

Available scientific information on trawl fisheries targeting for the giant red shrimp and blue and red shrimp in the Ionian sea and in the Levant sea as reported to GFCM.

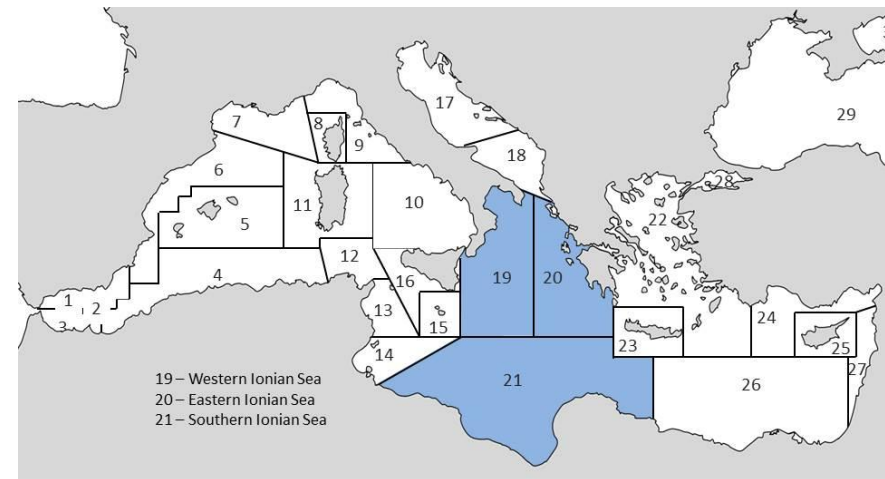
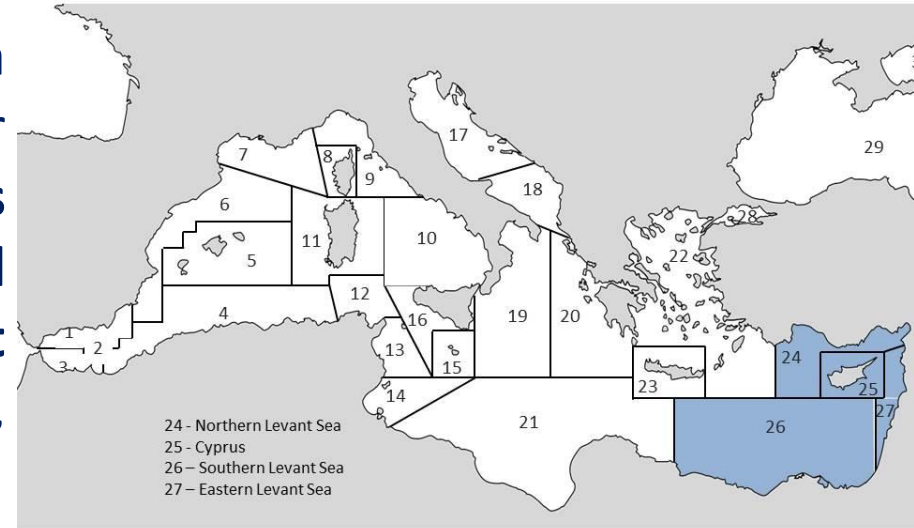


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Video Conference Focus Group Eastern Mediterranean 6 October 2021

Decisions adopted in the 42nd session of the GFCM relevant to the eastern Med

- Recommendation GFCM/42/2018/3 on a multiannual management plan for **sustainable trawl fisheries targeting giant red shrimp and blue and red shrimp in the Levant Sea** (geographical subareas **24**, **25**, **26** and **27**)
- Recommendation GFCM/42/2018/4 on a multiannual management plan for **sustainable trawl fisheries targeting giant red shrimp and blue and red shrimp in the Ionian Sea** (geographical subareas **19**, **20** and **21**)



Elements for 2 draft proposals for GFCM recommendations relevant to the eastern Med

- Draft Proposal for a Recommendation **amending** Recommendation GFCM/42/2018/3 on a multiannual management plan for sustainable trawl fisheries targeting for the giant red shrimp and blue and red shrimp in the Levant Sea (GSAs 24 to 27)
- Draft Proposal for a Recommendation **amending** Recommendation GFCM/42/2018/4 on a multiannual management plan for a sustainable trawl fisheries targeting for the giant red shrimp and blue and red shrimp in the Ionian Sea (GSAs 19 to 21)

Scientific monitoring



- CPCs shall ensure annually an adequate **scientific monitoring of the status** of the key species in the Strait of Sicily
- The SAC shall **assess the biological, economic and social implications of implementing several management scenarios** with the objective of restoring and maintaining the species population above levels that can produce MSY

Fleet management measures

- **Vessels authorized to fish for the key species in the specific areas shall be listed** by the CPC whose flag they are flying → to GFCM Sec by **30 June each year**
- Authorized vessels shall provide national authorities a **detailed report of their fishing activities, including as minimum requirements: operating days, operating area and total catch of key species.** This information shall be transmitted to the GFCM Secretariat at least on a yearly basis
- CPCs may **designate additional spatio-temporal restrictions** to those already established where fishing activities may be banned or restricted in order to protect aggregation areas of juveniles of the key species

Management of fishing effort



- CPCs shall ensure that their **fleet capacity or fishing effort is maintained at the levels authorized and implemented during the recent years for the exploitation in the specific areas for the key species**
- Each CPC shall ensure the **set-up of adequate mechanisms for the recording of each fishing vessel in a national fleet register and for the recording of vessel catches and fishing effort** via the logbook

Final provisions



- The SAC shall provide, on an annual basis as from 2020, **advice on the status of the key species in the Strait of Sicily** including specific objectives to maintain fishing mortality within agreed precautionary fishing mortality reference points and to maintain or restore the stocks of the key species at levels that can produce MSY
- **In 2022**, the SAC shall **provide scientific advice in order to enable the GFCM to establish a multiannual management plan** for the key species

Additional elements of the Recommendations:

Provide advice on stock status from 2019. In the **absence of such advice**: appropriate management measures decided according to the **precautionary approach**

Each CPC shall set-up adequate mechanisms for the recording of each fishing vessel in a **national fleet register, for the recording of vessel catches and fishing effort via the logbook and remote sensing** as well as for the monitoring of fishing vessel activities and landings via **catch and effort sampling surveys**

Fleet development plans for the SAC to assess *[template proposed in 2019]*

CPCs shall facilitate collation of existing relevant data and the collection of additional relevant data

Without BRPs, F_{MSY} shall be attained while **maintaining the fleet capacity or effort at the levels authorized and exerted during the years 2014–2017**

Active vessels >10m LOA: **equipped with VMS** (or other)

Recommendations GFCM/42/2018/3-4 on a multiannual management plan for **sustainable trawl fisheries targeting giant red shrimp and blue and red shrimp** in the Ionian and Levant Seas (geographical subareas 19, 20, 21, 24, 25, 26 & 27)

2019

June 2019: communication of **authorized vessels and their historic level of fishing effort**

from 2019: **advice on stock status**

2020 [2021]

2020 [2021] SAC: **evaluation of the measures** already applied

30d after 22nd SAC [2021]: **GFCM working group** to develop management measures taking into consideration the efforts made by CPCs, historical catches and socio-economic considerations

44th GFCM [2021]: adoption of **long-term management measures**

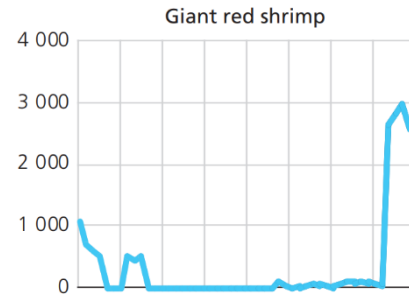
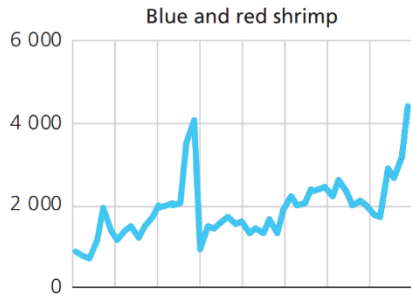
By 31/12/2020: **map of the fishing grounds (VMS)**



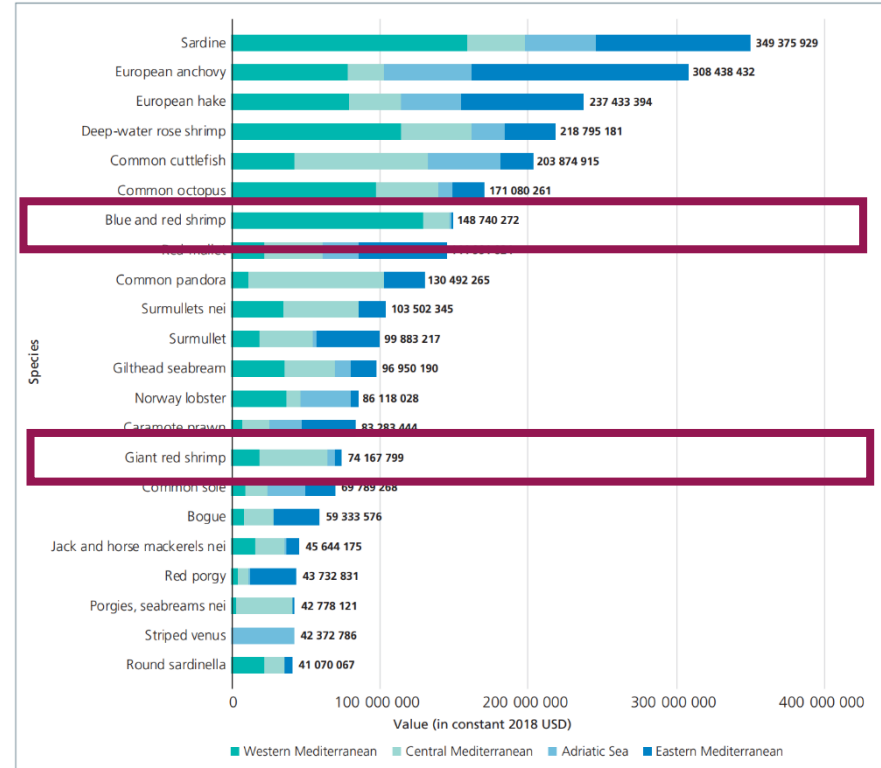
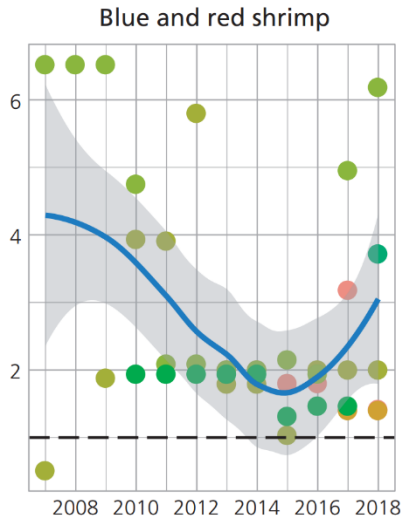
Deepwater red shrimp in the eastern-central Mediterranean

SOMFi 2020

Increasing trend in landings of both species in the Med



Increasing exploitation ratio for blue and red shrimp at Med level



High value of giant red shrimp fishery particularly in the central Med



As a result of the 2018 Recommendation on DWRS a number of Data Preparation WGs took place jointly with FAO Regional Projects i.e. MEDSUDMED, EASTMED in 2018, 2019 and the SRC-EM.

Their aim was to bring together a critical mass of expert scientists and collate, analyse, standardize various data sources from biology, ecology, fleets, landings, surveys, stock assessments, VMS/AIS etc.



REVIEW OF BIOLOGY

- **Age cohorts**
- **Growth parameters**
- **Length weight relationships**
- **Reproduction**
- **Maturity (ARS)**
- **Mortality**



REVIEW OF LANDINGS DATA



Landings and LFDs:

- GSA 12 (ARS + ARA, 2013 – 2017)
- GSA 15 (ARS, 2009 – 2012, 2017)
- GSA 16 (ARS, 2008 - 2016)
 - **Summary LFDs from catches taken in GSAs 12, 16, 21, 23, 25 – various years**
- **GSA 18 (ARS [2009 – 2017] + ARA [2010-2015])**
- **GSA 19 (ARS [2009 – 2017] + ARA [2003 – 2017])**
- **GSA 20 (ARS + ARA, 1996 – 2017, not reliable)**
- GSA 22 (TUR) (Mixed, 2007 - 2017)
- GSA 24 (TUR) (Mixed, 2007 - 2017)
- **GSA 25 (Mixed, IW+NW, 1965 – 2004, 2008 - 2017)**
- **GSA 26 (ARS [2015 -] 2017)**



- No idea of landings by GSA of origin



REVIEW OF SURVEY DATA



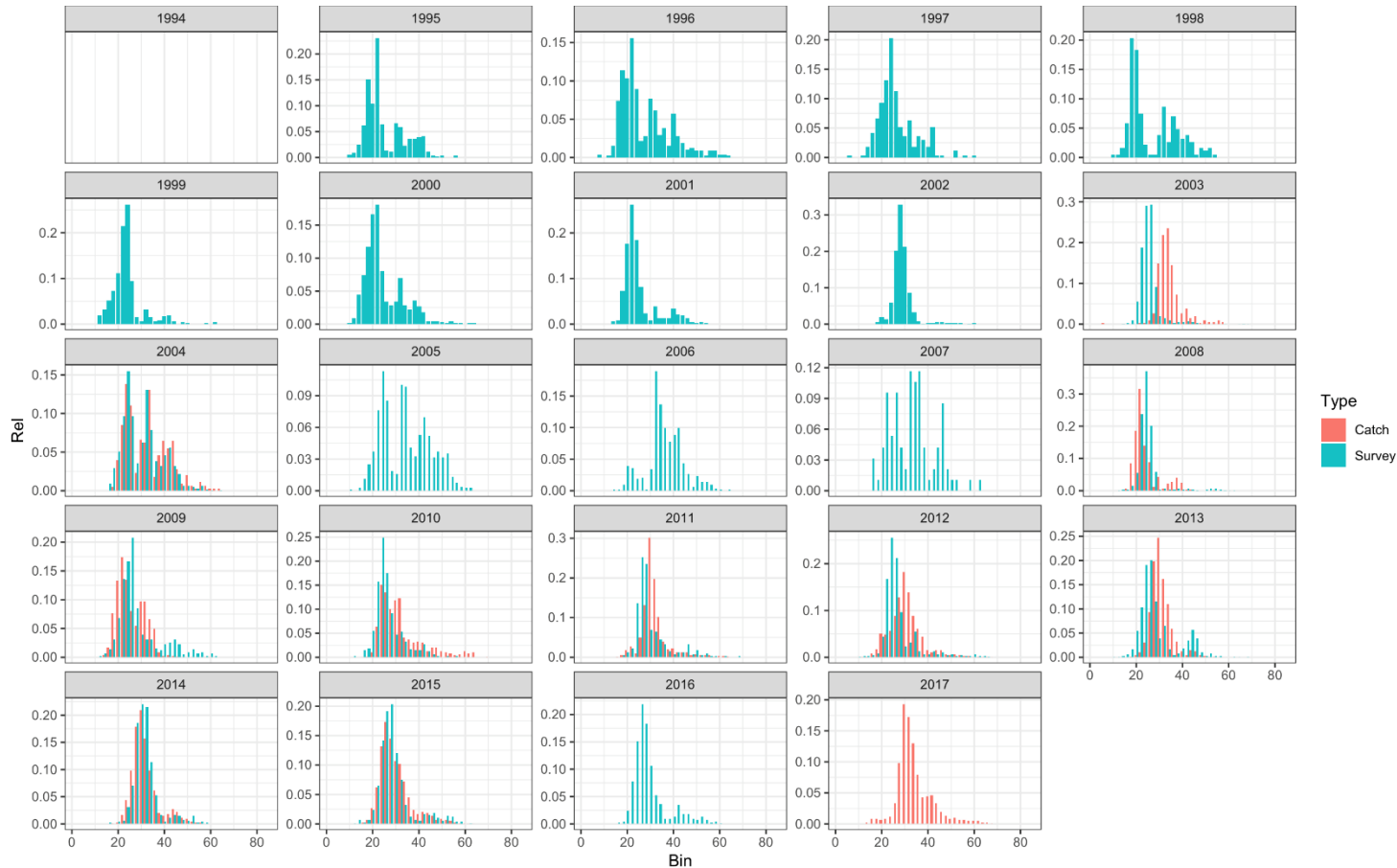
Indices and LFDs:

- GSA 12 (ARS + ARA, 2003, 2007, 2010, index only)
- GSA 15 (ARS, 2006 - 2019)
- GSA 16 (ARS + ARA, 1994 - 2019)
- **GSA 19 (ARS + ARA, 1995 - 2019)**
- **GSA 20 (ARS + ARA , 1996 - 2019)**
- **GSA 24 (ARS + ARA: Antalya Bay monthly, 2015 - 2019)**
- **GSA 25 (ARS, 2006- 2017 sporadic)**
- **GSA 27 (ARS + ARA: trammel nets, 2013/2017)**

Assessment

- Group investigated possible assessment methods for each GSA according to the data available and plotted length-frequency distributions of catches with those of surveys to determine the representativeness of survey data of the fished population. The result shows a good match

GSA 19 example



Assessment

- Stressed the importance of **running more than one method and assessing consistency in outcomes** of the different methods **rather than actual numerical results**
- Stressed the **importance of extensively using simulation testing**
- Agreed on a direction for assessments in each GSA with **the aim of starting with the simpler methods and progressing towards more complex models in GSAs with enough data to do so:**

Catch curves	LIME	LBSPR	LBB	AMSY	SpiCT	VPA-type	SCAA
GSA15	GSA15	GSA15	GSA15	GSA15	GSA15	GSA15	GSA18-19
GSA16	GSA16	GSA16	GSA16	GSA16	GSA16	GSA16	
GSA18	GSA18	GSA18	GSA18	GSA18	GSA18	GSA18	
GSA19	GSA19	GSA19	GSA19	GSA19	GSA19	GSA19	
GSA20	GSA20	GSA20	GSA20	GSA20			
GSA24	GSA24	GSA24	GSA24	GSA24			
GSA25	GSA25	GSA25	GSA25	GSA25			
GSA26	GSA26	GSA26	GSA26	GSA26			

Initial conclusions for assessment

Precautionary/initial

- Concentrate on *Aristaeomorpha foliacea*
- **Sexes combined**
- Preliminary screening of available biological data (growth pars and LFDs) showed **no substantial differences across the SRs**
- Preliminary assessment trials recommended for 2 hypotheses:
 - a. one stock unit in central-eastern Mediterranean (no catches by origin);
 - b. two stock units corresponding to the subregions (GSAs 12 – 21 and GSAs 22 – 27).
- Use common biological parameters based on female parameters (> precautionary): sensitivity analyses to be carried out on different sets of parameters (slow vs. fast growth)

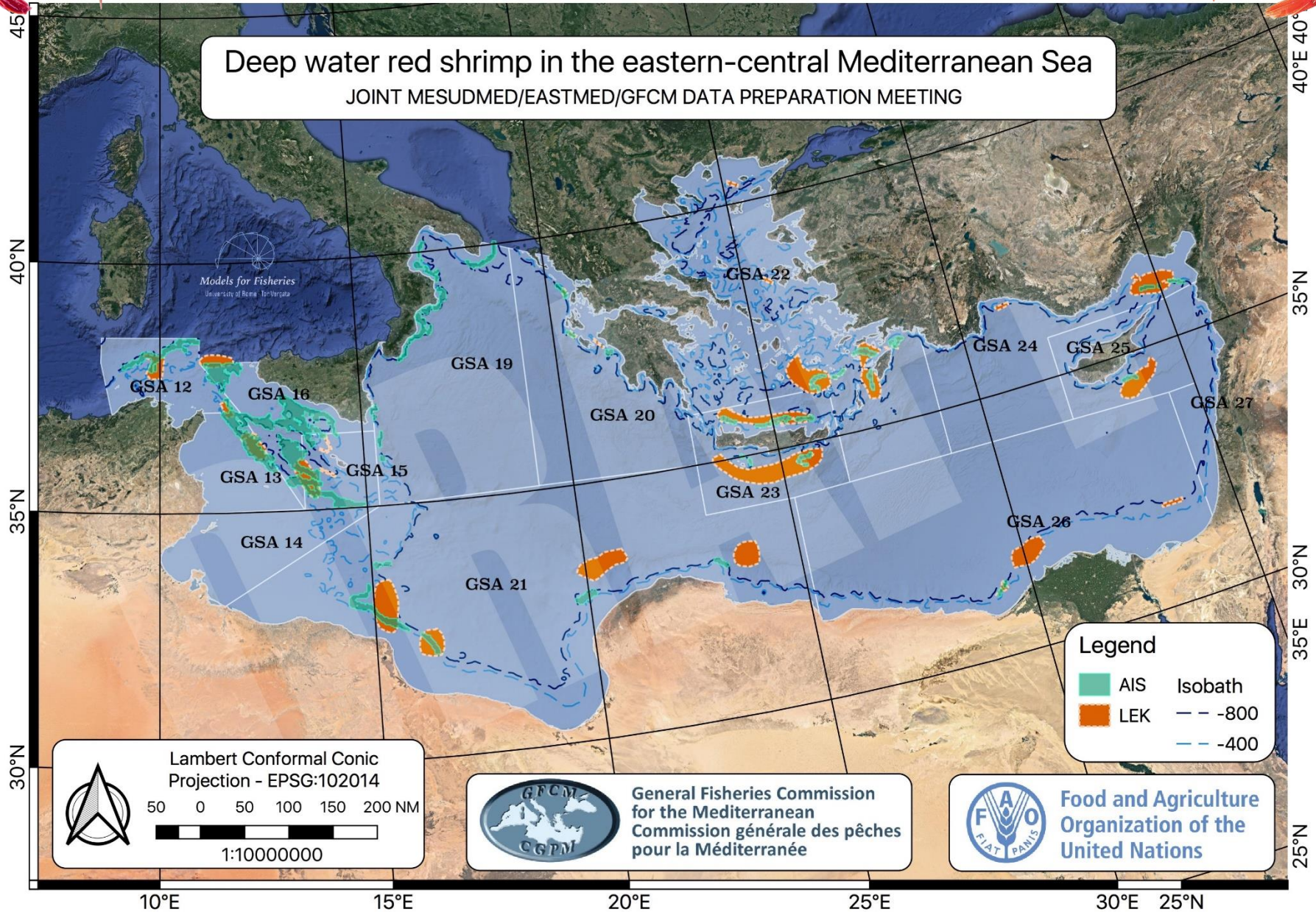
Future

- Separate sexes
- Assess *Aristeus antennatus* as well
- Further work on the identification of stock units needed

Determination of fishing footprint

Deep water red shrimp in the eastern-central Mediterranean Sea

JOINT MESUDMED/EASTMED/GFCM DATA PREPARATION MEETING



Models for Fisheries
University of Rome - Tor Vergata

Legend

- AIS
- LEK
- Isobath
- - -800
- - -400

Lambert Conformal Conic
Projection - EPSG:102014

50 0 50 100 150 200 NM

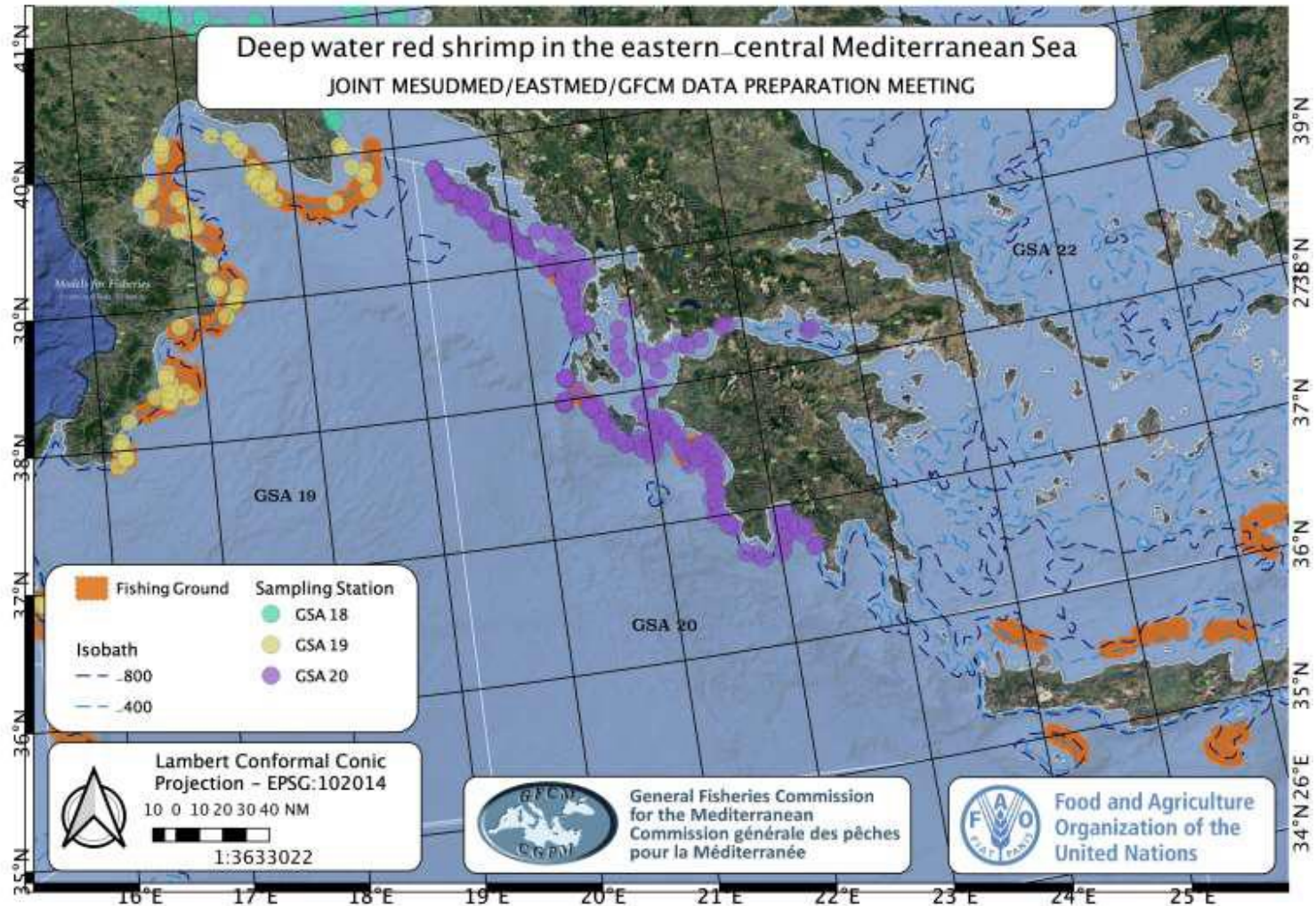
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GFCM
CGPM

General Fisheries Commission
for the Mediterranean
Commission générale des pêches
pour la Méditerranée

FAO
FIAT PANIS

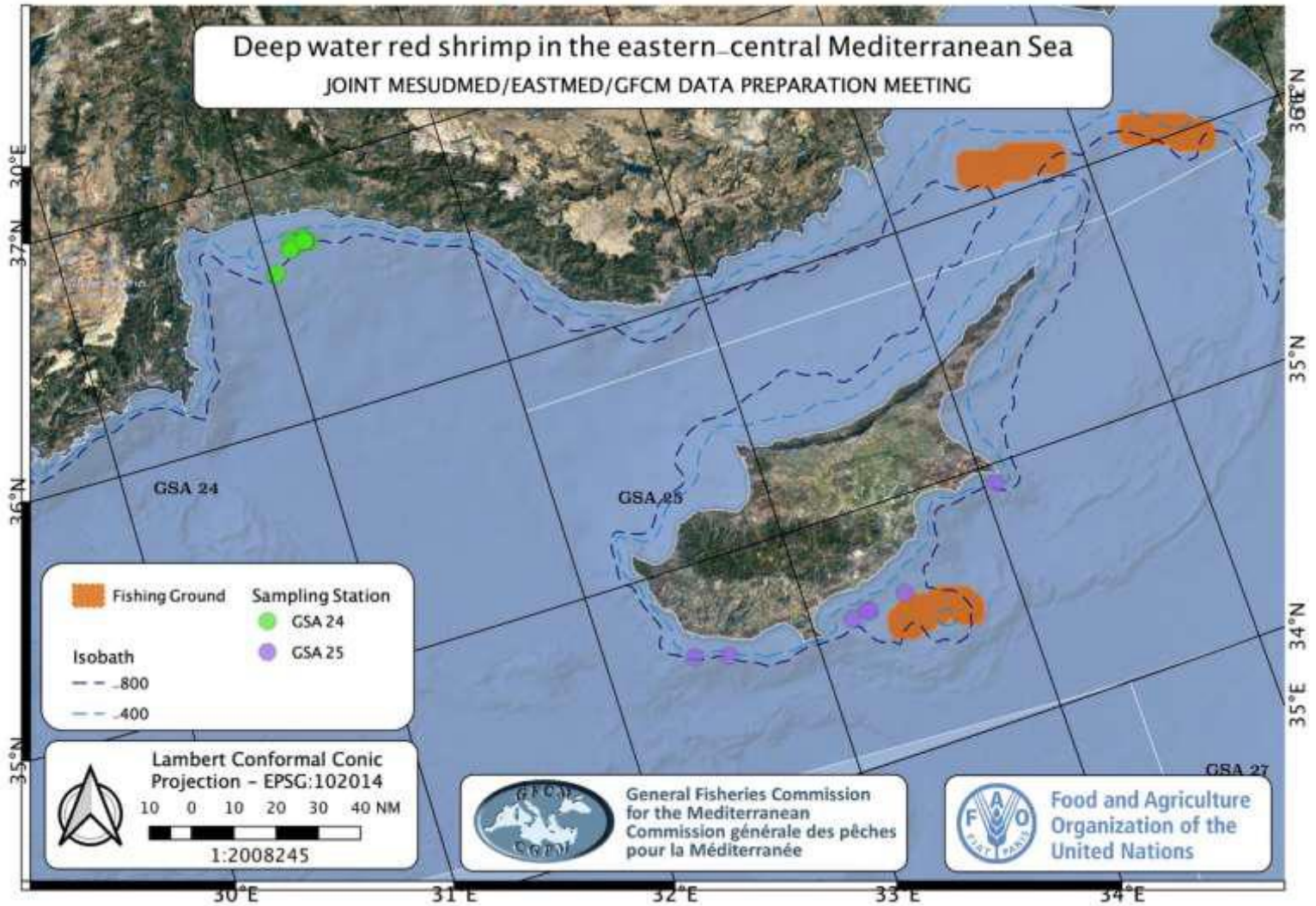
Food and Agriculture
Organization of the
United Nations

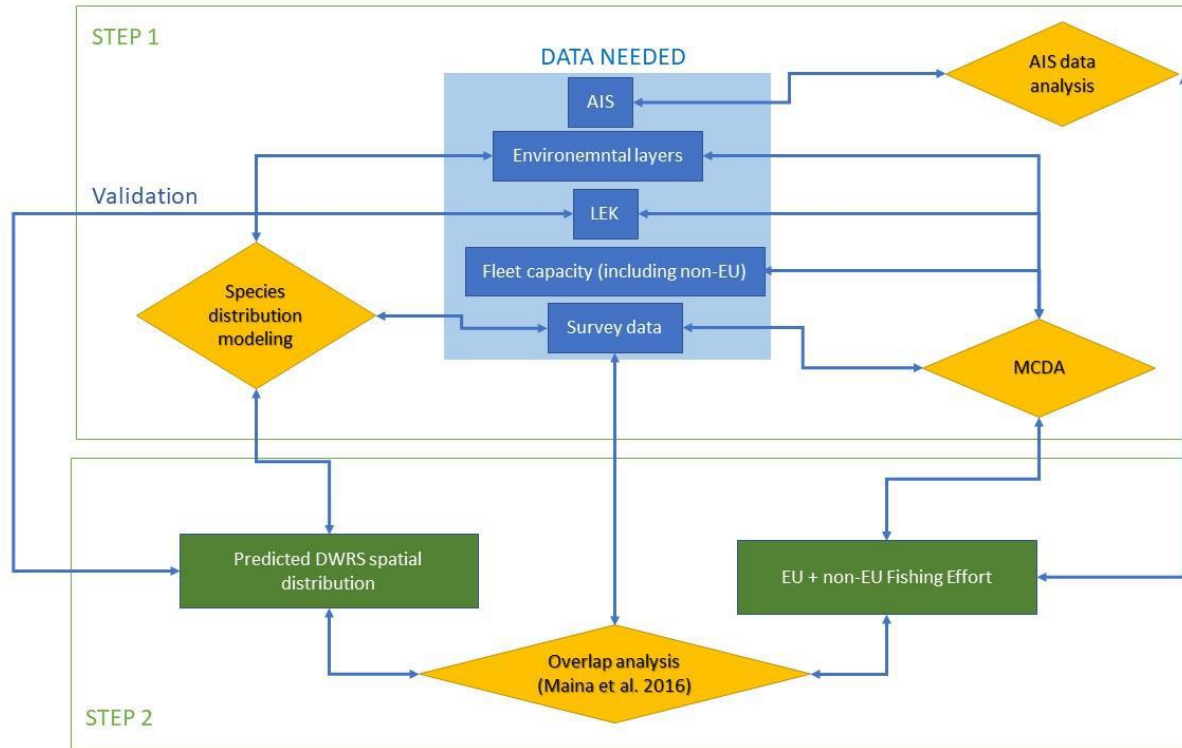


Maps of survey trawl positions of most recent survey overlaid on fishing grounds produced by GFCM WGs

Deep water red shrimp in the eastern-central Mediterranean Sea

JOINT MESUDMED/EASTMED/GFCM DATA PREPARATION MEETING





Schematic representation of the actions towards the estimation of fishing grounds for DWRS in the E-C Mediterranean according to GFCM.



Deepwater red shrimp in the eastern-central Mediterranean



Existing...

- Authorized landing ports
- Bycatch reporting obligation
- Catch and effort record
- Register of fishing authorizations
- Effort restrictions
- International inspection plan
- Logbook/VMS requirements
- Transshipment prohibition



Deepwater red shrimp



in the eastern-central Mediterranean

Potential...

- Report **catches by GSA of origin**
- **Freeze fishing effort/capacity**
- **Minimum landing size** (based on size at first maturity), at least for *A. antennatus*
- **Minimum mesh size and twine material** for the trawl cod-end (pending possible advice from WGFiT)
- **Technical gear measures that minimize the possibility of catching individuals smaller than the minimum landing size** (pending possible advice from WGFiT)
- Spatial **protection of nursery grounds** for *A. foliacea*
- Establishment of a **fishing season**

Thank you for your attention



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