



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR MARITIME AFFAIRS AND FISHERIES
Directorate C: Fisheries Policy Atlantic, North Sea, Baltic and Outermost Regions
Unit C3: Scientific Advice and Data Collection

Call MARE/2020/08

Agreement reference: SI2.839444

**Development of the Regional Database for the
Mediterranean & Black Seas**



European Maritime and Fisheries Fund (EMFF)

Final Report

ANNEX II

List of Meetings

Final Report Number: **1**

Covered period: **from 01/01/2021 to 28/02/2023**

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Meetings among Med&BS DCF NCs and RDBFIS experts

Bulgaria (BGR)

Summary

After a round of presentations, Med&BS RDB Coordinator introduces the objectives and the organization of the project for the development of the Med&BS Regional Database

BGR presents the general architecture and business logic of the national database which is under construction. The system will store Bulgarian fisheries data and will be set up in January 2022. The database will host records from logbook as well as scientific data collected by three Bulgarian institutes since the agency in charge of the system development is responsible of data. BUL provides data to Data Collection Framework (EU-DG MARE), FDI and Data Collection Reference Framework (GFCM) and accounts 1200 professional vessels.

BGR reported that even their database are not organized in RDBES format, they will be able to provide data in that format.

It was specified that the RDBFIS will include a set of algorithms to optionally process and analyze VMS data according to the willingness of the MS to upload them in the MED&BS RDB; however, the VMS data will be protected and will be accessible only to the national correspondents/or by the country representatives.

The added value of RDBFIS was highlighted. It will provide common facilities to be used by MSs by assuring homogenous process to assess quality and to deliver data to end users of the region. Also, RDBFIS represents a tool to optimize the analysis performed by the Med&BS RCG as well as to harmonize sampling performed in Med&BS countries.

The BGR IT expert, Kolyo Zhelev, is available to answer more technical questions on the Bulgarian database.



MARE/2020/08 - SI2.839444

DEVELOPMENT OF THE REGIONAL DATABASE FOR THE MEDITERRANEAN AND BLACK SEAS

This project has financed under the European Maritime and Fisheries Fund (EMFF)



**Med&BS
RDBFIS**

Minutes of the online meeting with MS Bulgaria - October 26th, 2021

Participants

MS Bulgaria: Simona Nicheva (SN), Violin Raykov (VR), A. Stefanov (AS)

Project: Stefanos Kavadas (SK), Maria Teresa Spedicato (MTS) Martina Zilioli (MZ)

After a round of presentations, Med&BS RDB Coordinator, Stefanos Kavadas, introduces the objectives and the organization of the project for the development of the Med&BS Regional Database.

SN presents the general architecture and business logic of the national database which is under construction. The system will store fishery Bulgarian data and will be set up in January 2022. SN specifies that the database will host records from logbook as well as scientific data collected by three Bulgarian institutes since the agency in charge of the system development is responsible of data. Bulgaria provides data both to Data Collection Framework (EU-DG MARE) and Data Collection Reference Framework (GFCM) and accounts 1200 professional vessels.

SK asks about the modules used to manage data calls.

SN guesses that even if data are not organized in RDBES format, they will be able to provide data according to the formats required by the RDBFIS.

SK specifies that the RDBFIS will include a set of algorithms to optionally process and analyze VMS data according to the willingness of the MS to upload them in the MED&BS RDB; however, the VMS data will be protected and will be accessible only to the national correspondents/or by the country representatives.

MTS and SK illustrates the added values of the RDBFIS. It will provide common facilities to be used by MSs by assuring homogenous process to assess quality and to deliver data to end users of the region. Also, RDBFIS represents a tool to optimize the analysis performed by the Med&BS RCG as well as to harmonize sampling performed in Med&BS countries.

SK stresses that national databases are the basis of the activities performed at larger scale. He also informs about the progress of the project: 1) discussion on compatibility issues will be finalized in middle of November 2) the 80% of the database structure is completed and 3) the tool provides some scripts to process the VMS data.

SN remembers that the IT expert, Kolyo Zhelev, is available to answer more technical questions on the Bulgarian database.

Croatia (HRV)

Summary

A centralized database system has been established in HRV, hosted by the ministry. The Research Institutes are connected to the system to enter data, running the quality checks, the analysis procedures and producing the datacalls outputs. The system will be re-developed using state of the art programming techniques.

No estimation procedures are being used for reporting on landing, discard and effort data because data are collected on a census basis from the entire fishing fleet. For vessels below 10m LoA using passive gears, a monthly fishing report is applicable in which case fisherman report data for each fishing trip. Data for landing value is estimated using average prices from sales notes. Biological estimates are made on the basis of official landings and discard data and are reported within the datacalls.

In case no VMS data is available (SSF <12 m using passive gears), spatial data is estimated on the basis of data reported in logbooks and fishing reports on Croatian fishing zones. For this purpose, specific mapping procedures are developed within the database to produce data according to GFCM statistical rectangles.

Since Croatia has a census-based data collection on catch reporting, discards are provided according to official data reported in logbooks and fishing reports (for SSF <10m using passive gears).

All effort calculation procedures are implemented in SQL following a harmonized approach to associate days at sea to the gear.

In regards to landing and effort data, the data are provided on a métier level.

Neither structure nor hierarchies of RDBES are included in the system. Relevant discussions will take place and it will be decided whether they will be included in the new system.

Cyprus (CYP)

A centralized database system has not been established in CYP yet. The RDBES hierarchy 5 was adopted to support Large Pelagics. The adoption of other RDBES hierarchies is under investigation.

Landings data are collected from trawlers in GSA 25. For SSF using polyvalent passive gears $\leq 12\text{m}$, landings data are collected by métier, and estimation is made on the percentage of landings assigned to each métier. The percentage is raised to the total landings.

The collection of effort data concerning SSF polyvalent passive gears $\leq 12\text{m}$) derives from sales notes. With the collection of effort data by métier, estimation is made on the % of fishing days assigned to each métier. The percentage is then raised to the total number of fishing days, allowing the estimation of fishing days by métiers.

The value of landings is estimated by species, by fleet segment and by métier.

Greece (GRC)

Greece has a National Centralize Database (NCD) for storing all the data collected in the framework of the Data Collection Framework (DCF). Up to 2020, the National Database was hosted in the Hellenic Centre for Marine Research (HCMR) and the data storing, analysis and data call obligations were supported by the IMAS-Fish (an Integrated Fisheries Information System). After 2020, a National database has been established in the Data Center of the Ministry of Rural Development and Food.

Confidential data from Vessel Monitoring System (VMS) and Electronic Reporting System (ERS) are provided by the Ministry of Shipping and Island Policy and the Ministry of Rural Development and Food respectively.

The primary data are stored in the NCD covering the part of the professional fishing fleet equipped with a control positioning system and keep ERS. The VMS data are used to estimate the fishing effort from vessels with total length ≥ 12 m (all trawlers and purse seiners are included), the boatseines and the vessels having a specific fishing license (large pelagic fishing, small scale fishing vessels (SSF) operating in international waters). For the remainder SSF vessels (which are the majority (96%) of the Greek fishing fleet) effort and landings data are collected at the port on monthly basis from a representative number of vessels. Specific routines (written in R and PLSQL) have been constructed to support the quality checks, analysis, raising and estimation of effort from SSF vessels by major area (according to the Greek DCF sampling scheme, the country has been divided in 12 major areas) and GSA.

Information related to the fleet capacity is provided by the Ministry of Rural Development and Food. Sales data collected monthly by questionnaires in the port from SSF vessels are included in the database. For the rest of the fishing fleet, sales data are stored in the NCB as reported in the ERS. Information on gear and statistical GFCM rectangle are provided by ERS.

No provision has been made for the adoption of the RDBES structure. This equally applies to the sampling scheme model followed by ICES.

France (FRA)

A centralized database has been established in FRA supporting the datacalls and any other obligations.

FRA would like to know under which Regulation the MS has the obligation to send the VMS data. The RDBFIS will include a set of algorithms to optionally process and analyze VMS data depending on the willingness of the MS to upload them in the MED&BS RDB; however, the VMS data will be protected and will be accessible only to the national correspondents/or by the country representatives. The topic of VMS data storage is under discussion at the meeting of the RCG steering committee.

FRA underlines that the link among LP (Large Pelagic) RCG (Regional Coordination Group), RDBES and Med&BS RDB is not clear; this is a crucial point for FRA, which has both Atlantic and Mediterranean coasts that are subject to fishery monitoring and sampling activities. FRA is involved in data submission to RDBES and Med&BS RDB and the burden of multiple data delivery need to be taken into consideration.

FRA presents the sampling scheme (SS). It is the same DCF sampling scheme for the north of the France and the Mediterranean coast; the difference is on the LP part. IFREMER has a mandate from the ministry to establish the collection of data from two GSAs (one for continental France, one for Corsica Island). From a geographical point of view, the SS is simpler in the Mediterranean (i.e. there is one geographic strata in the MED; here, even if the SS is the same in the North, the coast is smaller with less harbors). For the harbor sampling, they have observer teams which go to the port with the list of species they have to measure. This is done weekly. From a selected list of vessels, discards and fraction of the catch are measured. FRA completes the response by underlining that there is also a sampling scheme for Corsica, with on boat/at harbor observers.

Regarding to the management of data, there are two DB in France (one in continental France, one in Corsica). There is a database in Corsica and data are transferred to the IFREMER database (they are not integrated). The VMS/MEDIT fleet/vessel register data are hosted in the Ministry servers and are sent to IFREMER which combines them with other data (e.g. data from Corsica) when data have to be delivered in response to data calls. In fact, IFREMER submits data to datacalls.

Concerning the estimation of landings and effort from SSF vessels not equipped with ERS or VMS, the sampling activity is performed by phone and there is a system to estimate the fishing effort.

In the question if FRA thinks that the RDBFIS can be a useful tool, FRA considers that is useful for the analysis of data at regional level, to data mining and data submission to the GFCM. Moreover, there are sectors, like by catch, which are less developed. Then a comparison at regional level could be helpful. It could be useful to provide raw data and then use the RDBFIS to perform analyses.

With respect to algorithms for data quality used in France, FRA underlines that the COST libraries, legacy 1 algorithms are used, without any local improvement.

Italy (ITA)

A centralized database has been established in ITA supporting the datacalls and other obligations.

ITA underlines the importance of the grant and the system under development but also highlights that the NC needs more time to get familiar with the Italian and regional context with respect to data management. From his experience, his wishes are that the new environment should avoid duplication of national efforts and support optimization, though respecting specificities of the Mediterranean practices.

Also ITA agrees to have a tool to support fulfillment of data calls and quality checks at regional level, even though Italy already has its own national system, i.e. Fishdatanet. It will be important to investigate technical issues, but Italy will participate in the development, for example in the testing phase.

ITA underlines the importance of the dialogue among different databases that serve different regulations and represent, sometimes, new hurdles for data uploaders, instead of facilitating their tasks; in this respect, he think it is important to check the progress of the system development.

It was specified that the grant will maintain contacts with MSs, DG MARE, ICES and all other actors during its development to let them check the progress; in particular, the system will include statistical tools to make homogeneous analysis at regional scale. The advanced Italian system was mentioned, highlighting, at the same time, the difference with RDBFIS, that aims to incorporate a supranational dimension in data management and analysis.

The NC was invited to contribute in the data policy and governance definition in RDBFIS, which requires a particular contribution from MSs.

ITA engages in visiting the project site and in getting more acquainted with the issues at hand, though the Italian NC underlines again the importance of not duplicating efforts and of considering what is already available.

Neither structure nor hierarchies of RDBES are included in the ITA system.

Malta (MLT)



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Minutes of the online meeting with MS Malta – March 25th, 2022, 14:00 CET

Participants

MS Malta: Mifsud Jurgen (MJ)

Project: StefanosKavadas (SK), Paola Carrara (PC), Martina Zilioli (MZ)

Med&BS RDB Coordinator SK proposes to JM to present the Malta's database and sampling schemes, and eventually the familiarity with ICES system (RDBES)

-- Not necessary to introduce the objectives and the organization of the project for the development of the Med&BS Regional Database

JM informs that the Malta's national database (i.e., FIS) is facing a transition phase
Currently, FIS is used for control purposes: It is used to host logbook data and survey data
Fishing vessels register is incorporated in the database
The data stored are used to answer DataCalls (DCs)

National survey (from economic and catch assessment) data are not stored in the FIS

The DCF consortium starts a tender for developing a new system. The former is planning to upgrade the current tool to an integrated system in such a way that all the modules will be integrated so as to the data aggregation will be automatize.

The biological data (data from observers) are not incorporated and they will be incorporated in the new system

SK asks details on raising procedures

JM answers that all the raising and verification procedures are not automated in the system

In summary, databases that are under tendering are two:

- 1) One for integrating logbook and biological data to meet the DCs

2) One for controlling and monitoring the fishing vessels

The databases will be hosted and will be under responsibility of the Ministry

As far as scientific survey data, MEDITS survey data are collected while Malta does not carry out a MEDIAS survey (for these data they are in touch with Italian colleagues)

SK asks if RDBES schemas will be taken into consideration in the future integrated system

JM answers that these schemas will be adopted in accordance with the regional development

MZ asks how the automatization of data aggregation will be designed and developed

JM answers that the development is assigned to an external company and the DCF national experts are already involved within the consortium for the requirements collection

MZ asks which users are allowed to access the current database and how accesses will be regulated in future

JM affirms that accesses are restricted to specific officers after permission of the Director General

They are not publicly available. Public have to request data and the requests have to be reviewed and approved

SK asks if Malta is available to delivery national data needed for RDBFIS population

JM answers that with reference to RCG data call it is possible that Malta will provide its data after knowing the exact workflow

PC asks which are the expectations with respect to RDBFIS

JM responds by adopting the point of view of RCG chair:

- 1- To streamline the data delivery processes/exchange between MSs (the DCs are increasing)
- 2- To reduce the number of DCs by automatically aggregate the data in DC formats

PC asks how the sampling schemas at national level are organized

JM responds that:

- all the data collection procedures are outlined in the national working plan
- procedures are homogeneous for sampling activities which are operated by observers (they are internal people which are officially committed to do the task)

The meeting finished at 14:30

Romania (ROU)

A centralized database has been established in ROU (hosted in Constanța) supporting the datacalls and other obligations of the country. The plan is to develop a new state of the art information system within 2022.

ROU use a census sampling strategy. The Research Institutes of ROU are involved in the data collection process and are obliged to store the data in the DB. Scripts were developed to support quality checks, analysis and datacalls reporting.

ROU underlines the importance of the system under development. Neither structure nor hierarchies of RDBES are included in the ROU system. However, ROU could respond positively to the adoption of one or more RDBES hierarchies if this is deemed useful.

Slovenia (SVN)

A centralized database has been established in SVN supporting the datacalls and other obligations of the country.

SVN use a census sampling strategy and covers the whole Slovenian fleet which operates in the Adriatic Sea. The collected data are stored in the DB following proper quality checks and specific algorithms which support the analysis and the datacalls reporting.

Capacity, effort and landings data are collected for all active vessels. Fishing capacity data are part of the Fleet Vessel Register Module of the Slovenian information system InfoRib. The Fleet Register data is integrated with other sources of data in order to obtain data at the level of fleet segments and at the level of métiers. Effort data and the quantity of landings is collected from the logbooks (all vessels are obliged to keep logbooks). The price of the fish is collected from the sales notes.

A set of data are collected from on-board observers in the framework of the DCF. Discard are available only for those métiers that have been sampled.

SVN underlines the importance of the system under development. Neither structure nor hierarchies of RDBES are included in the SVN system.

Spain (ESP)



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Minutes of the online meeting with MS Spain – February 10st, 2022

Participants

MS Spain: NC and DCF experts: Juana Poza Poza (JPP), Vara del Rio, Maria del Pilar, Pedro Torres, Jose Miguel Serna, Garcia Alvarez Blanca, Garcia Caballero Elena, Garcia Nunez Norma Erendira, Maria Gonzalez (MG)

Project: Stefanos Kavadas (SK), Paola Carrara (PC), Martina Zilioli (MZ)

After a round of presentations, Med&BS RDB Coordinator SK introduces the objectives and the organization of the project for the development of the Med&BS Regional Database (Attachment 1).

PC presents the main documents produced by WP3 on data policy and governance (Med&BS RDBFIS SC membership schema, Med&BS RDBFIS SC guidelines, Med&BS RDBFIS data policy).

MG proposes a general presentation of the Spanish DCF information system (IS) and sampling schemes performed by Units. The Spanish team is available to provide any further information on the topics discussed.

JPP presents the IS to support DCF data management and to answer to datacalls in Spain (Attachment 2).

Currently, there are two databases hosted respectively by the **General Secretariat for Fisheries** and by the **IEO** (Instituto Español de Oceanografía).

The comprehensive Spanish IS is named DORI, a web-based application ([--@JPP could you provide the public link to the system?](#)) which hosts all DCF data and accomplishes two functions:

- Data Repository: the facility stores the information on the fisheries sector: economic, social, biological variables and fishing activity data
- Data Calls: the facility is used to generate reports and queries in order to answer different data calls, by automating the process as much as possible (e.g., official JRC Data Call, RDBES, etc)

Data on fishing activities are processed and INFOBASE is created. INFOBASE is represented by several tables linked with a unique key. They can be downloaded from DORI. DORI also allows responding to ICES data calls. The data raised are sent to the Minister. These tables are produced with the RDBES format

SIRENO is the database which contains disaggregated data and hosts also transversal data from INFOBASE. SIRENO stores fleet, landings, discards, lengths, other biological information (individual weight, sex, maturity, age...) and surveys.

SK asks following questions:

- Did Spain develop a centralized database to collect all information?
- Are biological variables collected in the Mediterranean organized in RDBES formats?

JPP answers to the questions:

- DORI is the database which contains all the data: socioeconomic and fleet activity; PET data are not included but they are reported in log book
- Spain uses the national format; DORI has scripts to get the data to respond the ICES data call

SK proposes to organize a meeting to discuss in detail the transformation from National format to RDBES one (in case of data collected in the Mediterranean).

MZ asks which are the users of the system and if: 1) EU COMM has access to the system and 2) public users have requested data from DORI

JPP: End-users cannot access the system. Nevertheless, in case of request, DORI team provides data which are needed.

The main users of the system are the Units involved in the Spanish Work Plan. They are allowed to access DORI.

The public user sends the information request but does not enter into the system.

PC requests an additional explanation on the relationship INFOBASE and DORI.

Fishing activity data are in the DORI repository.

DORI relates these data to biological variables which are hosted in SIRENO.

-- @JPP could you better define INFOBASE as we are not sure to have understood

PC asks which are the expectations of the Spanish team from the regional information system presented by SK and how it can help DCF data management according to their opinions.

The Spanish DCF team hopes RDBFIS will be compatible with the Spanish national database because every change requires big work. Also, they hope the Med&BS RDBFIS can help to reduce the burden to respond to multiple data calls.

SK asks to provide some information related to RDBES hierarchy they use to support data calls for MED (which hierarchy is used by action).

MG illustrated sampling designs performed in Spain (**Attachment 3**):

The sampling design presented relates to the WP 2022-2027

5 GSA are involved and sampling staff is dispersed at several locations around the coast to reduce traveling time. The different fisheries (trawlers, purse seines, artisanal fleet...) are widely distributed along the coast.

MG presented in detail the four strata (GSA or subGSA, métier, port, time frame) and the four types of sampling schemes:

1. Sampling at sea
2. Sampling on shore
3. Stock specific sampling on landings
4. Biological sampling of the GFCM

The meeting finished at 13:50.

On 11.02.2022, Pedro Torres and Josè Migel Serna transmitted the presentations (**Attachment 4 and 5**) which were missed the day before due to time limits.

Conclusions

1. All Member States, have established databases or similar systems to store and analyze the data collected in the framework of DCF and report to several data calls format.
2. The MSs underlined the importance of the grant;
3. Important that the RDBFIS will ensure common quality and analysis procedures;
4. The needs of the MS have to be investigated and considered in the RDBFIS (the case of Cyprus to use SDEF format and RDBES hierarchies are considered useful);
5. RDBES structure, hierarchies or algorithms are not included in the Med&BS MSs established information systems.

Meetings among ICES/FishFrame and RDBFIS experts

20/12/2021

Topics for discussion

1. Is the FishFrame database structure similar to COST one;
2. Algorithms for analysis and raising are included in the FishFrame? Are originated from COST/have been improved by you?
3. How FishFrame & RDBES communicates? Data from FishFrame can be exchange in a common format and be transferred to RDBES?
4. What about the security and data access system?
5. Are MSs obligated to enter their primary data into FishFrame?
6. EC continues to finance the maintenance and further development of the system?

Answers by Henrik Kjems-Nielsen

- Complete coding system which after years having been working with it very mature. We are welcome to look and take what is relevant to RDBFIS.
- RDBES database structure consists of simple tables which can be connected to 52 different ways making importing into them complex but also making the system very flexible.
- Lack of knowledge on RDBFIS to say if they are compatible enough but you can identify any of the hierarchies compatible with the Mediterranean situation and implement them in RDBFIS. The RDBES tables contain too much information and if it is not relevant to your case you will be wasting too much time adopting them as they are, so you must choose what is relevant to you. If you have to add things that are not in the North Sea DB it would more difficult than just removing what is not relevant.
- The estimation part is not implemented as much as we hoped so far and we have lot to do.
- Discuss about different needs on data sensitivity and build trust. RDB FishFrame 11 years use persuaded countries that their data is secure and not made public which built trust. Aggregate data to a level that is not sensitive anymore and agree upon it. Discuss data policy with countries.
- Few fields differed between COST and RDB format, but I am not an expert on COST to have a more informed opinion. Traditional raising algorithms have not been fully tested in FishFrame to a satisfying level for me. Data from RDB is not used directly for advice. FishFrame is used for the RCG's and ICES working groups. The same data is used in RDB and INTERCATCH being different only to the detail level. INTERCATCH uses subdivision by quarter whereas FishFrame uses by month. The estimations done in FishFrame are not used by many countries because they have moved on to statistically sound sampling and don't want to go back. Countries try to sample in truly random way and RDB cannot support such way of sampling. It is a very simple structure consisting of 5 main tables that cannot support true random sampling.
- Instead of having different data calls for the same data going into INTERCATCH and RDB with RDBES there will be one datacall with data going to RDBES which will be transparent. There data will be exported out into the TAF (Transparent Assessment Framework) where estimations are done by transparent and documented R scripts with the results used for advice or reporting.

- The DRB contains 5 tables for sampling: Trip, Individual samples, Haul, Species list, Length data. In RDBES there are 15 tables combined in 13 upper hierarchies (x4 = total 52). It can be used for sea and onshore sampling. They all start with the DE (Design Table) table and the SD (Sampling Details) table where basic information is given. In the FM (Frequency Measure) table which consists up to 90% of length data but is called this way to accommodate weight data also. The BV (Biological Variable) table is dynamic which means you can dynamically add variables without having to alter the table structure. The tables can be dynamically linked to produce the desired sampling hierarchies without having to alter the database structure.
- EU financed maintenance and hosting of RDB/FishFrame but without new requests for code and support no more money are coming in. also for RDBES no more money are given now. It is financed mainly by ICES for new development.
- Data from RDB/FishFrame cannot be transferred to RDBES. We have not even tried it because transferring data from the 5 tables of RDB to the RDBES tables would leave many holes in the RDBES tables since there are more of them. The way to go is to request again the national data in a more detailed format according to the RDBES hierarchies.



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Med&BS RDBFIS: MCDA meeting on 13 December 2021

Aim:

- (i) introduce the Multi-Criteria Decision Analysis method to estimate a fishing pressure index for Small Scale Fisheries;
- (ii) discuss potential improvements by integrating in the method the most reliable and sufficient economic variables

A. The meeting started with a short introduction, it was emphasized that the contribution of economists in this challenge is important and needful.

B. Irida Maina presented the method in detail pointed to the following:

- (i) a Multi-Criteria Decision Analysis (MCDA) method is proposed to estimate a Fishing Pressure Index (FPI) for Small Scale Fisheries (SSF), in data limited cases (given that data from monitoring devices (e.g. VMS/AIS) are not available for vessels with LOA<12m in a number of countries as Italy, France, Spain, Greece);
- (ii) The MCDA combines environmental/anthropogenic data, such as bathymetry, distance from coast, meteorological conditions, fishing fleet characteristics and expert knowledge;
- (iii) The grading values for each criterion (based on expert judgment) and the Analytic Hierarchy Process (AHP) are two fundamental steps of the method;
- (iv) The FPI arises from the spatial combination of suitability and activity index;
- (v) FPI can be combined with information from Data Collection Framework for estimating fishing effort for SSF in several spatiotemporal scales and can be applied by fishing gear or fleet segment;
- (vi) Spatio-temporal outcomes of FPI can be combined with predictions by species for estimating fishing grounds (by species or group of species);
- (vii) Further actions: Try to incorporate other factors related to economy/temporal aspects/ catchability;

- (viii) Given that certain fishing techniques (eg. bottom longlines, static nets) might have impacts on the seabed (maerl beds, coralligenous formations etc.), assessing the actual pressure of SSF is quite important and needs to be further investigated.

C. Dimitris Politikos presented the *fprmcda* R package focused on the following process:

- (i) load spatial data (raster, shapefiles, csv) from each criterion included in the model;
- (ii) load fishing fleet characteristics data (vessel ID, vessel length, GT) and fishing port location;
- (iii) combine spatially the steps (i) & (ii).

Details about the *fprmcda* R package are available on the SharePoint:

<https://drive.google.com/file/d/1qGylyah1uu6i7WZWwjg-XeAzTZsV2I52/view?usp=sharing>

D. Discussions on the economic variables (criteria) that can possibly be integrated into the model.

Aspects/proposals from **Paolo Acadia** and **Evelina Sabatela**:

- (i) The identification of additional criteria to be taken from the economic dimension should be based on the main objective of fishers, which is the maximization of profits. As profits are given by the difference between income and costs, fishers are supposed to select the fishing areas maximizing the income from landings and/or minimizing costs.
- (ii) Regarding the maximization of income, each area is supposed to have a different level of economic productivity, which depends on the composition of landings and the average value of the landings. Increasing the price of a species would make more “favourable” exploiting the areas where that species lives.
- (iii) Regarding the minimization of costs, fuel consumption represents one of the most relevant costs for the fishing sector. This cost is directly linked to the fishing area as it increases with the distance from the coast. It depends on both the distance from the coast and the fuel price. As the first factor is already included in Kavadas et al (2015), fuel price could be tested for inclusion in the MCDA approach as additional factor.

Aspects/proposals from **Melina Kourantidou**:

- (i) The most straightforward economic component to include would be harvesting costs. Now harvesting costs of course include a lot of different components (some of which were discussed yesterday, e.g. fuel costs) and questions may arise such as Irida's on whether this should be done collectively or per species. In my view, the more data available, the better, i.e. if this information is available at the species level, why not. Alternatively an approximation can be done, based on fleet segments for example.
- (ii) Generally costs are split into fixed and variable costs - I believe in this context it makes sense to focus on variable costs. And most of them would be associated to cost of fishing effort. That includes distance to fishing grounds, fuel costs etc. I do recall that the MCDA tool encompasses fishing effort - so that needs to be handled

with care. And again with respect to identifying costs, we can narrow it down to the level that makes sense based on the data available - the more, the merrier in my opinion. Of course we can also start with what's available in terms of cost data, see how the model behaves and leave it to future users to encompass additional cost components if they wish (and these data are not currently available to us).

The aspects/proposals will be investigated, the functionality of MCDA will be tested by introducing economic criteria and the outcomes will be evaluated.

Participants

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List of additional meetings

- Med&BS RDBFIS Kick-off meeting, 29/01/2021
- Med&BS RDBFIS plenary meeting, 09/03/2021
- SecWeb 1st assembly meeting, 14/03/2021
- SC for the Med&BS RDB, 22/03/2021
- National Correspondents & RCG, 20/04/2021
- ICES/RDBES (David, 29/04/2021)
- STREAMLINE plenary meeting, 27/05/2021
- LP Annual meeting, 29/06/2021
- SC for the Med&BS RDB, 12 & 13/07/2021
- Med&BS RDBFIS SC, 19/07/2021
- Med&BS RCG, 7-9/09/2021
- National Correspondents & RCG meeting, 21/09/2021
- LIAISON meeting, 23&24/09/2021
- Working Group on Governance of the Regional Database & Estimation System (WGRDBESGOV), 1 – 3 December 2020
- Med&BS RCG and MS
- MEDIAS (first communication with the chair)
- Internal meetings
- DCF National Correspondents' & RCG chairs meeting, 10 March 2022
- RCG LP ISSG Regional Database development, 11 March 2022
- RCG LP virtual meeting 15th-17th of June 2022
- Data Collection National Correspondents & RCG meeting, 20-22 September 2022, Brussels
- Fisheries Data Collection - 19th LIAISON meeting, 21-22 September 2022, Brussels
- MEDIAS meeting (among chair & RDBFIS), 05 October 2022, online
- MEDITS Annual Meeting, 24-26 October 2022
- Steering Committee Meeting for the Mediterranean & Black Sea Regional DataBase(Med&BS RDB SC) - 2 December 2022, online
- FISHERIES DATA COLLECTION NATIONAL CORRESPONDENTS & RCG CHAIRS MEETING - 9 March 2023, online