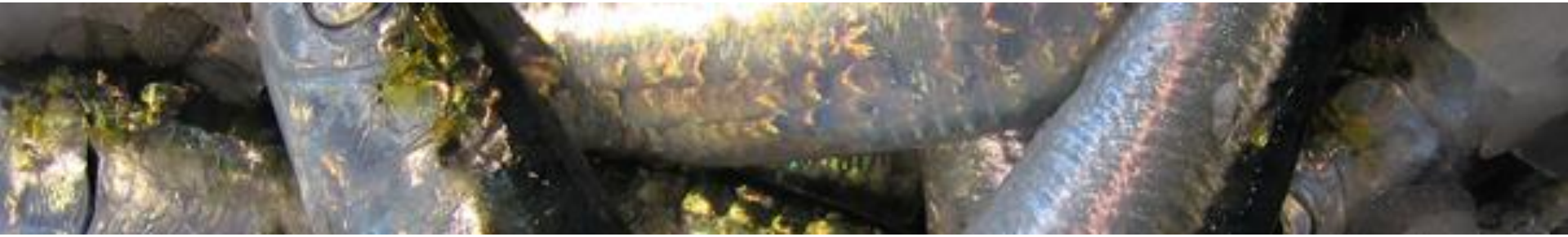

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Report on the latest results of the GFCM regarding stock assessments for small pelagic and demersal in the Adriatic Sea

* The contents of this presentation include notes of the observer attending at the WG. The aim is mainly to inform stakeholders on scientific evidences and observations raised during the experts meeting. Nevertheless the contents are not yet approved by SAC. The results and observations reported in the presentation can be modified in the final report of GFCM. Notes are not official and MEDAC is not responsible for the use which might be made of this presentation.

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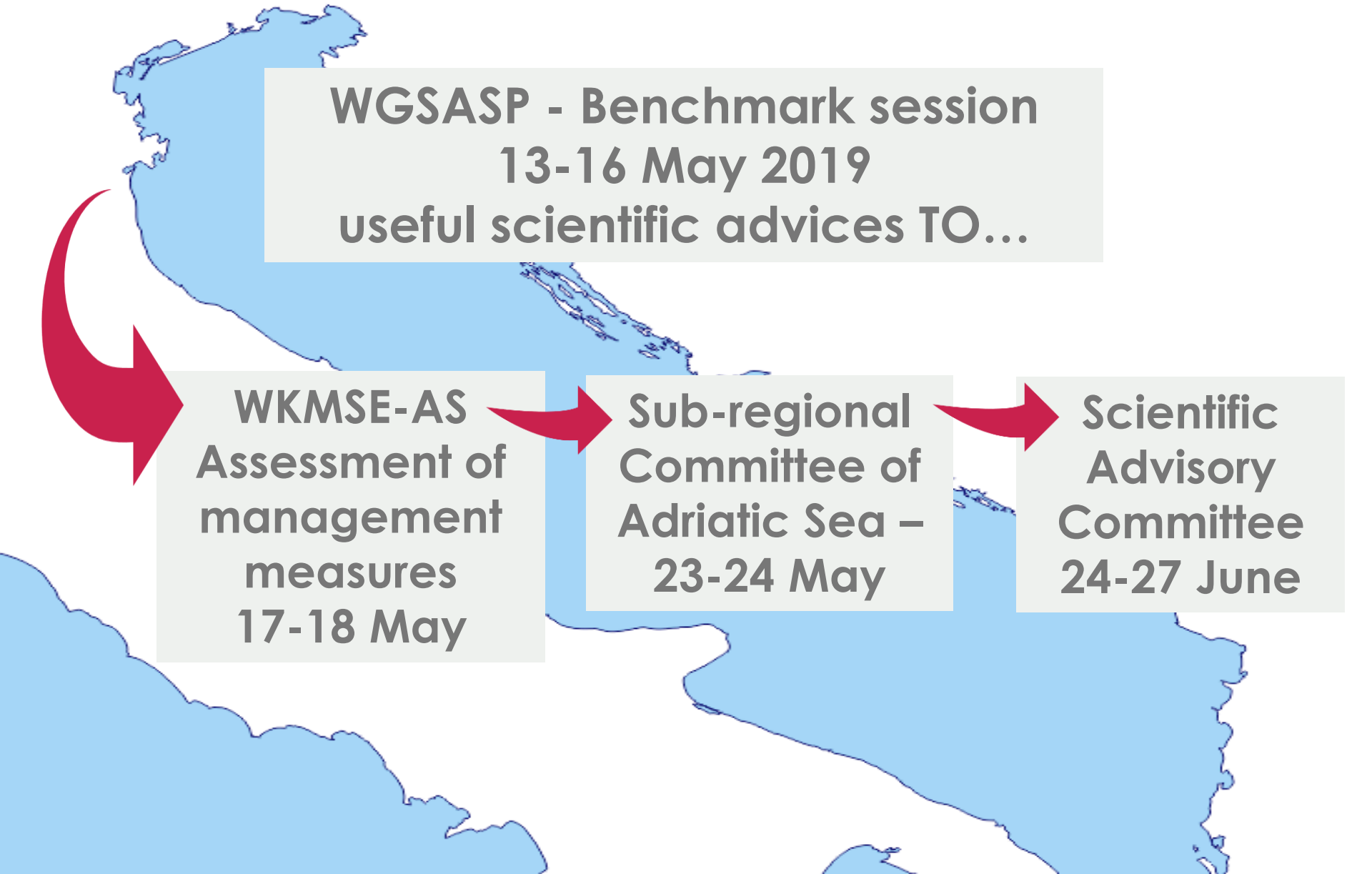
Small Pelagics - GSA 17 and 18



WGSASP - Benchmark session
13-16 May 2019
useful scientific advices TO…

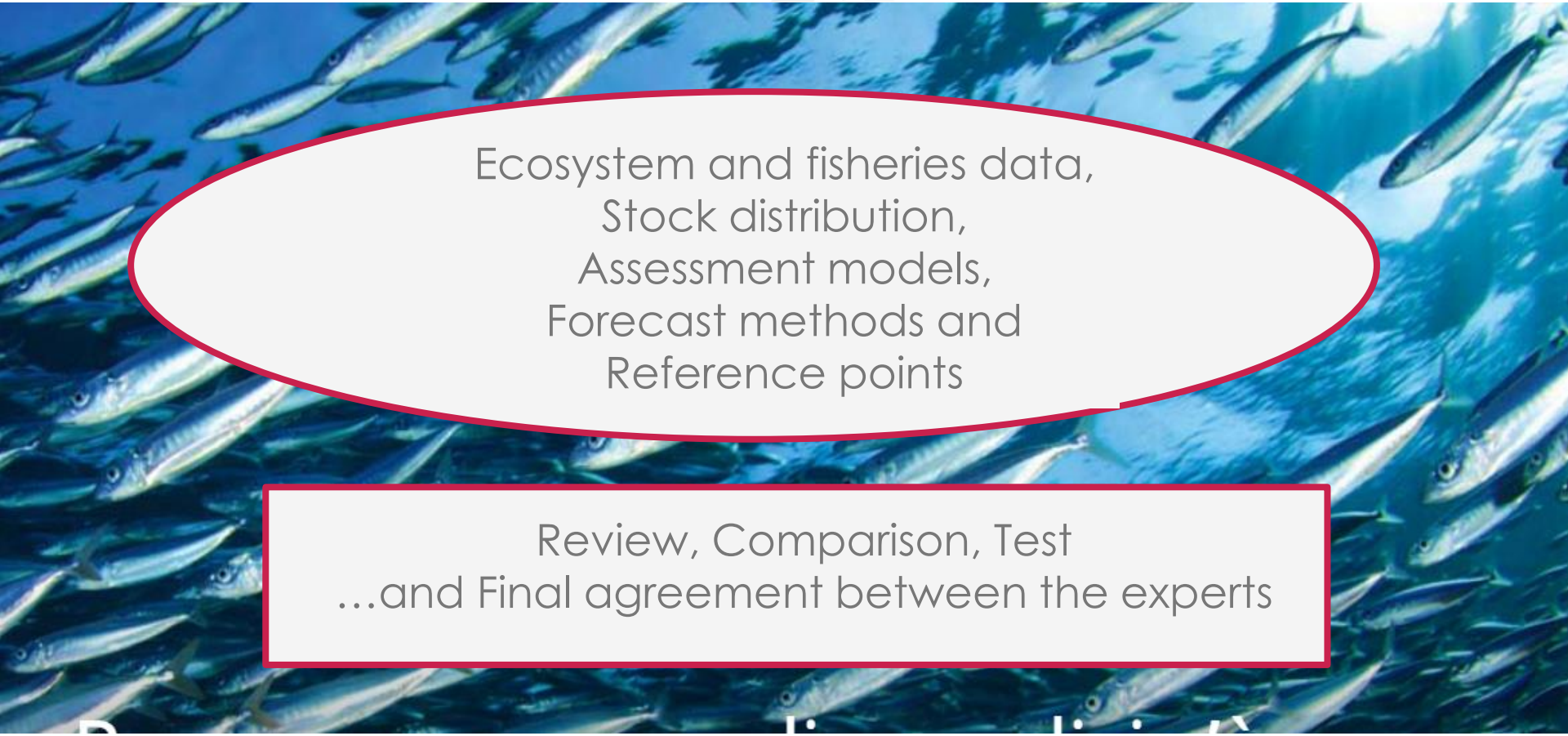
WKMSE-AS
Assessment of management measures
17-18 May

Sub-regional Committee of Adriatic Sea – 23-24 May

Scientific Advisory Committee
24-27 June

Benchmarking process

Built on the expertise of stock and ecosystem knowledge, involving the best available scientific competence



Ecosystem and fisheries data,
Stock distribution,
Assessment models,
Forecast methods and
Reference points

Review, Comparison, Test
…and Final agreement between the experts

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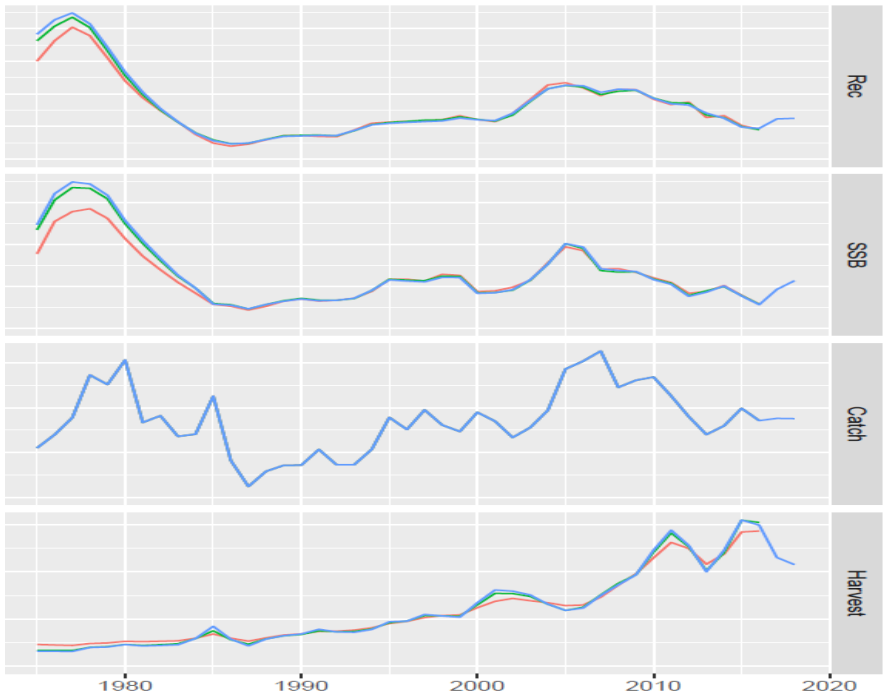
Data by all countries up to 2018
Available very shortly before the benchmark meeting,
- limited time available to perform basic data analysis



Need to further revise the input data and dedicate more time to thoughtfully evaluate the assessment models

Experts requested more time to conclude the benchmark
Advice on the status of stock
Information up to 2018

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Sardine	Time series	Comments
Update	1975 - 2018	Updated 2016 assessment (with 2017 and 2018)
Updated Short time series	2001 - 2018	Updated 2016 assessment (with 2017 and 2018)
Revised dataset	1975 - 2018	Dataset revised: Croatia and Albania: changes in the total landings reported Italy: correction of ALK from 2002 to 2014 Model parameters refined to obtain best fit
Anchovy	**Time series**	**Comments**
Update	1975 - 2018	Updated 2016 assessment with two more years of data. Catch at age for 2017 reported with the old ALK by Italy and Croatia. Catch at age for 2018 estimated using assumed ALK
Revised dataset	1975 - 2018	New ageing criteria and birthdate applied All dataset revised using combined new ALK Italian surveys revised using new ALK
Revised short time series	2001 - 2018	Revised dataset truncated

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Small Pelagics - GSA 17 and 18

Sardine	Time series	Comments
Update	1975 - 2018	Updated 2016 assessment (with 2017 and 2018)
Updated Short time series	2001 - 2018	Updated 2016 assessment (with 2017 and 2018)
Revised dataset	1975 - 2018	Dataset revised: Croatia and Albania: changes in the total landings reported Italy: correction of ALK from 2002 to 2014 Model parameters refined to obtain best fit

This scenario was not run due to lack of time

Anchovy	Time series	Comments
Update	1975 - 2018	Updated 2016 assessment with two more years of data. Catch at age for 2017 reported with the old ALK by Italy and Croatia. Catch at age for 2018 estimated using assumed ALK
Revised dataset	1975 - 2018	New ageing criteria and birthdate applied All dataset revised using combined new ALK Italian surveys revised using new ALK
Revised short time series	2001 - 2018	Revised dataset truncated

This scenario was attempted but the model did not converge with the different parameter specifications tested

STATUS OF SARDINE AND ANCHOVY IN GSA 17-18

UPDATED ASSESSMENT AS THE BASIS OF THE ADVICE

PENDING THE FINAL CLOSURE OF THE BENCHMARK

SPECIES	Fbar	E	E/0.4	SSB	SSBlim	SSBpa	Status
Sardine	1.529	0.68	1.71	157251	125318	250636	Overexploited and in overexploitation
Anchovy	1.075	0.53	1.32	119454	45936	91872	In overexploitation

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E patterson=0.4 Approximation of MSY for small pelagic species. E0.4 used when no robust analytical estimate of F_{MSY} can be obtained

Exploitation rate: E=F/Z (total mortality)

SPECIES	Fbar	E	E/0.4	SSB	SSBlim	SSBpa	Status
Sardine	1.529	0.68	1.71	157251	125318	250636	Overexploited and in overexploitation
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Mean Fishing mortality

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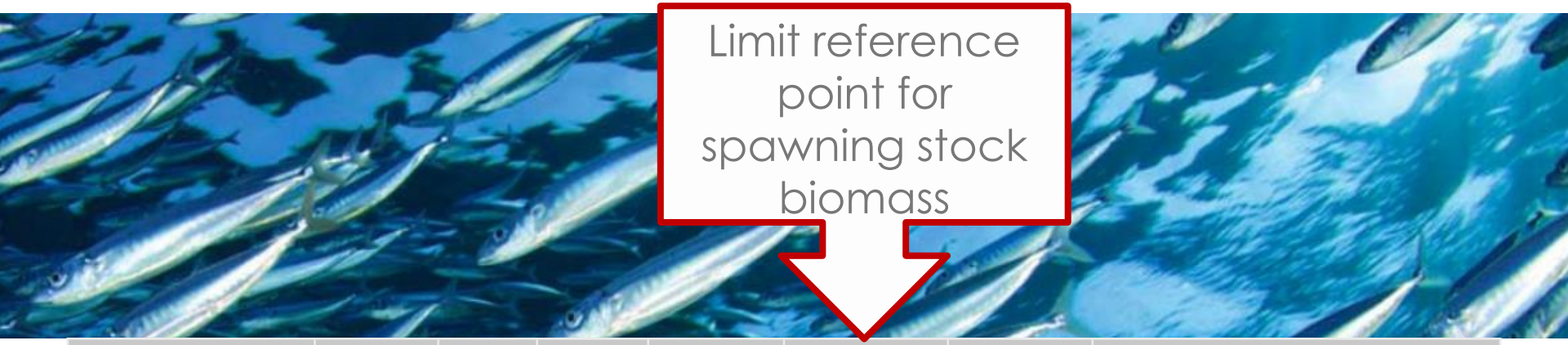

Limit reference point for spawning stock biomass

SPECIES	Fbar	E	E/0.4	SSB	SSBlim	SSBpa	Status
Sardine	1.529	0.68	1.71	157251	125318	250636	Overexploited and in overexploitation
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Spawning stock biomass

Precautionary Spawning Biomass

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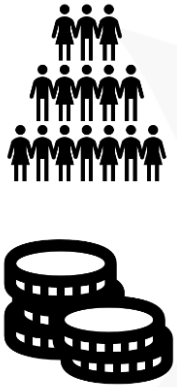
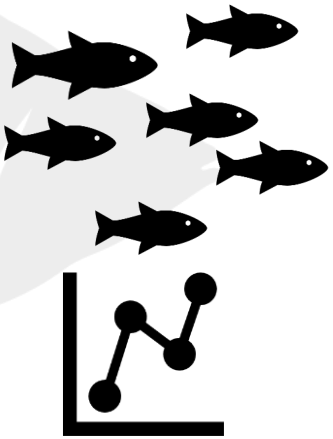
Small Pelagics - GSA 17 and 18

Workshop on the assessment of management measures for small-pelagic species in the Adriatic Sea (WKMSE-AS)
17-18 May
Analysis of **economic impacts** of alternative management measures – Recommendation for development



Continuation of the **benchmark**
October 2019 – February 2020

Advice integrating the 2019 data proposed to be by May 2020



Rec. GFCM/42/2018/8
further emergency measures in 2019, 2020 and 2021 for small pelagic stocks in the Adriatic Sea

Demersals - GSA 17 and 18

WKMSE-AS (18 May)
GFCM Working Group
on Management Strategy
Evaluation

STECF Report on MAP for the fisheries exploiting demersal stocks in the Adriatic Sea (STECF-19-02, April 2019)

Sub-regional Committee of Adriatic Sea – 23-24 May

Scientific Advisory Committee 24-27 June

Scientific basis for the GFCM recommendations (GFCM Commission 2019)

Key commercial stocks for a demersal MAP

✓ Previously identified by STECF EWGs
✓ Listed under GFCM SAC key priority stocks

Area	Common name	Scientific name
GSA 17-18	Hake	***Merluccius merluccius***
GSA 17-18	Red mullet	***Mullus barbatus***
GSA 17-18	Norway lobster	***Nephrops norvegicus***
GSA 17-18-19	Deep-water rose shrimp	***Parapenaeus longirostris***
GSA 17	Sole	***Solea vulgaris***
GSA 17-18	Spottail mantis shrimp	***Squilla mantis***

ToRs - STECF EWG 19-02

Management Procedure (MP) test:

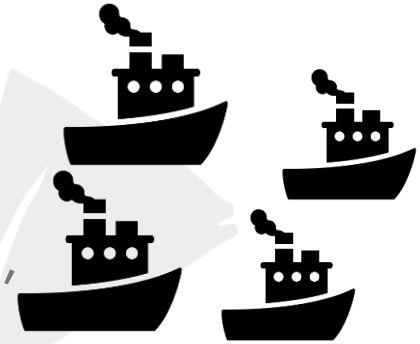
a) Reach the maximum sustainable yield (Fmsy) by:

i. 2020 (Fmsy2020) – ***not done***
ii. 2024 (Fmsy2024),
iii. Reduction of fishing mortality by
10% in 2020,
8% in 2021,

and then linear reduction in F to achieve F_{msy} by 2024 (FIXREDUX).

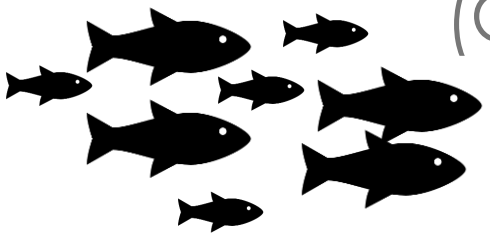
b) Simulation of management mechanism of the advisory process of GFCM SAC (n+2 basis)

c) Management controlling F:



✓ fishing effort regime (EFFORT),

✓ A catch limit scenario to be applied exclusively for the stock of Common sole and Norway lobster (CATCHLIM)



Evaluation of effect of theoretical additional protection of nursery and spawning areas as follows:

- "Sole Sanctuary" – ***updated area***
- FRA **protecting 20% of the area of high persistence** of spawners Norway lobster or European hake – *persistence definition*
- Closure of coastal **zone up to 6 nautical miles** to all active towed gear (**OTB and TBB**) - *Trieste Gulf issues*

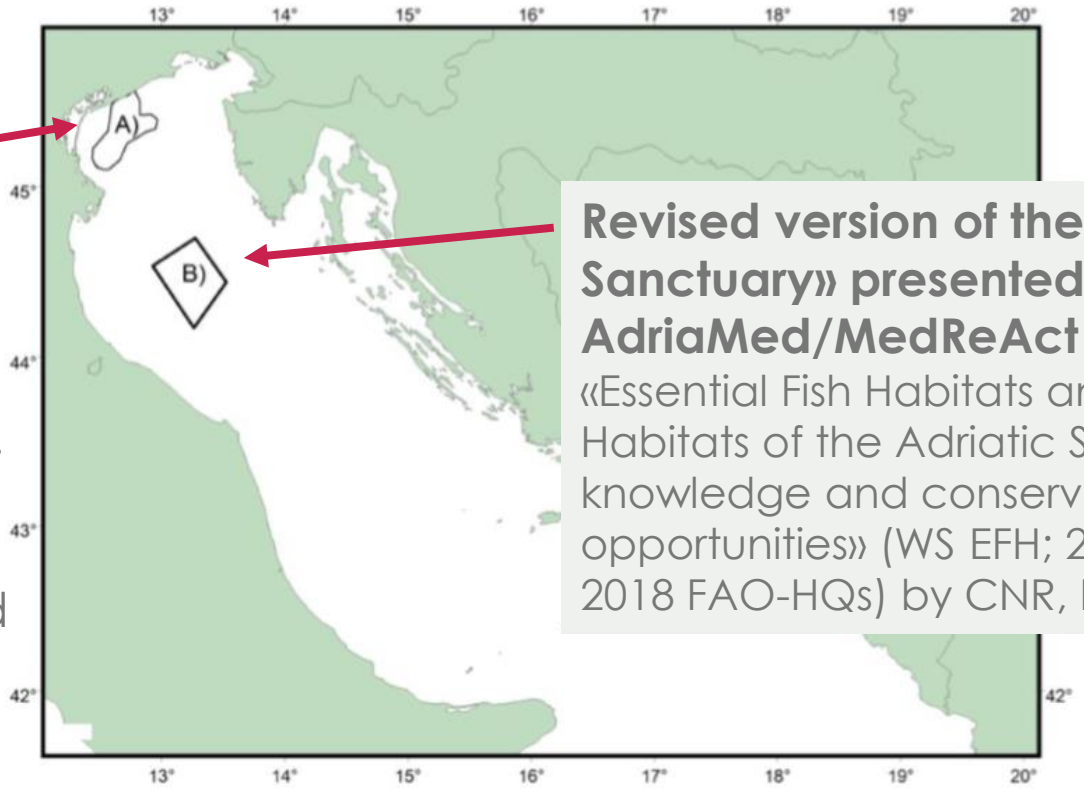
- "Sole Sanctuary"

- ✓ Updated map between Italy and Croatia (gillnets area)
- ✓ Core area closed to trawls and gillnets
- ✓ Hypothetical Buffer area:

trawls ban and temporal closures of gillnets

➢ "Sole Sanctuary"

Northern portion of the area described by Scarcella et al. (2014) concerning the spatial and temporal persistence of the adult common sole



Revised version of the «Sole Sanctuary» presented at the FAO AdriaMed/MedReAct Workshop «Essential Fish Habitats and Sensitive Habitats of the Adriatic Sea: state of knowledge and conservation opportunities» (WS EFH; 20-21° February 2018 FAO-HQs) by CNR, ISPRA, IOF and FRI

RECOMMENDATIONS

- ✓ Tested scenarios in line with general principles also valid within the GFCM framework
- ✓ Spatial Scenarios closure **6nm** to trawling in **western GSA 17** – not applicable to Eastern Adriatic Sea (Sea bottom-Fleet)
- ✓ Other **additional scenarios could be identified** in line with the procedure agreed by the SAC

ADVICE

Findings to be taken into consideration by the SRC-AS and the SAC for the management of Adriatic demersal resources

- ✓ The **linear reduction scenario** tested had the best performance in terms of both recovery and reaching the target of MSY

  → **Particularly true for stocks that are highly overexploited and for which a significant and continued reduction may be needed to reach agreed targets**

ADVICE

Findings to be taken into consideration by the SRC-AS and the SAC for the management of Adriatic demersal resources

- **Stocks highly overexploited** and for which a significant and continued reduction may be needed to reach agreed targets

- In those cases, small reductions of effort:
  - ✓ may not be enough and may be absorbed by changes in the fishery.
  - ✓ only postpone the implementation of the actual level of reduction required to achieve targets
  - ✓ the effect of increasing the probability that the target may not be reached at the agreed deadline in the simulation

ADVICE

Findings to be taken into consideration by the SRC-AS and the SAC for the management of Adriatic demersal resources

- ✓ Regarding **common sole**, the most effective spatial measures to reduce F among the ones tested is the **combination** of the 6nm closure with the effort reduction.

- ✓ The simulations with the **sole sanctuary** resulted in an increase of SSB, without significant effect on F.

ADVICE

Findings to be taken into consideration by the SRC-AS and the SAC for the management of Adriatic demersal resources

- ✓ Simulations comparing the effects of a **two- and a three-year management lag** :

- three-year management lag increases the uncertainty in the projections for catch and SSB

- effect is exacerbated by the fact that the fishery for most of these species concentrates on **individuals between 1 and 3 years of age**, so by the time adopted measures become effective, the stock used as the basis of management would have already left the fishery.

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Thanks for your attention!

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