

Report on the latest results of the GFCM regarding stock assessments*



* 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.

GFCM - Priority Species Demersals

Western Mediterranean	Central Mediterranean	Adriatic Sea	Eastern Mediterranean
Deep-water rose shrimp <i>Parapenaeus longirostris</i>	Deep-water rose shrimp <i>Parapenaeus longirostris</i>	Red mullet <i>Mullus Barbatus</i>	Red mullet <i>Mullus Barbatus</i>
Hake <i>Merluccius merluccius</i>	Hake <i>Merluccius merluccius</i>	Hake <i>Merluccius merluccius</i>	Lizardfish <i>Saurida lessepsianus</i>
Blackspot seabream <i>Pagellus bogaraveo</i>	Deep-water red shrimps <i>Aristeus antennatus</i>	Norway lobster <i>Nephrops Norvegicus</i>	Hake <i>Merluccius merluccius</i>
	Giant red shrimp <i>Aristaeomorpha foliacea</i>	Deep-water rose shrimp (GSA 18) <i>Parapenaeus longirostris</i>	Deep-water red shrimps <i>Aristeus antennatus</i>
	Red mullet <i>Mullus Barbatus</i>	Common sole (GSA17) <i>Solea solea</i>	Giant red shrimp <i>Aristaeomorpha foliacea</i>
		Common cuttlefish <i>Sepia officinalis</i>	
		Mantis shrimp <i>Squilla mantis</i>	

GFCM - Priority Species - Pelagics

Western Mediterranean	Central Mediterranean	Adriatic Sea	Eastern Mediterranean
Anchovy <i>Engraulis encrasicolus</i>	Anchovy <i>Engraulis encrasicolus</i>	Anchovy <i>Engraulis encrasicolus</i>	Anchovy <i>Engraulis encrasicolus</i>
Sardine <i>Sardina pilchardus</i>	Sardine <i>Sardina pilchardus</i>	Sardine <i>Sardina pilchardus</i>	Round sardinella <i>Sardinella aurita</i>
			Sardine <i>Sardina pilchardus</i>

Species of regional importance

Common dolphinfish
Coryphaena hippurus

Western Mediterranean– Demersal species

Species	GSA	Stock Status	Advice
HAKE <i>Merluccius merluccius</i>	1,3,5- 7,9-11	Overexploitation <i>Relative low biomass</i>	Reduce fishing mortality
RED MULLET <i>Mullus barbatus</i>	6	Overexploitation <i>Relative intermediate biomass</i>	Reduce fishing mortality
	7	Overexploitation <i>Relative high biomass</i>	Reduce fishing mortality
	9	In overexploitation	Maintain the current level of fishing mortality
	10	Sustainably exploited	Maintain the current level of fishing mortality
DEEP-WATER RED SHRIMPS <i>Aristeus antennatus</i>	1	Overexploitation <i>Relative intermediate biomass</i>	Reduce fishing mortality
	2, 6	Overexploitation <i>Relative low biomass</i>	Reduce fishing mortality
	5	Overexploitation	Reduce fishing mortality

Source – Observer Notes on WGSAD 2018

Western Mediterranean– Demersal species

Species	GSA	Stock Status	Advice
GIANT RED SHRIMP <i>Aristeomorpha foliacea</i>	9-11	<i>Overexploitation</i> <i>Relative low biomass</i>	<i>Reduce fishing mortality</i>
DEEP-WATER ROSE SHRIMP <i>Parapenaeus longirostris</i>	1,6,9-11	<i>Overexploitation</i> <i>Relative high biomass</i>	<i>Reduce fishing mortality</i>
	1,3,4	<i>Overexploitation</i>	<i>Reduce fishing mortality</i>
	5	<i>Overexploitation</i> <i>Relative intermediate biomass</i>	<i>Reduce fishing mortality</i>
NORWAY LOBSTER <i>Nephrops norvegicus</i>	5,6	<i>Overexploitation</i>	<i>Reduce fishing mortality</i>
BLACKSPOT SEABREAM <i>Pagellus bogaraveo</i>	1,3	<i>Overexploitation</i>	<i>Reduce fishing mortality</i>

Source – Observer Notes on WGSAD 2018

Central Mediterranean – Demersal species

Species	GSA	Stock Status	Advice
<i>DEEP-WATER ROSE SHRIMP</i> <i>Parapenaeus longirostris</i>	12-16	<i>Overexploitation</i> <i>Relative high biomass</i>	<i>Reduce fishing mortality and catches of undersized shrimp</i>
<i>HAKE</i> <i>Merluccius merluccius</i>	12-16	<i>Overexploitation</i> <i>Relative low biomass</i>	<i>Reduce fishing mortality</i>
<i>RED MULLET</i> <i>Mullus barbatus</i>	12-14	<i>In overexploitation</i> <i>Relative high biomass</i>	<i>Reduce fishing mortality</i>
	15	<i>In (low) overexpl.</i> <i>Relative low biomass</i>	<i>Reduce fishing mortality</i>
	16	<i>In sustainable exploitation, relative interm./high biomass</i>	<i>Maintain the current level of fishing mortality</i>
	19	<i>In low overexpl., relative intermediate biomass</i>	<i>Reduce fishing mortality</i>
	20	<i>Sustainably exploited, absolute high biomass</i>	<i>Maintain the current level of fishing mortality</i>

Source – Observer Notes on WGSAD 2018

Central Mediterranean – Pelagic species

Species	GSA	Stock Status	Advice
ANCHOVY <i>Engraulis encrasicolus</i>	16	In the absence of clear trend in acoustic biomass (MEDIAS) or catches, no qualitative advice could be given either. This assessment was considered preliminary	
SARDINE <i>Sardina pilchardus</i>	16	<i>In overexploitation</i>	<i>Reduce fishing mortality</i>

The WGSASP recommended to...

Increase the number of stock assessments of small pelagic stocks in the Southern and Eastern Mediterranean

Pursue the work on defining a common methodology to harmonize otolith reading

Perform yearly acoustic surveys where possible (e.g. GSA 16)

Increase the historical perspective as much as possible for each assessed stock (e.g. GSA 16)

Source – WGSASP

Adriatic Sea – Demersal stocks

Species	GSA	Stock Status	Advice
HAKE <i>Merluccius merluccius</i>	17-18	<i>Overexploitation</i> <i>Relative low biomass</i>	<i>Reduce fishing mortality</i>
RED MULLET <i>Mullus barbatus</i>	17	<i>Overexploitation</i> <i>Relative low biomass</i>	<i>Reduce fishing mortality</i>
	18	<i>Sustainably exploited with relative high biomass</i>	<i>Maintain the current level of fishing mortality</i>
	17-18	<i>Sustainably exploited with relative high biomass</i>	<i>Maintain the current level of fishing mortality</i>
DEEP-WATER ROSE SHRIMP <i>Parapenaeus longirostris</i>	17-18	<i>Sustainably exploited with relative high biomass</i>	<i>Maintain the current level of fishing mortality</i>
COMMON CUTTLEFISH <i>Sepia officinalis</i>	17	<i>Sustainably exploited</i> <i>Absolute low biomass</i>	<i>Reduce fishing mortality</i>
MANTIS SHRIMP <i>Squilla mantis</i>	17	<i>In high overexploitation with relative low biomass</i>	<i>Reduce fishing mortality</i>
COMMON SOLE <i>Solea solea</i>	17	<i>In overexploitation with relative low biomass</i>	<i>Reduce fishing mortality</i>

Adriatic Sea – Pelagic stocks

Species	GSA	Stock Status	Advice
SARDINE <i>Sardina pilchardus</i>	17-18	<i>Overexploited and in overexploitation</i>	<i>Reduce fishing mortality</i>
ANCHOVY <i>Engraulis encrasicolus</i>	17-18	<i>Overexploited and in overexploitation</i>	<i>Reduce fishing mortality</i>

Source – SRC-AS 2018

Eastern Mediterranean – Demersal stocks

Species	GSA	Stock Status	Advice
COMMON PANDORA <i>Pagellus erythrinus</i>	25	<i>Sustainably exploited</i>	<i>Do not increase fishing mortality</i>
	27	<i>Overexploitation</i>	<i>Reduce fishing mortality</i>
STRIPED SEABREAM <i>Lithognathus mormyrus</i>	27	<i>Overexploitation</i>	<i>Reduce fishing mortality</i>
SURMULLET <i>Mullus surmuletus</i>	26	<i>Overexploitation</i>	<i>Reduce fishing mortality</i>
PEREGRINE SHRIMP <i>Metapenaeus stebbingi</i>	26	<i>Overexploitation</i>	<i>Reduce fishing mortality</i>

The WGSAD...

Recommended to **provide more details on the data, assumptions, diagnostics and different runs of the models used to assess a stock**

Repeatedly proposed to **better investigate the adequate spatial dimension for performing stock assessments** (joining adjacent GSAs or maintaining separate) – based on robust scientific evidence.

Source – Observer Notes on WGSAD 2018

Eastern Mediterranean – Pelagic stocks

Species	GSA	Stock Status	Advice
ANCHOVY <i>Engraulis encrasicolus</i>	22	<i>Sustainably exploited</i>	<i>Evaluate potential fishing opportunities</i>
SARDINE <i>Sardina pilchardus</i>	22	<i>In overexploitation</i>	<i>Reduce fishing mortality</i>

The WGSASP recommended to...

Increase the number of stock assessments of small pelagic stocks in the S-E Mediterranean.

Countries from the Eastern Mediterranean to **start collecting biological information on anchovy**, such as age, sex and maturity.

Pursue the work on defining a common methodology to harmonize otolith reading.

Perform **yearly acoustic surveys** where possible (e.g. GSA 22)

Increase the historical perspective as much as possible for each assessed stock

Source – WGSASP

Benchmarking process

Built on the expertise of stock and ecosystem knowledge, involving the best available scientific competence and relying on the integration of such knowledge for the different aspects.

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

**Review, Comparison, Test
...and Final agreement between the experts**

Source – Observer Notes on WGSAD 2018

In particular, the benchmark process should include:

- ✓ Identification of all **problems** associated to the assessment of a resource (including stock boundaries, data, assumptions and methodologies);
- ✓ Identification and provision of **extra data required** to address the above problems (for example, on different spatial aggregations and/or environmental variables);
- ✓ **Revision and agreement** of data, assumptions (including all biological parameters and related estimation methods), standardization of fishery-independent data and assessment methods;
- ✓ **Test of the candidate methods** with a sensitivity analysis on different assumptions;
 - ✓ **Performance** of the assessment.

Following a benchmark assessment,

**all
historical data,
assumptions and
models**

**will be fixed for the successive 3 – 4
years and assessments presented in
this time period will simply provide
updates.**

Working Group on Stock Assessment of Demersal Species 15-18 January 2019

Benchmark session for the assessment of European hake in GSAs 17-18

Including advices in the context of

STECF and GFCM

...and considering the related issues on available data

Draft - Benchmark European Hake

GFCM ASSESSMENTS IN GSAs 17-18 since 2010

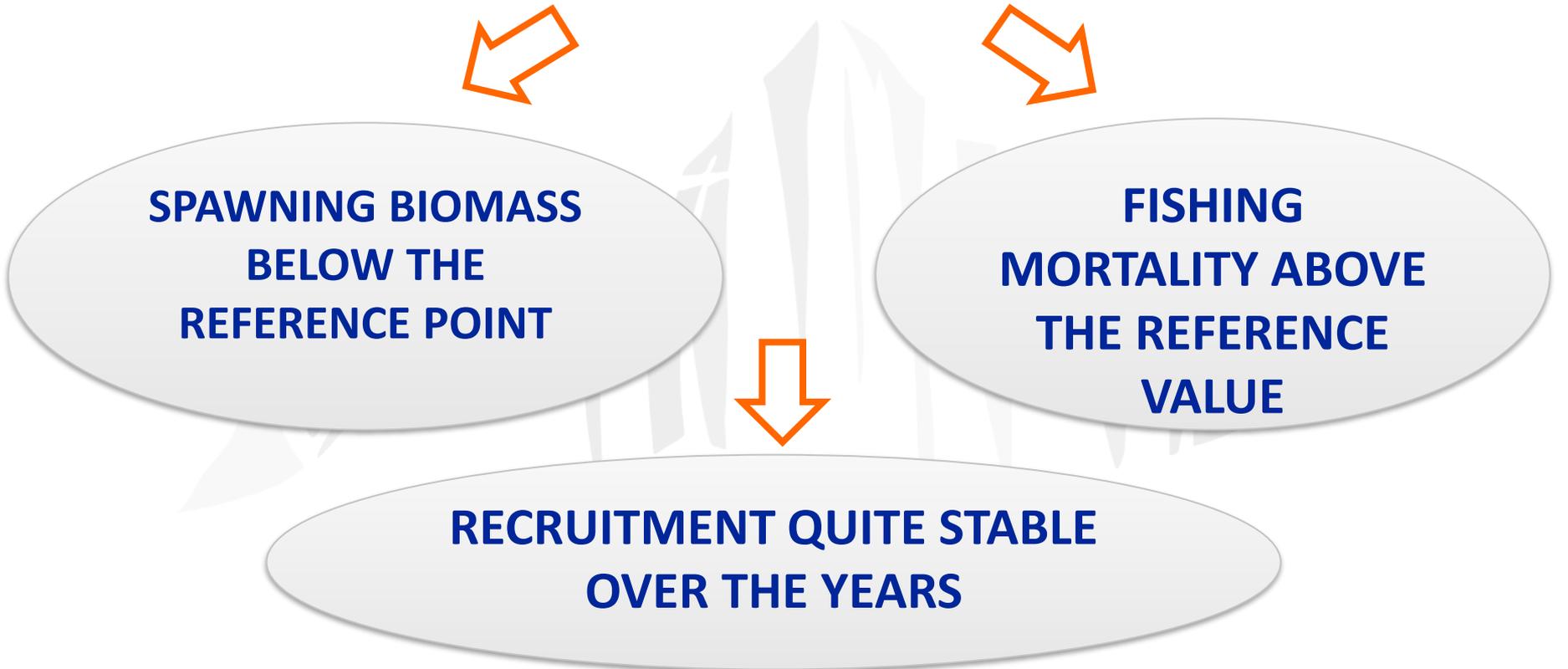
Despite changes in methodology, stock has always been considered to be in overexploitation

The extent of the overexploitation differs between methods and assumptions on the unit of stock

- ✓ 2012, 2013, 2014 - Biomass  Intermediate state
- ✓ 2015, 2016 - Biomass  Relatively low

Final Advice – Current status and yields

OVERALL STOCK STATUS CONCLUSIONS



**SPAWNING BIOMASS
BELOW THE
REFERENCE POINT**

**FISHING
MORTALITY ABOVE
THE REFERENCE
VALUE**

**RECRUITMENT QUITE STABLE
OVER THE YEARS**

Fishing mortality is above the reference point F_{MSY}
along the entire time series

OVEREXPLOITATION STATUS IN 2017

F needs to less than 40% of the current F value (2017)

Uncertainty in the time series of catches

- ✓ recent revision from Albania (sudden change in level of catches from 2012)
 - ✓ Croatia (revision of discards from 2008)
 - ✓ revision of Italian catch data is suggested
- may have some limited effect in the advice.

Particular aspects of input data to be further analysed include:

- i) the **analysis of reported catches**, including the changes in the historical series of Albania;
- ii) the **level of discards** in the different fleets;
- iii) potential **changes in growth/maturity** during the time series;
- iv) investigate ageing error emanating from **otolith readings**, and if possible increase the number of otoliths used, as well as the sampling design.