facilitation of the RWP preparation process. The elaboration of the RWP needs and benefits from the contributions of many experts within the RCGs network. Part of these network is made by experts affiliated to the Fishn'co partner-organisations, however, there are many others who are not and their participation in the process needs also to be fully identified and acknowledged and for this. As part of the coordination there are two specific activities that deserve to be mentioned as particularly useful towards the RWP preparation.

- 1- From the identification of stakeholders in the network of the RCGs, it has been identified which organisations would be willing to contribute, and within these organisations who specifically would be contributing and to which specific components of the work planned within Fishn'Co in relation to the RWP elaboration (WPs 1, 2 and 3). This information is now mapped and clear for the network of participants. (Annex 6.1)
- 2- The Fishn'Co partnership is in the process of signing a consortium agreement, which supplements the project Grant Agreement regarding the partner's rights and obligations. However, it was identified the need to have some formal and legally binding instruments to organise the work with participants making part of the project network and beyond the partnership. These participants have been invited to sign a Data Sharing Agreement (with similar terms of those used previously for the same purpose in FishPi and FishPi2 projects). Moreover, CETMAR, has prepared a ToRs document, that will be used with any expert or participant beyond the partnership, invited by the Project Steering Group to participate in person, in future project meetings (when the conditions allow for this). All these legal documents have been announced to the partners and participants and are available on the project TEAMS channels organised also by CETMAR to share the project technical and administrative information when and with who correspondents.



## ANNEX 6.1 – Contributions to the Fishn'Co Project

		WP1 - INFO GAPS										WP2 - DECISION MAKING	WP3 - DRAFTING RWPs				
		1. COMMERCIAL FISHERIES					2. RECREATIONAL FISHERIES	3. DIADROMOUS SPECIES	4. ACTIVITY VARIABLES & SSFs	5. INCIDENTAL CATCHES OF PETS	6. ADDITIONAL DATA ON THE IMPACT OF FISHING ACTIVITIES			7. SOCIAL & ECONOMIC DATA ON FISHERIES	8. SOCIAL, ECONOMIC & ENVIRONMENTAL DATA ON	9. RESEARCH SURVEYS AT SEA	10. BIOLOGICAL DATA QUALITY
		1.a) The Baltic small pelagic CS	1.b) Iberian trawl CS	1.c) Freezer trawl CS	1.d) Large pelagics CS	1.e) Coord. of RSPs											
IFREMER	Joël Vigneau																X
	Manon Troucelier	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Pierre Cresson									X							
	Sebastien Demanèche							X									
	Florent Renaud													X			
CETMAR	Rosa M <sup>a</sup> Fernández																
	María Pérez																
ILVO	Els Torrele						X		X					X		X	
	Wim Allegaert																
	Sofie Vandermaele														X		
	Lies Vansteenbrugge																
	Sabine de Peuter											X					
	Adelbert De Clercq											X	X				
MI	Heleen Raat													X			
	Leonie O'Dowd	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	David Currie														X		
	Andrew Campbell			X													
	Hellen McCormick																
WR	Arie Klok											X	X				X
	Jamal Rokam											X	X				X
	Hans van Oostenbrugge											X	X				X
IRD	Julien Lebranchu				X												X
	Mathieu Depetris				X												X
AZTI	Lucia Zarauz		X													x	x
	Naiara Rodriguez														X		
	Estanis Mugerza						X		X	X							

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO - Annex

		WP1 - INFO GAPS										WP2 - DECISION MAKING	WP3 - DRAFTING RWP's				
		1. COMMERCIAL FISHERIES					2. RECREATIONAL FISHERIES	3. DIADROMOUS SPECIES	4. ACTIVITY VARIABLES & SSFs	5. INCIDENTAL CATCHES OF PETS	6. ADDITIONAL DATA ON THE IMPACT OF FISHING ACTIVITIES			7. SOCIAL & ECONOMIC DATA ON FISHERIES	8. SOCIAL, ECONOMIC & ENVIRONMENTAL DATA ON	9. RESEARCH SURVEYS AT SEA	10. BIOLOGICAL DATA QUALITY
		1.a) The Baltic small pelagic CS	1.b) Iberian trawl CS	1.c) Freezer trawl CS	1.d) Large pelagics CS	1.e) Coord. of RSPs											
IPMA	Rita Maria Vasconcelos		X			X			X								
	Ana Cláudia Fernandes		X														
	Ivone Figueiredo							X									
	Miguel Gaspar							X									
	Susana Garrido									X							
	Hugo Mendes									X							
	Marta Rufino																
	Ana Moreno							X									
IEO	José Rodríguez		X						X								
	Jose Castro		X														
	Isabel Bruno									X							
	José Lorenzo																
	José Luis Cebrián		X														
EAFA	Kolyo Zhelev										X	X			X	X	
	Simona Nicheva										X	X			X	X	
NISEA	Monica Gambino							X			X	X			X	X	
	Evelina Carmen Sabatella										X	X					
	Loretta Malvarosa										X						
	Rosaria Felicita Sabatella							X									
	Maria Cozzolino											X					
DTU	Marie Storr-Paulsen	X													X	X	
	Jørgen Dalskov														X		
	Josephine Egekvist							X									
	Mollie Elizabeth Brooks	X															
	Kirsten Thomsen																
LUKE	Kirsten Birch Håkansson	X				X											
	Joni Tiainen																X
	Tapani Pakarinen						X										
	Heidi Pokki										X	X					
	Juha Heikkinen										X						

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO - Annex

		WP1 - INFO GAPS										WP2 - DECISION MAKING	WP3 - DRAFTING RWP's			
		1. COMMERCIAL FISHERIES					2. RECREATIONAL FISHERIES	3. DIADROMOUS SPECIES	4. ACTIVITY VARIABLES & SSFS	5. INCIDENTAL CATCHES OF PETS	6. ADDITIONAL DATA ON THE IMPACT OF FISHING ACTIVITIES			7. SOCIAL & ECONOMIC DATA ON FISHERIES	8. SOCIAL, ECONOMIC & ENVIRONMENTAL DATA ON	9. RESEARCH SURVEYS AT SEA
1.a) The Baltic small pelagic CS	1.b) Iberian trawl CS	1.c) Freezer trawl CS	1.d) Large pelagics CS	1.e) Coord. of RSPs												
Azores Regional Directorate of Fisheries	Alexandra CSG Guerreiro					X		X								
	Dalia CC Reis					X		X								
Croatian Ministry of Agriculture / Directorate of Fisheries	Ivana Vukov														X	
Fisheries Service (Ministry of Agriculture Lithuania)	Irina Jakovleva															
Government of Portugal- DGRM	Emília Batista														X	
	Inês Ferreira					X					X	X				
	Isabel Valentim															
Institute of Food Safety, Animal Health and Environment (LV)	Suzana Cano					X		X			X	X				
	Ivo Sics													X		
	Maksims Kovsars							X								
Ministry of the Environment (Republic Of Estonia)	Didzis Ustups															X
	Elo Rasmann														X	X
National Marine Fisheries Research Institute (PL)	Irek Wojcik															X
	Marta Szymańska															X
	Katarzyna Krakówka															X
	Maciej Adamowicz															X
Spanish Ministry of Agriculture, Fisheries and Food. General Secretary for Fisheries. Deputy Directorate for Research and Marine Protected Areas	Ricard Buxó de la Peña															
	Juana Poza Poza															
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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

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		1.a) The Baltic small pelagic CS	1.b) Iberian trawl CS	1.c) Freezer trawl CS	1.d) Large pelagics CS	1.e) Coord. of RSPs											
Stichting Wageningen Research - WR	Harriet Vanoverzee					X											
	Ralf Vanhal																
	Sieto Verver												X				
Swedish University of Agriculture and Sciences	Annelie Hilvarsson														X		
	Katja Rindahl	X				X				X							
	Maria Hansson												X		X		X
Thuenen Institute	Nuno Prista	X				X	X										
	Alexander Kempf																
	Christoph Stransky												X				
	Jens Ulleweit			X													
	Joerg Berkenhagen																
	Marko Freese							X									
	Matthias Bernreuther										X						
Sven Stoetera																	
University of Copenhagen	Rasmus Nielsen																
University of Hamburg	Steffen Funk																
University of Klaipeda	Atanas Kontautas																
	Remigijus Sakas	X															X
University of Tartu - Estonian Marine Institute	Redik Eschbaum							X									X
	Tiit Raid	X															X

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 6. ISSG Development of Draft Regional Work Plan/ FISHN'CO - Annex

		WP1 - INFO GAPS										WP2 - DECISION MAKING	WP3 - DRAFTING RWP's				
		1. COMMERCIAL FISHERIES					2. RECREATIONAL FISHERIES	3. DIADROMOUS SPECIES	4. ACTIVITY VARIABLES & SSFs	5. INCIDENTAL CATCHES OF PETS	6. ADDITIONAL DATA ON THE IMPACT OF FISHING ACTIVITIES			7. SOCIAL & ECONOMIC DATA ON FISHERIES	8. SOCIAL, ECONOMIC & ENVIRONMENTAL DATA ON	9. RESEARCH SURVEYS AT SEA	10. BIOLOGICAL DATA QUALITY
1.a) The Baltic small pelagic CS	1.b) Iberian trawl CS	1.c) Freezer trawl CS	1.d) Large pelagics CS	1.e) Coord. of RSPs													
Azores Regional Directorate of Fisheries	Alexandra CSG Guerreiro						X		X								
	Dalia CC Reis						X		X								
Croatian Ministry of Agriculture / Directorate of Fisheries	Ivana Vukov															X	
Fisheries Service (Ministry of Agriculture Lithuania)	Irina Jakovleva																
Government of Portugal- DGRM	Emilia Batista															X	
	Inês Ferreira						X					X	X				
	Isabel Valentim						X		X			X	X				
	Suzana Cano																
Institute of Food Safety, Animal Health and Environment (LV)	Ivo Sics														X		
	Maksims Kovsars								X								
	Didzis Ustups																X
Ministry of the Environment (Republic Of Estonia)	Elo Rasmann															X	X
	Irek Wojcik																X
National Marine Fisheries Research Institute (PL)	Marta Szymańska																X
	Katarzyna Krakówka																X
	Maciej Adamowicz																X
	-																
Spanish Ministry of Agriculture, Fisheries and Food. General Secretary for Fisheries. Deputy Directorate for Research and Marine Protected Areas	Ricard Buxó de la Peña																
	Juana Poza Poza																
Stichting Wageningen Research - WR	Harriet Vanoverzee					X											
	Ralf Vanhal																
	Sieto Verver													X			
Swedish University of Agriculture and Sciences	Annelie Hilvarsson														X		
	Katja Rindahl	X				X				X							
	Maria Hansson													X		X	X
	Nuno Prista	X				X	X										
Thuenen Institute	Alexander Kempf																
	Christoph Stransky													X			
	Jens Ulleweit			X													
	Joerg Berkenhagen																
	Marko Freese						X										
	Matthias Bernreuther Sven Stoetera										X						
University of Copenhagen	Rasmus Nielsen																
University of Hamburg	Steffen Funk																
University of Klaipeda	Atanas Kontautas																
	Remigijus Sakas	X															X
University of Tartu - Estonian Marine Institute	Redik Eschbaum								X								X
	Tiit Raid	X															X

## 7 ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group)

### 7.1 Aim

Develop guidance for the development of optimized and operational regional sampling plans (RSPs) and collate 'theoretical gaps' and new developments in simulation tools relevant for the development of RSPs.

### 7.2 Tasks

1. Develop guidance for the development of optimized and operational regional sampling plans (RSPs). This is a dynamic process that needs to build on practical experience, which will be developed in the ISSGs for the RSP case studies. It could be seen as a step wise process where we do not improve everything in one go. Identify where you are at the level of regional sampling and where you want to go. The preliminary list of relevant steps identified during the RCG meeting 2020, see appendix 7.2, acted as a starting point for further work.
2. Address the 'theoretical gaps' encountered when evaluating the new RSPs with the present simulation tools. The simulation tools provide a counter-stone in the development of optimized RSPs. We need solid proof of when a RSP can be finalized. Such proof can consist of a comparison between the performance of a RSP and present practice. The ISSG will act as a forum for discussing shortcomings of the present tools, how these can be handled and needed development of the tools. There is a strong link with WKBIOPTIM.

In 2020-2021 the three ISSGs for RSP case studies Iberian trawlers, Freezer trawlers, and Baltic small pelagics have provided input to the Umbrella Group.

#### 7.2.1 Task I

For Task I feedback from each of the three case studies about the identified relevant steps, see appendix 7.2, was gathered. Each case study provided feedback separately via e-mail after which an online meeting was held to collectively discuss the provided feedback, going through the topics one by one. This feedback is summarized below with the aim to build up a knowledge bank that can guide future RSPs based on examples. *Two of the topics, b and j, may require a broader discussion within the RCGs, since these touch upon the definition of a RSP.*

- a) End-users are involved in informing on data needs e.g., how was this achieved?  
The three case studies recognize the relevance of involving end-users, but none of them went through a process of trying to involve end-users formally/directly. However, all case studies are accompanied by RCG (RCG in general and ISSG of the RCG "Umbrella group"). Moreover, some of the case studies involve people from ICES assessment WG working with data from these case studies, and some of the case studies involve people from WGCATCH.

The experience from these case studies does not support or contradict the involvement of relevant end-users since this was not done. As the case studies are not finished yet, issues regarding this may only be identified in a later stage of the case studies.

- b) Involvement from region e.g., are all relevant MSs and partners involved or had the opportunity to participate?



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 7. ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group)

The three case studies recognize the relevance of involving all relevant MSs and partners. In all case studies, all relevant MSs and partners had/have the opportunity to participate, namely: case studies are presented at RCG where all MSs are present; all MSs/partners have been contacted at some point about the case study (e.g., in some cases early on during the inception phase or data call, or later on during the development of the case study).

Among these three case studies with fewer than countries (2-3) it has been easier to have all relevant MSs/partner involved (e.g., other countries not involved have residual landings or do not have sampling in the case study fishery). But one of these has issues due to Brexit/involvement of UK and uncertainty about involvement of third countries.

In contrast, the case study with many countries all relevant countries are having the opportunity to participate but difficulties in involvement of countries arose for example from: involvement of MSs later in the process, changes in representative from MSs, mismatching technical expertise/responsibility level of representatives from MSs (and mismatching involvement in different stages of the process), mismatching level of interest/commitment from MSs in changing the regional sampling plan (e.g., MS with a priori position of no willingness to adhere to regional sampling plan for having just recently changed national sampling plan).

As the three case studies are still in development, they have no experience on the more advanced stages where decisions have to be taken by MSs/partners about whether/how to implement the RSPs developed in the case studies.

- c) Clear description of different MS role / part in the RSP – is it reflected in the regional work plan (RWP)? (Link to ISSG – Development of Draft Regional Work Plan).

In the three case studies it is generally expected that all MSs will be involved in sampling. But the allocation of number of samples to each MS/partner effort is still being developed and depends on the outcome of the analysis.

As the case studies are still in development, they have not proposed a RSP to be included in the RWP.

- d) Identification of fleets relevant for regional coordination e.g., finding common ground in identification. (Link to ISSG- Regional overview of fisheries and sampling).

The fleets have been defined for the three case studies. Sharing experience on how fleets are defined in the different case studies may help future case studies.

In the Iberian case study, in project Fishpi2 the trawl fishery was considered a good candidate for regional sampling as it concerns a multi-specific fisheries with catches of targeted stocks shared by different countries. The freezer trawler case study is a fleet-based case study where identifying the fleet itself was not straight forward and relied on expert knowledge. For the Baltic case study on small pelagics it became apparent when defining the fleet for the case study, the national aspect also needs to be preserved.

- e) Definition of the objectives and main aspects of the new RSP – e.g., what is relevant to simulate (identify main scenarios), what is relevant output (identify elements that demonstrate coverage and efficiency for different end-users), how is the efficiency of the new plan evaluated (based on which criteria), evaluate against sampling schemes already in place (Link to WKBIOPTIM).

Different scenarios have been run for RSPs for two of the case studies. In one case study the different scenarios have been compared first based on statistical metrics, then cost and feasibility/suitability issues. Scenarios should provide information on the reallocation that is needed in sampling and the





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 7. ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group)

stratification that is used. One case study has indicated that it will start with the WKBIOPTIM tools in the near future.

WKBIOPTIM and project FishPi2 describe tools that could be useful in case studies.

- f) Description of the sampling protocol (e.g., population, sampling frame, stratification, sampling units, selection units, randomization method). Link to ISSG – Data Quality (developing a template for the RWP for documenting sampling design) & Link to ISSG – Development of Draft Regional Work Plan. All case studies have used their own format on the description of the protocols, either at national or regional level. The umbrella group discussed whether there should be a uniform template for the description of the regional sampling plan of each case study. The template of ISSG Data Quality could be a useful starting point. When filling in this template from a regional perspective it will become clear whether the template serves purpose and where improvements can be made.
- g) Permanent structures for data sharing. Mainly in place with the RDB / RDBES, but some of the simulation tools require more dis-aggregated data, than these data structures allow for. Responsibilities in respect to storing data and uploading data to international databases need to be a part of the final plan.

All case studies have used more dis-aggregated data, than the RDB/RDBES can handle.

It was suggested that once the design is done and approved by MSs and RCG there is no need to upload disaggregated information apart from RDBES. There is no need to simulate continuously, main aspects of the stratification and design should be maintained for a while. MSs can agree on an internal mechanism to follow up how the design is aging, for example like a 5 year review and brief analysis to update to the RCG (dynamics changing, etc). Nevertheless, it is relevant to check if it is possible to identify the relevant fleets in the CL and CE data. If yes, then it is possible to follow the fleet and only re-run the simulations if something dramatically is changing (what is dramatically?). If not, then it will be hard to follow and also do estimation in the RDBES. If we end up agreeing on regional effort allocation, then we may need to analyze the patterns each year. Do we need more permanent structures or are people happy enough with the way it is now?

- h) Estimation – e.g., consider the suitable estimation procedure needed for the RSP (e.g., how to get number sampled vs. total number) and if it is feasible to implement it.

The three case studies recognize the relevance of this point.

One case study has started to develop this based on samples from a pilot and another case study recognized the need to check whatever present raising procedures are compatible with the regional sampling. Further, one case study suggested that when a RSP is in place, it may be an idea to conduct the raising procedure regionally by the coordinating member states.

The ISSG thinks that guidance for this point could be given with a summary of methods and links to detailed references. Further, it would be a good idea to agree on who will be in charge of the estimation in the future, e.g., national estimators or is it delegated to a regional. The latter could depend on sampling design, e.g., is country a part of the stratification, but it will also depend on availability of data need for a regional estimation.

In addition, the RSP should be able to describe estimation method of main variables of interest, including variance and maybe the template of ISSG Data Quality could be useful for this.

- i) Feasibility and implementation are tested with pilot studies and/or consultations – e.g., is it feasible to sample foreign landings / the planned ports / vessels / strata / etc.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 7. ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group)

The three case studies recognize the relevance of this point and in conclusion see pilot as the way to identify and find solutions.

One of the case studies considered the feasibility as a criterion for the selection of fleet relevant for regional sampling, but no pilot has been conducted. Another will use a future pilot to test feasibility. Lastly, the case study with a running pilot is not able to have 100% similar sampling protocol for the PSU and SSU due to national particularities, but are close in respect to number of fish in the sub-sample.

The ISSG thinks that guidance for this point could be given as a FAQ, which would need to be really well structured to be helpful.

- j) Mechanisms are in place to reach agreements across MSs. Identify what normally needs to be agreed on. (Link to ISSG – Development of Draft Regional Work Plan).

Each of the case studies will develop a regional sampling where each MS/partner will be allocated a part of the number of samples from the plan, so it is implied that MSs/partners/RCG will need to agree on the RSP, specifically agree on the allocation of samples (that will be an output of the development of each case study).

The three case studies are still being developed and still not at the stage where agreements are already needed. But one of the case studies already identifies that reaching an agreement may be an issue because of the mismatching level of interest/commitment from MSs in changing the regional sampling plan (e.g., MS with a priori position of no willingness to adhere to regional sampling plan for having just recently changed national sampling plan). This example raises the question: Should/Can a RSP be implemented without the agreement from one/or more relevant MS/partner (i.e. without their commitment to do their part of the allocated number of samples)?

Additionally, one of the case studies highlights already that cost implications of effort redistribution/new sampling arising from the RSP will need to be considered for the decision, so the case studies should provide this info.

- k) Quality checks are made at the national and regional level. (Link to ISSG – Data Quality & Link to ISSG – Development of Draft Regional Work Plan).

At present the case studies are not so far progressed to take quality checks into account.

- l) Clarify the expectations – new point (not included in original identified relevant steps)

In terms of sampling, what is the aim of the sampling scheme e.g., having a good regional description of the age structure and/or the species composition of the commercially caught fish, does the RSP needs to deliver good estimates at a national level?

In terms of the level of regional sampling, what level is the RSP aiming at (0 – no coordination, 1 – coordinated data reporting, 2 – agreed guidelines, 3 – common monitoring strategy, 4 – joint data collection).

#### 7.2.2 Task 2

Task 2 was only briefly touched upon in this year cycle of the ISSG. No new developments have been identified. The following ‘theoretical gaps’ have already been identified for the RSPs in previous years:

- How to handle regional optimizations on biological measurement (e.g., age), when some countries have collected length stratified samples and other have taken random samples, and the goal is to



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 7. ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group)

- simulate number of fish needed in a random sample. This will be addressed in the RSP case study Baltic small pelagic (through the ISSG and project Fishn'Co)
- Most of the simulation tools developed under WKBIOPTIM and in the fishPi projects have looked at optimizations on a few levels of the sampling hierarchy. On the other hand most are asking for the full scale simulations, where it is possible to see the consequences of changing sampling effort at different levels e.g., increasing number of trips, but lower the number of age readings. This will be addressed in the RSP case study Baltic small pelagic (through the ISSG and project Fishn'Co)
  - This point is not a 'theoretical gap', but a proper description of the sampling design behind the sample data being used in the simulations is needed. This will be addressed in the RSP case study Baltic small pelagic (through the ISSG and Fishn'Co)
  - The point above is also relevant for simulations, with present practices as the baseline.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 7. ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group) – Appendix

## Appendix 7.1 - Participants and meetings

### Participants

Participant	
Kirsten Birch Håkansson (co-chair)	DTU Aqua, Denmark
Harriet van Overzee (co-chair)	Wageningen Marine Research, the Netherlands
Rita Vasconcelos (co-chair)	IPMA, Portugal
Andrew Campbell	Marine Institute, Ireland
Marie Storr-Paulsen	DTU Aqua, Denmark
Nuno Prista	SLU Aqua, Sweden
Jose Rodriguez	IEO, Spain
Jens Ulleweit	Thünen Institute, Germany
Lucia Zarauz	AZTI, Spain – Basque Country

### Meetings

15-10-2020 – Presentation to umbrella group by ISSG RSP case study Freezer trawlers.

16-02-2021 – Discussion of feedback from each ISSG RSP case study (about topics in Task I of the ISSG Umbrella group work plan for 2021).

26-06-2020, 19-02-2021 – Umbrella group chairs participated in meetings of ISSG RSP case study Baltic small pelagics.

June 2020 to June 2021 - Several meetings of the chairs of the ISSG Umbrella group.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 7. ISSG Optimized and Operational Regional Sampling Plans (Umbrella Group) – Appendix

#### Appendix 7.2 – Relevant steps identified during the RCG meeting 2020

Develop guidance for the development of optimized and operational regional sampling plans (RSPs). This is a dynamic process that needs to build on practical experience, which will be built up in the ISSGs for the RSP case studies. Maybe this development process should be seen as a step wise process where we do not improve everything in one go. Identify where you are at the level of regional sampling and where you want to go. Below a preliminary list of relevant steps identified during the RCG meeting 2020 which will act as a starting point for further work.

- a) End-users are involved in informing on data needs e.g., how was this achieved?
- b) Involvement from region e.g., are all relevant MSs and partners involved or had the opportunity to participate?
- c) Clear description of different MS role / part in the RSP – is it reflected in the regional work plan (RWP)? (Link to ISSG – Development of Draft Regional Work Plan).
- d) Identification of fleets relevant for regional coordination e.g., finding common ground in identification. (Link to ISSG- Regional overview of fisheries and sampling).
- e) Definition of the objectives and main aspects of the new RSP – e.g., what is relevant to simulate (identify main scenarios), what is relevant output (identify elements that demonstrate coverage and efficiency for different end-users), how is the efficiency of the new plan evaluated (based on which criteria), evaluate against sampling schemes already in place (Link to WKBIOPTIM).
- f) Description of the sampling protocol (e.g., population, sampling frame, stratification, sampling units, selection units, randomization method). Link to ISSG – Data Quality (developing a template for the RWP for documenting sampling design) & Link to ISSG – Development of Draft Regional Work Plan.
- g) Permanent structures for data sharing. Mainly in place with the RDB / RDBES, but some of the simulation tools require more dis-aggregated data, than these data structures allow for. Responsibilities in respect to storing data and uploading data to international databases need to be a part of the final plan.
- h) Estimation – e.g., consider the suitable estimation procedure needed for the RSP (e.g., how to get number sampled vs. total number) and if it is feasible to implement it.
- i) Feasibility and implementation are tested with pilot studies and/or consultations – e.g., is it feasible to sample foreign landings / the planned ports / vessels / strata / etc.
- j) Mechanisms are in place to reach agreements across MSs. Identify what normally needs to be agreed on. (Link to ISSG – Development of Draft Regional Work Plan).
- k) Quality checks are made at the national and regional level. (Link to ISSG – Data Quality & Link to ISSG – Development of Draft Regional Work Plan).



## 8 ISSG Case Study of Fisheries for Small Pelagics in the Baltic

### 8.1 Aim of the sub group

RCG Baltic agreed to use the fisheries for small pelagic species as a case study for the development of a regional sampling programme in the Baltic Sea. It was agreed to establish a subgroup for in-depth analyses how a regional sampling programme for small pelagics can be established and suggest how it can be implemented. The pelagic fisheries target western Baltic herring, central Baltic herring, herring in Gulf of Bothnia, herring in Gulf of Riga and sprat.

### 8.2 ToRs

- I) Description of the fisheries.
- II) Generate description of present national sampling programmes, including overviews of sampling protocol and sampling intensities. Partly done. An overview was produced in the RCG Baltic 2019 meeting. However needs to be refined. A description on where (at-sea, harbor) and how (self, inspectors, sci-obs) the samples are taken and how easy is it to get access to the samples.
- III) Generate overview of data that is collected on the regional level. An overview table was conducted during the RCG Baltic.
- IV) Identify what commercial data ICES AWG need for these stocks. If relevant meet up with relevant stock coordinators and assessors at appropriate meeting.
- V) Compare data presently collected with data needed by the AWG. Identify gaps and data presently collected but not used.
- VI) Suggest common sampling protocol (Harbour and self-sampling) – difference between HC and I sampling.
- VII) Suggest proper sampling sizes for age, weight and length.
- VIII) Suggest if and when maturity data need to be collected from commercial samples (end-user needs) will be at WGBFAS 2020.
- IX) Suggest if other types of data (e.g., scales, genetics, parasites) shall be collected (end-user needs) will be at WGBFAS 2020.
- X) Suggest how data (samples and transversal data) shall be stored and exchanged.
- XI) How to raise the different sampling programs (work-shop 2019).
- XII) Simulations of the sampling plans that demonstrate the efficiency of the new regional programme relative to present programmes.

### 8.3 Workplan

Workplan until RCG meeting in 2021.

Date	Task	Responsible	Other Participants
7-9/12 2020	Workshop on pilot and how to continue in 2021	All members of the subgroup	
20/12 2020	Work plan and ToRs	Marie, Katja, Nuno and	All members of sub group

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic

		Kirsten	
23/12 2020	Template for vessel and trip selection	Marie	All members of sub group to respond before 25/1
January 2021	2 hours meeting on uploading of 2020 pilot to the RDBES (data needs to be ready for the workshop)	Nuno and Kirsten	All relevant people of the sub group
January 2021 (after the 15/1?)	Workshop on sample size. Presentation of tools to analyse number of samples	Nuno and Kirsten	All members of sub group
	Results to be agreed in the 25/1		
25 – 27 – 29 /1 2021	<ol style="list-style-type: none"> <li>1. Agree sample sizes</li> <li>2. Develop a design based estimator for our pilot and run it on the 2020 pilot – to be presented at WGBFAS</li> <li>3. Present and discuss results from optimizations</li> <li>4. (agree sample size)</li> <li>5. How to move on with the evaluation of the WGBFAS time series e.g., analyze the Danish control samples – to be presented at WGBFAS</li> </ol>	Katja and Marie, Nuno and Kirsten	All members of sub group
Before the meeting all participants need to have a randomized list of the vessels to be sampled in Q1 alongside filled in the description of the vessel selection (Rie has send a template)			
February – April 2021	Conducting pilot with adjustments	All members of sub group	
February 2021	Age reading workshop sprat	All institutes in the Baltic	
April 2021	Presenting the results to the WGBFAS	Marie	All subgroup members also members of WGBFAS
May 2021	Preparing the report to RCG	Katja and Marie	All members of sub group

#### 8.4 Overview of 2020/2021 subgroup work

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic

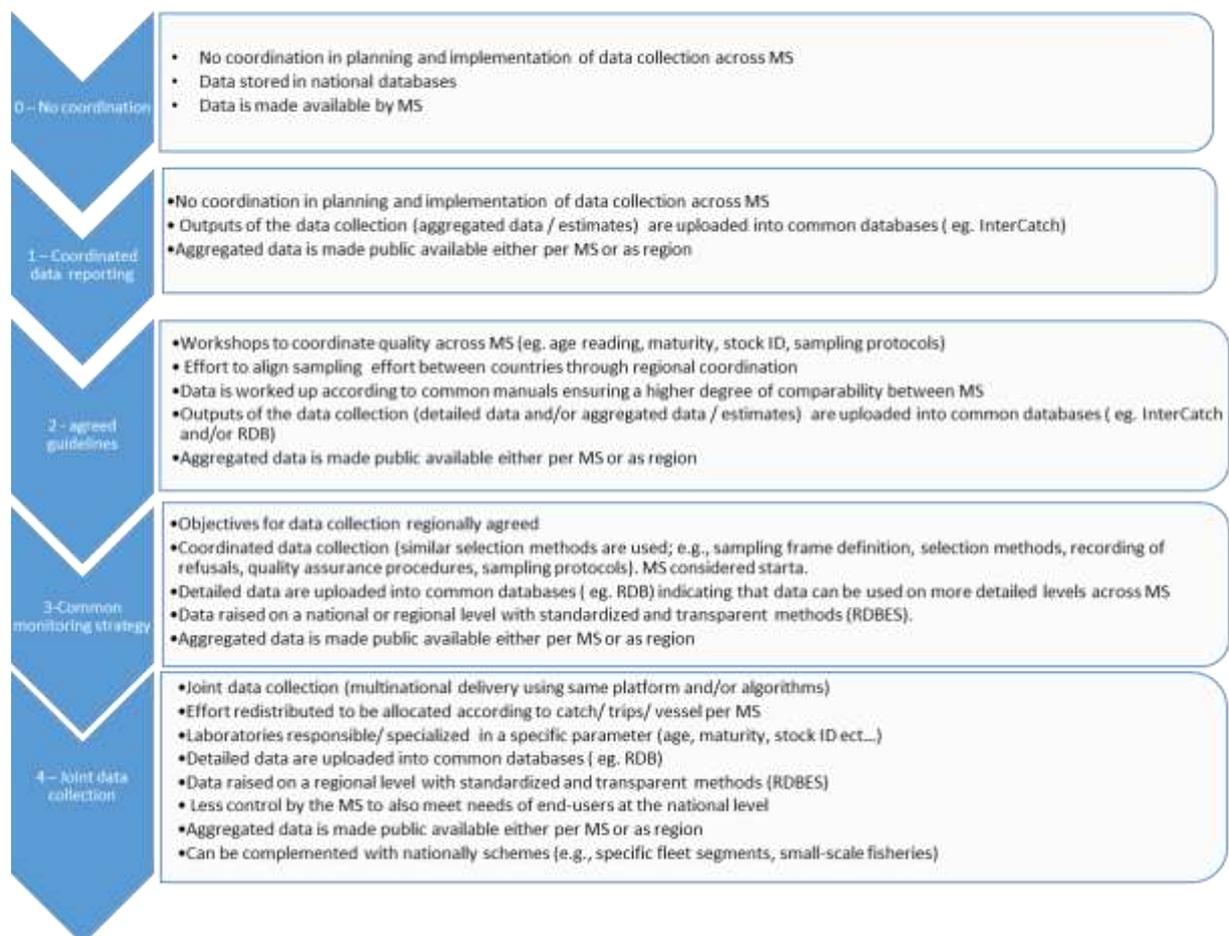
#### Background

Implementation of regional schemes frequently gets bogged down by single alternatives, or is stopped because of national interest not being prioritized in the regional context. However, this group sees regionalization is a process that can have several outcomes, and it is not necessary the final goal to have a 100% common approach (same vessel platform etc.) for a regionalization to be fulfilled.

The subgroup considers regionalization as involving 4 general steps located along a gradient that goes from “no coordination” to “common monitoring strategy” and “joint data collection”(Fig. 8.4.1). This gradient naturally entails a different capability of sampling to meet the needs of national and regional end-users. To supplement the sampling needs of specific end-users (e.g., specific end-uses), part of the program can be left for planning on a national scale. That part can still be coordinated (e.g., have common protocols) but does not necessarily require the higher level of regional coordination involved in full regional sampling plans (Fig. 8.4.1).

#### Sampling programme

collecting data for common purposes (eg. stock assessment, international assessment of impact of fisheries etc)



**Fig. 8.4.1** Flow chart of the steps involved in a regional coordination. The objectives can be different from a regional and national point.

#### Overview of meetings 2020/2021

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic

#### December 2020:

The 2020-2021 work period started off with a joint workshop held online between 7 and 9 December 2020 (Annex 8.1). At this meeting, the flow chart (Fig. 8.4.1) was discussed and each MS presented the challenges it faced during the present pilot programme. Changes to the protocols were discussed to make every MS join a regional sampling protocol. The second day it was discussed if it would be possible to upload the pilot study to the RDBES in a common format so that estimates could already be produced using a common algorithm in 2021. The sampling protocol was also evaluated and it was decided to carry out additional work on available small pelagic data using WKBIOPTIM code to see if the numbers of fish set to be worked up in the protocols were suitable all over the Baltic. Further, data from Danish control were presented. Those data span more than 10 years and were made available to the individual MS. Finally it was decided to continue during 2021 the pilot study started in 2020. All MS agreed to join in but Germany. However, Germany would still like to participate in the meetings. It was further decided to have three separate workshops during 2021: 1) workshop on design-based estimation and how to upload the data in RDBES, 2) a workshop on optimization of subsampling for age and length and 3) a workshop on species misreporting involving a comparison of Danish control samples with the national logbook/sale-slips for the same vessels.

#### January 2021

Design based estimator workshop (Annex 8.2)



At the simulation workshop we looked into:

- broader regional plans - simulating data using different stratifications, onshore and onboard sampling, sampling effort, etc. to see what the impact of the different designs may have on targeting the landings of the stocks. Further, look into the consequences of these designs for the length and age structure of the stocks. These are fishPi2-type of simulations, the first only requiring 2017-2018 data from last



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic

- year's data call and the latter also requiring sample data in the RDB format.
- national plans - using 2017-2018 data asked for in last year's data call as input (also 2019 in same format if you want it) - simulate different types of trip selection (by week, next trip, etc; random, systematic, etc), haul selection within trip if haul-by-haul data is available (first haul, last haul, random haul, all hauls), and evaluate coverage and workload obtained in terms of species and subdivisions. These is simulation code Nuno started developing after Lyngby meeting.
- sample processing - using data on RDB:CA and RDB:HL formats from different species and areas, it is possible to simulate how reductions in sample size (kg and/or number of fish processed) impact the perceptions we get from samples in terms of age and length structure. These are WKBIOPTIM-type of simulations.

Further it was discussed to inform the WGBFAS as end-users on the progress of the species mis-reporting ;

- As response to the sentence in the sprat advice quality section "Species misreporting of sprat has occurred in the past and there is again indication of sprat being misreported as herring", the RCG subgroup on sampling of small pelagic in the Baltic have started to investigate the challenge with mixed species (herring/ sprat) in the catches. The preliminary results indicate an inconsistency in species composition between different data sources. Therefore, the subgroup has started to investigate the possibility to include more data sources (control samples, first salebuyers from the MS). We are aiming for an analysis being available to the WGBFAS meeting 2022.

#### February 2021

The workshop on biological optimization took place over three separate meetings held 17, 18 and 19 of February 2021. Prior to the 1<sup>st</sup> meeting, an extract from RDB data of central Baltic sprat and herring was obtained from ICES and Nuno Prista (Sweden) ran the sample-level code produced under WKBIOPTIM on RDB data, consulting with ISSG members where needed. At the meeting, an introduction to the code was given to participants and the code was shared with them via GitHub. Participants were then given the opportunity to test the code on their own data with preliminary results being discussed in the 2<sup>nd</sup> meeting (18 February). At the final meeting, results obtained were presented, challenges and pending issues identified and the work ahead identified. Full details in Annex 8.3 and 8.4.

#### April 2021

The sub group met the 27<sup>th</sup> April 2021 to discuss species composition in catch and compare Danish control data with data derived from other sources (logbooks, sale-slips).

The group was granted access to 10 years of Danish control data of landings of unsorted fish in Danish harbors. Data can be used to investigate if there is a more systematic (historic) misreporting in the industrial fishery by comparing species composition within a given trip compared to the logbook information. At the workshop Denmark, Lithuania, and Latvia presented the comparison between the Danish control samples and the national logbook / sale slip information from the same vessels. There was a general tendency with an overestimation of herring and underestimation of sprat and indications that this tendency has increased since 2013-2014 when the herring quota increased and the sprat quota went down.



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic

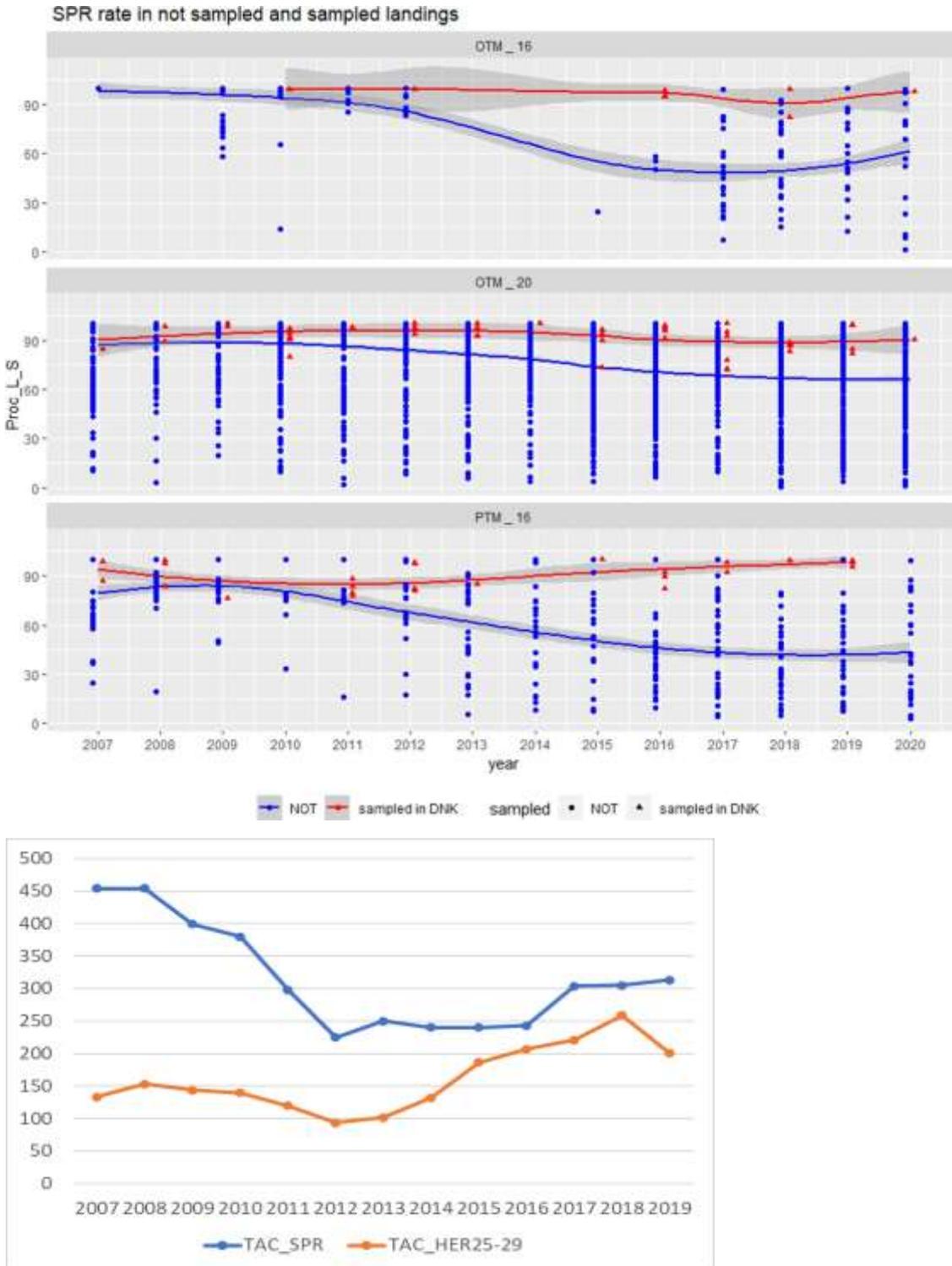


Fig. 8.4.2 TAC of central herring and sprat in the time period 2007 to 2020.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

#### Annex 8.1 Meeting notes December 2020

The meeting was held over 2 days online 7 and 9 of December 2020

All documents can be found at

<https://community.ices.dk/ExternalSites/datacollection/Regional%20coordination%20meetings%202017/RCGIntersessionalWork/layouts/15/start.aspx#/SitePages/HomePage.aspx?RootFolder=%2FExternalSites%2Fdatacollection%2FRegional%20coordination%20meetings%202017%2FRCGIntersessionalWork%2F2020%20Meeting%20Docs%2F04%2E%20Working%20documents%2FISSG%20Regional%20sampling%20programme%20E2%80%93%20Case%20study%20Baltic&FolderCTID=0x012000F4BA56070492274BA10C3737F5874DB2&View=%7BA0805EDA%2DC451%2D4C77%2DA72D%2D5622BB61A061%7D>

(RCG intersessional work/ 2020/ working documents / ISSG – regional sampling programs – case studyBaltic)

#### Participants

Name / email	MS
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Remigijus Sakas <Remigijus.Sakas@apc.ku.lt>	Lithuania
Timo Myllylä <timo.myllyla@luke.fi>	Finland

132

#### Agenda

Date	Time	Subject	Responsible
Monday 7/12	14.00-14.15	Welcome and presentation	Rie
	14.15 -15.00	Presentation of flowchart. Discussion on were we would like to aim as MS and as a group	Rie
	15.00-15.50	Each MS to present challenges with present setup. What can be changed in the protocols to make every MS join a regional sampling protocol	All participants



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

	15.50-16.00	Wrap up and	
Wednesday 9/12	10.00	Start of meeting	Rie
	10.10-11.00	RDBES – can data be uploaded <ul style="list-style-type: none"> <li>Is it possible to mark the samples with same sampling name for RDBES (small pelagic- Baltic?)</li> <li>Any problems uploading spr.22-32 this year?</li> <li>Questions about uploading data of regional pilot</li> </ul>	Nuno All participants
	11.00-12.00	Danish control samples We have the samples now. <ul style="list-style-type: none"> <li>How should they be distributed to MS</li> <li>Which analysis should be conducted</li> <li>How to present the data for WGBFAS (2021)</li> </ul>	Kirsten All participant
	12.00 -13.00	Lunch	
	13.00-14.00	Sampling protocols We have decided to try a common sampling protocol <ul style="list-style-type: none"> <li>Have MS changed ?</li> <li>Is it working ?</li> <li>What could be changed to make it acceptable by all MS ?</li> <li>Which analysis are wanted for January meeting</li> </ul>	Rie Nuno
	14.00-15.00	Can we expect participant to start the pilot in January. What would be the obstacles ? Which analysis would we like to see in January What can we expect to present to WGBFAS 2021	Katja

133

## Summary

### 7.12 2020

- We do not need to reach level 4 in the flow chart to conduct regional sampling
- Coordinated workshops are improving the quality. We talked about the present sprat age reading workshop. All MS should participate (Finland has derogation). It would be good to conduct the age reading workshop every 3 year with a small (100-150 otoliths) to ensure the quality on a regular scale.
- As annual maturity is only used for Herring 30-31 (the do survey together and look at maturity) we do not recommend a maturity workshop
- Latvia has implemented a random selection of vessels. It would probably not be very difficult to include Latvia in the present regional pilot.
- Finland presented their present sampling program and they had a random selection method where vessels are selected in the beginning of each quarter and then contacted. Therefore it also seems reasonable to assume that the present setup with a few adjustment can be used in the pilot.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

- Lithuania would like to present their sampling program Wednesday.
- All participating countries participating in the meeting showed interested in a continuation of the pilot if it will be possible to

### 9.12 2020

- RDBES was discussed and Nuno went over the different hierarchies one can use in the uploads. It was discussed that H1 and H3 were the most appropriate to use for the small pelagic case study. All participant should evaluate their case-study and upload the data before the January meeting the 25-27 and 29 of January. Send an email to [nuno.prista@slu.se](mailto:nuno.prista@slu.se) and [kih@aqu.dtu.dk](mailto:kih@aqu.dtu.dk) if you need help with that.
- Sampling protocols. The present (or before 2020) sampling protocols were described by MS. It was decided that a final common sampling protocol will first be decided after the workshop hold in January were a test will be conducted on the uploaded materials on numbers of fish aged/ length by area. The protocols by MS and common is in annex 8.1.

RDB – all countries is ok and support the idea that we should look at the sample size and numbers of fish to measure and age (is 50 a good number for length and age?) and 3-5 kg for sample size. We will have a one day meeting in January. In the morning more running through the code (lead by Nuno, for all interested in running it at their institutes) and in the afternoon discussion of results (for all).

Nuno will send a doodle with suggested dates for a pre-workshop on data upload and coding from WKBIOPTIM on numbers of fish measured / aged.

- Both Lithuania and Latvia showed interest in participating in the pilot in the future. This indicates that all MS in the Baltic except Germany will participate in the pilot. Germany will however participate as an observer and when more results from the pilot is obtained they will maybe join the pilot.

We decided that all MS should provide a short description on the vessel selecting system, making it easier for the group to see how we can incorporate the different practice challenges and learn from each other. Marie will make a template describing the present Danish system, this will be distributes before Christmas.

Table on participation in the case study Annex 8.2.

- Control samples. Denmark has control samples from all MS back in time. Demark has compared the Danish control samples with the Danish logbook and sale slips from the same vessels. This can be used to get an indication on species misreporting. All other countries control samples canbe made available in separate folder in the ICES SharePoint. Marie will look into this.

### Sampling schemes by country

When the samples have been chosen, countries are using different approaches to work up the samples. In this document most MS in the Baltic have applied there sampling protocols.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

Country	Samples type	Samples size	Numbers length	Numbers aged	Number Sex	Number maturity
Denmark	Self-sampling/ harbor sampling (HC) / industrial					
	Sprat	2-5 kg	Ca. 100 fish	Ca. 50 (every second)	Sex and maturity not taken if industrial landings and fish of too poor condition	Sex and maturity not taken if industrial landings and fish of too poor condition
	Herring		125-150	1/5 (25 fish)	Sex and maturity not taken if industrial landings and fish of too poor condition	Sex and maturity not taken if industrial landings and fish of too poor condition
Estonia	?	Based on BIAS sampling protocol				
	Herring		200 /haul	4 per 0.5 cm per haul per ICES Sub- Division	4 per 0.5 cm per haul per ICES Sub- Division	4 per 0.5 cm per haul per ICES Sub- Division
	Sprat		200/ haul	5-10 per 0.5 cm per haul per ICES Sub- Division	5-10 per 0.5 cm per haul per ICES Sub- Division	5-10 per 0.5 cm per haul per ICES Sub- Division
Finland	Herring 25-30 kg both species.	Commercial: 5-10 kg;	Commercial: 300/sample	Commercial: 10 indiv./0.5 cm/SD/Q	Commercial: 10 indiv./0.5 cm/SD/Q	Commercial: 10 indiv./0.5 cm/SD/Q
Finland	Sprat	Commercial 5-10 kg;	Commercial 300/sample	Commercial <b>derogation</b> due to small quota	Commercial <b>derogation</b> due to small quota	Commercial <b>derogation</b> due to small quota
Germany			60 kg (25 kg)	5/0.5 cm / sample	5/0.5 cm / sample	5/0.5 cm / sample
Herring	Passive – ports/ stratified sampling weeks	60 kg unsorted/ per port				

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

Sprat	2 OTM/ selfsampling + adhoc from minor vessels	5 kg				
Latvia	Harbor / self sampling	2-7 kg Ca 5 kg				
	Herring		200	10 / 0.5 cm/ sample	10 / 0.5 cm/ sample (GoR only in March-June)	10 / 0.5 cm/ sample (GoR only in March-June)
	sprat		200	10-15 / 0.5 cm/ sample	10 / 0.5 cm/ sample	10 / 0.5 cm/ sample
	Small scale (trap net) Herring	30/ samples year	100/ sample	100/ sample	100/ sample	100/ sample
Lithuania	Harbor / few selfsampling	Ca. 5-7 kg (0.5-1 bucket)		10 / 0.5 cm/ sample	10 / 0.5 cm / sample	10 / 0.5 cm / sample
	Herring		Ca. 200			
	Sprat		All sprat			
	Small scale (trapnet) Herring selfsamling	Ca. 5-7 kg	200	10 / 0.5 cm/ sample	10 / 0.5 cm / sample	10 / 0.5 cm / sample
Poland	Harbo ur / observ er ?	Based on BIAS sampling protocol				
	Herring	25 kg	200 /haul	4 per 0.5 cm per haul per ICES Sub-	4 per 0.5 cm per haul per ICES Sub-	4 per 0.5 cm per haul per ICES Sub-
				Diivision	Diivision	Diivision
	Sprat		200/ haul	5-10 per 0.5 cm per haul per ICES Sub-	5-10 per 0.5 cm per haul per ICES Sub-	5-10 per 0.5 cm per haul per ICES Sub-
				Diivision	Diivision	Diivision
Sweden	Harbour sampling (some sampled by control officers) / self- sampling (2018)					
	Herring	7-10 kg (could be mixed samples)	100 ind (but target can vary between 50- 150 depending on subdivision	100 ind (but target can vary between 50- 150 depending on subdivision	100 ind (but target can vary between 50- 150 depending on subdivision	100 ind (but target can vary between 50- 150 depending on subdivision



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

Country	Participate in the pilot RWP 2021 (Y/N)	Adaptations from the agreed sampling protocol	Sampling intensity (No of trips/week)	Will upload data to the RDBES
Denmark	Yes	Length stratified sampling of sprat – maybe change 2021, herring systematic sampling of ages	Aim for census on trip level or more than 1 sample/week depending on SD	Yes
Estonia	Yes	Biological sampling as agreed. Separate samples from GoR and other SDs	GoR 3 sample/month, CBH 6-8 samples/month	Yes
Finland	Yes	Sample frame all trawlers (observer program MSC) Will look into strategy for biological sampling during 2021 following meeting on sample size	1 sample/month, might be problems due to Covid-19 during Q1	Yes
Germany	No. But will take part in ISSG and feed back to institute.			
Latvia	Yes	Length stratified sampling presently. Will look into strategy for biological sampling during 2021 following meeting on sample size	3 samples/month and stock randomly selected from initial list based on information of vessels targeting those stocks. Only call vessels operating in GoR	Yes
Lithuania	Yes	Length stratified sampling presently. Will look into strategy for biological sampling during 2021 following meeting on sample size	2 samples/month	Yes

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

Poland	Yes	Length stratified sampling presently. Will look into strategy for biological sampling during 2021 following meeting on sample size. Now sample 200 fish but presently ok	5 samples/month (mix of herring and sprat)	Yes
Sweden	Yes	Will look into strategy for biological sampling during 2021 following meeting on sample size. Presently take minimum 50 individuals by species from max 2 hauls by SD and trip. Maturity and sex for all individuals aged.	Call 5 vessels/week, ad-hoc sampling of SD 24 and some quarters in SD 25	Yes

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

## Annex 8.2. Meeting notes on Design-Based Estimation of Baltic Herring and Sprat

### Terms of reference and agenda for the meeting

#### Important! Ahead of workshop:

1. Upload your 2020 QI Regional Pilot data to RDBES with the following info in the Design table (DE).

DErecordType	DEsamplingScheme	DEsamplingSchemeType	DEyear
DE	Baltic SPF regional	RegPilCF	2020

2. Fill in overview of vessel and trip selection during 2020 pilot see attached file.

### Work to develop during the week

#### Estimation ToR

- Compile overviews of vessel and trip selection during 2020 pilot.
- Documenting estimation of sprat and herring done during 2019 for WGBFAS (a template for this will be distributed during meeting) – this will include handling of subdivision when sampling on-shore.
- Working with 2020 QI Regional Pilot data:
  - o Documenting estimation methods to be used on pilot data.
  - o Producing estimation algorithm for point estimates and variance (in R and/or Excel).
  - o Implementing estimation.
- Summarize work in a WD for WGBFAS.

140

### Schedule:

All participants to be present during plenaries and be available for subgroup/own-work between 10 and 15 CET on Monday, Wednesday and Friday (stopping at 1300); more flexible schedule on Tuesday and Thursday.

Time (CET)	Monday (25/1)	Tuesday	Wed	Thursday	Friday (29/1)
08-09	---	---	---	---	---
09-10	---	---	---	---	---
10-11	plenary		plenary	---	plenary
11-12	plenary	---	subgroups	---	subgroups
12-13	break	---	break	---	plenary
13-14	subgroups	---	subgroups	---	---
14-15	subgroups	---	subgroups	---	---
15-16	---	---	---	---	---
16-17	---	---	---	---	---

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

#### Preliminary agenda [Monday 10-12]

Welcome, presentations and overview of WS [Rie/Katja]

#### Estimation ToR

- Overview of TOR [Nuno] Overview of uploads to RDBES [Kirsten]
- Round-the-table of overviews during pilot to RDBES [everyone]
- Presentation of estimation overview to be filled in (respecting 2019 WGBFAS Herring and spratdata) [Kirsten]

#### By-catch / species composition ToR

- Presentation of Danish control procedures and data [Rie]
- Where is data placed [Rie]
- What can we do with this data [Laura]

#### Links:

**Meeting:** [Click here to join the meeting](#)

**Some code on estimation (WKRDB-EST2):** [ices-eg/WK\\_RDBES](#)

**RDBES data format:** [RDBES public: ices-tools-dev/RDBES](#)

#### Outcome of the meeting

141

#### Estimation ToR

#### By-catch / species composition ToR

The

After the meeting, country specific datasets were made available to the countries at a secured SharePoint in ICES.

#### Next steps

#### Estimation ToR

- I. xxx

#### By-catch / species composition ToR

The by-catch / species composition issue was addressed at a later meeting in the spring 2021, see annex 8.4.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

## Annex 8.3. Meeting notes from Workshop on Optimization of Baltic Herring and Sprat

### Overview of the workshop

The workshop took place over three separate meetings held 17, 18 and 19 of February 2021. Prior to the 1<sup>st</sup> meeting, an extract from RDB data of central Baltic sprat and herring was obtained from ICES and Nuno Prista (Sweden) ran the sample-level code produced under WKBIOPTIM on RDB data, consulting with ISSG members where needed. At the meeting, an introduction to the code was given to participants and the code was shared with them via GitHub. Participants were then given the opportunity to test the code on their own data with preliminary results being discussed in the 2<sup>nd</sup> meeting (18 February). At the final meeting, results obtained were presented, challenges and pending issues identified and the work ahead identified.

### Developments during the workshop

The objective of the workshop was to analyze the number of fish that need to be length/age measured from each sample sent by fishermen involved in the Baltic pilot sampling programme. The protocol to be tested does not involve stratification by length, i.e., when 50 individuals is set as target these are to be randomly selected from the original sample collected by the fishermen and all of them have their length and age determined.

Ahead of the workshop historical data on sprat and herring biology was extracted from the RDB. Extracting and processing such large volumes of data and adapting it to the WKBIOPTIM code involved some computational challenges, the most important of which are the identification of valid fit for purpose samples and the separation of the data that results from simple random sampling from the data that results from stratified random samples. A script was produced for such purpose that was made available for validation to participants. It was found that samples from Sweden and Latvia were taken by simple random sampling while samples from other countries had been collected using stratification by length. In the process of preparation of the data some countries (e.g., namely Denmark) found many of their samples were being excluded, a situation that appears to be linked to how Danish data was uploaded to table HL and CA of the RDB and that was identified for further analysis and review.

Main developments of the workshop:

- Compilation of historical data from RDB at regional level.
- Common preparation script for analysis.
- WKBIOPTIM code shared and explained to participants from the region.
- Simulation results produced for Sweden and Latvia.
- Tests of simulation results by Poland.
- Documentation of variance for stratified simple random sampling.

### Issues pending

- There is a big advantage in being able to make use of all samples from all countries in the simulations. That builds confidence and makes for all countries to feel involved. With regards to both age and length simulations, this requires input data to be validated by countries. If age sampling is to be simulated then a solution needs to be found for the problem of how to best simulate random samples from originally stratified samples.





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

- Input data
  - Many Danish samples excluded during preparation; In depth analysis of Danish RDB data uploads and the assumptions made by preparation script is needed to sort out this situation.
- Simulation of Random samples from originally stratified data
  - The vast majority of biological data available in the RDB was collected via stratified sampling. To simulate simple random sampling from those data involves significant assumptions since the age of a part of the fish in the sample is not known. An algorithm is then needed that assigns ages those fish. Two possibilities were discussed<sup>9</sup>:
    - Assign missing ages based on simple random sampling of aged individuals within length class
      - Advantage: easier to compute.
      - Disadvantage: fish in the original sample only replicate the pairs (age, length) already existing in the aged subsample. This may lead to some distortions in age structure.
    - Modeling the age/length relationship (e.g., via a multinomial model) and predicting the missing ages using the probabilities obtained from these models
      - Advantage: There is some potential for the generation of new (age, length) pairs not existing in the original subsample.
      - Disadvantage: requires good model fit to all subsamples and model assumptions to be met. This may lead to some distortions in age structure.
- MS are interested in seeing what happens to results of CV when all simulated samples of different sizes are pooled together at quarterly level. Such results are considered to provide insight into the consequences for assessment of reducing sample size. The pooling of samples and calculation of CVs is possible but involved a very strong assumption that is a priori known not to be met, namely, that boxes sample are a random sample from the fishery. A more trustable result will be obtainable when data from the present pilot (more probabilistic) is available.

### Next steps:

- Fix the Danish data / Denmark to check it against the preparation script.
- Every MS to look at preparation and finalize datasets – 28/04.
- Prepare lengths from HL for all countries, run WKBIOPTIM simulations for all countries and circulate – 28/04
- Figure out how to generate ages for length stratified samples [Nuno, Kasia, Kirsten] – 28/04.
- Code algorithm to pool samples and calculate pooled CVs [Annica, Nuno].
- Upload pilot results to RDB with Pilot name used in RDBES.
- Adapt WKBIOPTIM code to RDBES format – longer term.

<sup>9</sup> These alternatives were further discussed in a meeting held the 23<sup>rd</sup> of April



## Annex 8.4. Estimation of CV from a two-phase sample of fish

By Annica de Groot 2021-02-17

Consider a catch of fish from a trip or a haul. We think of this set of fish as a finite population  $U$  of size  $N$ .

Let  $y$  denote a study variable, and let  $y_k$  be the value of  $y$  for the  $k$ th fish in the population. For instance,  $y$  is age and  $y_k$  is the age of the  $k$ th fish.

We want to estimate the population mean of  $y$  (the mean age of the catch),

$$\bar{y}_U = \frac{\sum_U y_k}{N}$$

We use the following two-phase sampling design:

Phase 1: A simple random sample without replacement (SRS) of fish, a *box of fish*, is selected from the catch. We denote this sample  $s_a$  of size  $n_a$ .

Phase 2: The fish in the box are divided into  $H$  strata by length class. From each stratum (length class), an independent subsample is selected with SRS. The subsample from stratum  $h$  is denoted  $s_{ah}$  of size  $n_{ah}$ .

The resulting total subsample is given by  $s = \bigcup_{h=1}^H s_{ah}$  of size  $n = \sum_{h=1}^H n_{ah}$ .

From Särndal et al (1992, Result 9.4.1), an unbiased estimator of  $\bar{y}_U$  is given by

$$\hat{\bar{y}}_U = \sum_{h=1}^H w_{ah} \bar{y}_{s_{ah}}$$

where  $w_{ah} = n_{ah}/n_a$  and  $\bar{y}_{s_{ah}}$  is the mean age for the fish in sample  $s_{ah}$ .

If  $N$  is much larger than  $n_a$ , and  $(n_{ah}-1)/(n_a-1) \approx w_{ah}$ , an approximate variance estimator is given by

$$\hat{V}(\hat{\bar{y}}_U) = \sum_{h=1}^H \frac{w_{ah}^2 S_{y_{s_{ah}}}^2}{n_{ah}} + \frac{1}{n_a} \sum_{h=1}^H w_{ah} (\bar{y}_{s_{ah}} - \hat{\bar{y}}_U)^2$$

where  $S_{y_{s_{ah}}}^2$  is the variance of  $y$  in  $s_{ah}$ .

Finally, an estimate of the coefficient of variation (CV) of  $\hat{\bar{y}}_U$  is given by

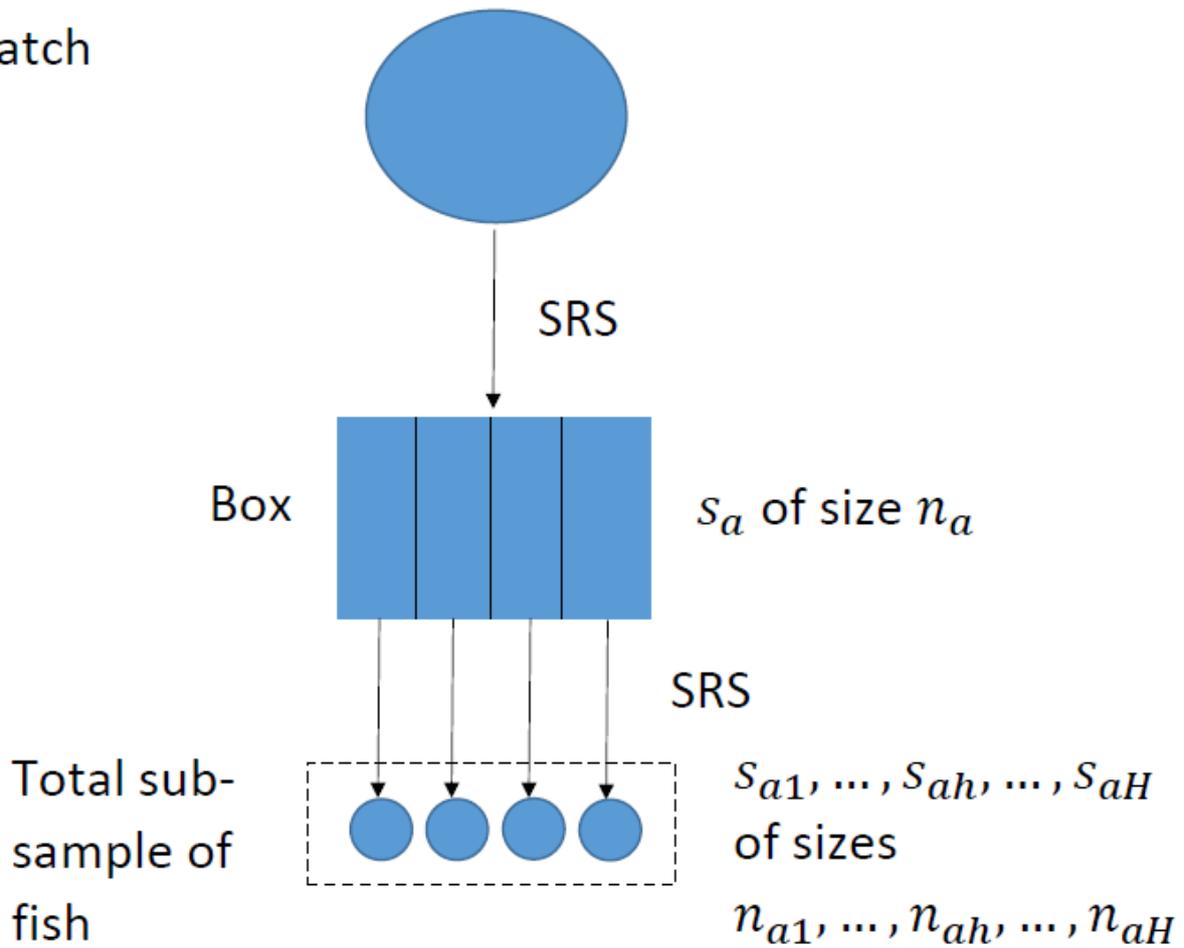
$$cve(\hat{\bar{y}}_U) = \frac{\sqrt{\hat{V}(\hat{\bar{y}}_U)}}{\hat{\bar{y}}_U}$$

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8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

Note: the estimated CV is a function of several sample sizes:  $n_a, n_{a1}, \dots, n_{ah}, \dots, n_{aH}$ .

Catch



## Annex 8.5. Meeting notes on misreporting between sprat and herring

### Meeting date

Agenda for the meeting:

1. Which data by country is used for the data call IC / sale slips or logbook or some kind of corrected data
2. Is it possible for you to compare the Danish control samples with the matching logbook / sale slip information for the same trip?
3. Can you describe your national control sampling? Would you think it is possible to get access to the samples / results / can you bring the data / information to the meeting / is your control only sampling own flag country?
4. Is it possible to get data from 3<sup>rd</sup> party companies – sample by sample.
5. What to do with the benchmark in 1.5 time (January 2023). Would we like to redo catch estimate.

### Background

The Danish control agency have taken control samples of roughly 20% of all industrial landings conducted in Danish harbors in the last 10 years. The sampling have been conducted in a relative consistent way (many samples from every landings – and each sample is around 10 kg). Only the species composition has been registered in the samples, not age, length or weight. However, from some landings only very few buckets were available.

The data is off course confidential and needs to be treated in that way. Every MS has got access to their own data on a closed folder in the SharePoint.

#### 5.2.1. Numbers of available Danish control data by country.

Flag Nation	2015	2016	2017	2018	2019
DEU	7	5	10	8	6
DNK	524	419	425	406	318
EST	4	1	NA	NA	1
FIN	1	NA	3	11	1
LTU	5	12	10	8	9
LVA	NA	4	2	7	3

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

POL	42	23	32	26	47
SWE	29	28	53	30	40

Data uploaded to ICES has in some countries been corrected according to other information. Several countries have used national control data to correct either a given trip with the result from the control data or the total fleet.

Overview of data sources used when submitting data from the Baltic to WGBFAS			
MS	Landing category	Time period	Data source
Denmark	IND	2020-present	<p>Sale slips</p> <p>(In 2020, Denmark introduced a new system for estimating the species composition in the landings for reduction. The Danish 1<sup>st</sup> buyers of these landings now oblige to sub-sample every landing and use these to estimate the species composition in that landing. The estimated figures are reported in the sale slips. The number of sub-samples depends on species, area and total amount landed e.g., in 2020 landings of sprat from the Baltic was sub-sampled in the following way;</p> <p>(The two biggest 1<sup>st</sup> buyers of landings for reduction use 3<sup>rd</sup> party companies to sample the landing))</p>
		2017- 2019	<p>Sale slip figures. No correction with control samples</p> <p>(All vessels had the 1205 license in the period)</p>
		2016	<p>55% sale slips (1205 license) 45% Sale slips figures corrected with the 9-square method.</p> <p>(A new license, 1205, was introduced in the Baltic fishery for reduction. Vessel fishing with that license is oblige to report the species composition caught and the sale slip figures was not corrected with the 9-square method for these vessels. Sale slip figures from vessel fishing without was still corrected with the 9-square method)</p>

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

		2012-2015	Sale slip figures corrected with the 9-square method.  (In 2012, The Danish Fisheries Agency took over calculation of by-catch with the 9-square method and it became a routine to use the method in the Baltic)
		1991-2012	Sale slips figures has been corrected with the 9-square method some years, others not.  (The so-called <b>9-square method</b> was introduced in 1991. The method use the Danish control samples to estimate the species composition in the fisheries for reduction. A species composition is calculated per square and month based on samples from the square and the 8 surrounding squares within month. The estimate is then applied to the figures from the sale slips per square and month (Logbooks are used to get information about ICES square).  The method was routine for the North Sea, Kattegat and Skagerrak, but not for the Baltic, but some years it has been used, when submitting data to WGBFAS  DTU Aqua was responsible for the calculations, but the results for North Sea, Kattegat and Skagerrak was used by the Danish Fisheries Agency)
		Before 1991	No clue
	HUC	All years	Sale slips
Estonia			
Finland			
Sweden			
Latvia			
Lithuania			
Poland			

148

At the meeting, several countries presented their comparison between the control samples and the data

Denmark

Comparison between the Danish control samples and the sale notes showed since 2016 a higher amount of sprat in the control samples compared to the sale notes, as an average over the years of 2%. This is from the time period where the data uploaded to ICES has not been corrected with control samples as the license system changed and it was judged by the Danish control agency that these data were more trustworthy.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

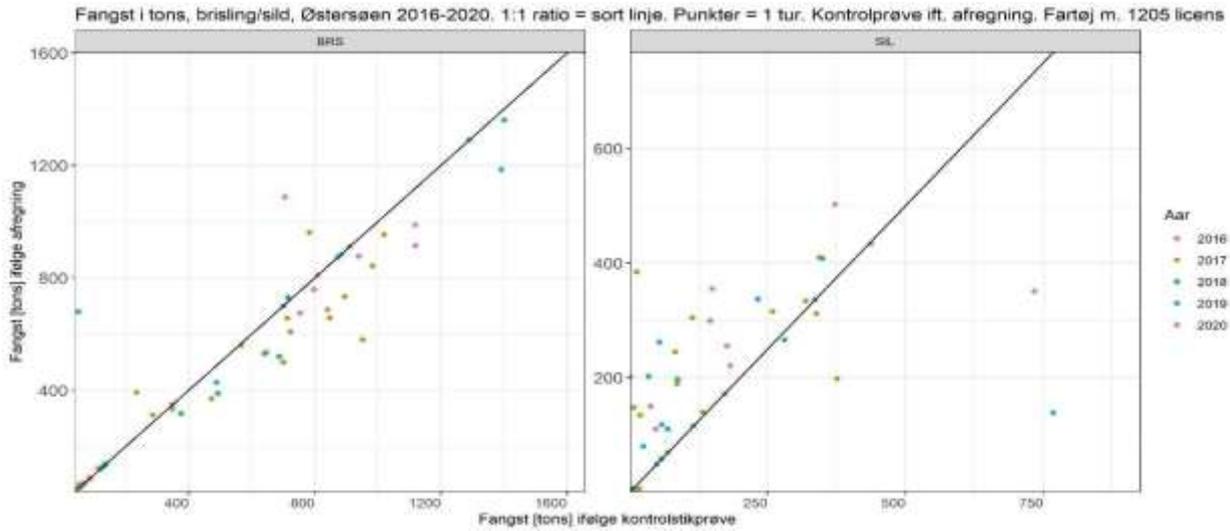


Fig. 8.A5.1. X-axis indicate the amount sprat (left) and herring (right) compared to the amount reported in the sale notes from the same trip.

År	% sprat in salesnotes	% sprat in controlsamples	Number of samples	Difference in tsprat
2016	88	90	9	-289
2017	77	82	22	-1048
2018	87	90	12	-361
2019	83	80	9	204
2020	70	72	6	-90

Estonia

Finland

Sweden

Due to time limitations it was not possible to analyse the Danish data on Swedish vessels ahead of the workshop. During the workshop, an overview of results recently obtained when sampling onboard and onshore 5 pelagic trip in central Baltic was presented. Those results indicate that when a low number of buckets is sampled from the landings and particularly when these are sampled only from the beginning of the landings, point estimates for species proportions can be significantly biased. This highlights the need to compile documentation on the historical sampling protocols used by control back in time and carefully select the subset of data to analyze before modelling and concluding on the level of species misreporting. The Danish control protocol has been significantly improved in recent years and landings are now systematically sampled during unloading. However, a quick analysis of Danish control samples on Swedish vessels of the time series



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 8. ISSG Case Study of Fisheries for Small Pelagics in the Baltic - Annex

provided indicated that the vast majority of controlled trips had only 1 bucket record associated to them<sup>10</sup> which indicates the need for compilation of control protocols and a more detailed analysis of the dataset before modelling it and drawing conclusions.

Latvia

Lithuania

Poland

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<sup>10</sup> Note: it cannot be dismissed the possibility that data was collected from a larger number of buckets was originally collected but stored aggregated in the database. Further analysis of the data (sample sizes) alongside information on the protocols used in each time period will help clarify this issue and sort out the data that can be used in analysis.



## 9 ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

### Towards a RSP for the freezer trawler fleet exploiting pelagic fisheries in the Northeast Atlantic

#### 9.1 Introduction

The EU freezer trawler fleet targeting a number of small pelagic species in the Northeast Atlantic and North Sea was identified as a potential candidate for the development of a regionally coordinated sampling plan during the RCG North Atlantic and Eastern Arctic meeting held in Vigo, Spain in 2018 and the ISSG “Towards a regional sampling plan for the freezer trawler fleet exploiting pelagic fisheries in the Northeast Atlantic” was established. The current sampling of the fleet consists of a combination of nationally designed sampling programmes and bilateral agreements.

Following an initial information gathering exercise to identify the vessels that comprise the freezer fleet, the ISSG issued a data call in 2019 to EU countries with freezer vessels for trip level data between 2014 and 2018 in order that the potential for coordinated sampling schemes could be evaluated. Analysis of the fleet landing data indicated that there are a number of important pelagic stocks that are exploited by freezer vessels operating under more than one national flag and are therefore potential candidates for regionally coordinated sampling. Moreover, the operational characteristics of the fleet are relatively stable over time, following traditional seasonal fishing patterns. A simulation framework was developed to investigate potential levels of sampling coverage available under alternative sampling schemes with interim results presented to the RCG in 2020.

This report presents updated simulation results along with additional outputs for a number of potential sampling schemes. Simulations were conducted to investigate annual sampling coverage for a suite of preselected stocks under various sampling schemes including random selection of individual fishing trips and vessels (*i.e.* a reference fleet). Effort stratification and weighting of trip selection on the basis of historic landings or average trip diversity was investigated with redistribution of effort to quarters with more diverse fishing activity leading to increased sampling coverage.

For geographically distinct fisheries for which there are relatively few trips undertaken to be included within a fully randomised sampling plan based on trip selection, it is important to ensure a sufficient level of sampling effort. In the case of the reference fleet approach, stratification of the fleet during selection of the reference vessels can mitigate the risk of insufficient sampling coverage for such stocks.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

#### 9.2 The EU Freezer Trawler Fleet

The EU freezer trawler fleet consists of a relatively small number of vessels (20-25) ranging in size from 60-150m. The vessels are owned and operated by a small number of fishery companies with vessels operating under the national flags of the Netherlands, Germany, UK and France. Other countries (e.g., Poland, Lithuania) also have freezer vessels although they are only occasionally report relatively minor catches from the stocks of interest.

Freezer vessels are designed to process and store frozen catch on board which permits them to undertake relatively long trips (2-6 weeks), returning to port when freezing storage capacity is full. Catch sampling is currently carried out by national sampling programmes either by on-board observers or shore-based staff when frozen samples are landed.

For the purposes of this exercise, identification of appropriate vessels for inclusion was largely achieved through expert knowledge, available from national scientists who work closely with their respective fleets and industry based scientists. It was not possible to directly identify the vessels from national fleet registers which typically do not store information related to the processing of catch.

#### 9.3 Current Sampling Arrangements

The pelagic stocks targeted by the European freezer trawler fleet are assessed by the ICES Expert working groups WGWIDE, HAWG, WGHANSA and WGDEEP. Annual catch advice for these economically important stocks are derived primarily from the results of applying age based assessment models. Although the assessment models tend to be configured as single area/fleet and season, estimates of catch at age by ICES division and quarter are required for all fleets exploiting the fisheries. Within the EU, national sampling programmes are in place to support the collection of the relevant data. At present, the sampling of the European freezer trawler fleet, which is largely Dutch owned and operate under the flags of the Netherlands, Germany, France and the UK (England) is conducted by the Dutch and German administrations. While there exists an element of cooperation, the national sampling schemes differ in extent and methodology and there is no formal arrangement or harmonisation. Vessel and trip selection is not wholly random for either national scheme.

##### Germany

The German sampling scheme is based on on-board observers with an annual target of 4-5 trips (from approximately 40 fishing trips). Trip selection is opportunistic, targeting the fisheries for which Germany has a quota allocation including NEA Mackerel in Q1, Blue Whiting in Q1/Q2, North Sea Herring in Q2/Q3, Atlanto-Scandian Herring in Q3, Western Horse Mackerel in Q4 and Herring in ICES division 7d in Q4. On occasion, a skipper may be requested to retain a sample of unsorted catch which is collected upon landing if no observer is on board.

Whilst on board, observers take a random sample of catch from the majority of hauls and measure for length and weight. For the purposes of ageing, samples are frozen and reading is completed on shore.

Further details on the sampling and raising procedures for the German sampling programme can be found in the joint (NL-DE) report of the sampling programme (CVO report: 20.004).



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

#### The Netherlands

The Dutch sampling scheme consists of 2 separate programmes; an on-board observer programme and a self-sampling programme.

The observer programme is a continuation of the Dutch discard sampling programme and is conducted under the remit of bycatch sampling. 12 trips are conducted annually, evenly distributed over the year. Trips are selected in cooperation with the fishery companies and include both Dutch and foreign flagged vessels (excluding German flagged vessels from 2018 onward). Trip selection is ad-hoc and considered to be non-random. During selection of a trip, the planned fishing area is not considered as this may change at short notice prior to or during the trip. Since 2019, attempts have been made to randomize sampling through a random weighted selection of fishing companies based on the number of freezer trawler vessels owned by the company. The majority of hauls are sampled with restrictions on working hours or technical difficulties occasionally leading to unsampled hauls. Random unsorted catch samples of 30-150kg are taken (size of sample depending on the target species), weighed, sorted by species and all individuals are measured. Further details on the sampling and raising procedures for the Dutch observer sampling programme can be found in the joint (NL-DE) report of the sampling programme (CVO report: 20.004).

The sampling of catch for the purposes of informing assessment working groups is carried out by the self-sampling programme. Using a reference fleet (ad-hoc selection) of 3 vessels, unsorted catch samples of approximately 22kg are taken on-board by trained crew members with one sample per week per ICES division per species taken. The species list is pre-defined based on DCF obligations. Occasionally, the sampling intensity will be increased for some seasonal (short) fisheries. The samples are frozen at sea and collected upon landing when they are analysed for length and weight with 25 individuals selected from each sample for ageing.

153

#### Bi-lateral Arrangements NLD

As many of the vessels operating under the national flags of France and the UK are Dutch-owned and operated, there are bi-lateral agreements between the Netherlands and France/UK to sample these vessels on an opportunistic basis. There is also a bi-lateral agreement between the Netherlands and Germany in order to secure the sampling of landings of pelagic species of Dutch flagged vessels in German harbours and vice versa.

#### Historical performance of sampling

An overview of the historical performance of the sampling can be obtained by examining the WG data submissions. Some examples are given below.

#### Blue Whiting 2014

Dutch and German catches of blue whiting by ICES division and quarter for 2014 are detailed in Table 9.3.1. In 2014, 49% of the total catch weight of Blue Whiting from freezer trawlers was sampled by the Dutch self-sampling scheme. No sampling was conducted by the German observer scheme. Allocations are available from the relatively well sampled Dutch fishery. However, there is a significant gap (16kt+ of catch) in divisions 4a and 5b (red bordered cells). There are also catches by French flagged vessels (not shown) totalling approximately 10kt, taken primarily in 5b, 6a, 7b, 7c, 8a and 8d.

**Table 9.3.1** – Dutch and German catches of blue whiting by ICES division and quarter for 2014. Cells with a green border represent catches for which sampling was carried out, cells with a red border represent significant catches for which no sampling was carried out.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

ICES	2a		2b	4a			5b		6a		7b	7c		7j		7k
Q	3	4	4	2	2	4	1	2	1	1	2	1	2	1	2	1
DE	12	14		2627	6966		711	6647	62	7447						
NL		93	92	3664	1629	1521	1548	25939	198	2647	85	125	534	448		

#### NEA Mackerel 2018

The NEA Mackerel fishery is an important component for both Dutch and German fleets. The fishery traditionally operates in the first and fourth quarters and is spread out over a wide geographic area although the bulk of the catch is usually taken in 4a in Q4 and 6a in Q1 (Table 9.3.2).

Both the German and Dutch flagged fleets are sampled for mackerel with the main areas and divisions covered each year (cells with green border), covering 55% of the landed weight. In 2018, the large fishery in 6a Q1 is covered by both programmes as is that in 4a Q3. Given the fleets operate in a similar manner, this may represent an inefficient duplication of sampling effort. This effort may be more usefully deployed to un-sampled areas such as in the north (2a) and south (8).

**Table 9.3.2** – Dutch and German catches of NEA mackerel by ICES division and quarter for 2018. Cells with a green border represent catches for which sampling was carried out, cells with a red border represent high catches for which no sampling was carried out.

ICES	2a		4a			4b			4c			6a		
Q	3	4	2	3	4	2	3	4	2	3	4	1	2	4
DE	574			174								7453		
NL	64	2632	24	820	11993	350	338	56	643	113	15	10100	643	216

154

ICES	7b		7d				7e		7g	7j			8a	8b		8c
Q	1	2	1	2	3	4	1	3	4	1	2	3	1	1	2	1
DE	129	19								13			418	1169		36
NL	23		289	42	22	357	12	13	21	1166	59	132		386	344	

#### Horse Mackerel 2018 (North Sea & Western)

The majority of horse mackerel catch was sampled in 2018 (70%; cells with green border in Table 9.3.3). However, none of the catches of the North Sea Stock in 4a-c are sampled with all samples from this stock secured in division 7d. As noted for NEA Mackerel, there is duplication of sampling effort in the largest fisheries (6a Q1 and 7d Q4).

**Table 9.3.3** – Dutch, German and UKE catches of horse mackerel by ICES division and quarter for 2018. Cells with a green border represent catches for which sampling was carried out, cells with a red border represent high catches for which no sampling was carried out.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

ICES	6a				7b			7c		7d			
	1	2	3	4	1	2	4	1	3	1	2	3	4
DE	1894		22	863	371	13			4			1577	1189
NL	10555	155		1210	2143		47	7		93	63	14	4756
UKE	32									1184	8	3	1223

ICES	7e				7h		7j				7f		7g
	1	2	3	4	1	2	1	2	3	4	3	4	3
DE			7	317	653			35					
NL	419	20	13	6	5551	2440	522	392	1447	1			
UKE	147	5	8	3	1443	113	467				16	209	5

ICES	8a		8b		4a	4b				4c			
	1	2	1	2	3	1	2	3	4	1	2	3	4
DE	554												
NL			4	2	5		17	11	1		117	39	75
UKE				1							6		825

#### 9.4 Data

An initial investigation was carried out to explore the utility of the data submitted in response to the data call issued for the fishPi2 project in terms of this analysis. However, it was determined that a dedicated data call would be required, primarily because it was not possible to definitively identify those landings that were made by freezer trawlers within the fishPi2 dataset and also within the RDB. In addition, the fishPi2 data call covered a period of 2 years and did not request data from all areas where freezer trawlers are known to operate. A dedicated data call was therefore issued in support of this exercise, the details of which are given in appendix A. The call requested trip level details for all freezer trawler vessels operating under the national flags of the Netherlands, Germany, UK (England) and France for 2014-2018 where catches of Atlantic Mackerel, Atlantic Herring, Blue Whiting, Atlantic Horse Mackerel, European Sprat or Greater Argentine were landed into national or foreign ports. Data was received from the Netherlands, Germany and the UK and so the analysis presented in this report is based on information provided for vessels operating under these flags.

Data was received covering 609 individual fishing trips over the 5-year period, with total annual landings of the 6 species requested ranging from 360-460kt (Table 9.4.1).

**Table 9.4.1** – Total fishing trips and landings for the pelagic freezer trawler fleet for the period 2014-2018 for DE, UKE and NL.

Year	Fishing Trips (Landings)		
	DE	UKE	NL
2014	32 (110kt)	22 (44kt)	63 (205kt)
2015	31 (127kt)	27 (43kt)	62 (204kt)
2016	31 (109kt)	24 (39kt)	61 (229kt)
2017	35 (133kt)	17 (40kt)	72 (240kt)
2018	34 (129kt)	15 (29kt)	83 (300kt)

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

#### 9.5 Suitability for a Regional Sampling Approach

The freezer trawler fleet targets a number of pelagic species at various times through the year. A regional sampling plan (as opposed to a national programme) can be considered if the catches from a particular stock comprise a number of vessel flags. The proportion of the landings from the freezer fleet by vessel flag for 2014-2018 from each of the targeted stocks are shown in Fig. 9.5.1.

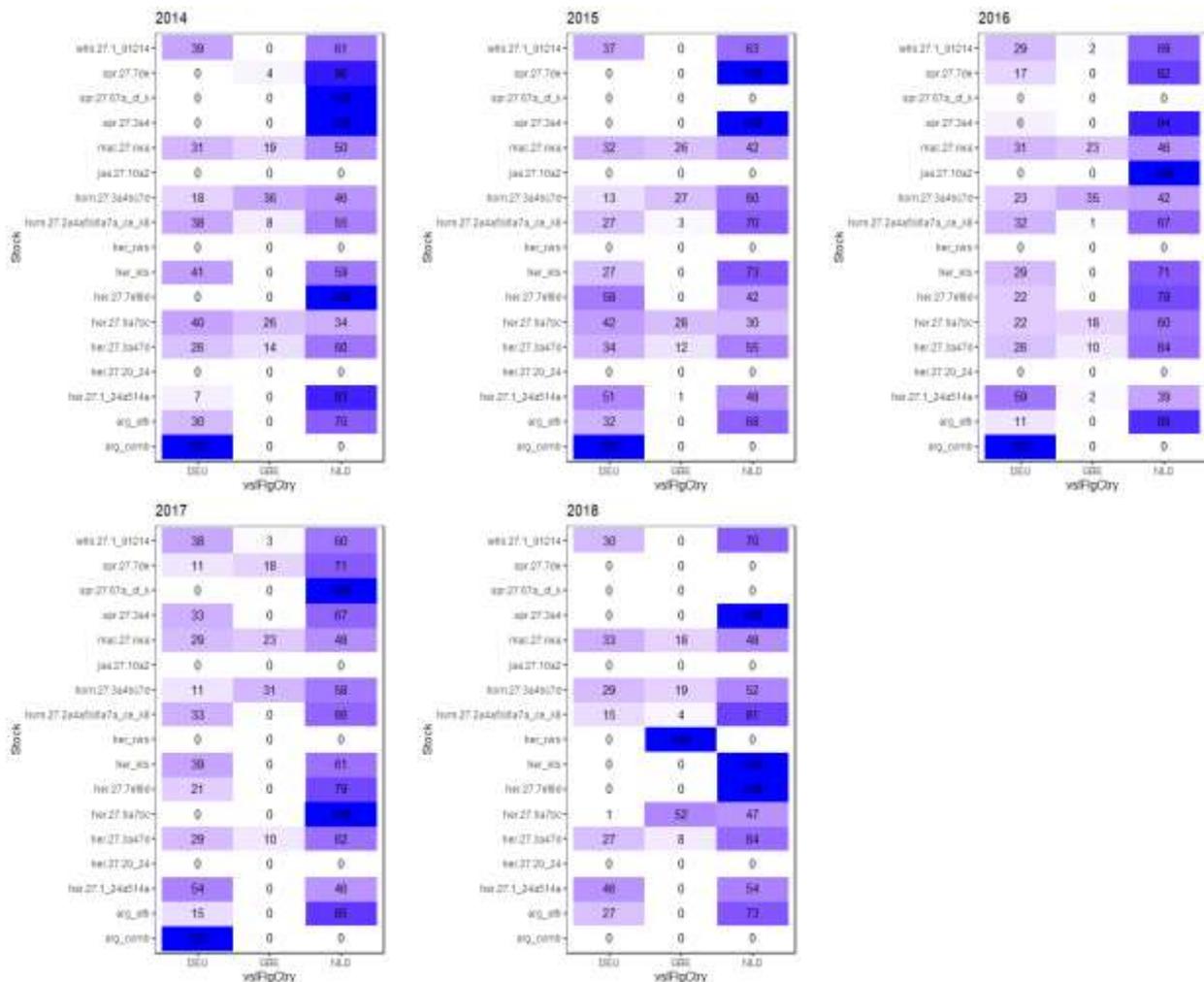


Fig. 9.5.1 - proportion of the landings from the freezer fleet by vessel flag for 2014-2018 from each of the targeted stocks

Several stocks (e.g., sprat, some smaller herring stocks) are only fished by a single nation and are therefore not relevant in terms of a coordinated sampling approach. However, based on the data supplied in response to the data call, 6 stocks that are exploited by at least 2 of the national fleets have been identified (Table 9.5.1) as suitable candidates for a regionally coordinated sampling programme. All are economically important and, with the exception of North Sea Horse Mackerel are assessed using an age-based, category I assessment methodology. As such, the quality of the data from the sampling of the catch is of high importance.

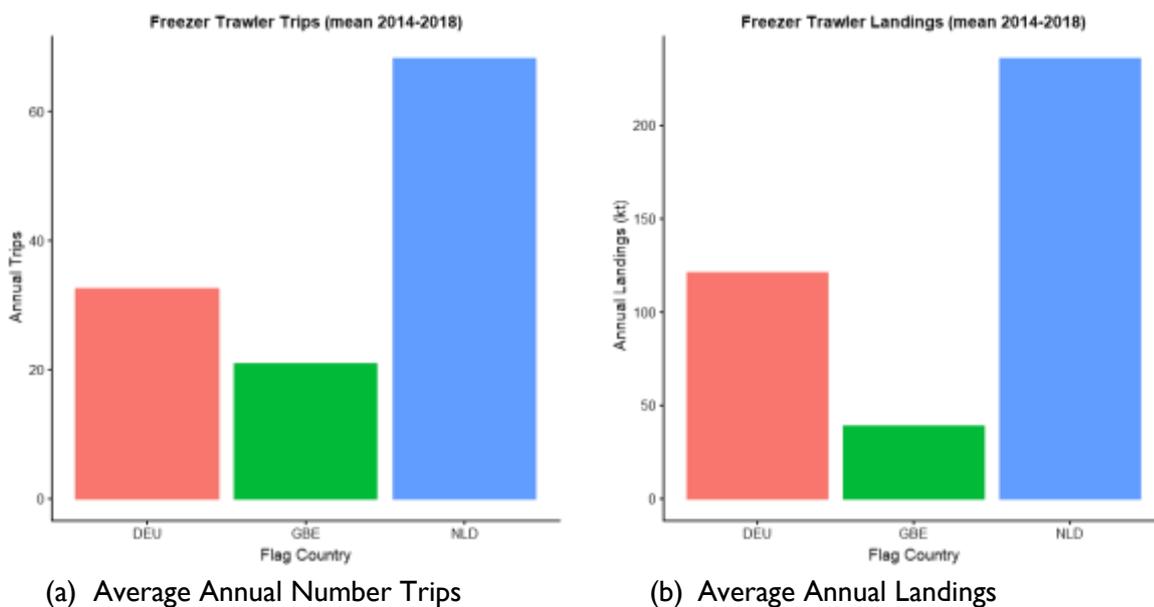
RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

**Table 9.5.1** – Pelagic stocks that are exploited by at least 2 of the national freezer trawler fleets.

ICES Stock Code	ICES Stock Name	ICES Working Group	Abbreviation (this exercise)
mac.27.nea	NEA Mackerel	WGWIDE	NEAM
whb.27.1_91214	Blue Whiting	WGWIDE	BW
hom.27.3a4bc7d	North Sea Horse Mackerel	WGWIDE	NSHM
hom.27.2a4a5b6a7a_ce_k8	Western Horse Mackerel	WGWIDE	WHM
her.27.1_24a514a	Norwegian Spring Spawning Herring	WGWIDE	NSSH
her.27.3a47d	North Sea Autumn Spawning Herring	HAWG	NSASH

The average number of fishing trips and average annual landings (all data call species) for the national freezer fleets is shown in Fig. 9.5.1.



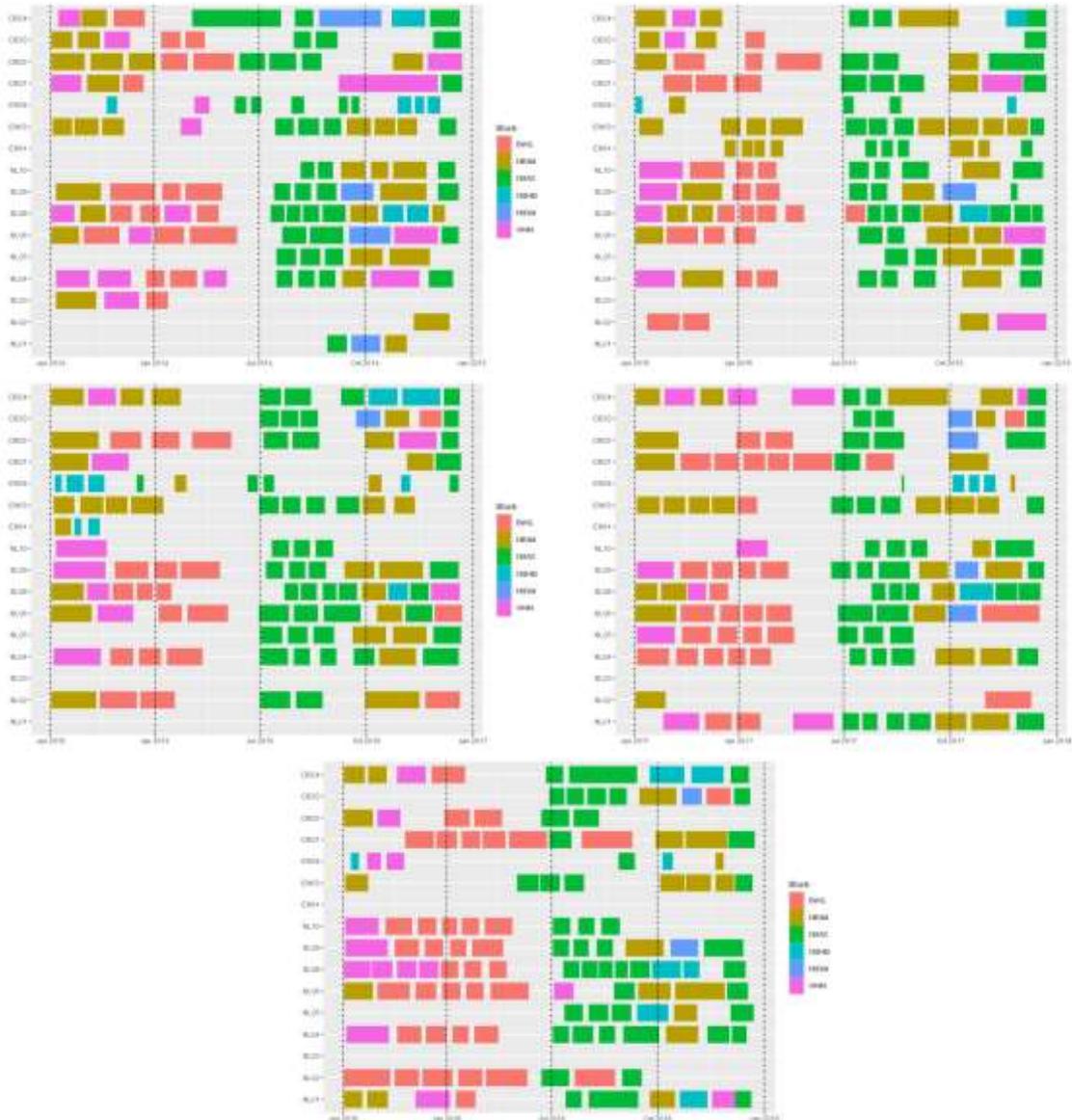
**Fig. 9.5.1** – Average number of fishing trips (a) and annual landings (b) by flag country

Individual fishing trips usually target a single species although this may change during the trip depending on successfully locating fishable aggregations of the target species. In addition, minor quantities of non-target species are often caught. Characterising each trip of a specific vessel on the basis of the species/division (stock) with the highest proportion of the trip landings reveals the annual fishing pattern of the fleet which can be represented as a Gantt chart (Fig. 9.3). In general, it is seen that:

- The targeting behaviour and exploitation is similar for each of the 5 years.
- Mackerel and Horse Mackerel are targeted largely in Q1 and Q4.
- The Blue Whiting fishery takes places in Q1/2.
- Fleet activity is reduced in mid-summer.
- North Sea Herring fishery takes place in Q3.
- North Sea Horse Mackerel is targeted in Q4.
- Fishing patterns are similar for each flag.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic



**Fig. 9.5.2.** – Gantt chart of catch composition (expressed as stock) by trip and year. Each coloured block represents an individual fishing trip based on departure and landing dates. The block colour indicates the stock with the highest proportion of the total trip landed weight.

The number of fishing trips conducted annually targeting each of the stocks is shown in Table 9.5.2. Trips regularly land catch from a number of different stocks. It is common for trips targeting Mackerel to also catch Western Horse Mackerel, and vice versa (Table 9.5.3). Conversely, trips targeting North Sea Herring, tend to have little catch from the other stocks with over 90% of landings by weight of herring only (Table 9.5.3).

**Table 9.5.2** – number of fishing trips conducted annually targeting each of the stocks

Stock	2014	2015	2016	2017	2018
NEAM	29	37	28	29	20
BW	18	24	19	32	38
NSHM	7	4	9	4	8

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

WHM	16	9	9	10	14
NSSH	4	1	1	4	2
NSASH	41	43	47	42	47

**Table 9.5.3** - mean proportion by weight for all trips during the reporting period. Row-wise proportions may not sum to 1 as other species are also landed.

Stock	NEAM	BW	NSHM	WHM	NSSH	NSASH
NEAM	<b>0.778</b>	0.018	0.019	0.111	0.024	0.035
BW	0.042	<b>0.866</b>	0.001	0.039	0.000	0.012
NSHM	0.052	0.000	<b>0.779</b>	0.066	0.000	0.077
WHM	0.206	0.051	0.021	<b>0.681</b>	0.000	0.029
NSSH	0.259	0.018	0.019	0.003	<b>0.677</b>	0.017
NSASH	0.021	0.004	0.013	0.009	0.000	<b>0.906</b>

The mean annual landings of each of the 6 stocks for each national fleet are shown in Fig. 9.5.3. UK flagged vessels do not land significant quantities of Norwegian Spring Spawning Herring, Western Horse Mackerel or Blue Whiting either due to a lack of national quota or if the available quota is allocated to other fleets (e.g., RSW vessels which store catch in refrigerated seawater tanks before landing for processing ashore). North Sea Autumn Spawning Herring, North Sea Horse Mackerel and Northeast Atlantic Mackerel are all important components of the total catch for each of Germany, the Netherlands and the UK. The freezer fleet is majority owned by a small number of companies owned and operated in Germany and the Netherlands. As a result, the landings from the fleet are concentrated on a small number of major ports (Fig. 9.5.4). For landings, the Dutch port of IJmuiden is dominant, accounting for 65% to 75% of the total landings in each year. Landings into the other Dutch ports of Scheveningen, Rotterdam and Vlissingen are more variable but have reached 10%. Combined, the Dutch ports account for well over 90% in each year. The German port of Bremerhaven is the only non-Dutch port with regular landings (2%-6% annually).

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

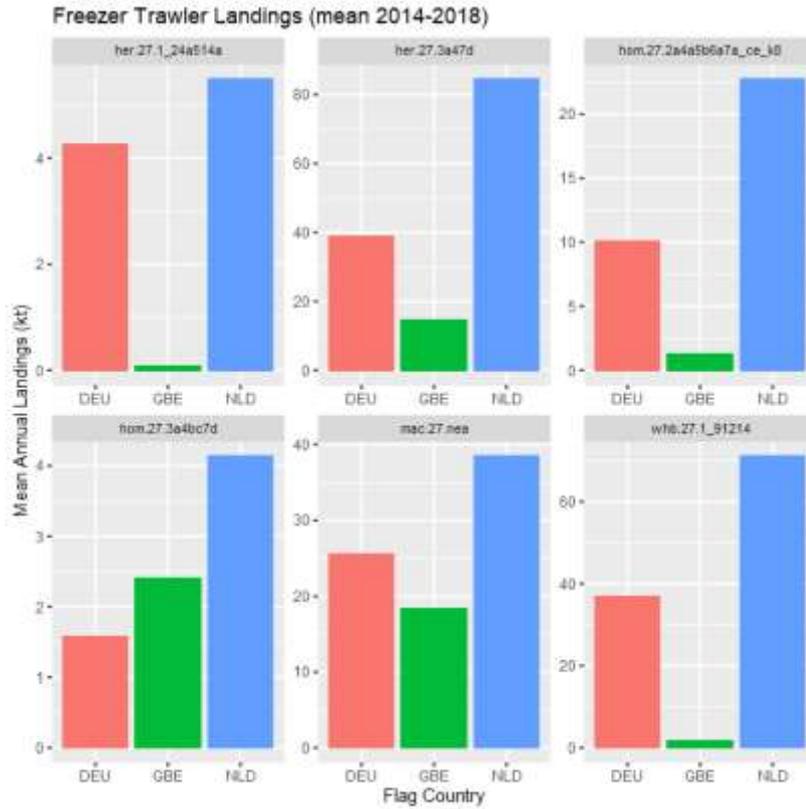
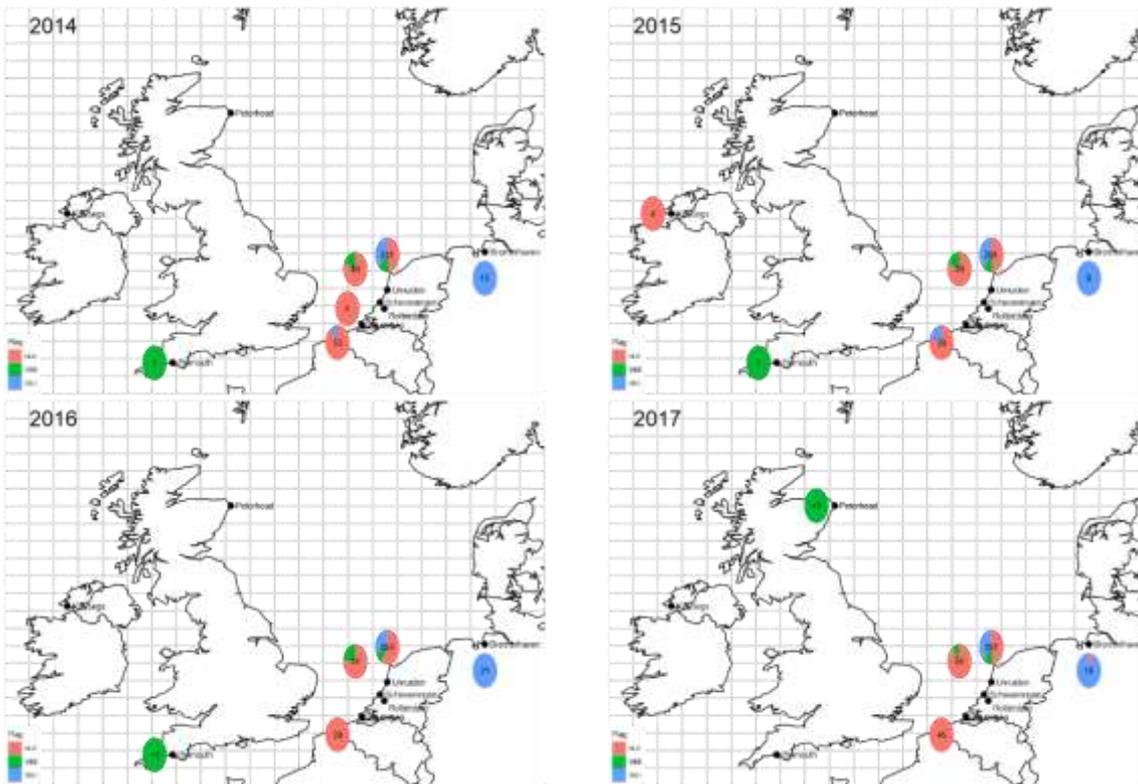


Fig. 9.5.3 – Mean annual landings of each of the 6 stocks by flag country



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### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

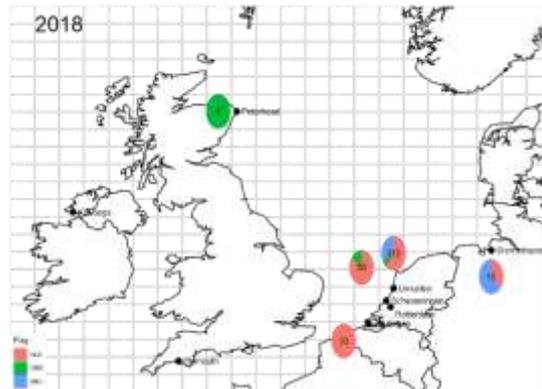


Fig. 9.5.4 - Landing locations by flag country for 2014-2018

## 9.6 Methods

A simulation framework was developed in R to test potential sampling coverage under the assumption that any of the catches reported in response to the data call are available for sampling either *in situ* (e.g., by an observer) or by shore-based scientific staff (following sampling by trained fishing crew). Both these approaches to sampling are currently used by the national sampling programmes.

### Trip-based Sampling

For each year of the available data

- Assign a quarter to each trip, based on the trip midpoint.
- For each quarter, randomly select (without replacement) a predetermined number of trips with trip selection probability one of:
  - equal
  - based on the average proportion of the fleet landings for the vessel in the quarter such that vessels that land more have a greater probability of selection. The landings based weighting factors are show that individual vessels typically account for between 5 and 10% of the total freezer catch (Fig. 9.6.1). No single vessel accounts for greater than 15% of the total but some have very small shares in certain quarters, likely due to operating outside of EU waters during this time.
  - based on the average trip diversity for the vessel such that vessels with catches from a wide range of stocks during a single trip have a greater probability of selection. The diversity of a fishing trip is simply the number of unique stock/quarter/area combinations from that trip (Fig. 9.6.2).
- From the subset of selected trips, consider that a sample is available for each species/division (stock) combination within each trip where the associated catch is at least 5% of the total trip landings (to avoid assuming samples can be obtained from minor bycatches). This approach assumes that a catch sample from any vessel in the freezer fleet can be considered as representative of the other vessels fishing on the same stock during the same quarter.
- Calculate the overall sampling coverage by stock as the percentage of the total fleet landings for which at least one sample is secured.

1000 iterations are run for each year and an overall level of coverage is calculated for each stock by averaging the annual values.

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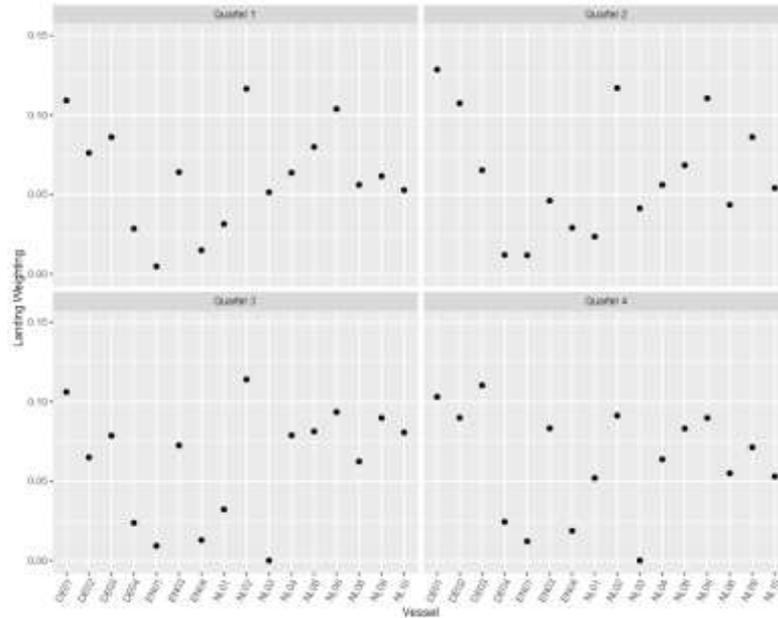


Fig. 9.6.1 – Average proportion of total landings by vessel and quarter for 2014-2018.

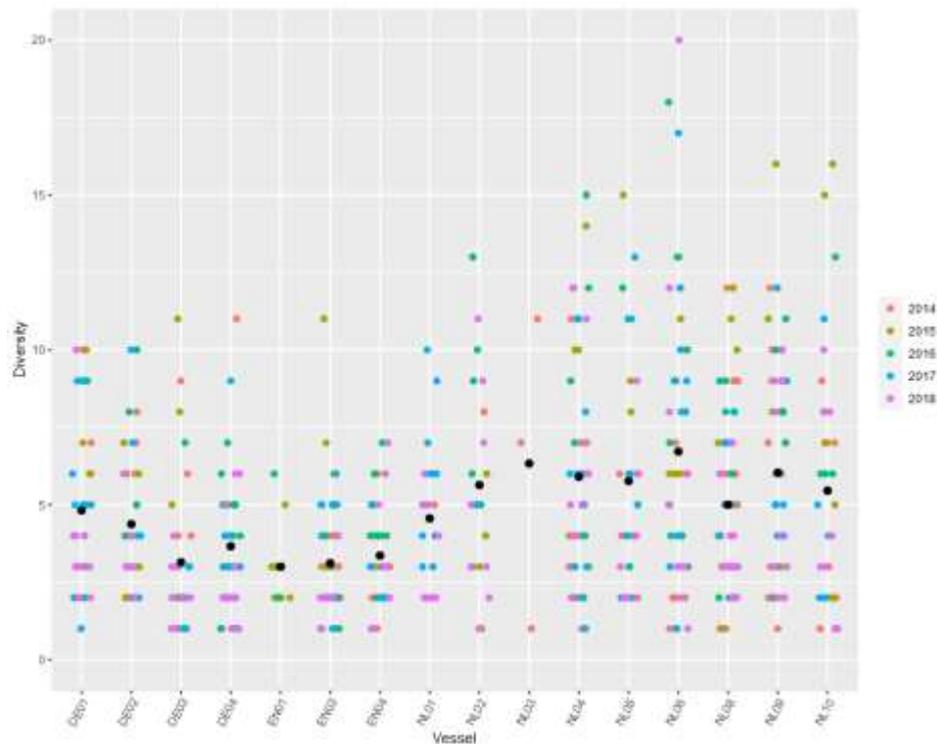


Fig. 9.6.2 – Trip diversity (defined as the number of distinct stock/ices division/quarter combinations by trip). The black dot represents the vessel mean.

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### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

#### Vessel-based (Reference Fleet) Sampling

With a reference fleet approach, a number of vessels are selected at the start of the sampling period and all trips by these vessels are sampled. Trips carried out by the remaining vessels are unsampled.

To simulate the potential coverage available from a reference fleet a sampling frame consisting of all vessels with fishing activity in each of 2014-2018 is constructed. A reference fleet of a defined number of vessels is then randomly selected and annual sampling coverage is calculated based on all trips conducted by these vessels, using the same method and assumptions as the trip based calculations. No selection probabilities have been used in selecting a reference fleet although selections based on vessel flag were tested.

#### 9.7 Results

##### Trip-Based Sampling

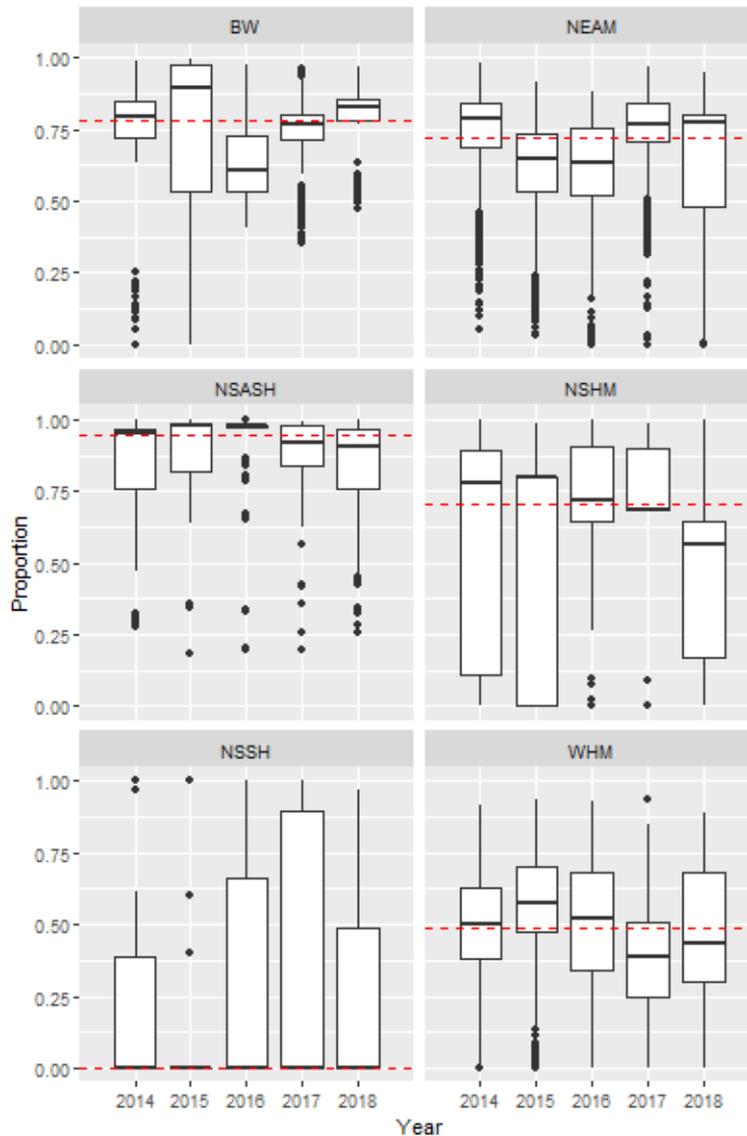
A range of sampling scenarios were tested based on random sampling of fishing trips. Three alternative sampling frames were considered:

- Scenario 1: trips conducted by Dutch and UK flagged vessels only.
- Scenario 2: German flagged vessels only.
- Scenario 3: all vessels with annual sampling levels set to current values.
- Scenarios 4-6: all vessels with annual sampling levels set at current levels but with alternative weighting schemes applied during the random selection.

Scenario 1 is similar to the current Dutch observer scheme with vessels operating under the Dutch and English flags included in the sampling frame. 12 trips are conducted annually, with 3 trips selected at random from each quarter for sampling (the current operational programme actually targets 1 trip per month). No prior weightings are assigned for selection in this scenario. 1000 random draws are conducted for each of the 5 years of data available and the overall coverage achieved for each stock for each year is calculated. The percentages in the table represent the average coverage for the 5 years. The variability in coverage from the random draws is depicted in Fig. 9.7.1. The average coverage achieved for NEA Mackerel under this scenario is 72% for the freezer vessels operating under the flags of NL and UKE (Fig. 9.7.1, Table 9.7.1). The large number of trips targeting this species in quarters 1 and 4 mean there is a high chance they will be represented in a random selection of 3 trips from each of these quarters. Blue Whiting is also well covered, particularly since much of the overall Q2 fleet activity is on this fishery (Fig. 9.7.1, Table 9.7.1). This is also the case for North Sea Herring in Q3. The average coverage for Western Horse Mackerel is lower and the Norwegian Spring Spawning Herring fishery is frequently missed completely (Fig. 9.7.1, Table 9.7.1). This is a relatively small fishery (4/5 trips) during Q4 when there are many other trips undertaken targeting several stocks, thus the chance of randomly selecting a NSSH trip is low.

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9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

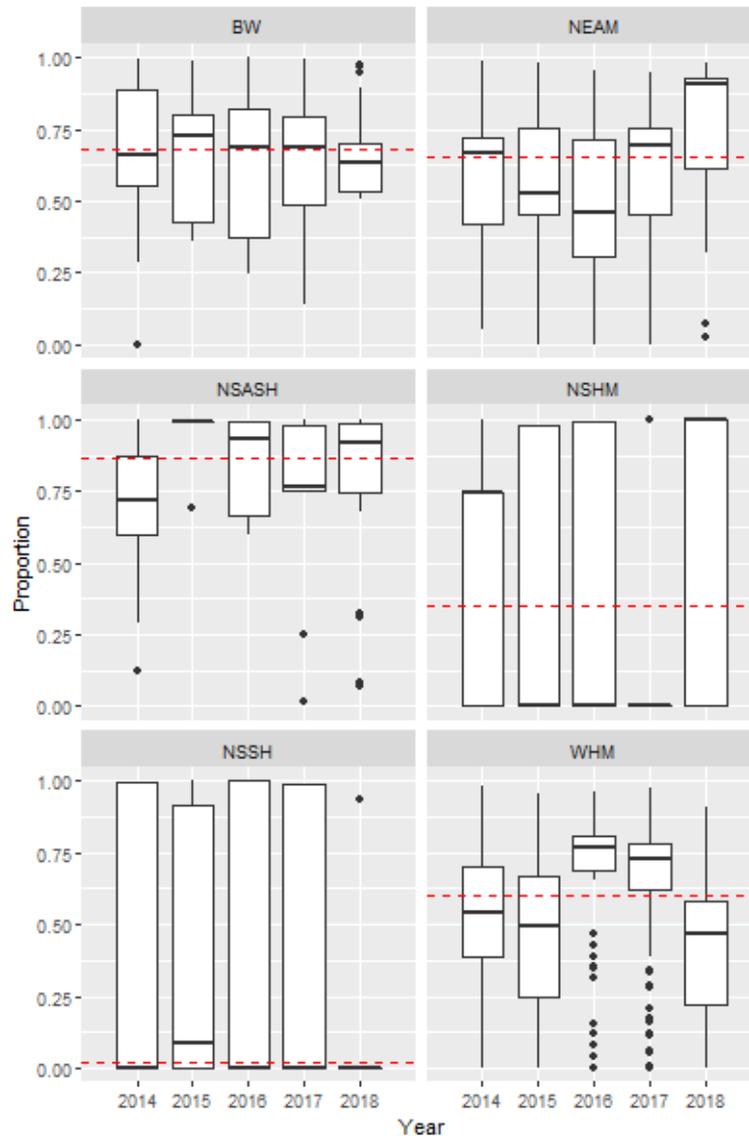


**Fig. 9.7.1** - Scenario 1: Annual proportion of total landings covered by random selection of trips conducted by NL, UKE flagged vessels, selected with equal probability. 3 trips per quarter in each of 2014-2018.

Scenario 2 is similar to the current German observer scheme with vessels operating with German flags included in the sampling frame 8 trips are conducted annually, with 2 trips selected at random from each quarter for sampling (the operational programme actually conducts 4-5 trips per year). The variability in coverage from the random draws is depicted in Fig. 9.7.2 and a summary is given in Table 9.7.1.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic



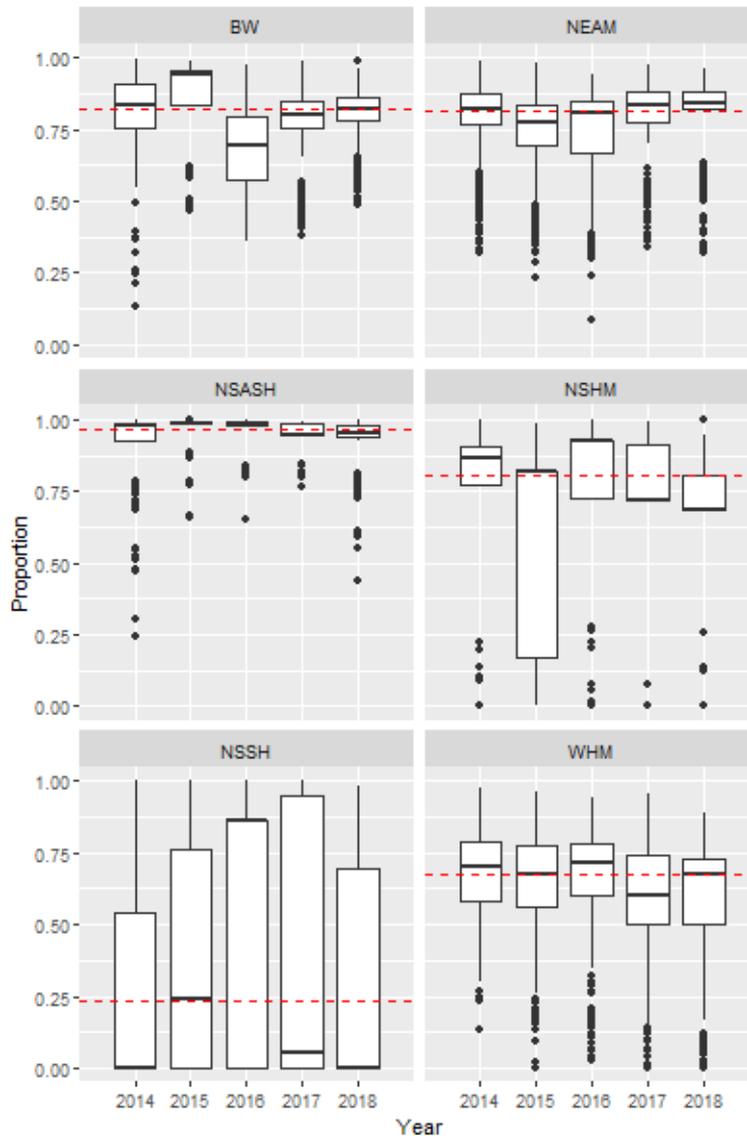
**Fig. 9.7.2** - Scenario 2: Annual proportion of total landings covered by random selection of trips conducted by DE flagged vessels, selected with equal probability. 2 trips per quarter in each of 2014-2018.

Scenario 3 considers the sampling frame to consist of vessels from all three countries *i.e.* it is a simulation of a regionally coordinated approach to sampling. The overall level of sampling effort is maintained such that 5 trips are carried out per quarter. The variability in coverage from the random draws is depicted in Figure 9.7.3. For all stocks, the sampling coverage is significantly improved over that achieved by the separate national programmes (scenarios 1 (Fig. 9.7.1) and 2 (Fig. 9.7.2)). This is particularly true for those stocks with small, spatially and temporally discrete fisheries such as North Sea Horse Mackerel and Norwegian Spring Spawning Herring. It is a greater challenge for a sampling program to achieve coverage of widely dispersed fisheries such as Western Horse Mackerel and this is reflected in the achieved coverage in the by the simulation.

The annual pattern of fishing is relatively constant between years with quarters 2 and 3 typically consisting of Blue Whiting (2) and North Sea Herring (3) trips whereas quarters 1 and 4 are more diverse. Apportioning effort equally on a quarterly basis is therefore unlikely to be optimal.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic



**Fig. 9.7.3** - Scenario 3: Annual proportion of total landings covered by random selection of trips conducted by NL, UKE & DE flagged vessels, selected with equal probability. 5 trips per quarter in each of 2014-2018, similar to the current sampling effort and stratification.

A simulation was conducted splitting the effort on the basis of the diversity of the fleet activity. An alternative sampling effort allocation consisting of 6 sampling trips in Q1, 2 in Q2, 5 in Q3 and 7 in Q4 such that the overall sampling effort remains constant (*i.e.* 20 trips) was also simulated. The results for this scenario (4) indicate that improvements can be achieved for some stocks without impacting on the proportion of the total catch sampled of other stocks (Fig. 9.7.4, Table 9.7.1). The relatively high number of trips (7) in Q4 is necessary to achieve a significant level of coverage for NSSH (Fig. 9.7.4).

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9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

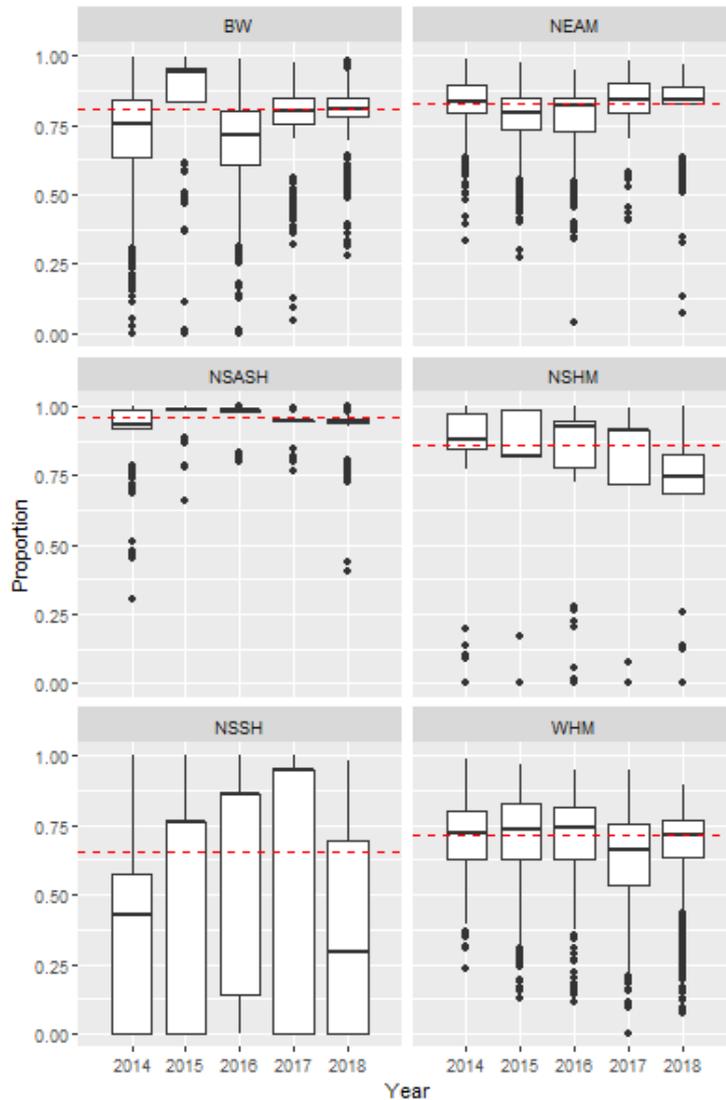


Fig. 9.7.4 - Scenario 4: Annual proportion of total landings covered by random selection of trips conducted by NL, UKE & DE flagged vessels, selected with equal probability. Redistribution of effort to quarters 1 and 4 but maintaining annual effort at 20 trips in each of 2014-2018.

Simulations were also conducted with alternative weighting schemes applied during the random selection (Scenarios 5 and 6). Weighing trips more heavily on the basis of the historic landings of the vessels undertaking the trip or on the diversity of a vessels historic activity (such that those vessels who typically cover a wide range of ICES divisions and stocks during a trip are more likely to be selected) had little impact on the overall coverage achieved (Table 9.7.1).

Table 9.7.1 - summary of the results of the different scenarios for trip-based sampling.

Scenario	Sampling Frame	Samples by Quarter	Trip Weighting	Mean Annual Sampling Coverage Achieved (%)					
				NEAM	BW	NSHM	WHM	NSASH	NSSH
1	NL, UKE	3,3,3,3	Equal	72	78	71	49	95	0
2	DE	2,2,2,2	Equal	66	67	35	61	91	2
3	NL, UKE, DE	5,5,5,5	Equal	82	80	80	67	97	41

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

4	NL,UK,DE	6,2,5,7	Equal	83	81	86	71	96	66
5	NL,UK,DE	6,2,5,7	Landings	83	84	76	74	96	66
6	NL,UK,DE	6,2,5,7	Diversity	82	82	82	75	96	66

#### Vessel-based (Reference Fleet) Sampling

##### Reference Fleet – all vessels

To simulate potential coverage available from a reference fleet a sampling frame consisting of all vessels with fishing activity in each of 2014-2018 was constructed. A reference fleet is then randomly selected and sampling coverage is calculated based on all historic trips conducted by these vessels.

The overall sampling coverage is calculated as the average of the median annual coverage from the 1000 randomly selected reference fleets. A selection of results is shown in the Table 9.7.2.

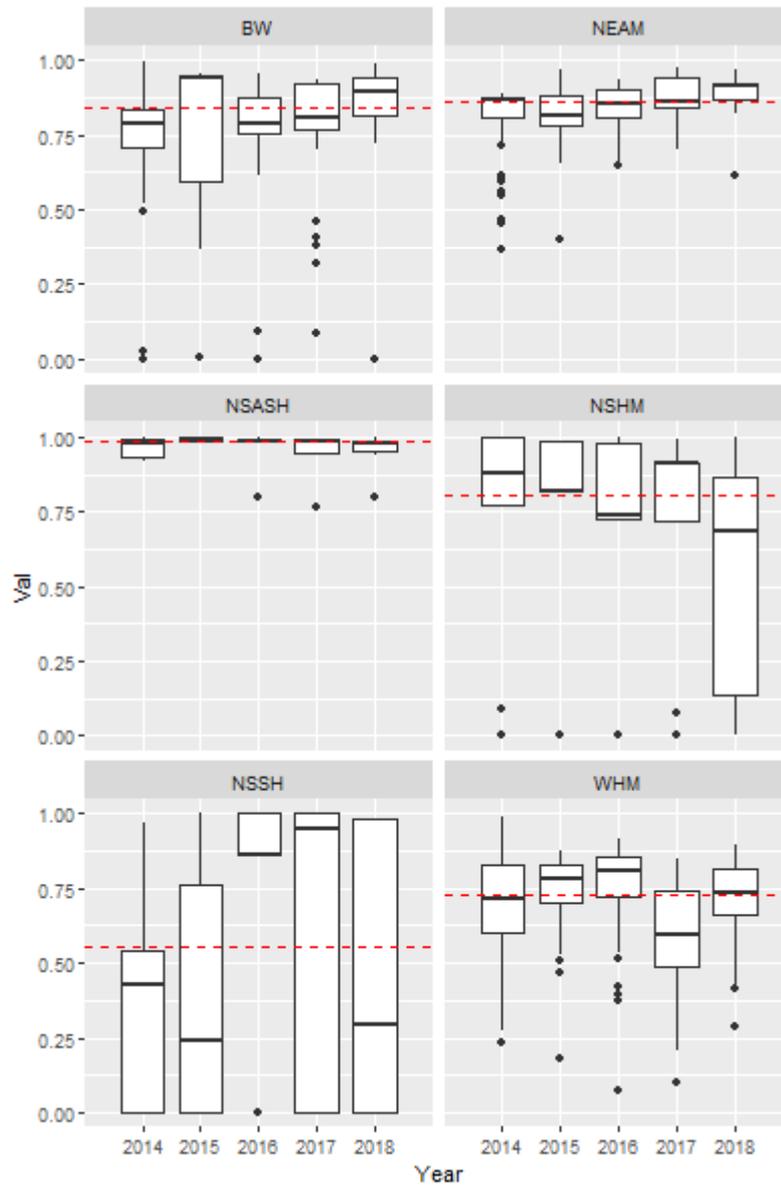
**Table 9.7.2** – selection of results of different scenarios for Reference fleet sampling

Scenario	Sampling Frame	Ref Fleet Size	Sampling Coverage Achieved (%)					
			NEAM	BW	NSHM	WHM	NSASH	NSSH
RF1	NL,UK	3	86	84	81	73	98	55
RF2	NL,UK	4	88	88	85	80	99	55
RF3	NL,UK,DE	4	90	90	83	81	98	74
RF4	NL,UK,DE	3	86	86	78	75	97	65

The use of a reference fleet of 3 or 4 vessels leads to a higher number of sampled trips (vessels typically conduct an average of 10 trips per annual) than from the trip-based observer scheme considered above and consequently a higher proportion of the total catch is sampled. Increasing the size of the reference fleet increases the sampling coverage, a 4 vessel reference fleet will lead to an approximate doubling of the current sample effort. Expanding the sampling frame to include vessels from all 3 countries does not significantly impact the sampling coverage achieved. Figs. 9.7.5 – 9.7.8 indicate the variability in coverage from the reference fleet based simulations.

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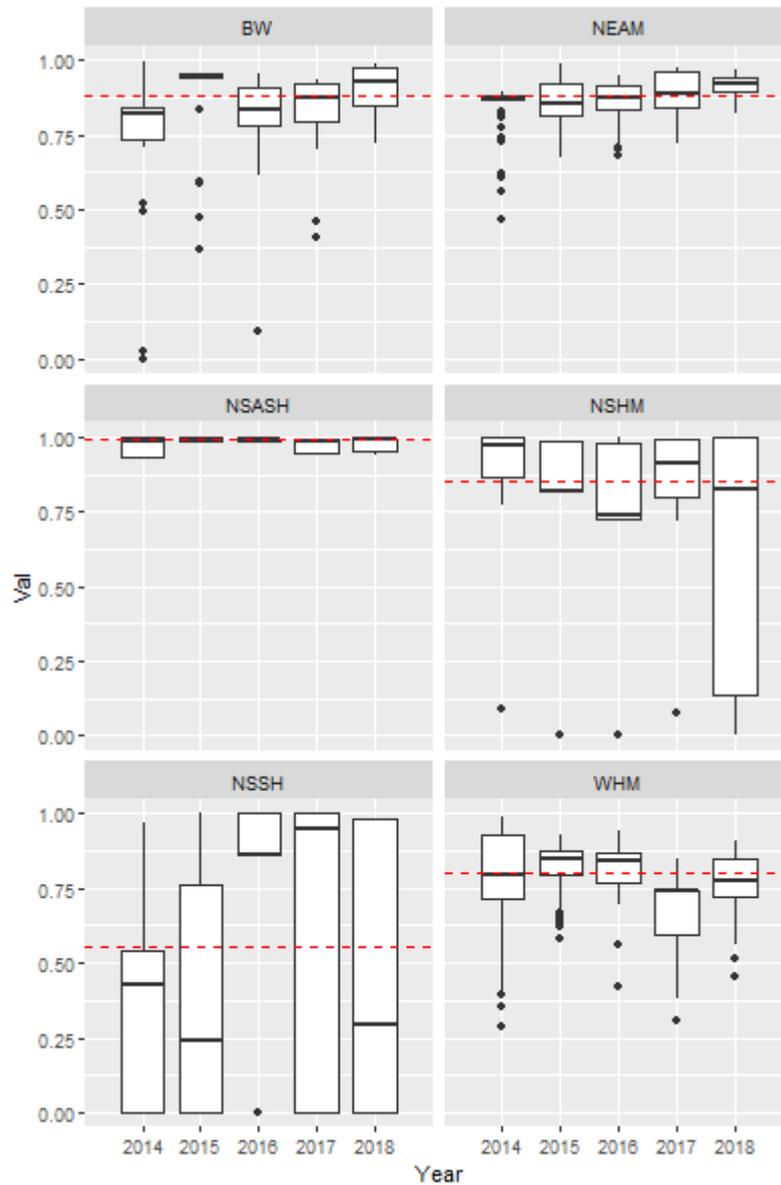
9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic



**Fig. 9.7.5** - Scenario RFI: Annual proportion of total landings covered by random selection of reference fleet consisting of 3 NL & UKE flagged vessels. Red dashed line is the average of the annual medians values.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

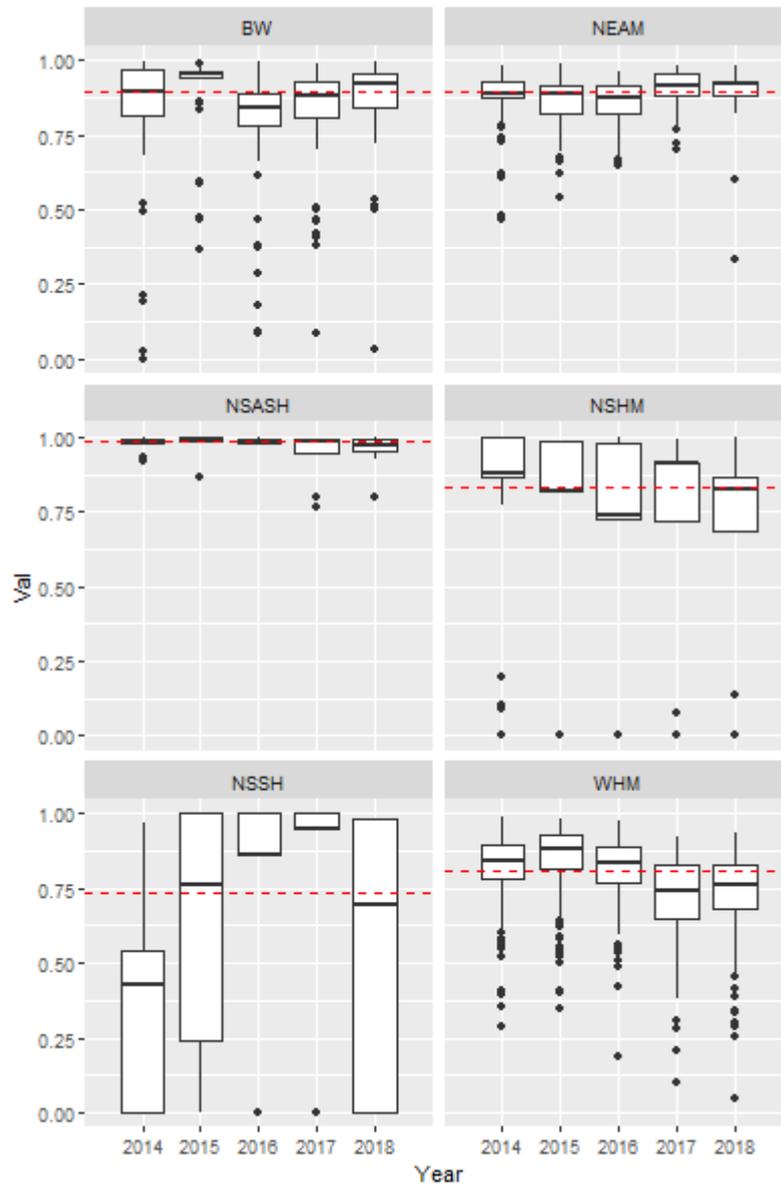
### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic



**Fig. 9.7.6** - Scenario RF2: Annual proportion of total landings covered by random selection of reference fleet consisting of 4 NL & UKE flagged vessels. Red dashed line is the average of the annual medians values.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

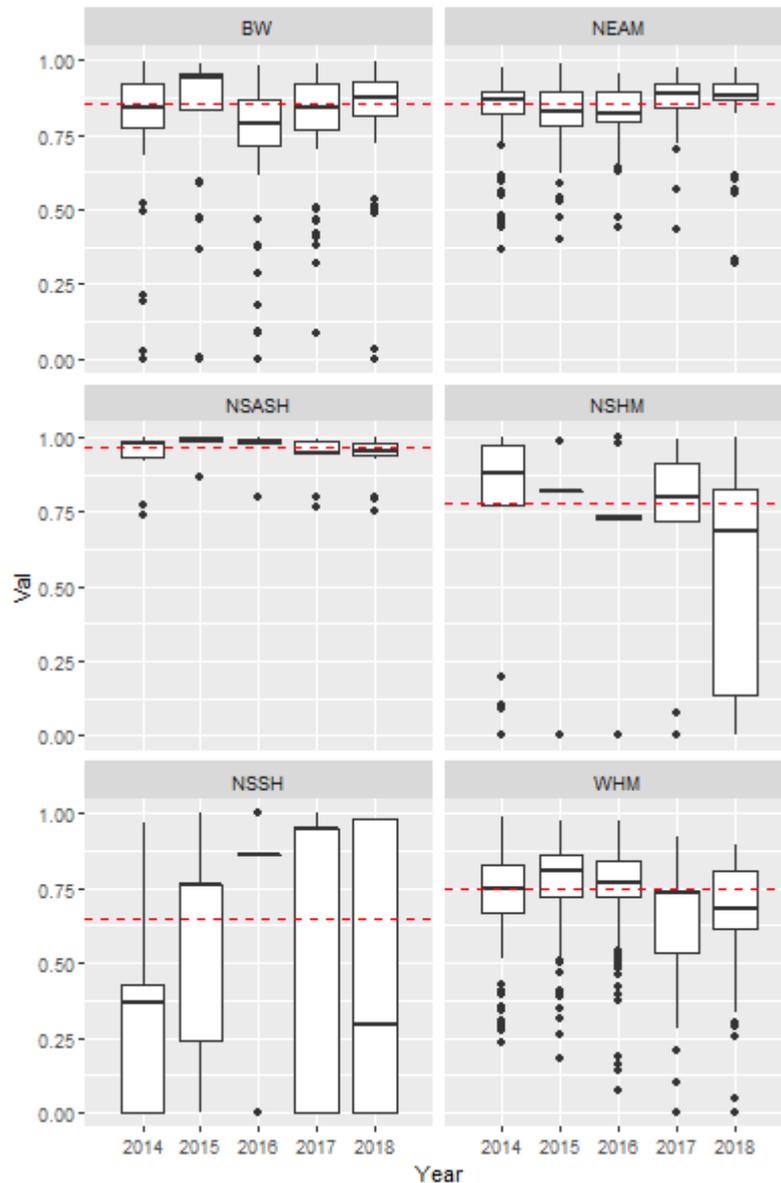
9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic



**Fig. 9.7.7** - Scenario RF3: Annual proportion of total landings covered by random selection of reference fleet consisting of 4 NL, UKE & DE flagged vessels. Red dashed line is the average of the annual medians values.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic



**Fig. 9.7.8** - Scenario RF4: Annual proportion of total landings covered by random selection of reference fleet consisting of 3 NL, UKE & DE flagged vessels. Red dashed line is the average of the annual medians values.

Reference Fleet – top Performing Vessels

The simulations conducted with a 3-vessel reference fleet with 1000 fleets selected at random with equal weighting from the set of vessels with activity in each of 2014-2018 (scenario RF4) were examined to identify those vessels most frequently associated with high levels of sampling coverage. Considering only the reference fleets with sampling coverage in the top 5<sup>th</sup> percentile, the 5 vessels most frequently selected are shown in Table 9.7.3. Also shown are results when coverage of Norwegian Spring Spawning Herring is excluded from the analysis. NSSH has the highest probability of zero coverage given the relatively small size and remote location of the fishery and could potentially be considered for sampling under a separate scheme.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

**Table 9.7.3** – Top 5 vessels most frequently associated with high levels of sampling coverage

Vessel ID	All Stocks	Ex NSSH
NL09	17.2%	12.4%
EN04	11.4%	14.4%
NL08	9.0%	11.1%
NL06	8.8%	8.3%
NL05	7.4%	8.0%

The 5 vessels most frequently associated with high sampling coverage remains unchanged when NSSH is disregarded. This is because, among the selected vessels for sampling coverage of all 6 stocks are those that have historically also taken part in the NSSH fishery (in particular, NL09 in each of 2014-2015). To ensure coverage of the NSSH fishery in any future sampling programme, inclusion of a vessel scheduled to participate in the fishery would be necessary otherwise, simulation results suggest a significant risk of zero coverage. A similar situation applies to North Sea Horse Mackerel for which the UK vessel EN04 has a consistent track record. These vessels have a relatively low trip diversity and landings compared to the larger vessels. However, although the associated trips are relatively short, they continue throughout the year (some vessels operate outside of EU waters during some months), targeting a high proportion of the stocks of interest and therefore are associated with good overall sampling coverage.

## 9.8 Conclusions

Catch sampling for the EU freezer trawler fleet is currently carried out at a national level by Dutch and German programmes. Although a degree of cooperation exists between the programmes, they are distinct, with differing sampling protocols and cannot be considered either fully randomised or harmonised. As a result, overall sampling coverage for the freezer fleet as a whole is unlikely to be optimised for the total allocated resources and is potentially less efficient than a fully coordinated sampling programme.

Based on information submitted in response to a data call for trip level landings by species, an analysis of the fleet structure and its operations indicates

- There are six stocks exploited by the freezer fleet that would be suitable for the development of a regionally coordinated sampling plan. These stocks are exploited by the majority of the fleet flag nations, a follow a traditional pattern of seasonal fisheries.
- The fleet structure is stable with relatively few vessels participating. Annual changes in the participating vessels are minimal.
- The fleet operates from and lands into a small number of readily accessible major ports

Freezer vessels usually target a single species during a fishing trip although this can be changed in real time, depending on the availability of national quota and fishable aggregations of the original trip target species. Mackerel and Western Horse Mackerel are the two stocks most commonly exploited on a single trip as they are both traditional winter fisheries in similar areas. Conversely, North Sea Herring trips rarely land catches of other species.

The potential sampling coverage has been explored by simulation, based on historic trip landings data between 2014 and 2018. Random selection by fishing trip or by vessel has been explored, using effort levels similar to that currently deployed (20 trips per annum, 3 or 4 vessel reference fleet). The selection of trip can be weighted by the historic quarterly share of the total fleet landings of the relevant vessel or its average trip

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

diversity (typical number of stock/area combinations per trip). By conducting 1000 iterations for each scenario, the variability in coverage is investigated.

Current effort levels by the national sampling programmes are relatively evenly spread throughout the year. However, simulations indicate that improvements in coverage can be achieved for the ensemble of stocks by increasing effort in the autumn and winter quarters when more diverse fisheries operate. The summer quarters tend to focus on Blue Whiting (Q2) and North Sea Herring (Q3) both of which have traditionally high catches. All scenarios considered achieved a very high sampling coverage for North Sea Herring as the bulk of the fleet is involved in this fishery throughout quarter 3 in a relatively limited number ICES divisions.

Weighting the selection probabilities for a fishing trip on the basis of the vessel's historic share of landings or average trip diversity has a minimal impact on the sampling coverage achieved for Mackerel, Blue Whiting and the two herring stocks. There is a slight increase in coverage for Western Horse Mackerel, and reduction in North Sea Horse Mackerel probably because this fishery is relatively small compared to the others in terms of total landings and is traditionally carried out by a fixed fleet of 2-3 vessels, which are characterised by low trip diversity and share of total landings and are therefore less likely to be randomly selected under the weighting schemes investigated.

Simulations based on the selection of a reference fleet result in a greater number of sampled fishing trips as vessels typically conduct in the region of 10 trips annually. Increased mean sampling coverage is achieved for most stocks with a reference fleet with the exception of North Sea Horse Mackerel. A 4 vessel reference fleet is required to increase coverage (over the randomised trip selection approach) for Norwegian Spring Spawning Herring. A comparison of the results for simulations based on selection by fishing trip (constant sampling effort and redistributed effort) and 3 or 4 vessel reference fleets is shown in table 9.8.1.

**Table 9.8.1:** Summary of mean sampling coverage for selected simulations.

PSU Type	Sampling Effort	Mean Annual Coverage Achieved (%)					
		NEAM	BW	NSHM	WHM	NSASH	NSSH
Fishing Trip	20 trips (5,5,5,5)	82	80	80	67	97	41
Fishing Trip	20 trips (6,2,5,7)	83	81	86	71	96	66
Vessel	3 vessel reference fleet	86	86	78	75	97	65
Vessel	4 vessel reference fleet	90	90	83	81	98	74

Further examination of the reference fleet results indicates that the vessels associated with the optimal coverage for both individual stocks and alternative combinations (e.g., excluding those most difficult to sample such as Norwegian Spring Spawning Herring) is unchanged. Vessel EN04 is associated with optimal sampling coverage primarily due to a strong track record of participation in the North Sea Horse Mackerel fishery, despite a relatively low share of the historic landings from the fleet and low trip diversity. Trips undertaken by this vessel tend to be relatively short and target a single species. The Dutch vessels that offer the highest potential sampling coverage (NL09, NL08, NL06) all fish throughout the year and exploit all (or the majority) of the stocks under consideration including the Norwegian Spring Spawning Herring. Mean annual sampling coverage for a reference fleets comprising these particular vessels ranges from 83% (NSSH & BW) to 98% (NSASH & NSHOM).

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

## Appendix 9.A: Data Call

### RCG SubGroup Data Request Pelagic Freezer Trawler Trip Level Data

To further progress on the development of regional sampling plans the RCG NA has identified the EU pelagic freezer trawler fleet targeting small pelagics as a potential candidate for a coordinated sampling approach. An RCG subgroup has been established in support of this task and requests trip-level logbook data for all trips departing or landing on a date in the period 01/01/2014 – 31/12/2018.

Data is requested for freezer trawler vessels operating under the national flags of The Netherlands, Germany, UK (England) and France.

All catches, landed into national or foreign ports from FAO area 27 of the following species should be submitted

Common Name	Scientific Name	AphiaID
Atlantic Mackerel	<i>Scomber scombrus</i>	127023
Atlantic Herring	<i>Clupea harengus</i>	126417
Blue Whiting	<i>Micromesistius poutassou</i>	126439
Atlantic Horse Mackerel	<i>Trachurus trachurus</i>	126822
European Sprat	<i>Sprattus sprattus</i>	126425
Greater Argentine	<i>Argentina silus</i>	126715

The data format and examples are given below. All fields are mandatory. Data submissions should be sent to ICES (accessions@ICES.dk) in csv format with filename RCG\_NANSEA\_FT\_CTY\_Vx.csv where CTY is the submitting country code and x is an incremental version number e.g., DEU\_V1.csv. Please use "RCG\_NANSEA\_FT CTY Data Submission" as the subject of the submission email. All data supplied will be used according to the RDB data policy.

175

Field	Variable Name	Description	Format	Code list of example
1	vsIFlgCtry	Vessel Flag Country	Character string of length 3	One of DEU, ENG, FRA, NLD
2	vsIld	Vessel Identifier Anonymous vessel identifier, unique to each Vessel. Use the same identifier for all trips of the vessel, across all years.	Character string of length 8. The first 3 characters will be the 3 letter flag country code, the following 5 will be a numeric string with leading zeroes.	Examples: NLD00012 DEU00421
3	vsLenCls	Vessel Length Class Vessel length class overall (m) DCF LOA classes	Character string of length 6	One of VL0010, VL0012, VLI824, VL2440, VL40XX

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

4	fishTripld	Fishing trip identifier.  Unique anonymous fishing trip identifier	Character string of length 14. The first 3 characters will be the 3 letter flag country code, the following 4 will be the year, the last 7 a numeric string with leading zeroes.	Examples  DEU2015000001 NLD20160002474 END20150056632
5	depDate	Departure date  Departure date of the fishing trip	YYYY-MM-DD Character string of length 10. Numerical year, month, day separated by hyphens.	Finite code list; Examples:  2015-12-05 2016-02-12
6	depLoc	Departure location	Departure Location LOCODE	See <a href="http://www.ices.dk/marine-data/Documents/RDB">http://www.ices.dk/marine-data/Documents/RDB</a> For list of harbour codes
7	landDate	Landing date  Landing date of the fishing trip	YYYY-MM-DD Character string of length 10. Numerical year, month, day separated by hyphens.	Finite code list; Examples:  2015-12-05 2016-02-12
8	landLoc	Landing location	Landing Location LOCODE	See <a href="http://www.ices.dk/marine-data/Documents/RDB">http://www.ices.dk/marine-data/Documents/RDB</a> For list of harbour codes
9	Rect	ICES statistical rectangle recorded for the species landing	Character string of length 4	Fixed code list; Examples  36E5 09E1
10	Area	FAO area codes  Corresponding to highest possible resolution ICES sub-area, area, division.	Character string	Fixed code list; Examples  27.4.a 27.8.c
11	foCatEu6	Métier level 6	Character string with gear, target, mesh and selection device components, underscore separated.	See <a href="http://www.ices.dk/marine-data/Documents/RDB">http://www.ices.dk/marine-data/Documents/RDB</a> For list of métiers
12	sppCode	Species code  The species codes of the recorded landings from the trip	WoRMS Aphia ID  Character string of length 6 or shorter, of numeric values.	See species table
13	sppName	Species name	Accepted WoRMS name corresponding to the Aphia ID.	See species table
14	landWt	Landed Weight	Numeric	



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

9. ISSG Case Study Freezer Trawler Fleet Exploiting Pelagic Fisheries in the Northeast Atlantic

		The live weight equivalent in kg for each species		
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## 10 ISSG Case Study of the Trawl Fishery in Iberian Waters

### Towards a regional sampling plan – Case Study of the trawl fishery in Iberian Waters Regional 2020-2021

#### 10.1 Background

**For 2020-2021, the RCG 2020 report defined the following tasks for this ISSG:**

“Define and implement pilot study, which includes analysing in detail alternative scenarios of RSP and define needed adjustments to agree on a pilot for implementation/testing.”

Tasks to be developed if human resource is hired full-time by the project within the MARE/2020/08 annex I grant: Analyse effects of alternative RSPs on length composition and incorporate these results into the definition of the RSP.

(Alternatively, if a project is not submitted/secured then a workplan for this task needs to be revised and discussed in RCG 2021).”

**For 2021-2022 the Fishn’Co project application proposed the following tasks:**

“An ISSG was set up in RCG NANSEA 2019 and will work in 2020-2021 to continue the previous work by Fishpi and Fishpi2 towards developing a RSP for trawl fishery in Iberian waters. In articulation with the work of the RCG ISSG, the support tasks of the Fishn’Co project will be to evaluate aspects that need to be addressed for a RSP, such as: the need to reevaluate the feasibility, suitability and cost issues of alternative RSPs; and/or the need to analyse effects of alternative RSPs on length composition; and/or the need to implement a pilot study; and/or other relevant needs.”

#### 10.2 Work plan 2020-2021

**Therefore, for the period between RCG meeting 2020 and 2021 the following work plan / timings was considered for the ISSG:**

The work for Fishn’Co and RCG ISSG is the same, and no work will be done (at least in 2021) about lengths. Work will focus on defining a pilot study.

- Mid January 2021: date to be decided, 2h online “starting” meeting to:
  1. Revise in detail what was done in Fishpi2, specifically in relation to the selection of scenarios and the feasibility/suitability issues.
  2. Decide what still needs to be done for defining the pilot study (and splitting of tasks among people):
    - a. any new simulations needed?
    - b. rethinking about feasibility / suitability issues?
    - c. thinking about how to implement (in parallel with current programs or ...?) and when to implement?
  3. Determine new elements to be included and initiate its development, such as:
    - a. sampling protocol
    - b. joint quality framework
    - c. policy for data sharing and use
- During remaining January: Any individual work

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters

- Mid February 2021: date to be decided, 2h online “progress” meeting to:
- Discuss work done and adjust work still needed (and splitting of tasks among people)
- During remaining February: Any individual work.
- Mid March 2021: date to be decided, 2h online “final” meeting to:
  - o Discuss/close work.
- April 2021: write ISSG report.
- 1 May 2021: Work and report of the ISSG needs to be finished.
- June 2021: RCG.

### 10.3 Work achieved 2020-2021

During 2020-2021, team members of this ISSG had limited time to dedicate to the work plan proposed. For this reason, the ISSG decided to dedicate in 2020-2021 on the topics from the work plan that would provide the best relationship between time invested and progress achieved, namely:

i) Revise in detail what was done in Fishpi2, specifically in relation to the selection of scenarios and the feasibility/suitability issues.

The ISSG highlights that the approach of the simulation study (assessing bias and precision) was welcomed as a means to obtain a robust / balanced sampling design. The regional sampling plan to be selected can be based on the best scenarios from project Fishpi2, but with modifications to avoid suitability issues identified in the project. The selected scenarios (S35 – Major ports 90 mix; S55 – major ports 90 mix own; equivalent but with and without sampling of foreign landings) included ports with 90% of landed weight and covered most important trawl fleets in ICES divisions 8c and 9a (1-4 below) but left out one fleet and stocks targeted by it, because it is important in landed value but not as much in landed weight (5 below):

1. Otter bottom trawl in Gulf of Cadiz.
2. Otter bottom trawl in 27.8.c and 27.9.a.n.
3. Pair bottom trawl in 27.8.c and 27.9.a.n.
4. Otter bottom trawl for demersal species in 27.9.a.c.n, 27.9.a.c.s, 27.9.a.s.a.
5. Otter bottom trawl for crustacean species in 27.9.a.c.s and 27.9.a.s.a).

ISSG finds that the RSP should increase ports covered (add two specific ports to cover the fifth fleet not covered) and that the stratification / allocation of sampling effort between institutions / countries needs to consider port (considered in Fishpi2) but also fleet and quarter.

ii) Define a common sampling protocol for the regional sampling plan (topic 3a).

A preliminary version (1.0) of the common sampling protocol (Appendix 10.2) was developed based on the template for commercial sampling programs from ISSG data quality. The common sampling protocol developed by the ISSG Iberia represents an important new element needed for the future implementation of a regional sampling protocol of trawl fisheries in Iberian waters.

This development allowed to identify similarities/differences in current sampling protocols of this fishery by institutions/countries (AZTI, IEO, IPMA) and assess if differences can be changed aiming at similar procedures. The ISSG expects that revised versions of the common sampling protocol may be needed as the work of the ISSG develops.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters

Additionally, aiming at the definition of the pilot study, the ISSG identified elements that will receive no further development (simulations) and on the other hand, elements that will receive development (feasibility / suitability issues - in 2021-2022 - 2023; how / when to implement, joint quality framework, policy for data sharing and use - in 2022-2023).

#### 10.4 Work plan 2021-2022

Team members of this ISSG expect to have (during 2021-2022) limited time to dedicate to the work plan of the ISSG. The ISSG proposes to dedicate in 2021-2022 to the topic:

Define RSP to be implemented in a pilot study and allocation of sampling effort between institutions/countries.

This will imply: Define scenarios for sampling design of the Regional Sampling Plan. In the simulation study of project FishPi2 several scenarios were defined and preferential scenarios were identified based on bias, precision, feasibility and suitability. The selected scenario to be implemented in a pilot study needs to be identified especially taking into account the output from FishPi2 and the sampling protocol. Allocation of sampling effort needs to be defined taking into account the final scenario selected.

In 2021-2022 this work plan will be developed under the scope of Project Fishn'Co.

#### 10.5 Work plan 2022-2023

Team members of this ISSG expect to have (during 2022-2023) limited time to dedicate to the work plan of the ISSG. The ISSG proposes to dedicate in 2022-2023 to the topic:

Design, implement and assess results of pilot study of the regional sampling plan

This will imply:

Define aspects for the implementation of the pilot study (timing, costs, additional adjustments); Implement pilot study during one year; Compare results of the pilot study with results of the national sampling plans.

In 2022-2023 this work plan will be developed under the scope of ISSG Iberia / Project Fishn'Co.

## Appendix 10.1 - Participants and meetings

- **Participants**

Participant	
Rita Vasconcelos (chair)	IPMA, Portugal
Ana Cláudia Fernandes	IPMA, Portugal
Jose Rodriguez	IEO, Spain
Lucia Zarauz	AZTI, Spain – Basque Country

- **Meetings**

ISSG work: December 8 2021, April 23 2021, May 19 2021, May 26 2021.

Others:

Related to ISSG “Optimized and Operational Regional Sampling Plans” (Umbrella Group)

February 8 2021 – Meeting of ISSG Iberia to provide reply to ISSG Umbrella group

Several dates – Participation of chair of ISSG Iberia in meetings of ISSG Umbrella group and of ISSG case study Baltic small pelagics

Related to Project Fishn’Co “Strengthening Regional cooperation in the area of fisheries data collection”

Several dates – Participation of chair of ISSG Iberia in meetings of Project Fishn’Co (during proposal and implementation stages of the project)

## Appendix 10.2 – Sampling protocol

### Commercial Catch Sampling Summary

The following information should be provided by the person completing this template.

Document created date:	2021/06/18
Most recent document review date:	Version 1.0 - 2021/06/18
Contact name:	Ana Cláudia Fernandes, José Rodriguez, Lucia Zarauz, Rita Vasconcelos
Contact email:	acfernandes@ipma.pt, jose.rodriguez@ieo.es, lzarauz@azti.es, rita.vasconcelos@ipma.pt

#### 1. Purpose and scope of this document

The purpose of the template is to increase transparency by allowing all countries to provide metadata on the purpose and design of their commercial catch sampling programmes in a standard way.

It is intended to be used as a high level summary of a program and is aimed at users of the data who need to understand how it was collected. It is not intended that all details of a program will be provided in this document - references and links should be provided to more detailed documentation as required e.g. detailed sampling protocols, or published guidelines and best practice.

**There should be one template completed by a country or institute for each type of sampling program it runs** e.g. one document for their at-sea observer program, one document for their market sampling program etc.

Please note:

- The meaning of the statistical terms used in this report follow ICES WKPICS1 REPORT 2011 <https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2011/WKPICS1/WKPICS%20report%202011.pdf>
- Information relating to the ICES Regional Database & Estimation System (RDBES) can be found at <https://github.com/ices-tools-dev/RDBES>
- Where possible links have been provided to ICES vocabularies – using values from these lists in your answers will make it easier to compare different sampling programmes.

#### 2. Programme

overview

##### 2.1. Program name

[The name of this sampling program. **It is very important to maintain consistent naming of the program so please ensure this name matches other reference sources** such as data submitted to the RDBES, and EU national work-plans (where relevant)]

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

#### Regional sampling plan for Iberian bottom trawl fisheries

#### 2.2 The objective of this commercial catch sampling program

*[A brief description of the purpose of this program - for example onshore-sampling to obtain data to estimate landed catch by species, length-composition, catch in numbers by age, and mean weight of fish by size/age; or at-sea sampling to estimate by-catch.]*

On-shore sampling to obtain data to estimate length-composition

#### 2.3 Spatial coverage and temporal resolution

*[Include a summary of the areas sampled (can include a map if desired) , and the time of year and frequency of the sampling]*

Spatial coverage: ICES divisions 8c and 9a.

Time of year: All year.

Frequency of the sampling: Sampling occurs throughout the year, with sampling effort allocated to each quarter. Distribution of sampling days within each quarter follows a systematic coverage of months or weeks but with random or quasi-random selection of sampling days.

183

#### 2.4 Stocks targeted

*[If the sampling program targets a small group (<10) of stocks list the ICES stock codes here. For broader sampling programs describe the target (e.g. all commercial fish)]*

All commercial species.

#### 2.5 Known quality issues

*[Highlight any known quality issues with the data e.g. discard data from 1995 – 2000 is not generally considered suitable for use in assessment or analyses.]*

#### 2.6 Time-series

*[Include a brief summary of the existing time-series (first survey year, e.g. 1994–present), including some brief information about significant changes in the methods over time that might affect the consistency of the time-series (e.g. ad-hoc sampling until 2015 thereafter probabilistic). Use a table for your answer if helpful e.g.*

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Time period	Description
1980s - 1990s - 2002 - 2009 - present	Portugal - IPMA - Since 1980s to present but in different sub - time periods there were different sampling strategies and designs. Major breakpoints between such sub - time periods are 1980s (national funding) - 1990s (international funding) - 2002 (DCF species focus sampling strategy) - 2009 (DCF concurrent campling strategy) - present.
1982 - present	Spain - IEO. The sampling network started in 1982 in the 8c and 9aN, and in 1994 in the 9aS (Gulf of Cadiz)
1986 - present	Spain Basque Country - AZTI - Since 1986 but in different sub - time periods there were different sampling strategies and designs.

### 3. Sampling design

#### 3.1. Organisations conducting the sampling

*[List all organisations sampling data. Identify any bilateral/multi-lateral agreements – for sampling conducted under these agreements it is preferred if only one country fully completes this form and other countries then refer to it. Identify RCG region when relevant. Use a table for your answer if helpful e.g.*

Organisation	Country <a href="http://vocab.ices.dk/?ref=337">http://vocab.ices.dk/?ref=337</a>	Bi-lateral / multi-lateral agreement partners	RCG region <a href="http://vocab.ices.dk/?ref=1640">http://vocab.ices.dk/?ref=1640</a> (if relevant)
IPMA - Instituto Português do Mar e da Atmosfera	PT - Portugal		North Atlantic
IEO - Instituto Español de Oceanografía	ES - Spain		North Atlantic
AZTI	ES-PV - Spain-Basque Country		North Atlantic

184

#### 3.2. Sampling scheme type

Sampler affiliation	Location	Y/N
Observer	On-shore	Y
Self-sampling	On-shore	N
Control	On-shore	N



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

#### 3.3. ICES Regional Database & Estimation System (RDBES) Upper Hierarchy

[Specify which ICES RDBES Upper Hierarchy is used for data submission, if known. More details available at <https://github.com/ices-tools-dev/RDBES>]

From “Documentation of the Regional Database and Estimation System Data Model - RDBES Data model doc. v. 1.18 - 15 June 2020”:

“Hierarchy 4 Sampling by selecting from location\*time (e.g., harbour-day), then from Fishing Trips, then from Landing Events from those Fishing Trips.

(...)

Hierarchy 5 Sampling by selecting from location\*time (e.g., harbour-day) as primary sampling unit, then from Landing Events as the secondary sampling unit.”

The two upper hierarchies are quite similar, except that “4” requires the identification of a Fishing Trip to which a Landing Event belongs, whereas “5” does not. In the current national sampling programs, Spain (IEO) and Spain-Basque Country (AZTI) implement Upper Hierarchy “4”, and Portugal (IPMA) implements Upper Hierarchy “5”. Therefore, in this sampling programme the most suitable Upper Hierarchy seems to be “5” and not “4” since it is not always possible to identify the Fishing Trip to which a Fishing Trip belongs.

#### 3.4. Target population

[Brief text description e.g., all demersal fish landed into England and Wales for which estimates of length or age composition is required]

All commercial species (fish, crustaceans, cephalopods, etc.) landed by Portuguese and Spanish bottom trawl vessels at Portuguese and Spanish ports of ICES divisions 8c and 9a.

#### 3.5. Sampling frame

[Brief text description e.g., List of English and Welsh  $\geq 10$ m vessels predominantly using shrimp beam trawls]

List of ports\*days with landings from bottom trawlers:

- List of days includes all weekdays (only Mondays and Thursdays in Spain-Basque country).

- List of ports includes the main portuguese and spanish ports of ICES 8c and 9a that together comprise 90% of landed weight and number of trips (i.e. scenarios 35 “Major Ports 90 Mix” and 55 “Major Ports 90 Mix Own” selected in simulation study of project Fishpi2) plus additional ports until major ports for all five important fleets are covered:

- Otter bottom trawl in Gulf of Cadiz;

- Otter bottom trawl in 27.8.c and 27.9.a.n;

- Pair bottom trawl in 27.8.c and 27.9.a.n;



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Otter bottom trawl for demersal species in 27.9.a.c.n, 27.9.a.c.s, 27.9.a.s.a;

Otter bottom trawl for crustacean species in 27.9.a.c.s and 27.9.a.s.a).

This selection resulted in a list of ports (see table below) that comprises 98% of landed weight and 93% of number of trips below. Minor ports are not sampled.

ctryCode	locName	loCode
ESP	La Coruña	ESLCG
ESP	Santa Eugenia de Riveira	ESSNI
ESP	Aviles	ESAVS
ESP	Gijón	ESGIJ
ESP	Burela	ESBRL
ESP	Cillero	ESCIO
PRT	Aveiro	PTAVE
PRT	Nazaré	PTNZR
ESP	Muros	ESMRS
PRT	Peniche	PTPEN
ESP	Camariñas	ESIAS
PRT	Figueira da Foz	PTDFD
ESP	Ondarroa	ESOND
ESP	Vigo	ESVGO
PRT	Matosinhos	PTMAT
PRT	Portimao	PTPRM
ESP	Pasajes	ESPAS
ESP	Mugia	ESMGA
ESP	Corme	ESCOX
PRT	Sesimbra	PTSSB
ESP	Santander	ESSDR
ESP	Marin	ESMPG
PRT	Sines	PTSIE
PRT	Vila Real de Santo António	PTVRE



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

#### 3.6. Under coverage of the sampling frame

*[Summarise any population components excluded from sampling e.g. vessels excluded for health & safety reasons; vessels below a certain size; ports with few landings; landing sites where considerable effort would be required to sample very small amounts. (Please don't list vessel names) ]*

Minor ports are not sampled. See 3.5.

Foreign landings are not sampled. See 3.12.

#### 3.7. Sampling units

*[Brief description of the primary sampling units (PSU) (e.g., vessel-trips, port-day) and lower level sampling units within PSUs (e.g., fishing operations within vessel-trips for at-sea sampling programs, or vessel-trips in port-days, fish boxes for on-shore sampling programs). Note that if data from this program is being submitted to the RDBES then that should include full information on sampling units.]*

Primary Sampling Unit: Port-day

Secondary Sampling Unit: Vessel-trip (RDBES Upper Hierarchy 4) / Landing-event (RDBES Upper Hierarchy 5)

#### 3.8. Stratification of Primary Sampling Units (PSU)

*[Describe the stratification of the sampling frame of primary sampling units (e.g., quarter, area, gear, vessel size etc.). Note that if data from this program is being submitted to the RDBES then that data should include full information on stratification.]*

Port. Only major ports are sampled (90% of landed weight and number of trips in the region), Minor Ports are not sampled. In the simulation study of project Fishpi2 only this stratification was considered.

Fleet (Otter bottom trawl in Gulf of Cadiz; Otter bottom trawl in 27.8.c and 27.9.a.n; Pair bottom trawl in 27.8.c and 27.9.a.n; Otter bottom trawl for demersal species in 27.9.a.c.n, 27.9.a.c.s, 27.9.a.s.a; Otter bottom trawl for crustacean species in 27.9.a.c.s and 27.9.a.s.a).

Quarter.

#### 3.9. Effort allocation

*[The coverage of the sampling frame of the target population and temporal resolution of the sampling of PSUs (time of year; frequency), and an explanation for the effort allocation.]*

Allocation of effort (i.e. of number of PSU) to each fleet \* port \* quarter is based on the number of port \* days from reference year (usually year n-2).





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Scenarios 35 and 55 from simulation study in project FishPi2 include 304 PSU which is 80% of a reference effort of 380 PSU (considered as a measure of current sampling effort for this fishery in the national sampling plans of Spain and Portugal together). This reduction was considered since the simulation study suggested little increase in data quality from 80% to 100% of a reference effort of 380 PSUs.

#### 3.10. Selection methods

*[Describe how units are selected within a PSU (e.g., selection of fishing operations within a trip in at-sea sampling programs ; selection of a vessel-trips within a port-day ; selection of boxes within market categories on a market-day visit). Use ICES vocabulary <https://vocab.ices.dk/?ref=1637> Note that if data from this program is being submitted to the RDBES then that data should include full information on selection methods.]*

1. Within a PSU (Port-day), each SSU (Fishing Trip / Landing Event) is selected in a quasi-random manner, which can be done in one of these manners, depending on the institute / country / port / fleet:
  1. in each port\*day, the selection of Fishing Trips / Landing events is based on a previously defined daily list (permutation of vessels without repetition / replacement). Each port\*day uses a list created independently from the other port \* days.

Applies to AZTI-Spain-Basque country.

2. at the start of each port\*day, the selection of Fishing Trips / Landing Events is based on a previous random selection of the location of the boxes in the port. Each port\*day uses a selection independent from the other port \* days.

Applies to IEO-Spain

3. in each port\*day, the selection of Fishing Trips / Landing Events is based on a random selection of vessels from the pre-sales notes / list of vessels that landed in that port\*day. Each port\*day uses a selection independent from the other port \* days.

Applies to IPMA-Portugal except port “Vila Real de Santo António” / fleet “Otter bottom trawl for crustacean species in 27.9.a.c.s and 27.9.a.s.a”

4. in each port\*day, only one Fishing Trip / Landing Event is sampled, based on a predefined annual list (permutation of vessels without replacement). This procedure was defined together with the fisheries sector.

Applies to IPMA-Portugal / Port “Vila Real de Santo António” / Fleet “Otter bottom trawl for crustacean species in 27.9.a.c.s and 27.9.a.s.a”

2. The number of PSU (port\*day) per fleet/port/quarter is defined a priori, and the number of SSU (Fishing Trip / Landing Event) per port\*day can be either not defined or defined (depending on institute / country).
3. After the selection of the SSU (Fishing Trip / Landing Event), all species and commercial categories are sampled, by selecting at least one box from each species \* commercial category and as many individuals / boxes as needed until a mode is identified in the length frequency distribution obtained.

In general it is possible to randomly select any box in the port for sampling, but in some ports this is not possible and it is only possible to sample the top box from a tower of boxes (AZTI-Spain-Basque country, and IEO-Spain one/some of the ports).





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Note about species: It often occurs that the commercial species assigned in the sales note is not the same as the species identified by the observer. In the case of IPMA, both types of information (official species and sampled species) are recorded by the observer for each box sampled; in the case of AZTI-Spain-Basque Country and IEO-Spain this information is not recorded by observers, but sales notes include information on official species in the trip.

#### 3.11. Recording of non-responses and refusals

*[Are non-responses and refusals recorded? How often do these occur? Are they random or is there a pattern?]*

Recording of refusals in onshore sampling is desirable for this sampling programme, namely at the PSU and SSU level. However, whereas for onboard sampling this is currently implemented at the trip-level in the institutes-countries involved, in the case of onshore sampling it is not currently implemented in a standardized manner. Therefore, no information on patterns of refusals can be provided.

Implementing this type of recording will require an adaptation period.

#### 3.12. Risks and mitigations

*[Are there known problems with acquiring satisfactory data (e.g. samplers not having access to landings) if so briefly describe them, along with any mitigations put in place.]*

There are some current limitations that deserve attention in the future, but it is not guaranteed that it will be possible to solve it:

- In Cadiz, port sampling is not possible and is replaced by onboard sampling.
- Landings of foreign vessels are not sampled.

189

#### 3.13. Further information on sampling design

*[Insert references and links to any other publicly available documents related to the sampling plan (e.g. detailed sampling protocols published on an institute's web-site).]*

## 4. Biological sampling protocols

### 4.1. Species selection strategy

*[Describe the strategy used to select the species for this program (e.g., all fish species, all demersal fish in the commercial landings are sampled for biological data, all pelagic, all benthic fauna included or a specific list). For self-sampling programs include the requested sample size. Note that if data from this program is being submitted to the RDBES then that data should include full information on species selection. Different species can be sampled for different biological parameters and this should be noted in the following sections. Different processes might be used for samples from different areas – again please note this in the sections below.]*

Length sampling follows a concurrent sampling strategy, i.e. all species are sampled, but with some differences between institutes-countries.

- a) A difference in protocol of national sampling programs currently implemented by institutes-countries is that IEO-Spain implements a sampling strategy for length sampling that is not fully





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

concurrent, since a list of about 70 species is used that sets a priority order for species and excludes from length sampling species that are rarely landed (i.e. species with 1-10 individuals measured per year - in years when full concurrent was implemented). For the remaining species only landed weight is recorded. This priority order is:

-Nine priority species: ANE, ANF (ANK, MON), HKE, JAX (HMM, JAA, HOM), LEZ (LDB, MEG), MAC, NEP, PIL, WHB

-priority 1: ARU, ARY, BXD, BYS, GUR, COE, BSS, CET, GUG, GAG, SHO, WIT, BRF, SFS, RJN, SQR, MKG, LEM, BLI, LIN, MUR, OCC, SBR, DPS, GFB, POL, RJC, RJM, VMA, SYC, CTC, SOL, BIB, POD, JOD

-priority 2: BOG, CBC, CTZ, GUU, GUM, CIL, EOI, EDT, SQM, SQF, MIA, SLI, MUT, SBA, TGS, BON, EJE, IAR, MTS, SQE, TDG, GUN

-priority 3: Other rays and shark species.





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Especie	A3	Prior.	Areas.RIM
<i>Argentina silus</i>	ARU	G1	Todas las areas
<i>Argentina sphyraena</i>	ARY	G1	Todas las areas
<i>Beryx decadactylus</i>	BXD	G1	Todas las areas
<i>Beryx splendens</i>	BYS	G1	Todas las areas
<i>Boops boops</i>	BOG	G2	8, 9aN
<i>Cepola macrophthalma</i>	CBC	G2	8c, 9a
<i>Chelidonichthys cuculus</i>	GUR	G1	Todas las areas
<i>Trigloporus lastoviza</i>	CTZ	G2	8, 9a
<i>Chelidonichthys lucerna</i>	GUU	G2	Todas las areas
<i>Chelidonichthys obscurus</i>	GUM	G2	8, 9a
<i>Otharus linguatula</i>	OL	G2	9a
<i>Conger conger</i>	COE	G1	Todas las areas
<i>Dicentrarchus labrax</i>	BSS	G1	Todas las areas
<i>Dicologlossa cuneata</i>	CET	G1	8c, 9a
<i>Eledone cirrhosa</i>	EOI	G2	Todas las areas
<i>Eledone moschata</i>	EDT	G2	9aS
<i>Engraulis encrasicolus</i>	ANE	EP	8, 9a
<i>Eutrigla gurnardus</i>	GUG	G1	Todas las areas
<i>Galeorhinus galeus</i>	GAG	G1	9aS
<i>Galeus melastomus</i>	SHO	G1	8c, 9a
<i>Glyptocephalus cynoglossus</i>	WIT	G1	7, 8abd
<i>Helicolenus dactylopterus</i>	BRF	G1	Todas las areas
<i>Illex coindetii</i>	SQM	G2	Todas las areas
<i>Lepidopus caudatus</i>	SFS	G1	8c, 9a
<i>Lepidorhombus boschii</i>	LDB	EP	Todas las areas
<i>Lepidorhombus whiffiagonis</i>	MEG	EP	Todas las areas
<i>Leucoraja naevus</i>	RJN	G1	Todas las areas
<i>Loligo forbesii</i>	SQF	G2	Todas las areas
<i>Loligo vulgaris</i>	SQR	G1	Todas las areas
<i>Lophius budegassa</i>	ANK	EP	Todas las areas
<i>Lophius piscatorius</i>	MON	EP	Todas las areas
<i>Merluccius merluccius</i>	HKE	EP	Todas las areas
<i>Microchirus azevia</i>	MIA	G2	9a
<i>Microchirus variegatus</i>	MKG	G1	Todas las areas
<i>Micromesistius poutassou</i>	WHB	EP	Todas las areas
<i>Microstomus kitt</i>	LEM	G1	Todas las areas

Especie	A3	Prior.	Areas.RIM
<i>Molva dypterygia</i>	BLU	G1	Todas las areas
<i>Molva macrophthalma</i>	SUJ	G2	7, 8, 9aCN
<i>Molva molva</i>	LIN	G1	Todas las areas
<i>Mullus barbatus</i>	MUT	G2	9aS
<i>Mullus surmuletus</i>	MUR	G1	Todas las areas
<i>Nephrops norvegicus</i>	NEP	EP	Todas las areas
<i>Octopus vulgaris</i>	OCC	G1	Todas las areas
<i>Pagellus acame</i>	SBA	G2	8, 9a
<i>Pagellus bogaraveo</i>	SBR	G1	Todas las areas
<i>Parapenaeus longirostris</i>	DPS	G1	9aS
<i>Penaeus kerathurus</i>	TGS	G2	9aS
<i>Phycis blennoides</i>	GFB	G1	Todas las areas
<i>Pollachius pollachius</i>	POL	G1	Todas las areas
<i>Raja clavata</i>	RJC	G1	Todas las areas
<i>Raja montagui</i>	RJM	G1	Todas las areas
<i>Sarda sarda</i>	BCN	G2	8c, 9a
<i>Sardina pilchardus</i>	PIL	EP	Todas las areas
<i>Scomber colias</i>	VMA	G1	8, 9a
<i>Scomber scombrus</i>	MAC	EP	Todas las areas
<i>Scyliorhinus canicula</i>	SYC	G1	Todas las areas
<i>Sepia elegans</i>	EJE	G2	8, 9a
<i>Sepia officinalis</i>	CTC	G1	8, 9a
<i>Sepia orbignyana</i>	IAR	G2	8, 9a
<i>Solea solea</i>	SOL	G1	8, 9a
<i>Squilla mantis</i>	MTS	G2	9aS
<i>Todarodes sagittatus</i>	SQE	G2	8c, 9a
<i>Todaropsis eblanae</i>	TDQ	G2	8c, 9a
<i>Trachurus mediterraneus</i>	HMM	EP	8, 9a
<i>Trachurus picturatus</i>	JAA	EP	8, 9a
<i>Trachurus trachurus</i>	HOM	EP	Todas las areas
<i>Trigla lyra</i>	GUN	G2	8, 9a
<i>Trisopterus luscus</i>	BIB	G1	Todas las areas
<i>Trisopterus minutus</i>	POD	G1	Todas las areas
<i>Zeus faber</i>	JOD	G1	Todas las areas
Resto de rayas/tiburones		G3	

- b) Another difference in protocol of national sampling programs currently implemented by institutes-countries is that AZTI-Basque country covers fish, elasmobranchs and cephalopods but does not cover other species such as bivalves, gastropods and crustaceans. This is because such other species are not targeted by the fleets operating in Spain-Basque country.
- c) Another difference in protocol of national sampling programs currently implemented by institutes-countries is that IPMA-Portugal one important species in this fishery (horse mackerel - *Trachurus trachurus* - HOM) is sampled through a sampling strategy focused on commercial size category, and not through the concurrent sampling strategy.





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

#### 4.2. Sub-sampling procedure

*[Is the weight of the whole catch or just a component of it being recorded. Are catch and/or box weights measured or estimated? Are conversion factors used? Are fish weighed either whole, gutted or by individual components <https://vocab.ices.dk/?ref=1642> . This information might vary by species.]*

*Is the weight of the whole catch or just a component of it being recorded.*

This commercial catch sampling programme is implemented on shore, and covers landings / landed fraction of the catch. The objective of the sampling programme is to sample lengths.

*Are catch and/or box weights measured or estimated?*

In a sampled Fishing Trip / Landing Event:

Total landed weight per species \* commercial size category is obtained from the sales notes. AZTI-Basque country also records it from the total weight available directly at the auction, when possible.

Weight of boxes sampled for length of a species \* commercial size category is:

- recorded by observers based on the information that is written in the sales notes (IPMA-Portugal)
- or recorded by observers based on the information that is written in each box (IEO-Spain, AZTI-Spain-Basque country). If there is no information written in the box, the weight is estimated based on:
  - length-weight relationship (AZTI-Spain-Basque country and IEO)
  - estimated by multiplying the reference weight per box \* species by the number of boxes of the species). And this is checked against sales notes and logbooks (if available) in the quality control procedure to detect sampling bias (IEO)

If sub-sampling of lengths in a box is done (i.e. not all of the individuals in a box are sampled) then the weight of the sub-sample is measured with a scale/dynamometer (IPMA-Portugal) or it is estimated from the length-weight relationship of the species in the box (AZTI-Spain-Basque country, IEO-Spain).

*Are conversion factors used? Are fish weighed either whole, gutted or by individual components <https://vocab.ices.dk/?ref=1642>*

Some differences in procedure were found that indicate that further information may be needed to adequately document and standardize this topic. For instance:



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

-Conversion factors are used in data recorded of each Fishing Trip / Landing Event (AZTI-Spain-Basque country, IEO-Spain) - e.g. weight of a species that is landed and sampled as gutted is recorded as whole weight estimated from gutted -whole weight relationship

-No conversion factors are used in data recorded of each Fishing Trip / Landing Event (IPMA-Portugal); but conversion factors are used in some cases for transversal data (Portugal).

#### 4.3. Length sampling

*[Specify if lengths are taken for every PSU or just for selected PSUs (provide details). Are the PSU's length stratified (e.g. if a sample comes from market and has been size classified) or non-stratified? Number of fish/boxes (or other units/methods) to be measured by PSU; description of how the lengths are measured for each species (e.g., fork-length, total length <https://vocab.ices.dk/?ref=1606>) and if estimated provide details, and accuracy, (e.g. by 1 cm or 0.5 cm <https://vocab.ices.dk/?ref=1608>). This information might vary by species.]*

*Specify if lengths are taken for every PSU or just for selected PSUs (provide details).*

Length sampling is done for every selected Primary Sampling Unit (port \* day), every selected Secondary Sampling Unit (Fishing Trip / Landing Event) and every Tertiary Sampling Unit (Species\*Commercial size category).

193

*Are the PSU's length stratified (e.g. if a sample comes from market and has been size classified) or non-stratified?*

Each landed species is usually sorted by commercial size category and, in this case, all commercial size categories of a species are sampled for length.

In some cases, sampling is done while boxes are being weighed and sold (otherwise there is insufficient time for sampling) therefore before a commercial species and category is assigned to each box; in those cases sampling is not stratified by commercial size category. This occurs at least for IPMA-Portugal.

*Number of fish/boxes (or other units/methods) to be measured by PSU*

The rule of thumb is to sample a number of individuals enough to get a defined length frequency distribution (or at least modal class) per species \* commercial size category.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Description of how the lengths are measured for each species (e.g., fork-length, total length <https://vocab.ices.dk/?ref=1606> ) and if estimated provide details, and accuracy, (e.g. by 1 cm or 0.5 cm <https://vocab.ices.dk/?ref=1608> ). This information might vary by species.

Length type:

	AZTI-Spain- Basque country	IEO-Spain	IPMA-Portugal
Fish	total length	mostly total length	total length, except for: species with rigid caudal fin - fork length; species with pronounced upper jaw - length between lower jaw and caudal fin fork; species with pronounced upper and lower jaw - length between posterior edge of eye and caudal fin tip; species with fragile or undefined caudal length - pre-anal length
Rays	total length and total width (wings)		
Other elasmobranchs	mostly total length, except for species with pronounced upper jaw – length between the lower jaw and caudal fin fork.		
Molluscs - Cephalopods	mantle length, except for octopus - total weight	mantle length	mantle length, except for octopus - total weight
Molluscs - bivalves and gastropods	-	shell length	
Crustaceans	-	cephalothorax length or carapace length, except for: crabs - carapace width	

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Length unit:

	AZTI-Spain- Basque country	IEO-Spain	IPMA-Portugal
Fish	1cm, except for ANE and PIL: 0.5cm		1cm, except for: bony fish species usually below 20cm (e.g. small pelagics as ANE PIL, small flatfishes as MKG MSF, small Triglidae as LDV LEP, and others as boarfish BOC, snipefish SNS, and others GDG, TOZ, not WHB) - 0.5cm.
Rays			
Other elasmobranchs			
Molluscs - Cephalopods	mantle length 1cm, except for octopus - total weight 1g	mantle length 1cm	mantle length 1cm, except for octopus - total weight 1g
Molluscs - bivalves and gastropods	-	1mm	
Crustaceans	-		

4.4. Fish weight sampling

*[Specify if weight measurements of individual fish are taken for every PSU or selected PSU and provide details. Are the PSU's weight stratified (e.g if a sample comes from market fish are size classified) or non-stratified? Number of fish/boxes (or other units/methods) to be measured by PSU for weight-composition; description of how the weights are measured for each species (e.g. individual measurements recorded or average from subsample weight divided by number of fish in the subsample). This information might vary by species.]*

See sections above. The objective of the sampling programme is to characterize the biological variable length. No individual weights or other biological variables are sampled.

4.5. Age sampling

*[Provide information on type and number of ageing structure collected <http://vocab.ices.dk/?ref=1507> (specify if more than one) and if these are taken from stratified or non-stratified samples. Provide details of any stratification e.g per length class. This information might vary by species.]*

See sections above. The objective of the sampling programme is to characterize the biological variable length. No age or other biological variables are sampled.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

#### 4.6. Other biological parameters measured

*[Include details of other biological parameters which are routinely collected (e.g sex, maturity, fat content, stomach content, parasites, DNA) and if these are taken from stratified or non-stratified samples. Provide details on number of samples and level of stratification. Include the same level of details for other biological parameters that are taken on an ad-hoc basis.]*

See sections above. The objective of the sampling programme is to characterize the biological variable length. No other biological variables are sampled.

#### 4.7. Further information on biological sampling protocols

*[Insert references and links to any other publicly available documents related to the biological parameter sampling (e.g. detailed biological sampling protocols published on a web-site). Provide detailed information on any changes which have occurred in relation to biological sampling back in time e.g. improved species identification or selection methods. Where information is not publicly available, document who should be contacted.]*

See sections above. The objective of the sampling programme is to characterize the biological variable length. No other biological variables are sampled.

## 5. Data storage

196

### 5.1. Programme data storage

*[How is data stored nationally e.g. database, spreadsheets. If detailed data is stored internationally specify the name of the international database and number of years' data is available]*

National data storage			
Database name	Location (e.g. host institute)	Format (database / spreadsheet)	Years of data stored
AZTI Fisheries data Base	AZTI	database	1995-present
SIRENO	IEO	database	1986-present
PNAB database / DB-PNAB	IPMA	database	?; 2002-2016; 2017-present

International data storage			
Database name	Location (e.g. host institute)	Format (database / spreadsheet)	Years of data stored

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

Intercatch	ICES	database	?-present
RDB	ICES	database	?-present
RDBES	ICES	RDBES	-To be defined -Will replace RDB

#### 5.2. Further information on data storage

*[Insert references and links to any other publicly available documents related to data storage and access policies (e.g. detailed information on an institute's database published on a web-site).]*

## 6. Data quality checks and validation

### 6.1. National data checks

*[Brief summary of data quality checks and validation performed at a national level. This could include those performed during or soon after data collection and those performed later (e.g. checks performed when combining data prior to submission to a data call). Provide a schematic if it is helpful.]*

Several data quality checks are performed at data-entry and post-validations stages, including:

- missing value
- limited code-lists (e.g. vessel, port, metier, species, ICES area, ICES rectangle);
- expected combinations of code-lists (e.g. ICES statistical rectangles inside an ICES subdivision, expected metier\*species\*ICES area);
- minimum value / maximum value / outliers (e.g. for length);
- cross-check of sample weight estimated from length weight relationship and from recorded during sampling;
- expected species (e.g. species not expected in the wider geographical area - North Atlantic).

### 6.2. International data checks

*[Brief summary of data quality checks and validation performed at an international level e.g. during or after data submission to an international database. Provide a schematic if it is helpful.]*

As defined by the international databases.

### 6.3. National data flow

*[Where there are multiple organisations involved in collecting and processing national data please show how the data flows between them. Provide a schematic if it is helpful.]*

Currently, in the national sampling plans:

#### SPAIN:

- Length sampling of landings is stratified geographically, AZTI covering the Basque Country and IEO the rest of the coast of Spain. Both institutes perform sampling and raise sampled length distribution to the total landings of each strata. Then, length distributions are added by metier/quarter/area/species to conform the total Spanish landings.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

- Total landings are obtained from official transversal data (based on logbooks and sales notes).

#### PORTUGAL:

- Length sampling of landings is performed by IPMA. Sampled length distribution is raised to the total landings of each strata, with the stratification (metiers/time/area) depending on the species.
- Total landings are obtained from official data (based on logbooks and sales notes).

#### 6.4. Further information on data checks and validation

*[Insert references and links to any other publicly available documents or code repositories related to data quality checks (e.g. links to publically available data checking source code or packages).]*

AZTI: No link to public documents yet.

IEO: <http://www.proyectosap.es/index.php/documentacion-publica/category/323-quality-assurance-framework>

IPMA: No link to public documents yet.

## 7. Estimation procedure

### 7.1. Estimation procedures

*[Briefly describe the estimation procedure for each parameter. Identify whether model-based, model-assisted, or design-based estimation is being done. Is missing data imputed? Include a description of the process for estimating variance where this is done.]*

Currently, estimation procedures in the national sampling programs are:

- for weight of landings: census;
- for length distribution of landings: ratio-estimator (landings weights).

Sequence of estimation procedure for length distribution of landings is presented below separately for Spain and Portugal:

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix

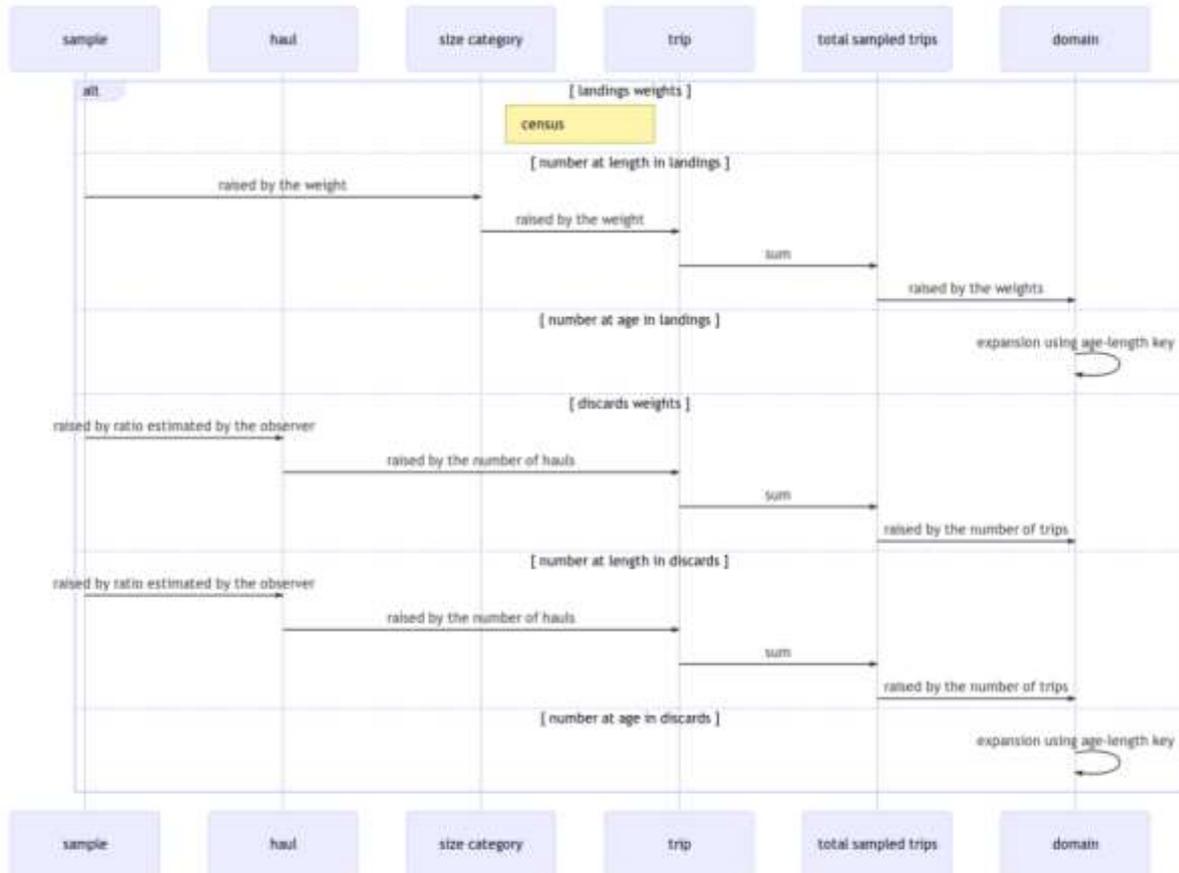


Figure 3.4. Sequence diagram of estimations for [Spain](#).

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

10. ISSG Case Study of the Trawl Fishery in Iberian Waters - Appendix



Figure 3.5. Sequence diagram of estimations for Portugal.

For further detail see table 3.1 and figures 3.4 and 3.5 in WGCATCH report, 2019.

In the regional sampling program, the estimation procedure still needs to be discussed / developed.

7.2. Further information on estimation procedures

[Insert references and links to any other publicly available documents or code repositories related to estimation (e.g. links to publically available source code or packages).]

## II ISSG Evaluation of the Data Collected for SSF at EU level

### II.1 Background

Small Scale Fisheries (SSF) are an important economic and social activity in many European inshore coastal areas. Despite their differences, these fisheries present analogies which justify a similar approach. They have reduced mobility, which makes them dependent on local and regional ecosystems, and focus their impact on coastal fish resources and habitats. Unlike large scale fisheries (LSF), official statistics are often limited for SSF. Data on catches and effort are therefore dependent on sampling if there are no census data, which has traditionally hampered the understanding of these fisheries, and underestimated their impacts.

2020 was the first year of work for this ISSG where the main objective is to move forwards a better coordination on the data collection for these fisheries under the umbrella of the RCGs.

For 2020-2021 period, several tasks were agreed during 2020 RCG technical meeting. to be covered.

Below the tasks agreed to be covered by this subgroup:

- **Analysis of catch and effort data in the RDB**

There is a need to analyse the information related to catch and effort in the RDB. How the effort information is estimated by each of the Member States (MS) is essential and the possibility of standardizing this effort estimate for the SSF is one of the objectives and a challenge. In addition, how MS are codifying the métiers at level 6 for this fleet is also very relevant. As mentioned in the previous section, in some cases most of these trips are allocated to this MIS\_MIS métier. This métier resolution is not sufficient for regional coordination objectives. The plan is to work together with the métier ISSG subgroup and check if the codes and tools provided by this subgroup could be used also to improve the codification of this fleet.

In addition, within those MS/institutes where a sampling approach is used to collect the data, the plan is to compare the estimates obtained compared to the transversal information uploaded to the RDB.

- **Sampling effort allocated to the under 12m fleet**

In collaboration with the ISSG on fisheries overviews, it will be analysed the effort allocated by MS to this fleet under their National work programmes. This will be done using the information uploaded under the CS (Sampling) data. In addition, the data collected will be also reviewed. This means if apart from the catch and effort data, what other type of information is collected (e.g., discards, length, age, PETS bycatch).

- **PGECON involvement in the subgroup**

PGECON colleagues will be contacted to participate in this sub-group. The socio-economic data collection of this fleet is essential due to the importance of this fleet in the coastal populations.

- **RDBES data model and the SSF**

RDBES will be one of the principal tools that will allow to improve the regional coordination and the development of the regional sampling programmes. It's essential for this subgroup to be involved in the process of the development of this tool, and the data model is the core of this data base. Due to the special characteristics of the SSF, is probably that the RDBES may require specific issues to be considered in the development of this data model.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### II. ISSG Evaluation of the Data Collected for SSF at EU level

#### II.2 2020-2021 tasks

Although the task mentioned above were the ones agreed during last year's RCG meeting, due to time constraints, during this period the ISSG has focused on these topics:

##### II.2.1 SSF Fisheries overviews

Three reports were produced one by region, North Atlantic, North Sea & Eastern Arctic and for the Baltic regions. These reports were considered as a very useful tool to have a general overview of this specific fleet in these regions. The number of vessels, target species, main métiers etc. are identified in these reports. In addition, these reports allowed to identify relevant gaps in the data available for this fleet under the RDB. For example, absence of information from very relevant countries for this fleet, potential gaps in the catch and effort data, but also problems in the definition of trips at the desired métier resolution level. It is the case of some countries where most of the trips are identified as MIS\_MIS métiers. Although most of the Member States (MS) have no problems to allocate the métier level 6 to the SSF trips, it's quite common to use the MIS\_MIS code when there are difficulties to allocate a métier code to these trips. This ISSG is working in collaboration with the ISSG métiers, trying to improve the R code developed by this group to solve the métier codification of the SSF trips.

The information provided in these overviews comes from the RDB. These are transversal data reported by fishers based on the EU Control Regulation requirements. It should be recommended to make a depth analysis to validate these transversal data where catches and effort information is provided. This validation should be done by comparing the transversal data with the data obtained from the sampling programmes.

##### II.2.2 Cooperation with RCGECON

The collaboration and cooperation between this ISSG and RCG ECON and sharing the methodologies used in the data collection of the SSF for both, biological and economic variables was considered as relevant by this ISSG. With this aim in mind, both groups tried to identify topics that could be covered between both groups. One of the identified topics was how to deal with vessels that have different activity levels. Within this fleet has been seen that there are vessels with high activity but other with low levels, especially among those skippers where fishing is a complementary activity. This could lead to differences in behaviour between these patterns that could have also influence in the estimates provided (e.g., mortality rates). This topic will be covered during the next period of work by this ISSG and RCG ECON.

##### II.2.3 SSF biological sampling data

In collaboration with ICES WGCATCH SSF subgroup, the coverage of both, onshore and onboard sampling programmes for the SSF was analysed. In this analysis the SSF the different fleet segment coverage is taking into account. This analysis is focused on biological data (e.g., length, age etc.). The objective is to ensure that there is sufficient data across the EU countries, for main end-users needs, harmonised and comparable. With this aim in mind, a questionnaire was sent before WGCATCH 2020 meeting to the participants in this working group. Quantitative and qualitative questions were developed. Main results will be provided in WGCATCH 2020 final report (still in progress).





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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### II. ISSG Evaluation of the Data Collected for SSF at EU level

#### ***II.2.4 SSF data and the RDBES***

Although the surveys designed to collect data for the SSF are similar to the ones used with the Large-Scale fleet, there could be some specific issues considering the characteristics of the SSF. The RDBES is planned to be fully implemented by 2023 and it is important that all data models considered from different surveys also consider these specificities for the SSF. Because of this, it is important to test the data models currently considered by the RDBES and identify if some gaps exist or there are some specific needs for the SSF. This test will be carried out during the next working period in collaboration with the RDBES SC.



## 12 ISSG Identification of Case Studies for PETS Bycatch Monitoring

### 12.1 Background

Interactions between fisheries and non-target species such as protected, endangered and threatened species (PETS), including cetaceans, seabirds, turtles, some elasmobranchs, and rare fish species, can be frequent and widespread. These interactions may lead to levels of incidental mortality which, in some cases, could pose a threat to species or population viability. Such interactions can also have an adverse effect on fishing productivity, profitability and crew safety.

Under the previous Data Collection Framework (Council regulation (EC) No. 199/2008), there were no binding obligations for Member States (MS) to collect data on species other than commercial fish species and certain invertebrate species. When the current DCF (Regulation (EU) 2017/1004) came into force in 2017, collection of data on PETS bycatch when observers are onboard became mandatory. As a consequence, MS have begun to implement new data collection protocols in their at-sea observer programmes following guidelines developed by ICES expert Working Groups (WGBYC, WGCATCH) to improve the collection and quality of data on PETS bycatch. However, sampling designs remain focused primarily on active gears. In addition, under several EU instruments (Regulation 2019/1241 on technical measures, Habitats Directive 92/43/EEC, and Birds Directive 2009/147/EC) MS are required to monitor and report on bycatch of protected species, including cetaceans, seabirds and marine turtles.

The overall aim for RCG NANSEA and the RCG Baltic is to review the status of current issues, achievements and developments of regional coordination and identify future needs in line with DCF requirements and the wider European environmental monitoring and management. With this aim in mind several ISSG were created trying to cover different topics related to different needs in line with the DCF requirements, including PETS bycatch issues.

During the last three years the ISSG PETS work has been focused on conducting a risk-based assessment for the different PETS groups or species and identify the sampling coverage of the high-risk fisheries with scientific observers at sea under the DCF sampling programmes. In addition, potential gaps and improvements were identified and a workplan defined for this group.

For 2020-2021 period, several tasks were agreed during 2020 RCG technical meeting. to be covered.

Below the tasks agreed to be covered by this subgroup:

- **Intersessional work with ICES WGBYC and WGCATCH**

There is a need to know the effort allocated to monitor fisheries with at sea observer programmes. WGBYC is collecting this information during the last years. In addition, in the RDBall the at sea trips monitored under the EU MAP are included. The work will consist in comparing both data bases and compare the results obtained. This will provide a general overview of the effort realized and coverage of the different métiers/fisheries at sea.

In addition, the risk assessment done the previous year will be updated and improve if possible, considering some of the suggestions received by WGBYC. Finally, the RDBES data model and its importance of this data base for bycatch data collection will be addressed between these groups.

- **Case studies**

The plan is to work in several case studies following a similar approach conducted by the small pelagic

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

case study, where a generic regional sampling programme was defined. This generic regional sampling programme will be adapted to the specific issues related to PETS bycatch data collection. One of the case studies will be the “common dolphins in the Bay of Biscay and the harbour porpoise in the Baltic” due to the importance that the special request mentioned above has acquired. The other case study will be defined and agreed together between this subgroup members and WGBYC members.

Under these case studies, several tasks will be covered with the objective to improve the data collection of the bycatch species and move towards a regional sampling programme for this.

Some of these tasks, are tasks that are considered essential as first steps before doing the fieldwork but essential for a regional sampling programme:

- Fisheries/métiers characterization at the right resolution considering bycatch impact.
- Sampling coverage of these fisheries/métiers
- Align observers protocols between countries
- Standardize effort calculation methodologies and identify relevant variables needed to collect under the transversal data to improve bycatch estimates (e.g., number of nets, soak time etc. in the case of passive gears)

The other tasks to be covered are more focus on the need to increase the fisheries monitoring effort:

- Identify minimum sampling coverage per fishery/métier.
- Ensure minimum sampling coverage for fisheries that currently have no/low coverage.
- Methodologies to collect bycatch data considering different fleet segments.
  - Scientific observers
  - New technologies (e.g., CCTV)
  - Fishermen collaboration

205

However, due to time constrains the group decided to reduce the ambition level for this period and focus on some of these tasks that were considered as first steps. The tasks covered are, the case study of common dolphins in the Bay of Biscay (BoB), where the main objective is to identify how the high-risk bycatch métiers for this species are covered by the DCF at sea programmes, identify other specific monitoring programmes conducted by the most relevant MS considering the fishing effort on this fishing ground. In addition, identify differences found between specific bycatch monitoring programmes and DCF at sea programmes in relation to bycatch data collection. Finally, analyse the differences found in the main data bases used for bycatch purposes but also for regional coordination, this means WGBYC data base and the RDB and future RDBES. In addition, the subgroup also will provide feedback to the HELCOM fishery roadmap in relation to bycatch data as it was requested by the RCGs chairs to this group.

The tasks not covered during this year, will be discussed again as potential tasks for 2021-2022 period including other specific request coming from main end-users.

## 12.2 2020-2021 tasks

### 12.2.1 BoB common dolphin (*Delphinus delphis*) case study

#### 12.2.1.1 Work during 2020-2021:

Due to current increased concern with PETS bycatch especially in what regards cetaceans in some areas

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

and métiers (ICES 2020), the ISSG “PETS” of RCG NANSEA dedicated to describing the current sampling effort of national programmes implemented by Member States under the Data Collection Framework. To this end, we analysed data from Regional Database (RDB - <https://www.ices.dk/data/Documents/RDB/RDB%20Exchange%20Format.pdf>); specifically data for the North Atlantic region extracted in 2021 for the purpose of the RCG ISSGs.

We focused on RDB data for the North Atlantic region, specifically the area of the Bay of Biscay (namely ICES Divisions 8c, 8abd) in the period 2017-2019 (the most recent triennium; and excluded 2020 since sampling was decreased in several countries due to the Covid-19 pandemic). In what concerns fishing effort, we used data from RDB table CE (“Commercial Effort”), and in what concerns sampling data we used data from RDB table CS (“Commercial Sampling”) - specifically data collected at sea by observers (i.e., we excluded at-market sampling since it is not relevant for incidental bycatch of PETS, as well as data collected at-sea by self-sampling since there was no information on its relevance in this context).

#### Case study (ICES Divisions 8c, 8abd in 2017-2019) and Selected dataset (Commercial Effort and Commercial Sampling at sea by observers)

The selected dataset (“commercial effort”) included fishing effort (number of trips done by the fleet) from vessels from 11 countries: two countries with relevant effort (France and Spain; respectively with 62% and 38% of fishing effort), one country with small effort (Portugal;  $\leq 1\%$ ), and six countries with very minor effort (Belgium, Ireland, Germany, Denmark, England, Netherlands, Poland, Scotland;  $\leq 0.1\%$  each).

The selected dataset (“commercial sampling”) included at-sea sampling effort (number of trips sampled at sea by observers) in vessels from three countries (Spain, France and Belgium respectively with 73%, 26% and  $< 1\%$  of sampling effort) and no sampling of foreign flag vessels was implemented.

206

We initially aimed to discriminate the analysis of the Commercial Sampling selected dataset by Vessel Length or Vessel Length Category ( $< 10\text{m}$ ,  $[10-12\text{m}]$ ,  $[12-18\text{m}]$ ,  $[18-24\text{m}]$ ,  $[24-40\text{m}]$ ,  $\geq 40\text{m}$ ) since Vessel Length is known in trips sampled at sea by scientific observers. But the selected dataset does not allow us to achieve this aim. This information is provided in the “Commercial Sampling” tables of the RDB (table TR - Trip Record), but the field “Vessel Length” is optional.

In the selected dataset, France and Belgium always provided Vessel Length of the sampled trips, but Spain did not provide Vessel Length for the sampled trips. For this reason, no further analyses were done per Vessel Length or Vessel Length Category.

On the other hand, we initially also aimed to discriminate the data analysis by Métier (5 - Target assemblage or 6 - Mesh size and other selective devices) since the Métier is known in a Station/ Haul sampled at sea by scientific observers. But the dataset from the RDB (described above) does not allow us to achieve this aim as well as expected. This information is provided in the “Commercial Sampling” tables of the RDB (table HH - Station Record), but the fields “Fishing activity category National” and “Fishing activity category European level 5” are optional, while the fields “Fishing activity category European level 6” and “Gear” are mandatory - but “MIS\_MIS” is allowed in level 5 and “MIS\_MIS\_0\_0\_0” in level 6.

In the selected dataset, data from Spain and Belgium always discriminated Métier Level 5 and Level 6 for each Station/Haul, but in data from France 32% of the hauls/stations are uploaded as MIS\_MIS (Level 5) and MIS\_MIS\_0\_0\_0 (Level 6), as a means to bypass the constraint to the code list of métiers by area allowed by the RDB.

For the purpose of this case study, and based on the Métier Level 5 in the selected dataset we created a

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

Métier Level 4 (Gear type) to each Station/Haul. We the upcoming analysis we especially focused on the following Métiers Level 4: GNS (set gillnet), GTR (trammel net), PS (purse seine), OTM (midwater otter trawl), PTB (bottom pair trawl) and PTM (Pelagic pair trawl).

The fishing effort (number of trips done by the fleet; Fig. 12.1), at-sea sampling effort (number of trips sampled at sea by observers; Fig. 12.2) and at-sea sampling coverage (percentage of the number trips sampled at sea by observers relative to the number of trips done by the fleet; Fig. 12.3) differ with area (8abd, 8c), métier and country.

As a note, when analysing the selected dataset by area and by métier, the sampled trips with hauls in different areas and/or with different métiers will be counted in the several areas and métiers; this duplication does not happen in number of hauls since each haul is assigned to one area and métier.

#### ICES area 8c

In ICES area 8c, fishing effort (number of fishing trips done by the fleet) is almost totally done by vessels from Spain (98% of fishing effort), with a small contribution from Portugal and France (<1%) and very minor contribution from three other countries ( $\leq 0.1\%$ ; Ireland, Germany, England).

In ICES area 8c, at-sea sampling effort (number of trips sampled at sea by observers) is almost totally implemented by Spain (95% of sampling effort), with a small contribution from France (5%).

If we focus on the métiers level 4 of concern of this case study (GNS, GTR, PS, OTM, PTB, PTM):

- Fishing effort (number of trips done by the fleet) was higher in GNS (18% of fishing effort), followed by GTR (16%), PS (13%), PTB (4%), and by métiers with less than 1% each [undefined métier (MIS), PTM and OTM]. Each of these métiers had a number of sampled trips lower than the other remaining métiers combined together (48%).
- At-sea sampling effort (number of trips sampled at sea by observers) was higher in PS (22% of sampling effort), followed by GNS (22%), PTB (16%), undefined métier (MIS; 5%) and GTR (1%). Each of these métiers had a number of sampled trips lower than the other remaining métiers combined together (34%).
- At-sea sampling coverage (percentage of trips sampled at sea by observers relative to the total of trips done by the fleet) was below 1.5% in each of the métiers. The percentage was higher in undefined métier (MIS; 1.5% sampling coverage of the métier effort) followed by PTB (0.5%), GNS (0.2%), PS (0.2%), “others” (0.1%) and GTR ( $\leq 0.1\%$ ). There was no coverage in OTM, PTM.

If we consider all métiers level 5:

- Fishing effort (number of trips done by the fleet) was higher in GNS\_DEF (18% of fishing effort), followed by FPO\_MOL (7%), GTR\_DEF (16%), LLS\_DEF (14%), PS\_SPF (13%), LHM\_SPF (5%), PTB\_MPD (4%), OTB\_DEF (4%), FPO\_CRU (3%), OTB\_MPD (2%).

In addition, a small fishing effort ( $\leq 1\%$  each) was done by the fleet in FPO\_FIF, LHM\_CEP, undefined métier (MIS\_MIS), LHM\_DEF, TBB\_MOL.

And a very minor fishing effort ( $\leq 0.1\%$  each) was done by the fleet in LHM\_CEP, MIS\_MIS, LHM\_DEF,

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

TBB\_MOL, GND\_SPF, PTM\_LPF, SDN\_MCF, DRB\_MOL, LLD\_LPF, LTL\_LPF, OTB\_SPF, GNS\_CRU, LLD\_DEF, OTB\_CRU, OTB\_DWS, OTM\_DEF, PTM\_DEF.

- At-sea sampling effort (number of trips sampled at sea by observers) was higher in métier OTB\_DEF (26% of sampling effort), followed by PS\_SPF (21%), GNS\_DEF (21%), PTB\_MPD (15%), OTB\_MPD (10%), undefined métier (MIS\_MIS; 5%) and by métiers with  $\leq 1\%$  each (LHM\_SPF, GTR\_DEF, LHM\_DEF).
- At-sea sampling coverage (percentage of trips sampled at sea by observers relative to the total of trips done by the fleet) was  $\leq 1.5\%$  in each of the métiers. The percentage was higher in undefined métier (MIS\_MIS; 1.5% sampling coverage of the métier effort), OTB\_DEF (1.0%), OTB\_MPD (0.8%), PTB\_MPD (0.5%), PS\_SPF (0.2%), GNS\_DEF (0.2%), LHM\_DEF (0.1%), LHM\_SPF ( $\leq 0.1\%$ ), GTR\_DEF ( $\leq 0.1\%$ ).

There was no sampling coverage in DRB\_MOL, FPO\_CRU, FPO\_FIF, FPO\_MOL, GND\_SPF, GNS\_CRU, LHM\_CEP, LLD\_DEF, LLD\_LPF, LLS\_DEF, LTL\_LPF, OTB\_CRU, OTB\_DWS, OTB\_SPF, OTM\_DEF, PTM\_DEF, PTM\_LPF, SDN\_MCF, TBB\_MOL (métiers in alphabetical order).

### ICES areas 8abd

In ICES areas 8abd, fishing effort (number of fishing trips done by the fleet) is almost totally done by vessels from France (98% of fishing effort), with a small contribution from Spain and Belgium (respectively 2% and 0.12%) and very minor contribution from eight other countries ( $\leq 0.1\%$  each; Ireland, Portugal, Germany, Denmark, England, Netherlands, Poland and Scotland).

In ICES areas 8abd, at-sea sampling effort (trips sampled at sea by observers) is almost totally implemented by France (91% of sampling effort), with a small contribution from Spain (8%) and very minor contribution from Belgium ( $< 1\%$ ).

If we focus on the métiers level 4 of concern of this case study (GNS, GTR, PS, OTM, PTB, PTM):

- Fishing effort (number of trips done by the fleet) was higher in undefined métier (MIS; 30% of fishing effort), followed by GNS (8%), GTR (5%), PS (2%), and by métiers with  $\leq 1\%$  each (PTM, OTM, PTB). Each of these métiers had a number of sampled trips lower than the other remaining métiers combined together (52%).
- At-sea sampling effort (number of trips sampled at sea by observers) was higher in undefined métier (MIS; 32% of sampling effort), followed by GNS (19%), GTR (8%), PS (4%), OTM (2%), and by métiers with  $\leq 1\%$  each (PTM, PTB). Each of these métiers had a number of sampled trips lower than the other remaining métiers combined together (33%).
- At-sea sampling coverage (percentage of number of trips sampled at sea by observers relative to the number of trips done by the fleet) was below 1.5 % in each of the métiers. The percentage was higher in PTB (1.5% sampling coverage of the métier effort), followed by OTM (0.9%), GNS (0.8%), PS (0.6%), GTR (0.5%), PTM and undefined métier (MIS) (0.4% each) and “others” (0.2%).

If we consider all métiers level 5:

- Fishing effort (number of trips done by the fleet) was higher in undefined métier MIS\_MIS (30% of

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

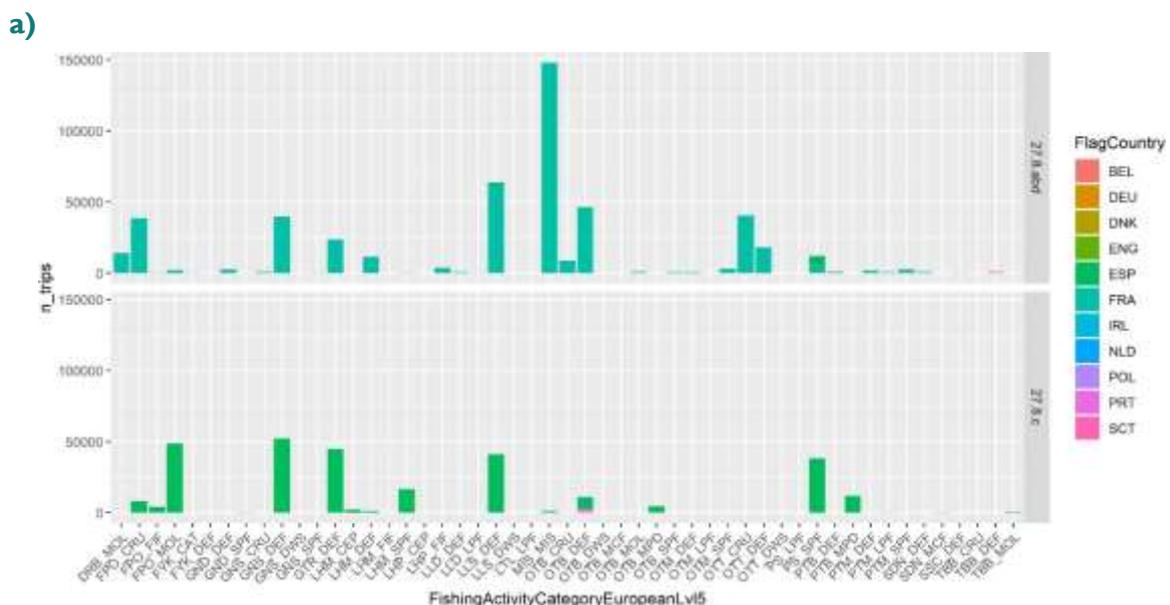
sampling effort), followed by LLS\_DEF (13%), OTB\_DEF (9%), OTT\_CRU (8%), GNS\_DEF (8%), FPO\_CRU (8%), GTR\_DEF (5%), OTT\_DEF (4%), DRB\_MOL (3%), PS\_SPF (2%), LHM\_DEF (2%) and OTB\_CRU (2%).

In addition, a small fishing effort ( $\leq 1\%$  each) was done by the fleet in LHP\_FIF, OTM\_SPF, PTM\_SPF, GND\_DEF, FPO\_MOL, PTM\_DEF, GNS\_CRU, PTB\_DEF.

And a very minor fishing effort ( $\leq 0.1\%$  each) was done by the fleet in SDN\_DEF, OTB\_MOL, TBB\_DEF, OTB\_SPF, OTM\_DEF, LLD\_DEF, PTM\_LPF, GNS\_SPF, SSC\_DEF, LHM\_SPF, FYK\_CAT, FPO\_FIF, LLD\_LPF, LTL\_LPF, OTB\_MCF, OTB\_MPD, TBB\_CRU, FYK\_DEF, GND\_SPF, GNS\_DWS, LHM\_CEP, LHM\_FIF, LHP\_CEP, LLS\_DWS, OTB\_DWS, OTM\_LPF, OTT\_DWS, PS\_LPF.

- At-sea sampling effort (number of trips sampled at sea by observers) was higher in undefined métier MIS\_MIS (32% of sampling effort), followed by GNS\_DEF (18%), OTT\_DEF (9%), OTB\_DEF (8%), GTR\_DEF (8%), LLS\_DEF (6%), OTT\_CRU (5%), PS\_SPF (4%), FPO\_CRU (3%), OTM\_SPF (2%), followed by métiers with  $\leq 1\%$  each (LHM\_DEF, PTB\_DEF, PTM\_SPF, SDN\_DEF, TBB\_DEF, PTM\_DEF, OTB\_CRU, LHP\_FIF, OTB\_MPD, SSC\_DEF) and  $\leq 0.1\%$  each (FPO\_MOL, OTB\_MCF, OTB\_SPF, FPO\_FIF, GND\_DEF, GNS\_CRU, GNS\_SPF).
- At-sea sampling coverage (percentage of the number of trips sampled at sea by observers relative to the number of trips done by the fleet) was  $\leq 7.4\%$  in each of the métiers. The percentage was higher in OTB\_MCF (7.4% sampling coverage of the métier effort), followed by OTB\_MPD (7.3%), PTB\_DEF (1.5%), TBB\_DEF (1.5%), SDN\_DEF (1.3%), followed by OTM\_SPF and SSC\_DEF (1.0% each), OTT\_DEF and GNS\_DEF (0.8% each), FPO\_FIF and PS\_SPF (0.6% each), GTR\_DEF, PTM\_DEF and PTM\_SPF (0.5% each), undefined métier (MIS\_MIS) and OTB\_SPF (0.4% each), GNS\_SPF and OTB\_DEF (0.3% each), OTT\_CRU, LHP\_FIF and LLS\_DEF (0.2% each), LHM\_DEF, GNS\_CRU, FPO\_CRU, FPO\_MOL, OTB\_CRU and GND\_DEF ( $\leq 0.1\%$  each).

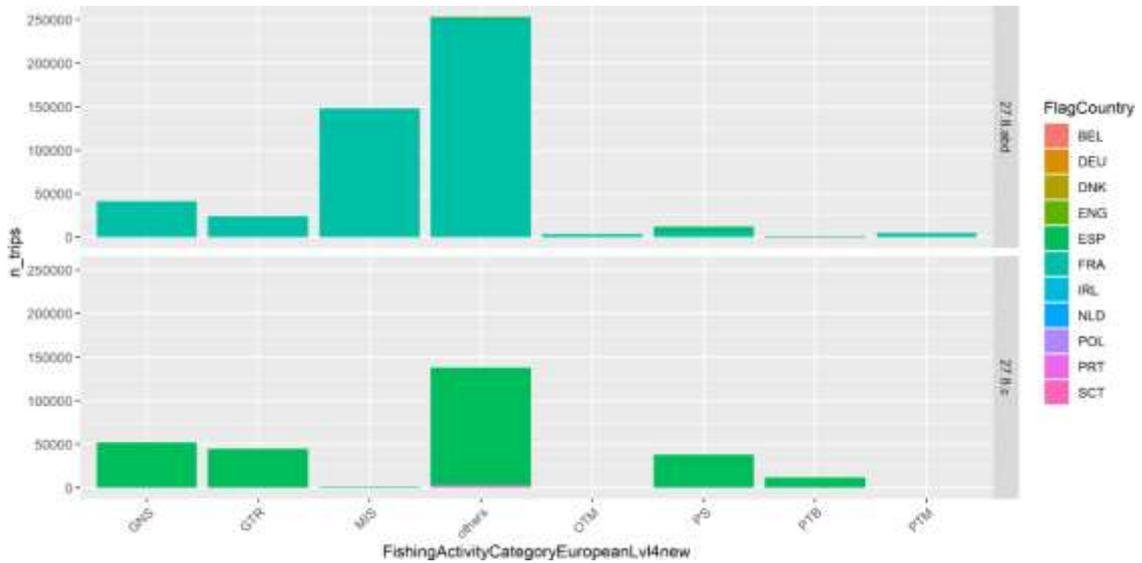
There was no sampling coverage in DRB\_MOL, FYK\_CAT, FYK\_DEF, GND\_SPF, GNS\_DWS, LHM\_CEP, LHM\_FIF, LHM\_SPF, LHP\_CEP, LLD\_DEF, LLD\_LPF, LLS\_DWS, LTL\_LPF, OTB\_DWS, OTB\_MOL, OTM\_DEF, OTM\_LPF, OTT\_DWS, PS\_LPF, PTM\_LPF, TBB\_CRU (métiers in alphabetical order).



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

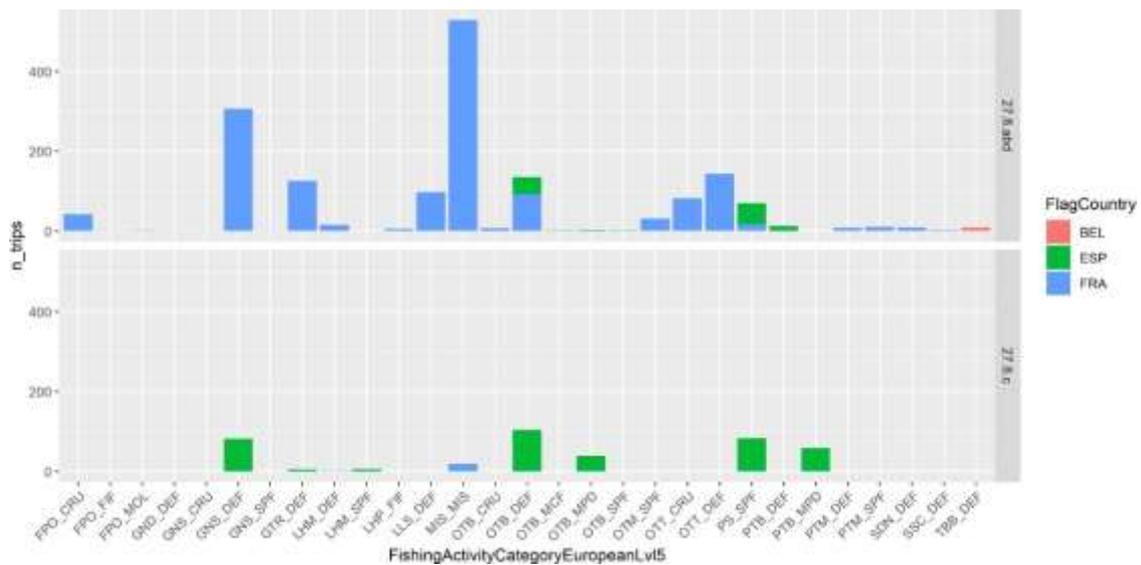
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b)



**Fig. 12.1- Fishing effort (number of trips done by the fleet) in areas 27.8.abd and 27.8.c of the North Atlantic in the period 2017-2019, per area, métier and country. Based on data extracted from the RDB. a) Métier level 5 as in the original data uploaded in the RDB, and includes undefined métier (MIS\_MIS); b) Métier level 4 focusing on the métiers of concern of this case study (GNS, GTR, PS, OTM, PTB, PTM), undefined métier (MIS) and remaining métiers grouped as “others”.**

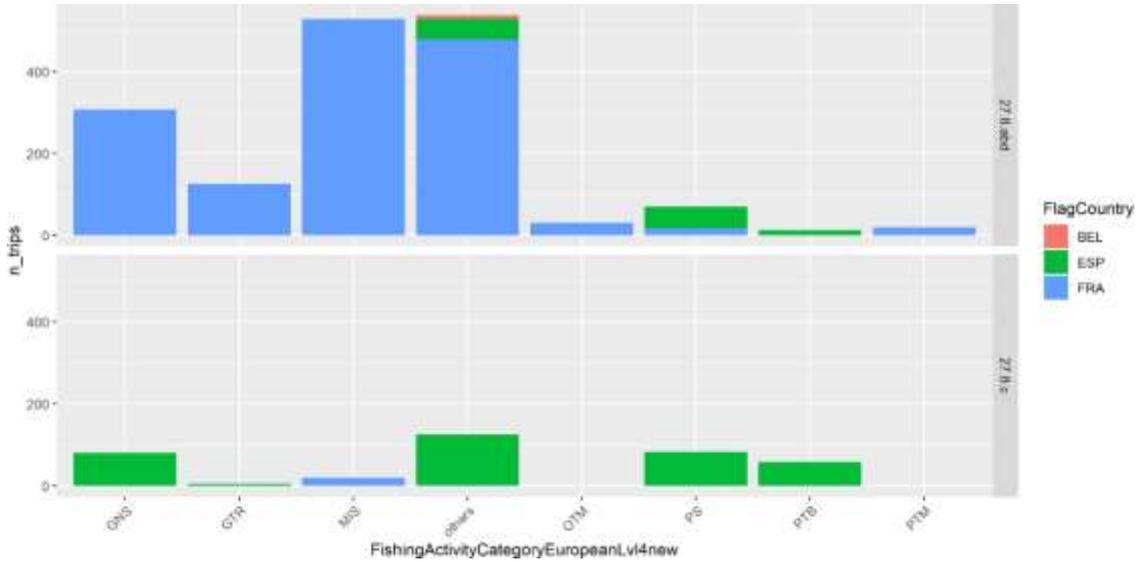
a)



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

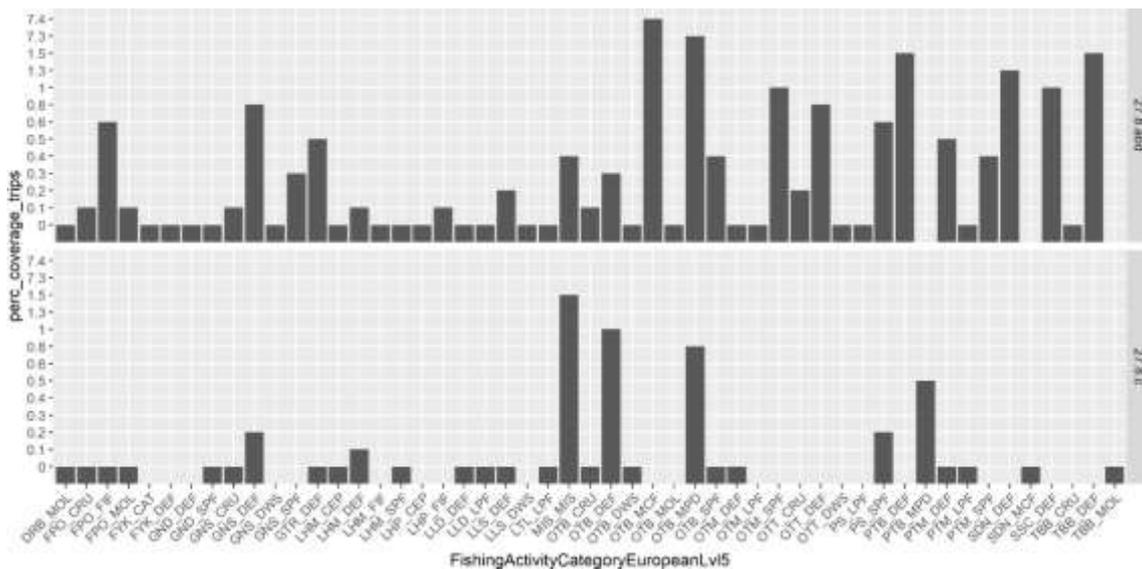
12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

b)



**Fig. 12.2-** *At-sea sampling effort (number of trips sampled at sea by observers) in areas 27.8.abd and 27.8.c of the North Atlantic in the period 2017-2019, per area, métier and country. Based on data extracted from the RDB. a) Métier level 5 as in the original data uploaded in the RDB, and includes undefined métier (MIS\_MIS); b) Métier level 4 focusing on the métiers of concern of this case study (GNS, GTR, PS, OTM, PTB, PTM), undefined métier (MIS) and remaining métiers grouped as “others”.*

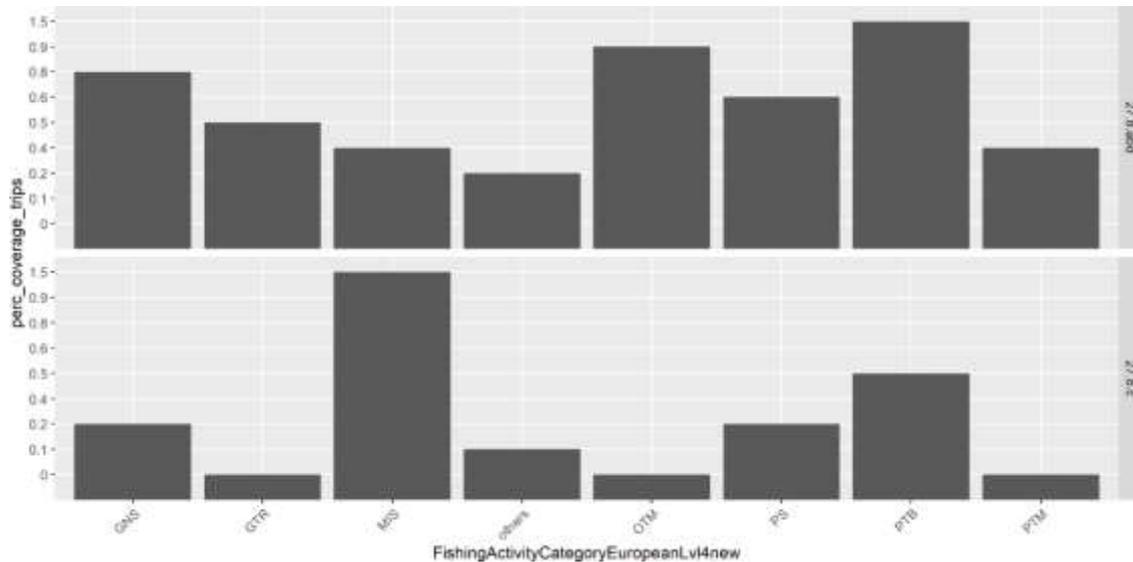
a)



b)

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring



**Fig. 12.3-** *At-sea sampling coverage (percentage of the number trips sampled at sea by observers relative to the number of trips done by the fleet) in areas 27.8.abd and 27.8.c of the North Atlantic in the period 2017-2019, per area, métier and country. Based on data extracted from the RDB. a) Métier level 5 as in the original data uploaded in the RDB, and includes undefined métier (MIS\_MIS); b) Métier level 4 focusing on the métiers of concern of this case study (GNS, GTR, PS, OTM, PTB, PTM), undefined métier (MIS) and remaining métiers grouped as “others”.*

#### 12.2.1.2 Specific monitoring programmes (France, Spain)

212

In addition to the DCF at sea observed trips, due to this concern on the bycatch of this species in the BoB, both France and Spain are carrying out specific monitoring programmes with scientific observers at sea to collect bycatch information. Below a summary of the objectives of both programmes.

#### France

Under the ObsMer programme, data on PETS bycatch is collected during the whole year. However, since 2018 due to the common dolphin problem in the BoB, the coverage of the fleet considered as risky fleets, is being increase from 1<sup>st</sup> of December to 30<sup>th</sup> of April. This is the period considered the highest bycatch period of this species in the BoB.

In addition, in the case of netters, a better characterization of these fleet was made. This would allow to classify in a more detailed way this fleet in relation to common dolphins' bycatch risk. With this aim in mind, an algorithm was developed by IFREMER, to categorize netters in five different categories (river netters, netters <3 miles, coastal netters, mixed, offshore netters).

The objective is to reach a 5 % of the total coverage for netters and mid-water trawlers. These fleet are also segmented considering the vessel total length in two subgroups:

- Netters <12 meters
- Netters >12 meters
- Mid-water trawlers <15 meters
- Mid-water trawlers >15 meters



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

According to the ObsMer program protocol, for the selected fishing operations, the following information is recorded:

- Species, number, size, weight, sex, state at release of the bycatch mammal
- Position of release and number of the marking ring
- Parameters regarding fishing operations: fishing operation start coordinates, fishing operation end coordinates, start hour, end hour, type of gear, length for nets, mean depth.
- Details regarding the gear: mesh size, type of panels, size, acoustic or deterrent device...

As not all fishing operations can be sampled by the observers for one fishing trip, the observer must collect declarative information for the fishing operations that could not be observed (date, time, position, gear, targeted species, species of by-catch if any).

In addition, in 2021 a new pilot study started called OBSCAM, where 20 netters will be equipped with on-board cameras to collect data on cetacean bycatch. 5 netters were already equipped in January to test different positions of the cameras and test the data collection protocol. 1 or 2 cameras will be installed depending on the size of the vessel. The goal is to have a good representativity of netters activity and a good spatial coverage in the BoB.

#### Spain

Spain developed a specific pilot monitoring programme focus on the data collection of PETS bycatch in the BoB (ICES 8abd) and the Iberian (ICES 8c9a) ICES ecoregions. It was implemented in September 2020 and it will end in August 2021 although the intention is to extend this period.

This specific monitoring programme includes Spanish vessels using gillnets and codified as GNS\_DEF\_>=100\_0\_0 and GNS\_DEF\_80-99\_0\_0 at métier level 6 and pair trawlers codified as PTB\_DEF\_<=70\_0\_0 and PTB\_DEF->55\_0\_0.

The objective of this specific on-board observer programme for cetaceans is twofold. On the one hand, to establish a programme specifically and temporarily aimed at monitoring the accidental capture of vulnerable species, adding other species to cetaceans (elasmobranchs, turtles, etc.) in order to optimise the investment required to implement the programme. On the other hand, to obtain data that can be compared with the data collected under the DCF at sea observer programme in order to determine statistically the possible discrepancy between the two, to determine the appropriate methodological changes and/or increase in coverage necessary for the on-board observer programme to adequately estimate bycatch.

The data to be collected are: technical data at haul level and biological data on the vulnerable species caught. The former are common to those under the DCF programme for commercial catches and include the basic information on the fishing operation: day, gear, gear measurements, positioning (latitude, longitude), duration, depth, etc.

In relation to biological data, a specific record shall be provided for each taxonomic group, including: taxonomic identification, phase of the fishing operation in which the bycatch occurred, number of individuals, weight, condition of the catch (alive, dead, unknown), condition of the release (ditto), size, weight, sex, etc.

The sampling is a stratified random sampling design, and the refusals will be noted from the sampling frame



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

(list of vessels).

The sampling effort will be allocated to the different strata trying to achieve a 2% coverage as the minimum level recommended by FAO for the at sea bycatch data collection programmes for PETS (FAO, 2019).

#### 12.2.2 Comparison of bycatch rates from different data collection programmes.

The issue of the unintentional bycatch of Protected, Endangered and Threatened Species (PETS) in commercial fishing operations has grown in profile significantly over the last decade and is now a recognised element of fisheries management under an Ecosystem Approach, where consideration of the wider impacts of fishing activity on non-commercial species and habitats is required.

In relation to assessing the possible impacts of PETS bycatch on affected populations, the most commonly used method to date compares species specific mortality estimates against some form of population mortality threshold as a way of gauging if significant population level impacts are likely to be occurring.

Typically, mortality estimates are produced by estimating métier specific bycatch rates (the number of animals bycaught per unit of fishing effort in each métier) which are then applied to the same métier specific fishing effort estimates to produce métier level mortality estimates. These are then summed to produce a total mortality estimate.

Clearly the reliability of those estimates can be highly influenced by the quality of the data used in the calculation of bycatch rates, and by the accuracy of fishing effort estimates and so might lead to unreliable assessments of the implications of bycatch mortality.

Determining how well a single data collection programme performs at quantifying bycatch rates is challenging. However, in the UK two large scale fishery dependent data collection programmes have been running concurrently for many years. One of these programmes (the UK Bycatch Monitoring Programme) is specifically designed for quantifying non-commercial species bycatch rates and the other is specifically designed for quantifying commercial species discard rates under the DCF. Data collection protocols differ between the programmes and sampling designs are also largely different but there are some specific métiers that are sampled by both programmes and this provided a useful opportunity to compare bycatch rates calculated from data within each programme.

In 2013, an initial comparison was undertaken which compared small cetacean bycatch rates from static net fisheries in ICES Subarea 7 that were sampled by both programmes over a three-year period (2011 to 2013). The results of that analysis (which did not stratify the data by specific net type and/or ICES Division), indicated that the overall cetacean bycatch rate (0.025 animals per haul) in Subarea 7 calculated from dedicated bycatch monitoring was thirty-six times higher than the rate calculated using DCF observations (0.007 per haul) over the same period and broad area (Northridge *et al.*, 2014).

This finding prompted a more detailed and longer-term analysis which was undertaken in 2015 (Northridge *et al.*, 2015). This second analysis was extended spatially to include Subareas 4, 6, 7 & 8, used a longer time series (2005 to 2014), included seals as well as cetaceans and was stratified into two categories of broad net types (gill nets and tangle/trammel nets) and so provides a more robust assessment of potential differences in marine mammal bycatch rates calculated from data originating from the different data collection programmes.

Table I (from WKPETSAMP, ICES 2019) provides a summary of sampling levels, observed marine mammal

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

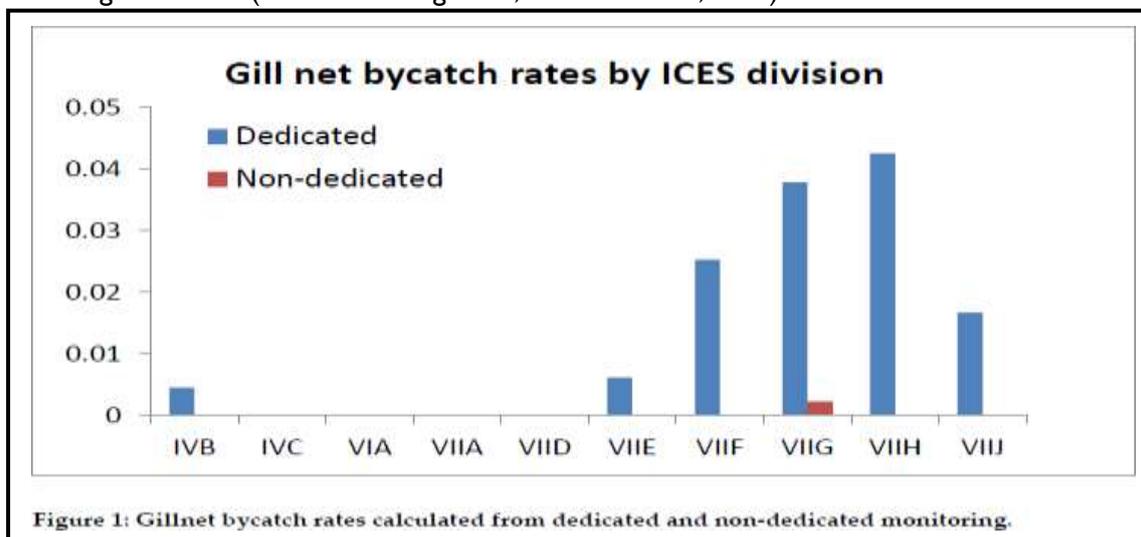
bycatches under each programme and an initial comparison of overall bycatch rates calculated from the 10-year and 3-year data time series analyses.

The bycatch rate calculated from dedicated bycatch sampling was consistent over the two timeperiods at 0.025 animals per haul, despite seals and a much wider area being included in the 10-year dataset, whereas the rate calculated from DCF data is almost three times higher over the longer time period. This increase, which results from 3 mammal bycatch records from 2009/2010 in the DCF programme leads to a reduction in the overall difference between rates calculated from each programme, from thirty-six times higher in dedicated sampling over the 3-year period to thirteen times higher over the 10-year period.

**Table 1: Overall bycatch rates**

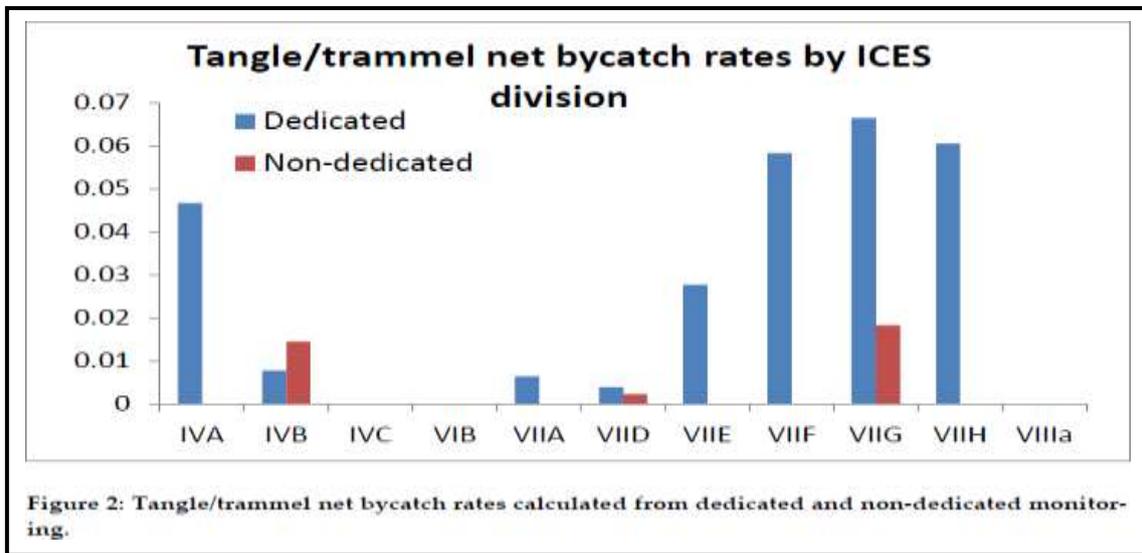
Monitoring type	Obs Hauls 2005-2014	Obs Marine mammals 2005-2014	Mammals rate 2005-2014	Cetaceans Rate 2011-2013
Dedicated	7433	188	0.025	0.025
DCF	3142	6	0.0019	0.0007

We then stratified the full (dedicated bycatch and DCF data) 10 year dataset by area (ICES division) and broad gear type (gill or tangle/trammel) and calculated the resulting métier specific bycatch rates. These are shown in the figures below (from Northridge *et al*, 2015 and ICES, 2019).



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring



The data used in this analysis from both programmes are stratified in an equivalent way, and there was at least some sampling in the majority of métiers in each programme (though not always observed bycatch), so the resulting differences in bycatch rates are considered by Northridge *et al* (2015) to be largely driven by differences in on-board sampling protocols.

This analysis was undertaken to see if differences exist between bycatch rates produced using the data collected under each programme. It is not intended to undermine the general quality of data available from different programmes, because each programme is designed to provide information about impacts on different catch components. However, the results do indicate that at-sea sampling protocols and overall sampling designs may need to be adapted if single monitoring programmes such as the DCF are to satisfactorily meet multiple management objectives.

#### 12.2.3 Comparison fishing effort WGBYC and RDB datasets

Fishing effort data are a fundamental component of mortality estimates and essential to extrapolate from bycatch rates to bycatch numbers. Accurate fishing effort data are essential to the production of robust mortality estimates, and discrepancies in the different data bases used to produce these estimates could have important implications in the calculation of bycatch estimates and risk assessment. The most relevant data bases used by ICES WGBYC to produce these estimates are the WGBYC data base that contains data requested by the specific data call for this expert group, but also the RDB data base. The latter data base is also used by the RCG NANSEA & Baltic, for regional coordination purposes.

ICES WGBYC has historically used fishing effort data provided through MS Council Regulation 812/2004 annual reports for contextualising reported bycatch rates and to form the basis of bycatch risk assessments. In 2017 WGBYC were informed that Regulation 812/2004 would be repealed so the WG began considering alternative data sources. Some initial basic comparisons of Days at Sea (the effort metric generally used by WGBYC) records from different effort datasets (WGBYC, Logbooks, RDB, VMS) were carried out in 2018 (WGBYC, 2018) and then for only the WGBYC and RDB datasets in 2019 (WGBYC, 2019). As expected, these comparisons indicated that fishing effort data contained in the WGBYC database and RDB were the most complete, because the logbook and VMS data only contain data for some vessel sizes, but there were some quite large discrepancies between the two datasets.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

In 2020 a further comparison was made using 2017 and 2018 effort data from the WGBYC and RDB databases for three broad métiers (nets, midwater trawls and bottom trawls) to try and understand any possible biases in reported effort levels. As with previous comparisons several discrepancies were found. In general, there was more variability in each dataset between countries but less variability between years of submission for each country indicating that discrepancies may be country specific.

Not all of the observed differences across the range of gears and vessel sizes considered in the analysis could be explained at the WGBYC 2020 meeting and after discussions within the group it was agreed that a short questionnaire should be developed and circulated prior to the 2020 WGCATCH meeting which is attended by many of the national data submitters, and so could provide important insights into why these sometimes significant discrepancies in reported fishing effort exist between the WGBYC and RDB databases.

A questionnaire was prepared inter-sessionally by a subgroup within WGBYC and was sent to all WGCATCH members about 3 weeks before their meeting in November 2020. 14 countries completed the questionnaire. The questionnaire contained ten questions related to five broad topics and here we provide an aggregated summary of the responses within in each category:

1. Data sources.
2. Effort metric and vessel size classes considered.
3. Methods used for calculating effort.
4. Possible explanations for the observed discrepancies.
5. Suggested solutions and further actions.

### Conclusions:

Given the wide variety of responses returned through the questionnaire it is clear there is no single reason that explains the observed discrepancies in fishing effort data submitted through the RDB and WGBYC data calls. Various issues related to: the different timing of the data calls, communication between different institutions involved in national submissions, different approaches to métier labelling, simple errors in data extractions, descriptions of and methods used for calculating DaS, and non-standardisation of data requirements between the data calls were all highlighted as reasons why differences in submitted effort levels might exist between the data calls.

Some of the highlighted issues have already been resolved, e.g., error in scripts and the ambiguous description of “Days at Sea” provided in the WGBYC data call guidance notes. Other sources of discrepancy highlighted by this exercise remain but have now been identified, and if these are considered significant, they can be addressed. This should help improve the overall quality and consistency of fishing effort data across countries.

The upcoming transition from the RDB to the RDBES will help in this regard as some data fields such as DaS will be mandatory in the RDBES (but are not in the RDB). Other parallel work is also ongoing to ensure that observations of protected species bycatch can be held within the RDBES and because of these developments when it is fully operational WGBYC will likely use the RDBES as the main data source of fishing effort and sampling data for bycatch assessments.

Fishing effort data are regularly used by numerous ICES working groups, including WGBYC, and are one of the fundamental components in the production of bycatch mortality estimates and risk assessments, and along with bycatch rates estimated from sampling programmes and abundance estimates help to

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

improve our understanding of the impacts of fishing activity on many non-commercial and protected species populations and in the development of bycatch management measures. To ensure that any measures introduced on the basis of such mortality assessments are appropriate (i.e., effective and proportionate) it is important to improve data quality across all the main data elements used in bycatch assessments.

#### 12.2.4 HELCOM roadmap on fisheries data

As a request from the RCG NA &NS and Baltic chairs, this ISSG reviewed the HELCOM fisheries roadmap, focusing specially on issues related to bycatch data collection. The feedback provided by this ISSG will be used as background document under the specific session scheduled to cover during the technical meeting in June.

The final document will be completed considering the discussions during the RCG technical meeting and will be added to this report as an Annex.

#### 12.2.5 References

FAO. 2019. Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection. FAO Fisheries and Aquaculture Technical Paper No. 640. Rome, FAO.

ICES. 2019. Joint WGBYC-WGCATCH Workshop on sampling of bycatch and PET species (WKPETSAMP), 24–26 April 2018, SLU Aqua, Lysekil, Sweden, ICES CM 2018/EOSG:35. 76 pp.

Northridge, S, Kingston, A. and Thomas, L. 2014. Annual report on the implementation of Council Regulation (EC) No 812/2004 during 2014.

Northridge, S, Kingston, A. and Thomas, L. 2015. Annual report on the implementation of Council Regulation (EC) No 812/2004 during 2014.

#### 12.2.6 Annex (HELCOM fisheries roadmap)

### Roadmap on fisheries data in order to assess incidental bycatch and fisheries impact on benthic biotopes in the Baltic Sea

#### I. Introduction

The HELCOM Fish Group initiated a discussion in 2016 (FISH 5-2016) on the provision of fisheries data to facilitate assessment of the HELCOM core indicator “Number of drowned mammals and water birds in fishing gear” as well as the pre-core indicator “Cumulative impacts on benthic biotopes”, related to the assessment of Descriptor 1 and 6 of the Marine Strategy Framework Directive and taking into account the EU Data Collection Framework for the collection of fisheries and aquaculture data (DCF)<sup>11</sup> and its implementation

<sup>11</sup> 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)

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

regulation (EU-MAP)<sup>12</sup>. The aim is to facilitate an assessment of the indicators as part of the HOLAS III assessment planned to be developed by 2021, which will serve as an element for EU Member States to report nationally on MSFD Art. 8 and 9 assessment in 2024.

Furthermore, recognizing the role of the State&Conservation Working Group in coordinating work on the HELCOM indicators, HELCOM Fish invited State&Conservation to give advice on data necessary for assessing the impact of fisheries on marine ecosystems, in order to ensure that the collected data serve the scientific purpose of the HELCOM indicators (STATE&CONSERVATION 6-2017).

HELCOM FISH 7-2017 established a Correspondence Group for Fisheries Data (CG Fishdata, from 2019 EG Fishdata) tasked with developing a draft Roadmap on fisheries data in order to assess incidental bycatches and fisheries impact on benthic biotopes in the Baltic Sea to be submitted to HELCOM Fish. After several meetings and discussion EG Fishdata agreed that the Roadmap should identify available fisheries data that could be used to meet data needs for assessing the indicators (section 3); and propose potential options for addressing any remaining demands for data gaps or improved data quality (section 4). Section 5 describes how the Roadmap will be communicated and taken forward.

## 2. Introduction

Monitoring by-catch of marine mammals and sea birds as well as impact of fisheries on the sea bottom and benthic communities is important in order to assess the two indicators.

This Roadmap on collection of fisheries data, not only should deliver answers to the questions included in the two HELCOM core and pre-core indicators, but it also reflects several HELCOM and EU commitments which put an emphasis on a necessity to monitor by-catch of protected species as well as impact of fisheries on a sea bottom and its benthic communities. These are especially:

219

### The HELCOM Baltic Sea Action Plan and Ministerial Declarations

The Baltic Sea Action Plan (BSAP) and HELCOM Ministerial Declarations from 2010 and 2013 include commitments related to assessing different pressures on the marine environment, including fisheries, within the context of HELCOM's role as the coordinating platform for the regional implementation of the EU Marine Strategy Framework Directive (EU MSFD) in the Baltic Sea. By-catches of marine mammals and sea birds as well as the impact of fisheries on the benthic biotopes in the Baltic Sea are an integrated part of these assessments.

### The Marine Strategy Framework Directive, Habitats and Birds Directives

The EU Marine Strategy Framework Directive (2008/56/EC) (MSFD), and specifically the Commission Decision COM 2017/848/EU, instructs Member States to establish threshold values and assess the status and pressures on the marine environment in accordance with several criteria.

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<sup>12</sup>COMMISSION 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

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

Criterion DIC1 concerns bycatch of sea mammals, birds, and non-commercially exploited fish species<sup>13</sup>. The MSFD prescribes that Member states shall establish threshold values for the mortality rate from incidental bycatch of species of birds and mammals, which are at risk from incidental by-catch. Criterion DIC2 states that Member States shall establish a set of species representative of each species group according to the criteria laid down in the Commission Decision.

Criterion D6C2, D6C3 and D6C5 concerning seafloor integrity and the impacts of physical disturbance to seabed requires Member States to assess the extent and distribution of physical disturbance pressures on the seabed.

Reporting under Art. 8 of the MSFD is currently based on national MSFD indicator assessments (where they exist) and otherwise on evaluation criteria according to other EU Directives.

The Habitats Directive (92/43/EEC), obliges EU members to monitor by-catch of protected species (Art. 12: Member States shall establish a system to monitor the incidental capture and killing of the animal species listed in Annex IV). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned.

The system of protection set out in Article 5 of the Birds Directive (2005/147/EC) requires clear, effective and well monitored measures to prevent deliberate killing or capture of birds, also from incidental catch in fishing gear. This applies to the whole territory of a Member State and additional rules apply in special protection areas (SPAs) which are part of the Natura 2000 network under the Habitats Directive.

### The Common Fisheries Policy and related commitments

The EU Common Fisheries Policy includes overarching commitments to be coherent with the Union environmental legislation, in particular with the objective of achieving a good environmental status by 2020 (EU 1380/2013, Art. 2.5.j). It also puts emphasis on assessing the impact of fisheries on marine environment (EU 1380/2013, Art.25.1.b). This includes for instance national data collection and monitoring activities, as well as data collection under the multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors (EU-MAP) for the period 2017-2019, for those countries which are EU members (EC Implementing Decision 2016/1251). The table ID included into the EU-MAP, specifies which bird species and marine mammal species (also other groups of protected species such as fish and reptiles) have to be monitored as bycatch in fishing gears. The present EU-MAP has been rolled over for the period 2020-2021. Any new data collection under the DC-MAP will therefore only be considered in the preparation of a new programme starting 2022. In accordance with the EU-MAP, EU Member States collect data if these data are not collected in accordance with other EU regulations e.g. the EU Control Regulation (1224/2009) and its Implementing Regulation (404/2011). The EU Control Regulation specifies what type of fishing vessel tracking system is mandatory and how fishing effort shall be reported. Vessels  $\geq 12$  m in length must have a Vessel Monitoring System (VMS) and an electronic logbook. Vessels  $> 10$  m in length ( $> 8$  m in the Baltic Sea when they have a cod quota<sup>14</sup>) must have a logbook. Smaller vessels are not required to carry a logbook or fill out a landing declaration. For smaller

<sup>13</sup> Non-commercially exploited fish species are not part of the scope of this roadmap.

<sup>14</sup> According to Reg. 2016/1139

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

vessels estimates of effort are derived by individual Member States in a variety of ways such as monthly journals (Sweden), sales records (Denmark) or extrapolated sampling data.

In addition, according to Directive 2002/59/EC, vessels  $\geq 15$  m in length must carry Automated Identification System (AIS)<sup>15</sup>. VMS signals implemented by the EU Control Regulation including a vessel's position, speed and course are usually transmitted once every 2 hrs<sup>16</sup>, AIS system allows assessment of the vessels' position every few seconds.

Requirements concerning fishing gears and techniques allowed for the Baltic Sea, as well as other environmental monitoring requirements, are included into the Technical Measures Regulation<sup>17</sup> repealing, among others, EU Regulation 812/2004. According to this regulation, Member States shall undertake monitoring schemes on an annual basis and established for vessels  $\geq 15$  m to monitor cetacean by-catch for fisheries using bottom-set gillnet or entangling nets with mesh sizes  $\geq 80$  mm (ICES divisions 3b, 3c and 3d) and pelagic trawls (ICES divisions 3a, 3b, 3c, 3d).

Technical Measures Regulation also puts more emphasis on regional cooperation (under the Common Fisheries Policy regionalisation). That allows the development of specific solutions (e. g., for the Baltic Sea under the Baltic Sea Fisheries Forum BALTFISH), what can also include optimising bycatch monitoring of marine mammals and waterbirds and also include monitoring of vessels  $\leq 15$  m in length.

Financing of the data collection under the DCF/EU-MAP has been already covered by the European Fisheries and Maritime Fund for years 2014-2020. In the new EMFF financial perspective for years 2021-2027, higher emphasis should be put on data collection and control activities and the perspectives are such, that at minimum 15% of the future EMFF allocation is to be given to this scope of support. Some Member States already allocate a much higher fraction of their EMFF funds for this purpose. After entry into force of the new EMFF for years 2021-2027, new monitoring requirements can be decided under EU-MAP. Whether, this new financial perspective provides additional monitoring opportunities for Member States, will also depend on decision taken in each MS, which will be given higher flexibility in deciding on their new EMFF financing priorities.

221

### The Indicators

HELCOM core indicators such as the Core indicator "Number of drowned mammals and water birds in fishing gear" and relevant seafloor and benthic biotopes indicators (e.g. "Cumulative impacts on benthic biotopes") are relevant to the work of EG Fishdata. Furthermore, other processes such as the outcomes of ICES workshops WKBEDPRES1, WKBEDLOSS, the autumn 2019 WKBEDPRES2, and the work of WGFBIT may be relevant. These existing indicators will contribute to overall assessments of by-catch and seafloor integrity/benthic habitats for the purposes of the Baltic Sea Action Plan and in evaluation progress

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<sup>15</sup> According to Directive 2002/59/EC of the European Parliament and of the council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC.

<sup>16</sup> According to Implementing Regulation (404/2011)

<sup>17</sup> REGULATION 2019/1241 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on 20 of June on the conservation of fishery resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1098/2007, (EC) No 1224/2009 and Regulations (EU) No 1343/2011 and (EU) No 1380/2013 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

towards Good Environmental Status (GES) under the EU Marine Strategy Framework Directive<sup>18</sup>, for those HELCOM Contracting parties that are also EU Member States.

To support HELCOM indicator assessments and ensure that functional data flows are available, the [HELCOM Monitoring and Assessment Strategy](#), adopted by the 2013 Copenhagen HELCOM Ministerial Meeting, exists, and is supported by Monitoring and Assessment Guidelines defining the best practices and acceptable data collection required to support each relevant indicator assessment. This strategy outlines that the core indicators are to be regularly updated, a process involving a lead/co-lead country approach, which allows for periodical thematic and holistic assessments, such as the State of the Baltic Sea second Holistic Assessment adopted in 2018, to occur. In order for each HELCOM core indicator to be fully regionally coordinated, each indicator should have common monitoring guideline, which is followed by Contracting Parties, quality assurance programme and working data flow arrangements including common database / access point where data resulting from monitoring programmes should be reported (doc. 3J-20, STATE&CONSERVATION 8-2018).

The existing [by-catch indicator](#) is generally descriptive due to the need for better data flows to support a full and operational assessment. Other relevant aspects that will follow, include defining and gaining approval on threshold values (e.g. via State and Conservation then HOD), and issues raised during the 'Future work on HELCOM indicators' process (HOD 54-2018 Outcomes paragraph 4.25, document 45), a process overseen by the GEAR Working Group. At the first HELCOM Indicator workshop in this process (HELCOM Indicator WS 1-2019) by-catch was considered to be a priority area on which developments should take place to have an operational indicator ready in advance of the third holistic assessment, with a deadline for development in autumn 2021. A supporting summary related to the topic of [indicator development on by-catch](#) is available as part of this ongoing process. One further issue discussed at the first indicator workshop was the potential need to consider by-catch of non-commercial fish and relevant regionally agreed lists of species to consider.

222

The pre-core HELCOM indicator "Cumulative impacts on benthic biotopes" is being further developed and was together with recent developments [presented at State and Conservation 9-2018](#), providing an overview of test cases carried out in German waters. The topic of benthic biotopes has also been identified as an area of high priority by HELCOM Indicator WS 1-2019, with a view to defining what assessment can be developed in time for the third holistic assessment of the Baltic Sea. Further work on this topic is underway by Lead Countries Germany and Sweden.

### 3.Meeting data needs with currently available fisheries data

State&Conservation has coordinated work on the development of indicator reports with descriptions of optimal monitoring (HELCOM INDICATORS)<sup>19</sup>. On the basis of these reports, Poland and the indicator lead for the bycatch indicator further outlined data that could be used for an assessment of the indicators, which

<sup>18</sup> <http://www.helcom.fi/baltic-sea-trends/indicators/background>

<sup>19</sup> CORE Indicator: Number of drowned mammals and water birds in fishing gear: <http://www.helcom.fi/baltic-sea-trends/indicators/number-of-drownedmammals-and-waterbirds-in-fishing-gear/>



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

was included in an inventory of HELCOM data needs<sup>20</sup> submitted to STATE&CONSERVATION 6-2017 and to FISH6-2017 for consideration.

Considering the indicator reports and the inventory, EG Fishdata has identified the following fisheries data that may be required for assessing the two indicators; the core indicator “Number of drowned mammals and water birds in fishing gear” and the pre-core indicator “Cumulative impacts on benthic biotopes”.

For both indicators it is imperative to have information on the distribution of fisheries on an appropriate spatiotemporal scale, with what gear and with what effort in relation to the impact.

Some of the key data sources for this information are:

- Logbooks recordings, sales notes, monthly journals, coastal logbooks, etc.
- VMS, AIS, or other sources of GPS data (Black box<sup>21</sup>, etc.)
- Vessel register data (in some cases for assuming gear use)

In order to be able to produce a regionally comparable assessment of the indicators it would be useful if the metric of effort was comparable between all vessels fishing in the same métier, regardless of their size.

Section 3a and 3b describe fisheries data needs for the two indicators, how they could be addressed using fisheries data that is already being collected, and what issues remain to be addressed in terms of data gaps and data quality. Suggestions for how to address remaining issues are elaborated on in section 4. In cases where environmental data is required in order for the fisheries data to be useful, this is highlighted.

#### 3a Core indicator on bycatch – “Number of drowned mammals and water birds in fishing gear”

##### *Overview of data needs*

For both marine mammals and water birds, drowning in fishing gears is considered a significant pressure for some populations.

The indicator “Number of drowned mammals and water birds in fishing gear” aims to estimate the mortality of mammals and birds due to fisheries bycatch. The indicator is to deliver a bycatch rate. Data on bycatch in order to assess whether the mortality of marine mammals and seabirds due to bycatch in fishery is at a level threatening the population status are necessary. Such an assessment allows for decisions on if further management actions in fisheries management are required. For such assessments, it is essential that bycatch numbers are related to monitoring or sampling effort (ICES Advice 2017). Otherwise, no extrapolations to total bycatch numbers are possible.

Data needs in relation to temporal and spatial distribution of passive fisheries (e.g. gillnets, trammel nets, traps) as well as active gears like trawls, is dependent on availability and resolution of VMS, AIS, logbook data and vessel register data.

In order to use available data in the best possible way and to assess ways to gather additional data in a cost effective manner different initiatives are relevant.

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<sup>20</sup> Inventory of HELCOM data needs (last version): <https://portal.helcom.fi/meetings/CG%20FISHDATA%201-2018513/MeetingDocuments/Document%205%20Inventory%20of%20HELCOM%20data%20needs%20to%20assess%20incidental%20bycatches,%20fisheries%20impact%20on%20benthic%20biotopes.pdf>

<sup>21</sup> Black box is used in a Danish mussel dredge fishery as a precise vessel tracking system, especially in Natura 2000 sites.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

Since 2018, the ICES Working Group on bycatch of protected species (WGBYC) issues an annual data call on total fishing effort, monitoring/sampling effort and protected species bycatch incidents. The data supports ICES annual advice on the impact bycatch on small cetaceans and other marine animals to answer a standing request from the European Commission for advice on the impacts of fisheries on the marine environment. The majority of the countries submitted data but the quality and quantity of the data provided varies widely among nations. There are also difficulties in estimating the total effort of all vessel segments (different size classes) as their effort is reported in different metrics.

It is important to note that to assess the conservation threat posed by fishery bycatch to a particular protected species three bits of information are required, these are:

1. the susceptibility of that population to bycatch in particular fisheries (based on sufficient observed effort data and recording of bycatch incidents for each fishing gear) – bycatch rate;
2. the spatiotemporal scale of the fisheries concerned (based on total fishing effort for each fishing gear);
3. the resilience of the population to bycatch (based on population abundance and recovery potential and other pressures). This analysis is outside the scope of this Roadmap but is however very important when estimating the threat to different species related to incidental bycatch.

The WGBYC data call gathers information to estimate 1) and 2). The WGBYC data call does not provide data to estimate 3), since resilience depends on the population abundance and its ability to grow and recover. Data to assess 3) is also needed to set targets for the indicator but is not the focus of this Roadmap and may originate from scientific studies on birth and mortality rates, as well as national and international scientific surveys to estimate trends of bird and mammal population abundances. The ICES/OSPAR/HELCOM JWGBIRD has initiated work to enable assessment of 3). The basis for the ICES advice on “Bycatch of cetaceans and other marine animals” is available online<sup>22</sup>.

224

In conclusion, the following types of data are needed to further operationalize this indicator the:

- data on bycatch related to monitored effort
- regional, temporal and spatial overview of fishing effort for specific métiers, especially but not limited to gillnetters and fleet segments
- data on the distribution and population size of the relevant species (not dealt with within the context of this roadmap as not fisheries data)

#### Data on bycatch

ICES collects information on bycatch of protected species from monitoring under Reg. 812/2004 (until 2019), and other monitoring programmes (currently mainly DCF). ICES Advice (2017)<sup>23</sup> <sup>24</sup>state that bycatch observations “are insufficient to enable any assessment of the overall impact of EU fisheries on [marine mammals]“. But such assessments are required: COM DEC 848/2017 states that bycatch data

<sup>22</sup> [http://ices.dk/sites/pub/Publication%20Reports/Guidelines%20and%20Policies/16.3.3.2\\_Basis\\_for\\_the\\_advice\\_on\\_Bycatch\\_of\\_small\\_cetaceans\\_and\\_other\\_marine\\_animals.pdf](http://ices.dk/sites/pub/Publication%20Reports/Guidelines%20and%20Policies/16.3.3.2_Basis_for_the_advice_on_Bycatch_of_small_cetaceans_and_other_marine_animals.pdf)

<sup>23</sup> <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/byc.eu.pdf>

<sup>24</sup> ICES 2017 ICES Advice (Ecoregions in the Northeast Atlantic and adjacent seas Published 29 August 2017). Bycatch of small cetaceans and other marine animals – review of national reports under Council Regulation (EC) No. 812/2004 and other information. 4 pp.





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

needs to be on species level in order to assess the impact of fisheries on marine mammal and waterbird species. The species to be assessed under primary Criteria DIC1 and DIC2 are to be selected on the basis of scientific and other additional criteria. Therefore, it is important to record on species level in monitoring programmes that already exist and also take this into account when designing new monitoring programmes or scientific studies.

It has been highlighted in the ICES Advice (2017) that EU Member States need accurate bycatch rates to assess whether or not species are at risk from fisheries. Monitoring effort must concentrate on relevant fisheries. E. g., for seabirds in the Baltic Sea priority should be given to monitoring in trammel nets and set gillnets (ICES Advice 2015)<sup>25</sup>. Assessment of and Advice on the bycatch of protected species will also need information on both monitored and total effort in the relevant fisheries to allow for extrapolations (ICES Advice 2017).

The annual *ICES Advice on bycatch of small cetaceans and other marine animals* evaluates the bycatch of cetaceans in selected sea areas using a bycatch risk assessment approach (BRA). In their impact assessments, data from the ICES WGBYC database is pooled over many years. E.g., the bycatch of harbour porpoises in static nets in the Kattegat and the Belt Sea has been evaluated in 2015 and 2016 based on bycatch data pooled for the years 2006-2013 and 2006-2014, respectively (ICES Advice 2015, 2016)<sup>26</sup>. This is due to a very low observed effort in national bycatch monitoring programs.

Observed effort could be significantly increased using Remote Electronic Monitoring (REM) (ICES WGBYC 2015)<sup>27</sup>. Often, ICES does not raise bycatch observations reported by Member States to assess total mortality due to uncertainties in fishing effort data (see section “overview of data needs”, this chapter) and as a consequence, no assessments are possible (e.g., ICES Advice 2015, 2016). ICES reiterate that available information is insufficient to evaluate the impact of fisheries on seabirds and other vertebrates (ICES Advice 2018)<sup>28</sup>.

The BRA approach explicitly recognizes the uncertainty in the overall bycatch rate estimate (its precision) by presenting estimates as 95% confidence intervals. This would result in a very wide range of annual bycatch totals where data are scarce (ICES WGBYC 2015). This limits the possibility to make precise statements about possible population consequences<sup>29</sup>. Sources for potential bias have been identified by ICES (observations cover a wide range of vessel types and métiers, sampling concentrates on larger vessels with higher fishing effort, smaller vessels not fully represented, data not representative of the nature and diversity of the gillnet fisheries) but are not specifically addressed. Further, no account is taken of spatial heterogeneity, mesh size or other gear characteristics (ICES Advice 2015) which would be extremely helpful to inform management as this would enable concentrating management action in the most relevant fisheries.

<sup>25</sup> [http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/Bycatch\\_of\\_PETS\\_Advice\\_2015.pd](http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/Bycatch_of_PETS_Advice_2015.pd) #search=wgbyc

<sup>26</sup> [ICES 2015 ICES Advice \(Ecoregions in the Northeast Atlantic and adjacent seas Published 15 April 2015\). 1.6.1.1 Bycatch of small cetaceans and other marine animals – Review of national reports under Council Regulation \(EC\) No. 812/2004 and other published documents. 5 pp. ICES 2016 ICES Advice \(Ecoregions in the Northeast Atlantic and adjacent seas Published 15 April 2016\). 1.6.1.1 Bycatch of small cetaceans and other marine animals – review of national reports under Council Regulation \(EC\) No. 812/2004 and other information. 6 pp.](#)

<sup>27</sup> [ICES WGBYC 2015. ICES ACOM COMMITTEE ICES CM 2015\ACOM:26 Report of the Working Group on Bycatch of Protected Species \(WGBYC\). 2-6 February 2015. ICES Headquarters, Copenhagen, Denmark. 80pp.](#)

<sup>28</sup> [ICES 2018. ICES Advice \(Ecoregions in the Northeast Atlantic and adjacent seas Published 11 September 2018\). Bycatch of small cetaceans and other marine animals – review of national reports under Council Regulation \(EC\) No. 812/2004 and other information. 4 pp.](#)

<sup>29</sup> Further uncertainties are on the side of the population model which is not the focus of this document.





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

Sampling under the current DCF can contribute to the assessment of bycatch of Protected, Endangered and Threatened Species (PETS), but is largely insufficient on its own as currently implemented by Member States. Assessments carried out by WKBYC (2013) and WGBYC (2018) showed that bottom trawling is generally relatively oversampled with respect to monitoring of protected species bycatch, and e.g. fyke nets (FYK), trammel nets (GTR), set gillnets (GNS), set longlines (LLS), pots and traps (FPO) are undersampled in the Baltic Sea (ICES WGBYC 2015, 2018, 2019).<sup>30 31</sup>

#### Regional, temporal and spatial overview of fishing

There is a need to improve recording of bycaught marine mammals and sea birds on vessel level in the Baltic Sea. In the meantime, assessments of the total amount of the different species, by-caught in fisheries effort related data on static gears and information from scientific projects and surveys are used in order to have best possible estimates. Within métiers, comparable effort data (in days at sea) is currently only available from a fraction of all vessels (where logbook data is available). Others report e. g., hours fished. In reporting total effort of static nets to ICES, Member States choose between five different metrics (ICES WGBYC 2018). **“Days at sea”** (DaS) is the only aggregated unit of fishing effort that is consistently reported among Member States (mandatory for vessels >15 m but often provided also for some smaller vessels). It is also the only unit that is comparable between métiers and hence, ICES WGBYC is reporting bycatch rate estimates in units associated with DaS. ICES WGBYC (2019) however, concluded that due to inconsistencies the 2017 fishing effort data from the ICES Regional DataBase and Estimation System (RDBES) could not be used for their PETS bycatch estimates. RDBES is intended to be the data basis for future advice on bycatch of cetaceans and other marine vertebrates. For describing bycatch risk, however **DaS** is only a very rough proxy for the dimensions of static nets and thus a very inaccurate variable. This is because a day at sea could be either the setting or the recovery or both of any net of a few 100 m up to 21 km (9 km if vessel is ≤12m) length of the net. To increase the precision of extrapolations (from bycatch rate per effort to total bycatch) the preferred metric would be total “soak time of nets in kilometre hours” (as required in Reg. 812/2004) for the observed effort already.

226

To that end, fishing effort needs to be measured sufficiently accurately to be able to make reliable assessments. Although soak time and net length may not be fully available for the necessary fleet segments. In the Baltic Sea a comparable method across the region and across fishing fleet segments is important to be able to make coherent assessments.

The current obligations for the recording rate of fishing positioning systems give a limited view of where and when the fisheries takes place and with what effort. Furthermore, small vessels are not obliged to carry VMS equipment. These currently only report effort at the resolution of Baltic Squares (1/9 of the basic Baltic Sea ICES statistical rectangle). **The positioning of fishing effort is especially important in relation to a hotspot approach to by-catch mitigation fisheries management measures.**

Data aggregated on a monthly basis would enable extrapolations from observed bycatch rate per effort on total effort during months in which a species occurs in the area (especially important for overwintering birds) as an extrapolation to yearly effort could result in an overestimation of bycatch numbers (ICES WGBYC 2019).

<sup>30</sup> [ICES WGBYC 2018. ICES ADVISORY COMMITTEE. ICES CM 2018/ACOM:25. Report from the Working Group on Bycatch of Protected Species \(WGBYC\). 1–4 May 2018, Reykjavik, Iceland. 128pp.](#)

<sup>31</sup> [ICES WGBYC 2019. ICES ADVISORY COMMITTEE. ICES CM 2019/ACOM:xx. Report from the Working Group on Bycatch of Protected Species \(WGBYC\). 5-8 March 2019. Faro, Portugal. xxpp](#)





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

#### 3b Pre-core indicator on cumulative impacts on benthic biotopes

The HELCOM pre-CORE indicator “Cumulative impact on benthic biotopes”, aims to assess the impact of fisheries (among other physical pressures from human activities) on marine benthic habitats/biotopes.

The benthic biotopes in the Baltic Sea are adversely affected by several human activities causing physical disturbance to the seafloor. Fisheries with mobile bottom contacting gear is a widespread activity in many parts of the Baltic Sea. In order to assess the total cumulative impacts on benthic biotopes in the Baltic Sea, data on the distribution and effects of mobile bottom contacting gear on the seabed is essential.

In general, the EG Fishdata finds that data is available to deliver on the indicator on cumulative impacts. The Baltic-wide assessment of cumulative impacts based on ICES fishing intensity data was performed recently and is therefore applicable. It should, nonetheless, be significantly refined by a higher spatial and temporal resolution of fishing intensity data for bottom contacting gear. This will reduce the still high amount of spatial averaging leading to a bias in the heterogeneous coastal regions, especially in the southern part of the Baltic Sea. In terms of a higher temporal resolution (e.g. quarterly data instead of yearly data), this will improve the assessment of the fishing frequency and contribute to more realistic data for the magnitude of the pressure, complementing the fishing intensity. In particular, in the heavily fished areas of the south-west Baltic Sea, a more detailed assessment can be achieved with higher-resolution data. This will help avoid overestimation of fishing impacts e.g. in (smaller) marine protected areas and their connected surrounding regions.

ICES has different Working Groups that work with seafloor impact from fishing gear (WGFBIT, WGSFD). On the basis of the work done in these working groups, ICES advises on the environmental impacts of fishing and the use of space in the North East Atlantic and Baltic Sea. VMS data from vessels coupled with log book data, is currently the most practical and cost-effective way to describe the spatial dynamics of fishing activities (ICES 2018)<sup>32</sup>. Data flows and quantitative methodologies for assessing the physical disturbance from bottom fishing, currently exist within ICES and were deemed appropriate by EG Fishdata for EU purposes for assessing the seafloor (e.g. MSFD and Habitats Directive). The ICES assessment framework consists of three main components: fishing pressure (footprint), benthic habitat sensitivity (including the benthic communities) and the resulting benthic impact. ICES methodology for sensitivity and impact assessments needs further discussion and development to ensure the model gives acceptable outputs. There is also a need for groundtruth validation of the model. The framework is also capable of estimating trade-offs relating to the distribution of impact with other factors important for management (e.g. fisheries economics).

Regional impact assessments as well as further methodological development takes place within the three year (2018-2020) ICES Working Group on Fisheries Benthic Impact and Trade-offs (WGFBIT). On the basis of the WGFBIT work (see WGFBIT three-year work plan), ICES has the objective that the respective indicators become operational across the whole EU and ICES areas (also the Baltic).

The basis for ICES assessment on “sea bottom integrity” - is available within the WGFBIT report as “Annex 4 Technical guidelines document for assessing fishing impact from mobile bottom-contacting fishing gears”.

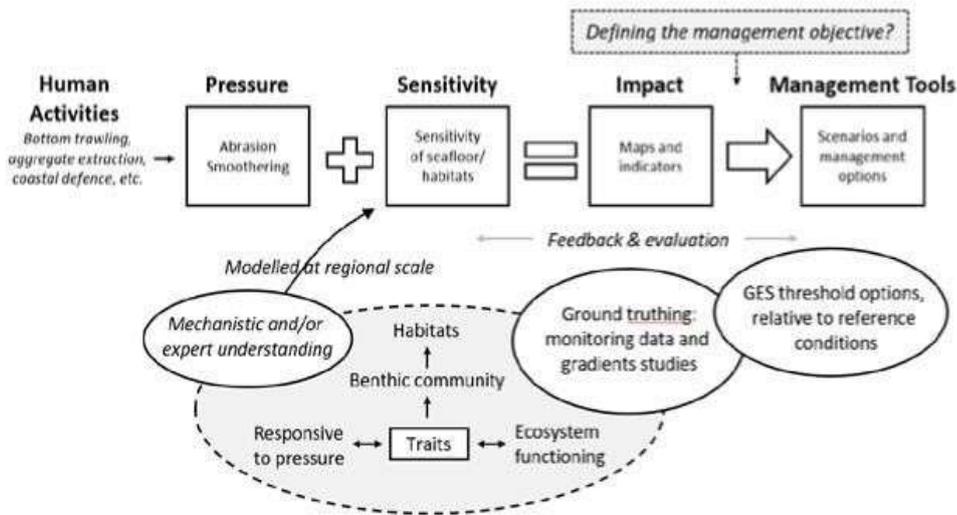
<sup>32</sup> ICES. 2018. Report of the Working Group on Spatial Fisheries Data (WGSFD), 11–15 June 2018, Aberdeen, Scotland, UK. ICES CM 2018/HAPISG:16. 79 pp



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

The described methods build on ICES (2017a,<sup>33</sup> 2017b<sup>34</sup>) advice that has established a set of indicators to assess seafloor integrity, in terms of the spatial extent and distribution of pressures classed under both assessment criteria (physical loss D6C1 and physical disturbance D6C2) and their impact for each broad habitat type, within each ecoregion and subdivision. The seafloor assessment framework suggested by ICES (Figure I, below) also allows for evaluation of trade-offs between catch/value of landings per unit area and the environmental impact and recovery potential of the seafloor.



**Figure I.** Conceptual diagram of the steps taken in developing management tools for assessing pressure and impact on the seafloor (ICES 2019).

ICES regularly calls for data from Member States in order to have the most relevant and up to date data for their work. When interpreting fishing pressure maps for mobile bottom contacting gears, a number of factors are relevant with regard to the precision of the results of the work done by ICES:

#### Fishing vessels without VMS

The ICES data call requests VMS data, but part of the European fishing fleet is not covered by VMS. Fishing vessels smaller than 12 meters are currently not required to have VMS<sup>35</sup>. According to EU (1224/2009, article 9) fishing vessels of less than 15 meters length fishing in territorial waters of the flag Member State or never spending more than 24 hours at sea from the time of departure to the return to port are not required to have VMS. Member States are implementing this article differently, some requiring VMS on all vessels above 12 m.

The vessels without VMS are often fishing in coastal areas, and many of the smaller vessels are using passive gears. Although there is currently no EU requirements for the vessels without VMS to have vessel position

<sup>33</sup> ICES, 2017a. Report of the Workshop to evaluate regional benthic pressure and impact indicator(s) from bottom fishing (WKBENTH), 28 February–3 March 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:40. 233 pp.

<sup>34</sup> ICES, 2017b. EU request on indicators of the pressure and impact of bottom-contacting fishing gear on the seabed, and of trade-offs in the catch and the value of landings. ICES Special Request Advice - sr.2017.13. Published 6 July 2017

<sup>35</sup> 25 COM(2018)0368 proposes VMS data for all fishing vessels. Proposal is awaiting negotiation in Council and Parliament

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

data, there are examples of national legislation requiring part of this fleet to have vessel position data (e.g. in Denmark - Black box).

AIS data is only a requirement for fishing vessels larger than 15 m, but some smaller vessels are using the AIS security system, and these data can give information on fishing activity for a proportion of the fleet without VMS. One of the ToRs proposed for WGSFD 2019 is to evaluate inclusion of AIS data in the ICES data call.

For vessels, carrying VMS-equipment the frequency of a signal varies between different Member States (every 1 or 2 hours). A more frequent signal (e.g., a 10 minute ping rate) or cumulated position data packages and improving the reporting concerning gear types and fishing effort in the logbooks would increase the accuracy of the pressure maps.

The EU GDPR regulation<sup>36</sup> puts some limitations (like including only aggregated swept area ratio information) on the use and publication of fisheries data. Agreements and systems for handling of fisheries data are needed in order to allow for the best possible use of this data.

#### 4. Addressing remaining demands for improved data and data quality

Section 3 of this roadmap highlights that the existing data are not sufficient to give precise estimates of sea bird and mammal bycatches to operationalize the indicator “Number of drowned mammals and waterbirds in fishing gear”. There are also some shortcomings in the data used for the indicator on “Cumulative impact on benthic biotopes”.

Generally, logbook and VMS data (>12 meter) are available. For vessels above 15 meter, AIS is also available. Several smaller vessels (<12 meter) may carry AIS although this is not mandatory.

ICES has for years issued data calls on fishery effort. Hence, data is available at diverse temporal resolutions. Overlaying data layers on fisheries with other anthropogenic data layers may be challenged by ‘scale’, which several studies have and is currently addressing in relation to MFSD.

In general, data is available to deliver on the indicator on cumulative impacts. Work can be done to improve data quality (VMS data for vessels <12 m, higher spatial resolution etc.) as well as data availability to data users and the way of data processing (e.g. higher temporal resolution). Habitat maps should be improved and data on benthic quality collected in fished and unfished (reference) areas to properly calibrate any sensitivity models used. But this is outside the scope of this document. As for the indicator on bycatch, available data will not deliver on the indicator. In this section, the Roadmap outlines what is required in relation to data collection, if HELCOM Contracting Parties and/or EU Member states are to deliver on this indicator.

A number of possible actions are suggested to improve the data availability and data quality. These initiatives will also contribute to fulfilling requirements under the MSFD and the Habitats Directive.

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<sup>36</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

#### Actions related to fisheries effort

- Increase precision of monitoring fisheries effort. E.g. by changes in reporting intervals (higher temporal resolution of VMS data) or using aggregated position information in transmissions.
- Expand the obligation to keep a logbook which would contain the most needed information for all vessels independent of their size: Essential information are position (for higher spatial resolution), length, height (drop) and soak time (start and end time) of the net. For countries having better effort data, such data should be made easily available for assessments.
- Cover a certain % of métier and area under the DCF monitoring.
- In the absence of data reporting, nets, net length and vessels can be counted manually (via satellite, drones or planes). However, it is much more cost-efficient to improve reporting instead.

#### Actions related to bycatch data

- Initiate dedicated research projects to collect data on bycatch in relevant fishing métiers coordinated between Contracting Parties. If possible this should be organised within DCF.
- Initiate dedicated bycatch monitoring, e.g. as part of DCF, of protected species (marine mammals and relevant sea birds, especially those below favourable conservation status or GES).
- Initiate research projects dedicated to estimate bycatch rates and /or for identifying hot-spot bycatch areas.
- Improve recording of bycatch of marine mammals and birds by making it easier for fishermen to self-report through e.g. adding changes to the logbook and ensuring that there are no repercussions for reporting. Use of electronic logbooks on all fleet segments would facilitate the sharing of information and shorten the time lag. However, it should be considered that the use of electronic logbooks for boats below 12 metres may be a challenge in case of small open boats.
- Bycatch monitoring can be conducted with onboard observers or - more cost-effective - with Remote Electronic Monitoring (REM). Incentives or an obligation to fishermen to accept onboard observers or REM onboard should also be considered as well as an enforcement mechanism for noncompliance. Scientific quotas could act as incentives. Focus of bycatch monitoring of most relevant métiers (gill- and entangling nets).
- Main focus should be on regions identified as high bycatch risk areas.
- Consider the use of a reference fleet to make calculations of numbers for total bycatch.
- Identifying possible national and international funds for bycatch data collection (either as part of DCF or additional) especially in the new EMFF financial perspective for years 2021-2027.

230

#### Increase precision of tracking

- The current revision of the EU Control Regulation provides an opportunity to ensure better monitoring and control of fishing operations, including implementation of a tracking system for vessels below 12 m.
- With respect to locating effort using passive gears such as gillnets, the use of smartphone apps by fishermen would provide the opportunity to enhance data quality and quantity. This is especially the case for small vessels.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

Possible actors involved: fisheries authorities of HELCOM Contracting Parties, BALTFISH to discuss possible regional initiatives, MEP's, DG Mare, DG Environment. The Commission has presented a proposal for a new EU Control Regulation COM(2018)0368 in May 2018. Negotiations expected continue during the coming 1-2 years.

#### Increase precision of effort monitoring

Harmonisation of data entries in logbooks with respect to a metric more precise than “days at sea” (DaS) would increase the precision of effort assessments. For passive gears, such as GNS/GTR, to increase the precision of extrapolations (from bycatch rate per effort to total bycatch) the preferred metric would be total **“soak time of nets in kilometer hours”**. This simple but very effective improvement in logbook requirements can be addressed in the revision process of the control regulation (COM(2018)0368, proposed Article 14 nr.2(f) and no. 5(b iii and iv)) and also at BALTFISH in order to harmonise this at a regional level. It is useful that vessels of all sizes record the same metrics. In order to make use of ICES WGBYCs database covering a long time but based on DaS it would be required to keep DaS as additional variable for reporting. In addition to the mesh size, which is already required to be recorded in the logbook, the drop of the net is also relevant information with respect to bycatch risk. But this is not required to be recorded in logbooks. The current Control Regulation 1224/2009 (Article 14) does not specify how the dimensions of a net must be recorded in a log book. From the perspective of bycatch risk it should be length, position in the water column and height (drop) of a net.

Since logbooks are only kept on fishing vessels >10 m (or 8 m if vessels have a cod quota), a large number of vessels using gillnets and other passive gear do not provide the information needed for a precise effort estimation. Expanding the obligation to keep a logbook which would contain the most needed information to be used specifically to estimate by-catch would further increase the precision of bycatch estimates. This can also be addressed in the revision process of the control regulation and also at BALTFISH.

Actors involved: fisheries authorities of HELCOM Contracting Parties, BALTFISH, MEP's, DG Mare, DG Environment

#### Initiate research projects to collect data on bycatch in relevant fishing métiers coordinated between Contracting Parties

Regionally coordinated research projects (either as part of the DCF or nature conservation management) on bycatch would much enhance the data quality and be a first step to fulfill the data requirements according to the Habitats- and Bird Directive and the MSFD. These should be complemented with DCF monitoring efforts, and the results should be comparable and compiled together. This can be achieved with onboard observers or - more cost-effective - with remote electronic monitoring (REM) (Kindt-Larsen et al. 2013). As the main focus of DCF on-board sampling is on different métiers than those known to produce most of the bird and mammal bycatch in the Baltic Sea, additional bycatch information is needed especially for passive fishing methods such as gillnets and trammel nets in order to have better by-catch data. If this has to be done in a cost-effective way, it is possible to do this in a cycle of e.g. 3 or 6 years<sup>37</sup>. A longer than annual cycle could provide added value as the monitored effort in a particular year could then be larger using less money compared to a regular monitoring (e. g., in the DCF at-sea-sampling programme) in which bycatch is only one of many aspects observers have to deal with. In order to get the best benefit out of this it would be desirable

<sup>37</sup> MSDF and HBD reporting is every 6 years.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

to coordinate such projects between Contracting Parties and include as many Contracting Parties as possible. This is because e.g., harbour porpoise by-catch rates are expected to differ along a gradient of density/occurrence and also with respect of regional/local differences in fishing practices.

Actors involved: fisheries and environmental authorities of HELCOM Contracting Parties, funding agencies, scientific institutions

#### **Dedicated bycatch monitoring of protected marine mammal and relevant sea bird species**

A comparison of bycatch data collected by dedicated<sup>38</sup> observers with data obtained through other monitoring programmes (such as DCF) revealed that bycatch rates in programmes dedicated to bycatch, resulted in much higher bycatch estimates. Although the monitoring programmes compared were not in the same fisheries or precisely the same areas or at the same time, the scale of the difference has been so large that ICES advises that specifically designed monitoring schemes including dedicated observers or REM are required if good estimates of protected species bycatch are required (ICES Advice 2016). Reasons for this could be that in DCF monitoring bycatch (e.g., bycaught animals slipping out of a net before entering the vessel) can be overlooked by observers when performing other tasks (ICES WGBYC 2018, 2019).

Bycatch rates from dedicated monitoring must be extrapolated to fleet level in order to get total estimates. For this reason, the data quality of effort data is critical. A method must be developed which takes into account the different bycatch rate per month and also the variation of bycatch risk due to varying densities. This method must also take the precautionary principle into account.

Actors involved: fisheries and environmental authorities of HELCOM Contracting Parties, funding agencies, scientific institutions, RCG Baltic

232

#### **Give the DCF Observer programme a stronger focus on métiers more relevant for bycatch**

Currently, DCF Observer programmes focuses mainly on trawl fisheries. If DCF monitoring were to provide data on bycatch of mammals and birds in a quality suitable for precise bycatch assessments, it would be necessary to increase the observer coverage in gillnet and trammelnet fisheries as well as traps, longlines and other passive gear (ICES WGBYC 2018). It may be challenging to include a large number of small vessels, which cannot carry an additional person on board into the programme. For this purpose, additional monitoring using REM-schemes can provide a cost-effective solution. Further, including bycatch monitoring into DCF monitoring will require very careful consideration of sampling regimes and, as such, monitoring will require significant adjustments from that used for commercial fish bycatch (ICES Advice 2016). E. g., the observed effort must have to be corrected for times during which the observer was focused on different tasks than observing bird or mammal bycatch (for details see ICES WGBYC 2018 and 2019). It should though be noted that the EU funding for carrying out the national DCF programs for several years have been fully utilized and already today prioritization of what can be done in order to fulfill the CFP article 25 obligations are made.

ICES suggest that Regional Coordination Groups will need to adapt at-sea sampling designs to include data on frequency of protected species bycatch events in all relevant fisheries. In particular, gillnet fisheries are currently receiving little observation overall (ICES Advice 2017).

It is important that EU and national funding for collection of data on protected marine mammal and relevant sea bird species are made available. Collection of data for the MSFD monitoring in addition to the DCF

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<sup>38</sup> The term “dedicated monitoring” is used to define programs that are specifically aimed (through sampling design and data collection protocols) to obtain data for the typically rare bycatch events of protected, endangered or threatened species.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

monitoring could be made available through the new EMFF program period 2021-2027. This is important, in order to enable additional monitoring to the DCF-monitoring with a focus on bycatch of birds and mammals, fulfilling relevant nature conservation monitoring requirements such as MSFD, Habitats and Birds Directives. EMFF negotiations are currently in progress.

Actors involved: fisheries and environmental authorities of HELCOM Contracting Parties, funding agencies (EMFF and co-funding), DG MARE, DG ENV, RCG Baltic.

#### Improve regional co-ordination on data collection for Union policies through EMFF direct management funding

EMFF provides a possibility for the European Commission to finance various measures through Integrated Maritime Policy (IMP). The purpose of such possibilities, among others, is to increase co-operation between different policy sectors. IMP enables a number of measures to address issues where different Union policies interface with each other and the stakeholder interest are common in different policy areas.

IMP direct management funding possibilities could improve regional co-operation on data collection for the purpose of the CFP and MSFD simultaneously. Such co-operation could consist e.g. developing or improving regional databases and assessments, pilot projects and studies and promoting dialogue between stakeholders. HELCOM, together with other regional actors such as BALTFISH and BSAC, could take the lead and form a partnership to advance such initiatives.

It is essential to maintain and preferably, improve the financing possibilities through the IMP direct management in the ongoing discussion in EU institutions on the new EMFF.

Actors involved: fisheries and environmental authorities of HELCOM Contracting Parties, BALTFISH, BSAC, funding agencies (EMFF and co-funding), DG MARE, DG ENV.

## 5. Follow-up and Communication

### Process towards promotion and communication of the Roadmap within HELCOM

- **Contribution from work done by the HELCOM ACTION project.** HELCOM ACTION to examine/look into data availability according to the data needs identified in the Roadmap (mainly fishing effort for smaller boats) and suggest what should be done to be able to identify bycatch hot spots of harbour porpoise, as well as matters related to seabed disturbance, which is currently in the focus of the ACTION Project which is going to terminate **by 2020**). There is a link between the ACTION Project and the update of the BSAP (see below and **Annex**).
- **Ensure relevant input to the updated Baltic Sea Action Plan.** The adopted Roadmap should be used to identify, in the updated Baltic Sea Action Plan, future actions related to bycatch and seabed disturbance. Such new actions are to be adopted in the updated BSAP by 2021. The exclusive competence of the European Union in conservation of marine biological resources under the Common Fisheries Policy, should be taken into account as appropriate.
- **HELCOM work on indicators.** Using information from the Roadmap to initiate actions to make the bycatch and seabed disturbance indicators operational by the planned HOLAS III assessment in 2021.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

#### Process towards coordination and communication of the Roadmap outside HELCOM

- **OSPAR:** In general it is very important to coordinate work with OSPAR. Due to the fact that the Kattegat area will be assessed by OSPAR and the overlap of bird and sea mammal populations between HELCOM and OSPAR area, it is necessary to harmonise OSPAR and HELCOM indicators.
- **BALTFISH:** Communicate and present the Roadmap to the BALTFISH forum in the context of the envisaged communication process between BALTFISH and HELCOM regarding closer cooperation between fisheries management and the protection of the marine environment. Some technical issues connected with data needs identified in the Roadmap (e.g. to increase precision of effort monitoring) may be suggested to BALTFISH **in the first half of 2020**.
- **Regional Coordination Group (DCF) for the Baltic Sea:** Submit the Roadmap to the RCG meeting with the aim for RCG to discuss it **by first half of 2020**. RCG is suggested to discuss possible improvement of bycatch monitoring, and note the seafloor disturbance assessment in Chapter 3b of the Roadmap.
- **BSAC:** the Roadmap should be presented during discussions at upcoming meetings of the groups: (BSAC Working Group on Ecosystem based Management **by second half of 2020**, and possibly EXCOM **by first half of 2020**. Advice on solutions to address remaining data needs should be sought.
- **ICES:** HELCOM should communicate to the Advisory Committee of ICES (ACOM) and the ICES data centre on ongoing work of the HELCOM Fish Group to harmonize a data collection roadmap to operationalize a bycatch and seafloor disturbance indicators for the Baltic Sea. Communication should note HELCOM's wish to cooperate to find solutions on existing data gaps in the Baltic Sea, in particular for bycatch monitoring for a "Number of drowned mammals and waterbirds in fishing gear" indicator. HELCOM could enquire how to best support the work of ICES working groups WGSFD and WGBYC to help resolve existing gaps in data. The intention is to harmonize ongoing work on indicator development and seabed assessment towards HOLAS III with regard to ICES' seabed assessment framework (WGFBIT) for the Baltic Sea and consider the EC Technical Group on seabed habitats and sea-floor integrity (TG Seabed) recommendation for an EU approach based on a review of approaches by ICES and Regional Seas Conventions. This can be used to provide options on how to reduce the environmental impact of bottom fishing on seafloor habitats and marine protected areas in a cost effective way.
- **ASCOBANS:** The Roadmap should be shared with the Joint bycatch Working Groups of ACCOBAMS and ASCOBANS, ASCOBANS Advisory Committee and the JASTARNIA group, as well as the ASCOBANS Meeting of Parties in 2020.
- **European Union institutions:** Communicate the Roadmap to relevant bodies of the EU (e.g. DG Environment and DG MARE) **by the first half of 2020**.
- **EU Marine, Nature and Fisheries Directors:** Aim to present the Roadmap at the next meetings, preferably in 2020, to ensure linkage between MSFD and CFP processes.

#### Annex

#### **ICES contribution to the Roadmap on fisheries data in order to assess incidental bycatches and fisheries impact on benthic biotopes in the Baltic Sea**

**ICES** notes that the data requirements may be very different in order to operationalize the respective indicators being put forward by the HELCOM Fish Group, 1) bycatch of mammals/birds and, 2) sea bottom integrity. We note that the Roadmap is well developed with regard bycatch of mammals/birds, and provide



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

some further input as to ongoing work within ICES. For sea bottom integrity the roadmap is underdeveloped, and we thus provide some more substantive input on the ongoing ICES work.

#### Bycatch assessment data and methods

The basis for the ICES advice on “Bycatch of cetaceans and small marine mammals” is available online:

[http://ices.dk/sites/pub/Publication%20Reports/Guidelines%20and%20Policies/16.3.3.2\\_Basis\\_for\\_the\\_advice\\_on\\_Bycatch\\_of\\_small\\_cetaceans\\_and\\_other\\_marine\\_animals.pdf](http://ices.dk/sites/pub/Publication%20Reports/Guidelines%20and%20Policies/16.3.3.2_Basis_for_the_advice_on_Bycatch_of_small_cetaceans_and_other_marine_animals.pdf)

Since 2018, the ICES Working Group on bycatch of protected species (WGBYC) issues an annual data call on total fishing effort, monitoring/sampling effort and protected species bycatch incidents. The data supports ICES annual advice on the impact bycatch on small cetaceans and other marine animals to answer a standing request from the European Commission for advice on the impacts of fisheries on the marine environment. Data are requested from 18 ICES countries and six additional Mediterranean non-ICES countries. The majority of the countries submitted data, but the quality and quantity of the data provided varied widely among nations.

It is important to note that to assess the conservation threat posed by fishery bycatch to a particular protected species three bits of information are required, these are:

1. the susceptibility of that population to bycatch in particular fisheries (based on observer effort data and number of bycatch incidents recorded by fishing gear);
2. the scale of the fisheries concerned (based on total fishing effort by fishing gear);
3. the resilience of the population to bycatch (based on population abundance and recovery potential).

The WGBYC data call gathers information to estimate 1) and 2). The WGBYC data call does not provide data to estimate 3), since resilience depends on the population abundance and its ability to grow and recover. Data to assess 3) may originate from national and international scientific surveys to estimate bird and mammal population abundances.

#### Seafloor assessment data and methods

The basis for ICES assessment on “sea bottom integrity” - is available within the WGFBIT report as “Annex 4 Technical guidelines document for assessing fishing impact from mobile bottom-contacting fishing gears”.

<http://ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/HAPISG/2018/01%20WGFBIT%20-%20Report%20of%20the%20Working%20Group%20on%20Fisheries%20Benthic%20Impact%20and%20Trade-offs.pdf>

The described methods are based on ICES (2016, 2017) advice that has established a set of indicators to assess seafloor integrity, in terms of the spatial extent and distribution of pressures classed under both assessment criteria (physical loss D6C1 and physical disturbance D6C2) and their impact for each broad habitat type, within each ecoregion and subdivision. This work builds on from the old DCF Annex XII indicators 5, 6, and 7 (see 2015 ICES advice), but now also includes benthic impact estimate (biomass relative to carrying capacity) indicators. The suggested seafloor assessment framework by ICES (Figure 1, next page) also allows for evaluation of trade-offs between catch/value of landings per unit area and the environmental impact and recovery potential of the seafloor (see e.g. 2017 ICES workshop WKTRADE). Such information will be required in the exploration of management scenarios under different policy requirements (e.g. MSFD, CFP, and the deep-sea access regulation EU 2016/2336).



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

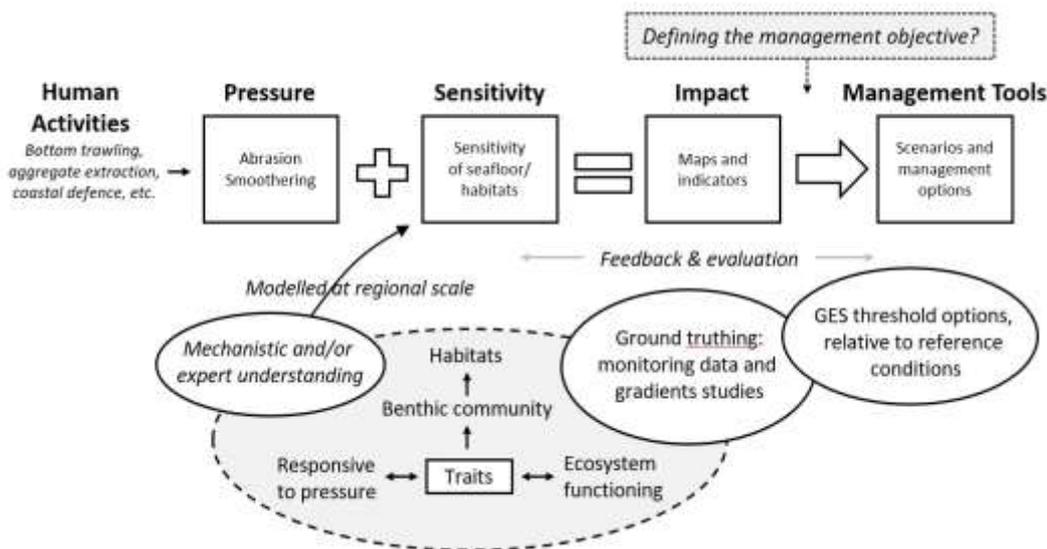
### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

Based on this ongoing (2018-2020) work, ICES is working to operationalize the suggested seafloor assessment framework (see [WGFBIT three-year work plan](#)), with respective indicators becoming operational across the whole EU and ICES areas (also the Baltic). The indicators and data collected need to be appropriate to the assessment of benthic habitats (D1) and seafloor integrity (D6) as set out in the Commission Decision (EU) 2017/848. The Marine Strategy Framework Directive (MSFD) sets the broad requirement under Descriptor 6 that sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected (Directive 2008/56/EU), and the indicators will also need to serve this purpose.

#### Assessing the seafloor?

A newly established ICES working group WGFBIT, who met in November 2018, will be taking forward (2018-2020) the operationalizing of the ICES seafloor assessment framework (see [WGFBIT three-year work plan](#)) - with respective indicators across the whole EU, ICES areas, including the Baltic.

In addition to the established and suggested pressure data flows (see below section), WGFBIT has in their draft report recommended the integration of benthic datasets that are linked to specific functional traits (longevity/biomass) of the species. These data are required not only for a wider range of taxa, but also across a specific range of habitats within for example Barents Sea, Celtic Sea, Baltic Sea, Norwegian Shelf and the Mediterranean Sea (and others). Where data does not exist, targeted gradient studies – rather than traditional monitoring - will be required. Some data does exist via EMODnet biology data portal, but this needs to be greatly expanded. With this in mind there may be a need in the near future to establish new initiatives and/or project to target some of the identified gaps.



**Figure 1.** Conceptual diagram of the steps taken in developing management tools for assessing pressure and impact on the seafloor.

#### Activities to pressure data, service seafloor assessment indicators?

##### Pressure data gaps and requirements



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 12. ISSG Identification of Case Studies for PETS Bycatch Monitoring

Parallel to the process of indicator development, ICES has received a number of EU advice requests to map out the data needs necessary to the service seafloor assessment framework and to demonstrate its operationality. This work has already highlighted some specific data needs to service the underlying methods of the indicators. If these data needs are met, this would ensure the overall assessment of the seafloor (impact and pressure) can be featured in the future iterations of, for example, the ICES Fisheries Overviews and Ecosystem Overviews for each ecoregion (e.g. in 2020).

A recent ICES workshop ([WKBEDPRESI](#), October 2018) has identified the benthic physical disturbance (D6C2) pressure layers available within ICES and the European and wider marine community across four EU regions – including the mapping of pertinent data flows and the establishment of criteria needed to ensure the practical use of the data in assessing benthic impact. See conclusions and recommendations [page 44-46](#) of the WKBEDPRESI workshop report.

Preliminary analysis indicated that the key human activities that resulted in physical disturbance on the seabed are very similar for the 4 EU regions examined (Baltic Sea, North East Atlantic, Mediterranean and Black Sea). Here fishing was found to be the most extensive cause of physical abrasion, with aggregate extraction and dredging also of relevance in most regions, but much less extensive.

Data flows and quantitative methodologies for the processing of physical disturbance from bottom fishing currently exist within ICES and were deemed appropriate for EU e.g. MSFD purposes for assessing the seafloor. These methodologies are in line with previous ICES advice on indicators (ICES 2016, 2017). However, similar data flows are yet to be established for the Mediterranean and Black Sea. Future calls should also take into account other sources of data reflecting activity causing seabed abrasion to allow for better coverage (e.g. AIS). Relevant data from HELCOM, OSPAR and the EMODnet human activities data portal may also be of use in the assessment and should be explored. Similar to the ICES VMS/logbook data call, data flows for other pressure (e.g. aggregate extraction and dredging) need to be better established to ensure consistent collation at the regional scale from national level. This needs to be done using data management practices, for which ICES's TAF ([transparent assessment framework](#)) is an integral part of.

In addition to physical disturbance pressures data, ICES has in 11-13 March 2019 run a similar workshop ([WKBEDLOSS](#)) to identify data flows for activities resulting in physical loss (D6C1/C4) pressures, i.e. permanent alteration of the habitat from which recovery is impossible, such as construction activities (e.g. offshore windfarms).

**What about the trade-offs?** To ensure more realistic scenarios will be developed under the assessment framework, a series of workshops are planned to bring together experts from ICES working groups WGFBIT, WGMARS, and WGECON. These management scenarios will have cross policy relevance (e.g. MSFD, CFP, and the deep-sea access regulation (EU) 2016/2336). Data improvements will also be at the heart of these workshops: for example, where countries might agree on standard methods in assigning landings values when answering the ICES VMS/logbook data calls.



## 13 ISSG Diadromous Fishes

### 13.1 Executive Summary

Due to the prevailing restrictions caused by the global Covid-19 pandemic, ISSG Diadromous Fishes met between 20<sup>th</sup> and 22<sup>nd</sup> of April 2021 in daily web meeting sessions (3 hours per day) instead of having a physical meeting. Altogether, 26 experts on diadromous fishes from 13 countries participated at least part of the meeting's sessions (see list of participants). The group discussed various issues and dealt with several tasks, that were identified by participating experts or that were derived from outcomes from RCG-related work or ICES EG workshops and meetings.

The following points were considered to be of highest priority:

- Data collection under DCF following end-user needs. Which data are currently collected, actually being used and what is missing?
- Potential issues raised in latest ICES WGEEL, WGNAS and WGBAST reports.
- Acoustic tagging studies in member states, how can efforts be canalised and synergistic effects be used?

### 13.2 Data in assessments and end-user needs (availability, use and need)

Collection of biological data of diadromous species in inland waters was introduced at a relatively recent stage of the common data collection framework (DCF). Despite of that, some countries in the Baltic Sea region have funded monitoring of salmon in rivers under DCF and included data collection and projects in their National Plans since the beginning of DCF in 2002. Due to the complicated life cycles of diadromous species, data requirements for stock assessment are often different and rather unconventional compared to assessment data needs of most other (shared) marine stocks covered under DCF.

Changes to the EU Data collection Framework in 2007 introduced requirements to collect data on eel and salmon, but the data requested for these species did not meet the needs of national and international assessments. As a result, data specifics for eel and salmon data collection have been postulated in line with a designated ICES workshop WKESDCF in 2012 (ICES 2012), which was meant to:

- determine data requirements to support obligations for international eel and salmon assessment.
- describe national monitoring and survey programmes required to meet these data requirements.
- consider options for integrating salmon and eel surveys and monitoring.

Outcomes from this workshop still constitute the basics of data collected for diadromous species under DCF. However, continuous adjustments of the new Data Collection - Multi-Annual Programmes (DC-MAP) since 2016 and the upcoming modifications in the annex of the commission delegated decision for the EU MAP from 2022 provide the opportunity to clarify, review and identify potential improvements in data collection for diadromous fishes.

#### 13.2.1 Eel

##### 13.2.1.1 Eel in Mediterranean, NANSEA & Baltic Sea

International assessment and recommendations for the stock of European eel conducted by Joint EIFAAC/ICES/GFCM working group on eels "WGEEL" is currently based on recruitment time-series from currently a total of 68 glass- and yellow eel monitoring sites in the North Sea, Baltic and "Elsewhere" in



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

Europe. However, landings data, yellow eel abundance and silver eel escapement data are gaining importance and specific workshops and (e.g. WKEELDATA, WKFEA) have recently tackled the need of improvements in assessment, aiming at taking into account also fisheries-related data and abundance data on later continental life-history stages.

At the same time GFCM eel is currently conducting the European eel research programme, a study on eel assessment in the Mediterranean, which stemmed from a request of GFCM/42/2018/1 on a multiannual management plan for European eel in the Mediterranean based on discussions held at Working Group on the management of European eel (WGMEASURES, FAO HQ, 16-17 April, 2019). This GFCM Eel Research Program aims at the achievement of a coordinated framework for eel monitoring, assessment and management, in view of preparation of a Management Plan for eels in the Mediterranean Region, which will strengthen the knowledge and data availability around European eel throughout the majority of its natural distribution range.

Findings and outcomes of abovementioned workshops and studies will provide new knowledge on data needs and recommendations for improvement of current DCF data collection requirements.

A presentation on WGEEL Assessment data needs by WGEEL Chair Jan-Dag Pohlmann is available at ([link](#)) and a presentation on Coordination of eel data collection in Mediterranean region (GFCM) held by Eleonora Cicotti is available at ([link](#))

#### Issues to be discussed in RCG NANSEA, Baltic and Med:

- WKEELDATA has outlined the data requirements and how future data calls will fulfil the data needs of WGEEL.
- GFCM Eel Research Programme planning is ongoing and will complete in spring 2022 to achieve a coordinated framework for eel monitoring, assessment and management for eel in the Mediterranean.

**Issues to be decided in the RCG NANSEA, Baltic and Med:** none at this point

### 13.2.2 Salmon

#### 13.2.2.1 North Atlantic salmon

ICES Working Group on North Atlantic Salmon (WGNAS) is a recognised end-user for these data.

The Atlantic salmon stock assessment carried out by the ICES WGNAS has traditionally been based on modelling the pre-fishery abundance (PFA) of salmon at sea before any fisheries targeted them. The model has used the stock-recruitment relationship from the run-reconstruction modelling, and it has been run separately for different stock complexes and units in the Atlantic area (Stock Annex of NANSEA salmon, ICES 2020b). Since 2017, a new modelling approach, a hierarchical Bayesian life-cycle model (LCM; e.g. Rivot et al. 2019), has been under development to harmonize stock assessment across different stock complexes and units in the Atlantic. The LCM framework allows for modelling covariations among all stock units and for partitioning the effects of fisheries from the effects of environmental factors at a hierarchy of spatial scales. The LCM framework requires information on adult abundance and age composition on an annual basis, similar to the present PFA modelling. Data on adult sex ratio, fecundity and smolt age composition has only been required periodically, but full time-series will likely be included in the new LCM. Similarly, information on parr



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

abundance (densities) has been used for national assessment and management but is currently not required by the ICES assessment. The developing LCM will likely also use such data to account for life history variability across and within populations.

#### Data requirements of ICES WGNAS

- WGNAS internally reviewed data requirements for assessments in 2019 (see the text table below).
- Since 2020 WGNAS has an official ICES data call. Start was just very basic data but adding to that annually. Data call goes out of all countries, not just EU Members States.
- Other data is reported on in report, but not strictly needed for assessments.

#### WGNAS reports on data call of catch data (since 2020)

- covers all fisheries (commercial, recreational, farmed, ranched, indigenous, subsistence).
- in all fishing areas (coastal, estuary, river; open sea fisheries don't occur).
- by age/size class of catch.
- also estimates of unreported catch.

#### Foreseen data needs in future

- major changes coming to WGNAS assessment.
- move to a new Life-Cycle Model for assessment + Benchmark.
- new LCM will be more flexible and will take more and different kinds of data compared to current models => WGNAS data requirements will likely change in future.

Apart from EU MSs also non-EU countries are participating (Iceland, Norway, Russia, United Kingdom, USA, Canada).

Presentation WGNAS Assessment data needs by Dennis Ensing is available at ([link](#)).

**Issues to be discussed in RCG NANSEA:** the expected data needs in short/medium term and potential funding from the DCF budget.

**Issues to be decided in the RCG NANSEA:** No actions from the RCG are required, since the model development is underway and details about data requirements will be realized in future.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

**Salmon in NANSEA.** Atlantic salmon data requirements adapted by the RCG 2018 and annotated by the WGNAS 2019.

Data type	Parameter	Used by Working Group	Future planned	Would be useful	
<b>All fisheries exploiting North Atlantic salmon</b>	1 Fishing effort.	X			
	2 Number and weight of all salmon caught separated by fisheries, location, age class. Estimates are also required for unreported catches.	X			
	3 Number of salmon released in recreational fisheries.	X			
	4 Weight of ranched salmon caught.	X			
<b>Mixed-stock salmon fisheries</b>	5 Assignment to jurisdiction/region/river of origin of adult salmon, at least once every 5 years.	X			
<b>Biological data</b>	6 Counts (or estimates) of returning adults for at least one river stock in 30, or as based on national assessment requirements.		X		
	7 Sea age composition of returning adults	X			
	8 Sex ratios of returning adults by sea age at a national/regional level every 5 years	X			
	9 Annual smolts counts on monitored rivers		X		
	10 Annual age composition of smolts		X		
	11 Surveys for juvenile salmonids to assess stock compliance (national assessments) and Water Framework Directive (WFD) requirements			X	
	12 Fecundity of returning adults by sea age at a national/regional level every 5 years (should be in new DC MAP)	X			
	13 Annual fry/parr densities on index rivers, as agreed by ICES – required for WFD not for WGNAS assessments				X
	14 Egg to smolt survival time-series on index rivers – potential future incorporation in LCM				X
	15 Annual estimates of sex ratios of adults on index rivers - potential future incorporation in LCM				X
	16 Annual estimates of sex ratios of smolts on index rivers – potential future incorporation in LCM				X
	17 Disease and parasite monitoring in wild fish (e.g. BKD, ISA, Gyrodactylus salaris, sea lice, etc.)				X
	18 Modelling the density-dependence in the freshwater phase – potential future incorporation in LCM				X
	19 Midpoint of smolt migration period	X			
	20 Estimates of ‘smolt to returning adult’ return rates (‘marine survival’) collected annually on monitored rivers, collected at suitable spatial frequency to be decided at country level	X			

241

### 13.2.2.2 Baltic salmon

ICES Baltic Salmon and Trout Assessment Working Group (WGBAST) is the recognised end-user for these data. Some countries have collected salmon data (catch sampling, parr densities, smolt counts) in their NP from the beginning of the DCF since 2002. In many countries, however, large part of the monitoring has been funded from other sources than DCF. In general, the data collected today meets the quality requirements and is comparable between countries. There are still inconsistencies in some assessment units e.g. in estimation of smolt numbers (from parr densities) and also in estimation of carrying capacity of rivers.

In the Baltic salmon stock assessment carried out by ICES WGBAST, a Bayesian approach is applied in a full history model (plus sub-models) which allow a diverse range of data and expertise to be incorporated probabilistically and the input to be specified in a formal and probabilistic manner.

The main sources of information currently used for the assessment of Baltic salmon stocks can be categorised into three groups according to the place where the actual data collection is carried out:

- River surveys: parr density estimates, smolt trapping, monitoring of spawning runs, M74 and river catches
- Sea surveys: catch data, fishing effort data and catch composition estimates (stock and age)
- Joint river and sea surveys: tagging data (tagging in rivers, recaptures from sea and river fishery)

The data that is available and currently used in the stock assessment is presented in text table below.

Regarding the data use and data needs WGBAST reports (WGBAST 2021) along the same lines as previously:

Because requirements for data will always exceed available resources, preferences must be given. The identification and prioritisation of new data collection is of importance with respect to the European data collection framework (EU-MAP). Modifications to ongoing monitoring work should be based on end-user needs, particularly those related to ICES assessment.

Over the years, WGBAST has repeatedly highlighted and discussed various needs for data collection (e.g. ICES, 2014; 2015; 2016). For example, the need for genetic analysis to study stock composition in catch samples (MSA) has been reviewed (ICES, 2015), with suggestions provided regarding future studies. Comments have also been given to a comprehensive list of proposals for Baltic salmon data collection produced at an earlier ICES workshop in 2012 (ICES, 2016). Further, the need for at least one wild index river per assessment unit has been highlighted, with suggestions given on potential candidates in AUs 5–6. As a part of the last benchmark for Baltic salmon (WKBALTSalmon, ICES, 2017c) all different types of information needed as input for the Baltic salmon stock assessment (fisheries statistics, biological data, etc.) were reviewed with respect to needs, availability and quality. Data issues and questions listed in that benchmark report are rather extensive and prioritizations will thus be needed before decisions on data collection included in EU-MAP.

In brief, WKBALTSalmon highlighted the below data needs and development areas. WGBAST encourage Member States to include these elements into their national data collection programmes.

#### River data

##### Biological monitoring

- Expansion of networks for electrofishing sites, to cover also recently populated river stretches;
- Updates of size estimates for river-specific reproduction areas using standardised methodology;
- Inventories of habitat quality, particularly in 'weak' salmon rivers (i.e. those with low stock status);



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

- Compilation of stocking data on young life stages combined with information that enables estimation of survival for these releases until the smolt stage;
- Counting data of ascending spawners from additional rivers. Guidelines to assure comparability of such data should also be compiled. In rivers where counting is ongoing but data are yet not used in the assessment, additional information may be needed (e.g. from tagging studies).

#### River fisheries

- The amount and quality of catch statistics varies considerably between rivers and countries. There is a general need for improvement and harmonisation of methods used for data collection, including estimates of unreporting;
- River-specific salmon catches should be included in InterCatch (ICES database);
- Available effort data from river fisheries should be evaluated.

#### Sea fisheries data

- The level of misreporting of salmon as sea trout may be underestimated. For the Polish coastal fishery, no misreporting is accounted for so far, although it potentially may occur in substantial amounts there. Data on proportions of sea trout and salmon in catches should be provided to the working group to facilitate estimation of the development of misreporting.
- Recreational trolling open sea catches have been estimated to be higher than previously recognised. Initiated work to improve methods and estimates should continue. Time-series of country-specific catch estimates by three main fishing areas should be added into InterCatch;
- Also estimates of other recreational salmon sea catches (i.e. from coastal fishing in Sweden and Finland) should be added into InterCatch;
- Unreporting of catches is challenging to estimate, and it is possible that higher than currently estimated unreporting takes place in some countries and fisheries. An expert elicitation covering all relevant fisheries is needed in order to update unreporting estimates. Also, discards (e.g. undersized and seal-damaged catch, or wild salmon when only fishing on reared salmon is allowed due to local/national regulations) may be substantially underestimated and studies on these (including post-release mortality) are needed;
- Shortcomings in currently available fisheries data may cause bias in mortality estimates (F and M). At present, the possible magnitude of such bias, and consequently its potential impact on conclusions regarding stock status and catch advice, has not been evaluated. The present assessment model is assumed to estimate the magnitude of total mortality reasonably reliably. However, an exercise exploring extra uncertainties emerging from data deficiencies, currently not accounted for, and how these may influence the catch advices (both qualitatively and quantitatively) should be carried out.

Presentation on WGBAST sea trout assessment data needs by Johan Dannewitz is available at ([link](#))

**Issues to be discussed in RCG NANSEA:** Improvement of coordination on data collection of Baltic salmon to improve the coverage of the data (see WGBAST recommendations Section 4.3).

**Issues to be decided in the RCG NANSEA:** none at this point



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

**Baltic salmon.** Overview of the compatibility of data collected under the DCF/EU-MAP/EU Control Regulation with the data needed for stock assessment (ICES WGBAST Stock annex; revisions: inter-benchmark in 2012–2013, benchmark in 2017 and annual WGBAST meetings in 2019 and 2020).

Type of data	Collected under DCF/EU-MAP	Available to WG	Reviewed and evaluated by WG	Used in current assessment model	Future plans	Notes
Fleet capacity	yes	yes	no	no	n	Incompatible with current assessment model
Fishing effort	yes	yes	yes	yes	n	-
Landings	yes	yes	yes	yes	n	-
Discards	yes	yes	yes	yes	n	-
Recreational fisheries	yes	yes	yes	yes	n	-
CPUE data series	yes	yes	yes	yes	n	-
Age composition (adults)	yes*	yes	yes	partly used	n	Only samples from a few rivers are used in current assessment
Wild/reared origin (scale reading)	yes**	yes	yes	partly used	n	Only data from the Main Basin offshore fishery is used in the current assessment model
Length & weight at age (adults)	yes*	yes	yes	no	n	-
Sex ratios (adults)	yes*	yes	no	partly used	n	Not incorporated in current assessment model, river samples used
Maturity	yes*	no	no	no	n	-
Economic data	yes	no***	partly used	no	n	Incompatible with current assessment model, but used for
Data processing industry	yes	no***	no	no	n	Incompatible with current assessment model
Electrofishing data	yes	yes	yes	yes	Potential increase	Length and weight at age of parr may be used to improve estimation of smolt output
Smolt trapping data	yes	yes	yes	yes	Increased use	-
Tagging data	no	yes	yes	yes	n	Mark-recapture to estimate smolt production, but tag returns from the sea phase not used from 2010 and onwards
Fish ladder data	yes	yes	yes	partly used	Increased use	-
Genetic data	yes**	yes	yes	no	Will be used	Currently used as independent information to evaluate model results, but will be used in assessment model in near future

\* Required under DCF/EU-MAP, but some countries are not collecting data because of limited use for assessment

\*\* Only collected by some countries

\*\*\* Not asked for by the working group.

n = no change

### 13.2.3 Sea trout

#### 13.2.3.1 Seat trout in NANSEA

ICES Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous *Salmo trutta*) Populations (WGTRUTTA) is presently the only recognised international end used for these data

General conclusion is a lack of standardized data to assess sea trout population across Europe particularly outside the Baltic Sea.

WGTRUTTA has delivered (ICES 2020d)

- Database on sea trout and their environment
- Inventory of data collection methods
- Inventory of PIT rivers
- Liaised with ICES Data Centre on future hosting database
- Published review of ecological factors affecting the abundance and life history of anadromous fish
- Extended the development and application of the Trout Habitat Scores (THS) model from Sweden to Northern Ireland, to assess smolt production and juvenile carrying capacity.
- Developed length based indicators to assess stock status
- Two papers describing the development and application of LBI for sea trout stock status (Shephard 2018a, Shephard, 2019)
- Tested several curve fitting approaches to sea trout stocks with data from counts, returning stock estimates, catches, and juvenile abundance surveys.
- Identified a potential stock grouping to inform tool selection.

#### Length based indicator (LBI) for estimating the stock status

- LBIs describe the size structure of the population
- Healthy populations are assumed to be close to  $K$ (abundance) and  $L_{max}$  (size)
- Size selective fishing reduces abundance and curtails structure
- Parameters:  $L_{max}$ ,  $L_{mature}$ , length data of adults

#### Model for sea trout recruitment for estimating the juvenile “carrying capacity” and status in streams

- Electrofishing - recruitment in nursery streams
- SR-parameters
- Trends
- Carrying capacity  
→ recruitment status observed / expected

Expected recruitment climate (lat, long, temp) and Trout habitat quality (THS)

Trout Habitat Score (THS; class 0-3): width, depth, velocity, shade, slope, substrate

### Estimation of smolt production

#### Data needs to model smolt production

- Quantitative habitat classification
- Electrofishing at representative habitats (parr densities)
- Winter mortality
- Degree of smoltification
- Migration mortality
- Carrying capacity of the stream (Region specific reference data)

#### Work in progress under the Innovative Training Networks project SUSTAINROUT

- Populating the database as the go to source in WG2 for long term data from select European rivers such as juvenile densities, habitat characteristics, smolt and adult abundances.
- Future proof the DB via ICES hosting
- Online mapping of PIT rivers (“index rivers”)
- New sea trout climate change model?
- Bayesian sea trout population model
- Trout Habitat Scores model applied to other countries
- A Short Communication to illustrate a Pilot Scheme, and a paper describing a wider exploration of electrofishing time series & habitats.
- Apply the LBI to other rivers
- Test S/R methods against more stocks
- Test grouping stocks based on growth and longevity as basis for focussing stock recruitment or other model approaches and recommending index rivers.
- Sea trout genetics

#### Subjects prioritised by the WGTRUTTA in upcoming work

- Data collection in standard manner. Recommendations for unified and standardized protocols for sampling trout, characterizing habitats, and calibrating for extrapolations across the natural range
- Description of the current and potential future impacts of natural and anthropogenic impacts on trout populations. Present knowledge about quantifying impacts (negative and positive), at international, national and river scales, and baselines to act as reference levels.
- Description of situations outside the Baltic where sea trout stocks may be exploited or otherwise impacted at an international scale. Present knowledge about international exploitation and impacts, from targeted catch and bycatch, and from shared patterns.

#### Thoughts for the future

- Aim to get WGTRUTTA into applied fisheries management
- Aim to get WGTRUTTA into ICES advice (e.g. WGBAST)
- Aim to get WGTRUTTA onto the EC's radar
- Other bodies that should be target?

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

#### Data availability for sea trout in NANASEA

- no data collected under DCF so far, but the new regulation will make the monitoring of sea trout stocks eligible also outside the Baltic sea
- several countries collect data for their national assessment purposes (ISSG Diad has not mapped where and what kinds of data have been collected and how long data series are available)

#### Data requirements for sea trout in NANSEA

- presently no clear international end user for the data, but national assessment are conducted in many countries
- WGTRUTTA is developing the assessment model that will take different kinds of data
- data needs will be specified in future once the model will become completed

Presentation on WGTRUTTA Assessment data needs by Johan Höjesjö is available at ([link](#))

#### Issues to be discussed in the RCG NANSEA:

- the expected data needs in short/medium term and potential funding from the DCF budget under the renewed EUMAP regulation
- WGTRUTTA or other corresponding expert group may become as an end-user, but unknown if advice will be requested in foreseeable future
- the new model will allow national and regional actors to assess the status of sea trout stocks

247

#### Issues to be decided in the RCG NANSEA: none

#### 13.2.3.2 Sea trout in the Baltic sea

ICES Baltic Salmon and Trout Assessment Working Group (WGBAST) is the recognised international end-user for these data, which mainly consists of parr densities measured by electrofishing. In most countries part of monitoring is funded from DCF, but also other sources of funding are used (e.g. Water Framework Directive, etc.). In general, the data collected today meets the quality requirements and is comparable between countries.

#### General characteristics of data use

- ICES advices on Baltic sea trout biennially (reports the status of stocks by assessment units but does not give the catch advice).
- ICES WGBAST assess annually the status of stocks in 5 assessment units.
- the present assessment compares the observed parr densities to the estimated potential parr density. The model uses various physical parameters including the Trout Habitat Score (THS). Site specific THSs are computed from habitat descriptors.
- Also, HELCOM utilise the ICES WGBAST parr density data in their evaluations (HOLAS).

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

#### Data availability

- most of the Baltic sea riparian countries have sea trout monitoring in their national programs. Mostly parr densities by electrofishing but in some countries also spawner counts and smolt counts are carried out.
- Long time series. Some rivers time data series start from year 2000. Better coverage of monitored rivers from 2010. Data readily available in uniform format (compiled by ICES WGBAST).

#### Data requirements

- the present model takes parr densities (by electrofishing) from sea trout habitats in brooks and rivers, monitored in frequent intervals. Not necessary to monitor annually or even triennially in assessment units with plenty brooks/rivers.
- also physical parameters and habitat descriptors are needed, but these need to be updated only if changes habitat status occur.
- One index river per assessment unit, where apart from parr densities also spawner counts and/or smolt counts are performed at least biennially.
- depending on the model development in ICES WGTRUTTA the data requirements may change in the future.
- see text table below for other parameters.

Presentation on WGBAST sea trout assessment data needs by Tapani Pakarinen and Stig Pedersen is available at ([link](#)).

248

#### Issues to be discussed in the RCG Baltic:

- WGBAST is an end-user and ICES provides the EU commission with an advice biennially.
- For Denmark and Germany to consider some monitoring of Baltic sea trout in rivers/brooks to be included in their national programs.
- feedback to the WGBAST to come up with the list of data that is needed for the assessment in foreseeable future.

#### Issues to be decided in the RCG Baltic: none

**Baltic Sea trout.** Overview of the compatibility of data collected under the DCF/EU-MAP with the data needed for Baltic sea trout assessment (based on communication with ICES WGBAST in 2021).

Type of data	Collected under DCF/EU-MAP	Available to WG	Reviewed and evaluated by WG	Used in current assessment model	Future plans	Notes
Fleet capacity (commercial)	yes	yes	no	no	n	Incompatible with current assessment model
Fishing effort (commercial)	yes	yes	yes	no	n	Incompatible with current assessment model, but used for qualitative assessment
Landings	yes	yes	yes	no	n	Incompatible with current assessment model, but used for qualitative assessment
Discards	yes	yes	no	no	n	Incompatible with current assessment model
Recreational fisheries	yes	yes	yes	no	n	Incompatible with current assessment model, but used for qualitative assessment
CPUE data series (commercial)	yes	yes	no	no	n	Incompatible with current assessment model
Length & weight at age (adults)	yes*	yes	no	no	Potential use	Incompatible with current assessment model, but could be useful together with additional info on production capacity etc
Wild/reared origin (scale reading)	yes**	yes	no	no	n	Incompatible with current assessment model
Sex ratios (adults)	yes*	yes	no	no	n	Incompatible with current assessment model, but could be useful together with additional info on production capacity etc
Maturity	yes*	no	no	no	n	Incompatible with current assessment model
Economic data	yes	no***	no	no	n	Incompatible with current assessment model
Data processing industry	yes	no***	no	no	n	Incompatible with current assessment model
Electrofishing data	yes**	yes	yes	yes	Potential increase	Length and weight at age of parr together with smolt age data may be used to improve estimation of smolt production
Habitat descriptors	yes**	yes	yes	yes	n	-
Smolt trapping data	yes**	yes	yes	no	Increased use	Incompatible with current assessment model, but used for qualitative assessment
Tagging data	no	yes	yes	no	n	Incompatible with current assessment model, but used for qualitative assessment
Fish ladder data	yes**	yes	no	no	Increased use	Incompatible with current assessment model, but used for qualitative assessment
Genetic data	no	yes	no	no	n	Incompatible with current assessment model

\* Required under the DCF/EU-MAP, but some countries are not collecting data because of limited use for assessment

\*\* Collected by part of countries

\*\*\* Not asked for by the working group.

n = no change



### 13.2.4 Acoustic tagging

Acoustic tagging is a powerful tool to monitor movement of fish in their natural environment. The technique can be used at any scale but is particularly useful for large-scale assessments. In 2019, several member states around the Baltic Sea commenced tagging programmes of European eels with acoustic transmitters. These programmes have continued in 2020 and will continue in 2021 as well. Acoustic receivers have been deployed at several locations in the Baltic Sea, and importantly, all exit points from the Baltic Sea, the straits between Sweden and Denmark and the Danish sounds, are fully covered by receivers. So far, eels have been tagged in Sweden, Denmark, Estonia, Latvia, Finland, Germany, and Poland. Approximately 700 eels have been tagged in total, and 20% have been registered leaving the Baltic Sea. These acoustic tagging programmes create a unique possibility for a joint Baltic Sea assessment, which is long overdue. For example, questions such as which EMU's that are contributing to the actual spawning mass leaving the Baltic Sea could be assessed. The tagging programmes are to a large extent handled within each member state, but to use the data to the furthest extent, collaboration and data sharing across member states will be required.

RCG ISSG Diad acknowledges that a network or similar would be most helpful to connect researchers and projects and assists in the sharing of equipment and data within the Baltic Sea acoustic tagging programmes. To aid the work to create a common platform, researchers from member states could take advantage of established networks, such as The Great Lakes Acoustic Telemetry Observation System (GLATOS), established by the Great Lakes Fishery Commission.

## 13.3 Recommendations and development areas identified toward end users

Diadromous biological and stock-data collected under DCF should be guided and steered through defined data needs for over-regional assessment provided and/ or agreed upon by the respective ICES expert groups. Regional coordination of data collection for these species has thus to be conducted in line with steady and ongoing harmonization between RCG / ISSG and the respective End-users.

End user needs should thus be clarified on a regular basis by EGs and formulated well in advance to allow DCF data collection operation to adapt and create the necessary obligation to collect the needed data, even if the respective model is not operating yet.

Feedback to the end users to come with a list of data

- 1) that is collected under the DCF but not used presently or in foreseen future.
- 2) that is needed presently or in foreseen future but not collected under the DCF.

In addition, end-users should report on potential issues on the quality of data and come up with a suggestion how this could be improved. Also, the potential needs for improving the coordination of data collection (by standard methods) should be reported by the end-users.

## 13.4 Recommendations and development areas identified by end users

### 13.4.1 ICES WGEEL Report 2020

Biometric data have been included in the WGEEL Data Call since 2019 with the objective to bring insights to the eel assessment provided by the WGEEL.



### 13. ISSG Diadromous Fishes

Some monitoring programmes, such as eel data collection under the DCF, collect biometric data. Here, the biometric data are stored in a specific table along with information about the location, EMU, habitat type and the number of eels collected.

When reporting biometry data, WGEEL recommends to:

- for those series in which a mixture of stages is reported (e.g. mixed glass eel/yellow series), an approximate percentage of each stage should be indicated.
- in the series, the sampling method should be specified, alongside with any additional precisions that may bias the captured sizes.
- it is recommended to include information about the sampling timing that might influence biometrics.
- It should be indicated whether there have been changes in the series that may lead to a change in the time trend (e.g. period or sampling method).

A first exploratory spatial and temporal analysis of the data has been made that has identified some spatiotemporal trends. However, the low number of series with biometric data in some stages and lack of information about the analysed stages and insufficient details on the monitoring protocols and sites, makes it currently impossible to clearly disentangle whether those patterns arise from methodological differences among series (e.g. sampling gear, monitoring season), local environmental (e.g. habitat type, distance to the sea) or anthropogenic (e.g. restocking) influences, or large-scale life-trait patterns. Still, it has been useful to identify complementary information that must be collected in order to make a complete analysis of the data.

As far as spatial analysis is concern, there are differences among series, but no clear spatial trend was found. In the case of the length of monitored standing stock yellow eel, a positive relation of length and weight with distance to Gibraltar was found. However, no definitive conclusion can be drawn as the analysis includes average lengths obtained by different sampling methods, some of which show a bias of catching certain sizes. Thus, until the series information is completed, it remains unclear whether there is a relationship between latitude and weight and length of eels.

As far as temporal trends are concerned (Table 12), trends in length and weight have been detected in many different time-series, for each stage and EMU/series. However, the sign of the trends was variable, even for a similar life stage and in a single country. Thus, it was not possible to detect any general pattern per stage or latitude in those parameters.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

**Table 12. Summary of the temporal trends analysis for length, weight and silver sex ratio per stage.**

Length		weight		sex ratio	
trend	+ trend	trend	+ trend	trend	+ trend
Glass /yellow		ImsaGY, BresGY SousGY		Imsa, Sous	
Yellow	Es Basq GB_Humb GB_North GB_Seve GB_SouE IE_West	GB_SouW and NL_Neth	Es_Basq GB_Humb GB_North GB_Seve GB_SouE	FR_Bret GB_SouW GB_Scot	Not analysed
Silver	FR_Adou (♀+♂) FR_Loi (♀+♂) IE_West (♀+♂) FR_Loi (♀) IE_West (♀) FR_Loi (♂) IE_West (♂)	FR_Bret (♀+♂) GB_Scot (♀+♂) FR_Sein (♀+♂) FR_Bret (♀) GB_Scot (♀) FR_Bret (♂) GB_Scot (♂) NO_total (♀)	FR_Adou (♀+♂) FR_Loi (♀+♂) IE_West (♀+♂) FR_Loi (♀) IE_West (♀) FR_Loi (♂) IE_West (♂)	FR_Bret (♀+♂) FR_Bret (♀) FR_Bret (♂) NO_total (♀)	FR_Bret (%♀) GB_Scot (%♀) IE_West (%♀)

This analysis allows to issue some recommendations:

- For those series in which a mixture of stages is reported (e.g. mixed glass eel/yellow series), an approximate percentage of each stage should be indicated.
- In the series, it must be indicated if the sampling method is considered to be causing a bias in the captured sizes.
- It is recommended to include information about the sampling timing that might influence biometrics.
- It should be indicated whether there have been changes in the series that may lead to a change in the time trend (e.g. period or sampling method).

#### 13.4.2 ICES WGNAS Report 2021

The WGNAS (ICES 2021a) recommendation are mostly related to the West-Atlantic region and non-EU countries and consequently are beyond the EU-Data collection. The PIT tag database should be progressed in liaison with ICES.

1. The Working Group recommends the creation of a database listing individual PIT tag numbers or codes identifying the origin, source or programme of the tags on a North Atlantic basin-wide scale. This is needed to facilitate identification of individual tagged fish taken in marine fisheries or surveys.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

Data on individual PIT tags used in Norway have now been compiled, but an ICES coordinated database, where the data could be stored, is needed.

2. The Working Group recommends complete and timely reporting of catch statistics from all fisheries for all areas of eastern Canada.
3. The Working Group continues to recommend improved catch statistics and sampling of the Labrador and the Saint Pierre and Miquelon fisheries. Improved catch statistics and sampling of all aspects of the fishery across the fishing season will improve the information on biological characteristics and stock origin of salmon harvested in these mixed-stock fisheries.
4. The Working Group recommends that additional monitoring be considered in Labrador to estimate stock status for that region. Additionally, efforts should be undertaken to evaluate the utility of other available data sources (e.g. Indigenous and recreational catches and effort) to describe stock status in Labrador.

#### 13.4.3 ICES WGBAST Report 2021

The WGBAST (ICES 2021b) recommends following actions in order to fulfil the shortcomings in the present data and knowledge regarding the Baltic Sea salmon and sea trout to further improve the stock assessment and also, potentially support the management of Baltic salmon and sea trout. The recommended actions should be implemented in the national programs of relevant countries.

#### Recommendation

1. Catch estimates of recreational **salmon and sea trout** fisheries are uncertain, incomplete or totally missing for several countries. Studies and methods to estimate these catches are needed.

#### 2. Issues related to **salmon sampling**:

In Sweden and Finland, in the coastal trapnet fishery, salmon are released back to sea during part of fishing season because of quota fulfilment or fishing regulations. Reported and non-reported amounts of these discarded salmon and their survival rate should be evaluated.

Counting of ascending adults should be performed in all salmon index rivers.

Quality of data on amounts and areal distribution of seal damaged salmon and other dead discards by fisheries should be evaluated and improved in countries where these data are found to be defective.

#### 3. Issues related to **sea trout sampling**:

Total population size of 0+ and older parr, as well as estimated total production of smolt should be calculated for rivers where data are available. Especially important are values for index rivers. If possible, the areas should be divided into habitat quality classes.

Total production area available for sea trout should be provided for streams where data are available.

Sufficient data coverage of sea trout parr densities from typical trout streams should be collected in all countries. Presently no information was available from Schleswig-Holstein and Kaliningrad region.

Sea trout index rivers should be established to fulfil assessment requirements with respect to geographical coverage and data collection needs.



4. Data on proportions of **sea trout and salmon** in catches should be provided to the working group to facilitate estimation of the development of misreporting. ICES Baltic Sea Member States should provide catch composition data from coastal and offshore fisheries (as defined in the EU regulation) covering all main gears.

#### 13.4.4 ICES WGTRUTTA Report 2020

The WGTRUTTA recommends (ICES 2020d) the following actions:

1. The WG has identified a range of knowledge gaps and associated research opportunities. The WG recommends developing a network of PhDs to research these topics, and an application within the Marie Curie ETN network action has been sent in to achieve this.
2. The WG recommends that a scale reading workshop is convened to calibrate age reading between labs. This would link to the wider ICES workstream of improving data quality.

### 13.5 Communication between ISSG Diad and relevant ICES EGs and other end user

Large parts of current and upcoming EUMAP data collection obligations for diadromous species, will be end-user driven and need to be coordinated and harmonized on a regional (RCG / ISSG) level. To further clarify and identify relevant End-users for data collected under the DCF, following regulations are of importance:

- Regulation (EU) No 1380/2013 on the Common Fisheries Policy (Article 4, point 32) defines “end-user of scientific data” as “a body with a research or management interest in the scientific analysis of data in the fisheries sector”.
- Regulation (EU) 2017/1004 on the Union framework for the collection, management and use of data for scientific advice regarding the common fisheries policy further differentiates in Article 17 (3&4) between end-users for advice to fisheries management and “other” end-users

This clarifies ICES Expert Groups such as WGEEL, WGNAS, WGBAST and potentially WGDIAD (as leading bodies of international assessment of relevant diadromous species) to be designated end-users, to whose assessment methodology data collection under DCF should be beneficial. However, if regional or national interests apply, diadromous species data collection may also be conducted to supply regional or stock-specific aspects of assessment, making also national entities potentially eligible to act as end-users. Specific data needs as well as changes in data need of all potential end-user should be specifically clarified and communicated on a regional level in a timely fashion. ISSG can then manage regional coordination of DCF data collection for the best possible fulfilment of assessment / end-user needs.

#### ICES end-users

Joint Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous and Trout)	Working Group on North Atlantic Salmon Assessment	Group on Eels (WGEEL)
		(WGNAS)
		(WGTRUTTA)
		(WGBAST)

The Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species (WGDIAD) is not an end-user of the data but it coordinates work on diadromous species in ICES context. The group considers progress and requirements in the field, coordinates with expert groups, organizes symposia and theme sessions, and helps to deliver the ICES Science Plan.

Presentation on ICES WGDIAD outcomes of the 2020 meeting by Hugo Maxwell is available at ([link](#))

### 13.6 Quality Assurance – Questionnaire on electrofishing surveys

ISSG Diad conducted a questionnaire to the MS regarding the electrofishing surveys for eel, salmon and sea trout. Altogether 18 countries responded to the questionnaire out of which electrofishing was used in 12 countries for monitoring the abundance of diadromous species. In rest of countries the species concerned either don't occur or electrofishing is not used in monitoring of these species. In 12 countries at least part of electrofishing surveys is funded from the DCF and consequently included in the NP (Table 1 in Annex 13.1). The main weight in surveys was for salmon and sea trout in the Baltic Sea region where almost all MS have included at least part of their national electrofishing surveys in their NP.

Major of the responses indicated use of some standard protocol in their surveys (Table 2 in Annex 13.1). ISSG Diad did not evaluate the referred standards, but this data could be utilised by potential end-user specific data workshops later. To meet the criteria of co-dimensional data apart from a standard electrofishing protocol also the electrofishing sites should be placed to the typical habitat of monitored species. According to responses much of electrofishing are carried out under the Water Framework Directive monitoring, where sites may not always be optimal for monitoring of diadromous species. Quality of electrofishing sites, however, was not surveyed in this questionnaire, but could be in focus in later evaluations.

When it comes to use of electrofishing data in assessments most countries reported that salmon and sea trout data are used in international and national assessments. Data on eel abundances are used more dominantly only on the national assessments, which MS conduct as a part of national eel management plan (Table 3 in Annex 13.1).

Typically, the electrofishing surveys are carried out to monitor the abundance or densities of young fish. In addition, also abundances of adult fish are monitored as well as age, size and species composition (Table 4 in Annex 13.1).

According to results of this rather sketchy study can be concluded that end users-users of electrofishing data and all other data that is used in international assessments should have regional specific data workshops for improving the coverage and homogeneity of the data and to make the data collection better coordinated in the region.

Presentation on Electrofishing survey by Tapani Pakarinen is available at ([link](#))

### 13.7 Regional work plans – Fishn'Co

EU funded project Fishn'Co - Strengthening EU-MAP data collection by developing Regional Work Plans for NANS&EA, Baltic and Large Pelagics RCG and PGECON (duration 2021-2022) is related to the ISSG Diad work by its Work Package I (WPI): Compiling, identifying and filling information gaps.

WPI Objectives are:

In close cooperation with the regional and pan regional Intersessional Subgroups of the RCGs NANS&EA, Baltic:

- a) Assess the current stages of regional coordination and define the level of ambitions for the content of their work for the defined RWP focus areas.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

- b) Identify the elements that will go towards the development of the RWP in 2021 and 2022 and analyse the information and knowledge gaps.
- c) Agree on the core ISSG tasks to be carried out as part of the intersessional RCG work and the supporting tasks to be carried out as part of the Fishn'Co.
- d) Address these support tasks as distinctive pieces of work to be financed and completed within the Fishn'Co project.
- e) Communicate WPI outputs of RWP content to WP3 (Drafting Regional Work Plans) for the development of the RWP structures.

The WPI will be performed through 10 thematic focal areas which are in line with the EUMAP and RCG intersessional work programs. The thematic focal area for Diadromous species includes three topics:

- a) moving towards regional harmonisation of data collection of catch and effort data for diadromous fishes
- b) harmonise procedures to designate Index rivers for salmon, sea trout and eel
- c) harmonise methods and comparability of results for Electrofishing survey programs.

The first drafts of evaluating the degree of ambition to progress towards the RWPs for salmon and sea trout in Baltic and NANSEA regions has been done. These have not circulated to end-users for comment. In general, the regional coordination of data collection on diadromous species is still in rather early stage in all regions and more work is needed e.g. in form of data region- and species-specific data workshops of ICES expert groups.

#### 13.8 Task of ISSG Diad for the next term

Communication with end-users

Promotion of data workshops

Work that potentially will come from Fishn'Co



### 13.9 List of participants

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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 13. ISSG Diadromous Fishes

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### 13.10 References

GFCM. 2017. Recommendation GFCM/41/2017/6 on the submission of data on fishing activities in the GFCM area of application.

<https://gfcmlive.com/CoC/Decisions%20Texts/Forms/AllItems.aspx?id=%2FCoC%2FDecisions%20Texts%2FREC%2EDIR%5FGFCM%5F41%5F2017%5F6%2De%2Epdf&parent=%2FCoC%2FDecisions%20Texts&p=true&originalPath=aHR0cHM6Ly9nZmNtLnNoYXJlcG9pbmQuY29tLzpiOi9nL0NvQy9FUW5tbEpHWWEhGQkRkZDZhZGIrLXhjb0J2ZERkVkVKAkdVajZtMFNTUXBIOFBnP3J0aWlIPVVRQW9pTTM0MTBn>

ICES. 2012. Report of the Workshop on Eel and Salmon DCF Data (WKESDCF), 3 – 6 July 2012, ICES HQ, Copenhagen, Denmark. ICES CM / ACOM:62. 67 pp.

ICES. 2017. Report of the Benchmark Workshop on Baltic Salmon (WKBALTSalmon), 30 January–3 February 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:31. 112 pp.

ICES. 2019a. Interim Report of the Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (*Anadromous Salmo trutta*) Populations (WGTRUTTA), 6–8 February; 15–19 October 2018, Copenhagen, Denmark; Lisbon, Portugal. ICES CM 2018/EPDSG:21. 32 pp.

ICES. 2019b. Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL). ICES Scientific Reports. 1:50. 177 pp. <http://doi.org/10.17895/ices.pub.5545>

ICES. 2019c. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 1:16. 368 pp. <http://doi.org/10.17895/ices.pub.4978>

ICES. 2020a. Baltic Salmon and Trout Assessment Working Group (WGBAST). ICES Scientific Reports. 1:23. 313 pp. <http://doi.org/10.17895/ices.pub.4979>

ICES. 2020b. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 2:21. 357 pp. <http://doi.org/10.17895/ices.pub.5973>

ICES. 2020c. Working Group on Recreational Fisheries Surveys (WGRFS; outputs from 2019 meeting). ICES Scientific Reports. 2:1. 78 pp. <http://doi.org/10.17895/ices.pub.5744>

ICES. 2020d. Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (*Anadromous Salmo trutta*) Populations (WGTRUTTA; outputs from 2019 meeting). ICES Scientific Reports. 2:59. 59 pp. <https://doi.org/10.17895/ices.pub.7431>

ICES. 2021a. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 3:29. 407 pp. <https://doi.org/10.17895/ices.pub.7923>

ICES. 2021b. Baltic Salmon and Trout Assessment Working Group (WGBAST). ICES Scientific Reports. 3:26. <https://doi.org/10.17895/ices.pub.7925>

RIVOT, E., OLMOS, M., CHAPUT, G., PREVOST, E. 2019. A hierarchical life cycle model for Atlantic salmon stock assessment at the North Atlantic basin scale. ICES WGNAS Working Paper 2019/39, 26 March - 5 April 2019, Bergen, Norway.

Venturelli, P.A., Hyder, K. and Skov, C. (2017), Angler apps as a source of recreational fisheries data: opportunities, challenges and proposed standards. *Fish Fish*, 18: 578-595. doi:10.1111/faf.12189



## Annexes

### Annex 13.1- Questionnaire on electrofishing surveys

**Table 1.** Funding of the electrofishing surveys and its adequacy reported by Member States. Numbers in the table are not compatible between countries since some countries reported the overall status of all surveys and some countries reported by river or water body basis.

Covered by DCF funding				Adequacy of funding			
Species/Region/MS	entirely	partly	no	Species/Region/MS	Yes	No	not relevant
<b>Eel</b>	<b>18</b>	<b>3</b>	<b>1</b>	<b>Eel</b>	<b>13</b>	<b>9</b>	
<b>Baltic</b>	<b>4</b>			<b>Baltic</b>	<b>4</b>		
Latvia	2			Latvia	2		
Denmark	1			Denmark	1		
Sweden	1			Sweden	1		
<b>NANSEA</b>	<b>13</b>	<b>2</b>	<b>1</b>	<b>NANSEA</b>	<b>8</b>	<b>8</b>	
Denmark	1			Denmark	1		
Netherlands	2			Netherlands	2		
France	6			France		6	
Spain	3	1	1	Spain	3	2	
Portugal	1	1		Portugal	2		
<b>Med</b>	<b>1</b>	<b>1</b>		<b>Med</b>	<b>1</b>	<b>1</b>	
Spain	1	1		Spain	1	1	
<b>Salmon</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>Salmon</b>	<b>11</b>	<b>5</b>	
<b>Baltic</b>	<b>4</b>	<b>3</b>		<b>Baltic</b>	<b>6</b>	<b>1</b>	
Estonia	1			Estonia	1		
Finland		1		Finland	1		
Latvia	3			Latvia	3		
Lithuania		1		Lithuania		1	
Sweden		1		Sweden	1		
<b>NANSEA</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>NANSEA</b>	<b>5</b>	<b>4</b>	
Finland		1		Finland	1		
Denmark		1	1	Denmark		2	
Sweden		1		Sweden	1		
France	1			France	1		
Spain	2	1	1	Spain	2	2	
<b>Sea trout</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>Sea trout</b>	<b>5</b>	<b>4</b>	<b>3</b>
<b>Baltic</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>Baltic</b>	<b>5</b>	<b>3</b>	<b>2</b>
Estonia		1		Estonia	1		
Finland		1		Finland		1	
Latvia	3			Latvia	3		
Lithuania		1		Lithuania		1	
Poland	1			Poland	1		
Denmark			2	Denmark			2



RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

13. ISSG Diadromous Fishes - Annex

Sweden	1	
<b>NANSEA</b>	<b>1</b>	<b>1</b>
Denmark		1
Sweden	1	
<b>multispecies</b>	<b>2</b>	<b>6</b>
<b>Baltic</b>		<b>3</b>
Latvia		3
<b>NANSEA</b>	<b>2</b>	<b>3</b>
Ireland	1	
Netherlands	1	3

Sweden	1	
<b>NANSEA</b>	<b>1</b>	<b>1</b>
Denmark		1
Sweden	1	
<b>multispecies</b>	<b>8</b>	
<b>Baltic</b>	<b>3</b>	
Latvia	3	
<b>NANSEA</b>	<b>5</b>	
Ireland	1	
Netherlands	4	





## 14 ISSG Marine Recreational Fisheries

### 14.1 Background

RCG NANSEA and RCG Baltic discussed the need for a Subgroup to progress on regionalization sampling plans for Marine Recreational Fisheries (MRF). The EU-MAP states the relevance of the regional approach for these fisheries, including evaluating end-users' needs for biological data collection, coordinating national surveys of recreational fishing, and the definition of potential thresholds. The COM has already announced that the new regulation will not have a pre-defined list of species, and it will be defined by region based on end-user needs. ISSG has proved to be a valuable tool to work on the regionalization of specific areas of data collection such as SSF, PETs, Stomach sampling, or Diadromous Species. The RCG considered that the same approach could be used for MRF and proposed creating an ISSG on MRF. For this subgroup to work properly, we need to ensure that the right people are involved, including experts from WGRFS, DCF, and PGECON. National Correspondents (NC) need to be approached to ensure that relevant bodies are contacted to ensure expert participation.

### 14.2 Terms of Reference

1. Define a species list at a regional level.
2. Work on regional sampling plans for shared stocks.
3. MRF data incorporation in the RDBES but also MRF and the data model.
4. Proposal of an RWP table ID on recreational fisheries to be reviewed by ICES WGRFS. And WGRFS to provide feedback on the structure and content of table ID and required changes to support the documentation of regional coordination of recreational fisheries towards an RWP.

### 14.3 Tasks 2020-2021

The aim of the Intersessional subgroup on Marine Recreational Fisheries fits on preparatory work for decision making, including input for regional work plans. MRF ISSG work is coordinating with the relevant ICES EG (WGRFS) and the Fishn'Co consortium.

#### 14.3.1 Work plan

In December 2020, the subgroup chair prepared a draft work plan. In consultation with the responsible RCG chair, a final proposal for the work plan was circulated among the ISSG members, discussed by correspondence, and approved in the virtual meeting on May 11<sup>th</sup>. Some of the initial work plan objectives proved to be very ambitious for this newly formed subgroup, and adjustments were made, including the proposal for some subgroup work during the RCG NANSEA and RCG Baltic 2021 TM (Annex 14.2).

One of the identified tasks was defining a species list and identifying shared stocks at a regional level. Concerning the species list, it was supposed to review the main end-users work and reports about MRF species to be considered priorities under the EU-MAP. The outcome should be a species list proposal at a regional level based on end-user needs. Identifying shared species at the regional level intends to determine what the crucial stocks are for each member state and what criteria the score high. Based on this, identify shared stock candidates for RWP. This task would imply the joint work of the RCG MRF subgroup, WGRFS, and Fishn'Co project.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 14. ISSG Marine Recreational Fisheries

Concerning the incorporation of MRF data into the RDBES, the aim was to work on different data models to incorporate MRF data into the RDBES based on the surveys and methodologies used to collect MRF data. This task would also imply the joint work of the RCG MRF subgroup, WGRFS, and Fishn'Co project, and the outcome should be data model proposals based on the different surveys carried out to collect MRF data.

Another task of this subgroup should be revising the National WP table I D and producing a new table proposal for the future MRF RWP. MRF subgroup and Fishn'Co project should work together to accomplish this task.

To close, the final report of the intersessional work of the subgroup should be present in the RCGs meeting in June and concluded after the subgroup work during the RCG NANSEA and RCG Baltic 2021 TM.

#### 14.3.2 Meetings related to ISSG MRF work

Date	Participants	Issue	Comments
19.11.2020	<b>Dália Reis</b> – ISSG chair <b>Estanis Mugerza</b> – WGRFS co-chair & MRF task leader Fishn'Co <b>Kieran Hyder</b> – WGRFS co-chair <b>Lucia Zaraus</b> – RCG chair	Issues to be raised at the Regional Database Steering Committee	Lucia as official RCG representative made a presentation to WGRDBESGOV to define specific steps to lead to recreational data being included in the RDBES (Annex 14.3)
4.12.2020	<b>Dália Reis</b> – ISSG chair <b>Estanis Mugerza</b> – WGRFS co-chair & MRF task leader Fishn'Co <b>Veronika Veits</b> – Director of Directorate B, DG MARE <b>Clara Aguilera</b> – MEP and Rapporteur on the revision of the "Fisheries control system." <b>Harry Strehlow</b> – WGRFS Speakers – EAA, EFTTA, Cyprus, Spain, Denmark, consortium Halieuticom-Seaneo-Scenent, DG MARE Over 170 webinar participants	DG MARE Webinar "Recreational fisheries monitoring & control"	At the request of the European Parliament, DG MARE launched a pilot project to develop and test a "control scheme for recreational catches of sea bass" <sup>39</sup> . An external contractor has developed an integrated IT tool to allow recreational fishers to quickly inform about their daily catches. While the main purpose of this webinar was to share the outputs of the pilot project, it was also the opportunity to present other existing IT tools that can be used to improve the effectiveness of recreational fisheries control and monitoring (Annex 14.4).
8-9.03.2021	<b>Dália Reis</b> – ISSG chair <b>Estanis Mugerza</b> – WGRFS co-chair & MRF task leader Fishn'Co <b>Fabio Grati, Ivana Vukov</b> – RCG Med&BS WS co-chairs RCG Med&BS WS Recreational Fisheries participants	RCG Med&BS Workshop on Recreational Fisheries	TORs: 1. Presentation of results of MS pilot studies 2. Identification of the list of priority species to be sampled.
11.03.2021	<b>Estanis Mugerza</b> – WGRFS co-chair & MRF task leader FishN'Co Representatives of <b>FishN'Co partners</b> and <b>non-partners</b>	Fishn'Co	First Plenary Meeting
07.05.2021	<b>Estanis Mugerza</b> – WGRFS co-chair & MRF task leader Fishn'Co Fishn'Co MRF task participants	MRF task – Fishn'Co	<u>Aim</u> • Following the flowchart for a regional plan presented in the last RCG

<sup>39</sup> Control scheme for recreational catches of sea bass (MARE 2019/006) – Final Report. 2020.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 14. ISSG Marine Recreational Fisheries

Date	Participants	Issue	Comments
			meeting, check the different levels of coordination <ul style="list-style-type: none"> <li>Improve and push the upload of RF data into the RDBES</li> </ul> <u>Ambition</u> <ul style="list-style-type: none"> <li>Prioritize areas for improvement for coordination at the different levels</li> </ul>
April-May 2021	MRF ISSG Participants,	MRF ISSG Tasks	Various correspondence was exchanged between MRF ISSG participants and the MRF ISSG chair for the definition of tasks and criteria and .ratification of concepts (Minutes of the most relevant conversations in Annex 14.5)
11.05.2021	<b>Adam Lejk</b> – PL; <b>Dália Reis</b> – PT (ISSG chair); <b>Diarmuid Ryan</b> – IE; <b>Edgar Afonso</b> – PT; <b>Els Torrele</b> – BE; <b>Estanis Mugerza</b> – ES (WGRFS co-chair & MRF task leader Fishn'Co); <b>Filipe Henriques</b> – PT; <b>Goran Sundblad</b> – SE; <b>Hans Jakob Olesen</b> – DK; <b>Harry Strehlow</b> – DE; <b>Hugo Diogo</b> – PT; <b>Irina Davidjuka</b> – LV (RCG ECON chair); <b>Louise Veron</b> – FR; <b>Lucia Zarauz</b> – ES (RCG chair); <b>Niamh Smith</b> – FR; <b>Tessa Vanderhammen</b> – NL; <b>Teresa Qental</b> – PT; <b>Thomas Lanssens</b> - BE	Intersessional work of RCG MRF subgroup	TORs <ol style="list-style-type: none"> <li>Regional species list</li> <li>Regional sampling plans for shared stocks</li> <li>MRF data incorporation in the RDBES</li> <li>Proposal of an RWP table ID. (Presentation in Annex 14.6)</li> </ol>

#### 14.3.3 Regional species list

Concerning the species list, it was supposed to review the main end-users work and reports about MRF species to be considered priorities under the EU-MAP. The outcome should be a species list proposal at a regional level based on end-user needs.

An excel table proposal (Table 14.1) was circulated among ISSG participants to identify priority species for each Member State and Region. For this table, the RCG Med & BS approach (with the criteria defined by GFCM) was adopted. Participants were asked to comment on the criteria adopted and suggest different measures if they wish to. Although initially only concepts and criteria were intended to be discussed and not the completeness of the table, five MS chose to complete the table promptly.

**Table 14.1** – Proposed criteria for selection of the main species of interest for Recreational Species. Adapted from GFCM

Criteria for selection Check all that apply:						
Species with a <b>high volume of landings</b> from recreational fisheries	Species with an important <b>social impact</b> for recreational fisheries (e.g. quality of recreational fishing experience, preference of fishers, etc.)	Species with an important <b>economic impact</b> for RF (e.g. species driving tourism, etc.)	Species at <b>risk of overexploitation</b> and/or for which a steep <b>decrease in abundance</b> has been observed	Species of <b>conservation interest</b> (e.g. endangered, vulnerable, etc.)	<b>Non-indigenous species (NIS)</b>	Main species of commercial <b>interest for SSF</b> (by volume and by value)

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 14. ISSG Marine Recreational Fisheries

The different opinions expressed (and how different MS filled out the table) clarified that there are concepts and expectations diverse concerning this issue (e.g., not all MS interpret that having multispecific surveys will imply going beyond the EU-MAP mandatory species).

During the RCG technical meeting, these concepts should be clarified in plenary and, if necessary, to advance with recommendations or clarifications to the MS. MRF ISSG participants agreed to meet to work during the technical meeting to investigate shared stocks among the mandatory species in this phase.

There is a wide variety of existing or potential end-users in Europe that require or might require the use of MRF data. Most of them have an essential role in the decision-making process. FishPi project<sup>40</sup> and ICES WGRFS<sup>41</sup> (2015) identified those end-users (Table 14.2) and the correspondent use of data.

After analyzing the exact needs of end-users, the total recreational catches of each species, and agreement on the selection criteria, the regional species list should be updated by the RCG.

MRF ISSG, WGRFS, and RCG ECON should assess the feasibility of collecting additional information.

**Table 14.2** – Existing and potential end-users of recreational fishery data (Adapted from FishPi & ICES, 2015).

END-USER	END-USER SUBGROUPS	USE OF DATA
ICES	Working Group on Recreational Fishery Surveys (WGRFS)	Collation of participation, catch and economic data by country and area; Quality assurance of data collected; Development of survey methods; Provision of advice on data collection and use of recreational fishing data in stock assessment.
	Working Group on North Atlantic Salmon (WGNAS); Assessment WG on Baltic Salmon and trout (WGBAST)	Recreational catch data used in assessments
	Baltic Fish Assessment WG (WGBFAS)	Recreational catch estimates included in the Western Baltic cod assessment; recreational flounder catches considered by WGRFS as suitable for assessment.
	Working Group on Celtic Seas Ecoregion (WGCSE)	Recreational catch estimates for sea bass used in the assessment.
	Working Group on eels (WGEEL)	Recreational catch data sought but not sufficient for use in assessments
	Other assessment Working Groups, and Expert Groups / Steering Groups dealing with ecosystems assessments	Recreational catches of all species other than salmonids, bass, Baltic cod are needed to more completely evaluate human impacts on ecosystems and for single-species assessments for stocks where recreational harvests are a significant contributor to fishing mortality.
NASCO	Working groups dealing with salmon	Recreational catch data used in assessments
European Commission	DG MARE	Recreational survey data used by Commission in 2014/15 to review effects of MLS and bag limits for sea bass management. Future requests may be envisaged for other species.

<sup>40</sup> FishPi project (MARE/2014/19). "STRENGTHENING REGIONAL COOPERATION IN THE AREA OF FISHERIES DATA COLLECTION IN THE NORTH SEA AND EASTERN ARCTIC". Deliverable 3.3 - A regional sampling plan for data collection of small scale fisheries and recreational fisheries.

<sup>41</sup> ICES 2015. Report of the Working Group on Recreational Fisheries Surveys (WGRFS), 1–5 June 2015, Sukarrieta, Spain. ICES CM 2015\SSGIEOM:10. 111 pp.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 14. ISSG Marine Recreational Fisheries

END-USER	END-USER SUBGROUPS	USE OF DATA
	DG Environment	Implementation of MSFD; achievement of GES with good management of recreational as well as commercial fishery impacts.
Regional Coordination Groups	RCGs for each region	Coordination and cost-effectiveness of national recreational fishery data collection within regions
RCG ECON		Evaluating social and economic impacts of fishing and relative value of commercial and recreational sectors. This may be best done by occasional one-off surveys than in annual surveys, so we may not want to consider this as a recurrent EUMAP requirement.
National Governments and regional fisheries authorities within countries		Developing policy positions on management that includes controls on recreational fishing and aspects of sustainable development in coastal regions. Management of recreational fishing in context of spatial planning such as MCZs.
International and National recreational fishing bodies	European Anglers Alliance; national marine recreational fishing bodies, etc.	Developing policy and lobbying positions on management and sustainable development of marine recreational fishing.
National and local businesses	Charter boat businesses; tackle trade; boat manufacturers; hotels etc.	Time-series of effort and catches by species and region are useful for planning, and local authorities could benefit when making decisions on local development if they have data on how much recreational fishing takes place and the economic value.
Scientific community in general.	Universities; Govt. departments; other Institutes	Scientists working on the impacts of climate change should be interested in how recreational fishery species compositions are changing in each region and occurrences of species beyond the previous range. The development of new recreational survey methods requires the evaluation of data from existing surveys. Data for publication
Journalists	All media	Information for media articles on news items referring to recreational fishing.
Representative bodies for International and national commercial fisheries.	Commercial fishermen's organisations and federations.	Policy developments;
Advisory Councils	e.g., North Western Waters AC; North Sea AC, etc.	Policy developments
Marine NGOs		Policy developments

266

#### 14.3.4 Identify shared stocks candidate for RWP

Identifying shared species at the regional level intends to determine the important stocks for each member state and what criteria the score high. Based on this, identify shared stock candidates for RWP. This task was not accomplished yet, and it will imply joint work of MRF ISSG, WGRFS, and especially with the Fishn'Co project.

The Fishn'Co project application proposed that the flowchart of regional coordination steps will be applied and, if necessary, adapted to MRF data collection to identify current stages of moving towards an RWP and the main gaps to be covered in the short and mid-term. MRF ISSG work will support this task.

#### 14.3.5 MRF data incorporation in the RDBES

Concerning the incorporation of MRF data into the RDBES, the task of the subgroup was to work on different data models to incorporate MRF data into the RDBES based on the surveys and methodologies used to collect MRF data.

MRF ISSG chair, WGRFS co-chairs, and MRF responsible RCG chair meet to define specific steps to lead to recreational data being included in the RDBES and present them at the Working Group on Governance of the Regional Database & Estimation System (WGRDBESGOV) (Annex 14.3).



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 14. ISSG Marine Recreational Fisheries

Quoting WGRDBESGOV<sup>42</sup>: *Under the current "2+2" RDBES funding agreed by ICES detailed data on bycatch and PETS AND/OR recreational data should be incorporated in the RDBES by 2023. Given the heavy workload of the ICES Data Centre and RDBES Core group in preparing the RDBES to store and use commercial fisheries data it was agreed that the best way forward was to arrange a test data call using CSV/Excel file submission based on the proposed recreational data format. This would mean the proposed recreational data format could be evaluated without the heavy burden of first adapting the RDBES database and upload portal to handle it. In this way, progress can be made on recreational data without waiting for the commercial data developments to be completed.*

This work will be carried out with tight collaboration between the RCG ISSG on Marine Recreational Fisheries, the ICES WGRFS and the Fishn'Co Project. In addition, we need to ensure that this work is done in communication with the RDBES Core Group to ensure that the transition to the RDBES will be as easy as possible.

#### 14.3.6 Proposal of an RWP table ID on recreational fisheries

For this particular task, the work for Fishn'Co and MRF ISSG is also the same. The subgroup will follow the work and meetings held under the Fishn'Co project. Input expected from WGRFS.

MRF ISSG chair and WGRFS co-chair (and MRF task leader for Fishn'Co) participated as invited experts in STECF EWG 20-18 meeting (*Revision of DCF Work Plan and Annual Report templates and guidelines*). They contributed to the revision of templates and guidelines for Work Plans (WP) and Annual Reports (AR) to reflect changes introduced in the multiannual Union programme (EU MAP) for the collection and management of data of recreational fisheries.

### 14.4 Issues that are important for RCG to discuss

During the RCG technical meeting, some concepts or issues regarding marine recreational data should be clarified, namely:

- Recreational fisheries monitoring and control (Proposal for a new regulation - Recital 30).
- EU MAP 'multispecies sampling schemes' (vs. 'stocks agreed at regional level' or 'species and areas listed').
- Priority species (associated criteria and thresholds).
- Pan-regional subgroup means the incorporation of Large Pelagic in a regional species list?
- End-users needs (which end-users? Which needs?).
- Regional species list (to be produced by subgroup work during RCG technical meeting. Include mandatory species only?).

### 14.5 Issues that need to be decided by the RCG

Depending on the discussion of the concepts/issues mentioned in the previous item, the RCG may decide which recommendations to take to the NCs meeting.

It will also be necessary to approve the final list of regional species that will be produced during the RCG technical meeting. However, this list should also have the contribution of the ICES WGRFS that will be held one week later the RCG.

<sup>42</sup> ICES. 2021. Working Group on Governance of the Regional Database & Estimation System (WGRDBES-GOV; Outputs from 2020 meeting). ICES Business Reports. 1:4. 67 pp. <https://doi.org/10.17895/ices.pub.7976>





**14.6 Suggestions for next steps in intersessional work (tasks for the period 2021-2022)**

Tasks for the period 2021-2022 will depend on the decisions taken during the technical meeting and the work carried out by the subgroup then. This topic will be updated after the RCG meeting.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### I4. ISSG Marine Recreational Fisheries - Annex

#### Annex I4. I – List of MRF ISSG participants

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### Annex 14.2 – MRF ISSG 2020-2021 Work plan.

	What	What (detailed)	Who	Milestone
<b>1. WorkPlan</b>	Draft, discussion, and approval of subgroup work plan	Subgroup chair prepare draft work plan; prepare final proposal work plan; circulation, discussion, and approval of work plan	Dalia/Lucia	Work plan for subGroup
<b>2. Defining a species list &amp; identify shared stocks</b>	Define a species list at a regional level	Review main end-users (e.g., RCGs, ICES WGRFS report, MEDAC, etc.) work, reports, about MRF species to be considered as priorities under the EU MAP	MRF subgroup & WGRFS	Species list proposal at a regional level based on end-users needs
	Identification of shared species at a regional level	Identify what the important stocks are for each member state and for what criteria the score high. Based on this, identify shared stocks candidates for RWP.	MRF subgroup & WGRFS & FishN'Co project	Shared stocks identification at regional level for MRF potential regional sampling programmes
<b>3. Table proposal (NWP ID) for a RWP</b>	Table proposal for MRF RWP	National WP Table Id will be reviewed to produce a new table proposal for future MRF RWP	MRF subgroup & FishN'Co	RWP table ID proposal
<b>4. MRF data incorporation to the RDBES</b>	Data model proposals	Work on different data models to incorporate MRF data into the RDBES based on the surveys and methodologies used to collect MRF data	MRF subgroup & WGRFS & FishN'Co project	Data model proposals based on the different surveys carried out to collect MRF data
<b>5. Report to present in the RCGs in June</b>	Report for the RCG June meeting	Final report to present in the RCG s meeting in June	MRF subgroup	Final report



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RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

I4. ISSG Marine Recreational Fisheries - Annex

**Annex I4.3 – MRF presentation to WGRDBESGOV**

**Annex I4.4 – Report of the Webinar on Recreational fisheries Monitoring and Control**

**Annex I4.5 – Minutes of relevant conversations with MRF ISSG participants**

**Annex I4.6– MRF Intersessional Subgroup presentation – virtual meeting**



## 15 ISSG Regionally Coordinated Stomach Sampling

### 15.1 General summary

During the 2020-2021 period, the ISSG “Stomach sampling” worked on the four ToRs listed below. Outcomes of this work are presented in detail in the present document.

ToR1 was dedicated to the construction of a coordinated stomach sampling program in the North Sea and Skagerrak, using IBTS as a powerful platform to collect stomachs. ISSG adopted the rolling sampling scheme proposed by WGSAM as a working baseline: each year, stomachs of one or two species already sampled for biology and one or two species not sampled for biology will be included, leading to a large number of species sampled over a DCF cycle. Sampling 2 stomachs per 5 cm size class on each haul would result in sampling up to 20 000 stomachs over a 5-year cycle, i.e. less than 1% of all measured individuals during that time period in the IBTS. The number of expected samples for each participating nation depends on the spatial distribution of the species and the individual allocation of the ICES statistical rectangles.

This work then fueled ToR 2, dedicated to the estimation of costs for the presented stomach sampling program. This work was based on the result of a questionnaire sent to national correspondents. Four types of expenses were considered: (1) costs associated with onboard tasks (i.e. extra staff and material), (2) costs associated with transportation of samples toward stomach analysis centers and storage, (3) costs for the analysis of stomachs and (4) costs associated with data storage and management. The major source of variation of the cost was associated with the estimation of unitary costs associated with stomach analysis. In addition, exchanges with WGIBTS members revealed that the costs associated with onboard work may have been underestimated, and that extra staff should be considered.

ToR3 was dedicated to the exploration of a method to intercalibrate IEO stomach analysis protocol and the comparison of these data with those collected with the protocol recommended by WGSAM. IEO has been operating for three decades a protocol based on stomach content volume. Changing methodology would break the ongoing time series. Results of the analysis conducted seemed to demonstrate that values obtained with the volumetric method could be then extrapolated within the format requested by WGSAM.

Finally, ToR4 was dedicated to an historical overview of the stomach content projects. This work is based on an online survey, shared with PI of projects involving stomach content. Even if the survey was incomplete, some trends could be observed. Some long-term stomach content surveys do exist in European waters, including species of major fisheries interest, cod in the North and Baltic Sea, and hake in the Bay of Biscay and the Mediterranean. This survey also confirms the heterogeneity of methods, even if this could result from a lack of accuracy in the survey resolution. This synthesis is nonetheless powerful to identify points that could be easily included in regionally coordinated protocols, and the gaps that should be addressed before being implemented.

### 15.2 Terms of Reference

1. Development of a regionally coordinated sampling, using North Sea IBTS as a case study, and based on the recommendations of WGSAM.
2. Discuss, including members of the IBTS WG to define specifically the repartition of sample collection and analyses among countries. Discuss with COM how to secure funding for the sampling.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

3. Development of a specific case study to intercalibrate the IEO protocol with the WGSAM recommendation, as to guarantee the continuity of the stomach time series.
4. For each region the group will compile an updated overview of historic and contemporary stomach samplings by area and species. Based on the work of fishPi2 and previous workshops (e.g., ICES WKBECOSS) and suggestions by the end-users of the stomach data (e.g., ICES WGSAM) the group will incorporate existing approaches, guidelines and protocols into the design of the sampling plan. A regional sampling plan and protocols (by species) will be developed for each region.

### 15.3 Work on the Terms of Reference

#### 15.3.1 Regionally coordinated stomach sampling program - Case Study North Sea (ToRs 1 and 2)

##### 15.3.1.1 Background

Fundamental changes in the importance of natural versus fishing induced mortality have been observed in the North Atlantic while moving towards maximum sustainable yield (MSY) management targets. The reduction of fishing mortality in combination with successive recovery of fish stocks, especially of some larger predatory species, led to an increasing natural mortality as opposed to fishing mortality. Consequently, estimates of natural mortality have become more important for stock assessments and forecasts.

In general, information on prey availability, competition, predation processes or biotoxins and plastic particles levels in fish stomachs are needed to support several policies (e.g., Common Fisheries Policy (CFP), EU Marine Strategy Framework Directive (MSFD)) that envisage an Ecosystem Approach to Fisheries (EAF) and an Ecosystem Based Fisheries Management (EBFM). Assessing trophic relations with detailed stomach contents analysis increases knowledge on suitable stock-recruit models (e.g., density dependent effects like cannibalism), assessment of fish species (e.g., estimates of Natural Mortality), reliable Biological Reference Points (BRP) considering species interactions, all aiming at providing a more appropriate framework for the implementation of multi-annual management plans. New data on predation is also important for providing both tactical and strategic advice for management of marine ecosystems (FAO 2008), since they positively contribute to the quality of the tools used to quantitatively assess their dynamics (i.e. multispecies assessment models, ecosystem models, etc.).

A DG MARE tender (Contract No MARE/2012/02-SI2.632887) pilot study on stomach sampling in the North and Baltic Seas was able to demonstrate, in cooperation with the ICES Working Group on Multi Species Stock Assessment Methods (WGSAM), that **cost-effective sampling of stomachs is possible during existing surveys**. It was possible to analyse stomachs in a cost-effective manner with the help of national labs and/or external contractors. Results of the FishPi project (EU MARE/2014/19) conclude that opportunistic stomach sampling on existing DCF surveys is a promising way forward. However, missing regional coordination was identified a challenge. The lack of coordination leads to unbalanced sampling effort resulting in a lack of statistically sound sampling of all key species needed for food web characterisation and finally to a barrier for moving towards an Ecosystem Approach to Fisheries (EAF).



### 15.3.1.2 Surveys as the platform for the stomach sampling

The International Bottom Trawl Survey (IBTS) in the North Sea, Skagerrak and Kattegat in quarters 1 and 3 was identified as the most appropriate scientific survey for sampling stomachs in the Greater North Sea area (Figs. 15.1 + 15.2). In quarter 1, seven nations participate in the survey (Table 15.1) covering a total of 190 rectangles (Fig. 15.1), while six nations participate in quarter 3 (Table 15.2) covering a total of 172 rectangles (Fig. 15.2).

- **IBTS Q1**

**Table 15.1:** IBTS quarter 1 - Participating countries, vessels, months covered and numbers of rectangles sampled by country.

Country	Vessel	Months	# rectangles sampled
Denmark	Dana	January/February	41
France	Thalassa II	January/February	62
Germany	Walther Herwig III	January/February	76
Netherlands	Tridens 2	January/February	54
Norway	G.O. Sars	January/February	40
UK Scotland	Scotia III	January/February	49
Sweden	Svea	January/February	21

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling

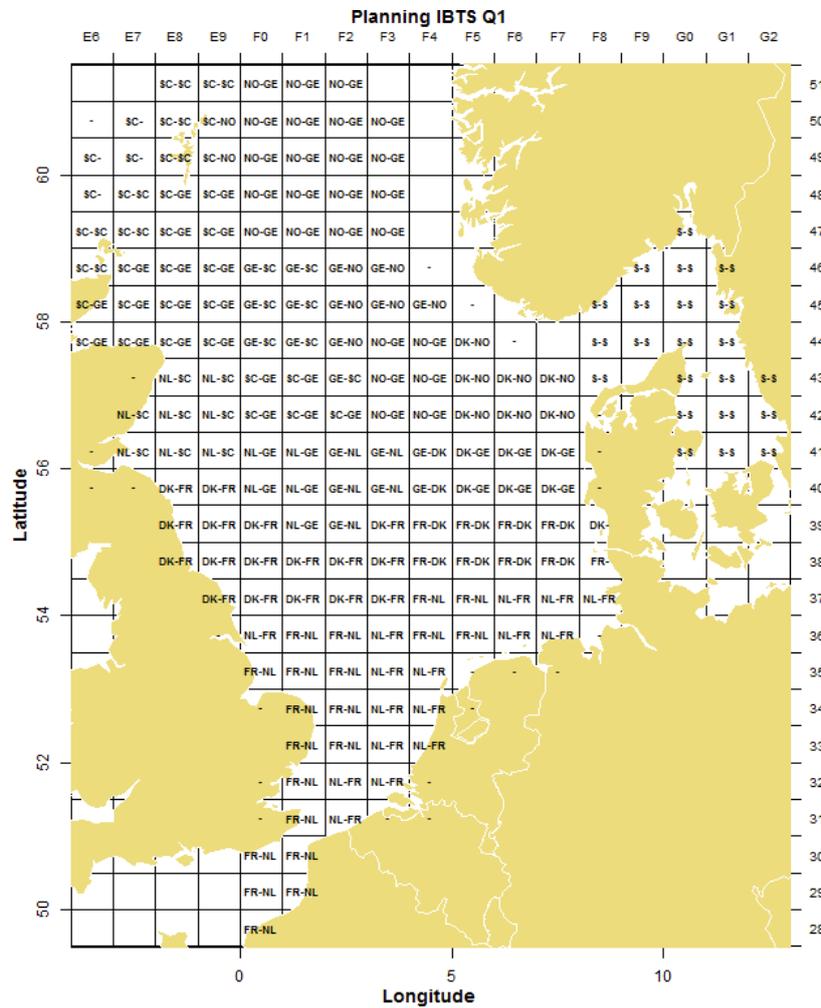


Fig. 15.1: IBTS Quarter 1 proposed grid for all participants. Applied from 2013 (SISP 10-IBTS IX)

• IBTS Q3

Table 15.2: IBTS quarter 3 - Participating countries, vessels, months covered and numbers of rectangles sampled by country.

Country	Vessel	Months	# rectangles sampled
Denmark	Dana	July/August	47
Germany	Walther Herwig III	July/August	29
UK England	Endeavour	August/September	76
Norway	Johan Hjort	July	47
UK Scotland	Scotia III	July/August	84
Sweden	Svea	August	18

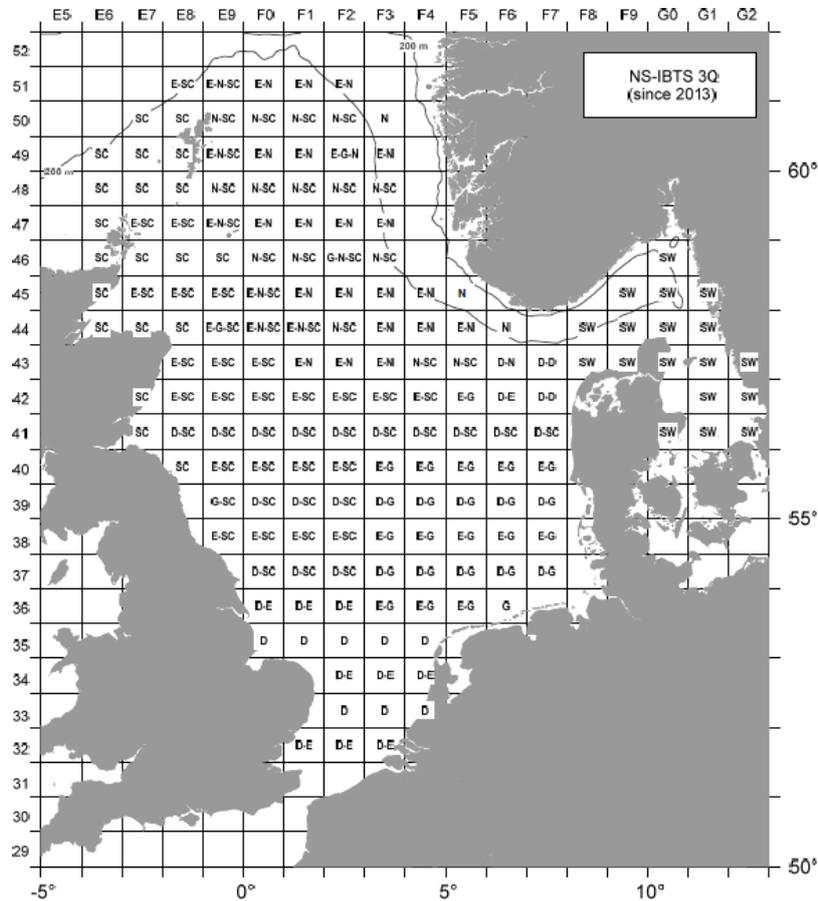


Fig. 15.2: IBTS Quarter 3 proposed Grid for all participants. Applied from 2013 Q3 (SISP 10-IBTS IX).

• **IBTS – Area, rectangles and trawl standards**

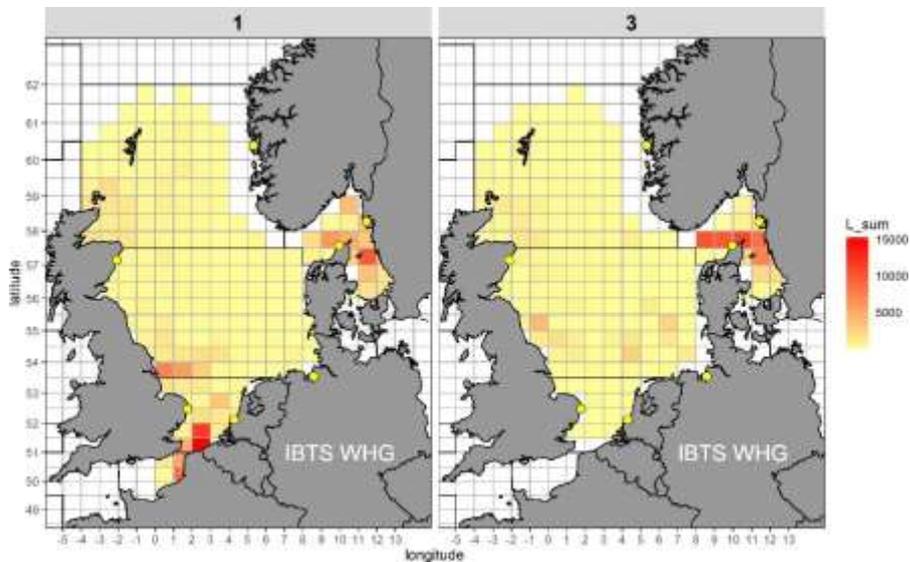
- The area is divided or stratified in ICES Statistical rectangles of roughly 30 x 30 nautical miles
- Each rectangle is typically sampled by two countries ->>= 2 hauls per rectangle.
- The vessels are free to choose any position in the rectangles as long as the hauls are separated by at least 10 nautical miles wherever this is possible. Tows in adjacent rectangles are separated by at least 10 miles.
- Fishing is limited to daylight hours, i.e. from 15 min before sunrise to 15 min after sunset.
- A GOV-trawl is used.
- Standard fishing speed is 4 knots measured as trawl speed over the ground (3.5 to 4.5 knots).
- The maximum fishing depth for standard stations in the North Sea is 200 m and in Division IIIa 250 m.
- A standard tow is fished for 30 minutes. Start time is defined as the moment when the vertical net opening and door spread are stable. Stop time is defined as the start of the winches hauling the net back in.
- Tows under 15 minutes are not included in index calculations and therefore a second valid station must be attempted in that rectangle.

### 15.3.1.3 Species to be sampled

Sampling for age, sex and maturity is conducted for the following species (which means that the body cavity is opened on a regular IBTS station, minimizing the additional time required for the removal of the stomach):

- Saithe (*Pollachius virens*)
- Cod (*Gadus morhua*)
- Haddock (*Melanogrammus aeglefinus*)
- Whiting (*Merlangius merlangus*)
- Norway pout (*Trisopterus esmarki*)
- Mackerel (*Scomber scombrus*)
- Herring (*Clupea harengus*)
- Sprat (*Sprattus sprattus*)
- Plaice (*Pleuronectes platessa*)

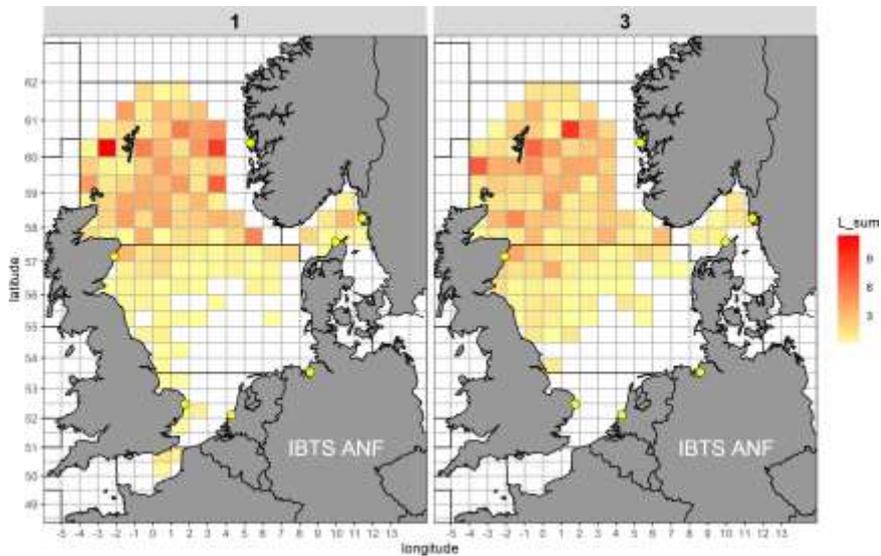
For an orientation of the distribution of the species to be sampled on the IBTS, overview maps are presented below. For these maps, the IBTS Datas data was downloaded and an average number of observed species per quarter, per rectangle and length class (cm) was estimated for a five-year period (2015 – 2019) and presented as a sum of all length classes for each rectangle.



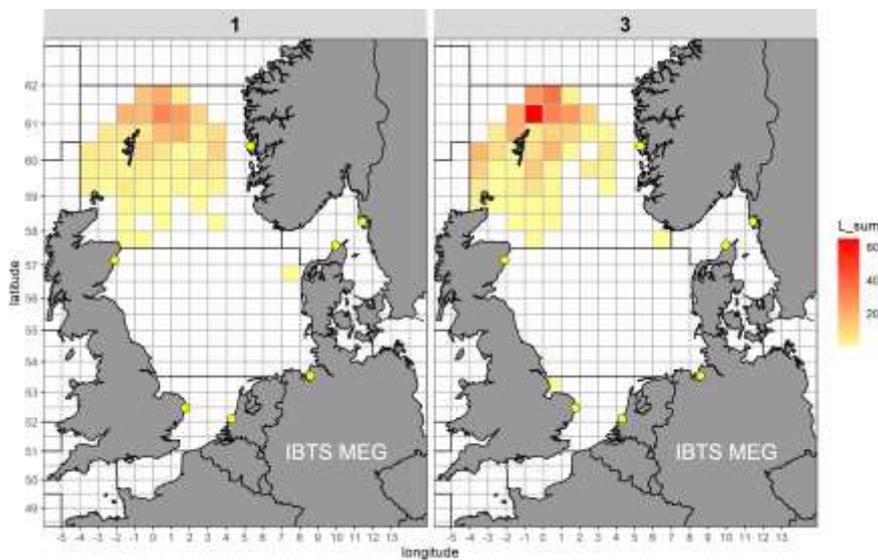
**Fig. 15. 3:** Spatial distribution of **Whiting (*Merlangius merlangus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling



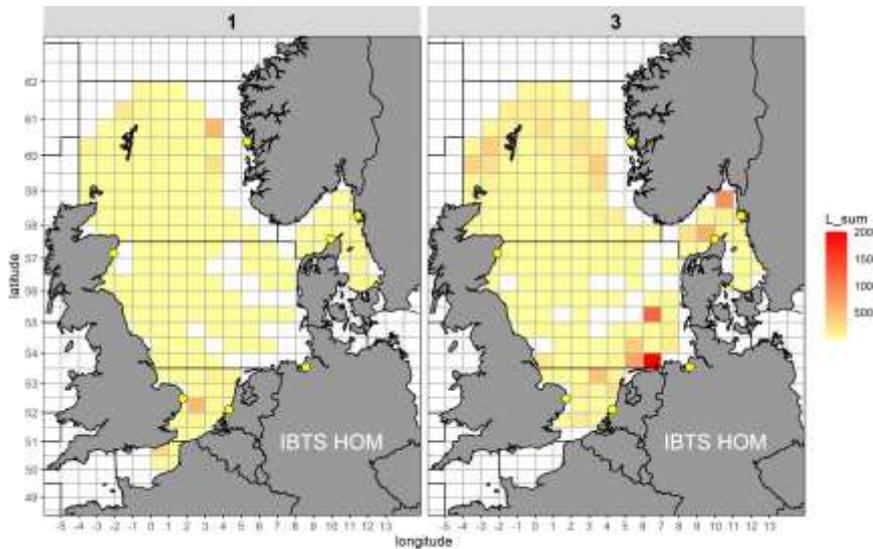
**Fig. 15.4:** Spatial distribution of **Anglerfish (*Lophius piscatorius* & *L. budegassa*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.



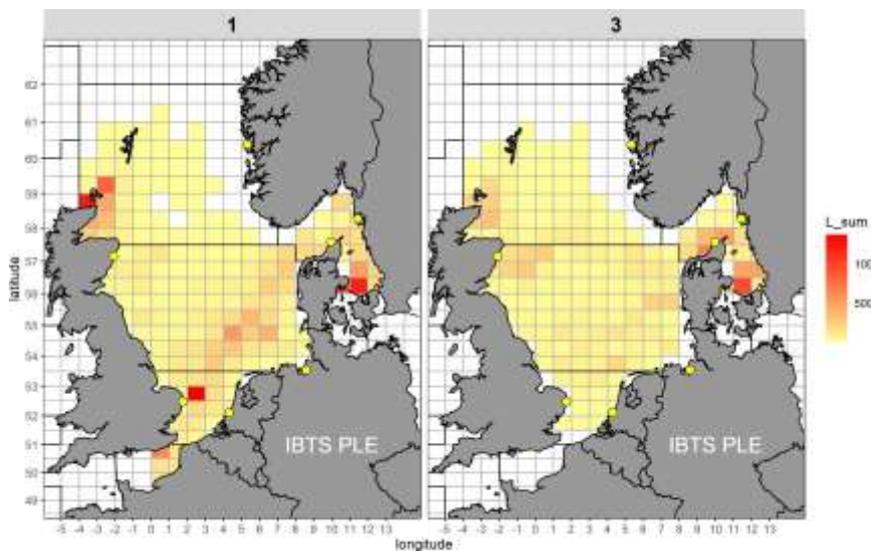
**Fig. 15.5:** Spatial distribution of **Megrim (*Lepidorhombus whiffiagonis*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling



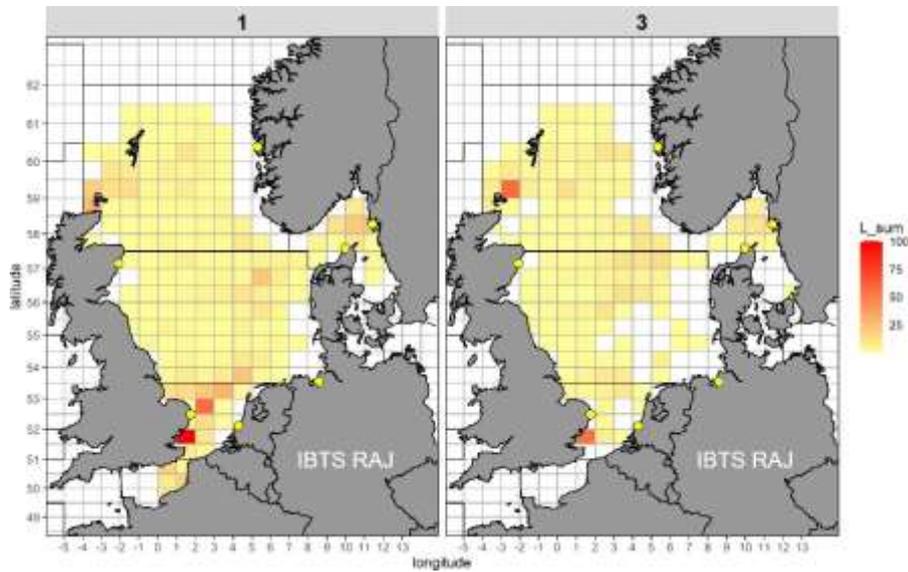
**Fig. 15.6:** Spatial distribution of **Horse mackerel (*Trachurus trachurus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.



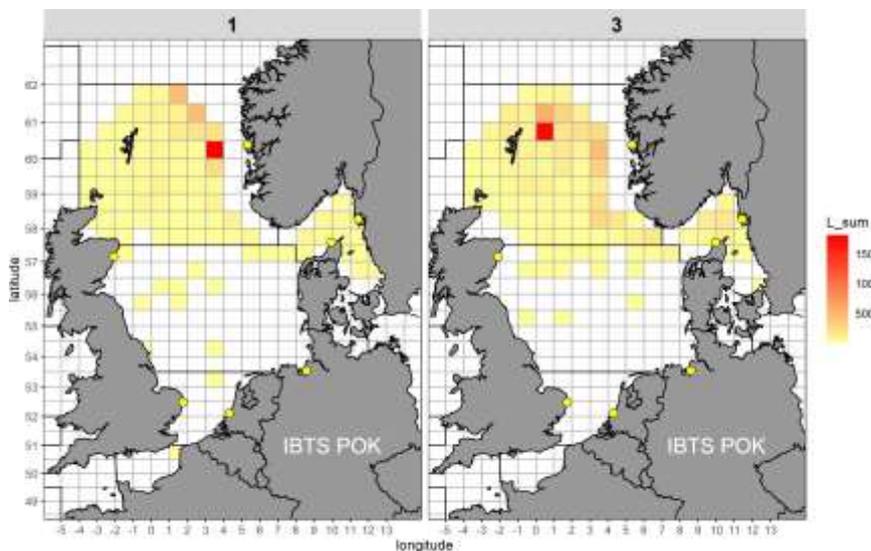
**Fig. 15.7:** Spatial distribution of **Plaice (*Pleuronectes platessa*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling



**Fig. 15.8:** Spatial distribution of Rays (*Dipturus batis*, *Raja montagui*, *R. clavata*, *Amblyraja radiata*) observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.



**Fig. 15.9:** Spatial distribution of Saithe (*Pollachius virens*) observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling

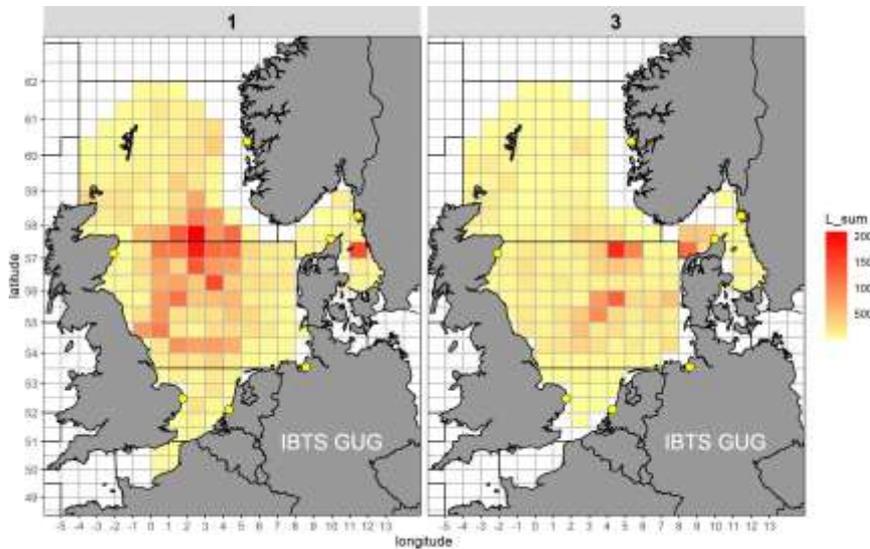


Fig. 15.10: Spatial distribution of **Grey gurnard (*Eutrigla gurnardus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

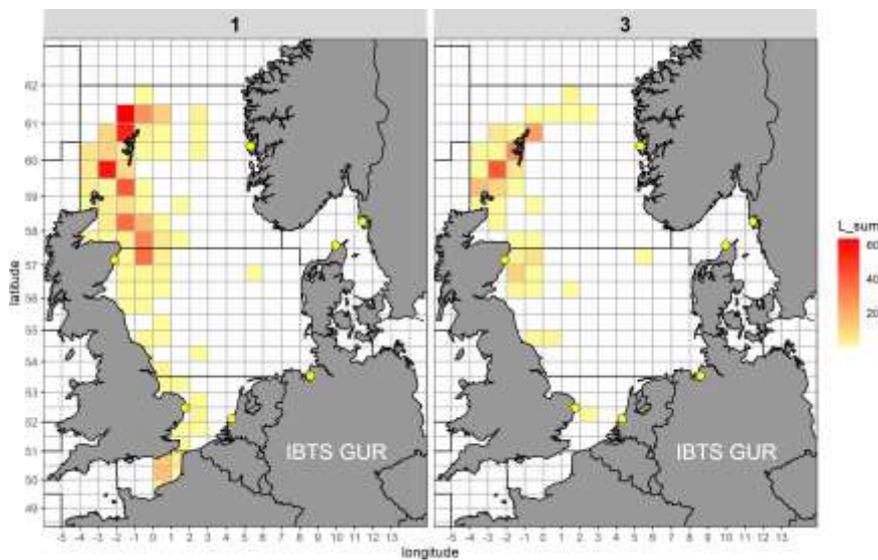


Fig. 15.11: Spatial distribution of **Red gurnard (*Chelidonichthys cuculus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling

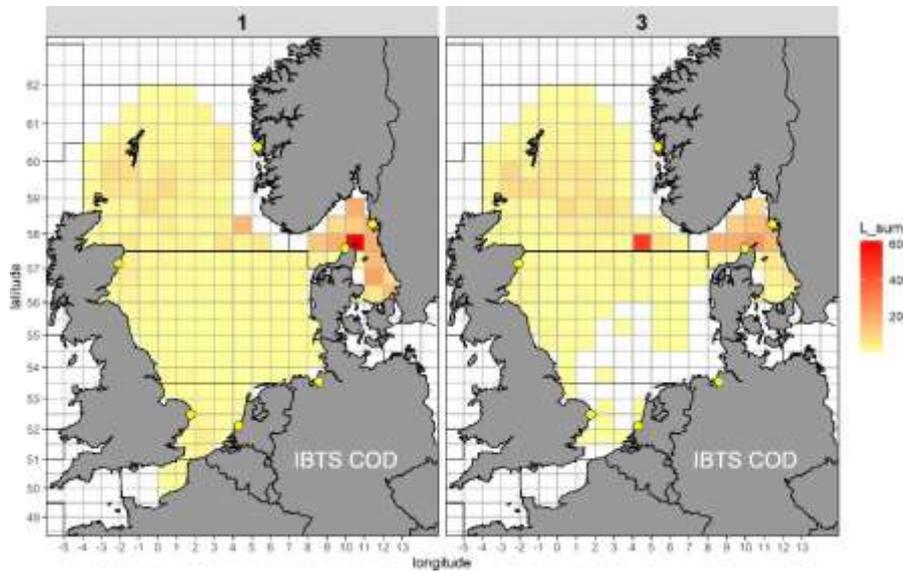


Fig. 15.12: Spatial distribution of **Cod (*Gadus morhua*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

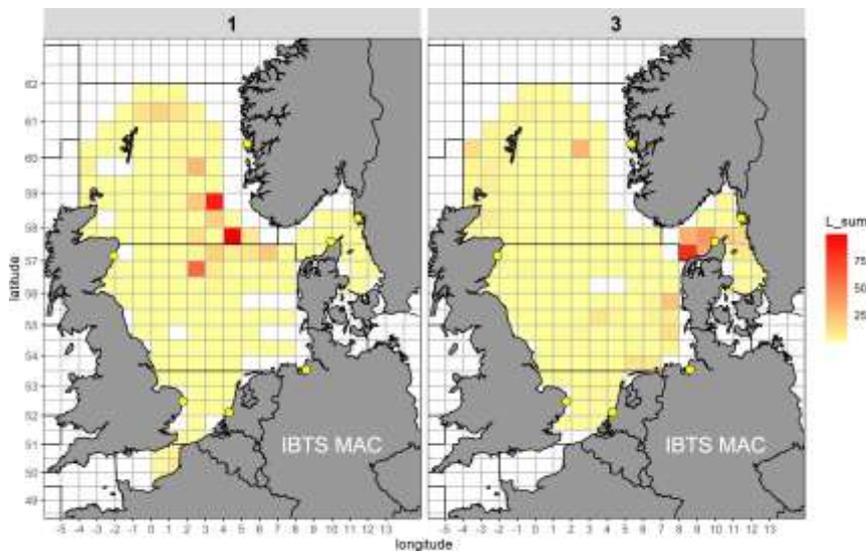
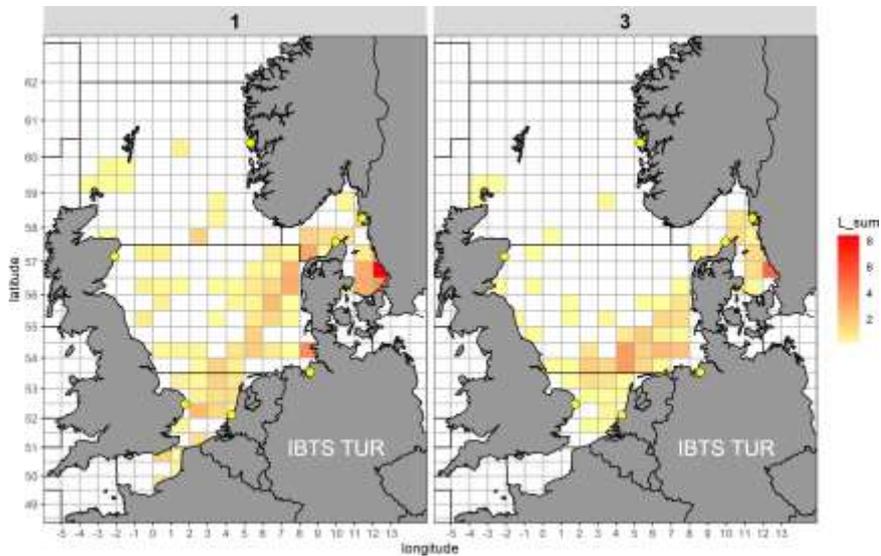


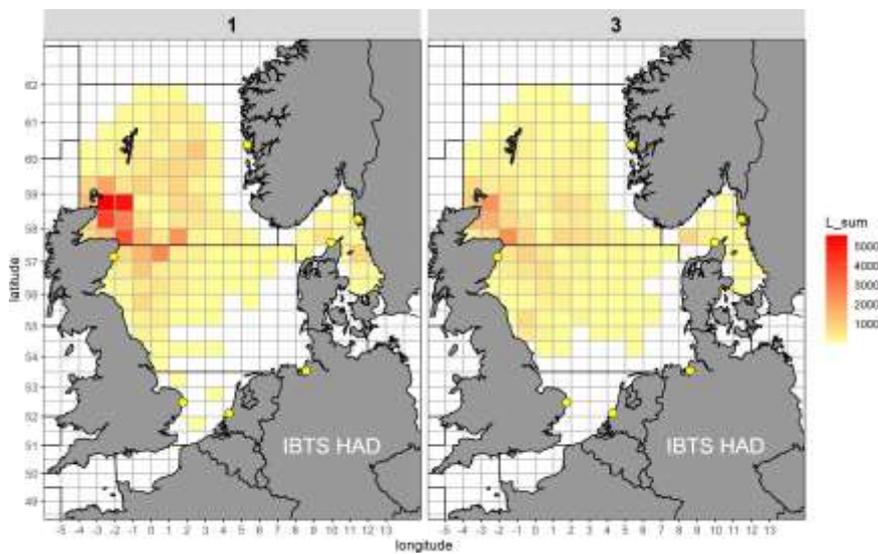
Fig. 15.13: Spatial distribution of **Mackerel (*Scomber scombrus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling



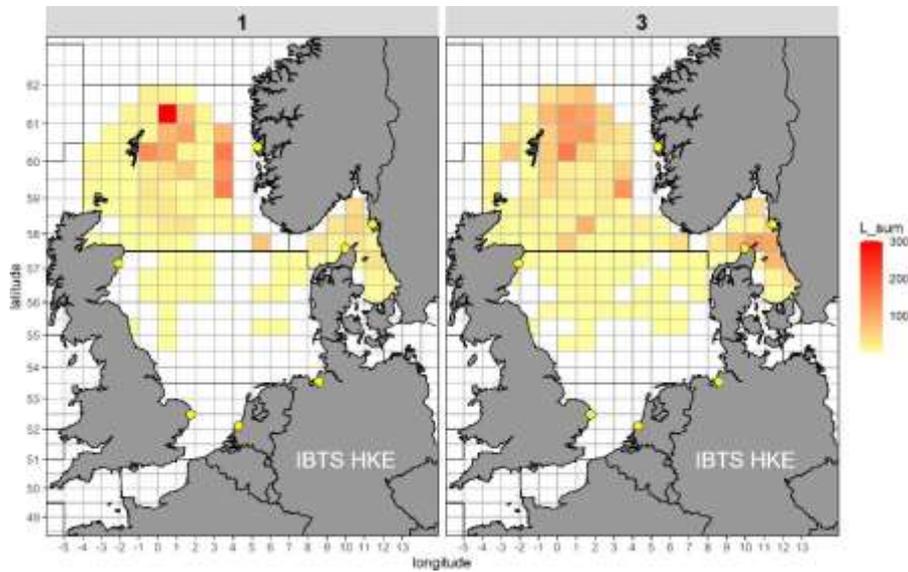
**Fig. 15.14:** Spatial distribution of **Turbot (*Scophthalmus maximus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.



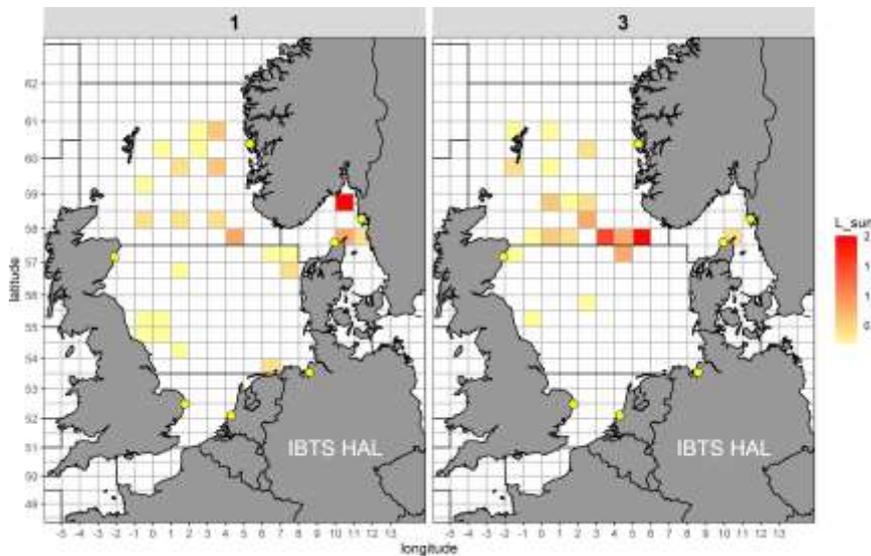
**Fig. 15.15:** Spatial distribution of **Haddock (*Melanogrammus aeglefinus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling



**Fig. 15.16:** Spatial distribution of **Hake (*Merluccius merluccius*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.



**Fig. 15.17:** Spatial distribution of **Halibut (*Hippoglossus hippoglossus*)** observed in the IBTS in Quarter 1 and 3 as an average for 2015 to 2019. Presented is the sum of length measured fish per hour and rectangle.

15.3.1.4 General Approach of the sampling plan

In terms of number of stations, the Study Group on Multi Species Assessment in the North Sea concluded that the sampling intensity for future stomach sampling cannot be substantially lower than the sampling



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

intensity in the North Sea “Years of the stomach” surveys in 1981 and 1991 (ICES, 2006). The probability of detecting a specific interaction decreases with a reduction in sampling intensity. A reduction in the number of sampling stations of more than 25% leads to substantial decreases in detection probabilities. In addition, the full spatial distribution of predators has to be covered to get an unbiased overview of the diet composition of the predator populations. What may be reduced compared to 1981 and 1991, however, is the number of stomach samples per haul and predator type. The species and size distribution of prey tends to be more similar at a local scale than at the scale of the predator population (Bogstad et al., 1995). Such intra-haul correlation points to a small gain in sampling a larger number of stomachs at a particular station. It is more cost effective to increase the number of stations and sample only a few fish at each station, which would minimize the additional effort associated with analysis of individual stomachs.

In general, only pooled stomach contents data (by predator size, for each haul) are available from the samplings of 1981 and 1991. This results in bias with regard to diet composition and consumption rates. This is because gastric evacuation rates are used to convert information about the stomach contents into estimates of food ration and diet composition. Studies on gastric evacuation have shown that the actual prey composition of a stomach substantially affects the gastric evacuation of its content. This may result in extremely variable estimates of food ration and especially prey composition depending on how the information on pooled stomach contents is interpreted (Andersen 2001). Therefore, individual stomachs should be sampled and analyzed to apply gastric evacuation models on single stomachs (Andersen and Beyer 2005).

Given limited time and financial resources, it is preferable to concentrate the sampling effort for a particular predator to one year rather than having an insufficient sampling intensity each year. The frequency of stomach samples, however, should at least ensure that important changes in the food web can be detected every 2–5 years. A rolling scheme sampling **with each year 2-3 key fish predators** should be sufficient to ensure a sufficient availability of time series data. This will allow for process studies on the evolution of predator-prey interactions over time and a proper parameterization of improved multispecies assessment models and deliver valuable information for the characterization and environmental status of the food web. WGSAM sees the following species as key fish predators in the North Sea and Skagerrak ecosystems: cod, whiting, saithe, haddock, hake, mackerel, horse mackerel, grey gurnard, halibut, starry ray, monkfish, plaice, turbot, megrim.

Species can be sampled in different years in a rolling scheme. It will ensure that at least one species for which biological samples (e.g., maturity and/or otoliths) and one species for which this is not the case (and which hence provides a greater increase in work load) is sampled every year. A maximum of 5 years passes between the sampling of any one species. In addition to the sampled species, it should be considered to sample other rays and sharks to derive estimates of the proportion of commercial fish in the diet of the most abundant elasmobranchs.

Due to its nature, the precision of stomach data can be low. Even though several thousand stomachs are analyzed, each diet entity (combination of quarter, predator species, predator length group, prey species and prey length group) is often based on rather few hauls. However, the gain in increasing the sample size from 50 to 100 hauls is much higher than an increase from 500 to 1000 hauls. Therefore, the number of hauls conducted in standard surveys (e.g., IBTS) is sufficient to give a reasonable precision of diet data (ICES, 2006). Based on the analyses of the precision of average diet estimates for North Sea species, linking precision to sampling level, by the Study Group on Multispecies Assessment in the North Sea (SGMSNS; ICES, 2006) and analyses by Bogstad et al. (1995) on the effect of survey design on the precision of estimates of average weight of stomach contents of fish in the Barents Sea, the recommendation was to sample between **2–5 stomachs**



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

**per 5 cm size group** of each predator (with the exception of saithe, mackerel and horse mackerel, where a large proportion of the stomachs can be empty. For these species, 10–15 stomachs should be sampled from each size group).

Based on these recommendations, and given the limited time resources during the IBTS, we have designed the regionally coordinated stomach sampling program using the minimum number of stomachs sampled per size group as our target value (however, three sampling scenarios are presented in the next section). After the completion of a 5-year sampling cycle (Table 15.3), the program has to be evaluated and sample sizes per predator and size groups may need to be adjusted.

A preliminary recommended pilot sampling scheme is presented in Table 15.3.

#### 15.3.1.5 Guidelines for the analyses

The sampling should be carried out based on the guidelines from WGSAM to ensure that data can be used for multi-species modelling, assessments and advice. The best practices regarding the stomach selection at sea as well as the actual stomach analyses have been discussed extensively in the past by WGSAM, including a weighting between most efficient handling time and the necessary amount of detail in the analyses. These best practices have been published as ‘Manual for ICES Stomach sampling projects in the North Sea and Baltic Sea’ (ICES 2010) and were revised by the fishPi2Project (EU MARE/2016/22) in 2019. The regionally coordinated stomach analyses should follow this revised manual with a few minor modifications to ease its application during the surveys and the subsequent laboratory analysis (the revised manual is attached as Annex 15.2 to this document).

#### 15.3.1.6 Provisional sampling plan for the Q1 and Q3 IBTS

**Table 15.3:** Preliminary sampling scheme for the 5-year rolling scheme of a coordinated stomach sampling in the North Sea.

Survey Area	Year	Species sampled for biology	Species <u>not</u> sampled for biology	5 year cycle
North Sea IBTS (including Skagerrak and Kattegat)	1	Whiting	Megrim, Anglerfish*	1st
	2	Horse mackerel, Plaice	Starry ray + rays and skates§	
	3	Saithe	Grey and Red gurnard	
	4	Cod, Mackerel (3 <sup>rd</sup> quarter)	Turbot	
	5	Haddock, Hake	Halibut	
	6	Whiting	Megrim, Anglerfish*	2nd
	7	Horse mackerel, Plaice	Starry ray + rays and skates§	
	8	Saithe	Grey and Red gurnard	
	9	Cod, Mackerel (3 <sup>rd</sup> quarter)	Turbot	
	10	Haddock, Hake	Halibut	
	11	...	...	3rd
	12	...	...	
	13	...	...	

\* Anglerfish = *Lophius piscatorius* and *L. budegassa*

§ Rays and skates = *Raja montagui*, *R. clavata*, *Dipturus batis*

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

The average (2015 – 2019) total number of length measured fish during the IBTS (species presented in Table 15.3) was 597 346 specimens. Based on the sampling scheme presented in Table 15.3, three scenarios were considered for estimating the total number of stomachs sampled by species, quarter and year.

In scenario 1, two stomach samples were taken from each 5 cm length group, starting from 15 cm total length (15 – 19.99 cm, 20 – 24.99 cm, 25 – 29.99 cm, etc.). In scenario 2, three stomach samples were taken from each 5 cm length group and in scenario 3, four stomach samples were taken from each 5 cm length group:

---

Total number of length measured specimens: 597 346 per year  $\approx$  2 986 730 over 5 years!

Scenario 1 – number of stomach samples: 19 506 (0.7% of all measured individuals)

Scenario 2 – number of stomach samples: 26 808 (0.9% of all measured individuals)

Scenario 3 – number of stomach samples: 33 308 (1.1% of all measured individuals)

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In the following sections, the scenario with the lowest number of samples (two stomachs samples out of each 5 cm length group) will be presented in more detail.

#### 15.3.1.7 Sampling scenario (2 out of 5)

Two stomachs per 5 cm length group are sampled from each haul in every rectangle in quarter 1 and 3 (sampling for stomachs starts from 15 cm total length ( $\geq$  15 cm)).

The total number of sampled stomachs would sum up to 19 506 (0.7% of all measured specimens). The numbers differ by species and quarter (Table 15.4).

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

**Table 15.4:** Expected numbers of stomach samples per sampling year, quarter and species.

Year	Quarter	Species sampled for biology	Expected no. of stomachs	Species not sampled for biology	Expected number of stomachs	Sum of stomachs to analyse	Sum of all stomachs per year
1	1	Whiting	1727			3077	3547
	3		1350				
	1			Anglerfish	75	142	
	3				67		
	1			Megrim	148	328	
	3				180		
2	1	Horse mackerel	306			881	3848
	3		575				
	1	Plaice	1206			2417	
	3		1211				
	1			Rays	331	550	
	3				219		
3	1	Saithe	534			1354	4112
	3		820				
	1			Grey gurnard	1373	2541	
	3				1168		
	1			Red gurnard	159	217	
	3				58		
4	1	Cod	1257			2465	3911
	3		1208				
	3	Mackerel	1082			1082	
	1			Turbot	178	364	
	3				186		
	5	1	Haddock	1362			
3		1221					
1		Hake	505			1439	
3			934				
1				Halibut	29	66	
3					37		

The number of annual samples from the IBTS will most probably vary between approximately 3 500 and 4 100 stomachs. Based on the historical allocation of rectangles in the first and third quarter IBTS (ICES 2015), the number of samples per participating nation will vary between approximately 940 (The Netherlands, only quarter 1) and 4 400 (Scotland, quarters 1 and 3; Table 15.5). The expected number of samples per nation by species are presented in Annex 15.1.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

**Table 15.5:** Expected numbers of stomach samples per participating nation and quarter.

Nation	Quarter	Stomach numbers	Total stomach number
Denmark	1	671	1 756
	3	1 086	
England	3	2 316	2 316
France	1	964	964
Germany	1	2 396	3 023
	3	628	
Netherlands	1	938	938
Norway	1	1 510	3 508
	3	1 998	
Scotland	1	1 749	4 404
	3	2 655	
Sweden	1	1 217	2 282
	3	1 065	
		<b>Sum:</b>	<b>19 189</b>

#### 15.3.1.8 Cost estimations

Based on the answers of a questionnaire on the expected costs of a stomach sampling programme sent out to the DCF national correspondents, relevant experts in the EU and involved non-EU countries, the associated costs of the presented stomach sampling programme were estimated. Since the costs per analysed stomach differed significantly, we present an estimation of the expected minimum and maximum costs.

Different costs have to be considered:

- 1) On-board sampling (Costs for extra personnel + material)
- 2) Transport costs to the stomach analysis centre and storage costs
- 3) Costs for the analyses of the stomach contents + data entry
- 4) Storage, data processing and management

- 1) Costs for on board sampling

The extra costs for the on-board sampling of stomachs were considered as negligible by most of the responding countries. One country estimated the cost for an additional staff member needed to approximately 5 000 € per week, adding up to 22 500 € for the country's entire survey in quarter 1.

Nevertheless, based on the discussion during the ISSG meeting and with members of the WGIBTS, it appears that this cost was largely underestimated, and that additional staff member is needed on every survey.

The material costs for the on-board stomach sampling (e.g., plastic bags, scissors, scalpels, tweezers) were considered as negligible.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

#### 2) Transport costs to the stomach analysis center and storage costs

Since the costs for the freeze transport of a large amount of frozen stomach samples via international shipping companies could not be adequately estimated, we will use a “dummy” cost of 10 000 € per year.

#### 3) Costs for the analyses of the stomach contents + data entry

The lowest reported expected costs per analyzed stomach were 8 € while the highest expected costs were 20 € per stomach. Based on the above presented scenario of sampling two specimens per 5 cm length group, the annual minimum costs for the analyses of the stomach contents (including data entry) vary between 31 200 and 36 200 € while the annual maximum costs vary between 78 000 and 90 500 € (Table 15.6). The costs for the data entry were estimated as 10% of the stomach analysis costs.

**Table 15.6:** Expected minimum (based on 8 € per stomach) and maximum (based on 20 € per stomach) cost of the stomach content analyses per year over the five-year sampling cycle.

Year	n stomachs	Cost analysis min (8 € per stomach)	Cost data entry (10% of stomach content analysis)	Cost analysis min incl. data entry	Cost analysis max (20 € per stomach)	Cost data entry (10% of stomach content analysis)	Cost analysis max incl. data entry
1	3 547	28 376	2 838	31 214	70 940	7 094	78 034
2	3 848	30 784	3 078	33 862	76 960	7 696	84 656
3	4 112	32 896	3 290	36 186	82 240	8 224	90 464
4	3 911	31 288	3 129	34 417	78 220	7 822	86 042
5	4 088	32 704	3 270	35 974	81 760	8 176	89 936
Avg.	3 901	31 210	3 121	34 331	78 024	7 802	85 826
Sum	19 506	156 048	15 605	171 653	390 120	39 012	429 132

290

#### 4) Storage, data processing and management

ICES is already hosting a large database allowing easy access to stomach data. The ICES stomach database provides information on the weight, size and species or species group in stomachs of predators of selected sizes and species. It is recommended that new data collected continue to be stored in the ICES database. The costs for the service by the ICES data center will be approximately 12 000 € as a one-time cost in year 1 for the setup (establishing active dataflow, adapting format, implementing automated checks, updating stomach portal interface) and from year 2 on approximately 5 000 € as an annual cost for the maintenance (hosting, data support and helpdesk, bug fixes and minor developments to upload/view/download functions).

The raise of stomach data to population level should be conducted based on the methods currently used by WGSAM.

### Annual total costs

Considering the above-mentioned costs, the total minimum and maximum annual costs add up to:

## 15. ISSG Regionally Coordinated Stomach Sampling

	Average annual minimum costs (€)	Average annual maximum costs (€)
Stomach analyses + data entry	34 330	85 826
Transport of samples	10 000	10 000
Additional staff costs on-board	22 500	22 500
Data storage, processing and management	7 000	7 000
Miscellaneous expenses	5 000	5 000
<b>SUM</b>	<b>78 830</b>	<b>130 326</b>

There may well be additional costs not considered here. A more accurate evaluation of the cost of extra staff on-board should notably be performed. This list represents the order of magnitude of the expected annual costs of the presented stomach sampling program. The costs may easily be lowered by e. g. reducing the number of analyzed species and may also easily be raised by e.g., an increase in the number of stomachs sampled per length group.

### 15.3.1.9 Stomach Analysis Centers (SAC) – Possible locations

It was the general view of the responding countries that the best option for an efficient stomach analysis program would be to have one or a small number of laboratories being responsible for the analysis.

So far, Poland, the Netherlands, France and Norway have expressed their interest in acting as a stomach analysis center (SAC), receiving stomach samples from other countries and carrying out the analyses according to the agreed manual.

291

### 15.3.1.10 Additional time needed for on-board sampling + Fall back option

The estimation of the time required for sampling stomach on-board a scientific survey was conducted in the fishPi2Project (EU MARE/2016/22):

When fish selected for biology (maturity, age, etc.) sampling are used for collection of stomach as well, it takes less than a minute to remove the stomach, fill-in the label and bag the stomach with a label if all other information on the fish already has been acquired and recorded.

When the fish is used exclusively for stomach sampling, the time spent is accordingly longer because weighing and length measuring of the fish, opening of the body cavity, and basic data recording is needed. The entire procedure may then take up to five minutes per stomach.

To what extent this additional time requirement has an influence on the daily routines on board the individual research vessels, will be seen in action during the surveys. If it turns out that in certain cases with large numbers of target species at a wide range of lengths are found in one haul, a fall back option could be to freeze the sampled species as a whole. This of course will have a negative impact on the costs of the transport to the stomach analysis center and most probably also on the per stomach cost of the analyses.

### 15.3.1.11 Cost sharing

According to the fishPi2 project, the “cost associated with the analysis could follow the Total Allowable Catch (TAC) distribution of the particular species/stock. After entering all data in the common format into the ICES stomach data base, the cost of the analyses of data can be shared in the same way.”

### 15.3.1.12 References

Andersen, N. G. (2001). A gastric evacuation model for three predatory gadoids and implications of using pooled field data of stomach contents to estimate food rations. *Journal of Fish Biology* 59, 1198–1217.

Andersen, N. G. & Beyer, J. (2005). Gastric evacuation of mixed stomach contents in predatory gadoids: an expanded application of the square root model to estimate food rations. *Journal of Fish Biology*, 67(5), 1413-1433.

Bogstad, B., Pennington, M. & Vølstad, J.H. (1995). Cost-efficient survey designs for estimating food consumption by fish. *Fisheries Research* 23, 37-46.

FAO (2008). Fisheries management. 2. The ecosystem approach to fisheries. 2.1. Best practices inecosystem modelling for informing an ecosystem approach to fisheries. FAO Fisheries Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 2, Add. 1. Rome, FAO. 2008. 78p.

Anon. 2019. Strengthening Regional Co-ordination in Fisheries Data Collection The fishPi2 Project. Summary and full reports available at: <https://crmg.st-andrews.ac.uk/current-projects/fishpi2/>

ICES (2006). Report of the Study Group on Multispecies Assessments in the North Sea (SGMSNS), 20–25 February 2006, ICES Copenhagen. ICES CM 2006/RMC:02. 75 pp.

ICES (2010). Report of the Working Group on Multispecies Assessment Methods (WGSAM), 4-8 October 2010, San Sebastian, Spain. ICES CM 2010/SSGSUE:05. 95 pp.

ICES (2015). Manual for the International Bottom Trawl Surveys. Series of ICES Survey Protocols SISP 10 - IBTS IX. 86 pp.

### 15.3.2 Development of a specific case study to intercalibrate the IEO protocol with the WGSAM recommendation, as to guarantee the continuity of the stomach time series (ToR 3)

#### 15.3.2.1 Background

Common agreement on stomach sampling programs and guidelines is desirable for fruitful coordination among countries. Although it is clear that coordination has to be established, the protocols and methodologies not necessarily have to be the same. Each region/(sub)region have their own specificities and particularities and this should not be a limitation to agree on common data structures and a list of minimum data that everyone should accomplish.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

During the RCG-ISSG meeting in June 2020, some differences arose on the stomach sampling methodology applied in the North Sea to feed in multispecies models for stock assessment and the one used by the IEO (Spain). IEO has a long and complete time series of stomach samples since 1990 standardized since 1994. Samples are collected on the Spanish IBTS-SPNGFS-Q4 survey DEMERSALES, carried out on ICES Divisions 8c and 9aN (Northern of the Iberian Peninsula) and includes complete samplings of more than 24 fish species (e.g., hake, blue whiting, monkfishes, megrims, mackerel, gurnards, conger eel). Since 2007, this methodology was also established in the demersal surveys carried out in the Spanish Mediterranean Sea (MEDITS). The approach carried out by Spain is considered to be particularly relevant for ecosystem models (Torres et al., 2013, López-López 2017, Corrales et al., in prep; Guijarro et al. in prep) and food web indicators (Arroyo et al. 2017, Preciado et al. 2019, Arroyo et al. 2019). This protocol is well-established and has been proved to reliably characterize some of the most abundant predators' diets in the area (e.g., Velasco and Olaso, 1998a, 1998b, Olaso et al., 2004; Preciado et al., 2008, 2009, 2015, López-López et al., 2011, 2012, 2015; Valls et al. 2011, 2017).

However, the stomach sampling protocol used by the IEO differs from the protocol recommended by WGSAM. In this task, a comparison between both methodologies is carried out.

The main differences found between both methodologies are:

- Target species (list of predators)
- Sampling design
- Gravimetric vs Volumetric method
- Size ranges
- Digestion stages
- Taxonomic level of identification

#### 15.3.2.2 Target species

In the WGSAM protocol target species are mainly commercial species (cod, haddock, saithe), while the IEO protocol performed SCA in as many species as possible, including elasmobranchs (rays and deep-sea sharks), conger eel, John dory, coastal species (gurnards, dragonet, red mullet) etc. More than 24 fish species are analysed consistently during the Spanish IBTS-SPNGFS-Q4 survey DEMERSALES, since 1994.

#### 15.3.2.3 Sampling design

According to the WGSAM protocol, from 2 to 5 stomachs each 5 cm length per haul is collected. In the IEO protocol, 10 individuals from each fish species are randomly set aside and analyzed. Exceptionally, the species *Merluccius merluccius*, *Lepidorhombus boscii* and *Lepidorhombus whiffiagonis* are analyzed by size range, examining 10 individuals by ontogenetic group. These ontogenetic groups are based on multivariate analyses conducted on the diet data matrices and are within the ranges 9 - 17 cm, 18 - 34 cm, 35 - 69 cm and 70 - 90 cm, for hake *M. merluccius* (Velasco, 2007), 11-17 cm, 18- 32 cm, and > 33 cm for *L. whiffiagonis*, and ≤ 15 cm, 16- 23 cm, 24 – 36, and 37 - 50 cm for *L. boscii*.

#### 15.3.2.4 Volumetric versus gravimetric method

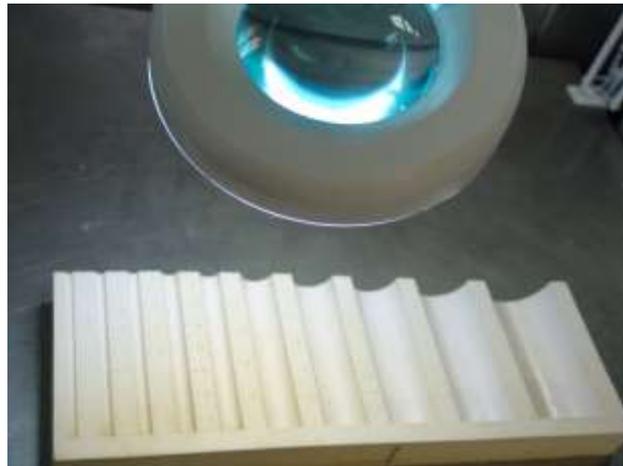
While the WGSAM protocol is based on a gravimetric method (stomachs collected during the survey are frozen, and weighted in laboratory), the IEO stomach samplings are carried out on board. After each haul the



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

catch is separated by species and the stomach content of each individual analyzed using a trophometer (Fig. 15.18) to measure the total volume of the stomach content. The percentage of volume occupied by each prey in the stomach is estimated.



*Fig. 15.18: Trophometer used in the IEO protocol for the estimation of volume of the stomachs.*

A high correlation exists between both volume and weight, even taking into account different taxa (Fig 19). Volume is automatically transformed into weight (following the regression shown in Fig. 19) when data are introduced in the IEO software.

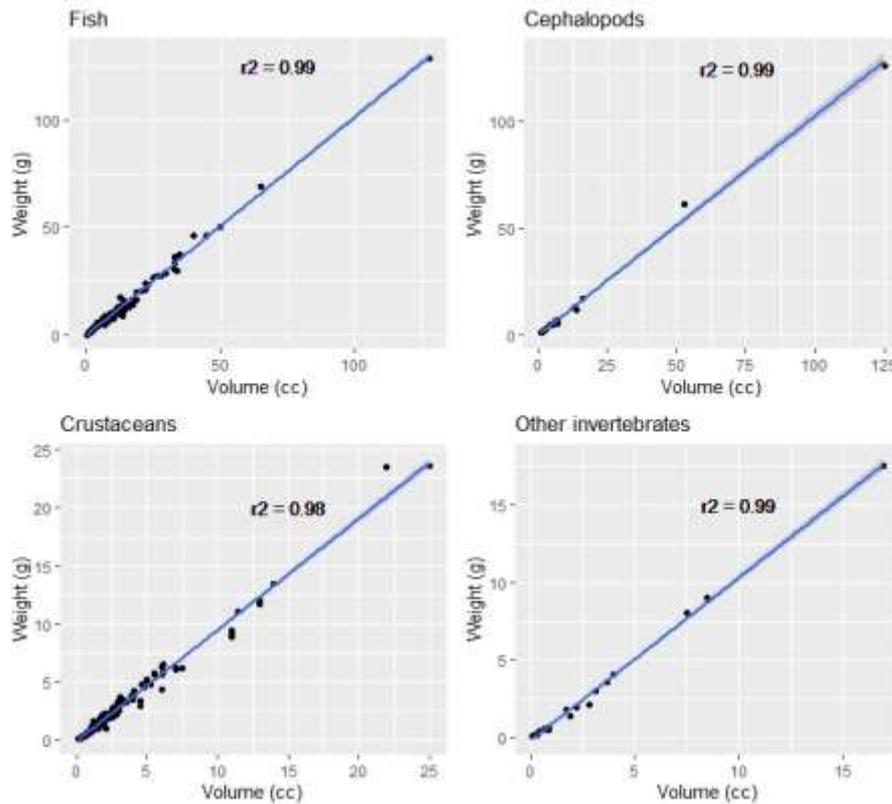


Fig. 15.19. Plots showing the regression line between the volume calculated using the trophometer (cc) and weight (g). Correlations are shown for each taxon. All these analyses were carried out at the laboratory.

### 15.3.2.5 Size ranges

Each region will have different size ranges depending on the ontogenetic changes in the diet. For example, in the northern Iberian Peninsula the hake *Merluccius merluccius* is known to display ontogenetic variation, and the size ranges established in the IEO protocol are based on multivariate analyses conducted on the diet data matrices within the ranges 9 - 17 cm, 18 - 34 cm, 35 - 69 cm and 70 - 90 cm (Velasco, 2007). These variations may be different depending on the region (e.g., <18 cm, 18-21.9 cm, ≥22 cm; Cartes et al. 2009 in the Mediterranean).

Besides, researchers involved in multispecies models and stock assessment should be consulted to establish a thorough sampling design according to the data requested by modelers.

It seems reasonable therefore leading each region to establish its own size ranges.

### 15.3.2.6 Digestion stages

In the WGSAM protocol 4 digestion stages are established (Table 15.7) while in the Spanish protocols only 3 stages are considered: 1. fresh, 2. digested but prey can be measured, and 3. highly digested.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

**Table 15.7:** Digestive stages of fish crab and shrimp/prawn from the WGSAM protocol.

	Stage 1	Stage 2	Stage 3	Stage 4
<b>Fish</b>	Shiny body surface – probably with scales. Clea reyes.	Intact body which however may be discoloured.	Body cavity opened. Parts of the head region may be digested.	a. Nothing or only some of the body cavity left b. Tail muscle mass ‘triangle’ left c. Spine with little muscle mass d. Only spine/bones/otoliths left
<b>Crab</b>	Carapace intact. Some appendages might be detached.	Carapace cracked enabling the digestive fluids to work on the inner parts.	NA	NA
<b>Shrimp/prawn</b>	Entire body intact. Some appendages might be detached.	Cephalothorax detached from the abdominal part.	NA	NA

296

Both stage 1 and stage 2 from the WGSAM protocol can be considered similar to stage 1 of IEO protocol. To agree on a common guideline, it seems easier to merge stages 1 and 2 (WGSAM protocol) than to split stage 1 into 2 different stages. However, the agreement on merging stages 1 and 2 of WGSAM protocol is something still to be discussed.

#### 15.3.2.7 Taxonomic level of prey identification

According to the IEO protocol all prey are separated and identified to the lowest possible taxonomic level whereas WGSAM protocol indicates the identification of prey at Family/Genus level. An agreement can be reached, establishing Family/Genus as the minimum taxonomic level.

#### 15.3.2.8 Estimations of costs per stomach (Spain)

A preliminary estimation of costs (€) per stomach has been performed (Table 15.8) considering:

1. cost per person per day,
2. number of days (DEMERSALES survey around 37 days),
3. number of people onboard,

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

#### 4. one additional month at the lab (1 person)

Since the average number of stomachs analyzed onboard per survey is around 11.000 specimens, the total cost would be 3.7 €/stomach.

**Table 15.8.** Spanish estimation of costs (€) of 3 people working on board during 37 days, plus one additional month at the office (1 person) to prepare and review the database to be ready for analyses.

Onboard					
Cost/day	Nº days	Nº people	Subtotal	TOTAL	
287 €	37	3	31.857 €		
Office					
Cost/day	Nº days	Nº people	Subtotal		
287 €	30	1	8.610 €		
				<b>40.467 €</b>	

### Summary

The time series of stomach data from the IBTS-SPNGFS-Q4 survey DEMERSALES obtained by applying the sampling stomachs protocol from IEO is most probably not as accurate as WGSAM method, but the IEO protocol allows on-board sampling providing a larger number of samples in a shorter time, resulting in significant economic and time savings (see estimation above). Also, results using this method can automatically be transformed into weight data using above volume-weight regressions making both data sets comparable.

Nevertheless, it should be kept in mind that many countries cannot perform such an amount of analyses onboard, notably due to the lack of available staff. Each country will therefore decide how they want to process the samples, as long as they produce the data required by management issues, in terms of sample size, spatial and temporal coverage, size ranges and data formatting.

#### 15.3.2.9 References

Arroyo N.L., Preciado I., López-López L., Muñoz I., Punzón A. 2017. Trophic mechanisms underlying benthodemersal community recovery in the north-east Atlantic. *Journal of Applied Ecology* (doi: 10.1111/1365-2664.12879).

Arroyo N.L., Safi G., Vouriot P., López-López L., Niquil N., Le Loc'h F, Hatab T., Preciado I. 2019 Towards coherent GES assessments at sub-regional level: signs of fisheries expansion processes in the Bay of Biscay using an OSPAR food web indicator, the Mean Trophic Level. *ICES Journal of Marine Science* (doi:10.1093/icesjms/fsz023).

Cartes J., Hidalgo M., Papiol V., Enric Massutí E., Moranta J. 2009. Changes in the diet and feeding of the hake *Merluccius merluccius* at the shelf-break of the Balearic Islands: Influence of the mesopelagic- boundary

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

community, Deep Sea Research Part I, 56: 344-365. <https://doi.org/10.1016/j.dsr.2008.09.009>.

Corrales et al. (submitted.) Trophic modelling in the Bay of Biscay: insights of the ecosystem functioning and fishing impacts. Ocean and Coastal Management.

Guijarro et al. (in prep.) Trophic structure and functioning in the NW Mediterranean marine ecosystem: an island-mainland comparison.

López-López L., Preciado, I., Velasco, F., Olaso, I., Gutiérrez-Zabala, J.L. 2011. Resource partitioning amongst five coexisting species of gurnards (Scorpaeniforme: Triglidae): Role of trophic and habitat segregation. Journal of Sea Research, 66: 58 - 68

López-López L., Preciado I, Villamor B, Velasco F, Iglesias M, Nogueira E, Gutierrez-Zabala JL, Olaso I (2012) Is juvenile anchovy a feeding resource for the demersal community in the Bay of Biscay? On the availability of pelagic prey to demersal predators. ICES J Mar Sci 69: 1394– 1402

López-López L., Bartolino V., Preciado I. 2015. Role of prey abundance and geographical variables in a demersal top predator's feeding habits (*Merluccius merluccius*). Marine Ecology Progress Series 541: 165- 177

López-López L. 2017. Trophic structure and functioning of the marine food webs on the North-Atlantic continental shelf of the Iberian Peninsula: Implications of benthic-pelagic coupling. University of Oviedo. FPI-IEO 2011-04 grant.

Olaso I., Velasco, F., Sanchez, F., Serrano, A., Rodriguez- Cabello, C., Cendrero, O. (2004) Trophic relations of lesser- spotted catfish (*Scyliorhinus canicula*) and blackmouth catshark (*Galeus melastomus*) in the Cantabrian Sea. J. Northw. Atl. Fish. Sci., Vol. 35: 481–494.

Preciado I., Velasco, F., Olaso, I. (2008) The role of pelagic fish as forage for the demersal fish community in the Southern Bay of Biscay. J. Mar. Sys. 72: 407- 417

Preciado I., Cartes, J.C., Serrano, A., Velasco, F., Olaso, I., Sanchez, F., Frutos, I. (2009) Resource utilization by deep sea sharks at Le Danois Bank, Cantabrian Sea, North- East Atlantic Ocean. J. Fish Biol 75: 1331- 1355

Preciado I., Punzón, A., Velasco, F. (2015) Spatio-temporal variability in the cannibalistic behaviour of European hake *Merluccius merluccius*: The influence of recruit abundance and prey availability J. Fish Biol 86: 1319- 1334

Preciado I., Arroyo N.L., González-Irusta, J.M., López-López L., Punzón A., Muñoz I., Serrano A. 2019. Small-scale spatial variations of trawling impact on food web structure. Ecological indicators 98: 442-452

Velasco F., Olaso, I. (1998a) John Dory *Zeus faber* (Linnaeus, 1758) feeding off Galicia and in the Cantabrian Sea: Dietary shifts with size Boletín del Instituto Español de Oceanografía 14: 69-79.

Velasco F., Olaso, I (1998b) European Hake *Merluccius merluccius* (L., 1758) feeding in the Cantabrian Sea: seasonal, bathymetric and length variations. Fish Res 38: 33–44

Torres M.A., Coll M., Heymans J.J., Christensen V., Sobrino I. 2013. Food web structure and fishing impacts on the Gulf of Cadiz ecosystem (south-western Spain). Ecological modeling 265: 26-44

Valls M., Quetglas A., Ordines F., Moranta J. 2011. Feeding ecology of demersal elasmobranchs from the shelf and slope off the Balearic Sea. Scientia Marina 75: 633-639



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

Valls M., Rueda L., Quetglas A. 2017. Feeding strategies and resource partitioning among elasmobranchs and cephalopods in Mediterranean deep-sea ecosystems. *Deep Sea Research Part I* 128: 28-41

#### 15.3.3 Overview of historic and contemporary stomach samplings by area and species (ToR 4)

The ISSG group was asked to compile “an updated overview of historic and contemporary stomach samplings by area and species. Based on the work of fishPi2 and previous workshops (e.g., ICES WKBECOSS) and suggestions by the end-users of the stomach data (e.g., ICES WGSAM) the group will incorporate existing approaches, guidelines and protocols into the design of the sampling plan. A regional sampling plan and protocols (by species) will be developed for each region.

To fill this task, a table collating all individual works involving stomach content analyses was shared online and publicized to members of the RCG ISSG Stomach content. In order to collect information about all potential works, members of other groups (e.g., WKBECOSS) or participants to workshops (e.g., 2020 Euromarine workshop of trophic guilds construction) were also invited to contribute to this shared document. The aim of this work was to list what is already done nationally and can be easily shared, and what improvements are needed to reach a regionally coordinated stomach content sampling plan. Such a work is also an update of similar previous syntheses, notably done during ICE WKBECOSS and MARE project FishPi<sup>2</sup>.

Despite our will to share this demand as largely as possible, we did not receive contribution from some countries we expected information from. It should thus be noted that the information has not reached all potential contributors, and may have been limited to person already involved in ICES or RCG processes. Thus, research project with no or few management implications may have been missed.

299

Participants were asked to provide information on: (1) geographical area and time period covered by the studies; (2) species included, along with sample size and size resolution, and if possible on the rationale for species choice and the further use of the data; (3) protocols used to analyze stomach contents; (4) information about data storage and (5) on the contact person and the institute in charge of the project. It should be kept in mind that, when some information was missing for a project, this project was not taken into account for the considered category.

#### 15.3.3.1 Spatial and temporal resolution

Contributions came from 10 countries, 7 from states from North European countries (France, Germany, Ireland, Norway, Poland, Sweden and UK) and 3 from the Mediterranean Sea (Spain, Italy and Greece). It should be noted here that France and Spain provided contributions covering both northern Seas (Bay of Biscay, Celtic Sea and North Sea for France, Bay of Biscay for Spain) and the Mediterranean Sea (Fig. 15.20). This first geographical analysis highlights regions where previous analyses of stomach contents by two countries or more can be used as baseline for regionally coordinated protocols:

- Ionian Sea – GSA 19 and 20 (Greece and Italy),
- NW Mediterranean Sea – GSA 6, 7 and 11 (France, Italy and Spain),



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

- Bay of Biscay-ICES Areas VIII a, b and C (France and Spain)
- Celtic Sea-ICES Area VIIb (Ireland and France),
- Irish Sea – VIIa (Ireland and UK),
- North Sea ICES IV b and C (France, Germany, UK),
- Baltic Sea (Germany, Poland, Sweden).

Interestingly, in the Baltic Sea, Poland and Sweden already developed a shared analysis of cod and flounder stomachs, where Sweden is responsible for the stomach sampling on different surveys (BITS, BIAS) and Poland is conducting the stomach analyses.



**Fig. 15.20:** Spatial coverage of stomach content programs considered in the online survey. Area surrounded by blue circle and mentioned by their names and ICES or GFCM codes are areas where two or more countries have performed stomach content analyses. Flags composed of two countries' flags represent shared sampling. EC: English Channel.

Looking at temporal resolution, most works implies continuous monitoring over short or long period of time and still performed or stopped. By example, Norway surveys cod diet in the Barents Sea since 1984. Similarly, hake and megrim diet are monitored in the Bay of Biscay by Spain since 1994 (Fig. 15.21). With the exception of these two long-term monitoring, and of the data collection performed within DAPSTOM (see afterwards), most long-term surveys began in the 2000's (capelin and polar cod in Bering Sea, cod in the Baltic mackerel, herring and blue whiting in Norwegian Sea, dab in areas surrounding Great Britain, several species in Balearic Sea) and in late 2010's (Hake in Italian and Greek areas). Finally, few studies reported single surveys (involving 1 season to 2 or 3 consecutive years of sampling) in Germany or France. The underrepresentation of this type of work may result from the answering bias already mentioned.

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling

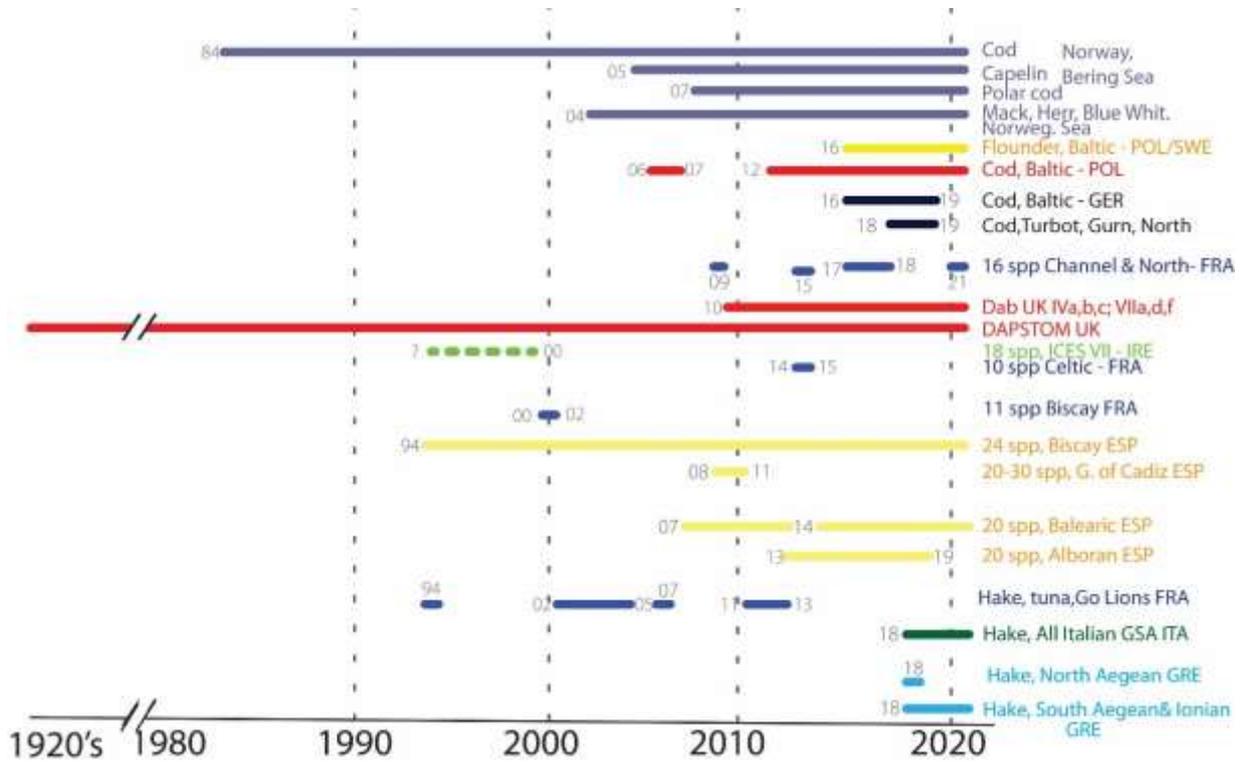


Fig. 15.21: Timeline of stomach content sampling programs in European waters.

15.3.3.2 Species, sample size, length resolution and aims of the sampling

Considering all projects reported and regardless of the zone sampled, cod was the most sampled species, occurring in more than 30% of the projects. This was indeed driven by the large inclusion of cod in studies in the NANSEA area (50%). Hake was also a species largely considered in stomach content (26% of the projects), mostly due to the importance of hake in the Mediterranean area (50% - Fig. 15.22). Other species play a significant role, such as whiting (18%), mackerel (15%), or dogfish, herring and plaice (~10%). These figures largely represent the pattern in the NANSEA area, as works performed in this area are predominant in the dataset. In addition, the species repartition is consistent with fishing interest, as cod and hake are predominant species in Northern and Mediterranean fisheries respectively. Whiting, herring or plaice do also play an important role.

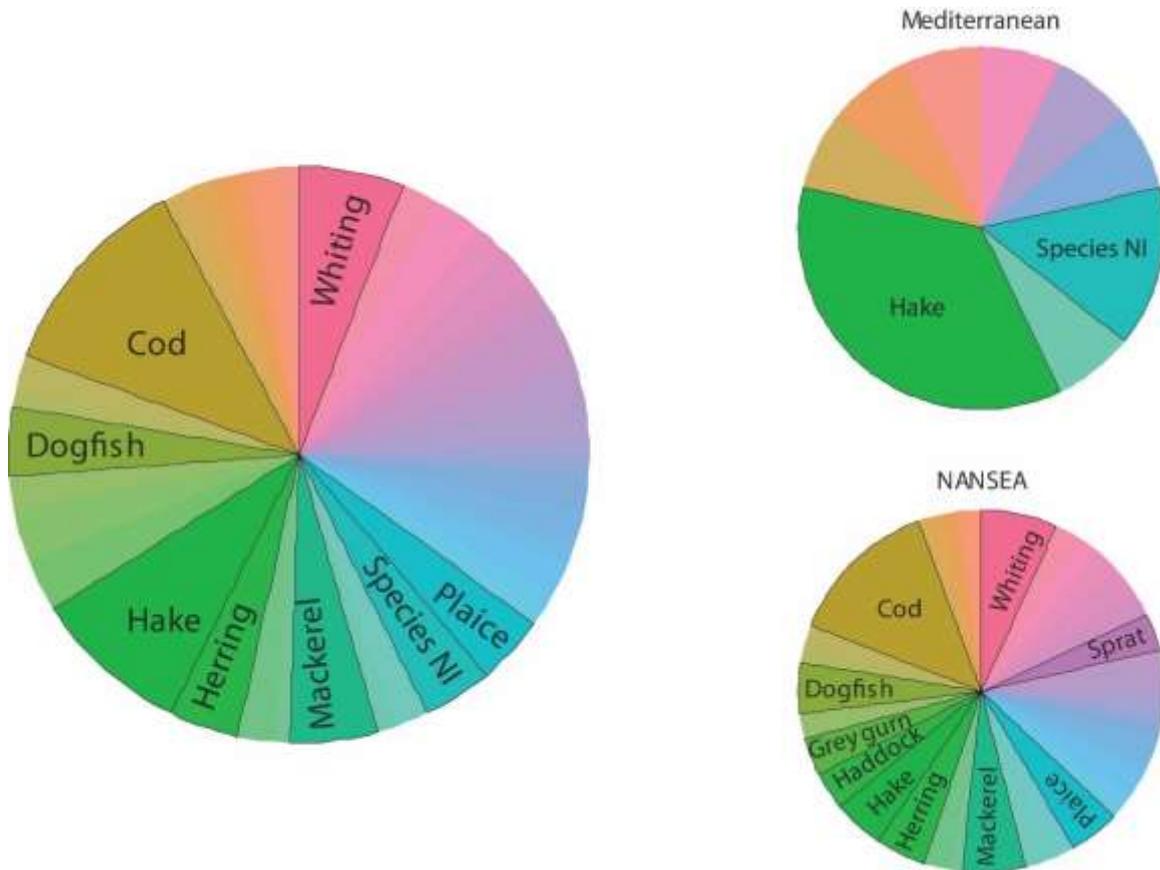
This analysis is nevertheless rendered complex by the discrepancies in the answers. When projects involved many species, no detailed information is available on the exact list of species included and it was necessary to create a “species NI” category. For the clarity of both the temporal and spatial vision, additional details have to be asked to the correspondents, to confirm the exact list of species.

The synthesis work was also getting complex by the absence of accurate information about the actual sample size (i.e. exact number of individuals per species) in each project. This constrained the use of the species occurrence rather than species abundance. Nevertheless, data was available for some works. By example, numbers in DAPSTOM database appears somehow consistent with species occurrence, as herring (21%)

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling

cod (13%), plaice (11%) and whiting (9%) are the most represented species. Similarly, monospecific studies report the sampling and analysis of between ~500 and ~5000 individuals, notably for Polish and German projects about cod or whiting diet in the Baltic Sea.



**Fig. 15.22:** Occurrence of species in stomach content project reported, whether considering all areas conjointly, or separating projects from the Mediterranean and the NANSEA area. Species were mentioned when they occur in 10% or more of the studies. “Species NI” refers to projects reporting a number of species sampled, but no explicit information of the actual species considered.

Regarding length resolution strategy, on the 30 answers, 14 did not reported information about a potential inclusion of length in sampling strategy. Seven did not considered length in the sampling: In these projects, 5 to 10 individuals per species were sampled haphazardly per station. Amongst project including a size-based sampling, 5-cm size classes is largely used (five projects out of nine). It seems to demonstrate that using a 5 cm resolution is a feasible protocol for most studies. The use of species-specific size class is also reported for some species (i.e. hake and *Lepidorhombus* spp. in Cantabrian and Galician Seas, and in the Italian GSA).

Several goals coexist in all reported projects. Most explicitly mention fisheries management as an aim, notably to detect potential trophic effect on the lowering condition of harvested species (e.g., flounder or cod in the Baltic) or during pilot projects within the framework of CFP, DCF or previous MARE projects (e.g., feeding habits of hake in the Mediterranean). Other projects were designed to inform more ecosystemic approach, like to support the construction of multispecies models, or inform food web or ecosystem indicators, by example in the MSFD.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling

#### 15.3.3.3 Stomach content analysis protocol

Synthesizing the answers about protocols used to analyze stomach content seems to highlight the heterogeneity of protocols, even if this may result from a difficulty to identify the information requested.

Regarding **onboard work**, three major approaches coexist: freezing entire fish, dissecting stomachs and freezing it or dissecting and analyzing the fish onboard. The choice of methods largely depends on the size of the scientific staff onboard and on the possibility to dedicate member of staff specifically to this task or not, and on the aims of the project. The inclusion of stomach content sampling in a project involving other analyses (e.g., for calorimetry measurements) may also justify the need to collect entire fish.

Freezing the entire fish is faster, but requires larger storage onboard while dissecting the fish out adds an additional step that require time. In addition, it may require a dedicated operator on board, to dissect carefully the whole stomach. Here using the onboard otoliths collection as an example may provide some perspective: after some decades of otoliths sampling, most of the people involved in surveys are now used to collect otoliths, and are able to train newcomers. It may thus be considered that the same will occur for stomach sampling, but after some time. Dedicating a person to this task may appear needed during the first times of stomach sampling. The reference to otolith collection is also pertinent here, as some studies report the use of the same individuals for both analyses, as to increase the possibility to couple several life history traits for the same individuals, and to limit the impact of scientific work.

Finally, analyzing the stomachs onboard appear as a very specific work that requires first dedicated staff onboard, and based on a specific protocol (volumetry, see Section 3.2). It has some advantages, notably as there is no need to store samples, and has many samples are treated in a very short period, resulting in significant economic and time savings (see Section 3.2.8). However, this would require some transformation to be compared with results from other methods and would get the collection of other interesting parameters, such as individual prey mass, difficult.

Regarding **predator biometrical analyses**, fish length and mass measurement, as well as sexual maturity estimation are reported for some works only, but it may be assumed that this basic analysis is largely done. Similarly, discrepancies coexist regarding feeding intensity. The way empty stomachs are considered is not always reported. Stomach fullness is sometimes reported to be measured with a three stages scale (cf. Table 15.7), and others studies mention the analysis of gall bladder color.

Regarding **prey treatment**, answers reported the identification of fish prey at lowest possible level, and the measurement of length and mass when possible following MARE 2012 recommendations. A question may appear regarding otoliths that are commonly observed in stomachs of piscivorous fish. Are otoliths considered specifically? Can we include a common protocol for otoliths, e.g., using otoliths measurement to estimate length and mass of fish prey? Are relationships between otolith length and fish length / mass accurate enough to do so?

Discrepancies occurred for invertebrates, as some studies determined all invertebrates at the lowest possible level and measured length and mass, while other only identify commercial invertebrate species at low taxonomic level or report the identification at lowest taxonomic level, weighing and measuring for fish, shrimps and isopods. This synthesis highlights the need to pursue the work here, before being able to reach an agreement about part of the prey analyses' methods that can be included in regionally coordinated workplans, and parts that may remain of national responsibilities.





#### 15.3.3.4 Data storage

Regarding data storage, with the exception of the DAPSTOM database that is freely available online, and of the data collected during the “years of the stomach” that were not mentioned, results from all projects are stored on local database. This result may potentially call for a major caution point, and would surely request a major effort to adopt a shared formatting, and shared protocols to prepare, process, upload and use stomach content data produced in the framework of regionally coordinated protocols. In addition, a question remains regarding data property, and the possibility to maintain an embargo on the data, to allow producer to publish it before the data being publicly available.

#### 15.3.3.5 Conclusion of the synthesis

As a conclusion, analyzing the analytical protocol was rendered complex by the diversity of objectives and methods used and by the diversity of answers. The shared document was potentially not clear enough, and the information requested for this synthesis not correctly expressed. A more accurate vision of the protocols actually in use may require another specifically designed questionnaire, with more precise questions about methodology and measurements.

As a conclusion, this synthesis can be viewed as a first step toward a semi-exhaustive summary of the work done. Answers already received and comments on it will allow a better definition of the questions to be posed. More specific questions, notably regarding sample size, length consideration or actual methods used should be asked in a second version of the questionnaire that will be sent



## Annexes

### Annex I5. I: Case Study North Sea - Expected numbers of stomach samples per species by participating nation and quarter.

a) Denmark

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
Denmark	1	1	Whiting	158			331	333
		3		173				
		1			Anglerfish	1	2	
		3				1		
		1			Megrim	1	1	
		3						
Denmark	2	1	Horse mackerel	10			84	535
		3		74				
		1	Plaice	168			406	
		3		238				
		1			Rays	20	45	
		3				25		
Denmark	3	1	Saithe	6			27	362
		3		22				
		1			Grey gurnard	150	333	
		3				183		
		1			Red gurnard	1	2	
		3				1		
Denmark	4	1	Cod	46			100	352

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling - Annex

		3		55				
			Mackerel					
		3		165			165	
		1			Turbot	23	87	
		3				65		
Denmark	5	1	Haddock	59			123	154
		3		64				
		1	Hake	6			29	
		3		23				
		1			Halibut	3	3	
		3						

b) Germany

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
Germany	1	1	Whiting	387			476	551
		3		89				
		1			Anglerfish	29	30	
		3				1		
		1			Megrim	45	45	
		3						
Germany	2	1	Horse mackerel	78			123	507
		3		45				
		1	Plaice	184			327	
		3		143				
		1			Rays	47	57	
		3				10		

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

Germany	3	1	Saithe	180			194	681
		3		14				
		1		Grey gurnard		336	454	
		3			118			
		1		Red gurnard		34	34	
		3						
Germany	4	1	Cod	295			320	484
		3		25				
		3	Mackerel				100	
		1						
		1		Turbot		20	64	
		3				45		
Germany	5	1	Haddock	426			452	652
		3		26				
		1	Hake	180			192	
		3		13				
		1		Halibut		8	8	
		3						

307

#### c) Norway

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
Norway	1	1	Whiting	218			425	574
		3		207				
		1		Anglerfish		23	44	
		3				22		

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling - Annex

		1			Megrim	46	106	
		3				60		
Norway	2	1	Horse mackerel	53			162	401
		3		109				
		1	Plaice	65			168	
		3		103				
		1			Rays	32	71	
		3				39		
Norway	3	1	Saithe	169			461	819
		3		292				
		1			Grey gurnard	186	355	
		3				169		
		1			Red gurnard	4	4	
		3						
Norway	4	1	Cod	197			501	656
		3		304				
		3	Mackerel	144			144	
		1			Turbot	9	11	
		3				3		
Norway	5	1	Haddock	248			498	950
		3		250				
		1	Hake	146			445	
		3		299				
		1			Halibut	7	7	
		3				1		

308

d) Scotland

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
Scotland	1	1	Whiting	269			636	766
		3		367				
		1			Anglerfish	16	38	
		3				22		
		1			Megrim	36	93	
		3				57		
Scotland	2	1		62			206	737
		3	Horse mackerel	144				
		1	Plaice	171			446	
		3		275				
		1			Rays	42	85	
		3				44		
Scotland	3	1	Saithe	74			245	917
		3		172				
		1			Grey gurnard	219	537	
		3				319		
		1			Red gurnard	87	135	
		3				48		
Scotland	4	1	Cod	239			527	816
		3		288				
		3	Mackerel	270			270	
		1				Turbot	9	
		3					10	

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

Scotland	5	1	Haddock	347			790	1079
		3		443				
		1	Hake	89			287	
		3		199				
		1			Halibut	2	3	
		3				1		

#### e) Sweden

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
Sweden	1	1	Whiting	181			309	312
		3		128				
		1			Anglerfish	3	4	
		3				1		
		1					0	
		3						
		1	Horse mackerel	33			87	433
		3		54				
1	Plaice	167			299			
3		132						
		1			Rays	33	47	
		3				14		
		1	Saithe	62			158	331
		3		96				
1			Grey gurnard	98	173			
3				75				

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

		1			Red gurnard		0	
		3						
Sweden	4	1	Cod	347			572	755
		3		225				
			Mackerel					
		3		105		105		
		1		Turbot		55	79	
		3				24		
Sweden	5	1	Haddock	123			215	406
		3		92				
		1	Hake	61			184	
		3		123				
		1		Halibut		8	8	
		3						

311

#### f) France

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
France	1	1	Whiting	258			258	258
					Anglerfish		0	
					Megrim		0	
France	2	1	Horse mackerel	27			27	340
			Plaice	235			235	
					Rays		79	
France	3	1	Saithe				0	196
					Grey gurnard		186	

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

					Red gurnard	11	11	
France	4	1	Cod	63			63	95
					Turbot	32	32	
France	5	1	Haddock	35			35	37
			Hake				0	
					Halibut	2	2	

#### g) The Netherlands

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
Netherlands	1	1	Whiting	227			227	228
					Anglerfish	1	1	
					Megrim		0	
Netherlands	2	1	Horse mackerel	31			31	315
			Plaice	206			206	
					Rays	78	78	
Netherlands	3	1	Saithe				0	175
					Grey gurnard	161	161	
					Red gurnard	14	14	
Netherlands	4	1	Cod	61			61	93
					Turbot	32	32	
Netherlands	5	1	Haddock	74			74	74
			Hake				0	
					Halibut		0	

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

#### h) England

Nation	Year	Quarter	Species sampled for biology	expected no. of stomachs	Species not sampled for biology	expected no. of stomachs	Sum of stomachs	Sum of all stomachs per year
England	1	3	Whiting	317			317	386
					Anglerfish	20	20	
					Megrim	49	49	
England	2	3	Horse mackerel	120			120	446
			Plaice	258			258	
					Rays	68	68	
England	3	3	Saithe	183			183	455
					Grey gurnard	263	263	
					Red gurnard	9	9	
England	4	3	Cod	249			249	513
			Mackerel	233			233	
					Turbot	31	31	
England	5	3	Haddock	294			294	517
			Hake	224			224	
					Halibut		0	

## Annex 15.2: Case Study North Sea - Manual for stomach sampling

This manual is a slightly amended version of Annex 4.2.1. of the fishPi2-project.

### General

- Stomachs should be selected randomly within 5-cm groups, but can be taken from fish sampled for maturity and age determination. The stomachs are frozen individually in plastic bags together with a label describing the sampled fish. Only predators larger than 15 cm should be sampled as fish below this size are generally not piscivorous. Deviations from this rule could apply to e.g., Atlantic mackerel and Horse mackerel which may feed on fish larvae and pot-larvae at sizes smaller than 15 cm total length.
- Data are recorded in the ICES exchange format on the labels used for year, quarter, ship and haul consistent with those used for haul information uploaded to DATRAS (Table 15.A2.2 and 15.A2.3). This assures accessibility of further haul details if necessary.

### Selection of stomachs at sea

The selection of stomachs should be based on the following stomach classification:

1. Everted stomach. Some fish have everted stomachs due to the pressure difference between trawling depth and the surface of the sea. Since it not known whether these stomachs contained food or not, such ones should not be sampled.
2. Stomach showing evidence of regurgitation. Some fish have regurgitated all or part of their stomach contents and these stomachs should not be sampled. The number of such stomachs encountered during the examination must however be recorded to ensure that the proportion of feeding fish in the sample is accurately defined. In practice, it is often difficult to tell whether regurgitation has taken place, except in situations of prey remains in mouth or pharynx. However, if the stomach is flaccid or its wall is thin but contains no or little prey remains, experimental work by Robb (1992) indicates that the size of the gall bladder is a useful indicator of the recent feeding history of the fish. A large densely-coloured gall bladder indicates that the stomach has been empty for some time and has not recently lost its content by regurgitation. The criteria are summarized in Table 15.9 and should be applied when classifying a stomach as either being truly empty or originating from a fish that shows signs of regurgitation.
3. Non-everted stomach showing no evidence of regurgitation – with or without contents – should be sampled. It should be noted that not all feeding fish have significantly distended stomachs, i.e. feeding does not necessarily mean full.
4. Empty stomach is included in the category Stomach of a fish showing no evidence of regurgitation. Remember also to check and record the status of the gall bladder of a sampled fish with a seemingly empty stomach (Table 15.A2.1).

The stomachs sampled at sea should thus originate from feeding fish showing no evidence of regurgitation (category 3) and from non-feeding fish (empty stomachs; category 4). The sampling should continue until at

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

least one stomach classified in one of these two categories is obtained.

#### Protocol for stomach sampling at sea

1. Collect predators according to the sampling scheme elaborated for each sea area and predator species.
2. Do not sample everted stomachs.
3. Check the individual predators for evidence of regurgitation according to the categorization described above. Do not sample stomachs showing evidence of regurgitation, but remember to record them.
4. Sample the other (valid) stomachs (with and without contents) and avoid loss of prey remains when cutting the esophagus during removal of the stomach from the fish.
5. Bag the stomachs individually (also empty stomachs) and preserve them by freezing as quickly as possible after removal from the fish. Each bag should contain a label giving the information listed in Table 15.10.
6. Record further relevant data including the number of regurgitated stomachs using the data exchange format in Table 15.A2.3.
7. Send the frozen stomachs to the stomach analysis center (SAC) upon arrival.

It is recommended that the predator species are recorded using WORMS' AphiaID codes (<http://www.marinespecies.org/aphia.php>).

#### Laboratory analysis of stomach contents

The stomachs are analyzed individually. They are thawed and cut open with scissors after which the contents may be carefully separated using water from a spray bottle in a 200–300 µm sieve. By use of water: remove the prey from the sieve, place it on moistened paper towel and gently dab it with another moistened paper towel to get rid of excess water.

Fish are identified to species or lowest possible taxonomical level possible and weighed individually. When possible, the total length is measured to the nearest mm below. Alternatively, for more digested fish, standard length or reduced standard length is measured – or estimated if still recognizable (Table 15.A2.7). Be careful to completely unfolding the prey so that the length is not underestimated. Eggs are recorded as having the length 0. The digestive stage of the fish is recorded (Table 15.A2.4) and pristine fish prey with intact and glistening bodies are categorized as eaten in the trawl and can be left out of the analysis later on to avoid bias introduced by feeding during the catch process.

Invertebrates are generally identified to the taxonomical levels shown in Table 15.A2.6. The exceptions are the commercial species Norway lobster *Nephrops norvegicus*, northern prawn *Pandalus borealis*, Baltic prawn *Palaemon adspersus*, brown shrimp *Crangon crangon*, edible crab *Cancer pagurus*, common whelk *Buccinum undatum*, king scallop *Pecten maximus*, and queen scallop *Aequipecten opercularis* together with the isopod *Saduria entomon*, sea mouse *Aphrodita aculeata*, and hermit crab *Pagurus bernhardus*, which are identified to species or lowest taxonomical level possible. The latter prey is weighed individually and the other individually or by group as convenient. Invertebrates are measured to nearest mm below according to Table 15.A2.7. The digestive stages of crabs and shrimps/prawns are recorded to avoid excessively biased estimates of diet composition and food consumption rates (Table 15.A2.4).

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

Detached prey remains are handled as follows when water separation is used. If possible, separate the materials into identifiable categories in the sieve. Then, extract water from the materials by use of moistened paper towel to underside of the sieve; use tweezers to lift the materials from the sieve; get rid of excess water like it is done for the prey. Detached, prey remains that cannot be assigned to any particular prey are recorded as unidentified.

Only for prey, which cannot be weighted, an estimate of prey weight is recorded as % total stomach content weight (at an accuracy of 1%). This will be later used to calculate prey weights in g from the stomach content weight and the other prey weights.

Notice that it is highly important to identify all prey items including detached materials at the lowest possible taxonomic level to avoid excessive bias arising in the subsequent data analysis. It is therefore not recommended to open the stomach and identify the contents aboard. Dispatch all stomachs to stomach analysis center. In addition, it is recommended to use the water separation method described here to avoid dry out smaller amount of materials. This is particularly important for materials originating from small predators that generally in total contain small amounts of prey. Also, do not use alcohol to defrost the stomach contents as it accelerates the drying-up process.

Stomachs with no content and without evidence of regurgitation are classified as empty.

Stomachs with only indigestible remains (polychaete bristles, mollusc shells and opercula, chitin remains from crustacean exoskeletons, fish bones, otoliths etc.) are also categorized as empty to avoid bias when estimating diet composition and food consumption rates by use of a gastric evacuation rate model to stomach content information. For the same reason, indigestible prey remains with no attached organic materials, and that cannot be allocated to identified prey in stomachs with other prey remains, are excepted.

All data obtained from the laboratory processing of sampled stomachs are recorded in the exchange data format (Table 15.A2.3) and submitted to the ICES database.

All prey species are recorded using WoRMS' AphiaID codes (<http://www.marinespecies.org/aphia.php>).

### Tables

**Table 15.A2.1.** Condition of gall bladder, bile and hindgut, which can be used to differentiate between empty and regurgitated stomachs (from Robb 1992)

Stage	Gall bladder	Bile colour	Hind gut	State
1	Shrunken, empty or with small amount of bile	Pale	Contains large amounts of bile and digested food material	Feeding*
2	Elongate	Pale green to light emerald green	Contains some bile and digested food particles	Feeding*
3	Elongate	Dark green	Empty or contains some food particles	Empty
4	Round	Dark blue	Empty	Empty

\*NB: If fish satisfying these criteria are found without food in their stomach, they should be classified as regurgitated

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling - Annex

**Table 15.A2.2.** Label to be included in each stomach bag

Ship
Cruise/Survey
Station number
Haul number
Species
Total body length (mm)
Sample ID

**Table 15.A2.3.** ICES data exchange format for stomach data (<https://www.ices.dk/data/data-portals/Pages/Fish-stomach.aspx>)

Field	Description
Dataset	Dataset name
RecordType	SS for single stomach
Country	Country that collected the data
Ship	Vessel that collected the data
Latitude	Data sampling position – latitude
Longitude	Data sampling position – longitude
Estimated_Lat_Long	Flag whether the sampling position based on the reported area
ICES_StatRec	ICES statistical rectangle
ICES_AreaCode	ICES area code
Year	YYYY
Month	MM
Day	DD
Time	Sampling time: HHMM
Station	Station reference
Haul	Haul number
Sampling_Method	Predator sampling method code (see Table 15.14)
Depth	Sampling depth
Temperature	°C
SampleNo(FishID)	Predator reference code – Fish ID unique for country, year, quarter and ship
ICES_SampleID	ICES predator reference
Predator_AphiaID	Predator WoRMS AphiaID
Predator_LatinName	Predator taxon Latin Name
Predator_Weight(mean)	(Mean) predator weight

RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

15. ISSG Regionally Coordinated Stomach Sampling - Annex

Predator_Age(mean)	(Mean) predator age
Predator_Length(mean)	(Mean) predator length
Predator_LowerLengthBound	Predator's length lower bound
Predator_UpperLengthBound	Predator's length upper bound
Predator_CPUE	Predator catch per hour
GallBladder_stage(class)	Gall bladder stage
Stomach_METFP	Method of stomach preservation
Stomach_TotalNo	Total number of stomachs in the pool. Should always be 1.
Stomach_WithFood	Number of stomachs with food. Can be 0 or 1.
Stomach_Regurgitated	Number of stomachs regurgitated. Can be 0 or 1.
Stomach_WithSkeletalRemains	Number of stomachs with skeletal remains. Can be 0 or 1.
Stomach_Empty	Number of empty stomachs. Can be 0 or 1.
Stomach_ContentWgt	Stomach content weight
Stomach_EmptyWgt	Stomach empty weight (This field is in historical data but no longer considered necessary)
Stomach fullness	Stomach fullness (This field is in historical data but no longer considered necessary)
Stomach_Item	Stomach item name
ICES_ItemID	ICES stomach item ID
Prey_AphialID	Prey WoRMS AphialID (see Table 15.13)
Prey_LatinName	Prey taxon Latin Name
Prey_IdentMet	Prey identification method
Prey_DigestionStage	Prey digestion stage (see Table 15.12)
Prey_TotalNo	Total number of preys
Prey_Weight	Prey weight in grams
Prey_LengthIdentifier	Prey length identifier (see Table 15.15)
Prey_Length	Prey length in mm
Prey_LowerLengthBound	Prey length lower bound
Prey_UpperLengthBound	Prey length upper bound
Prey_MinNo	Minimum number of preys (This field is in historical data but no longer considered necessary)
Remarks	Any relevant comments

**Table 15.A2.4.** Digestive stages of fish, crab, and shrimp/prawn

	Stage 1	Stage 2	Stage 3	Stage 4
Fish	Shiny body surface – probably with scales. Clear eyes.	Intact body which however may be discoloured.	Body cavity opened. Parts of the head region may be digested.	<ul style="list-style-type: none"> <li>e. Nothing or only some of the body cavity left</li> <li>f. Tail muscle mass 'triangle' left</li> <li>g. Spine with little muscle mass</li> <li>h. Only spine/bones/otoliths left</li> </ul>

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

Crab	Carapace intact. Some appendages might be detached.	Carapace cracked enabling the digestive fluids to work on the inner parts.	NA	NA
Shrimp/ Prawn	Entire body intact. Some appendages might be detached.	Cephalothorax detached from the abdominal part.	NA	NA

**Table 15.A2.5. Invertebrate groups and the corresponding AphialD codes**

Taxonomic level	Prey group	Code
Phylum	Ctenophora	1248
Phylum	Cnidaria	1267
Phylum	Annelida	882
Species	Aphrodita aculeata (sea mouse)	231869
Phylum	Mollusca	51
Class	Gastropoda	101
Species	Buccinum undatum (common whelk)	138878
Class	Bivalvia	105
Species	Aequipecten opercularis (queen scallop)	140687
Species	Pecten maximus (king scallop)	140712
Class	Cephalopoda	11707
Phylum	Echinodermata	1806
Phylum	Arthropoda	1065
Subphylum	Crustacea	1066
Order	Mysida	149668
Order	Euphausiacea	1128
Order	Isopoda	1131
Species	Saduria entomon	293511
Order	Amphipoda	1135
Order	Decapoda	1130
Infraorder	Caridea	106674
Family	Crangonidae	106782
Species	<i>Crangon crangon</i> (brown shrimp)	107552
Family	Palaemonidae	106788
Species	<i>Palaemon adspersus</i> (Baltic prawn)	107613
Species	<i>Pandalus borealis</i> (northern prawn)	107649
Infraorder	Astacidea	106672
Species	<i>Nephrops norvegicus</i> (Norway lobster)	107254
Infraorder	Brachyura	106673
Species	<i>Cancer pagurus</i> (edible crab)	107276
Infraorder	Anomura	106671
Species	<i>Pagurus bernhardus</i> (hermit crab)	107232
	Other invertebrates	9990
	Plastic	9991

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

	Litter other than plastic	9992
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**Table 15.A2.6. Sampling method codes**

Description of fishing gear	Code
Demersal trawl or seine	DEM
Pelagic trawl or seine	PEL
Demersal hook and line	DHL
Pelagic hook and line	PHL
Demersal gill net	DGN
Pelagic gill net	PGN

**Table 15.A2.7. Length measurement by prey type**

Prey group	Length measured	Code
Vertebrata	Total length from snout to end of tail fin	TL
	Standard length from snout to basis of tail fin	SL
	Reduced standard length: from first vertebra to basis of tail fin (i.e. the length of the vertebral column).	RL
Crustacea	Total length of small crustaceans like mysids, krill and amphipods and intact nephrops, shrimps, prawns and <i>Saduria entomon</i> .	TL
	Length from bases of eye stalks or rostrum to uropods or carapace length in the case of advanced digestion stage of nephrops, shrimps and prawns.	CL
	Carapace width of crabs	CW
	Pleotelson length of <i>Saduria entomon</i> in the case of advanced digestion stage.	PL
Cephalopoda	Mantle length	ML
	Beak length in the case of advanced digestion stage.	BL
Others	Total length of complete specimens	TL

320

### References

Robb, A.P. (1992). Changes in the gall bladder of whiting (*Merlangius merlangus*) in relation to recent feeding history. ICES J Mar Sci 49, 431–436.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

#### Annex 15.3: Minutes of the ISSG ‘Stomach sampling’ virtual meeting

Members of the ISSG meet virtually April 13<sup>th</sup> between 9:30 and 16:00 CET. Agenda included a discussion of the work done since the plenary RCG meeting on the four TORs, and already presented in the dedicated sections of the following report. General discussions were also held after addressing specific discussions about TORs outcome.

The meeting gathered 19 participants from nine countries. Emails addresses can be found in the annex 15.4.

It should also be noted that this meeting was shared with participants of the DG MARE FishNCo project, as some tasks of the ISSG and FishNCo are somehow similar, and as the group and the project are ultimately aimed at implementing regionally coordinated stomach content sampling and analyses.

#### Participants

- Belgium: Els Toreele, replacing Lies Vansteenbrugge
- Germany: Steffen Funk, Matthias Bernreuther
- Spain: Isabel Bruno, Izaskun Preciado, Naiara Rodriguez-Ezpeleta, Maria Valls Mir
- France: Pierre Cresson, Clémence Couvreur, Rémy Cordier, Manon Troucelier
- Greece: Thanasis Evangelopolous, Paraskevi Karachle
- Italy: Antonello Mulas
- Poland: Joanna Pawlak, Marzenna Pachur
- Portugal: Hugo Mendes, Susana Garrido
- Sweden: Annelie Hilvarsson, Karolina Wikström

Matthias Bernreuther presented the work of the TOR 1 and 2, notably based on the answers received from the questionnaire. Questions of the group were about the estimation of costs, notably if the 8 to 20 € costs included a determination of all preys at the lowest possible levels or only fish, and if this included the cost linked with extra staff on board, dedicated to the collection of stomachs. These questions raised the issue of the need for a better definition of the protocol, and also the need for dedicated staff onboard. This need was not correctly expressed in the questionnaires. Correcting the questionnaires already sent, or asking for further answers may be necessary.

Other questions were about the choice of using IBTS as the only platform to sample stomachs. Some periods and areas of trophic importance (e.g., shallow-water areas or structured, untrawlable habitats used by juveniles or adults of certain species) may be missed if bottom trawling is the exclusive gear used. Answers to this objection were that choosing IBTS for sampling stomachs results from a trade-off between the major gaps identified by WGSAM and the gaps to be filled to increase the accuracy of multispecies models and the workload needed, at sea and in the lab. In addition, IBTS working group (ICESWGIBTS) already coordinates a regional sampling protocol. Stomach sampling protocol can benefit from this work and build on the work of this group. However, national labs are encouraged to conduct additional and specific stomach content sampling programs in their waters to better cover factors such as depth stratum, season or habitat type, using the methodology agreed in this group.

The estimated numbers of stomachs were also questioned, notably as the number of individuals caught was





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

higher in the period used for the analysis than in the very recent years. The question was notably raised by the decreasing numbers of cod in Kattegat and Skagerrak. The numbers in the analysis are expected numbers, to be viewed as guidelines but not targets.

Izaskun Preciado presented the work done for the TOR 3. IEO has been performing a specific protocol for more than two decades, consistently with specific objectives in line with end-users demands, in both the Atlantic Ocean and the Mediterranean. The IEO protocol notably includes more non-commercial species than the recommendations of the WGSAM, since the aim is to provide evidence of change in the structure and functioning within and across ecosystems. As a consequence, and due to this ecosystem view, the IEO protocol has been successfully used in the development of food web indicators within the MSFD. However, results of the intercalibration done by IEO demonstrated that, despite the differences in the methodologies and sampling design, this protocol could be used for other purposes than those related to food web indicators.

The discussion about this presentation highlighted the importance of keeping boundaries between MSFD and DCF as clear as possible, even if results from DCF stomach content protocol can be used to inform MSFD descriptor and vice versa. In addition, the aim of this group and of the FishNCo project is to define a reasonable level of ambition, *i.e.* all aspects of the protocol that can be performed jointly by all member states in each region, and the aspects that stay in national protocols. Similarly, regional protocols can differ between regions.

Pierre Cresson presented the synthesis of the answers to the online survey about past and ongoing stomachs content analyses (TOR4). This presentation was an opportunity to introduce FishNCo project, and notably the task I of WPI, where stomach sampling is included. The discussion within the group confirmed the need for a better design questionnaire, as an actual questionnaire and not a table to fill, with more specific questions, and also the need for another call for this survey, as some countries did not answer.

322

Some questions asked during the presentation have been then discussed, *e.g.*, the possibility to maintain a 3-year embargo on the data, to allow analyses and publication of the data.

Several miscellaneous points were discussed during the general discussion. Further discussions were held about the specificity of the volumetric method, the time needed to analyze one stomach and the impossibility to apply this method to pelagic or zooplankton-feeding species.

Participants agreed that there is no need to for a technical ISSG meeting during the RCG plenary. A synthesis of the work and discussion of the ISSG could only be presented during the plenary. The group also wondered if there is a need for a validation of the work done before passing to the actual implementation of the proposed protocol, and if yes by whom? WG SAM? RCG? National Correspondents?





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 15. ISSG Regionally Coordinated Stomach Sampling - Annex

#### **Annex 15.4: Presentation of the outcomes of TOR 1 and 2 to the WGIBTS**

Pierre Cresson was invited by WGIBTS chairs to present the expected stomach sampling protocol and cost estimation to members of the WGIBTS April 15<sup>th</sup>, during the virtual WGIBTS 2021 meeting.

WGIBTS received with enthusiasm the proposition to include stomachs in the tasks already performed during IBTS. Participants support the idea of a coordinated stomach-sampling program, as it is already done in other areas (e.g., by the NOAA) and considered the need for accurate trophic information to reach an actual ecosystem approach to fisheries. Nevertheless, the presentation raised some questions and concerns.

Despite their interest, several cruise leaders raised concerns about the onboard time needed to perform stomach related work, regardless of the method adopted (*i.e.* freezing entire fish, or dissecting stomachs). Individual work (*i.e.* cutting out the stomach of one fish already used for biological parameter sampling) may appear a quick task, but one has to keep in mind that the current protocol may represent extra hours of work for every day at sea. Processing species not included in biological sampling will also increase the workload. Some countries have limited staff onboard or time at sea, with currently very few or no time available for extra work. Adding the stomach protocol would thus require extra resources, whether staff and days at sea. If not, this would require cruise leaders to prioritize between at-sea tasks, with impossibility for cruise leaders to decide what is important (and should be maintained) and what is not important and should be stopped.

Another important question is linked with the fact that non-EU countries are involved in IBTS survey, with potential issues related to the funding of stomach collection program. This point raises also questions about the difficulties that may arise from the need to ship biological samples from non-EU countries to the centralized stomach analyses centers.

Other questions have been raised regarding the species of interest. Some species may occur at low number each, *i.e.* below the threshold values guaranteeing a robust perception of the diet. WGIBTS recommend that these species may be sampled annually, so as the total number over a 5 year period would be sufficient. Similarly, the inclusion of sharks and rays in the protocol raised concern, as some of these species are under conservation status and are released alive, notably during tag-and-release program. Including only dead individuals in the stomach sampling protocol can be a way to limit the impact of surveys on these sensitive species.

Generally speaking, members of the WGIBTS stressed the fact that they are currently or will be soon writing national programs and so need clear information about the support given to the stomach sampling program.

A section with detailed comments will be included in the WGIBTS 2021 report.





## 16 ISSG National correspondents

**Participants:** NCs in NANSEA and Baltic countries

**Chair:** Anna Hasslow, NC Sweden

### Work done during the 2020-2021 season

The specific task for this intersessional subgroup was initially only to amend the rules of procedures (RoP) for RCG NANSEA and RCG Baltic.

This task was addressed by first, a written procedure where information about what issues in the current versions of the RoPs each member state identifies as problematic, followed by two digital meetings during spring 2021 to discuss and further structure the work.

Besides some minor suggestions for amendments, the major issues raised were how to deal with UK post-Brexit and if an alignment of the RoP for RCG NANSEA and for the RCG Baltic was possible.

Ireneusz Wójcik (NC Poland) made a comparative analysis between the RoP for RCG NANSEA and the RoP for RCG Baltic. The main outcome from the this analysis was that is a rather high degree of compliance between the two documents.

In addition, Ireneusz Wójcik took on the task of putting forward a proposal for an aligned RoP for RCG NANSEA and RCG Baltic (Annex 16.1). Thank you to all NCs that were involved in the process. The comparative analysis and proposal for an aligned RoP have been posted at the SharePoint for the Technical Meeting.

In addition to the task addressing the RoP, the group has also by e-mail correspondence discussed issues related to e.g., the current EU-MAP process and paragraphs in the proposal for a new Control Regulation that relates to data collection.





## **ANNEX 16.1. Rules of Procedure for Regional Coordination Group for Baltic Sea and North Atlantic, North Sea & Eastern Arctic**

*Please note that this is DRAFT version of the document. Might be subject to amendments before is finally approved*



Regional Coordination Group  
Baltic Sea Region



Regional Coordination Group  
North Atlantic  
North Sea & Eastern Arctic

# **Rules of Procedure**

## **for Regional Coordination Groups for:**

- **Baltic Sea**
- **North Atlantic, North Sea & Eastern Arctic**

Version 1.0 - Endorsed ..... 2021

*Draft prepared by Irek – [iwojczak@mir.gdynia.pl](mailto:iwojczak@mir.gdynia.pl)*





## 1. Scope

- 1.1. These Rules of Procedure applies to the following Regional Coordination Groups (RCG): for the Baltic Sea and for the North Atlantic, the North Sea and East Arctic established under the EU Data Collection Framework.
- 1.2. These Rules of Procedure are established on **XX XXXX (date)** by the following EU Member States coordinating their data collection activities in the Baltic Sea, North Atlantic, North Sea and Eastern Arctic: Belgium, Denmark, Estonia, Finland, France, Germany, Ireland, Latvia, Lithuania, the Netherlands, Poland, Portugal, Spain and Sweden..

## 2. Working language

- 2.1. The working language of the RCG is English.

## 3. Meetings of the RCG

- 3.1. To perform its duties, the RCG shall hold at least once a year an annual meeting (either physical or virtual) unless agreed otherwise by the RCG. An annual meeting shall consist of plenary sessions and may include work in subgroups.
- 3.2. The RCG may hold additional meetings to the annual meeting. The duration, form, meeting venue, terms of reference and other relevant elements for such an additional meeting may be agreed at the RCG annual meeting or in a written procedure initiated by the RCG Chairperson. The venue of the RCG annual meeting rotates between Member States coordinating their data collection activities in the same marine region. The order of the rotation is based on the alphabetical order in English language of the Member States unless otherwise agreed by the RCG.
- 3.3. Based on a written invitation from a third country, the RCG may agree to hold its annual or additional meeting in a venue provided by the third country.
- 3.4. No later than one month before the annual or additional meeting, the Member State or a third country organizing the annual or additional meeting shall be responsible for providing details of accommodation, travel and other organizational information relevant for the meeting.
- 3.5. Each Member State coordinating the data collection activities in the same marine region and the European Commission shall nominate their participants to a RCG meeting and may choose the number of their participants to a RCG meetings with due regard of the items on the agenda at the relevant RCG meeting. The information of the nominations should be communicated to the chairperson(s) of the RCG.
- 3.6. Member States not listed in point 1.2., may nominate a national correspondent or an expert to participate in the RCG meeting.
- 3.7. Only nominated persons may participate to the RCG meetings.





## 4. RCG subgroups

- 4.1. To carry out its duties, the RCG may agree to establish permanent or temporary bodies, task groups, subgroups or other arrangements (hereafter called subgroups). The RCG will appoint the lead(s) and any other role(s) or working practices necessary and provide terms of reference. The RCG may give this mandate to the subgroup(s).
- 4.2. These subgroups carry out their duties during and between the RCG meetings, as appropriate and as agreed by the RCG. The subgroup lead or a person nominated by the lead shall keep the RCG informed of the progress of such work and any issues arising at intervals agreed at the RCG.
- 4.3. When a group is mandated to prepare a draft regional work plan in the sense of the DCF regulations, relevant Member States and the European Commission shall send expert(s) with the necessary expertise related to that draft regional work plan to participate in the group's work.

## 5. RCG recommendations, preparations of a draft regional work plan

- 5.1. The RCG may give recommendations for further work to be carried out by the Member States on all issues related to the scope of the RCG activity. The recommendations should provide, but are not limited to, clear and understandable stand-alone guidance on the recommended work to be carried out, its justification and objectives, a foreseen time frame for fulfillment and to the extent possible, person(s) or institution(s) responsible for the follow up of such recommendation.
- 5.2. When a subgroup has been mandated to prepare a draft regional work plan, the chairperson of that subgroup or a person mandated by that subgroup, shall keep the RCG and may keep scientific institutions referred to Article 26 in Regulation 1380/2013 informed of the progress of such work at intervals agreed by the RCG. Such procedures may include e.g., requests or any other type of action, including timeframes for such action, to the national correspondents and/or scientific institutions referred above, relevant to the drafting of the draft work plan.
- 5.3. If the group mandated to prepare a draft regional work plan has not reached unanimity in preparing the draft regional work plan, Member States' experts or national correspondents participating in the group's work, may indicate their difference of opinions with appropriate justification in the group's report to the RCG meeting where the draft work plan is to be discussed and/or decided upon. Where appropriate, the group's report may include European Commission and ICES concerns.





## 6. Decision making on a draft regional work plan

- 6.1. Member States referred to in para 1.2. shall make a decision on a draft regional work plan by consensus. Member States shall take all necessary steps to ensure that they are represented with a person mandated to take a decision on the draft regional work plan.
- 6.2. A national correspondent may give a mandate to agree on its own behalf on a draft regional work plan to another national correspondent from a different Member State present at the meeting where the decision on the draft regional work plan is to be taken. This shall be done by the national correspondent giving a written confirmation outlining the details of the mandate transferred. The confirmation needs to be done in advance of the RCG meeting and it shall be provided to the chairperson(s) of the RCG.
- 6.3. The chairperson of the RCG may request, if necessary, observers at the annual meeting to be absent during the discussion intimately linked to the decision on a draft regional work plan.
- 6.4. A decision on a draft regional work plan may be taken at exceptional situations by a written procedure. The chairperson of the RCG may initiate such a written procedure after a mandate with the necessary details to organize and proceed with a written procedure has been given to the chairperson at the RCG annual meeting.
- 6.5. The chairperson of the RCG shall notify the RCG on the results of the written procedure within two weeks after the written procedure has ended.
- 6.6. The RCG shall make every effort to reach consensus on a draft regional work plan. If, after serious and numerous attempts by the RCG, consensus cannot be reached and no decision on a draft regional work plan by the Member States can be taken, Member State(s) not in a position to support the draft regional work plan, shall provide a written justification to the RCG reasoning its divergent view within one month after the end of the RCG meeting where the divergent view was expressed.
- 6.7. Member States, who were in a position to support the draft regional work plan, may take into account in their national work plans to content of the draft regional work plan as appropriate.

## 7. Cooperation between RCGs and other relevant bodies

- 7.1. The chairperson(s) of the RCG and/or other person(s) mandated by the RCG may participate and represent the RCG in any coordination with other RCGs and the European Commission under the provisions of Data Collection Framework and shall keep the RCG informed within an agreed time frame.
- 7.2. The chairperson(s) of the RCG and/or other person(s) mandated by the RCG may participate and represent the RCG in other relevant regional bodies, arrangements or meetings and shall keep the RCG informed within an agreed time frame..





## 8. Observers

- 8.1. In accordance with the provisions of Data Collection Framework, RCG shall invite as observers relevant end-users of scientific data, including appropriate scientific bodies, regional fisheries management organizations, Advisory Councils and third countries, where appropriate.
- 8.2. Observers referred to in the Data Collection Framework Regulation may indicate interest to participate in the RCG by sending the following information to the chairperson of the RCG at least one month in advance of the RCG meeting.

The justification send by the potential observer shall contain the following information:

- Indicate the relevance of their participation from the Common Fisheries Policy and/or fisheries management point of view and
  - Indicate their data interest as accurately as possible relevant to that RCG and
  - Indicate the scientific bodies/groups in their relevant institution or country conducting the scientific analyses based on the relevant data and
  - Indicate the management body with a legal mandate for fisheries management within the CFP for which the scientific analysis based on the RCG data is conducted for and
  - Indicate how, to whom and where the results of the scientific analysis referred to above are intended to made available and
  - Organizational details and details of the representative to be nominated to participate
  - Commitment to comply with the rules and conditions set by the RCG and any other information considered relevant by the potential observer..
- 8.3. The RCG meeting shall consider the information provided and may request additional information.
  - 8.4. The RCG shall decide by consensus of the Member States present at the meeting or prior to the meeting which observers shall be invited to the RCG meetings.
  - 8.5. After a written confirmation from the RCG chairperson, observers have the possibility to participate to the RCG meetings. The conditions set for the participation may include, but are not limited to, limitations on participation to RCG meetings or group work, limits on access to data or to be present when data is presented or available, possibility to provide written contributions or to give presentations.
  - 8.6. Observers are bound with the conditions referred above. If there are justified reasons to consider , that one or more of the conditions set by the RCG in the written confirmation or otherwise, are violated repeatedly or seriously by the observer, the necessity of the observer to participate or the conditions for the participation may be re-evaluated. The observer/organisation shall be informed of this, including the results of the re-evaluation, by a letter from the RCG chairperson after consulting and in consent with the national correspondents of the RCG responding to the chairperson's consultation.





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 16. ISSG National correspondents - Annex

- 8.7. Notwithstanding the provisions set in points 8.2 - 8.6, the International Council for the Exploration of the Sea (ICES) has a standing invitation to participate in all RCG meetings.

## 9. Terms of Reference for the RCG

- 9.1. The RCG may agree the Terms of Reference for the RCG taking into account necessary contributions and information deemed relevant by the RCG. This may include consultation with appropriate bodies or institutions prior or during the decision making to approve the Terms of Reference for the RCG.

## 10. Agenda and submission of documents

- 10.1. A draft agenda for the annual or additional RCG meeting shall be made available no later than one month in advance to the meeting. The draft agenda shall indicate, where relevant, on which day(s) during the meeting the discussion or decision on the draft regional plan is to be taken. The draft agenda shall be approved at the beginning of the meeting.
- 10.2. A draft regional work plan, where a decision is expected to be taken in accordance with the draft agenda of the RCG meeting, shall be made available to the national correspondents one month in advance to the meeting where the decision is expected to be taken. A draft regional work plan for a decision in the RCG meeting made available later than one month before the RCG meeting, may be considered and decided upon at that meeting in case of consent of all the national correspondents present at the RCG meeting.
- 10.3. When it is evident from the draft agenda of the RCG meeting that the draft regional work plan is not to be decided upon at that RCG meeting, the draft regional work plan can be made available to the national correspondents no later than two weeks in advance to the RCG meeting. Draft regional work plans made available later than two weeks in advance to the meeting may be decided upon at that meeting in case of consent of all the national correspondents present at the RCG meeting.
- 10.4. Other documents than the draft agenda and draft regional work plans for the RCG meetings shall be made available no later than two weeks in advance to the RCG meetings. Documents made available later than two weeks in advance to the RCG meetings, may be dealt at the meeting in case of consent of all the national correspondents present at the RCG meeting.

## 11. Election of the RCG chairperson(s)

- 11.1. The Chairperson may be elected or agreed upon without a vote by the RCG. A national correspondent, an expert from a Member State or European Commission may act as a chairperson of the RCG. National correspondents, European Commission or participants of the RCG meeting nominated according to point 3.5 may suggest nominees for a



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 16. ISSG National correspondents - Annex

chairperson. Unless agreed without a vote by the RCG, the election of a nominated chairperson(s) shall take place by voting in a form suggested by the resigning chairperson after consulting the national correspondents and European Commission present at the RCG meeting. National correspondents present and European Commission representative present has the right to vote and each has one vote. The vote is decided by a simple majority.

- 11.2. One term for a chairperson covers the period of two years. A chairperson may serve a two consecutive terms without limiting the total number of terms for the same person to act as a chairperson of the RCG.
- 11.3. RCG may decide to have co-chairperson(s). The same procedures and conditions as to the chairperson(s) elections apply.

## 12. The chairperson(s) responsibilities

- 12.1. The chairperson(s) of the RCG shall facilitate effective and productive work of the RCG. The chairperson(s), an institution or a person indicated by the chairperson shall be responsible for making the documents and information available in time and shall take all necessary action to that effect.
- 12.2. The chairperson(s) is responsible for preparing agendas for the RCG annual or additional meetings after consulting the national correspondents of that RCG and other institutions/bodies, as appropriate.

331

## 13. Reporting from a RCG meeting

- 13.1. The chairperson(s) of the RCG shall be responsible for drawing up a report from a RCG annual meeting. The final report should contain, but is not limited to, decisions and recommendations of the RCG, a summary of the RCG intersessional progress and of the RCG discussions, future work directions, the intended work to be carried out before the next meeting, the list of foreseeable RCG meetings and list of participants, their contact information, status and affiliation.
- 13.2. The final report from the annual meeting shall be made available to the participants of the meeting and publicly, as appropriate, within two months after the RCG annual meeting has ended. Reports from other meetings of the RCG shall be distributed within one month after the meeting has ended unless otherwise decided by the RCG.

## 14. Amending rules of procedure

- 14.1. These Rules of Procedure may be amended at the RCG annual or additional meeting by consensus of all national correspondents or in a written procedure by all national correspondents replying within a set time limit of at least 1 month.
- 14.2. Any Member State of the RCG can request the review and amendment of the Rules of Procedure to be put on the agenda of the RCG meeting.

The list of Member States in point 1.3 may be amended in accordance with the paragraph 14.1. after a written request has been provided to the RCG chairperson(s) by a Member State not listed in the point 1.3.

## 15. Repeal

- 15.1. The Rules of Procedure established on 6th September 2017 by the RCG for the Baltic Sea and Rules of Procedure established in November 2017 by the RCGs for the North Atlantic and for the North Sea and Eastern Arctic are repealed with effect from the date of adoption of these Rules of Procedure.

## 17 ISSG Implementation of Generic Tools for the RCGs/ SECWEB

### 17.1 Background

**RCG ToR5:** ISSG “Implementation of generic tools for the RCGs: Web, secretariat”

**Chair:** Els Torreele (ILVO, Belgium)

**Supporting RCG chair:** Sven Stötera (Thunen Institute, Germany)

The ISSG was provided with the following tasks:

- ✓ Task 1: To identify how to move forward with the project call
- ✓ Task 2: To establish a consortium for the project call
- ✓ Task 3: To involve all RCGs and PGECON in the project proposal
- ✓ Task 4: To establish the fundament for long-term funding and establishing of supporting tools for RCG and PGECON.

#### Timeline:

##### *Task 1 & task 2*

During 2020, a project call from DGMare was launched and with the members of this ISSG, a project was submitted. This proposal was accepted on 9 December 2020 and will start from the 1st of January 2021 onwards, ending 31<sup>st</sup> December 2022. The consortium of the project consists partly of the members of the ISSG. However, it is agreed within the project to involve every RCG and the RCGECON in the project.

- **January 2021:** kick off meeting of the project
- **February 2021:** face to face (virtual) meeting with the participants - feedback & consultation with ISSG

##### *Objectives of the Project “SecWeb”*

The overall concept of the project is to build upon the work of the RCGs and previous projects such as fishPi2, STREAM, SECFISH to help the RCGs in providing, as well as developing the tools and support to

In close cooperation with the RCGs (NANSEA, Baltic, ECON, LP, LDF, Med & BS), the project will:

1. develop and setup the framework for an RCG secretariat in support of fluent administrative procedures and establish a long-term script.
2. promote good practices in communication within and among the RCGs and engaging with all the stakeholders and the general public.
3. develop and setup the framework for a website in support of storing (confidential) documents and liaise with existing (relevant) websites and SharePoint
4. identify tools to increase the visibility of the work and output of the RCGs.
5. describe the funding structures put in place for the continued operation of administrative support to RCGs and the update of the content of the website.

##### *Task 3 To involve all RCGs and PGECON in the project proposal*

Initiate the process of consultation with the RCGs for mapping their needs



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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB

*Task 4: To establish the fundament for long-term funding and establishing of supporting tools for RCG and PGECON.*

- **May 2021:** listing of all scenario's presented in previous studies and reports, with the services linked
- **June 2021:** start of the description of the processes that needs to be taken into account when developing the website. List of needs of RCGs and end-users

#### ***June 2021 - RCG NA NSEA & RCG Baltic Technical meeting:***

- Presentation of the project and the tasks done during the first 5 months
- Table with all scenario's presented in previous studies and reports



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB

#### 17.2 WPI SECRETARIAT

##### Meetings

- A Kick-off with the EC and an internal Kick-off with the project partners and RCGs chairs.
- Regular fortnight meetings with the partners to launch & follow up the activity in the WPs.
- Consistent approaches to communication and secretariat services.

##### Actions taken:

- Progress on secretariat for RCGs chairs (& ISSG chairs where applicable).
- Update of their current and future needs – in depth analysis based on interviews and FishPi<sup>2</sup> project.
- RCG NA NSEA and RCG Baltic as Case Studies – results to other RCGs and finetuned.
- Setup of preliminary secretariat procedures and templates.
- Testcase with RCG NANSEA and RCG Baltic.

#### 17.3 WP2 Development of the website

The process for the development of the website (WP2) has followed these steps:

1. First draft of the **website architecture**:  
The site architecture refers to the structure that organizes and delivers the content on the website. It includes the hierarchy of pages where users find content.
2. Create **content**, write texts and collect images. A questionnaire was sent to all RCGs chairs to gather the information needed for the web.  
Information was also collected for other projects related to strengthening regional cooperation in the area of fisheries data collection, including ongoing projects (RDBFish, Streamline Fishn'Co), and finished projects (FishPi, recolape, Stream, etc).
3. Detail sections of the **RCG microsities**.  
Each RCG has its own microsite with common sections for all but taking into account the particularities of each one. RCG were consulted about the structure of the RCG microsities and how they could be adapted to the specificities of each RCG.
4. Purchase **domain** (<https://www.fisheries-rcg.eu>) and create the **secretariat's e-mail** ([secretariat@fisheries-rcg.eu](mailto:secretariat@fisheries-rcg.eu)) account.
5. First **layout** of the web.
6. Publish the website.

At every step of the way, the RCGs have been consulted on both the structure and content of the website and decisions have been taken after analysing the **feedback** of all the members of the project.

We already have the first draft of the website: <https://www.fisheries-rcg.eu/> so the WP2 of the project is progressing faster than scheduled.

In order to improve the website and the information that is transmitted through it, it has been decided to implement several functionalities:

- **Google calendar**: the most relevant meetings and events that may be of interest to both the RCGs and the sector will be incorporated.
- **Datawrapper**: In an effort to provide a more visual overview of the scope of the RCGs, maps have been developed using this platform.



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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB

**Newsletter:** It has been decided to design digital newsletters to be sent by email using mailchimp. To increase the reach and visibility of the project, a contact list of as many stakeholders as possible will be created. The form to subscribe for the Newsletter has been integrated in the web

We already have approximately 80% of the web content. We still need to add content of 2 RCGs, maps of the scope of each RCG and some more news.

Before the start of the RCG NA NSEA and RCG Baltic, a questionnaire is sent to the participants to receive feedback to improve and finalise the website (see annex 17.2).

Below are some screenshots from the home page given to illustrate how the website looks.

Draft website to consult through: <https://www.fisheries-rcg.eu/>





## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB



ISSG

#### Context

The Regulation (EC) 2017/1004 aims to establish rules on the collection, management and use of biological, environmental, technical and socioeconomic data concerning the fisheries sector (Data Collection Framework, DCF). The DCF should contribute towards reaching the objectives of the common fisheries policy, which include the protection of the marine environment, the sustainable management of all commercially exploited species and, in particular, the achievement of good environmental status in the marine environment by 2020, as set out in the Marine Strategy Framework Directive (Directive 2008/56/EC).

According to Article 8 of the DCF Regulation, Member States shall cooperate and coordinate their actions to further improve the quality, timeliness and coverage of data enabling the reliability of data collection methods to be further improved, with a view to improving their data collection activities. Further according to article 9 (d) of the same regulation, Member States shall coordinate their data collection activities with other Member States in the same marine region and shall make every effort to coordinate their actions with third countries having sovereignty or jurisdiction over waters in the same marine region.

In order to facilitate regional coordination, Regional Coordination Groups (RCGs) shall be established by the relevant Member States for each marine region (Article 9 (c) of the Regulation (EC) No 2017/1004). **An RCG consists of experts appointed by Member States, including national correspondents, end-users and the Commission** and a meeting is held annually at a minimum while interseasonal work continues throughout the year.

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#### The main hub for regional coordination

In view of the objective of the common fisheries policy to give more responsibility to Member States and to better involve end-users of scientific data in data collection, regional coordination should be strengthened and expanded from one single meeting into a continuous process coordinated by Regional Coordination Groups for each marine region. In this framework, Member States should aim to cooperate with relevant stakeholders including third countries (Reg EC 2017/1004).

The Regional Coordination Groups are therefore the main hub for regional coordination and cooperation within the different regions contributing to the fisheries Data Collection Framework. They also make efforts to coordinate their actions with third countries having sovereignty or jurisdiction over waters in the same marine region.

In accordance to the Regulation (EC) 2017/1004, RCGs should aim at developing and implementing procedures, methods, quality assurance and quality control for collecting and processing data with a view to enabling further improvement of the reliability of scientific advice.

RCGs consist of experts appointed by Member States, including MS' national correspondents for data collection, and the Commission.

#### Flexible structure

According to the Rules of Procedure adopted by RCGs to carry out their duties as set out in the regulation, the RCG may agree to establish permanent or temporary bodies, task groups, subgroups or other arrangements.

The RCG will appoint the lead(s) and any other role(s) or adopt working practices as necessary and provide terms of reference (ToR) establishing the necessary contributions and information to be produced by the RCG. The RCG may give this mandate to the subgroups. These subgroups will carry out their duties during and between the RCG meetings. The subgroup lead or a person nominated by the lead shall keep the RCG informed of the progress of such work and any issues arising at intervals agreed at the RCG.

Some RCGs hold joint meetings and/or sub-groups with common ToR which may cover several years. RCGs have established interseasonal sub-groups (ISSGs), which work year around in common topics, such as data quality, dialogue between data providers and end-users, dashboards, fish, regional overviews of fisheries, etc, but also on region specific priorities as agreed at RCG level.

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TYPES OF

#### How many RCGs do we have?

Currently, **six Regional Coordination Groups** are operating in the data collection framework:



**RCG Baltic**  
Regional Coordination Groups for the Baltic area.



**RCG LP**  
Regional Coordination Group for Large Pelagics.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB



## Regional Coordination Groups For Fisheries Data Collection

#### OBJECTIVES

### What is the role of the RCGs?

The Regional Coordination Groups are the main hub for regional coordination and cooperation within the different regions contributing to the fisheries Data Collection Framework. They also make efforts to coordinate their actions with third countries having sovereignty or jurisdiction over waters in the same marine region.

In accordance to the Regulation (EU) 2017/2534, RCGs should aim at developing and implementing procedures, methods, quality assurance and quality control for collecting and processing data with a view to enabling reliability of scientific advice to be further improved.

RCGs consist of experts appointed by Member States, including MS' national correspondents for data collectors, and the Coordinator.

[MORE INFO](#)

#### STRUCTURE

### How are RCGs organized?

To carry out their duties, the RCG may agree to establish permanent or temporary bodies, task groups, subgroups or other arrangements.

RCGs have established international sub-groups (ISSG), which work year around in common topics, such as data quality, dialogue between data providers and end-users, ad hoc reports, regional overviews of fisheries, etc. but also on region specific projects as agreed at RCG level.

To perform their duties, the RCGs shall hold one meeting annually unless agreed otherwise by the RCG. An annual meeting shall consist of plenary sessions and may include work in subgroups. Additional meetings can be held if agreed during the annual meeting.

[SEE MORE](#)



#### TYPES OF

### How many RCGs are there?

Currently, six Regional Coordination Groups are operating in the data collection framework.



**RCG Baltic**  
Regional Coordination Groups for the Baltic area.



**RCGLP**  
Regional Coordination Group for Large Pelagics.



**RCG NANS&EA**  
RCG North Atlantic, North Sea & Eastern Arctic (NANS&EA) merging of RCG North Sea and Eastern.



**RCGLDF**  
Regional Coordination Group for Long Distance Fisheries.



**RCG Med&BS**  
Regional Coordination Group for Mediterranean and Black Sea.



**RCG ECON**  
RCG on Economic Issues (ECON), pan-regional group that deals with collection of economic data.

#### NEWS

### Latest News

Find out all the latest news on Fisheries Data Collection Framework.

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**4 new initiatives for strengthening regional cooperation in the area of fisheries data collection.**  
More than 100 in May 2021 the European Commission (EC) launched a call for proposals for strengthening regional...



**5 Ways to Reduce Stress**  
Introduction: Stress is a natural part of life, but when it becomes chronic, it can have a negative impact on our health. Here are 5 ways to reduce stress...



**Psychology behind Dreams**  
Introduction: Dreams are a part of our lives, and they can be a source of inspiration and insight. Here are some interesting facts about dreams...





# RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

## 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB

The screenshot displays the website interface for the Regional Coordination Group. At the top, there are navigation menus for 'HOME', 'ABOUT', 'NEWS', 'RESULTS', 'INITIATIVES', and 'CONTACT'. Below this is a banner image with the text 'North Atlantic - North Sea & Eastern Arctic'. The main content area includes a 'Scope' section with a map of the region, a 'Terms of Reference (ToR)' section with a list of objectives, an 'Intersectoral subgroups (ISSG)' section with a grid of subgroups, a 'Participants' section with icons for countries and the European Commission, and a 'Lastest Reports' section with four report cards. At the bottom, there is a 'Materials' section with a 'Rules of Procedure' report card and a photo of people in a meeting.

**Terms of Reference (ToR)**

- ToR 1: Provide a clear overview of the progress between 2016 and 2021 and the next steps
- ToR 2: Improve and modernize data quality in data collection
- ToR 3: Review research and management measures on data collection
- ToR 4: Development and implementation of Regional Workplans
- ToR 5: Provide ways to improve the regional coordination and decision-making process
- ToR 6: Summary of ToRs

**Intersectoral subgroups (ISSG)**

Full-time	PIEs
Overseas	Open Study - Fraser Institute
Mediterranean	Open Study - Small pelagics
Data Quality	Open Study - Fisheries
ICES Working Group	Stock assessment
ISSG Core group	Recreational fishing
Landing Obligation (ON HOLD)	Regional Work Plan
Easternmost Fisheries	Revision of ECMP JON HELLO
Sweden	Tools for the RCGs
Delimited Sampling Plan	National Communications (NC)
Case Study - Baltic fisheries	

**Participants**

- COUNTRIES:** Greece, Estonia, Belgium, Spain, Germany, Denmark, France, Ireland, Lithuania, Latvia, Netherlands, Poland, Portugal
- EUROPEAN COMMISSION**
- WATERFIND USERS:** WEE (The International Council for the Exploration of the Sea)
- THIRD COUNTRIES**

**Lastest Reports**

- Technical Meeting Report** (6-10 JUNE 2020) - [READ MORE](#)
- Decisions & Recommendations** (6-10 JUNE 2020) - [READ MORE](#)
- ISSG Report** (9-10 JUNE 2020) - [READ MORE](#)
- Decision Meeting Report** (21 SEPTEMBER 2020) - [READ MORE](#)

**Materials**

- Rules of Procedure** (Approved by the North Atlantic Regional Coordination Group) - [READ MORE](#)
- Rules of Procedure for the Regional Coordination Group North Sea and East Arctic** - [READ MORE](#)

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB

#### 17.4 WP3 Business scenario's

Business models and scenarios for implementation and long-term maintenance will be identified and presented to the MS, NCs and the COM,

The scenario's described in the RCG NANSEA 2019 report will be taken into account.

Define and decide on a long-term strategy and a short-term operational plan for the RCG's support structure (for 3 years beyond the SECWEB).

Consultation for most fit for purpose.

**Aim:** RCGs and MS keep independency and control over how central resources are developed and utilized.

To be discussed between the NCs and the COM.

Overview of what has been presented in previous projects is given in annex 17.3

#### 17.5 WP4 Communication and dissemination

The main objective of this set of activities is to integrate communication into the RCGs' strategy and to promote visibility and engagement towards their work.

##### I. Dissemination and Communication Plan

A draft Dissemination and Communication Plan (DCP) was presented to partners at the very beginning of the project for discussion. This document is structured around four key elements, namely: relevant stakeholders groups, communications channels, communications products and actions.

A further draft was presented during the first Assembly Meeting held on April 14<sup>th</sup>.

The DCP is meant to be a dynamic document, to be updated every six months. It is expected to receive some feedback during the upcoming RCG NANSEA and RCG Baltic meeting in June, which will be taken into account during the first update, foreseen in June-July 2020.

During the early stages of the project, the following elements have been identified and/or released:

- **Relevant stakeholders groups** – a stakeholder classification including different target groups has been agreed among partners. This is a relevant input for the stakeholders' database to be developed by ILVO (in progress);
- **Communication channels:**
  - The most **relevant meetings** in the short term, other than the RCG ones, have been identified.
  - A draft version of the **website** has been launched and it is in process of being evaluated by RCG participants. Likewise, a **Twitter** account has been created, although it is not operating yet.
  - The **EC DG Mare Communication Team** has been contacted to request their support for increasing visibility among their own stakeholders' networks (through newsletters and social media). A meeting has been held on April 14<sup>th</sup> and DG Mare team expressed their willingness to provide the requested support, as far as the message crafting fulfils the specific criteria they shared during the debate. The main

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB

issue to be taken into account in this regard is to focus on results, the more tangible the better.

- **Communication products:**
  - **Infographics:**
    - **RCGs Scope:** the first one, corresponding to the RCG NANSEA, is already available at the website. Similar ones are in progress for RCGs Baltic and Med&BS, while the remaining RCGs (LP, LDF and ECON) are under further assessment of the possibilities to be represented using a map format. This work is progressing nicely in close cooperation with the corresponding chairs and AZTI as the partner in charge of the website development.
    - **Secretariat processes map** has been produced and shared with partners for discussion. A final version has been successfully agreed and will be presented to RCGs during their annual meetings.
  - A first **project leaflet** has been produced and distributed to all NCs and RCGs' chairs. For general dissemination it has been uploaded to the website and shared in Twitter.
  - It has been agreed to use the tool Mailchimp to produce periodic **newsletters** (at least twice a year), as it allows to feed directly from the News section of the website and is easy to use. A subscription facility has been included onto the website and potential recipients are being encouraged to sign up. The first issue will be released by June 2020.
- **Actions:** according to the scheduled timing, **one leaflet, three infographics** and one **newsletter** are due during the second project term (April-June 2020). The leaflet and one infographic have already been released and the remaining actions are in progress as expected. Furthermore, **regular meetings** among partners have been held fortnightly since the project launch.

341

## 2. Establishing a visual identity

The existing **logo** used by RCGs NANSEA and Baltic has been proposed and accepted by all RCGs. It consists in a common graphic element (a fish school) accompanied by the name of the corresponding RCG. This way, all of them can be identified under a common brand while keeping their own identity. Furthermore, an adaptation of this logo has been adopted by the Secretariat. A colour variation has been implemented for a clear distinction, keeping the graphic elements the same.



All the considerations to be observed for the use of logos and other branding elements such as colours and fonts have been compiled in a draft Visual Identity Manual, which is in process to be adopted by the RCGs and will be further shared at the website, together with the convenient logos and document templates.



## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB

Templates including the relevant the RCGs and Secretariat logos as necessary, and the EC emblem with the EMFF funding legend, have been produced for different kind of basic documents and presentations. They are available to RCGs, which are encouraged to use them in all their communications. Additional specific templates, such as RCG reports, are in progress and the Secretariat will consider any additional request in this regard.

#### 3. Enhanced coordination of stakeholders' engagement.

A **shared identification of stakeholders** is in progress, in cooperation with the RCGs and ISSGs chairs. It will feed the planned stakeholders' database that is meant to be a basic tool for implementing the communication strategy as well as for carrying out consultation processes and stakeholders' workshops.





RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB - Annex

**Annex 17.1: The project summary**

### Context

The Regional Coordination Groups (RCGs) are the main hub for regional coordination and cooperation within the different regions contributing to the Fisheries Data Collection Framework (DCF). In accordance to the European Council regulation (EU) 2017/1004, the RCGs should aim at developing and implementing procedures, methods, quality assurance and quality control for collecting and processing data with a view to enabling the reliability of scientific advice to be further improved. The RCGs may further prepare regional work plans, complementing or replacing the national work-plans that Member States (MS) submit to the European Commission (EC) on a regular basis. The RCG have further a key role to interact with end-users of scientific data and, after end-user consultation, to coordinate and agree on details in data to be collected and managed on the regional level according to (Decisions (EU) 2019/910 and 2019/909).

### SecWeb objectives

- Develop a framework and setup a secretariat in support of fluent administrative procedures of the RCGs and establish a long-term script, including a suitable financial scenario for that;
- Promote good practices in communication within and among the RCGs and engaging with all the stakeholders and the general public;
- Develop and setup a website linked with existing (relevant) websites and SharePoint, and to improve the overall capacity to reach out to a wider audience about past and present RCG work and outcomes;
- Identify tools to increase the visibility of the work and outputs of the RCGs;

## Strengthening regional cooperation in the field of data collection.





**Regional Coordination Group**  
North Atlantic  
North Sea & Eastern Arctic



**Regional Coordination Group**  
Mediterranean and Black Sea



**Regional Coordination Group**  
Long Distance Fisheries



**Regional Coordination Group**  
Baltic



**Regional Coordination Group**  
Large Pelagics



**Regional Coordination Group**  
on Economic Issues



**RCG's Secretariat**  
SECWEB

*"Developing mechanisms to support the planning and execution of administrative tasks and the branding and online visibility of the Regional Coordination Groups (RCGs) with the aim to establish a long-term supportive structure."*

Co-funded by the European Maritime and Fisheries Fund  
Grant Agreement No.MARE/2020/00 - SIC.19034 - SECWEB







## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB - Annex

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- Identify tools to increase the visibility of the work and outputs of the RCGs;

### Strengthening regional cooperation in the field of data collection.





**Regional Coordination Group**  
North Atlantic  
North Sea & Eastern Arctic



**Regional Coordination Group**  
Mediterranean and Black Sea



**Regional Coordination Group**  
Long Distance Fisheries



**Regional Coordination Group**  
Baltic



**Regional Coordination Group**  
Large Pelagics



**Regional Coordination Group**  
on Economic Issues



**RCG's Secretariat**  
SECWEB

"Developing mechanisms to support the planning and execution of administrative tasks and the branding and online visibility of the Regional Coordination Groups (RCGs) with the aim to establish a long-term supportive structure."

Co-funded by the European Maritime and Fisheries Fund  
Grant Agreement No. MARI/2020/06 - SIZ-819814 - SECWEB





## Annex 17.2 – Consultation RCG NANSEA & RCG Baltic

### Questions for developing a survey monkey (or alternative?) for the RCG participants:

(Partly) closed questions:

- Situate your role in the RCG: ISSG chair, chair or ex-chair, NC, end-user, expert, ISSG participant (different options should be possible)
- Is the first time you attend a RCG?
  - Yes/no
  - If no: for how long have you been involved in the RCG work?
- Is the structure of the website clear to you?
  - Yes/no
    - If no, please clarify what is not clear to you (the structure, the content, other?)
- Is the terminology used for the different 'tabs' clear to you?
  - Yes/ no
    - If no, please clarify what is not clear to you
- Are you familiar with the output of the RCG?
  - Yes/no
- Have you used the output of the RCG?
  - Yes/no
    - If yes: describe what kind of output you have used and for what purpose
    - If no: what kind of information coming from the RCG would be useful for you?
- Do you easily find the relevant information you expect to find?
  - Yes/no
  
- Would you subscribe to a RCG newsletter (published twice a year)?
  - Yes/no
    - If no: why not?

Open questions:

- What is your overall feel of the draft website?
- Do you have any comments/suggestions ?

## Annex 17.3:

### List of scenarios presented in previous studies and reports

#### I. FishPi2

The need for a secretariat was investigated and discussed during the work in the fishPi2 WP1. The role for the secretariat was determined as administrative, at least for the short and medium-term. A secretariat could provide support to one or several RCGs.

The general tasks for the secretariat were mentioned as:

- Support the chairs to set up and run the RCG meeting(s);
- Support the chairs to report from RCG meeting(s);
- Support the chairs to organize and monitor intersessional subgroup work;
- Maintain the website for the RCGs.

Fishpi2 discussed the staff level required to fulfil the desired tasks and elaborated on the total costs for the service carried out by the secretariat.

#### *Costs for the secretariat*

Fishpi2 discussed the staff level required to fulfil the desired tasks and elaborated on the total costs for the service carried out by the secretariat. The detailed estimated costings are based on the provision of Secretariat Services to two RCCGs (Baltic and NSEA+NA) each holding a five-day meeting and a two-day meeting.

In the example have been included 2 levels of staff and identified their skills and experiences.

RCG Co-ordinator - An individual with experience in the provision of Secretariat support for international organisations.

RCG Administrator - Familiar with and capable of efficient delivery of administrative services.

The detailed costs (time and euro) is outlined in table I. Should be noted that this is an example as a basis for future discussion. A budget of approximately €100 000- 120 000 would probably be sufficient to cover the needs for two RCCGs (Baltic and NSEA+NA) including support for subgroup work. Several models for how the costs should be split could be considered. These include flat rates across MS or rates based on shares in the fisheries.

## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB - Annex

Secretariaty Roles and Tasks Description	Resource (Days)		Resource (Cost)		Travel	Subsistence	Expenses
	Co-ordinator	Administrator	Co-ordinator	Administrator			
Support the Chairs in setting up and running RCG meeting(s) <i>Venue</i> - support Chairs by provide details of accommodation, travel and other organizational information relevant for the meeting in accordance with the rules and procedures. <i>Participants</i> – support Chairs with updated participant lists (including mailing lists), lists of NCs, make sure participants are nominated in accordance with the rules and procedures <i>Observers</i> – support Chairs, if needed, in inviting observers to meetings and ensure conformation with rules and procedures <i>Agenda</i> – support Chairs in set up agendas and make sure the agenda is sent to participants in accordance with rules and procedures <i>Documents</i> - Keep track of documents for the RCGs and make them available for the participants in accordance with the rules and procedures	0,75	7,05	€ 300	€ 2 820			
Act as rapporteur during RCG meetings	14	2	€ 5 600	€ 800	€ 1 000	€ 2 000	
Support Chairs in reporting RCG meetings	20,25	2,95	€ 8 100	€ 1 180			
Support Chairs in tracking and coordinating recommendations and agreements	5	2,25	€ 2 000	€ 900			
Support the Chairs in organising and monitoring intersessional subgroup work	100,1	20	€ 40 040	€ 8 000	€ 1 500	€ 1 500	
Maintain the website (and help to establish it)	13	4	€ 5 200	€ 720			€ 22 000
RCG Updates and briefings for stakeholders	4	0,25	€ 1 600	€ 45			
RCG Outreach and Representation	4	0,11	€ 1 600	€ 20			€ 1 000
Finance	3,1	2,35	€ 1 240	€ 423			
Risk Register	0,25	0,01	€ 100	€ 2			
<i>Subject to financial model to support Secretariat</i>							
Contractual Arrangements	3,5	3	€ 1 400	€ 540			
<b>Total for 1 RCG per year</b>	<b>185,75</b>	<b>46,37</b>	<b>€ 74 300</b>	<b>€ 8 347</b>	<b>€ 2 500</b>	<b>€ 3 500</b>	<b>€ 23 000</b>
<b>Total for 2 RCGs per year (assuming pan-regional subgroups)</b>	<b>271,4</b>	<b>72,74</b>	<b>€ 108 560</b>	<b>€ 8 693</b>			
<b>Proportion of FTE (based on 220 days P/A)</b>	<b>1,23</b>	<b>0,33</b>					

Table 1. Example of budget for Secretariat Service for RCGs



**FishPi2 also stressed the need to be examined if the Commission can pay part (or all) costs of the costs.**

## 2. RCG NANSEA and RCG Baltic

### 2019

During the 2019 meeting, RCG NANSEA concluded that the RCGs have complex and extensive tasks but are presently not supported by central resources. The RCGs are expected to interact with a wide group of end-users. This is difficult since the work of RCGs is largely invisible resulting in end-users being either unaware of RCGs or having unrealistic expectations.

After discussion on the fishPi2 project, which identified the need for robust funding of central resources for RCG work to be effective and consistent, the RCG identified central resources needed are:

Secretariat for the RCG;

Website for the RCGs.

Also was concluded that the estimated total cost for a secretariat and to establish a webpage would be 130 000 euro the first year and 100 000 euros the following.

### *Models to finance*

It was suggested that the MS share the costs of the central resources. This has advantages as RCGs and MS keep independence and control over how central resources are developed and utilized.

If MS agrees to finance the central resources this can be done in different ways eg. as a flat rate across MS, dependent on MS share in EMFF, or as combinations between the two. Below are tables (year 1 and year 2-5) showing examples of different MS contributions assuming different models. The example is including the 15 MS participating in RCG NE&EA, NA and Baltic.





RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB - Annex

Regions					
Baltic, North Sea & Eastern Arctic and North Atlantic					
			Option 1	Option 2	Option 3
<b>YEAR 1, Total cost</b>	<b>130 000 €</b>				<b>2 500 €</b>
	EMFF sum 2014-2020	Distribution key	EMFF Distribution key	Flat rate	Flat rate of <b>Option 3</b> + distribution key
Member State	€	%	€	€	€
BE	41 746 051	1,01	1 313	8 667	3 434
DK	208 355 420	5,04	6 552	8 667	7 162
DE	219 596 276	5,31	6 905	8 667	7 413
IE	147 601 979	3,57	4 642	8 667	5 803
EE	100 970 418	2,44	3 175	8 667	4 759
ES	1 161 620 889	28,10	36 528	8 667	28 491
FR	587 980 173	14,22	18 490	8 667	15 656
LV	139 833 742	3,38	4 397	8 667	5 629
LT	63 432 222	1,53	1 995	8 667	3 919
NL	101 523 244	2,46	3 193	8 667	4 772
PL	531 219 456	12,85	16 705	8 667	14 386
PT	392 485 464	9,49	12 342	8 667	11 282
FI	74 393 168	1,80	2 339	8 667	4 165
SE	120 156 004	2,91	3 778	8 667	5 189
UK	243 139 437	5,88	7 646	8 667	7 940
	<b>4 134 053 943</b>	<b>100,00</b>	<b>130 000</b>	<b>130 000</b>	<b>130 000</b>
			Option 1	Option 2	Option 3
<b>YEAR 2 - 5, Total cost</b>	<b>100 000 €</b>				<b>2 000 €</b>
	EMFF sum 2014-2020	Distribution key	EMFF Distribution key	Flat rate	Flat rate of <b>Option 3</b> + distribution key
Member State	€	%	€	€	€
BE	41 746 051	1,01	1 010	6 667	2 707
DK	208 355 420	5,04	5 040	6 667	5 528
DE	219 596 276	5,31	5 312	6 667	5 718
IE	147 601 979	3,57	3 570	6 667	4 499
EE	100 970 418	2,44	2 442	6 667	3 710
ES	1 161 620 889	28,10	28 099	6 667	21 669
FR	587 980 173	14,22	14 223	6 667	11 956
LV	139 833 742	3,38	3 382	6 667	4 368
LT	63 432 222	1,53	1 534	6 667	3 074
NL	101 523 244	2,46	2 456	6 667	3 719
PL	531 219 456	12,85	12 850	6 667	10 995
PT	392 485 464	9,49	9 494	6 667	8 646
FI	74 393 168	1,80	1 800	6 667	3 260
SE	120 156 004	2,91	2 906	6 667	4 035
UK	243 139 437	5,88	5 881	6 667	6 117
	<b>4 134 053 943</b>	<b>100,00</b>	<b>100 000</b>	<b>100 000</b>	<b>100 000</b>





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## RCG NA NS&EA AND RCG BALTIC 2021 REPORT - Part III

### 17. ISSG Implementation of Generic Tools for the RCGs/ SECWEB - Annex

Table 2 Possible options for distribution of the costs between MS to fund central resources necessary for effective RCG work

#### 2020

In the 2020 meeting was mentioned that the shared funding for data collection in the EMFF is based on national envelopes (per MS) and does not foresee EU-wide or regional funding mechanisms. MSs have so far not made funds available to support the administrative needs of regional coordination structures.

In principle, the MS was agreed upon, but the NCs requested more time to take this into account and to allocate national resources for the funding. Due to the timing was wrong as the financial planning for 2019 could not be changed anymore the task to establish the fundament for long-term funding and establishing supporting tools for RCG is one of the main aims for WP3.

