

Summary of GFCM Ad-hoc Working Group on Hake

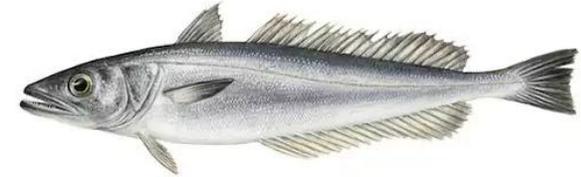
Ribera-Altimir J., Carreton M., Garriga-Panisello M., Ramírez J.G., Balcells M.,
Sala-Coromina J., Blanco M., Couve P., Santos-Bethencourt R., Bustos F.,
Galimany E., Recasens L., Company J.B.



GFCM Ad-hoc Working Group on European hake (WGHKE)

Rome, 11-13 March 2025

72 experts from research institutions
EU Commission
GFCM Secretariat



Objectives

1 **Reviewing** Mediterranean-basin and subregional data and stock assessment model assumptions to develop good practice guidelines for assessing this species



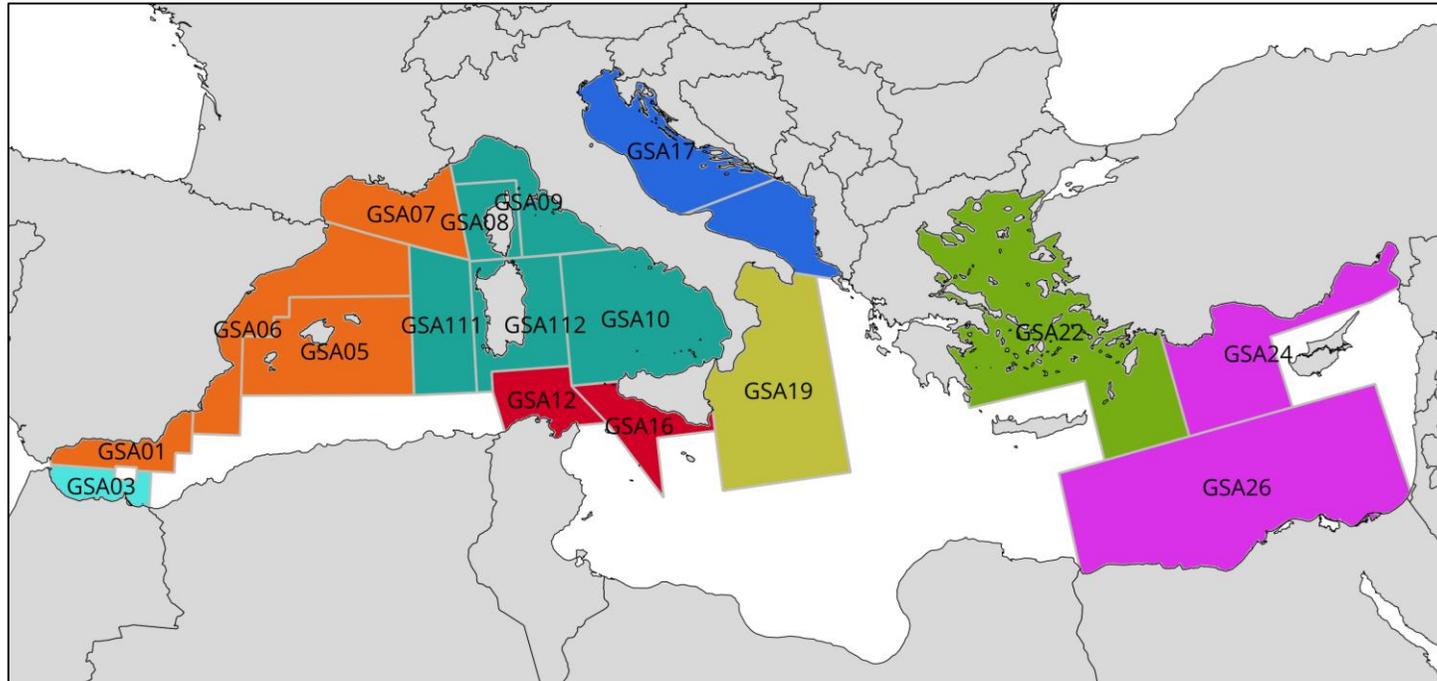
2 Drafting a **roadmap** for future work



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What was presented



8 stock assessments as basis for advice

**3 complementary stock assessments
(GSA 1, GSA 5, GSA 6)**

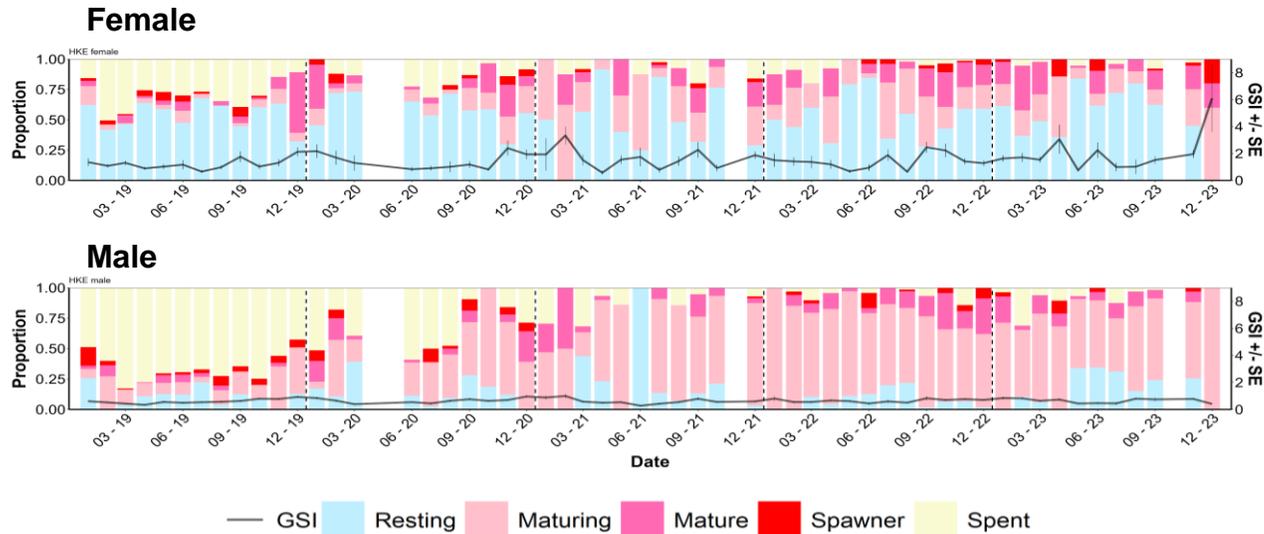
Complementary data for GSA 6 (ICATMAR)



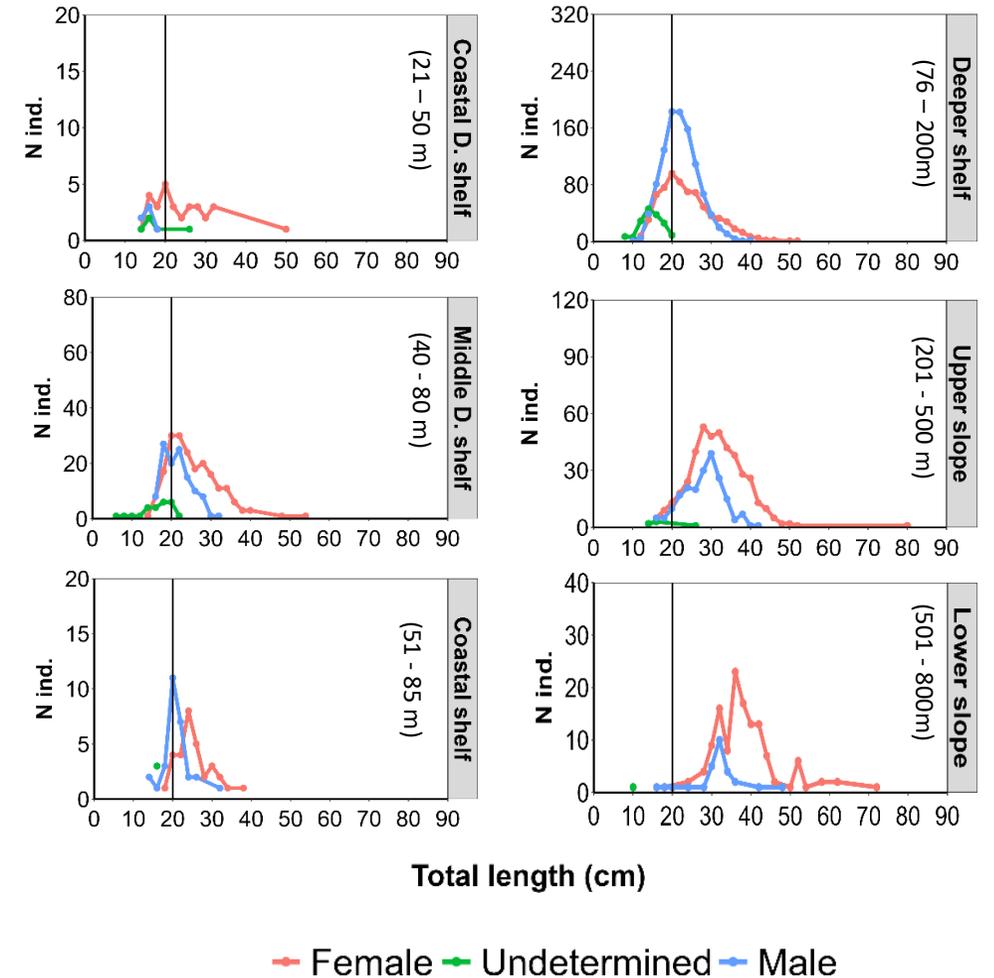
Species biology: parameters by sex

- Length-weight relationship
- Size at first maturity
- Sex ratio
- Length frequency distribution
- Reproductive cycle
- Recruitment peaks

Monthly gonadal cycle by sex (2019-2023)



LFD by sex and métier (2019-2023)



Complementary data from the GSA6

Catch is not only the reflex of population dynamics



Biological

- Recruitment peaks ●
- Population shifts

Environmental

- Cascading events ●
- Nutrient dynamics

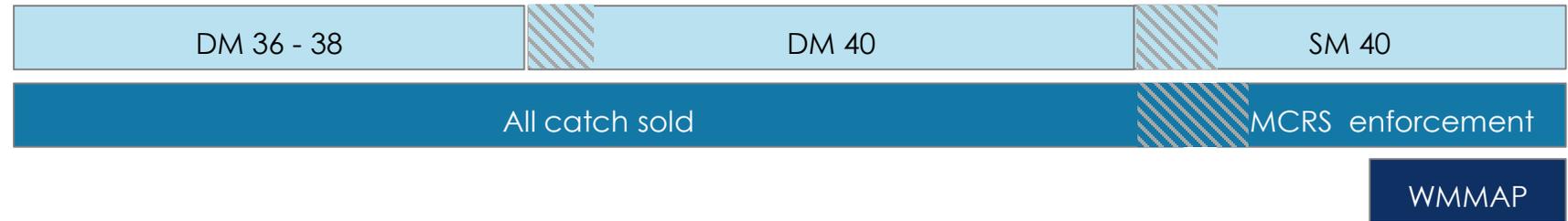
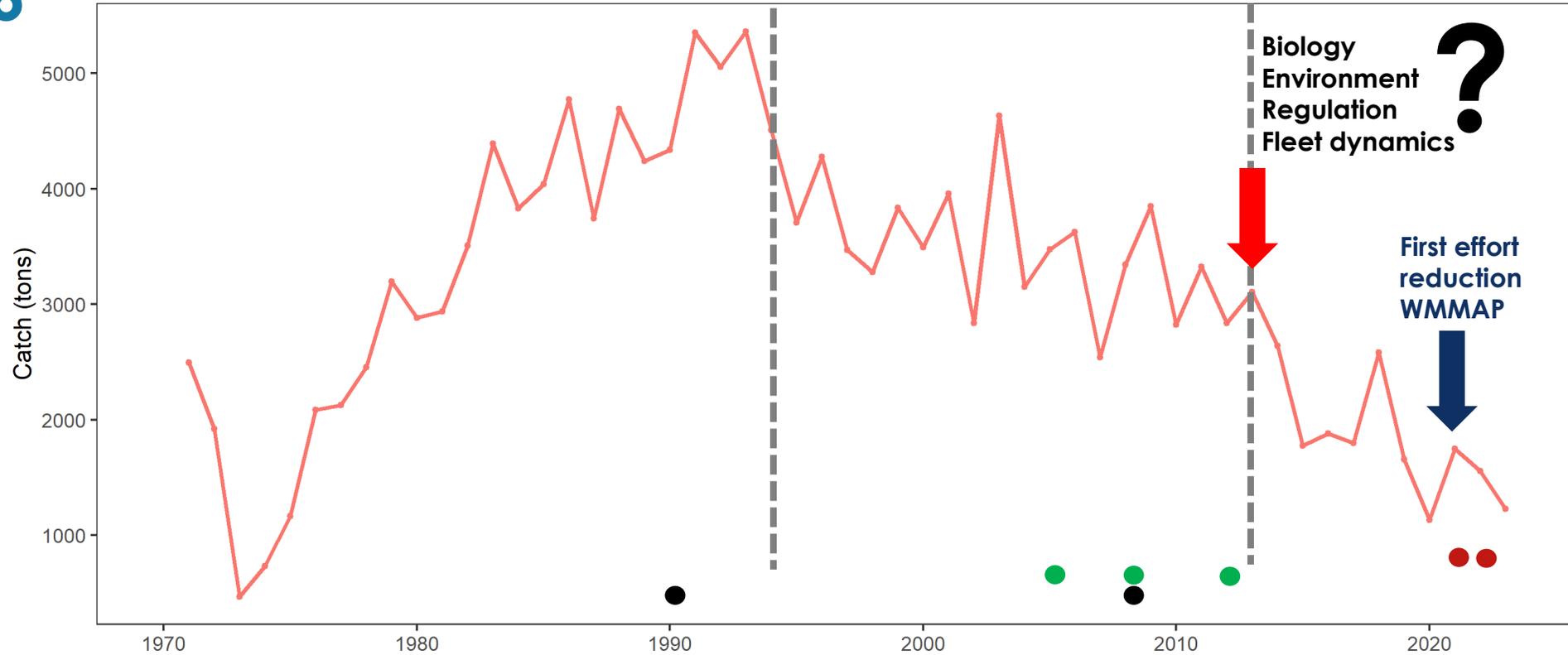
Regulatory

- Selectivity
- MCRS
- Effort reduction
- Enforcement and control changes
- Other management initiatives



Fleet dynamics

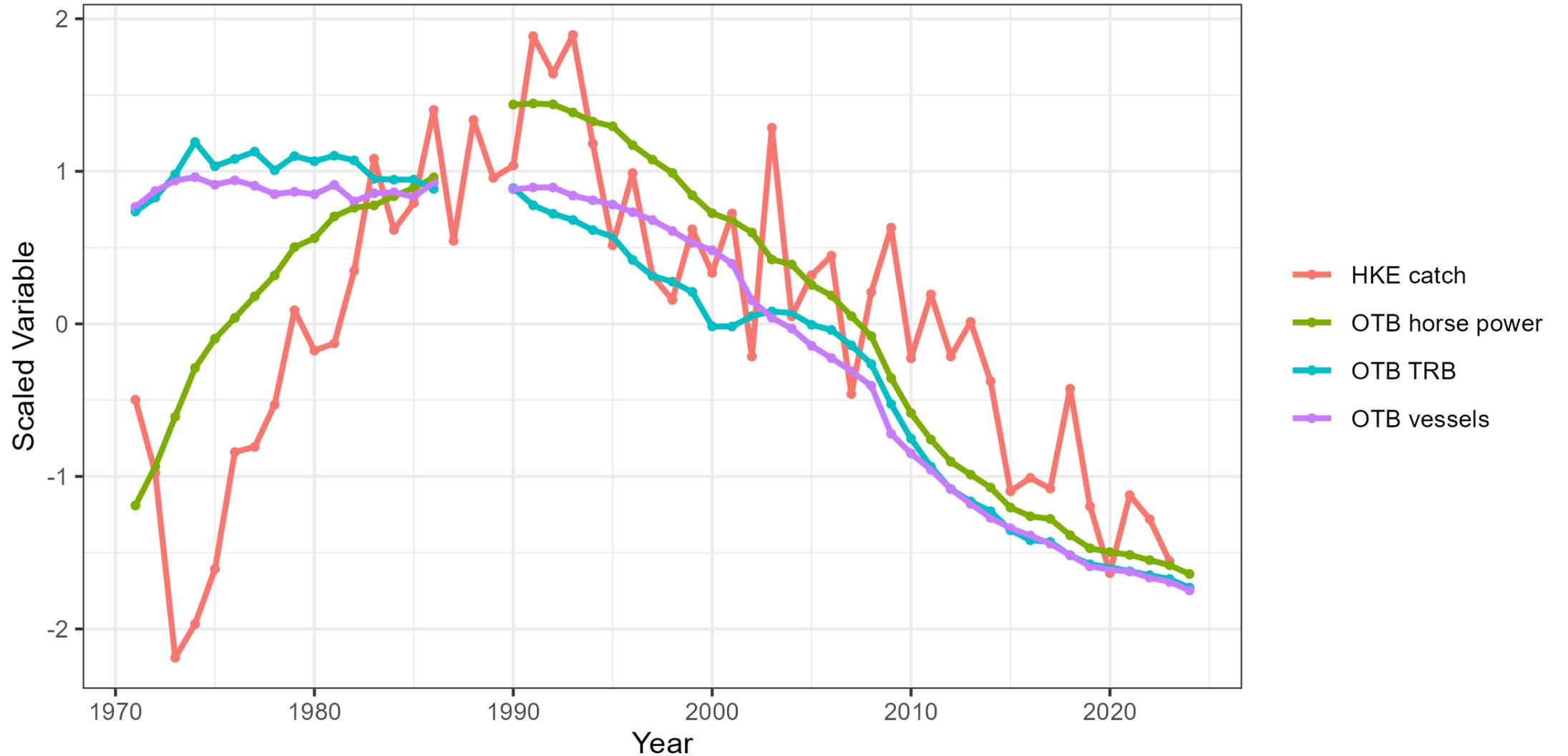
- Variation in N vessels
- Crude oil price spikes ●
- Changes in TRB / HP



Complementary data from the GSA6



Historical commercial and effort data



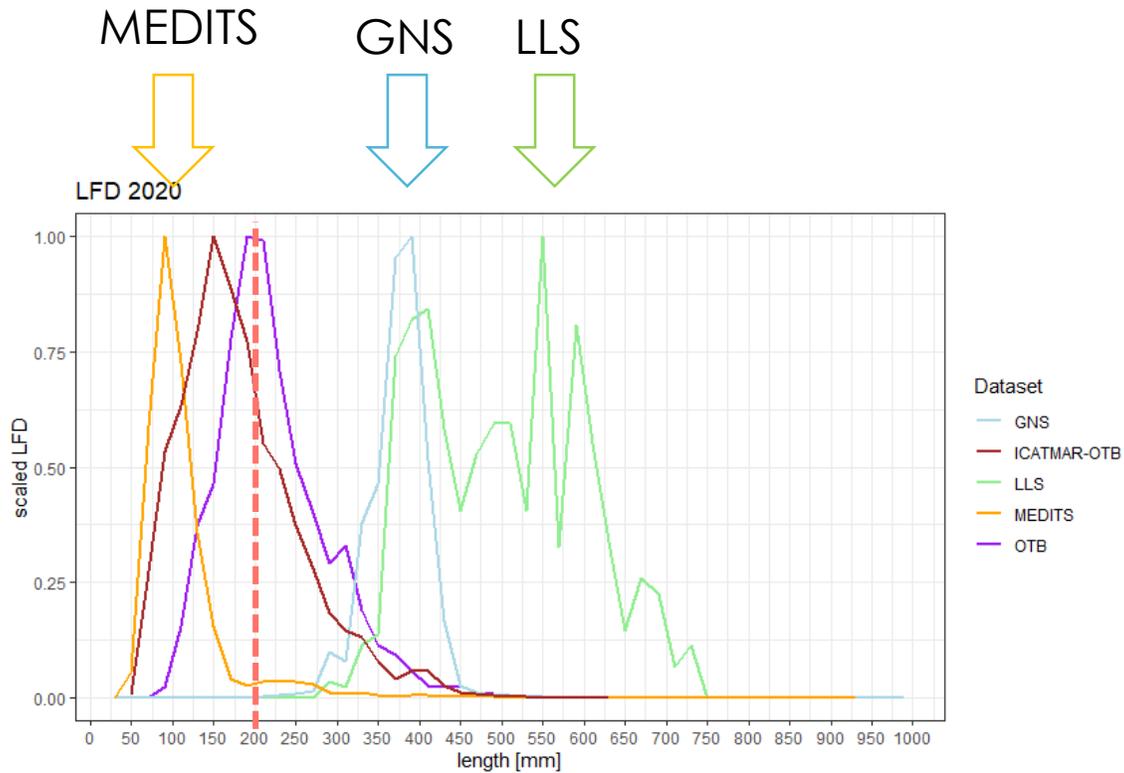
Identified issues

Age determination



- **Age determination** in hake is particularly difficult, and there is currently no consensus as to which is the most appropriate method
- Stock assessment models that are currently the basis for advice are **age-based**
- They **transform measured sizes into ages** following parameters that may not be well-adjusted
- There is a need to **refine these methods**

Hake population structure

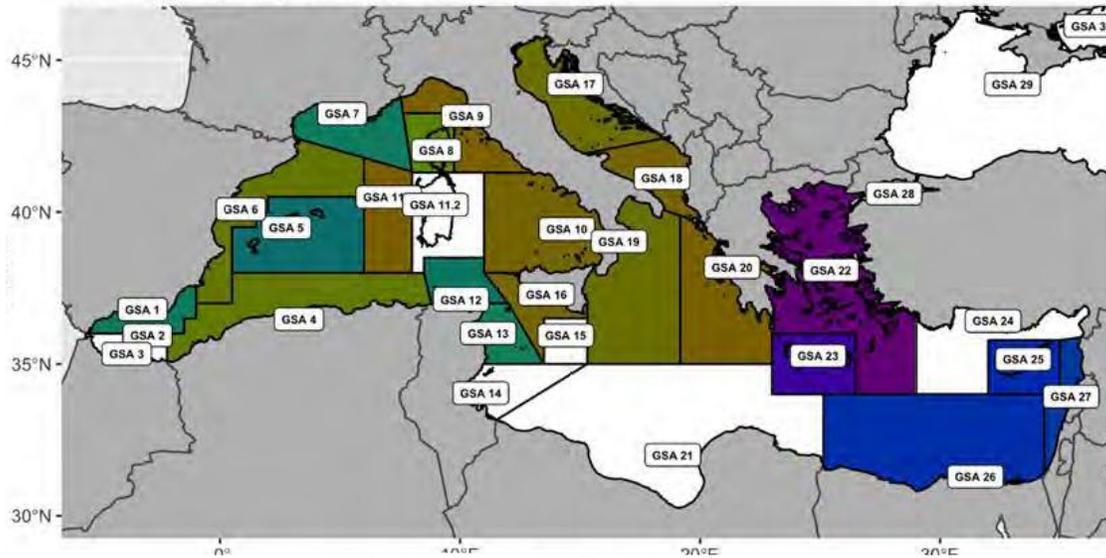


- Annual biomass and abundance survey is done with bottom trawl gear, which only catches **small and medium individuals**
- No survey for **large individuals**
- **Longline and nets** fleets are declining, few CPUE data on large reproductive individuals
- CPUE data need to be standardized

Spatial delimitation of management



HKE - Stock configuration by GSA



Stock #1



Stock #2



Stock #3



Mediterranean hake populations identified through genetics, otolith shape and microchemistry (Source: project MED_UNITS Final report)

- Discussion on whether to group GSAs for management
- Projects MED_UNITS and Transboran have completed analysis on **management units definition** in the Mediterranean
- Differences in genetics, otolith shape or microchemistry may be originated many generations ago. **Populations are not necessarily equivalent to stocks.**
- There is currently no available information on connectivity resulting from **adult movements and recruitment dispersal**
- **Multi-fleet:** different fishing pressure and selectivity by region

Roadmap

Short-term roadmap

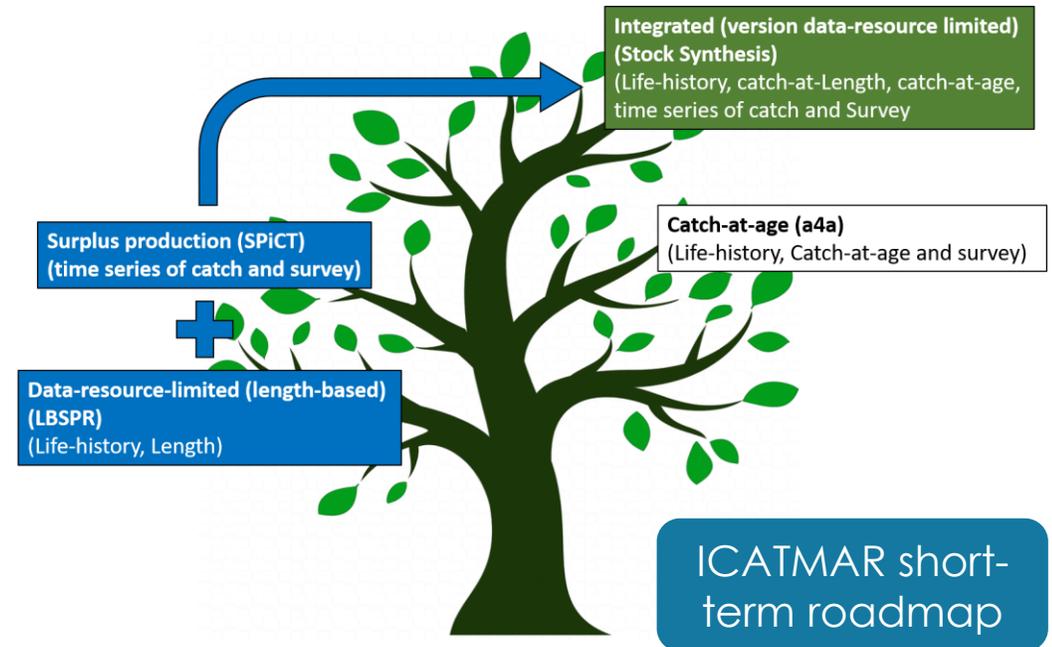
1 Prioritize benchmark process for the Western Mediterranean stocks

- 1) **Workshop on stock structuring** of WestMed: connectivity but also information by GSA
- 2) **Benchmark process** using models that can account for the complexity of the biology by sex and the multi-fleet nature of the fisheries and associated selectivity patterns

2 Refine existing a4a assessment models (ex: with data for growth by sex, selectivity, etc.).

3 When possible, **develop integrated models to be considered as new candidate models for quantitative advice.**

In the meantime, **conduct complementary analyses with SPiCT** fitted to exploratory long-line and gillnet data and advance on the development of **hake assessments in data-limited and data-moderate situations**, in the absence of longer time series of historical data



Medium/long-term roadmap

1 Identify the **stock boundaries** for hake stocks across the Mediterranean

2 Develop capacity in applying **integrated models** to account for:

- sex dimorphism
- multi-fleets selectivity and fishing mortality
- absence of ageing data
- missing values, by incorporating different sources of fishery and biological information

3 Develop a **long-term strategy towards spatially explicit assessment and advice** frameworks that account for:

- Connectivity through adult movement and recruitment dispersal
- Regional differences in fleet dynamics and input data

4 Establish an **ad-hoc working group** to solve issues in input data such as determination of age and standardization of survey and CPUE data

Thank you

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