

Working Group on Governance of the Regional Database and Estimation System (WGRDBESGOV; outputs from 2022 meeting)

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i Executive summary

The Working Group on Governance of the Regional Database and Estimation System (WGRDBESGOV) provides the governance function for both the existing Regional Database (RDB) and the new Regional Database and Estimation System (RDBES) that is currently in development. It is composed of representatives from ICES Member Countries and EU Regional Coordination Groups (RCGs). In this report the WGRDBESGOV reviews the RDBES developments performed during 2022 and plans for the work required in 2023 and beyond. It also considers how RDB data has been used and proposes changes required to the current Data Policy.

The RDBES is planned to replace both the existing ICES InterCatch and RDB database systems and has an important part to play in increasing transparency and improving the quality of stock assessment within ICES. To this end several workshops including training are planned for 2023 which will help data submitters with the transition to the new system.

The work done during the year affecting the WGRDBESGOV is impressive, and the output is of a very high quality. Figure 1 describes the structure of the annual workflow WGRDBESGOV for 2023. During the WGRDBESGOV 2023, this structure will be evaluated, further improved and adjusted where relevant. The setup of the intersessional work during the last years, has increased the overall achievement for the RDBESGOV work significantly. During the WGRDBESGOV 2022, the participants became convinced that RDBES work benefits from being supported by several ISSG and that the way of working should be developed further and to be continued. The suggested ISSG for 2023 are described in Section 4 of this report:

- The Core Group
- ISSG FDI alignment with RDBES
- ISSG Data confidentiality and data license
- ISSG Data Quality (link to RCG ISSG Quality)
- ISSG Funding and developments

In addition, the following Working groups and Workshops have been proposed by WGRDBESGOV to support the RDBES implementation and are newly initiated or ongoing (Annex 2 and Annex 3):

- WGRDBES-EST
- WKRDBES-INTRO
- WKRDBES-Raise& TAF2
- WKRDBES-Raise& TAF_Flow
- WK TAF training

The WGRDBESGOV works in coordination with the RCGs, to ensure that their needs are fulfilled.

The WGRDBESGOV works in coordination with a number of ICES WG who provide technical support to the WGRDBESGOV in relation to different types of data (Section 3):

- WGCATCH
- WGBIOP
- WGBYC
- WGRFS

To enhance and support the communication about the RDBES, to present clearer the tremendous work done, to highlight the need of the input of the ICES community, the approach as described and the infographic below, will be communicated to the RCGs including the National Correspondents, ICES ACOM and Secretary. In support of this, a short document will be compiled, including the roadmap and the main topics.

ONGOING STRUCTURE OF WGRDBESGOV- 2023

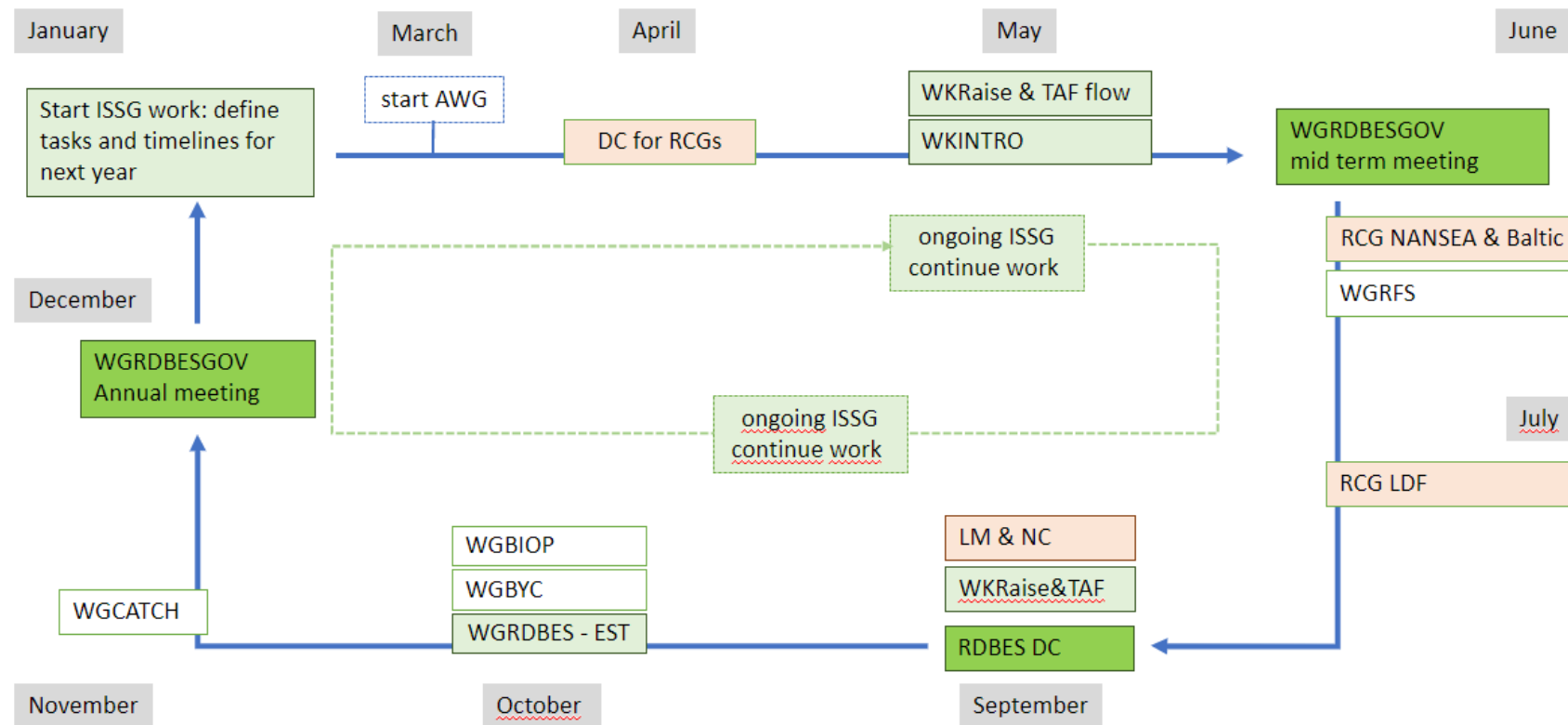


Figure 1.1 The test structure of the annual workflow WGRDBESGOV for 2023. (AWG: Assessment Working groups, DC = Data Call, ISSG = inter sessional subgroup, LM = Liaison Meeting, NC = National Correspondent Meeting, RCG = Regional Coordination Group). Green boxes filled are those events directly related with the WGRDBESGOV work. White boxes filled are those ICES EG giving support to the WGRDBESGOV. Orange boxes correspond to RCG related events.

ii Expert group information

Expert group name	"Working group on governance of the regional database and estimation system" (WGRDBESGOV))
Expert group cycle	"Multiannual fixed term"
Year cycle started	2020
Reporting year in cycle	3/3
Chair(s)	Els Torreele, Belgium
	Lucía Zarauz, Spain
Meeting venue(s) and dates	28 th November – 30 th November 2022, (26 participants)

1 RDBES annual workflow and support

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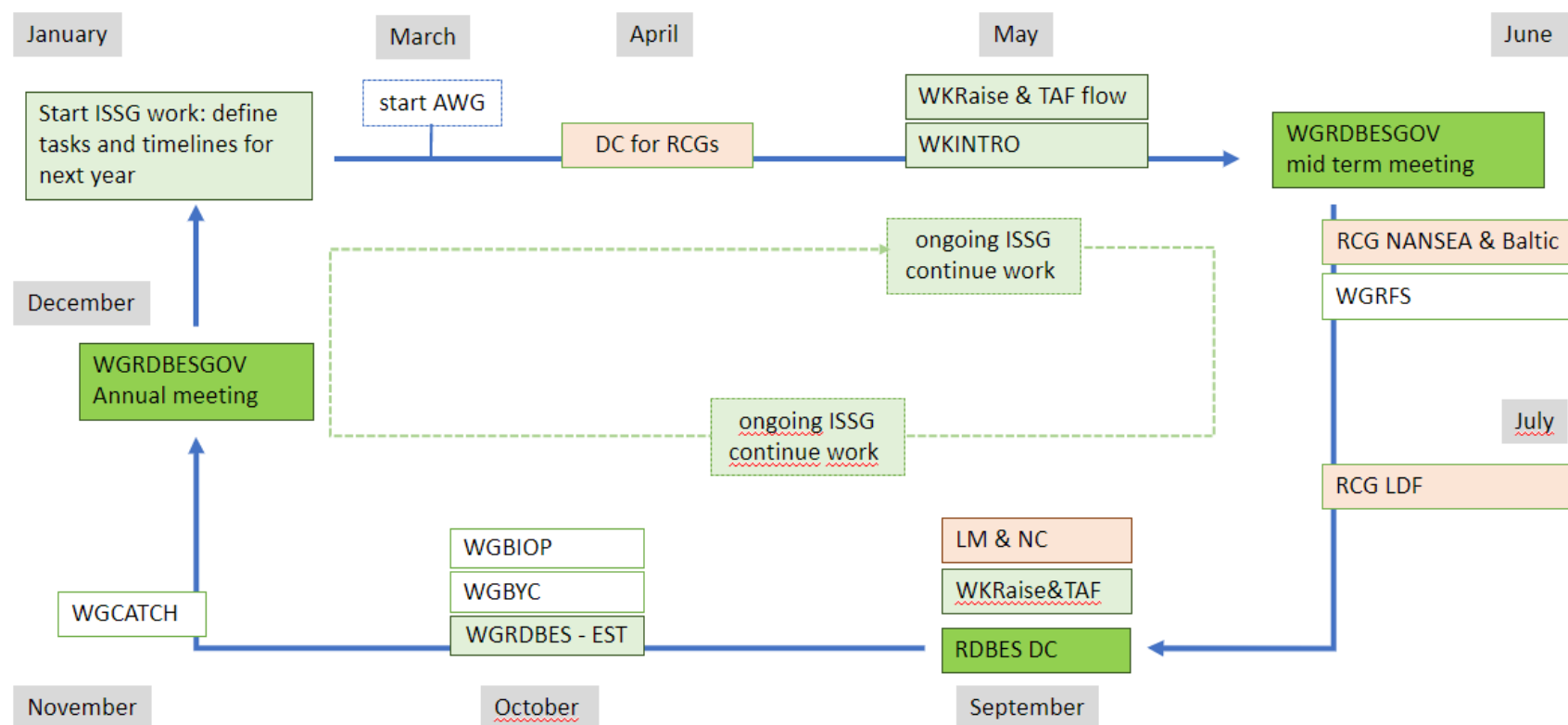


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2 Roadmap

Based on the feedback from the different working groups, workshops and users of the RDBES in 2022, the WGRDBESGOV decided to evaluate the roadmap proposed in 2021, and to re-assess the whole flow. From the community, there was a clear signal received that the planning to phase in/phase out respectively the RDBES and InterCatch, would not be feasible to realize in the initial timing.

A subgroup on Revision and design of the roadmap looked during the meeting deeper into the planning and the needs to establish the whole process for the implementation and use of the RDBES. The roadmap has been extended until 2027 (table 1.1), so that it can be coordinated with the timeline of the present DCF. The roadmap is finished for 2023, but not for the rest of the years. During annual meetings, WGRDBESGOV will revise it and make the needed adjustments.

Table 1.1 Summary of the roadmap 2023-2027 (The roadmap has been extended until 2027, so that it can be coordinated with the timeline of the present DCF. During annual meetings, WGRDBESGOV will revise the roadmap and make the needed adjustments.)

	2023	2024	2025	2026	2027
RDB	Data uploaded and download	Data download	Data download	Data download	Data download
InterCatch	Data uploaded and download	Data uploaded and download	Data* uploaded and download	Data* uploaded and download	Data download
RDBES	Data uploaded and download	Data uploaded and download	Data uploaded & download	Data uploaded & download	Data uploaded & download
Data Calls	<ul style="list-style-type: none"> . RDBES DC - 2022 data (sept) . Recreational DC (in excel) . RDB DC . IC DC . WGBYC DC 	<ul style="list-style-type: none"> . RDBES DC - 2023 data (TBD). . RDBES older data (2020, 2021)? . Recreational DC . IC DC . WGBYC DC* 	<ul style="list-style-type: none"> . RDBES DC - 2024 data . RDBES older data? (TBD) . Recreational DC . IC DC* . WGBYC DC* 	<ul style="list-style-type: none"> . RDBES DC - 2025 data . RDBES older data? (TBD) . Recreational DC . IC DC* 	<ul style="list-style-type: none"> . RDBES DC - 2026 data . RDBES older data? (TBD) . Recreational DC
Use of RDBES in stock assessment	<ul style="list-style-type: none"> . Countries can start using RDBES data for estimations . AWG can request CL and CE data . Test the use of RDBES data in the assessment 	<ul style="list-style-type: none"> . Use of RDBES data in the assessment for selected stocks (preferably in TAF) 	<ul style="list-style-type: none"> . Use of RDBES data in the assessment for selected stocks (preferably in TAF) 	<ul style="list-style-type: none"> . Use of RDBES data in the assessment for all stocks (preferably in TAF) 	<ul style="list-style-type: none"> . Use of RDBES data in the assessment for all stocks (in TAF)
ICES & DCF Community	<ul style="list-style-type: none"> . WGRDBES-EST . WKRDBESRaise&TAF_stock . WKRDBESRaise&TAF2 . WKINTRO 	<ul style="list-style-type: none"> . WGRDBES-EST (TBD) . WKRDBESRaise&TAF_stock2 . WKRDBESRaise&TAF3 . WKRDBES-TAF training 	<ul style="list-style-type: none"> . TBD 	<ul style="list-style-type: none"> . TBD 	<ul style="list-style-type: none"> . TBD

	2023	2024	2025	2026	2027
Deliverables	<ul style="list-style-type: none">. DB development: Bycatch. Define the future developments and priorities. Develop a financial plan for 2024-2027. Revision of the Data License. Data Quality Reports. Define the workflow and the data access in the process of preparing the data for stock assessment. Selection of the stocks that will use RDBES data for assessment in 2024	<ul style="list-style-type: none">. Implementation of a long term financial business scenario for the maintenance and updates of development of the RDBES. Data Quality Reports	<ul style="list-style-type: none">. TBD	<ul style="list-style-type: none">. TBD	<ul style="list-style-type: none">. TBD

** IC/WGBYC DB Progressively phasing out: the new estimates for some stocks will not be available in I*

2.1 Systems

Regional Database - RDB

2023 will be the last year that the RDB will be used to upload new data. From 2024 onwards there will not be a data call for this DB. RCG will use the RDBES for their work, and the RDB will only be used to download historic data.

To make sure that no data are lost, the RDB should stay alive until all the historical data are included also in the RDBES. That could be done through data calls requesting data to the countries. Countries know their historical data better than anyone, and they can make the best decisions on which default values to insert in the RDBES data fields where there is missing information. Alternatively, it may be possible for all countries to agree on how to convert the data in the RDB (which are stored in 5 sample table) into the RDBES data model (with 13 hierarchies and 13 sample tables). Because of the huge difference of the number of tables and data fields, the conversion will demand a lot of default values to be inserted into the mandatory fields in the RDBES, and the countries would have to agree on default values. It will need to be decided whether to have a lot of common agreed default values in the RDBES, or to let the countries themselves give the information and decide on how to fill in missing values.

InterCatch - IC

Due to the number of stocks and AWG using InterCatch, and the complexity of the data contained, the phasing out of IC needs to be done progressively. InterCatch will work normally for all species until 2024. In 2025 and 2026, some stocks will complete the transition to RDBES, and their new estimates will not be available in IC.

One scenario for IC in future could be to keep InterCatch until it is agreed to not allow more stocks to use InterCatch, and then to keep InterCatch alive to be able to download the historical data used for previous assessments (until it is not relevant or serious work have to be done to keep it alive). The good thing with InterCatch is that unless a serious system upgrade is needed, not much work is needed to keep InterCatch alive.

The objective is that **by 2027** the assessment of all stocks will be integrated in the RDBES workflow, and therefore there will not be a need of an InterCatch DC.

Regional DataBase and Estimation System - RDBES

The RDBES data call is already issued for all species, and it is ready to be used. The RDBES Documentation of the Data Model.docx' can be found in the following link: <https://github.com/ices-tools-dev/RDBES/tree/master/Documents>

2.2 Data Calls

The reduction of the number of data calls seems to be a desirable consequence of the implementation of the RDBES, however, we need to ensure that the needs of the different groups are timely fulfilled.

In 2023, the calendar of the data calls will remain the same as in previous years:

- ICES Joint Fisheries Data Call is launched end of January, and it sets different deadlines for the submission of processed data, depending on the dates of the different assessment WG. The calendar of the deadlines extends from the beginning of March to October.
- During the year, other ICES data calls are launched, with the following deadlines: ICES WGRFS (June), ICES WGBYC (August), ICES WGEEL (August), ICES WGBAST (February).
- RCG NANSEA and RCG Baltic data call is launched in March with deadline of the 1st of April
- RCG Long Distance Fisheries data call is launched 9th of May 2022 with deadline 13th of June 2022.
- The RDBES regular data call, is launched in June with a deadline in September.

In addition, the AWG can request CL and CE data, if they need them. And there will be a need for an additional data call for the selected stocks that will be used to test the assessment in RDBES & TAF in 2024 (dates to be decided)

As the transition to RDBES is progressively materialising, the current data call calendar will need to be rearranged. WGRDBES collected the feedback from WGCATCH about the data call and discussed the main problems and possible solutions. Some of the issues highlighted were the following:

- *Overwriting:* The RDBES overwrites data by sampling program. If you upload data of one species, in a specific sampling program, and then you want to upload a second species from the same sampling program, the first species will be removed. You need to upload the two species at the same time.
 - This is an issue because the different data needed by the AWG will not be ready at the same time (ie age readings). And therefore, each upload will need to include the data previously uploaded in the same sampling programme. The problem would apply also for benchmarks asking for historic data
- *Version control:* If we leave the RDBES open so that people can overwrite the data if they find an error, there may be inconsistencies with data already used in an assessment.
- *Timing for AWG:* in the ICES regular data call, AWG ask for estimates. Therefore, the national data needs to be uploaded to the RDBES well in advance, to give national estimators enough time to calculate the various estimates needed for stock AWG.
- *ByCatch data call:* WGBYC is launching its own data call for bycatch data. With the recent improvements in the RDBES data model, it is expected that RDBES data will fulfil the needs of WGBYC, but we need the WG to test the data. The RDBESGOV recommends WGBYC to test the data and give feedback to the Core Group and RDBESGOV on the issues encountered.
- *Recreational fisheries data call:* WGRFS test data call. Official data call is submitted in excel, but with the current RDBES format tested last year.

With reference to the ICES RDBES data calls in 2024 and beyond, WGCATCH recommends that:

- The deadlines for WG TAF estimates continue throughout the year in time for stock assessment WGs.
- The data required for these estimates would be requested to be uploaded to the RDBES in time for these deadlines as required.
- The ICES RDBES deadline for complete data for the previous year continues to be in late September.
- RCG RDBES deadline continues to be 1st April.

WGRDBESGOV discussed this proposal, but no conclusion was reached about the specifics of the rearrangement of the data call calendar. This is a complex issue that cannot be decided now. It will remain open and will be discussed in WGRBESGOV 2023. The feedback on how the MS is entering the whole transition process (towards RDBES) will be important here.

2.3 Use of RDBES data in stock assessment

Although good progress was made during the 2022 WKRDBES-RaiseWKRDBES-Raise&TAF workshop it did not demonstrate all parts of the estimation process working in RDBES/TAF.

Ideally, we would like to show the complete RDBES/TAF estimation path for at least 1 stock by the end of 2023 however this is difficult because it relies on all people and countries progressing at a sufficiently quick rate. If there was a clear statement from ICES that a particular stock was required to be in TAF then that would make the process easier for people to prioritise e.g. when stocks are entered into benchmarks, then data submitters must prioritise the work.

Planned use of data in 2023

Countries can start using RDBES data for estimation

AWG can request CL and CE data.

Test the use of RDBES data in the assessment.

Planned use of data in 2024

Use of RDBES data in the assessment for selected stocks (preferably in TAF). The stocks will be selected in spring 2023 so that they can be ready for 2024. The stocks which are selected for WKRDBES-RaiseandTAF will be proposed for this selection.

2.3.1 Set up of the workflow and roles

A workflow for RDBES repositories in TAF (figure 2.1) was proposed during WKRDBES-Raise&TAF but some details still needed to be discussed. The discussion and testing of the different roles will be taken on during two planned workshops: WKRDBES-Raise&TAF_Flow and WKRDBES-Raise&TAF2.

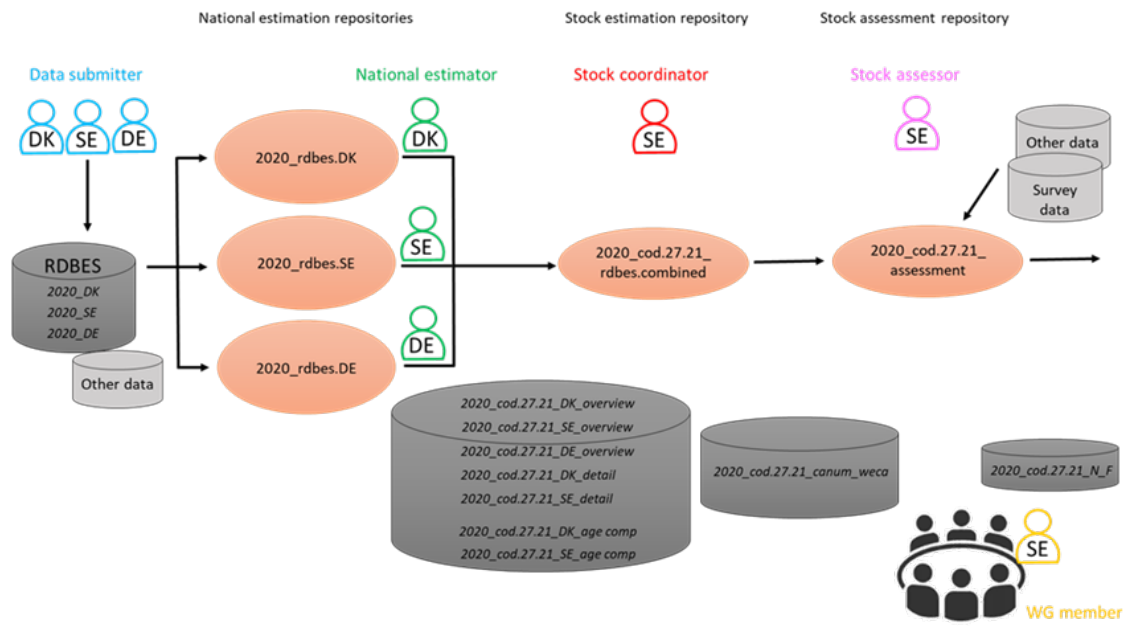


Figure 2.1 Schematic representation of proposed workflow, roles and TAF structure for estimating catch data for stock assessment (from WKRDBES-Raise&TAF)

The workflow designed in WKRDBES-Raise&TAF is illustrated in Figure 2.1 Schematic representation of proposed workflow, roles and TAF structure for estimating catch data for stock assessment (from WKRDBES-Raise&TAF). In this workflow (cod.27.21 as an example), the raw data of the countries fishing for cod in the Kattegat, are uploaded in the RDBES. National TAF repositories (one for each of the countries involved: Denmark (2020_DK), Sweden (2020_SE) and Germany (2020_DE)) are set up so that all the national data can be downloaded from the RDBES and are available to create the national estimates. The output of those national repositories for cod.27.21, will be stored in an 'intermediate output database' and will be the input for the stock estimation TAF repository

Those intermediate outputs are not only the national age and or length compositions (e.g. 2020_cod.27.21_DK_age_comp), but also an overview that presents the national cod.27.21 data in a more aggregated format (e.g. 2020_cod.27.21_DK_overview), and a detailed, raw cod.27.21 dataset would only be available if the country gives permission (e.g. 2020_cod.27.21_DK_detail).

The stock assessment procedures are done in the stock assessment TAF repository (already implemented for some stocks) and need the output from the stock estimation repository as input. The numbers-at-age and mean weights at age of the stock (e.g. 2020_cod.27.21_canum_weca), the national age and or length compositions and the national overviews will be available in the intermediate output database for all the members of the working group. For the assessment audit procedure, a WG member needs access to all the relevant input and output assessment information.

It was agreed that the "overview" outputs should consist of:

- landings and effort data for use in stock coordination and assessment, and;
- reports summarising the landings and effort data, and the national stock estimation.

The reports could include graphical summaries like those presented at the meeting for quality checking landings and effort data.

Whilst the exact format of the graphical reports could vary by stock or expert group it was agreed that it would be useful if they used a common base to build them e.g. R functions hosted in a common GitHub repository, or a common package. In future the RDBES visualisation R package proposed by WGRDBES-EST could provide these common functions. The overview reports don't necessarily need to be made publicly available so they can show more detailed data than is allowed to be presented in public reports.

We will need to further discuss, develop, and test the overview outputs during the planned WKRDBES-Raise&TAF workshops proposed for 2023. There are a few existing functions which can be tested for this purpose. The essential first stage should be a common script to create the landings/effort data for the overview.

The estimation outputs ("XX_age_comp, XX_canum") will need to be further defined but they will need to be in an InterCatch compatible format e.g. the InterCatch format but with added, optional values to record quantities such as uncertainty measures.

It is a requirement to make the outputs such as the national estimates easily available. These could be stored in a database, or a method to easily fetch the results could be provided (e.g. a web function). Scientific data submitters and users will find it easier to understand how this will be done if a clear example is provided.

2.3.2 Set up of the roles for national and regional estimates

The user roles and tasks (figure 2.2) were defined in WKRDBES-Raise&TAF for national estimations (note that a single person can hold multiple roles at the same time)

Intermediate output	Data submitter			National estimator			Stock coordinator	Stock assessor	WG member
	RDBES			TAF repos	TAF repos	TAF repos	TAF repos	TAF repos	
	DK	SE	DE	DK	SE	DE			
2020_DK									
2020_cod.27.21_DK_detail									
2020_cod.27.21_DK_overview									
2020_SE									
2020_cod.27.21_SE_detail									
2020_cod.27.21_SE_overview									
2020_DE									
2020_cod.27.21_DE_overview									
2020_cod.27.21_DK_age comp									
2020_cod.27.21_SE_age comp									
2020_cod.27.21_canum_weca									
2020_cod.27.21_N_F									

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Figure 2.2. user roles for national estimations and the corresponding 'read and edit' restrictions. (from WKRDBES-Raise&TAF report)

WGRDBESGOV discussed that the WKRDBES-Raise&TAF workflow and roles did not really highlight the possibilities of regional estimation, or national estimation being delegated to a

different country. Whilst these will not be common cases to begin with, we need to ensure they can be handled within the implemented system. The group made a proposal of user roles for regional estimation show in figure 2.3:

Intermediate output	Data submitter			Regional estimator	Stock coordinator	Stock assessor	WG member
	RDBES			TAF repos	TAF repos	TAF repos	
	DK	SE	DE	Regional			
2020_DK							
2020_cod.27.21_DK_detail							
2020_cod.27.21_DK_overview							
2020_SE							
2020_cod.27.21_SE_detail							
2020_cod.27.21_SE_overview							
2020_DE							
2020_cod.27.21_DE_overview							
2020_cod.27.21_DK_age comp							
2020_cod.27.21_SE_age comp							
2020_cod.27.21_canum_weca							
2020_cod.27.21_N_F							

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Figure 2.3: user roles for regional estimations and the corresponding ‘read and edit’ restrictions for regional estimations.

2.3.3 TAF support within ICES Secretariat

The amount of TAF support within the secretariat will be increased and this is a positive move. There will also be a push in 2023 to use TAF ICES experts to promote TAF which hopefully will result in an increase in the number of stock assessments included in TAF – it is also planned that TAF “ambassadors” in stock assessment groups will be identified. There is a shift in emphasis from “organic growth” of TAF to more focused encouragement being given.

There is a need to ensure TAF training is provided for people other than stock assessors e.g. national estimators who will use the RDBES TAF repositories. More input on these training needs might be required from WGRDBESGOV. As an introduction there is a TAF wiki page available <https://github.com/ices-taf/doc/wiki> - there is also a plan to update the introductory videos. A TAF Training workshop is proposed for 2024 to train people on how to use TAF with a focus on the needs of the RDBES workflow.

It's possible that TAF will need to be adapted to accommodate RDBES TAF repositories – this should be investigated during the 2023 workshops WK RDBES-Raise&TAF2

There have been previous discussions about the benchmark process and data compilation workshops being a way to introduce national data estimation into TAF – this could be possible at a later date, but it is difficult to add more topics to the benchmark workshop. Stock assessors also don't need to be heavily involved in the RDBES/TAF discussions. It could be possible to hold a specific TAF workshop a couple of months before the data compilations workshop. The Benchmark Oversight Group (BOG) and TAF governance group (WGTAFGOV) could give feedback on this.

2.4 RDBES Workshops and Training

The following workshops were identified as being required during 2023 and 2024. The input from different WG and WK was considered to make this calendar of WK and training (WGCATCH, WKRDBES-Raise&TAF, etc). The WGRDBESGOV 2023 will evaluate how to progress and needs for extensions of certain workshops during their meeting in December 2023.

National TAF repositories should be set up ahead of the workshops so that people can work within them - information about how to set up local TAF repositories should also be provided.

2023

- WKRDEBES-Raise&TAF_Flow
 - A workshop to validate the workflow and roles/permissions proposed in WKRDBES-Raise&TAF for 2 specific stocks. The aim is to investigate the workflow so the actual estimates don't need to be perfect. Stock assessors and data submitters/national estimators for the stocks need to be present.
 - Draft ToRs provided
- WKRDBES-Raise&TAF2:
 - A workshop to continue the work down in WKRDBES-Raise&TAF 2022 and WKRDBES-Raise&TAF_Flow. This will continue helping countries to reproduce their national estimates, and the InterCatch stock coordination functions within the RDBES.
 - Stock coordinators and national estimators should be participants at this workshop – it is good to have the two groups of people hearing the same information.
 - As much as possible should be tested within the TAF system – ideally, we would have complete stocks which have all their processes within TAF but this will be difficult to achieve in the workshop since it will be reliant on all relevant people attending the workshop and making sufficient progress.
 - Draft ToRs provided.
- WKINTRO2
 - A workshop to introduce people to the RDBES data model. Similarly, to the WKINTRO workshop held in 2022 the Core Group will need to be on hand to assist the chair.
 - More focus should be given on describing the CL, CE, and CS data structures and how to populate them for newcomers rather than on describing changes in the data model.
 - There is a need for a session about CL and CE, to explain the usefulness and relevance of some fields such as scientific/official data, VesselId Confidentiality, and also some other optional fields. It has to be taken into account that in some countries, the bodies uploading CL and CE tables are not the scientific institutes but the national Administrations, who are often outside the ICES world. We need actions to ensure that relevant bodies attend the WK
 - Draft ToRs provided

2023 and 2024

- TAF Training workshop
 - This is a separate requirement to the Raise&TAF workshops with the focus being on training people how to use TAF, not discussing what workflows should look like. For more information on the training and use of GitHub see [TAF Learning Materials \(ices.dk\)](#)

Other Wks will be defined during the WGRDBESGOV 2023, based on the outputs and recommendations of the Wks in 2023, the data call progress and the development of the functionalities of the RDBES.

3 Progress achieved in the RDBES and status of the different types of data

3.1 ICES RDBES development 2022

In 2022 there were many different developments in the RDBES. The commercial landing (CL) and effort (CE) tables were updated with many new fields to accommodate the needs of the various end-users. The needs came from WGBAST (Salmon and sea trout), because work was to be done to ensure salmon and sea trout data could be uploaded. But also from the need to export data for the Fisheries Dependent Information (FDI) data call.

Main developments were the following: New uncertainty measures included. An overview of uploaded data files into the RDBES with the status of the files was also developed and implemented. The check 'Allowed Metiers in Areas' that is known from the RDB was developed and implemented in the RDBES. The check makes sure only data relating to metiers, which are allowed for the given area can be uploaded. The options for Data Export and Data Delete have been updated for a better user experience. The numbers of decimals have been standardised and more precise across the whole RDBES, now the decimal numbers are extremely precise - 16 digits after request. Several new checks have been added because of the use of generic codes. That means that when code lists e.g. CatchCategories are needed in the landings, then a check has to be implemented for ensuring that the codes for discard and catch are not allowed in the landing table. It is now possible to see the user, time and server name when logged into the RDBES. New codes and new code lists/types have been added to the ICES Vocabulary (Vocab), and there have also been reviews and update of existing codes and code types. An API between Vocab and the RDBES has been developed, so changes in the Vocab is synchronised to the RDBES system. The new API goes across all ICES systems and puts limits on how the Vocab can be updated, which makes the changes and synchronisation safer.

In addition, a lot of technical updates have been made such as upgrading RDBES source code to .NET 6.0 and Angular to ver. 14. Refactor the screening page for easy integration of new checks. Started using Active Directories for security in RDBES, the first phase of this is developed but not second phase. There have also been changes and bug fixes of the source code. The development of stock definitions has also started, and it is ongoing. One important thing to remember when developing the RDBES is that the specifications are made iteratively like the development. That means that when new fields are identified as needed and the fields are added, then there have to be changed in many components in the RDBES:

- Changes to DB
- Schema validation
- Duplicate data check
- CSV to XML conversion
- Overwriting
- Upload
- Delete
- Export

There is one year left with development at the same speed as previous years with the current funding. The funding runs out at the end of 2023. But there are functionalities, which are requested and needed, which is not funded beyond 2023, and this is very critical.

The current funding scheme is shown in Table 3.1:

Table 3.1: Funding calendar (ICES funds)

Years	Task completed
2020-2021	Fully operational ICES Regional Database (RDBES) with a regional estimation system such that statistical estimates for stock assessment can be produced from detailed sample data in a transparent manner
2022-2023	Incorporate detailed data on Bycatch and PETS AND/OR Recreational data (to be determined by WGRDBES-GOV)

In 2023 there will be a focus on bycatch data; to have all required data in the RDBES, and whether or not extra information has to be included. The RDBES will be transferred to production servers, which means a production web server and database server have to be setup and new procedures implemented. There will be more work on user security, which is a security demand.

New fields will also be added this year in the RDBES system, probably a confidentiality flag in the landings data, auxiliary variables and recording of non-responses in the sample data etc. It is also expected to include new fields for the FDI data call when finally specified. Further development of roles of the RDBES user security is also needed. More checks should be implemented e.g. for the biological data so the type and unit match. It has been identified that there are more detailed area codes used in the stock assessment than in the current area level the generic area list used in the RDBES. It has to be further investigated if the detailed areas are needed for the assessment groups. For the areas required the information needs to be added to the data model and the RDBES. Automatic testing has been neglected, instead focus has been on faster functionality development progress. But it needs to be further developed to improve the quality and reduce the risk of errors in the RDBES in future. Stock definitions also have to be fully developed and implemented.

3.2 CL and CE tables (Landings and Effort)

Changes in the CL and CE format in 2022

Changes in the CL and CE format specification for the RDBES data call in 2022 were presented:

- In the CL format, the field Total official landings value was changed from numeric to string format, for allowing to enter 'NotApplicable', e.g. in case of logbook registered discards and 'Unknown' if the value of landings is not known. This solution was preferred instead of making the field optional.
- A new field with 'Data source of statistical rectangle' was added to both CE and CL formats as a quality indicator of the spatial information in the data. The statistical rectangle can be based on e.g. logbook data, position data, harbour location, expert knowledge.
- Exclusive Economic Zone has been introduced in both CE and CL formats, which is relevant for e.g. HAWG. In this field only country codes are accepted, which is a problem if the EEZ has been reported as EEC or International Waters in the logbook, therefore there is a need to re-introduce the EEZ Indicator field to align with the FDI data call.
- Based on a request from WGBAST (Assessment Working Group on Baltic Salmon and Trout) following fields have been added to the data format:
 - Fishing area category (CE and CL): Open sea, Coast or Freshwater/river
 - Freshwater name (CE and CL): River name for salmon and sea trout
 - Total number fish (CL): total number of fish, only for Baltic salmon and sea trout.
- To align with EU-Map table 6, following fields have been added to the CE table:

- Gear dimensions: The scientific number of the unit dependent on the gear code in the métier field. If longlines the unit is number of hooks, if pots or traps the unit is number of pots or traps, if gillnets the unit is total length of nets (m).
- Number of FADs/buoys: The scientific number of Fish Aggregating Device (FAD)
- Number of supporting vessels: The scientific number of support vessels, as specified in EU-MAP.
- Confidentiality fields: The issue of how to ensure confidentiality has been discussed within the core group and with WGBYC, where the number of vessels are also needed. The number of unique vessels field in the CE data is on the aggregation level (e.g, month, rectangle, métier etc.) so can't be summarized. The fields are introduced in the effort table for the 2022 data call but should potentially be included in the landings table as well.
 - Encrypted vessel ids: A string of all encrypted vessel ids related to this aggregated commercial effort CE record. The vessel ids should be the same unique id for a vessel throughout the year. It is suggested to use integer and start from 1. This field can be used to ensure that data published follows a rule of e.g, more than two vessels, as is done in the VMS data call. The rule should be described in the data license/data call.
 - Confidentiality flag: This confidentiality flag is filled in based on the national confidentiality rules. This is an additional confidentiality information field beside the number of vessels in the 'Encrypted Vessel id's'. It should be made clear which confidentiality rules are followed, and how to fill in this field, so that it doesn't conflict with a rule applied using the encrypted vessel ids.
- Uncertainty indicators of estimated landings: where estimates are given, there should be an uncertainty indicator, which has been added for scientific weight, landing value and number of fish.
- Uncertainty indicators of estimated effort: where estimates are given, there should be an uncertainty indicator, which has been added for fishing days.

Input from WGCATCH

The WGCATCH Small Scale Fisheries subgroup is discussing the development of RDBES database with the aim to make potential recommendations for the proper integration of SSF data and their specificities into the RDBES. Changes suggested by WGCATCH SSF subgroup in 2021 have been implemented in the RDBES CE and CL formats.

For the Small Scale Fisheries the WGCATCH in 2022 recommended the introduction of a new table that describes the number of active and inactive vessels (capacity table) by vessel length class to better describe the fleet. In addition, such a table could feed into the capacity table of the FDI data call. Furthermore, WGCATCH has developed a risk assessment data quality methodology to assess the potential risk of data incompleteness issue especially focused of fishing activity data collected by a census approach and such table constitutes a first step to implement it.

Input from WGSFD (Working Group on Spatial Fisheries Data)

The ICES VMS/Logbook data call contain a table with logbook information (<http://datsu.ices.dk/web/selRep.aspx?Dataset=145>) with a field called VMSEnabled (Y/N), to give information about the VMS data coverage. This table is similar to RDBES formats, and if this field, or a 'Position data indicator field' was added to RDBES, the table could be removed from the VMS/Logbook data call.

3.3 Long Distance Fisheries

In line with the continued 2015 RCG LDF recommendation to address future data calls to all non-landlocked MS, the 2022 data call was sent to all National Correspondents of these MS. Most MS responded, and only three (inactive) MS didn't respond. One MS responded that the data were considered confidential. In future, an attempt will be made to better address these concerns already in the data call. From 2023 onwards, only contributing MS will be addressed by the data call. While all MS are addressed only once every three years to avoid missing out on emerging fisheries.

Based on the RDB data and based on the work done by the intersessional RCG subgroup on fisheries and sampling overviews the RCG LDF produced a standardized annual overview of the fisheries in the respective region with graphs and maps, to get the most information out of the data possible. In 2023, the RCG may reconsider the required output needed for its work. Currently, the overviews are very detailed and some tailor-made solutions may support the digestion of all the information. The work by the ISSG was appreciated as the RCG workload was reduced allowing to focus on the content rather than the production of tables.

RCG LDF reiterates that in order to make the overviews as useful as possible in future, it is extremely important that Member States upload their data to the Regional Database. All MS should update the information on the Subpolygon in the data provided if not done so yet, as this will allow to carry out a more detailed spatial analysis.

In 2021, RCG LDF noted that it was impossible to delete/overwrite catch data at area level. As a result, updates to catch data overwrite earlier data submissions, thus risking that other national data are deleted. This issue was addressed by the ICES data centre before the 2022 data call and is not considered an issue anymore. The 2022 RCG LDF identified missing codes for harbours, (groups of) species and regions. The RCG LDF data manager will contact ICES Data centre to request the inclusion of these codes.

3.4 Bycatch data

A few members of WGBYC have worked with the RDBES core group over the last few years to help make sure some formats were suitable for bycatch data. However, it was not possible yet for the WGBYC during their last meeting to make any sort of appraisal of the bycatch data from the RDBES data call they did not see the data yet). This is something WGBYC plan to do and they might even be able to start with some intersessional checks.

There is a subgroup in WGBYC that works on the data call, and they will look further into this and will have a look and make some comparisons with the WGBYC data from the same period and then feeds back to WGRDBESGOV.

Present data from bycatch programmes (DCF and research) are stored in ICES in a database that does not contain the information required to document statistical samples, identify biases and produce statistically sound estimates. The database has a unique format so currently, an annual separate data call is issued by WGBYC to populate it. The RDBES has the potential to accommodate both detailed sampling data (CS) from sampling programmes collecting, directly or indirectly, data on bycatches, and aggregated (CL/CE) at the resolution required to produce statistically sound estimations of bycatches. In doing this the system will improve estimate quality and reduce the burden and risks involved in multiple data annual requests national data providers.

It is suggested that the WGBYC very soon only will use the RDBES.

3.5 Recreational data

The incorporation of the Marine Recreational Fisheries (MRF) data to the RDBES is considered as a key tool for the sampling coordination at regional level. The progress made under this topic and future actions were discussed. These two key points are also covered by the WGRFS during the last years, providing advice to the RCGs. The RCG intersessional group meeting was postponed to the end of 2022, and the outcomes from this group will be discussed during the RCG NANSEA and Baltic technical meeting in 2023.

As it occurs with the commercial fisheries data, it's essential that marine recreational fisheries (MRF) data are also included in the RDBES database. Given the characteristics of the current MRF data, the preferred solution is a database to store raised tonnages and numbers of fish caught and released by area and year, alongside length–frequency distributions.

With this objective in mind, WGRFS decided to revise the data model proposed some years ago for MRF catch and effort data and launch a voluntary test data call during 2022. Seven countries or institutes responded to the data call. In most of the cases the data provided was specific from a specific survey or from a specific geographical area of the country. This means that the data submitted was partial. However, as the main objective of the test was to analyse if the current data models were useful to populate the MRF data, to have partial data were not an issue.

WGRFS revised the data provided, and it was concluded that there were no big problems in providing the data requested in the developed data models. Some specific needs were highlighted in the codification of some variables and in the measurement of effort. In addition, some issues were found that need to be solved and discussed between the WGRFS, the Steering Group of the RDBES and some other ICES experts Working Groups (WG) where MRF are relevant (e.g. WGEEL and WGBAST).

In the case of the diadromous species, WGEEL and WGBAST collect data from recreational fisheries. WGEEL has its own database, developed by the group and focused on their specific needs for assessment. This database is quite complex. However, RCGs need that eel catch, and effort data are incorporated to the RDBES in order to coordinate the regional sampling of this species and its interaction with other stocks and fleets, including recreational ones. This means that collaboration between WGEEL and WGRFS, RCGs and WGRDBESGOV is essential to find the best solution. WGRFS will take the lead in this coordination between these groups, organizing a specific meeting to discuss and plan the actions needed. In the case of WGBAST, this WG is trying to adapt the RDBES data model developed for MRF data to their specific needs. A first proposal of the adapted data model was sent to ICES data centre experts and WGBAST to test it.

In addition to diadromous species data, the other main issues identified were related to the representativeness of the data. The RDBES needs to flag cases where the MRF estimates provided are not complete. This incompleteness could be due to estimates provided from some specific surveys covering specific recreational fisheries (e.g. only charter boats data, only spearfishing data etc.) or partial coverage of the geographical area in the country. It is also essential to make some bias assessment. In the current data model, it is not clear if the bias assessment done is related to the population sampled in the specific survey, or if the data are biased because the information provided is incomplete. The main objective of the RDBES is to have the total catch and effort estimates for the Country.

WGRFS will provide feedback to the WGRDBESGOV and will participate in the design of the roadmap for the following years. The proposal will be to launch a general data call for MRF during 2023 to continue testing the format. The inclusion of the MRF data in the RDBES also needs to be included in the plan, and MRF experts need to engage with the core group for the

development of the ISSG, so that the data can be integrated taking in consideration of all the rest of RDBES features.

Finally, the following steps to be carried out in the following months, years were discussed. WGRFS will launch an official data call for 2023 meeting. This will allow to ask for the current data that has been collected by the different countries during the last years. It's important to highlight that many countries have been able to incorporate in their national plans the monitoring of recreational fisheries under their routinary monitoring programmes. In addition, most EU countries under the EUMAP have developed pilot studies focused on recreational fisheries sampling during 2019-2022. This information must be incorporated to the RDBES, and this data call information aims to provide a first overview of the current situation and how this data could be uploaded to the RDBES.

The use of apps to collect recreational data are also increasing all around the world, and the clear evidence of this is the large number of apps that have been and are being developed. This will mean that all the information collected through these apps will have to be incorporated into the different databases, including the RDBES. Therefore, we need to start working on how this information can be incorporated into the RDBES. WGRFS role is essential for this to provide advice because of the great experience among the experts in this group in these issues.

3.6 Diadromous data

In the 2021 meeting WGRDBESGOV recommended the WGEEL to discuss and provide feedback about the possibility of using RDBES for the storage of catch data, and for estimation processes.

The WGEEL reported from their September 2022 meeting as follows: "WGEEL discussed the possibility of using RDBES for the storage of catch (or in the case of eel landings to be precise) data. Since WGEEL developed their own postgresSQL database, this is currently used and it is aimed to be hosted by ICES, which is currently a priority. Storage of eel landings data are not trivial, since most of it is from freshwaters and uses a different system for allocation of catches. However, if these issues can be sorted out, WGEEL suggests an automated output from the WGEEL database to the RDBES, to avoid double-work or inconsistencies, if needed."

The WGEEL didn't discuss if the RDBES would be used for the estimation process. WGEEL reported that it aims to further develop assessment models for the eel stock both in a smaller scale and more holistic pan European scale. These models would be able to provide for estimates on the eel stock on both Eel Management Units (EMU; EU) and whole stock level (ICES). The models will use a wide variety of data and they are aimed to be benchmarked in 2027.

WGEEL had a data call in 2022 where they asked data on recruitment, fishery landings, recreational landings, aquaculture production, restocking, yellow eel abundance and silver eel escape-time-series. In addition, individual fish data on biometry (length, age), muscle lipid content, parasites, viruses and contaminants. The data were submitted in excel spreadsheets that were further incorporated in the WGEEL postgresSQL database using the shiny data integration tool. The WGEEL database is currently hosted with a shiny app in EPTB Vilaine (University) server.

The landings data on eel consists of commercial and recreational fisheries in marine and inland waters (by water bodies) in the Baltic Sea, NANSEA and Mediterranean regions. The data are both reported and estimated landings with confidence or probability intervals. The WGRDBESGOV stated that the present structure of the RDBES allows the storage of such data. Only the list of inland water bodies would need to be updated.

The WGRDBESGOV concluded that it will have a dialog directly with the WGEEL and ask if it would be possible for the group to start use the RDBES for storing the landings data. At the same

time, it will be explored if the rest of the WGEEL postgresSQ database could be hosted in the ICES server.

3.7 Large Pelagic data

Since 2018, there is a discussion between WGRDBESGOV and RCG LP on what route the RCG LP will follow regarding a regional database. During national correspondents meeting in 2020, the recommendation from RCGLP to choose for the RDBES was rejected by some members.

As there was no agreement by all RCG LP members, the RCG LP created an ISSG to discuss in depth the development of different options for an RDB/RDBES system. The ISSG is composed of database experts of the 9 countries involve in the RCG LP, but also end-users (ICCAT, IOTC and FDI) and experts involve in the RDBES and the RDBFIS developments.

Currently the RCG LP looks into different scenarios: entering the RDBES system as is, using the newly developed RDBFIS (Mediterranean and Black sea RDB), or a combination of both with an additional processing to the end-users. In Annex 6, the scenarios are described with the respective pro's and con's.

The RCGLP realizes that they need to move forward and need to find a consensus. A deeper look into the technical aspects of both database (RDBES and RDBFIS) will be done during 2023, and it will be considered if some national 'actions' could be examples and perhaps trigger the decision. For example, in France they have moved forward on the use of the RDBES format as an exchange format between their national databases. Their feedback and experience will be considered into the discussion within the ISSG on the database. The objective is to reach to a decision by the end of 2023

3.8 Biological parameters

WGSMART and WGBIOP started the discussion on the development of generic quality scores for biological parameters such as age, maturity, eggs and larvae for use in the SmartDots software and upload in the ICES databases.

Now, quality scores already exist for age, but not for other biological parameters.

The proposition for new quality scores was presented during the RDBESGOV meeting (Table 3.2). These would replace the existing quality scores for age(<https://vocab.ices.dk/?ref=1682>) and be applicable also to maturity, eggs and larvae:

Table 3.2: Quality Scores for biological parameters

Code	Description
QS1 (Quality Score 1)	Biological parameter was determined with certainty
QS2	Biological parameter was determined with doubts but is sufficiently reliable for stock assessment
QS3	It was not feasible to determine the biological parameter
QS3_QA	It was not feasible to determine the biological parameter – Value assigned for quality assurance purposes only. Not to use for stock assessment
Not Applicable	When no qualitative measurement exists for the biological variable type
Unknown	When not recorded

Following feedback was given by WGRDBESGOV:

- Keep Code “AQ” instead of “QS”. “AQ” would then stand for “agreed quality”, “accepted quality”, or “approved quality”. Extraction scripts then don’t need any adjustment.
- Descriptions could also be valid for other biological parameters in RDBES: Length, weight - we could then remove the description “Not Applicable”.
- No remarks on the descriptions
- Accompanying guidelines for each biological parameter are necessary e.g. AQ score related to age: how easily you can count the rings.

Other working groups:

After the WGRDBESGOV, feedback from RMG was received. RMG agreed to implement the new "QS" codes in MeasurementCertainty and to let the AQ codes live on.

This because there is a change in concept between the current "AQ" codes and the new "QS" codes and it wouldn't be correct to simply change the description.

The suggestions must still be discussed at WGDATRASGOV. They will meet during the first quarter of 2023, then a final decision on the new vocabulary can be taken.

4 Intersessional work

4.1 Core Group

The RDBES Core Group plays a crucial role in supporting the ICES Data Centre in the RDBES development. The Core Group works intersessionally via on line meetings. (22 meetings in 2022) and can be considered the “core”.

The core group has the following ToRs:

1. Follow, and advise on the development of the project
2. Provide substantial input to the user requirement specifications, including:
 - a) The drafting of a requirement specification document.
 - b) Specify data exchange format,
 - c) Define user roles, processing of data, data checks, methods for estimation, output.
3. Be responsive to the project team in providing input to issues in the implementation of the RDBES.
4. Testing and approval of developments

During 2022, the group has continued specifying the data model of the RDBES, and discussing what information is needed and how it should be structured. The first half of the year the focus was to make needed updates to the data model, especially the CL and CE tables, before the data call was send out. The data model has also been modified to host WGBAST data (Salmon and sea trout). The core group has worked with WGRFS to update the data model for recreational fisheries, and with WGBYC to ensure that bycatch data are fit for purpose. From the technical point of view, the error value fields were changed from only Relative Standard Error RSE, to specify the error measurement value type; and decimal fields allows now for 16 decimals. The Core Group has also provided valuable guidance to countries who are in the process of uploading data to the RDBES.

The active members of the Core Group are:

- Kirsten Birch Håkansson, DTU Aqua, Denmark
- Nuno Prista, SLU Aqua, Sweden
- David Currie, Marine Institute, Ireland
- Liz Clarke, Marine Scotland, Scotland
- Josefine Egekvist, DTU Aqua, Denmark
- Karolina Molla Gazi, WUR, Netherlands
- Ana Cláudia Fernandes, IPMA, Portugal
- Henrik Kjems-Nielsen, ICES, chair

WGRDBESGOV recognizes the impressive work that the core group is doing, and really identify this group of people as the “core” of the RDBES development. The participation of the core group was essential to:

- Revise the roadmap, define a strategy to progress towards the use of RDBES data in assessment, and set deadlines
- Progress in the RDBES general features, and in each of the different types of data. Define priorities
- Incorporate in the data model variables to achieve the alignment with the FDI data call
- Review the data submitted in the 2022 data call (CE and CL)

- To keep the information in the GitHub up to date and responding to issues raised by users of the coding.
- Identify problems with confidentiality and data protection
- Identify the main discussion that the group needed to tackle, take decisions, and define priorities during the WGRDBESGOV annual meeting.

Membership of this group is open to suitably interested and qualified people. All countries can participate in the Core Group and contribute to the specifications and testing of the RDBES. In fact, it is essential that countries send relevant persons to the Core Group

4.2 FDI alignment

Outcomes of the subgroup

The objectives of the subgroup were to investigate the possibility of the RDBES to be used to fulfil the FDI data call. The subgroup revised the Fishery Dependent Information data call tables and compared them with the corresponding tables in the RDBES Data Model and InterCatch. The group went through the variables in both data calls and identified which variables are needed in FDI and are not asked in the RDBES data call. The aim for the next step is to find solutions for these variables that are missing.

The subgroup divided into 3 tasks and worked on the different tables of the FDI comparing them to the corresponding table in the RDBES. The groups followed a same approach and worked separately. When the variables in the tables were compared there were different colour coding used depending on if the variable in the RDBES can directly be used in the FDI data call or needs processing before it can be used or if it's totally missing from the RDBES.

The following variables are proposed to be added to the CL and CE tables of the RDBES:

- **SUPRA_REGION:** FDI Annex1, Appendix 9. In the FDI each vessel needs to be assigned to a supra-region where most of its activity takes place. This is a vessel-specific information, and it cannot be derived from the RDBES because some vessels (i.e. pelagic) might operate in different supra regions within a year (i.e. ICES areas and other RFMO's). In the FDI, this information is used to be linked with the economic data.
- **SUB_REGION:** FDI Annex1, Appendix 9 (including the EEZ indicator). In the RDBES, not all the information is given at the Subregion level, sometimes it is given by FAO area. For example, the RDBES allows for area 34 without division nor subdivisions, whereas the FDI requests area 34 at a finer resolution (i.e. 34.1.1). This isn't the case for other regions (87, 58, ...). There are packages like vmstools, ices rectangle that could be used to get the coordinates from the midpoint of the rectangle. However, we don't think it is possible to get accurate enough coordinates from the area when it comes to the long distance fisheries. In order to derive this variable from RDBES, we need the data by subdivision in the RDBES for all areas.
- **MESH_SIZE_RANGE:** FDI Annex1, Appendix 6. The ranges used in the FDI cannot be derived from Metier 6 fishing activity. See recommendation from EWG FDI for more information (Section 6)
- **SPECON_TECH:** FDI Annex1, Appendix 11. This information cannot be derived from the RDBES.
- **HRSEA, KWHRSEA, GTHRSEA:** The variables to define the effort in hours are different in the two data calls. FDI is asking for hours at sea, whereas the RDBES is asking for fishing hours. We need to ask FDI group and the core group about the reasons to select

one variable or another and try to reach an agreement. At the moment those variables cannot be derived from the RDBES.

- **RECTANGLE_TYPE, RECTANGLE_LAT, RECTANGLE_LON:** FDI Annex 1, Appendix 14. For ICES rectangles there is a function that takes the rectangle and gives you back the coordinates midpoint. But this is not currently possible for LDF areas and it has to be provided.
- **CONFIDENTIALITY FLAG** and **ENCRYPTED VESSELIDS** to be included in the CL table. (This has been already foreseen in the RDBES).

The following variables are proposed to be added to the FDI tables:

- **WoRMS SPECIES CODE:** Some species do not have a FAO code associated.

In addition, there are other issues that the SG discussed and that shall be taken into account in the alignment of RDBES and FDI data calls:

- **SPATIAL RESOLUTION (C_SQUARE):** Table I and H allows for different levels of spatial disaggregation (rectangle or c_square). However, some countries (i.e. France) are providing the FDI by c_square. To be decided whether to include it in the RDBES as optional field, or to assume that the RDBES can be used to answer at the spatial resolution of statistical rectangle, but that for better resolution (c_square), MS will need to use an alternative source of data.
- **EFFORT DATA (TOTSEADAYS, TOTKWDAYSATSEA, TOTGTDAYSATSEA, TOTFISHDAYS, TOTKWFISHDAYS, TOTGTFISHDAYS):** The different countries should ensure that the effort data sent to RDBES are split equally across fish dates and across the gear/rectangle combinations within one fishing day. Otherwise, these variables could not be extracted from RDBES.
- **OFFICIAL AND SCIENTIFIC DATA:** The RDBES allows to report both official and scientific (estimated) values for landings, discards and effort. These two data sources are not foreseen in the FDI. MS will need to choose which source to use to answer the FDI (same as they are doing now). The information about the source is lost in the FDI.
- **METIER:** Some countries have reported that in the FDI they have some registers that are not at metier level 6, and therefore they will not be able to derive the GEAR_TYPE and the TARGET_ASSEMBLAGE. Our suggestion is that for those problematic registers, countries can add this information in the RDBES National Fishing Activity field. This way we don't need to add more variables.
- **CONFIDENTIALITY:** The ENCRYPTED VESSELIDS can be used to fill in the FDI tables, but with some limitations.
- It will not allow to differentiate different confidentiality rules for value and weight as it is now in table A.
- A simple rule will need to be defined (i.e. less than three unique vessels). Anything different from that simple rule, will need to be done by each country specifically
- **TABLES C, D, E, F and K:** They are based on estimates. They will depend on the RDBES estimation process, which still needs to be defined. In these tables, estimates are provided at the domain level, and domains are defined at the country level. We discussed that if countries are able to make the estimations using the RDBES; they should also be able to define the domains from the RDBES data
- **TABLE J:** is not possible to derive it from RDBES. MS will need to create it separately. However, there is a recommendation from WGCATCH (SSF) to include a capacity table in the RDBES which would allow to fill in this table. To be revised. WGCATCH has also made a recommendation about this

- **NEED TO FLAG FDI VARIABLES:** It is important to flag in the RDBES Data Model, the variables which are only needed for the FDI. On the one hand, because non-EU countries don't need to answer them (they can use a value of "Not known"). On the other hand, because MS may decide not to use the RDBES to answer the FDI, and in that case they will not need to fill in these variables neither.

Plan for 2023

The WGRDBESGOV recommended this subgroup to continue during 2023 as an Intersessional subgroup (ISSG). The subgroup needs to meet with the Core group in order to revise the proposed variables one by one and take decisions in coherence with the rest of the RDBES development. It was stated that there need to be a justification when adding of new variables, in the sense that those variables are effectively used in the FDI.

The ISSG will also take into consideration the recommendation n°4 of WGCATCH about the inclusion of a new capacity table; and recommendation n°6 from EWG FDI, about the need to include some variables such as "Mesh size" and "VMS enabled" (Section 6)

4.3 Quality of RDBES data

4.3.1 Overview of the data submission in the 2022 data call (2021 data)

An overview of what data the countries have uploaded to the RDBES compared with last year is provided in Table 4.1. It shows which data have been uploaded by the countries in 2022, comparing with the 2021 submission.

It can also be concluded that the countries have in general uploaded all requested data types (green). The countries that did not upload all data types last year have clearly progressed and uploaded more data types this year (yellow). It is only one data type that is missing for a few countries. However, there is still not data uploads from Faroe Islands and Iceland, but we have the communication that the Faroe Islands are in the process of converting data to the RDBES format.

This table gives an encouraging overview of how many countries are uploading data, but it cannot inform about the completeness and quality of the data uploaded. In the case that data are missing within a data type the countries have to declare this in the Upload Log.

Detailed information on the RDB and RDBES data submission 2022 (2021 data) can be found in Annex 4.

Table 4.1. Overview of data submission in the 2022 data call (compared to 2021 data). The cells are colour coded. All the green cells indicate the data were also uploaded in 2021. Orange indicated the data were uploaded in 2021 but not in 2022. The yellow indicates the data were not uploaded in 2021, but it was uploaded this year

Country\Data type	Landing	Effort	Sample Details	Sample	Frequency Measure	Biological Variable
Belgium	Yes	Yes	Yes	Yes	Yes	Yes
Denmark	Yes	Yes	Yes	Yes	Yes	Yes
England	Yes	Yes	Yes	Yes	Yes	Yes
Estonia	Yes	Yes	Yes	Yes		Yes
Faroe Islands						
Finland	Yes	Yes	Yes	Yes	Yes	Yes
France	Yes	Yes	Yes	Yes	Yes	
Germany	Yes	Yes	Yes	Yes	Yes	Yes
Iceland						
Guernsey	Yes	Yes				
Ireland	Yes	Yes	Yes	Yes	Yes	Yes
Isle of Man	Yes	Yes				
Jersey	Yes	Yes				
Latvia	Yes	Yes	Yes	Yes	Yes	Yes
Lithuania	Yes	Yes	Yes	Yes	Yes	Yes
Netherlands	Yes	Yes	Yes	Yes	Yes	Yes
Northern Ireland	Yes	Yes	Yes	Yes	Yes	
Norway	Yes		Yes	Yes		Yes
Poland	Yes	Yes	Yes	Yes	Yes	Yes
Portugal	Yes		Yes	Yes	Yes	
Scotland	Yes	Yes	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes	Yes	Yes
Wales	Yes	Yes				

Upload Logs

Ten countries provided an upload log: Belgium, Estonia, Ireland, Lithuania, Latvia, Poland, Sweden, Denmark, Germany and Spain. From these, 5 countries reported a full upload for CL data, 4 countries for CE data, and only 2 countries for CS data. Main issues reported had to do with data not being reported from small ports, SSF, bycatch, maturity and age sampling at sea, and diadromous species.

The presentation on upload logs was followed by a short discussion related mainly to data confidentiality issues. In some countries, at the current level of aggregation of commercial landings and effort, around 80% of records are for a single vessel, meaning that the effort and landings data can't be referred to as aggregated any more. In addition, there is a need to define a common criterion for confidentiality for all countries.

The question is whether the problem lies in the storage or processing of the data. It was mentioned that it should be possible to upload data related to individual units, but it should not be published on that level. It must be clearly specified in the regulations, data call specifications and data licence, how the data will be used.

4.3.2 Review the quality of CL and CE tables

Quality and completeness of data

During 2022, the core group reviewed the data submitted in CL and CE tables, in the 2022 data, with regards to the use of the fields and options that are in the format and the data quality. To that aim, a data extraction was made available.

An *R markdown* script was updated to include the newest format, to make *html* outputs for CE and CL data. It was clear that submitted effort and landings data are based on official data sources, and the option for scientific estimates and adjustments have not been used yet. The amount of BMS landings and logbook registered discards in the data submitted is low compared to the landings, and not all countries have submitted data with these categories. Few countries have submitted values on the optional effort measure fields soaking meter hour for gillnets and the gear dimensions.

In the effort and landings tables, there are data from vessels below 10 meters, indicating the data from the small-scale fisheries have been submitted. A large proportion of the data that are uploaded have less than 3 vessels at the aggregation level of the data format. Maps showing the distribution of data by ICES statistical rectangle have been made by country and for the top 20 species, and relationships between the official weight and official value of landings are shown by species. Potential errors where there is a mismatch between the ICES statistical rectangle and the area is shown in a table.

Regarding completeness of the data, this can be estimated by comparing with another data source. As an example, the total landings of the submitted 2021 data were compared with Euro-Stat data when it was available by country. It was clear that in some cases the values from the two data sources are similar whereas in other cases there are differences. These differences could be highlighted or explained in the upload logs, if a quality assurance procedure is set up.

The subgroup suggested to WGRDBESGOV that a quality check procedure is set up for RDBES data, in a similar way as the for the ICES VMS/Logbook data call, where a QC group run a script to generate a data quality report by country and send it to the NCs with questions or acceptance.

Data confidentiality and the data license

In the current RDBES data license, there are specific rules for publishing landings and effort information. The rules specify that in general there must be more than two different units in each variable to be able to aggregate the data over the variables (e.g. to aggregate by country the data must include at least 2 different countries). When showing landings and/or effort data in a public report the highest resolution is determined by selecting at least 4 out of the 9 variables Vessel flag country, Year, Month, Species, Metier level 4-6, Vessel length category, Statistical rectangle, Landing Country and Harbor. Only one option/figure can be shown to ensure conclusions cannot be drawn from a combination of several figures.

These rules correspond to the ones adopted using the RDB format, but need to be updated to the RDBES format, containing more categories, and the introduction of the data confidentiality fields should be taken into account. From the review of the data submitted in the 2022 data call and for the countries that filled in the optional field with encrypted vessel ids, on average around 80% of the records only contain one vessel, meaning that the effort and landings data can't be referred to as aggregated any more.

The encrypted vessel ids field is a tool to know the number of vessels on different aggregation levels, whereas the confidentiality indicator field (Y/N) applies to the aggregation level of the

data submission. Using the encrypted vessel ids field, the percentage of the records and days at sea with more than 2 vessels was tested for different aggregation levels.

Data confidentiality is handled differently in different data calls (e.g, ICES VMS/Logbook and FDI data calls), and it would be useful to look at the possibility of harmonization between the approaches.

4.3.3 Subgroup for quality control

It is suggested to have a subgroup for RDBES Quality Control to develop/improve the existing QC code and start preparing/discussing the QC for the sampling data. WGRDBESGOV recommends that the work of this SG could be integrated in the tasks of the RCG ISSG Quality work in 2022/2023. As the database contains data not only from EU, the WGRDBESGOV also recommends the RCGs to invite third countries to their technical meeting again from 2023 onwards.

The deadlines for producing the QC reports are linked to the data use/request. In that way, two steps are envisaged:

- As the data are used by RCG in June, the first approach for the quality checks will be made by the RCG ISSG Catch, Effort and Sampling Overviews for the EU countries, after April 1st.
- After the September deadline (final data submission), the QC subgroup should get access to all the data, to run the QC code by country

Main objectives of the QC code are to:

- i. look for any inconsistencies in the data during preparation, make a list with types of possible inconsistencies (e.g. check WGQuality reports)
- ii. compare results of the QC code with upload logs, to see if they are already explained. For this, the group will need access to the upload logs.
- iii. check for data completeness by comparing it with other data sources (e.g, EuroStat, FDI, ICES, National catch statistics). It could also be possible to get a general overview by looking at the dataserie of previous years.
- iv. send the QC report to NCs with questions/comments - the data submission is only accepted after either explanations or resubmission with data corrections.
- v. the QC group should save the replies so that the same questions are not asked every year. A decision is needed on where to keep this information.

The ISSG will also take into consideration the recommendation n°4 of WGCATCH, regarding the need for a complete review of how data on the SSF have been uploaded to the RDBES in 2022 data call (Section 6).

The QC code is now available at the RDBES GitHub and there was a proposal to include it in the *RDBESvisualise* R package initiated by the RDBES Core Group and WGRDBES-EST. It was also discussed the possibility for countries to check their data before the upload (e.g. push a button in the data upload page that run the code under TAF). To that aim, the QC procedure should be ready before the data call and should be published and advertised in the data call request.

Other topics discussed

- How to assess quality of data coming from industry-based sampling programs. The first quality information needed is the source of the data, to compare self-sampling data with data from scientific observers. See WGCATCH 2022 report on industry sampling definitions and codes, and WKEVUT 2022

- How to deal with EM data on sampling bycatch of PETS and discards.
 - It is important that the data source is indicated in the data, so that they can be compared with observer data
 - To report effort coming from EM in the CE table, the code “EM” could be included as data source for scientific effort.
 - This could be a task for the RCG ISSG on EM.
 - It is also relevant to make WGTIFD aware of RDBES.
 - Regarding this topic, there are several groups developing work on EM (WGTIFD, RCG ISSG EM, WGCATCH SG on EM) and one of the main points is that there must be some coordination between those groups for not to duplicate work. So it is important to define the working strategies for each to have more fruitful results.
- Issues with overwriting
 - There should be a version of control of the data with a time stamp, to be able to reproduce the same outputs.
 - What are the overwriting procedures of the different tables? – They exist but also need to be available in the RDBES documentation.
- How to deal with time-series in different formats. Two solutions were proposed:
 - There is the possibility of converting RDBES to RDB format, but some clarifications are still needed (e.g., to know what information to use when official and scientific values for landing weight and effort are different).
 - When the data call is stable, CE and CL data might be requested one year back in time, as is done in FDI? Might be more problematic for CS data.

4.4 Confidentiality: data license and access to RDBES data

When the subgroup for updating the Data License looked into the suggested updates, it was recognised that the RDB/RDBES Data License need a much larger update, which is not possible at the WGRDBESGOV meeting.

Main issues were encountered when analysing quality of the data submitted in 2022 (section 4.3) and the use of RDB and RDBES data in RCGs and ICES EWG (Annex 4):

- the results of the revision of the data submitted in the 2022 data call, showed that an average of the 80% of the records only contain one vessel, meaning that the effort and landings data can’t be referred to as aggregated any more.
- We have two variables related to confidentiality, the *encrypted vessel id*, which allows to know the number of vessels on different aggregation levels; and the *confidentiality indicator* field (Y/N), which is used by countries with different criteria. Both fields are optional
- data confidentiality is handled differently in different data calls (e.g., ICES VMS/Logbook and FDI data calls), and it would be useful to look at the possibility of harmonization between the approaches.
- According to the present rules, working groups have to ask all National Correspondents for permission to use the data. Although there is also a list of pre-approved ICES Working Groups, that have access to aggregated data, it has been suggested that Working Groups should have easier access to the data.
- Need to take into account that the database contains data not only from EU countries. This could be solved if third countries are invited to RCGs
- Specifying access rules is still an ongoing process (WKRDBES-Raise&TAF). If different access rules are defined, that shall be done in coordination with the data licence.

WGRDBESGOV decided to make a subgroup to revise and update the RDB/RDBES Data License. The group will be composed of relevant and representative persons from different groups. The details of the proposal are shown below:

Data license update group participants

2 persons from the WGRDBESGOV (Els, Dalia). 1 person from the WGSFDGOV (Spatial Fisheries Data) (Els to contact). 1 person from WGBIODIVGOV (biodiversity VME bird, seal and cetaceans) (Els to contact). 1 from EC DG-MARE (Els to contact). 2 from ICES Sec. (Henrik, Neil). 1 from DIG (Data Information Group) (Henrik to contact Sjur Ringhiem Lid). 1 from RCG NA NSEA Baltic (Josefine). 1 from RCG LDF (Sieto). UK (Henrik to contact Jens Rasmussen DSTSG).

Timeline in 2023

(In coordination with the RDB/RDBES Data License approval cycle in Figure 4.1)

- *January:* Start updating the Data License.
- *April:* Updated Data License draft finished.
- *May 1st week:* Send update Data License draft to RCG Technical meeting and non-EU ACOM representatives. Feedback expected mid-June.
- *June:* Data License group start working on a potential re-draft, and interact with RCGs and non-EU ACOM representatives for finalisation in August.
- *August:* Final Data License proposal send to RCGs and non-EU ACOM for pre-approval.
- *September:* Send Final Data License proposal for approval at the RCGs Decision meeting and to and non-EU ACOM representatives for approval.
- *December:* Updated Data License published.

Main points moving forward

- Simplification
- Align with VMS Data License
- Not being “too linked” to the EU Data Collection Framework, DCF, for the non-EU countries
- Include future access needs for RCGs and ICES advisory WG, regarding roles like national estimator, stock coordinator, stock assessor, working group member and other related fisheries management group (e.g. WGCATCH, WGMIXFISH-ADVICE/METHOD, and WGRDBESGOV, WGRDBES-EST). Include other external potential users. ICES Benchmark Workshops roles like benchmark download data. Need to coordinate with WKRDBES-Raise&TAF.
- The message to the countries uploading their data, is that confidential data can be uploaded, as the user must follow the rules for publication of data.
- Update the rules for publication of data, which should be in the data call. (Potentially agree that 3 or more vessels in one stratum is aggregated data, and can be shown)
- The idea is that the *confidentiality flag* field and the *vessel Ids* field in the Effort, CE, will also be included in the landing CL data and made mandatory for both CL and CE.
- Confidentiality
 - Confidentiality criteria is not homogeneous and there’s a need for common criteria about this issue, as in FDI for example.

- Need to work on this issue with other groups with similar type of information reported: VMS, FDI, COM.
- Conflict for MS to comply with both regulation: dissemination data and data protection
 - Need clear guidelines/rules, e.g, data will not be published in a way that individual vessels can be identified.
 - Using the *encrypted vessel id* is a tool when aggregating the data.
 - A possibility could be to classify values into ranges if there are less than 3 vessels?
- The ISSG will also take into consideration the recommendation n^o9 from WKRDBES-Raise&TAF about clarifying the responsibility for giving the permission to detailed stock data (Section 6)

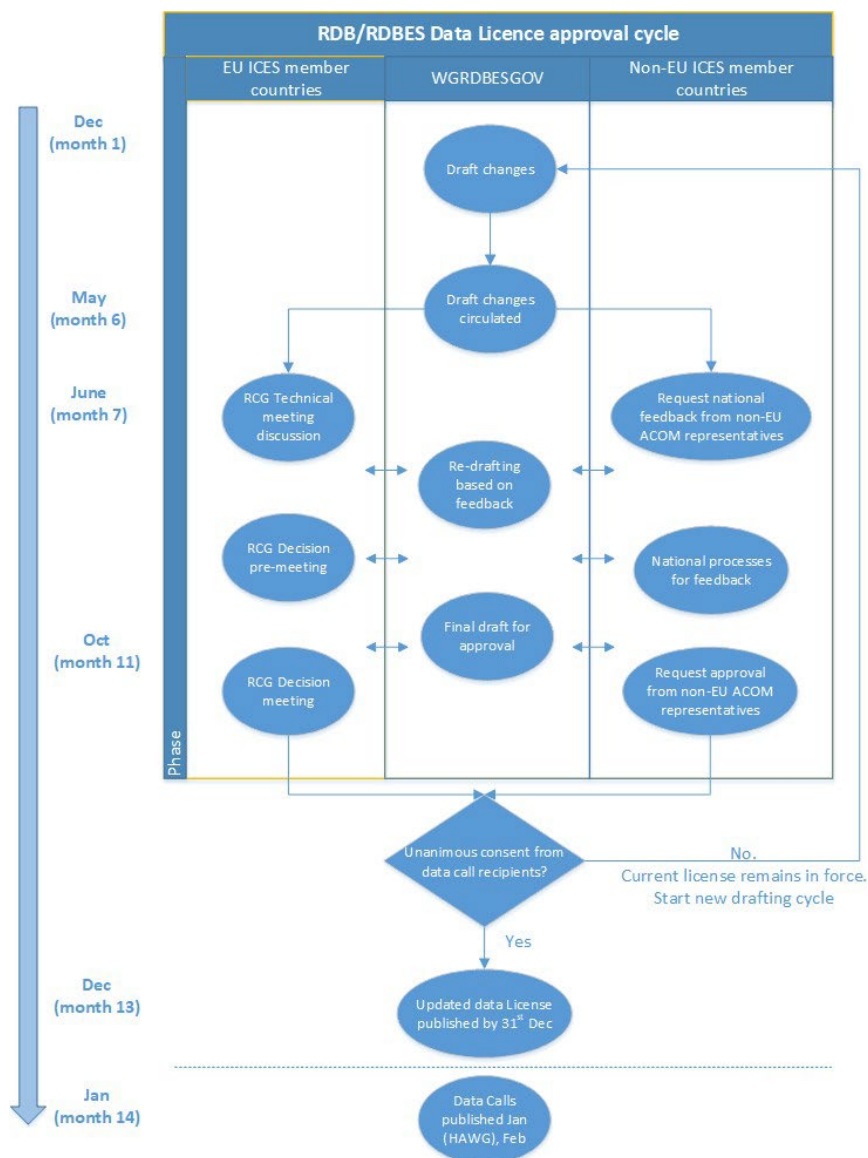


Figure 4.1. The RDB/RDBES Data Licence approval cycle (from the WGRDBESGOV report 2020).

4.5 Funding and developments

In order to develop the RDBES and its full functionalities and to accommodate all different type of data and enhance a smooth transition (and use) for all type of data (including bycatch and recreational fisheries) additional developments are needed (in addition to the maintenance). A list of high priorities needed functionalities have been developed by the WGRDBESGOV, at the end of this section. Another detailed document has also been developed by WGRDBESGOV with a description and a table which summarize a main set of views on development of RDBES (Annex 7). In this document, it is listed what has been discussed by the WGRDBESGOV, ICES, users and the Core group referring to the possible next steps, and whether is it funded or not.

Needed funding for functionalities

There are still functionalities, which have been requested, beyond what can be achieved in 2023.

During the WGRDBESGOV there was agreed on to the following needs to be taken with priority:

- The recreational data
- Upload Log import
- Data quality check improvements
- Improvement of data viewing and adding summarising for data quality control
- FDI export module

There is a clear aim to include recreational data in the RDBES, but so far there has not been time to work on that. In 2022 there was a short dialog between ICES Secretariat and experts from recreational fisheries. But the work on recreational data needs to continue for inclusion of the recreational data into the RDBES.

There is a recommendation to include what is called *Upload Logs* in the RDBES. The Upload Log has been used every year for the RDB, but it should also be implemented for the RDBES. The *Upload Log* used for RDB is a national spreadsheet sent in an e-mail, telling the status of the uploaded data in the RDB. This is an extremely important piece of information since it explains data issues in the national uploaded data to the RDB. The *Upload Logs* should of course also be used for the RDBES, and work has been done in updating the Upload Log for the RDBES, but it is not completely finalised. The *Upload Logs* should be implemented as a file upload into the RDBES and not as a spreadsheet attached to an e-mail.

The data model has not been concluded but this is crucial to ensure all known needs are met and to prepare for the finalization of the next steps. Once the data model is agreed it should be developed and implemented into the RDBES. It should also include the important information in the *Upload Logs*, so it is stored along with the data it describes and easily can be found and accessed. A check which ensures that no duplicate landings are uploaded into the RDBES and used for assessment should be developed. This check is a fundamental part of InterCatch, and the data quality in the RDBES should not be less than in InterCatch.

Table 4.2 below is a list of essential functionalities that need to be funded before it can be developed:

Table 4.2 Essential functionalities requiring funding before development

Functionality needed	Description of functionality
Recreational fisheries data implemented in the RDBES	Make it possible to upload and download aggregated recreational data into the RDBES. The recreational data consist of three different data types; landing, effort and length distribution data. This include developments in the RDBES; database, user interface, upload, XSDs, converter, overwriting, download, user administration new role and testing.
FDI export module	Make it possible to download FDI data from the RDBES. The FDI data consist of different data types so a number for different file formats have to be developed.
Upload Log implemented in the RDBES	Make it possible to upload, view and download Upload Logs into the RDBES. The <i>Upload Log</i> is a file which contain information from the countries of the completeness of their data uploaded into the RDBES.
Data quality improvements: Checks e.g. check preventing upload of duplicated landings etc.	To increase the data quality of the data in the RDBES many checks should be developed. One of the most important checks is the check for duplicated landings upload. Many other checks should be developed.
Improvement of data viewing and adding summarising for data quality control	Improve viewing and add summarising of the uploaded data for the national data submitter. Thus the data submitter can get an overview of the uploaded data and ensure all data have been uploaded.
Optimisation of data upload to prevent long waiting time	The upload of landing and effort data does not take as long as the upload of sample data, and since the data can be uploaded independently it makes sense to create a new queue and split the data, thus the data submitter will have faster upload times for some data types.
Finishing potential development from the very ambitious year 2023	Many system technical developments take up a lot of the time in 2023; Updating the security module, use of roles together with claims, conversions of admin pages, moving to new servers, automatic testing. Beside that there are the new requested developments with new added information to the data model. On top of that there is; implementing stock definitions and needed areas and a simple viewing of data. The plan for 2023 is very ambitious and therefore there is a risk that some things have not been developed, which then should be done in 2024.
Develop requests from year 2024 and 2025	The RDBES is a new system and the more the RDBES is use, the more request of needed functionalities will there come. Therefore it makes sense to have room for new needed developments.

WGRDBESGOV Discussions

One of the main discussions was about how to provide funding for the essential functionalities that is needed but will not be developed under the current funding.

As a way forward, the WGRDBESGOV chairs, together with the RCGs and the ICES Data Centre (and eventually DGMare), will explore different options to provide funds for the longer term developments of the RDBES functionalities and needs.

Options that could be considered (not limited) are:

- to request the European Commission (EC) funding for a non-recurrent project. The chance of EC funding is thought to be higher if countries outside EU are also included in the cost-sharing of the project.
- develop a scenario where all countries contribute to the needed budget, based on for example the level of national EMFAF funds (or other funds), the contribution to RCGs, etc...
- other options to explore.

Overall, it is very important that the funding is secured as soon as possible to minimise the risk for losing developers with many years of experience in the development of the RDBES.

5 Recommendations addressed to WGRDBESGOV

Id		Year	Recommendation	Recipients	Comments
1	WGQuality	2022	PGData noted in their 2020 report (pages 12-13) that a large number of different assessment working groups (WGs) have developed multiple ways of presenting similar information. This raises the question of duplication of work and a need for sharing and developing data analysis functions in a collaborative way. The current GitHub repos used by WGs mimic the WGs structure and thus cannot be used for collaborative work across WGs. The development of the RDBES presents an opportunity to develop common R functions and scripts which could be housed in a data exploratory analysis GitHub repo and used by many different WGs. WGQuality recommends that such a repo is created and that work is begun to develop RDBES data exploration scripts.	WGCATCH; WGTAFF- GOV; WGRDBES- GOV	The development of a repository where all R scripts and functions for statistical estimation using the RDBES data format are stored and documented, is a stepwise process. As the implementation of the roadmap is progressing step by step, the development of that repo is part of this RDBES visualise R package initiated by the RDBES Core Group and WGRDBES-EST will be the next phase in this process; the chairs of WGRDBEST are informed about this.
2	WGNSSK	2022	We recommend a timely planning for benchmarks/ training/ data call/ approved documentations for the implementation of RDBES.	WGRDBES- GOV	WGRDBESGOV has taken this into account in the revision of the Roadmap. A detailed roadmap including WGs, training, further development is developed with taking into account as much as possible the planning of BM, data calls etc. However at the moment of the WGRDBESGOV meeting, all information about the timing of certain WGs was not available yet. An overview of the revision of the roadmap is available in the WGRDBESGOV Report 2022.
3	WGMIXFISH- METH	2022	WGMIXFISH recommend that the RDB/RDBES Data License is adapted so that the WGMIXFISH group has pre-approved access to RDB/RDBES as an appropriate level of aggregation for use in the production of mixed fisheries advice. This will be required for several areas (27.3, 27.4, 27.6, 27.7, 27.8, 27.9, 27.10 and the Baltic). Any WGMIXFISH advice products or publicly available information based on these data will be aggregated and anonymised.	WGRDBE- GOV; Data Centre	This relates to access to: CE, CL and CS data (all detailed data) and raised data. Harriet Cole and Marc Taylor are the current MIXFISH chairs and it is worth discussing the recommendation further with them before giving the formal response

Id		Year	Recommendation	Recipients	Comments
4	WGCATCH	2022	<p>Recommendation</p> <p>For the SSF, 2022 WGCATCH recommends the introduction of a new table that describes the number of active and inactive vessels (capacity table) by vessel length class to better describe the fleet. In addition, such a table could feed into the capacity table of the FDI data call.</p> <p>Background</p> <p>WGCATCH has developed a risk assessment data quality methodology to assess the potential risk of data incompleteness issue especially focused of fishing activity data collected by a census approach and such table constitute a first step to implement the data quality methodology</p>		The RDBES core group together with the ISSF on FDI alignment will look further into this, in communication with WGCATCH.
4	WGCATCH	2022	<p>Recommendation</p> <p>WGCATCH recommend to achieve a complete description of the data available into RDBES which would be useful to assess the completeness and the quality of data available.</p> <p>Background</p> <p>There is a need for a complete review of how data on the SSF have been uploaded to the RDBES in 2022 data call, e.g. if the possibility to specify scientific estimates with uncertainty indicators have been used by countries, if all the vessel length classes have been uploaded into RDBES, the diversity of gears/fleets uploaded, the importance of MIS_MIS métiers uploaded for SSF ... This complete description of all data available would enhance the insight in the quality of the data in the RDBES</p>		The ISSG Quality will take this recommendation on. From June 2023 the ISSG is aimed to be integrated in the RCG ISSG Quality. Within this group further action will be taken and communication with WGCATCH taken further.
6	EWG FDI	2022	<p>The ICES RDBES has been prepared to be able to export data to the FDI data call, with the advantage of having corresponding data in ICES and FDI and biological stock estimates are the same. Currently, the RDBES landings and effort data formats do not include mesh size ranges, which are only available from the métier level 6 codes. In the current FDI ToR 2 to provide landings and discards data for exemptions in discard plans, the mesh size ranges in the métier codes do not follow the mesh size ranges defined in the exemptions for the discard plans, where they can split at e.g. 80 mm, while the métier code mesh size range is 70-89. Therefore, the EWG considers that an optional field with the FDI mesh size ranges should be requested in the RDBES effort and landings tables.</p> <p>WGSFD discussion: The ICES VMS/Logbook data call contain a table with logbook information (http://datsu.ices.dk/web/selRep.aspx?Dataset=145) and a field called VMSEnabled (Y/N), to have information about the VMS data coverage. This table is similar to RDBES formats, and if this field was added to RDBES, the table could be removed from the VMS/Logbook data call.</p>		This has been taken on in the FDL/RDBES alignment ISSG. The ISSG and the core group will continue working on this during 2023. FDI experts are kindly invited to join the group.

Id		Year	Recommendation	Recipients	Comments
7	WKRDBES-RAISE&TAF	2022	WGRDBESGOV to agree on a workshop were 2 stocks will be set up to go through the whole flow		WGRDBESGOV agreed to set up a WK for looking further into the whole flow. The WK is named WKRDBESRaise&TAF_Flow and will handle two stocks. The WK is planned for end May/June 2023.
8	WKRDBES-RAISE&TAF	2022	WGRDBESGOV to clarify the responsibility for developing the archiving of intermediate output : Test in next WK on stocks		During WGRDBESGOV this discussion was not finalized yet and no decision is taken yet. This will be looked at further during the year by WKRDBESRaise&TAF2.
9	WKRDBES-RAISE&TAF	2022	WGRDBESGOV to clarify the responsibility for giving the permission to detailed stock data: fits into the data license - users role - data call		This recommendation will be taken on by the ISSG Data Confidentiality and license.
10	WKRDBES-RAISE&TAF	2022	WGRDBESGOV to agree a follow up WKRDBES-Raise_TAF		WGRDBESGOV agreed to setup WKRDBESRaise&TAF2. The WK has as chairs David Currie and Edvin Fuglebakk and is planned for autumn 2023.

6 Recommendations from the WGRDBESGOV to WGs and RCGs

6.1 Follow up on 2022 recommendations

From WGRDBESGOV to WGQUALITY

Year	Recommendation	Recipients	Answer
2022	Describe how the RDBES fits an end-to-end ICES quality management system. The RDBES is a key component in improving the quality and transparency of fisheries dependent data that feeds into the ICES advice process – this should be clearly stated in the ICES quality management system.	WGQuality	<p>Due to the annual WGQuality meeting being held in January the recommendation from last year’s WGRDBESGOV meeting was only sent through to the group in October 2022 so we haven’t had a chance to give an official response yet.</p> <p>The unofficial response from WGQUALITY is that the draft quality manual is at a high level and describes the overall approach to quality within the production of ICES advice rather than describing individual data sources so the use of the RDBES will not be described in detail - however that doesn’t mean that the RDBES is not considered an important part of the overall ICES quality management system.</p>

WGRDBESGOV comments

We appreciate the answer and consider this issue as closed.

From WGRDBESGOV to WGEEL

Year	Recommendation	Recipients	Answer
2022	<p>Recommendation: to discuss and provide feedback about the possibility of using RDBES for the storage of catch data, and for estimation processes. (see section 1.8 Progress on Diadromous data and RDBES) .</p> <p>Background: At present eel data are stored in PostgreSQL database hosted with a shiny app in EPTB Vilaine (University) server. This database is not storing only catch and effort, but also other types of eel data. WGEEL data experts and ICES data centre has concluded that it is not possible to include these other types of eel data, other than catch and effort, in the RDBES data structure. However, there is room to explore the possibility of using RDBES for the storage of catch data, and for estimation processes.</p>	WGEEL	<p>WGEEL discussed the possibility of using RDBES for the storage of catch (or in the case of eel landings to be precise) data. Since WGEEL developed their own PostgreSQL database, this is currently used and it is aimed to be hosted by ICES, which is currently a priority. Storage of eel landings data are not trivial, since most of it is from freshwaters and uses a different system for allocation of catches. However, if these issues can be sorted out, WGEEL suggests an automated output from the WGEEL database to the RDBES, to avoid double-work or inconsistencies, if needed.”</p> <p>No discussion if the RDBES would be used for the estimation process. WGEEL aims to further develop an assessment models for the eel stock both in a smaller scale and more holistic pan European scale. These models would be able to provide for estimates on the stock on both Eel Management Units (EMU; EU) and whole stock level (ICES). Long process which is aiming at a first benchmark in 2027.</p>

WGRDBESGOV comments

The RDBES is aimed to support the AWGs and RCGs.

Uploading the CL table for eel (landings data) to the RDBES however, is an added value to the work of the RCGs, as the stocks are under the DCF and it is also assessed by ICES. The bycatch information may be also relevant. Further communication with the WGEEL is needed to have better insight of the data and what could be uploaded.

To know how to work further for the future, the following is agreed on:

- define who to contact regarding the eel data so that the RDBES core group can have direct communication with the WGEEL.
- the data on eel are also requested to WGBAST, and also for them it is crucial to be involved in the communication between the eel experts and the RDBES support team
- possible option is to upload just the CL data on eel in 2023, the rest of the data to deliver through another database. There needs to be analysed if this split up option is worthwhile doing.
- there can be looked at a similar approach as the salmon/trout experts are doing with their data and evolve to a regional database for all anadromous and catadromous stocks.

7 New chair(s) and next meeting date and venue

The next meeting will be held from **Monday 20th November (13:00) – Friday 24 November 2023 (13:00)** with the location to be confirmed nearer the time.

The chairs for the period 2021-2023 are Els Torreele (ILVO, Belgium) and Lucia Zarauz (AZTI, Spain).

Annex 1: List of participants

Name	Institute	Country	Email	Affiliation	Type of participation (Virtual/Physical)
Ana Cláudia Fernandes	IPMA	Portugal	acfernandes@ipma.pt	chair ISSG Catch, effort and sampling overviews	P
Dália Reis	DRP - Azores	Portugal	Dalia.CC.Reis@azores.gov.pt	chair RCG NANSEA	V
David Currie	Marine Institute	Ireland	david.currie@marine.ie	RCG NANSEA / RDBES Core Group	V
Edvin Fuglebakk	IMR	Norway	edvin.fuglebakk@hi.no	RDBES Core Group/co chair WKRAIS&TAF	V
Els Torrelee	ILVO	Belgium	Els.Torrelee@ilvo.vlaanderen.be	RDBES chair	P
Estanis Murgaza	AZTI	Spain	emugerza@azti.es	chair WGRFS/ISSG PETS/ RCG NANSEA	V
Henrik Kjems-Nielsen	ICES		henrikkn@ices.dk	ICES	P
Josefine Egekvist	DTU Aqua	Denmark	jsv@aqu.dtu.dk	co-chair RCGBaltic RDBES Core Group	P
Karolina Molla Gazi	WUR	Netherlands	karolina.mollagazi@wur.nl	RDBES Core Group	P
Kirsten Birch Håkansson	DTU Aqua	Denmark	kih@aqu.dtu.dk	RDBES Core Group	P
Leonie O'Dowd	European Commission		Oana.SURDU@ec.europa.eu	COM	V
Liz Clarke	Marine Scotland Science	UK (Scotland)	liz.clarke@gov.scot	ICES group membership	V
Lucia Zarauz	AZTI	Spain	lzarauz@azti.es	RDBES chair	P
Maciej Adamowicz	National Marine Fisheries	Poland	madamowicz@mir.gdynia.pl	RCG Baltic	P

Name	Institute	Country	Email	Affiliation	Type of participation (Virtual/Physical)
	Research Institute				
Marko Freese	Thünen Institute	Germany	Marko.Freese@thuenen.de	Diadromous	V
Mathieu Depetris	IRD	France	mathieu.depetris@ird.fr	RCG LP / Core Group	V
Neil Holdsworth	ICES		neilh@ices.dk	ICES	P
Nuno Prista	SLU	Sweden	nuno.prista@slu.se	RDBES Core Group	P
Oana Surdu	European Commission		Oana.SURDU@ec.europa.eu	COM	V
Perttu Rantanen	LUKE	Finland	Perttu.Rantanen@luke.fi	RCG Baltic	P
Sieto Verver	Wageningen University and Research	Netherlands	sieto.verver@wur.nl	RCG LDF	P
Sofie Nimmegeers	ILVO	Belgium	sofie.nimmegeers@ilvo.vlaanderen.be	RCG NANSEA	P
Stefanos Kavadas	Hellenic Centre for Marine Research (HCMR)	Greece	stefanos@hcmr.gr	RCG Med&BS	V
Tapani Pakarinen	LUKE	Finland	Tapani.Pakarinen@luke.fi	Diadromous	V
Zeynep Hekim	JRC		Hekim.ZEYNEP@ec.europa.eu	JRC	V

Annex 2: Resolutions

Second workshop on introducing the Regional Database and Estimation System (RDBES) data format (WKINTRO2)

The second workshop on introducing the Regional Database and Estimation System (RDBES) data format (WKINTRO2), chaired by Henrik Kjems-Nielsen, ICES Secretariat, will be established and will meet in online, dates to be decided to:

- a. Describe and explain the Regional Database and Estimation System (RDBES) data model to national data submitters and introduce participants to the necessary documentation for providing data ([Science Plan codes](#): 4.1;5.1;6.1);
- b. Arrange support sessions where participants can request expert guidance on adapting national data to the Regional Database and Estimation System (RDBES) data model ([Science Plan codes](#): 4.1;5.1;6.1).
- c. Discuss issues which the CL CE quality report developed by the RDBES Core Group shows ([Science Plan codes](#): 4.1;5.1;6.1).

WKINTRO2 will report by date to be decided 2023 for the attention of the DSTSG Committee.

Supporting information

Priority	The activities of this workshop will promote the adoption of the Regional Database and Estimation System, RDBES. This workshop will help countries to correctly convert their national data formats to the RDBES format. The RDBES works as a database for the Baltic Sea, North Sea & Eastern Arctic, North Atlantic and Long Distance Fisheries Regional Coordination Groups (RCGs). The RDBES will also function as a database and estimation system for ICES Fisheries Advice. The development will concentrate on harmonisation, quality assuring, documentation, approved estimation methods and transparency. Consequently, these activities are considered to have a very high priority. ICES will once again issue a data call in 2023 sample, landings and effort data in the RDBES format.
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Scientific justification	<p>The RDBES will be extensively used by the RCGs and ICES both to store detailed fisheries sample data and use it for estimation - therefore it is essential that national data submitters are familiar with the RDBES format and confident in correctly converting their national data to this format.</p> <p>Term of Reference a)</p> <p>The RDBES data format will be explained using its documentation, and a number of worked examples. These worked examples will play an important role in illustrating the types of decisions that data submitters will need to make. This work will focus on explaining what type of data each RDBES table stores and how to populate it.</p> <p>Term of Reference b)</p> <p>This is an important part of the workshop and it will entail the workshop chair and the RDBES Core Group providing practical online assistance to the attendees. The workshop attendees must be familiar with their own national sampling programme designs. The Core Group will answer questions and provide advice to help them to convert their data to the new RDBES format. The more work that attendees have done in trying to populate the RDBES format with their own data before the workshop, the more value they will gain from this work.</p> <p>Term of Reference c)</p> <p>From this year on, the WK will also put some focus on the CE and CL files, taking into account the results of the CL CE quality reports developed by the RDBES Core Group.</p> <p>CL and CE are often filled in by different bodies than CS files (i.e. the Administration), which sometimes are not so involved in the technical WK. Therefore, if we want them to attend, a special effort needs to be done in that direction</p> <p>When new questions are identified and resolved they may be added to the RDBES “Frequently Asked Questions” so that other people can benefit from the answers.</p>
Resource requirements	Members of the “RDBES Core Group” will be requested to participate as hands-on instructors/demonstrators.
Participants	~60 people: experts responsible for delivering CL, CE data; experts working with sampling data
Secretariat facilities	Workshop chair, SharePoint, and online meeting room support
Financial	No financial implications.
Linkages to advisory committees	There are no direct linkages with the advisory committees, but most of the stock assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other committees or groups	There is a link to WGRDBESGOV, WGCATCH, and WGBYC.
Linkages to other organizations	The RDBES will support the work done by the RCGs under the European Commission, EC. The aim is also allow the RDBES to support the countries in providing data for the data calls under the EC.

Workshop on Raising Data using the RDBES and TAF (WKRDBESRaise&TAF2) 2023

The **Workshop on Raising Data using the RDBES and TAF (WKRDBESRaise&TAF)**, chaired by Edvin Fuglebakk and David Currie will be held online in autumn, 2nd – 6th of October 2023 with the objective to:

- a) National estimation using RDBES and TAF
 - i) Reproduce the 2023 upload (2022 data) to InterCatch by producing R-scripts that raise national data extracted from the RDBES format to national level estimates. Compare with previously uploaded estimates; ([Science Plan codes](#): 5.1 ; 6.1). This ToR is a continuation of ToR a from WKRDBES-RAISE_TAF 2022.
 - ii) Set up national TAF repositories and produce R-scripts for generic, standard approaches; The work should build on the outcome of WKRDBESRaise&TAF_Flow.
- b) Stock coordination using RDBES and TAF
 - i) Reproduce the 2023 stock coordination (2022 data) previously done in InterCatch, with the R-scripts that run on ToRa output. Compare with previously achieved estimates. ([Science Plan codes](#): 5.1, 6.1). This ToR is a continuation of ToR b from WKRDBES-Raise&TAF 2022.
 - ii) Set up stock estimation TAF repositories and produce R-scripts for generic, standard approaches; The work should build on the outcome of WKRDBESRaise&TAF_Flow.

These ToRs will be performed for the case study of stocks selected by co-chairs in coordination with stock coordinators, and any additional stocks that can be facilitated by the participants. ([Science Plan codes](#): 4.1; 5.1; 6.1)

WKRDBES-Raise&TAF will report by 21/10/2023 for the attention of ACOM and SCICOM.

Supporting information

Priority	High.
	The WGRDBESGOV voiced the clear need to develop solutions for the use of the RDBES in replacement of InterCatch. National institutes need to be prepared to change the national raising of data towards the use of the RDBES format, and stock assessment groups need to be prepared to make use of total stock-harvest estimates from the RDBES. Realistic utilization of RDBES estimates is necessary in order for the RDBES development to proceed according to the roadmap decided on WGRDBESGOV 2022.

Scientific justification

The RDBES format will be used by the national institutes data providers, the stock coordinators, RCGs and other WGs such as WGCATCH. Therefore it is essential that current estimation practices can be reproduced with the RDBES.

More specifically, for each Term of Reference (ToR):

ToR a) i) Reproduce the 2023 upload (2022 data) to Intercatch by producing R-scripts that raise national data extracted from the RDBES format to national level estimates. Compare with previously uploaded estimates. This ToR is a continuation of ToR a from WKRDBES-Raise&TAF 2022.

National estimates is an important intermediate calculation for current estimation practices, and an important result in itself for other uses of the RDBES, such as responding to other EU data-calls. The initial work done at WKRDBES-Raise&TAF 2022, demonstrated that some national estimations could be done from RDBES. However only selected estimation protocols were tested, and some minor issues were reported that hampered an exact reproduction of the estimates. Therefore additional successful completion of this ToR is needed to verify that the RDBES contains sufficient information and support for the estimation of the national estimates reproduced, and is an necessary step for the completion of ToR b). Since the RDBES is designed to allow for gradual adoption, it will not be necessary to do this exercise for all national estimates, if relevant InterCatch input files can be made available for the rest of nations involved.

ToR a) ii) Set up national TAF repositories and produce R-scripts for generic, standard approaches for the national estimation; The work should build on the outcome of WKRDBESRaise&TAF_Flow.

The transition from InterCatch to RDBES depends on a suitable TAF structure for producing and archiving RDBES estimates. At WKRDBES-Raise&TAF 2022 a workflow was suggested in which the national estimations will be done in a national TAF repository using the RDBES data. The output of this national TAF repository will be the input for the stock coordination TAF repository. The work done under this ToR should aim to organize the national estimation R-scripts and (intermediate) output in TAF. Furthermore the possibility to define generic, standard R-functions should be explored.

ToR b) i) Reproduce the 2023 stock coordination (2022 data) previously done in Intercatch, with the R-scripts that run on ToRa output. Compare with previously achieved estimates. This ToR is a continuation of ToR b from WKRDBES-Raise&TAF 2022.

The initial work done at WKRDBES-Raise&TAF 2022, demonstrated that some stock coordination tasks could be done from RDBES. However additional successful completion of this ToR will verify that the RDBES contains sufficient information and support for the estimation of the input to stock assessment that InterCatch currently provides.

ToR b) ii) Set up stock estimation TAF repositories and produce R-scripts for generic, standard approaches for the stock estimation; The work should build on the outcome of WKRDBESRaise&TAF_Flow.

The transition from InterCatch to RDBES depends on a suitable TAF structure for producing and archiving RDBES estimates. At WKRDBES-Raise&TAF 2022 a workflow was suggested in which the stock coordination tasks will be done in a stock coordination TAF repository using the output from the national TAF repository. The output of this stock coordination TAF repository will be the input for the stock assessment TAF repository. The work done under this ToR should aim to organize the stock coordination R-scripts and (intermediate) output in TAF. Furthermore the possibility to define generic, standard R-functions should be explored.

The described ToRs will be performed for the case study of stocks selected by co-chairs in coordination with stock coordinators, and any additional stocks that can be facilitated by the participants

Resource requirements	Members of the “WGRDBESGOV Core Group” will be requested to participate, as well as the ICES Data Centre. The workshop will need access to InterCatch input files for all countries that provide commercial catch data for stocks selected based on co-chair, and access to RDBES submissions for at least one country that provide commercial catch data for the same stock. Such access can be made limited to certain participants in the workshop, but statistics for the comparisons in ToR a) and ToR b) must be made public.
Participants	<ul style="list-style-type: none"> - Stock coordinators, stock assessors and data submitters for the selected stocks - National data submitters (the national estimations) for the selected stocks and other stocks - All stock coordinators and data submitters of other stocks which are not included in this WK (learning opportunity) - Experts from the WGRDBESGOV Core group - ICES Data Centre (incl. TAF)
Secretariat facilities	None.
Financial	No financial implications.
Linkages to advisory committees	There is a direct linkage with the advisory committee, as most of the stock assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other committees or groups	WKRDBES-Raise&TAF Flow: a workshop to test the full TAF estimation workflow for two specific stocks, wit.27.3a.47d and pok.27.3a.47d, suggested at WKRDBES-Raise&TAF (2022). Especially looking into setting up the TAF repository structure, roles and continue the data format specifications for exchange of data within TAF. There are also connections to WGRDBESGOV, WGCATCH, WGQUALITY and WGRDB-EST.
Linkages to other organizations	The RDBES will support the work done by the RCGs under the European Commission, EC. The aim is also to allow the RDBES to support the countries in providing data for the data calls under the EC

Workshop on the RDBES Flow (WKRDBESRaise&TAF-Flow)

The workshop on WKRDBES-Raise&TAF Flow chaired by Alexandros Kokkalis (alko@aqu.dtu.dk), and XX (tbd) will be established and will meet online, in May/June with the objective to:

- a) Within the RDBES, test the full commercial catch TAF estimation workflow from national estimates to international stock coordination suggested at WKRDBES-Raise&TAF (2022) for two stocks, wit.27.3a47d and YY (tbd). This includes to look into setting up the TAF repository for national estimation of commercial catches and international stock coordination of catch estimate. This with the focus in setting up of the structure, roles, confidential folders, and continuing the data format specifications for exchange of data within TAF and storage of these.
- b) Make recommendations to WKRDBESRaise&TAF2 and WGRDBESGOV about the roles in the flow.

WKRDBESRaise&TAF_Flow will report by 1st August 2023 for the attention of the DSTSG Committee.

Supporting information

Priority	High. The WGRDBESGOV voiced the clear need to develop solutions for the use of the RDBES in replacement of InterCatch. National institutes need to be prepared to change the national raising of data towards the use of the RDBES format, and stock assessment groups need to be prepared to make use of total stock-harvest estimates from the RDBES. Realistic utilization of RDBES estimates is necessary in order for the RDBES development to proceed according to the roadmap decided on WGRDBESGOV 2021. While this activity was first planned for 2021, the workshop had to be cancelled. It is therefore important to prioritize this for 2023)
Scientific justification	WKRDBESRaise&TAF, 2022, put forward a recommendation for WGRDBESGOV to arrange a workshop to test the proposed TAF workflow on a small scale, to evaluate if the suggestion is the way forward. The suggestion covers the structure of the TAF repository, specification of roles, access to data and data formats for exchanging data within TAF and storage of the latter.
Resource requirements	Participation of the ICES data centre is needed with regards to expertise in TAF
Participants	At least two national data submitters and national stock estimators for wit.27.3a47d and pok.27.3a.47d, and the stock coordinator and assessor for each stock. (Engagement from people involved in the two stocks was promised at RA-SISE&TAF, 2022)

Secretariat facilities	Workshop chair, SharePoint, and online meeting room support
Financial	No financial implications.
Linkages to advisory committees	There are no direct linkages with the advisory committees, but most of the stock assessment Working Groups will be impacted by the development of the RDBES.
Linkages to other committees or groups	There is a direct link to WGRDBESGOV, the RDBES core group and close links to activities of WGTAFGOV, WGQUALITY, WGCATCH and WGBYC. There is an indirect link with WGRFS and WGBIOP.
Linkages to other organizations	The RDBES estimates are connected to regional data collection defined by the RCG under the European Commission. The RDBES will also support the ICES countries in providing data for both national and international assessments and optimizing their sampling programmes. In the case of EU MS, the RDBES is expected to facilitate and improve the quality of provision of commercial catch data requested under different data calls

Annex 3: Feedback of the WG and WK supporting the RDBES

This section reviews the work done on the RDBES so far, and plans for the future work required. It fulfils ToR (a): *“Review the status of the development of the new commercial fisheries Regional Database and Estimation System (RDBES) and its project plan for implementation, including the funding of the outstanding development. Adjust the project plan as required. Oversee and advise on the interpretation and prioritisation of recommendations for the RDBES development. Identify user guidance and training required for RDBES users.”*

Workshop on introduction to RDBES data submission (WKINTRO)

The Workshop on introduction to RDBES data submission (WKINTRO) is an extension of the WKRDB-POP (the Workshop on populating the RDBES data model) workshops that took place from 2019 to 2021. The WKINTRO chaired by Henrik Kjems-Nielsen, ICES Secretariat, was held online from 31st May to 2nd June 2022 to. The three resolution items for the WKINTRO were:

- a) Describe and explain the RDBES data model to national data submitters and introduce participants to the necessary documentation for providing data.
- b) Arrange support sessions where participants can request expert guidance on adapting national data to the RDBES data model.
- c) Develop a format for future RDBES training courses.

At the WKINTRO the data model/format of the commercial fisheries RDBES was described and explained to national data submitters, so the data submitters can convert the national data into the RDBES format and successfully upload the data into the RDBES. On the first day, most of the information was presented by Henrik, but the Core Group also gave some presentations. The 55 participants agreed that it was a very good and informative workshop, resulting in a better general understanding of the data model. In the second half of the workshop the participants from the different countries could book a support session. Where typically several participants from the same country could ask specific national questions. The questions were answered by the Core Group, and therefore it is essential that the Core Group participated in the workshop. The questions could of course be asked at any time during the workshop. But the support sessions gave an obvious opportunity to describe the national situation and to ask more detailed national specific questions (e.g. which hierarchy to use?). There was a consensus from the participants that the format of the 3-days online workshop was very good and the workshop should continue in the current format.

Workshop on Raising Data using the RDBES and TAF (WKRDBESRaise&TAF)

The Workshop on Raising Data using the RDBES and TAF (WKRDBESRaise&TAF) met online (26–30 of September 2022) to evaluate the use of the Regional Database and Estimation System (RDBES) format to reproduce the 2022 InterCatch input and output, identifying a Transparent Assessment Framework (TAF) structure to organize the intermediate steps and to propose standardized output formats.

The main outcomes of WKRDBES-Raise&TAF were:

- RDBES provides sufficient support for current national estimation protocols. However, some minor issues were reported that hampered an exact reproduction of the estimates. Therefore, adaptations of the data model should not be excluded completely.
- All the input to stock assessment that InterCatch currently provides, could be reproduced. The participants started from the current stock extracts that can be downloaded from InterCatch.
- A workflow was proposed with a national TAF repository for each country, a stock estimation repository and a stock assessment repository. The intermediate output of those repositories will be stored in an 'intermediate output database' and depending on the user role, you will get access to the relevant stages in this workflow. These results are further explained and developed in section 2.3.1 Set up of the workflow and roles of the workshop report: <https://doi.org/10.17895/ices.pub.21995141>
- The following requirements for the standard output formats were defined: they cannot be more restrictive than the InterCatch input and output format; they should present measures of uncertainty and sample sizes (for national estimates) and should have a configurable domain definition (for national estimates).

Despite those successful outcomes, the current plan for transition to an operational system was concluded to be too optimistic. WKRDBES-Raise&TAF therefore recommends to the Working Group on Governance of the Regional Database and Estimation System (WGRDBESGOV) to revise the roadmap and allow RDBES to be in a test phase also for 2023.

WKRDBES-Raise&TAF felt the need to test the proposed workflow on a small scale and therefore recommends to the WGRDBESGOV to arrange a workshop where two stocks (pok.27.3a46 (Saithe - *Pollachius virens*) in Subareas 4, 6 and Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat) and wit.27.3a47d (Witch - *Glyptocephalus cynoglossus*) in Subarea 4 and Divisions 3.a and 7.d (North Sea, Skagerrak and Kattegat, eastern English Channel)) will be set up to go through the whole flow.

Workshop on Raising Data using the RDBES and TAF for sandeel (WKRaise&TAF_Sandeel)

As part of the sandeel benchmark (WKSANDEEL, 2022) a WKRaiseTAF_sandeel together with an associated data call for landings and sampling in the RDBES format was planned for 2022. The idea was to move the catch estimation into the RDBES as part of the benchmark. The workshop was dropped, since hardly anyone was interested in participating. Further, the RDBES data were dropped, since it seemed wrong to base estimation scripts in production on data sources not in production and therefore the estimations script was not rewritten to the new RDBES format, but it was concluded that everything needed are present in the RDBES format.

Working group on estimation with the RDBES data model (WGRDBES-EST)

The Working Group on estimation with the RDBES data model (WGRDBES-EST) met for the 2nd time from 10 to 14th October 2022 in Tartu, Estonia. The Working Group aims to:

- a) Develop and document R scripts and functions for statistical estimation using the RDBES data format,
- b) Identify and document any problems with RDBES data model relating to statistical estimation,
- c) Coordinate the peer-review and inclusion of ToR a) outputs in the *icesRDBES* package,

- d) Establish a road forward to the improvement of estimates of commercial catches used in ICES assessments and
- e) Collaborate with WGRDBESGOV and WGTAFGOV to secure the integration of outputs from WGRDBES-EST in TAF.

WGRDBES-EST 2021/2022 work had been planned in its first meeting (September 2021, WGRDBES 2021 report). Most of the work took place intersessional through a combination of individual code developments and 9 monthly joint follow-up meetings (online). During this period, an R-package repository was created (with code already available migrated to it) and new code was developed. The new developments can be broadly categorized into a) a set of import and data handling functions (e.g. loading RDBES download files, subsetting them), b) a set of data preparation functions (e.g. calculation of probabilities, generating of 0s and NAs from the RDBES species lists), c) a set of estimation functions (calculating design-based unbiased estimator) and d) a set of functions to generate data summaries (e.g. tables and graphs with sample and estimate distribution developed under Fishn'Co project). During the period, a couple of meetings were held with the chair of RCG ISSG "Catch, effort and sampling overviews" and participants Med&BS RDBFIS project to evaluate possibilities of collaboration; the introductory guide to collaboration in the project was also updated and vignettes for use of the main functions were developed. The *icesRDBES* package was put in production and some of its functions tested and used (apparently successfully) by participants in WGRDBES-Raise&TAF (September 2022). Overall progress achieved during the period can be considered to be in-line with expectations in the original work-plan. Still, it was relatively limited, with only a small group of members already familiar with the details of R-package building fully involved.

The experience gained in the 2021/2022 intersessional work indicated that one of the main factors (other than "time") limiting the participation WGRDBES-EST members in package building activities related to difficulties in understanding "function testing" and "how to collaborate". Consequently, the WGRDBES-EST 2022 meeting focused primarily on this aspect. During the meeting, a combination of group and pair programming was used. Through it WGRDBES-EST members got more familiar with function testing and coordination in R-code development. It is estimated that the number of competent collaborative coders in the group, increased from 2 to 8 during the meeting. In parallel, progress was achieved in 26 issues. Among those, a few can be highlighted: i) renaming of both the package (*icesRDBES*→*RDBEScore*) and some key objects used in vignettes (*RDBESrawObject*→*RDBESdataObject*); ii) creation of new *RDBESvisualise* package (that will host more dependency-dependent graphical functions); iii) update of file.paths (made more system-independent); iv) estimation scripts adapted to wide-format RDBES objects; v) variance calculations fixed, vi) implementation of some statistical text-book datasets in RDBES format, etc. In the end, a new version of the package was put on production. The code can be used, but its outputs should be considered experimental until further notice (a warning on this now appears when the package is loaded by users).

In the follow-up of the meeting, the work-plan was updated (see below) and a new set of follow-up intersessional meetings was planned for 2022/2023. Next meeting will take place 9-13 October in Galway, Ireland.


RDBEScore	2021					2022												2023											
Milestones	ToR	Sep	Okt	Nov	Dec	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
review progress and plan (WG)	d	WG													WG												WG		
package repo set-up	c		x																										
createRDBESdataObj and aux functions; migrate to package	a		x																										
createRDBESprepObj and aux functions; migrate to package	a			x																									
createDBestim and aux functions; migrate to package	a					x																							
improve definition of createDBestim	a																		x										
improve estimation code and options	a																									x	?	?	
package published (in production)	c			x											x											x	?	?	
review and improve documentation (rOxygen2)	c														x											x			
evaluate TAF perspective	e														x											x			
recommend on developments of the data model	b														x											x			
discuss package maintenance and further development	c														x		x									x			
	 (Ctrl) ▾																												
RDBESvisualize																													
consider overviews and reports	a						x (a,b,c)																						
createDBoverviews/reports and aux functions; migrate to package	a											x																	
package repo set-up	c															x													
migrate fishn'Co code	a															x													
define next steps	a															x	x												
improve overview code and options	a																									x	?	?	
package published (in production)	c																									x	?	?	
discuss package maintenance and further development	c														x		x									x			
	(a) with RCG subgroup fisheries overviews																												
	(b) fishnCo data quality																												
	(c) RDBES-FIS																												
Reporting to EGs																													
report to wgcatch	d			x												x											x		
report to wgrdbes gov	d,e				x												x											x	
final report																												x	

Figure A3.1: RDBE Schedule 2021-2023

Annex 4: Data submissions for RDB and RDBES data calls

Baltic data submissions to the RDB by country 2022

1.1. Landings species

CL species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Denmark	50	59	49	51	54	57	55	63	65	60	57	61	54
Estonia	28	38	40	33	38	35	31	35	38	31	37	28	28
Finland	22	22	22	22	22	22	20	20	19	20	20	20	20
Germany	43	43	40	45	46	45	44	40	45	44	43	46	39
Latvia	30	12	12	12	12	33	34	34	32	33	35	30	34
Lithuania	12	11	13	26	12	25	23	24	27	26	27	29	28
Poland	36	38	36	34	36	34	33	32	36	36	40	36	39
Sweden	49	46	46	41	41	44	45	48	42	47	51	52	51

All fine.

1.2. Effort numbers of metiers

CE metiers	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Denmark	52	58	57	49	47	44	41	47	47	44	49	50	50
Estonia	3	2	2	2	2	2	2	1	3	3	6	6	6
Finland	14	15	14	15	13	14	14	14	15	16	15	15	16
Germany	49	49	49	44	46	42	43	44	36	43	44	41	38
Latvia	12	14	12	14	14	13	14	13	13	14	14	16	14
Lithuania	8	8	8	7	9	7	11	12	10	11	12	10	10
Poland	32	30	38	41	41	39	30	30	28	28	29	33	36
Sweden	46	52	52	50	48	45	47	47	44	43	49	47	47

All fine.

1.3. Number of species from samples HL

HL species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Denmark	37	45	38	29	39	42	31	39	32	32	37	32	26
Estonia	5	12	19	30	32	42	3	6	6	6	3	3	3
Finland	22	26	30	32	31	33	33	32	31	30	35	37	33
Germany	24	30	25	27	30	32	20	38	32	28	25	28	21
Latvia	4	6	16	13	14	17	16	19	26	31	27	23	26
Lithuania	4	4	4	4	9	15	13	8	16	7	7	9	11

Poland	29	29	40	44	46	47	50	40	35	36	38	40	40
Sweden	45	29	42	43	50	49	42	43	46	50	42	40	48

All fine.

1.4. Number of species from samples CA with age data

CA species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Denmark	8	10	10	10	10	9	8	8	8	8	8	7	6
Estonia	4	8	7	7	11	9	3	5	5	5	3	3	3
Finland	6	6	6	7	5	5	6	5	6	7	9	8	7
Germany	8	8	9	10	11	8	8	8	8	8	4	5	8
Latvia	5	5	8	9	9	7	9	10	8	9	10	7	8
Lithuania	4	4	4	4	4	6	4	4	3	3	6	7	9
Poland	12	11	12	16	17	18	16	17	16	10	14	16	12
Sweden	6	5	5	6	6	6	5	6	6	5	3	4	4

All fine.

NA NSEA data submissions to the RDB by country 2021

2.1. Landings species

CL species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Belgium	55	58	57	60	55	76	75	79	75	81	80	79	74
Channel Islands							39	39	56	42	42	21	
Denmark	82	86	81	88	99	104	98	103	112	105	110	121	127
England		141	141	140	135	130	129	131	158	150	150	105	
Estonia	1	1	1	2	5	9	4	5	7	5	5	6	4
France		125	124	98			233	251	239	247	240	247	244
Germany		35	63	64	61	60	65	73	81	85	86	88	92
Ireland	120	129	121	129	127	112	110	110	108	109	110	128	114
Latvia	1	1	1	1	1	1	1	2	6	8	5	10	7
Lithuania	3	5	8	17	3	9	5	7	6	9	9	14	8
Netherlands	69	82	84	91	89	91	92	98	95	82	82	84	84
N. Ireland		61	67	67	60		62	57	64	74	69	49	
Poland	9	9	9	10	10	12	17	18	19	26	27	24	21
Portugal	197	203	196	333	319	310	302	273	297	348	299	292	357
Scotland		118	115	116	108	98	101	112	127	116	114	68	
Spain						91	93	98	110	110	108	137	389
Sweden	57	66	66	67	66	63	71	72	68	67	73	74	77
Wales		79	80	71	64	65	69	71	68	62	67	38	

England, Channel Islands, Northern Ireland, Scotland and Wales have not uploaded data as they have stated in 2021. Beside that it all looks fine for the countries.

2.2. Effort numbers of metiers

CE metiers	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Belgium	17	19	19	18	15	18	17	16	15	14	14	15	15
Channel Islands							10	9	13	11	14	9	
Denmark	80	68	69	62	56	57	59	60	63	53	60	56	55
England		134	127	122	122	121	103	106	112	98	101	102	
Estonia	1	1	1	1	2	3	2	2	2	2	1	3	2
France		52	54	53			188	145	182	69	68	67	66
Germany		45	33	36	30	26	26	31	36	33	36	37	34
Ireland	24	25	24	24	27	22	18	16	23	23	24	23	35
Latvia	1	1	1	1	1	1	1	1	2	4	2	3	2
Lithuania	2	4	8	6	3	6	5	8	4	4	4	6	5
Netherlands	51	52	48	49	48	41	59	48	39	31	38	38	37
Northern Ireland		35	31	32	28		27	30	27	28	28	34	
Poland	2	1	1	1	1	1	2	1	3	4	6	4	3
Portugal	20	21	19	22	22	19	19	18	24	25	22	21	30
Scotland		79	76	76	70	71	62	71	73	70	78	75	
Spain						36	36	35	35	36	35	35	30
Sweden	48	42	40	49	55	45	46	42	45	44	38	46	44
Wales		32	37	37	31	32	33	31	35	30	35	27	

England, Channel Islands, Northern Ireland, Scotland and Wales have not uploaded data as they have stated in 2021. Beside that it all looks fine for the countries.

2.3. Number of species from samples HL

HL species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Belgium	11	25	20	17	15	14	15	15	16	19	16	19	22
Denmark	93	94	94	92	97	95	100	93	95	117	112	94	98
England	138	132	129	153	132	115	131	129	128	35	28		
Estonia						2		1				4	10
France				1					267	270	269	219	243
Germany	72	87	70	110	105	111	100	107	133	123	131	108	100
Ireland	113	116	126	125	105	108	124	104	108	105	97	90	34
Latvia	1	1	5	1	1	1	1	1					
Lithuania			1	2	2	2	2	2	2	2	2	2	2
Netherlands	33	38	40	41	37	42	41	41	49	33	88	83	82
N. Ireland								57		57		45	
Poland	11	18	3	17	16	16	30	35	20	11	18		
Portugal	213	214	235	224	233	228	240	225	263	269	255	188	173
Scotland		24	26	26	144	114	130	126	109	111	119	94	
Spain	18	20	11	14	11	212	212	194	206	183	188	148	203
Sweden	4	75	76	81	71	80	98	90	97	99	91	80	75
United Kingdom	54	65	58	70	60	60	57		53		28		
Wales								10		10	8		

England, Northern Ireland, Scotland and Wales have not uploaded data as they have stated for 2020 and 2021. Poland have not uploaded length data for 2020 and 2021, because Poland only have data from one survey, which was cancelled because of COVID-19. Beside that it all looks fine for the countries.

2.4. Number of species from samples CA with age data

CA species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Belgium	7	7	7	7	3	7	7	7	9	9	8	9	10
Denmark	19	21	23	23	23	22	22	24	23	23	20	18	18
England	14	15	17	21	18	17	15	17	18	15	15		
Estonia													2
France				20				23	21	25	30	28	28
Germany	10	10	10	11	10	12	11	9	10	11	10	8	13
Ireland	12	13	13	13	12	11	10	12	12	10	10	11	11
Lithuania									1				
Netherlands	14	15	14	14	14	14	13	14	14	11	12	13	12
N. Ireland								5		4		3	
Poland	1	2	3	1	1	1	3	3	2	2	1		
Portugal	7	6	7	7	7	5	5	6	6	5	7	5	4
Scotland		11	10	11	12	12	11	11	12	13	13	12	
Spain	1	1	5	4	4	13	20	4	19	19	17	10	13
Sweden	4	5	6	5	5	5	5	5	5	5	5	5	5
United Kingdom									4		19	18	
Wales								4		8	8		

England, Northern Ireland, Scotland and Wales have not uploaded data as they have stated for 2020 and 2021. Poland have not uploaded age data for 2020 and 2021, because Poland only have data from one survey, which was cancelled because of COVID-19. Beside that it all looks fine for the countries.

RDBES data submissions 2022

In the RDBES data call 2022: Landings, discards, incidental bycatch, biological sample and effort data from all species from year 2021 are requested to be uploaded into the RDBES.

Data call was sent 16th June, and the deadline was the 23th September 2022. The RDBES web-site was opened the 22nd August 2022.

1. Landings - number of species

Number of species in landings (CL) by country for year 2021 in green to the right and to the left in blue is the table from last year (the data have been deleted because of the updates to the data model)

Country\Year	2018	2019	2020
BELGIUM	71	71	71
CYPRUS			10
Denmark	111	110	121
England	151	150	145
ESTONIA	35	36	34
FINLAND	20	20	20
FRANCE	215	216	220
GERMANY	43	43	104
GUERNSEY	27	34	29
IRELAND	130	132	114
ISLE OF MAN	20	33	41
JERSEY	39	36	28
LATVIA	31	33	31
LITHUANIA	30	32	35
NETHERLANDS	86	92	93
Northern Ireland	72	66	64
NORWAY			2
POLAND	60	63	57
PORTUGAL	232	223	219
Scotland	126	127	117
SPAIN	275	278	277
SWEDEN	88	98	99
UNITED KINGDOM	8	9	16
Wales	66	70	71
Grand Total	1936	1972	2018

Country\Year	2021
BELGIUM	67
Denmark	128
England	153
ESTONIA	52
FINLAND	27
FRANCE	237
GERMANY	111
GUERNSEY	24
IRELAND	120
ISLE OF MAN	36
JERSEY	32
LATVIA	39
LITHUANIA	32
NETHERLANDS	118
Northern Ireland	63
NORWAY	3
POLAND	63
PORTUGAL	237
Scotland	111
SPAIN	411
SWEDEN	102
Wales	67
Grand Total	2233

Comment: In general, there is a good upload of landings by species for year 2021, Norway is low in numbers. The following countries have not uploaded landings data: Faroe Islands and Iceland.

2. Landings - number of records

Number of records in landings (CL) by country for year 2021 in green to the right and to the left in blue is the table from last year (the data have been deleted because of the updates to the data model).

Country\Year	2018	2019	2020	Country\Year	2021
BELGIUM	38641	40312	40341	BELGIUM	30444
CYPRUS			226	Denmark	259635
Denmark	534100	527782	501148	England	138422
England	144209	148300	130624	ESTONIA	12711
ESTONIA	12121	10889	11664	FINLAND	18576
FINLAND	14938	15189	14728	FRANCE	739485
FRANCE	745989	737673	678960	GERMANY	27531
GERMANY	11752	13503	29960	GUERNSEY	265
GUERNSEY	313	445	335	IRELAND	53792
IRELAND	56788	57854	43144	ISLE OF MAN	1057
ISLE OF MAN	864	940	1172	JERSEY	322
JERSEY	442	408	204	LATVIA	3099
LATVIA	3620	3441	3626	LITHUANIA	1217
LITHUANIA	1907	1530	1606	NETHERLANDS	52851
NETHERLANDS	43232	55144	54151	Northern Ireland	9591
North. Ireland	11237	11452	8473	NORWAY	39340
NORWAY			1185	POLAND	10823
POLAND	12880	13510	9957	PORTUGAL	171355
PORTUGAL	86783	91048	88813	Scotland	116517
Scotland	122557	127046	123409	SPAIN	220143
SPAIN	180403	396093	392810	SWEDEN	40179
SWEDEN	46241	89786	41406	Wales	5198
UK	36	29	48	Grand Total	1952553
Wales	5098	5086	5228		
Grand Total	2074151	2347460	2183218		

Comment: In general, there is a good upload of landing data records France, Denmark, Spain, Portugal, England and Scotland have uploaded a lot of records. The following countries have not uploaded landings data: Faroe Islands and Iceland.

3. Effort - numbers of metiers

Number of metiers in effort (CE) by country for year 2021 in green to the right and to the left in blue is the table from last year (the data have been deleted because of the updates to the data model).

Country\Year	2018	2019	2020	Country\Year	2021
BELGIUM	13	14	14	BELGIUM	15
CYPRUS			1	Denmark	118
Denmark	114	131	123	England	185
England	181	183	182	ESTONIA	10
ESTONIA	10	9	9	FINLAND	17
FINLAND	15	15	15	FRANCE	319
FRANCE	326	325	308	GERMANY	73
GERMANY	40	41	75	GUERNSEY	5

GUERNSEY	10	11	8	IRELAND	36
IRELAND	26	28	26	ISLE OF MAN	20
ISLE OF MAN	10	14	19	JERSEY	7
JERSEY	3	5	4	LATVIA	17
LATVIA	15	16	17	LITHUANIA	21
LITHUANIA	21	26	24	NETHERLANDS	43
NETHERLANDS	39	43	44	Northern Ireland	39
Northern Ireland	38	31	39	POLAND	39
NORWAY			11	Scotland	98
POLAND	30	34	37	SPAIN	37
PORTUGAL	8	7	5	SWEDEN	83
Scotland	102	116	115	Wales	34
SPAIN	38	40	40	Grand Total	1216
SWEDEN	83	84	89		
UNITED KING- DOM	4	6	5		
Wales	36	41	34		
Grand Total	1162	1220	1244		

Comment: In general, there is a good upload of effort data by metiers (fishing gear specified to metier level 6). France, England, Denmark, Scotland, Germany and Sweden have uploaded a lot of metiers. is low in numbers. The following countries have not uploaded effort data: Faroe Islands, Iceland, Norway and Portugal.

4. Samples information – number records in Sample Details (SD) by hierarchies

Number records in Sample Details (SD) by hierarchies in year 2021.

Country\Hierarchy	1	2	3	4	5	6	7	8	9	13	Grand Total
BELGIUM		1									1
Denmark	4								8		12
England	4				16						20
ESTONIA			2					7			9
FINLAND	16										16
FRANCE	13										13
GERMANY	3			2		1					6
IRELAND	8				12						20
LATVIA	6									1	7
LITHUANIA	2							4			6
NETHERLANDS	2				4						6
Northern Ireland			1		1						2
NORWAY	7										7
POLAND	7										7
PORTUGAL					2						2
Scotland					4						4
SPAIN	8		5		180		97				290
SWEDEN	32		16		48						96
Grand Total	112	1	24	2	267	1	97	11	8	1	524

Comment: It is clear to see that hierarchy 1 is used by most countries, then hierarchy 5 and 3. Spain and Sweden have uploaded a lot of sample detail records. Hierarchy 10, 11 and 12 are not used at all by any country. The following countries have not uploaded sample data: Faroe Islands, Iceland and Wales.

5. Samples data – number species in Sample (SA) by hierarchies

Number species in Sample (SA) by hierarchies in year 2021.

Country\Hierarchy	1	2	3	4	5	6	7	8	13	Grand Total
BELGIUM		55								55
England	128				47					175
ESTONIA			6					3		9
FINLAND	36									36
FRANCE	246									246
GERMANY	125			4		3				132
IRELAND	117				36					153
LATVIA	23								5	28
LITHUANIA	2							7		9
NETHERLANDS	5				4					9
Northern Ireland			68		17					85
NORWAY	183									183
POLAND	42									42
PORTUGAL					173					173
Scotland					31					31
SPAIN	321		128		192		19			660
SWEDEN	112		12		4					128
Grand Total	1340	55	214	4	504	3	19	10	5	2154

Comment: There is a large difference in the number of species the countries have uploaded. It looks like the Netherlands have not uploaded all species. Though Denmark does not appear Denmark have uploaded data, but because of a bug in the RDBES specifically for hierarchy 9 which Denmark used for sample data, the data as sample level is not inserted into the database. The following countries have not uploaded sample data: Faroe Islands, Iceland and Wales.

5.1 Samples data – number records in Frequency Measure (FM) by hierarchies

Number records in Frequency Measure (FM) by hierarchies in years 2022. The Frequency Measure table most often contain the number at each length class, potentially the table could also contain weight class.

Country\hierarch.	1	2	3	4	5	6	7	8	Grand Total
BELGIUM		44119							44119
England	28383				33831				62214
FINLAND	5966								5966
FRANCE	243722								243722
GERMANY	28606			700		20			29326
IRELAND	26070				29666				55736
LATVIA	1455								1455
LITHUANIA	350							455	805
NETHERLANDS	2276								2276
Northern Ireland			49796		525				50321
POLAND	4746								4746
PORTUGAL					38667				38667
Scotland					19838				19838
SPAIN	91565		22051		137328		1626		252570
SWEDEN	6940		861						7801
Grand Total	440079	44119	72708	700	259855	20	1626	455	819562

Comment: Data for the Frequency Measure (FM) (typically length class) is uploaded by some countries but not by all countries.

5.2 Samples data – number records in Biological Measurement (BV) under Frequency Measure (FM) by hierarchies

Number records in Biological Measurement (BV) by hierarchies in year 2022. The Biological Measurement table contain the measured value for any biological measured parameter for the individual sampled fish, e.g. age, length, weight, sex, maturity etc.

Country\hierarchy	1	3	4	5	6	7	8	Grand Total
England	2632			6564				9196
GERMANY	258863		9897			100		268860
IRELAND				103122				103122
LATVIA	36906							36906
LITHUANIA							11824	11824
NETHERLANDS	15969							15969
POLAND	37006							37006
Scotland				10415				10415
SPAIN						17848		17848
SWEDEN	19435	3114						22549
Grand Total	370811	3114	9897	120101	100	17848	11824	533695

Comment: A large number of Biological Measurement data have been uploaded under FM. There has been a large increase of uploading BV data under FM. Last year only 5 countries uploaded BV under FM. Data for Biological Measurement (BV) under Frequency Measure (FM) is uploaded by 10 countries, other countries have also uploaded Biological Measurement (BV) data, but directly under the Sample (SA) table, see below.

5.3 Samples data – number records in Biological Measurement (BV) under Sample (SA) by hierarchies

Number records in Biological Measurement (BV) by hierarchies in year 2022. The Biological Measurement table contain the measured value for any biological measured parameter for the individual sampled fish, e.g. age, length, weight, sex, maturity etc.

Country\hierarchy	1	2	3	5	7	8	13	Grand Total
BELGIUM		29828						29828
ESTONIA			55105			89104		144209
FINLAND	35144							35144
IRELAND	20013			82228				102241
LATVIA	22380						3956	26336
LITHUANIA	4000							4000
NETHERLANDS	6291			19953				26244
NORWAY	628733							628733
SPAIN	117613			150691	77932			346236
SWEDEN	16956			42288				59244
Grand Total	851130	29828	55105	295160	77932	89104	3956	1402215

Comment: A large number of Biological Measurement data have been uploaded. Belgium, Estonia and Norway have uploaded Biological Measurement (BV) directly under the Sample (SA). The other countries have also uploaded BV under FM.½

Annex 5: Use of RDB data in RCG subgroups and EWG

ICES Expert Groups

The list of ICES Expert Groups requesting RDB data in 2022 is:

- WGECON in March: CL CE
- HELCOM Blues Project in March: CE
- RCG NANSEA BS Subgroup in April: CL, CE and CS
- ICES internal sensitivity tool for sea bass in June: Aggregated CS and CL
- RCG LDF in July: CL CE
- WGBYC in Sep.: CE
- WGMIXFISH-ADVICE in Oct.: CL CE

Regional Coordination Groups (RCG)

Currently, RCGs are using the RDB data in the 'ISSG on RDB catch, effort and sampling overviews', to produce:

- Annual catch and effort overviews (word)
- Multiannual catch and effort overviews (html)
- Sampling Overviews (shiny app)
- Stock overviews for WGFAS (word)

These reports summarize the information on catches, effort and sampling, for the different regions, with the objective to streamline and facilitate the work of the RCGs in the coordination of fisheries sampling. One of the most important tasks for this ISSG for 2022-2023 will be to adapt existing scripts to the RDBES data format.

Other possibilities for using RDBES data have been discussed at the RCG (publish some graphs in the web, produce tables to fill in Annual Reports, produce specific reports for benchmarks...), but they all have to be in line with the data Licence (which is now being revised).

WGRDBESGOV comments

The presentation on the RDB data call and use of RDB data were followed by a discussion on the following issues:

- RDB and RDBES formats compatibility.

Annual and multiannual overviews need to be adapted to the RDBES format. In particular, multiannual overviews will require merging two different data sources, RDB and RDBES. One first solution will be to convert RDBES data format into RDB. This should not be a big issue for commercial landing (CL) and effort (CE) because new format has more information than the old one. However, it will be important that, in future, the overviews can include the additional information provided by the new format, and the type of new potential outputs should start being discussed/prepared in 2024. In what concerns to the conversion of sampling data (CS) the procedure will be more complex because it will be the transition of 5 tables (RDB) into a set of different hierarchies (with several types and different number of tables) included in the RDBES.

Code will be tested and results will be explored to make sure that functions are working as expected. It was suggested that the ISSG may contribute to the *RDBESvisualise* R package initiated by the RDBES Core Group (and WGRDBES-EST).

- Use of RDB/RDBES data,

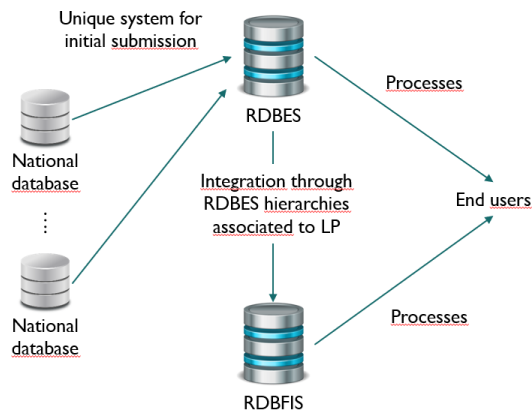
According to the present rules, working groups have to ask all National Correspondents for permission to use the data. There is also a list of pre-approved ICES Working Groups, that have access to aggregated data. It was suggested that Working Groups should have easier access to the data.

A relevant point regarding the access to data are that the database contains data not only from EU countries. This could be solved if third countries are invited to RCGs

Specifying access rules is an ongoing process (WKRaise&TAF). It was suggested that stock coordinators could have access to detailed data from RDBES of their area of interest, and that this should be specified in the data licence.

Annex 6: Progress on large pelagic data inclusion in the RDBES – 3 scenarios

Scenario 1



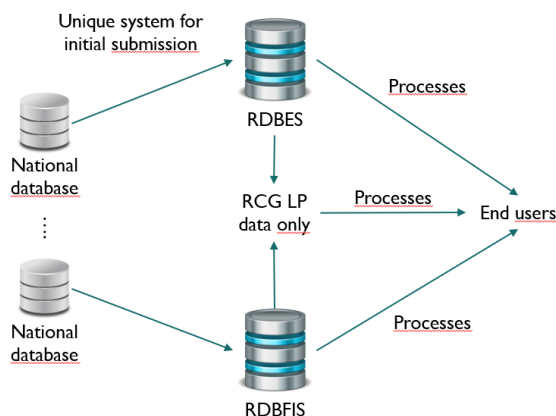
Pros

- Common repository and format for all LP data
- Freedom of choice regarding treatments and exports processes (link to the RDBES and/or the RDBFIS)
- Unity at the RCG LP and at the fisheries scales
- Simplification in programming and maintenance, MS can share experience and codes to feed the two systems
- Only one system to control in terms of policy and data confidentiality
- Solution to work around the delay of availability of RDBFIS

Cons

- All countries must accept to submit initial data to the RDBES
- Complications in the development of associated tools (e.g. export module to data calls)

Scenario 2



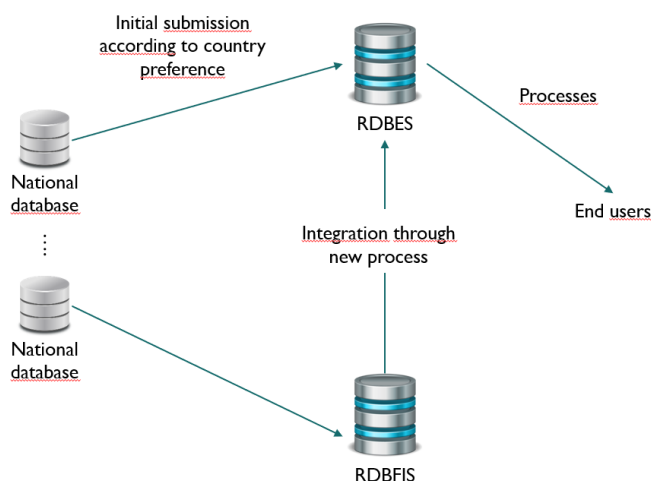
Pros

- Each MS submits to a single DB of their preference
- Each DB provides answers to common or separate End Users
- RCG-LP only has to worry about LP data
- Common data is handled temporarily at RCG-LP computer and destroyed at the end of the meeting (procedure used by RCG Med&BS and NANSEA for biological data?)

Cons

- While RDBFIS is in development RCG LP will only be able to work with RDBES data
- Complexity of developments and administration
- Creation of another common format for RCG LP data

Scenario 3



Pros

- Countries can submit data to the system of its choice
- Unique system for treatments and exports

Cons

- Two different workflows for data submission
- Link between RDBES and RDBFIS mandatory for the workflow to work
- Unique system for treatments and exports processes
- No unity at the RCG LP and at the fisheries scales
- Two systems to administer regarding policy and data confidentiality

Annex 7: Perspectives on the development of RDBES (towards funding proposals – only the specification part)

The need for RDBES and TAF

Assessment and advice dependent on non-statistical commercial samples and/or non-statistical estimates is not defensible from a scientific point of view. Similarly, non-reproducible assessment and advice is also not defensible from a scientific point of view.

There are two main inputs to assessment and advice - estimates from fisheries independent surveys and estimates from fisheries dependent surveys (aka commercial/recreational surveys)

Fisheries independent surveys have a design and years of experience in sampling and estimation behind them. They have routine designs that register relatively small number of departures in implementation, non-responses and other sources of bias. DATRAS is not a state-of-the-art database with regards to the sampling design details required for statistical estimation. But the Fisheries independent surveys are quite standardized across countries and have ample documentation on design and sampling manuals that ameliorates that issue. There is also an array of specialized survey-specific working groups that have continuous oversight of survey execution and estimation procedures.

Fisheries dependent surveys have an equally long history in EU countries but are plagued with implementation problems and different types of departures from original designs. Relative to their fishery-independent counterparts, they have received much less attention over time from a data quality perspective. Only recently these surveys started to be more generally analysed, compared across countries and improved. Progress to put them more in line with the principles of statistically sound sampling has been gradual but sustained, first through ICES EGs (e.g, PGCCDBS, WKPICS, SGPIDS, WGCATCH, ...), then through cooperative EU projects (e.g, FishPi) and more recently through direct requirements for statistically sound sampling under the DCF.

Improved and statistically sound fisheries independent surveys require databases that are able to accommodate the diversity of designs used (impossible to standardize across countries) and track the numerous difficulties of implementation that may lead to biased estimates. They also require the implementation of statistical estimators and data analysis that are able to estimate uncertainty and compensate final estimates with regards to possible biases happening during sampling.

The RDBES is a state-of-the art database able to accommodate the details of the new requirements for statistical surveys and make them available to national estimators - with it, data quality can be tracked and documented. National estimates provided to assessment and other end-uses can move from being simple calculations with little statistical support to state-of-the-art statistical point estimates with uncertainty and descriptions of potential biases associated to them. In brief, it is a good progress to statistically sound samples; but statistical documentation and estimation methods need to be coupled to the samples if the final goal of statistical estimates, i.e., estimates with strong statistical foundation and backing, are to be achieved.

Finally, last but not the least, statistically sound samples and estimators may provide accurate depictions of reality of commercial fisheries but having them is not enough to make model results and advice truly "scientific". It is fundamental to have scientific backing in both sample and

estimates but it is equally important that the flow from samples to estimates can be peer-reviewed and reproducible. This last characteristic is brought by TAF (<https://www.ices.dk/data/assessment-tools/Pages/transparent-assessment-framework.aspx>). With regards to the fishery-dependent inputs to stock assessment, it is the combination of RDBES and TAF that secures that statistical estimates are obtained, peer-reviewed and reproducible.

Perspectives for development of the RDBES

In table A7.1 there is a summary of the main set of views on development of RDBES, which are frequently mentioned in terms of its possible next steps, their funding. This list is focusing on the specification part of many detailed needs. This list should not be mixed with the needed functionalities which are shown in the section 4.5. Note that in some cases, steps are not independent – there are prerequisites of other steps for their development. It is expected the table also helps funding partners to understand that.

In reading tables A7.1, A7.2, and A7.3, it should be noted that:

The tables reflect mostly the specifications and estimation/analysis - The part of system development and implementation in the RDBES is not included in this list. That part is being carried out by the ICES Data Centre and should be secured with regards to funding before any other development. Without it appropriately funded, there is no RDBES to develop.

Even with regards to these specifications there are the assumptions that: a) while WGRDB-EST is alive there is no need for maintenance (the EG will take care of that); and b) there is a parallel process going on with regards to TAF. Both of these assumptions need to be met ahead of work ending - it is a waste of resources to developing an R-package that is not maintained; it is fundamental to the transparency and reproducibility of the RDBES data and estimates that they are integrated in TAF.

Table A7.1: RDBES: Model Specification

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
General	Model specification with regards to statistical documentation of samples	Data storage	None	Funded under DCF and ICES council	Completed	National experts involved in data estimation to ICES AWGs and other ICES EGs	Immediate: RCGs; WGRD-BES-EST Once integrated in estimation: ICES AWGs, EU COM and RFMOS (via ICES advice); national governments	The previous RDB did not allow for full documentation of statistical samples as it lacked both the structure and the information required to fully document sampling design and sampling implementation. Such documentation is important as it is needed both to evaluate the quality of the samples and programmes and to implement statistical based estimation methods.	Production data call (planned for 2023)	Core-Group then ICES Data Center
General	Model specification to allow for design-based unbiased estimators (HH, HT)	Data storage	None	Funded under DCF and ICES council	Completed	National experts involved in data estimation to ICES AWGs and other ICES EGs	Immediate: WGRDBES-EST Once integrated in estimation: ICES AWGs, EU COM and RFMOS (via ICES advice); national governments	Design-based unbiased estimators are the simplest form of estimators used in the handling of statistical samples. The RDBES will, by default, include the field required to calculate them (in their simplest form, numerous extensions possible). In doing this, the RDBES will allow the production of statistically sound point and interval estimates that communicate the biases and uncertainties of catch data to end-users, including assessment.	Production data call (planned for 2023)	Core-Group then ICES Data Center
General	Model specification to allow for model-assisted estimators (ratio, MREG)	Data storage	None	Partially funded under DCF and ICES council	Planned for 2023 Some initial steps: suggestions of model specs from work done by WKRATIO and in national experiences.	National experts involved in data estimation to ICES AWGs and other ICES EGs	Immediate: NA; once integrated in estimation: EU COM and RFMOS (via ICES advice); national governments	Model assisted estimators (e.g, ratio, MREG) are widely used by national data submitters, albeit most frequently in biased form. Present version of the RDBES data model has some capabilities with regards to data needs of this type of estimators (e.g, design information) but still requires	Specs to be finalized and implemented by ICES Data Center (expected 2023)	Core-Group then ICES Data Center

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
								development with regards to specification of auxiliary variables.		
General	Model specification: extension to full documentation of non-responses	Data storage	None	Partially funded under DCF and ICES council	Planned for 2023 Some initial steps: Some suggestions of model specs from the core-group work (2022) and national experiences.	National experts involved in data estimation to ICES AWGs and other ICES EGs	Immediate: NA; once integrated in estimation: EU COM and RFMOS (via ICES advice); national governments	Recording non-response (aka missing values) is part of statistical sound sampling and a requirement of DCF. It is also a need for the implementation of statistical estimation and reporting of quality indicators (of both sampling and estimates) such as refusal rates. National sampling procedures and databases have recently started adapting towards systematic recording and storing information on such events. The RDBES has considerable capabilities of incorporating information on non-response at different levels but still falls short of code-lists and some variables required for the computation of final indices and inclusion of this component in estimation.	Specs needed to inventories and suggested for implemented by ICES Data Center (expected 2023)	Core-Group then ICES Data Center
Bycatch	Model specification: extension to Incidental bycatch data (full documentation)	Data storage	None	Funded under DCF and ICES council	Planned for 2023 Initiated in 2021-2022: Some specs already implemented in data model as result of core-group collaboration with WGBYC. Test call in 2022 but with limited participation	ICES countries providing data and expertise to WGBYC, JWGBIRD, and other ICES by-catch advice	EU COM, National governments, other organizations; National institutes submitting data	Present data from bycatch programmes (DCF and research) are stored in ICES in a database that does not contain the information required to document statistical samples, identify biases and produce statistically sound estimates. The database has a unique format so a annual separate data call is issued by WGBYC to populate it. The RDBES has the potential to accommodate both detailed sampling data (CS) from sampling programmes collecting, directly or indirectly, data on bycatches, and aggregated (CL/CE) at the resolution required to produce statistically sound estimations of bycatches. In doing this the system will	Formal test call to be issued by WGBYC; analysis of 2022 test call and further specification (expected 2023)	Core-group, WGBYC, JWGBIRD

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
								improve estimate quality and reduce the burden and risks involved in multiple data annual requests national data providers.		
RecFish	Model specification: extension to recreational data (aggregated national estimates)	Data storage	None	Partially funded under DCF and council (only 2023)	Planned for 2023 Some initial steps: Initial specs defined and tested in informal call (no upload, just excel) in 2022 but limited participation in call. Specs are considered nearly ready to implement in RDBES data model but more participation is desired before final implementation in RDBES.	WGRFS, RCG ISSG on rec fisheries	WGRFS, RCG ISSG	The RDBES data model can be developed in order to store estimates of recreational fisheries and their statistical properties. Such storage is a request from WGRFS.	Test data call under new specification; evaluation; (expected 2023) suggestion of specs for implementation (expected 2024)	Core-group, WGRFS; then ICES Data Center
RecFish	Model specification: extension to recreational data (sampling data)	Data storage	None	Not funded	Not yet planned	WGRFS, RCG ISSG on rec fisheries	Immediate: WGRFS, RCG ISSG Once integrated in estimation: ICES AWGs, EU COM and RFMOS (via ICES advice); national governments	The RDBES data model can be developed in order to store sampling data of recreational fisheries and their statistical properties. This would	Test data call under new specification; evaluation; (expected 2023) suggestion for implementation (expected 2024)	Core-group, WGRFS; then ICES Data Center

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
STECF	Model specification: STECF variables (e.g, FDI)	Data storage	None	Initial steps being funded under DCF and council (covered to end of 2023 only)	Planned for 2023 (landings and effort only) Not yet planned (sample data) Initial steps on needed specs under an RDBES/FDI subgroup (landings and effort only)	EU countries	STECF	The RDBES data model can be adapted to incorporate the main information required to report DCF data under the FDI data call. Specs will be concluded in 2023 and implementation pondered thereafter. Further development of specs and implementation (2024 onwards) and not covered by funding. Similarly, development of specs with regards to sampling data and implementation are not yet funded.	Ongoing work in an RDBES/FDI subgroup and core-group to finalize the specs (landings and effort only). (Expected 2023); Implementation in ICES data centre (may be able to implement some of it in 2023)	RDBES/FDI subgroup and core-group; then ICES data centre to implement

Table A7.2: RDBES: Statistical Estimation Developments

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
General	Estimation code: Design-based unbiased estimators (HH, HT)	Estimation system	None	Funded under DCF	In progress Functions are being developed towards inclusion in an R-package (<i>RDBEScore</i>)	National experts involved in data estimation to ICES AWGs and other ICES EGs	EU COM, National governments and institutions managing fisheries	Design-based unbiased estimators are the simplest form of estimators used in the handling of statistical samples. These estimators are unbiased but tend to have large variance. RDBES offers the possibility of routinely producing statistically sound point and interval estimates that can be used in assessment adequately communicating uncertainties around catch data. The estimators are applicable, with some adaptations, to other types of statistical samples such as recreational, bycatches, diadromous, etc.	Finalize code and Generalize outputs; Incorporate functions into the <i>RDBEScore</i> package (expected 2023); generate domain estimates (being considered for WGRDBES ToRs for 2024-2026)	WGRDBES-EST?
General	Estimation code: Design-based model-assisted estimators (ratio, MREG)	Estimation system	RDBES data model with needed specs	Not funded	Being planned Some initial steps given at WKRATIO (2021).	National experts involved in data estimation to ICES AWGs and other ICES EGs	EU COM, National governments and institutions managing fisheries	Model assisted estimators, including ratio and MREG estimators) are an alternative type of estimators that are generally slightly biased but more precise than unbiased estimators while keeping adherence to statistically sound principles. They are currently the most common type of estimators used in the generation of estimates of commercial catches, albeit most frequently in highly biased form that ignores the underlying sampling design. RDBES offers the adequately integrating sampling design into these estimators, minimizing their bias and maximizing their precision.	Develop functions and incorporate into the <i>RDBEScore</i> package (being considered for WGRDBES ToRs for 2024-2026)	WGRDBES-EST?

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
General	Estimation code: extension to incorporation of non-responses during estimation	Estimation system	RDBES data model with needed specs	Not funded	Being planned Some minor trials at national level	National experts involved in data estimation to ICES AWGs and other ICES EGs	EU COM and RFMOS (via ICES advice); national governments	<p>Risk of bias and uncertainty in statistical estimates rapidly increase in presence of non-response (aka missing values), particularly when sample sizes are low.</p> <p>A variety of statistical methods exist (e.g, MREG) that, under some assumptions, can be used to estimate missing data and account for it in final estimates.</p>	Incorporate into the <i>RDBEScore</i> package (being considered for 2024-2026)	
General	Estimation code: model based estimators (zero inflated)	Estimation system	None	Not funded	Not yet planned Initial steps at national institutes and WKRARE (2022)	ICES countries providing data and expertise to WGBYC, JWGBIRD, and other ICES by-catch advice	EU COM, National governments and institutions managing fisheries	For a variety of reasons (e.g, recent colonization, over-exploitation, naturally low population numbers in a certain area), catches of many species are rare events. This rarity leads to high uncertainty in design-based estimates. Model based estimators (e.g, zero-inflated models) offer a suitable alternative to improve the precision of those cases. This alternative is being explored under WKRARE.	Not yet planned	WGRDBES-EST?
General	Stock coordination functions	Estimation	Definition of input/output standards (e.g, Inter-Catch upload files)	Funded under DCF	In progress Initial steps taken at national level and WKRD-BESRAISE&TAF. Some scripts and functions available.	National experts involved in stock coordination to ICES AWGs	EU COM, National governments and institutions managing fisheries	Stock coordination currently done in InterCatch can be replaced by documented scripts that make use of relatively simple R-functions. This is an important component of full implementation of the RDBES	Compilation of already existing functions in common repo (WKRD-BESRAISE&TAF2); later move to <i>RDBEScore</i> (WGRDBES-EST 2024-2026?)	WKRD-BESRAISE&TAF2 ; WGRDBES-EST?

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
Bycatches	Estimation code: extension of estimation code to incidental bycatches (design and model based)	Estimation system	General developments on design-based estimators	Not funded	Not yet planned	ICES countries providing data and expertise to WGBYC, JWGBIRD, and other ICES by-catch advice	EU COM, National governments and institutions managing fisheries	Similar to commercial catches, the RDBES has the possibility of producing statistically sound estimates of by-catch estimates using design-based or model based estimators. These require some adaptation to the specifics of bycatch data.	Not yet planned	Not yet planned
Bycatches	Estimation code: extension of model based estimators (zero inflated) to incidental by-catch	Estimation system	General developments on design-based estimators	Not funded	Not yet planned Initial steps at national institutes and WKRARE (2022)	ICES countries providing data and expertise to WGBYC, JWGBIRD, and other ICES by-catch advice	EU COM, National governments and institutions managing fisheries	The rarity of some incidental by-catches (namely marine mammals and birds) leads to high uncertainty in design-based estimates. Model based estimators (e.g. zero-inflated models) offer a suitable alternative to improve the precision of those cases. This alternative is being explored under WKRARE.	Not yet planned	WGRDBES-EST?
RecFish	Estimation code: extension to recreational catches	Estimation system	RDBES data model with needed specs (including sampling)	Not funded	Not yet planned	WGRFS, RCG ISSG on rec fisheries	WGRFS, RCG ISSG	Similar process to that being implemented on commercial catches (and incidental bycatches) but for recreational catches. Objective is to obtain point estimates and uncertainty measures for recreational catches, including biology. This requires however, previous specification of the RDBES data model towards recreational fisheries. Thus far this has not been an objective of WGRFS which focus is on storing national estimates. Should it ever be so, and it will involve considerable work as sampling programmes differ substantially from	Not yet planned	Not yet planned

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
									commercial and bycatch ones, namely with regards to hierarchies and variables needed.	
STECF	STECF input formats (e.g, FDI)	Estimation system	RDBES data model with needed specs	Not funded	Not yet planned	EU countries	STECF	Present national calculations behind national uploads to STECF (namely FDI) are, to a most extent, non-transparent not reproducible. The RDBES and TAF system can be developed to include scripts and functions that, by starting from RDBES or from ICES estimates, produce data in the formats desired by STECF (e.g, FDI).	Not yet planned	STECF EG or RCG ISSG SG, or project created to that effect
									Separate Funding or STECF/RCG initiative is needed for this task	

Table A7.3: RDBES: Other Developments

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
General	General data manipulation code	Data analysis	None	Funded under DCF	In progress Functions are being developed towards inclusion in an R-package (<i>RDBEScore</i>)	NA	WGRDBES-EST, National experts handling RDBES data	The RDBES data model is quite complex. Functions are being developed to import and prepare data, getting it ready for estimation	Finalize code; Incorporate functions into the <i>RDBEScore</i> package (expected 2023);	WGRDBES-EST
General	Sample reports/overview and bias identification	Data analysis	None	Funded under DCF	In progress Initial steps taken at national level and SGPID; WGRDBES-EST has initiated some work in 2022 but progress thus far limited (package <i>RDBESvisualize</i> created to host functions); WKRD-BESRAISE&TAF1-2 has produced some specifications on reporting needs; WGRDBESGOV SG QC has developed scripts to summarize data in RDBES	National experts involved in data estimation to ICES AWGs and other ICES EGs	Immediate: WGRDBES-EST, National experts handling RDBES data Once integrated in estimation: ICES AWGs, EU COM and RFMOS (via ICES advice); national governments	A variety of reports can be built from RDBES that summarize the main aspects of sampling data and document the main biases in sampling and estimation so they are known to stock coordinators and stock assessors	On a first stage compilation of already existing functions and reports; test in WKRD-BESRAISE&TAF; move towards <i>RDBESvisualize</i> functions (some development in 2023; being considered for 2024-2026);	WGRDBES-EST and WKRD-BESRAISE&TAF and WGRDBESGOV SG QC
General	Simple reporting of non-response and refusal rates	Data analysis	RDBES data model with needed specs	Not funded	Being planned Initial steps given at SGPID (2013).	National estimators and data submitters to DCF AR	Immediate: AWGs, STECF; national governments	Calculation of non-response rates, in particular refusal rates, is important to evaluate quality of sampling programmes and identify potential biases in estimates.	Documentation of main statistical rates of non-response; implementation as <i>RDBEScore</i>	WGRDBES-EST

Area	Product	Type	Pre-Requisites	Funding status	Status	Data-user	End-user	Description	Next steps	Who
							once integrated in estimation: EU COM and RFMOS (via ICES advice); national governments	It is also part of some data formats (e.g, FDI) and an obligation of the present DCF. There are several methods to calculate these rates. These methods can be implemented within the RDBES	functions (being considered for WGRDBES ToRs for 2024-2026)	
STECF	DCF Annual Reports (fishery-dependent part)	Data analysis	None	Not funded	Not yet planned	EU data submit-ters involved in DCF AR	STECF	RDBES contains all commercial sampling data collected under DCF, with regards to both planned and realized samples. A report can be built that facilitates annual reporting and reduces work-load on MS Separate Funding or STECF/RCG initiative is needed for this task	Not yet planned	STECF EG or RCG ISSG SG, or project created to that effect