



**Preliminary results from the
ECOCADIZ-RECLUTAS 2021-10
Spanish acoustic survey
(21 October – 07 November 2021)**

By

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ECOCADIZ 2021-07 survey: NO SURVEY THIS YEAR!!

- Survey planned to be performed from 31/07 – 13/08/2021 onboard R/V *Miguel Oliver* (as usual).
- Malfunctioning of the echo-sounder (vessel electric problems affecting to the echo-sounder?) during the previous acoustic survey (*MEDIAS*) caused the interruption of that survey.
- Failed attempts of solving such problems also led to the definitive suspension of the *ECOCADIZ* survey.
- Probable replacement of the R/V *Miguel Oliver's* EK60 by the EK80 this winter, including the corresponding further checks (calibration, self-noises, acoustic recording, etc.).
- Impact of this gap in the stock assessment (Gadget model) of the ane.27.9a southern component will have to be explored. *ECOCADIZ* not used in the sardine stock assessment (pil.27.8c9a).
- No survey, No data, No gridfiles.

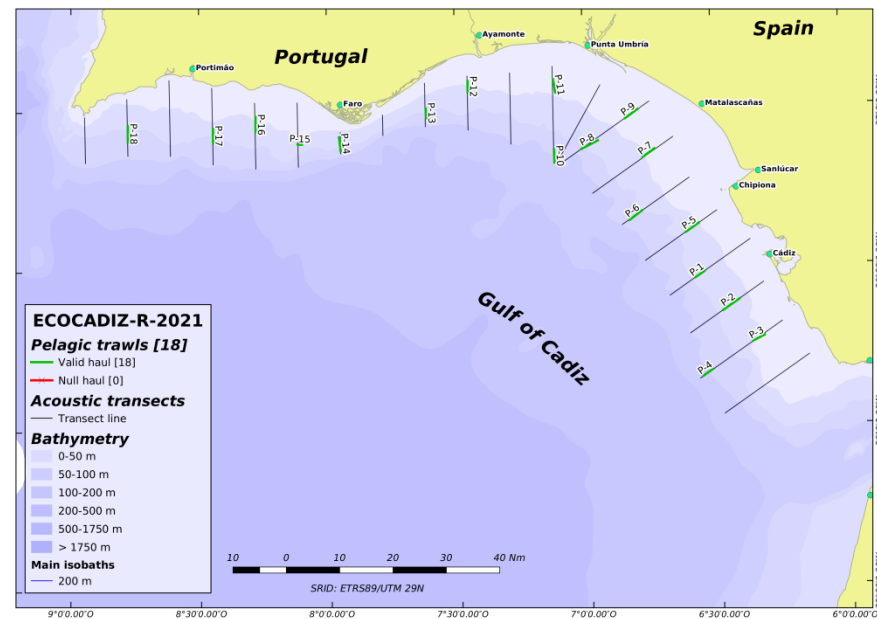
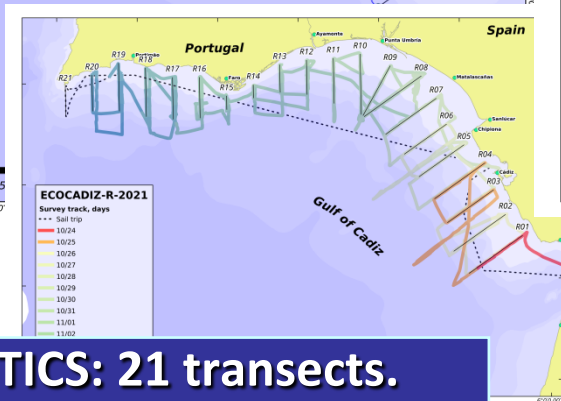
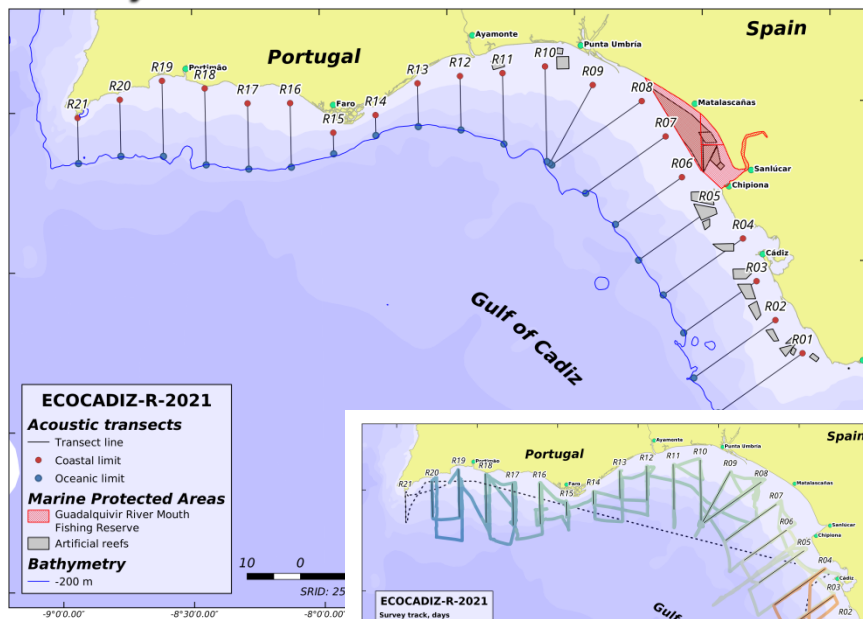
ECOCADIZ-RECLUTAS 2021-10 survey: Main objectives

- Acoustic assessment (by echo-integration) and mapping of neritic fish resources and of the oceanographic and biological conditions off the Gulf of Cadiz continental shelf, with special reference to anchovy and sardine juveniles (age 0).
- Biological characterization of assessed fish species.
- Mapping of anchovy and sardine recruitment areas in the surveyed area.
- Hydrological characterization of the surveyed area (CTD/LADCP/VMADCP & TSG-F).

ECOCADIZ-RECLUTAS 2021-10: Methods and samplers

Variable	ECOCADIZ-RECLUTAS 2020-10
Dates	21/10 – 07/11/2020
Research vessel	<i>Ramón Margalef</i> (IEO)
Survey design	21 transects, normal to the shoreline, 8-nm interspaced, 20 – 200 m depth
Acoustic sampling	21 transects
Echosounder (working freq.)	EK 80 (18, 38, 120, 200, 333 kHz)
Fishing gear (mean vert. op.)	<i>Gloria HOD 352</i> (10 m)
Fishing gear performance monitoring	Net Sonar (FS 20) + Scanmar door sensors
Valid fishing hauls (total)	18 (18)
CUFES (# st.)	No
VMADCP/TSG-F /AANDERAA	Yes/Yes/Yes
CTD-LADCP (# casts)	Yes (168, over 22 from 23 transects)
Manta Trawl (# st.)	No
Top Predator census	No

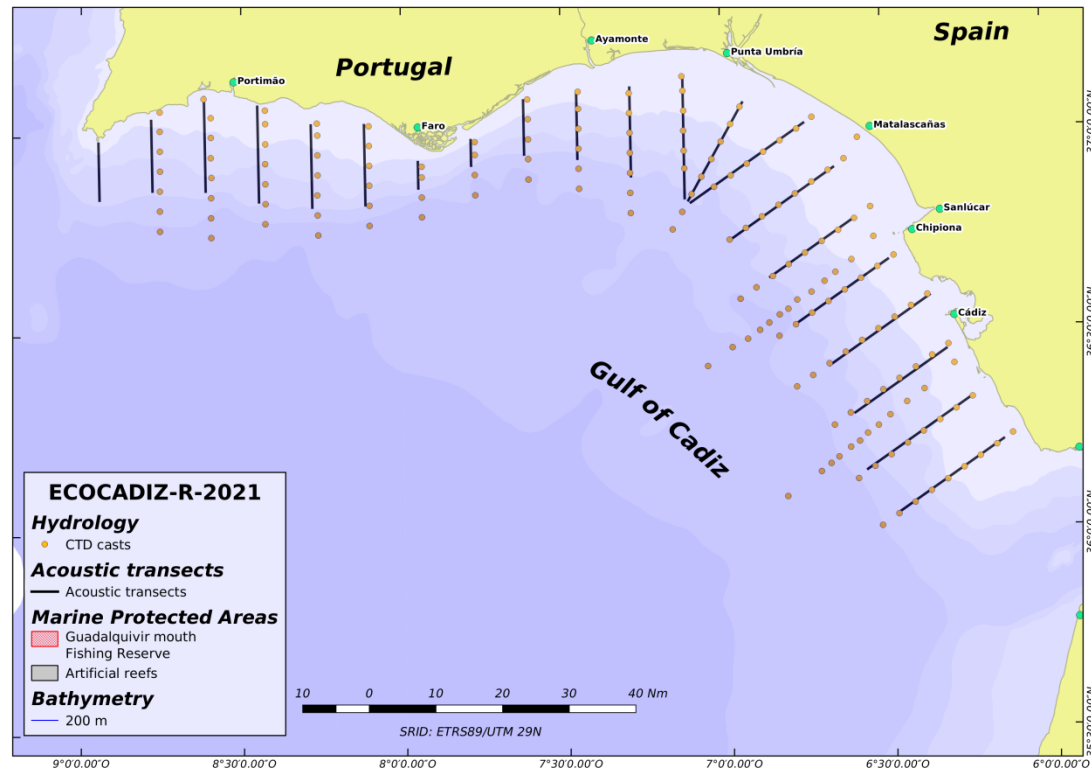
ECOCADIZ-RECLUTAS 2021-10: Methods (acoustics and fishing hauls)



- ACOUSTICS: 21 transects.
- RA01 to RA04 transects were sampled in an opposite direction to the usual E-W one trying to avoid Spanish Navy exercises all over the Spanish waters.

- GROUNDTRUTHING PELAGIC HAULS: 18 hauls, all valid ones (below the historical mean at about 20 hauls).

ECOCADIZ-RECLUTAS 2021-10 : Methods (CTD+LADCP)

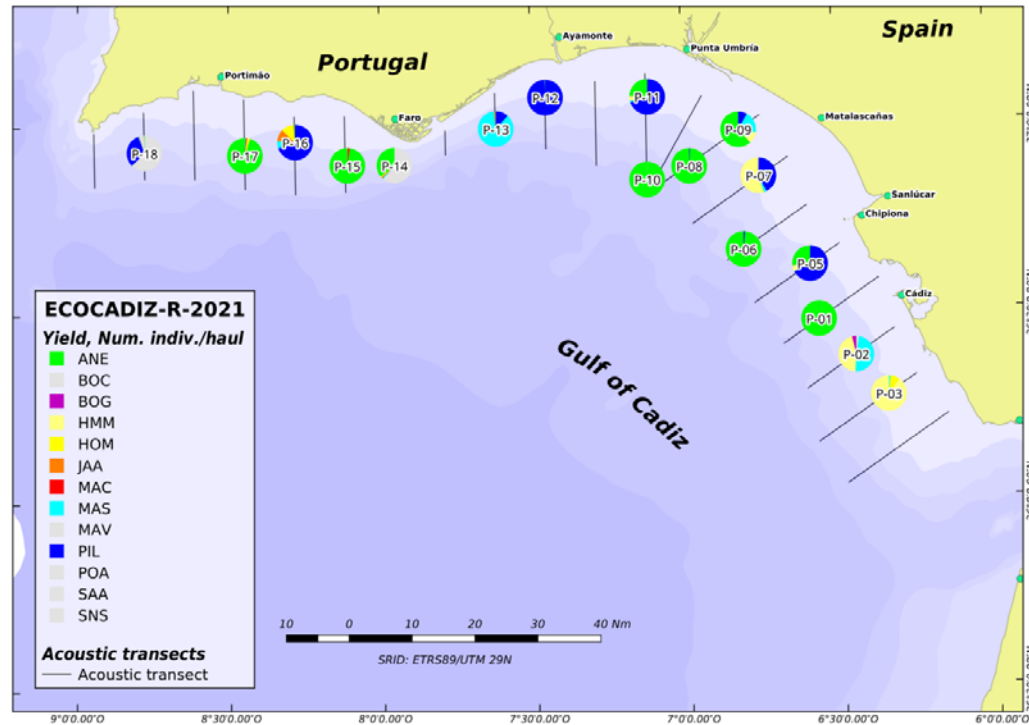


- CTD-LADCP: 168 stations in 22 from the 23 foreseen transects (+ 1 station for calibration). R21 CTD stations not sampled because time shortage.
- VMADCP (in night tracks).
- TSG-F.
- AANDERAA (24 h).

ECOCADIZ-RECLUTAS 2021-10 survey: Available estimates

- Echogram scrutiny not yet started, therefore...
- ...No NASC data, No gridfiles.
- ...N & B estimates not yet available.
- Only information from fishing hauls is available so far (*i.e.*, occurrence frequency, yields, LFD & mean size/haul...).

ECOCADIZ-RECLUTAS 2021-10: fishing stations and their species composition

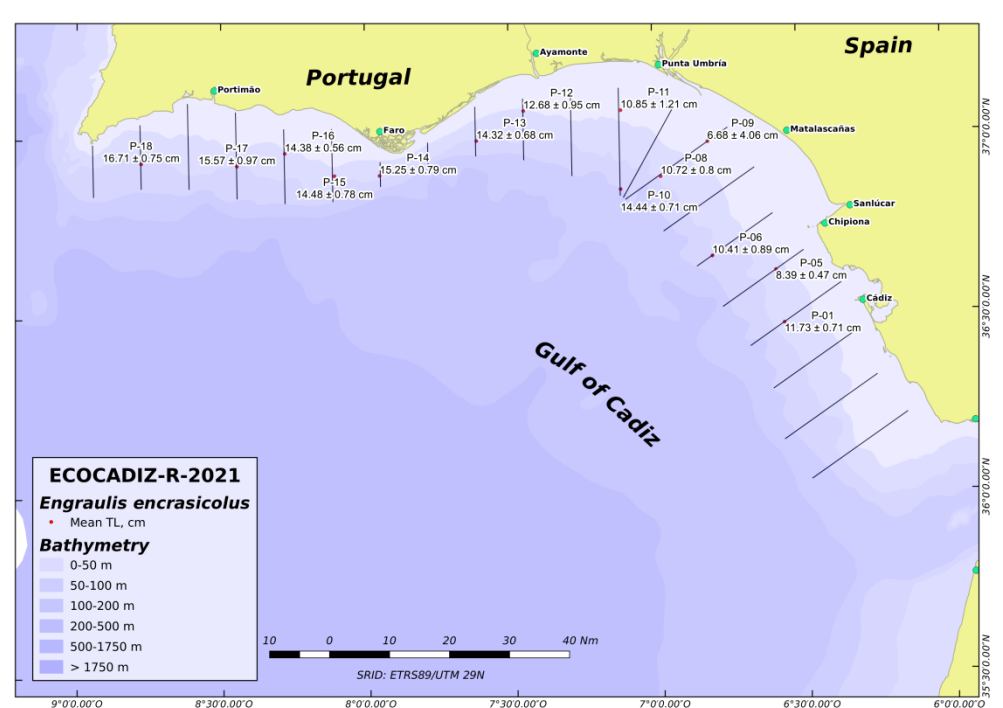
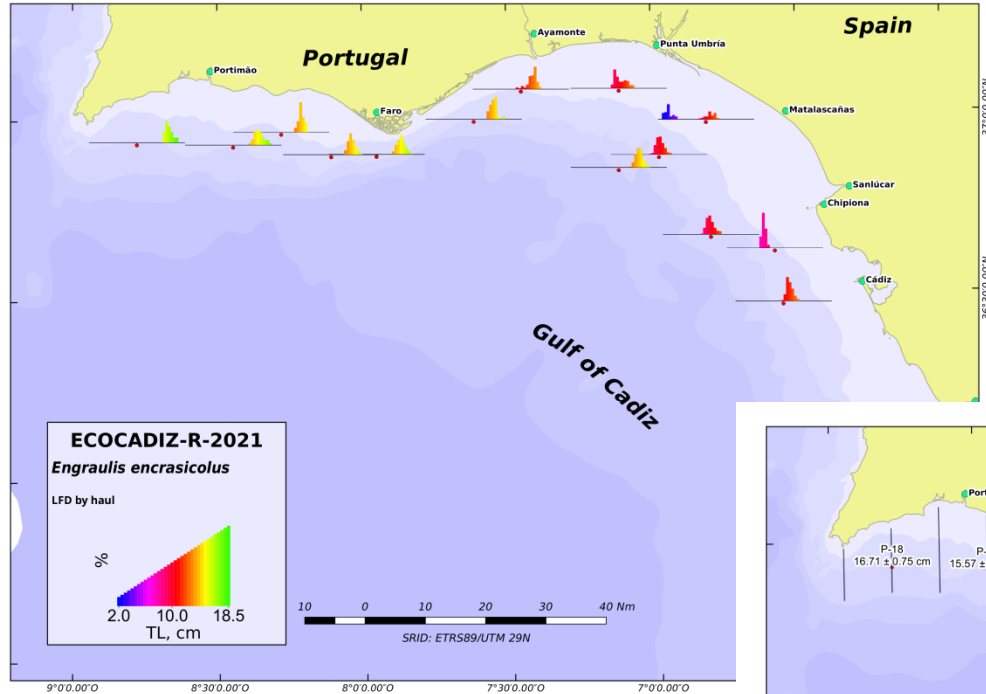


- 18 valid fishing hauls: 10 889 kg, 182 thousand fish of captured species.
- ANE & VMA the most frequent. PIL, HOM & BOG very frequent. MAC, HMM & JAA less frequent. BOC, SNS, MAV rare.
- PIL, ANE & VAM: (relatively) high yields; rest: low or very low yields.

ECOCADIZ-RECLUTAS 2021-10: fishing stations and their species composition

- Very low yields in Spanish waters (cause?: strong easterlies some weeks before the survey).
- Portuguese waters concentrated the bulk of the main species' populations, but neither showed very high yields, excepting isolated occasions/locations.
- Personal perception from echograms in real time: decreased population levels?

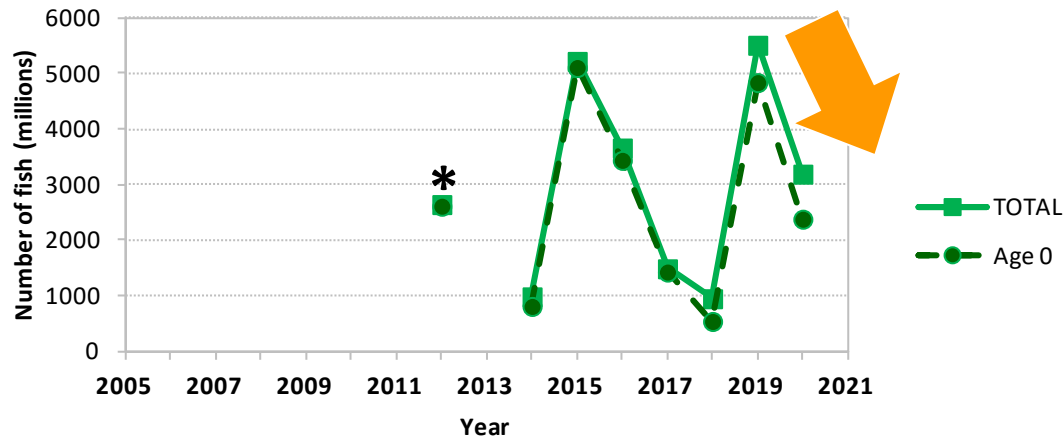
ECOCADIZ-RECLUTAS 2021-10: Anchovy. LFD and mean size in fishing hauls.



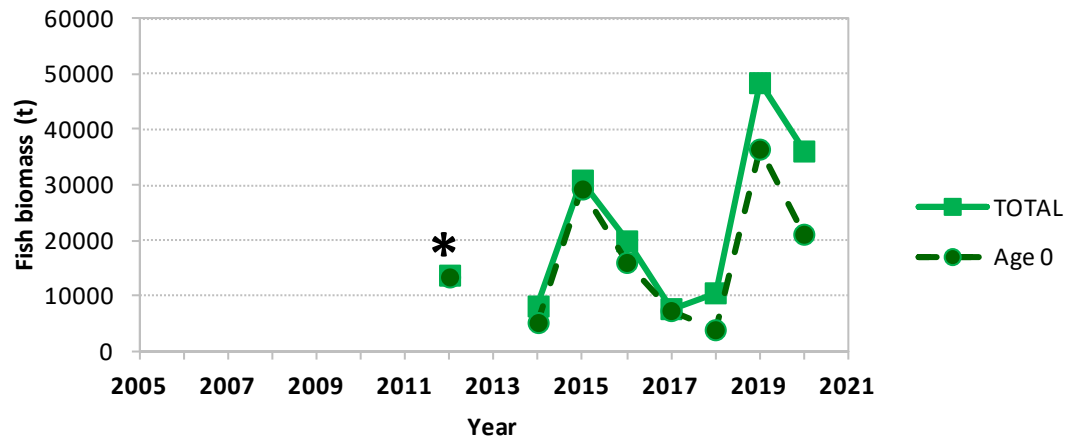
- The largest fish in western Algarve.
- The smallest ones in coastal waters between Chipiona and El Rompido.

ECOCADIZ-RECLUTAS 2021-10: Anchovy. Trends.

Anchovy abundance ECOCADIZ-RECLUTAS Surveys

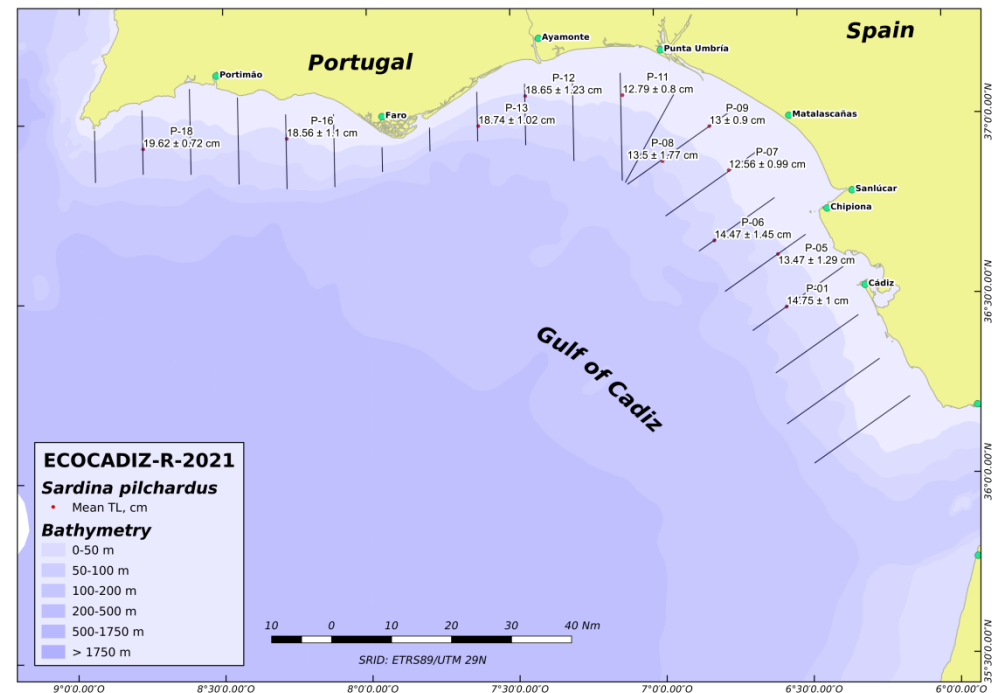
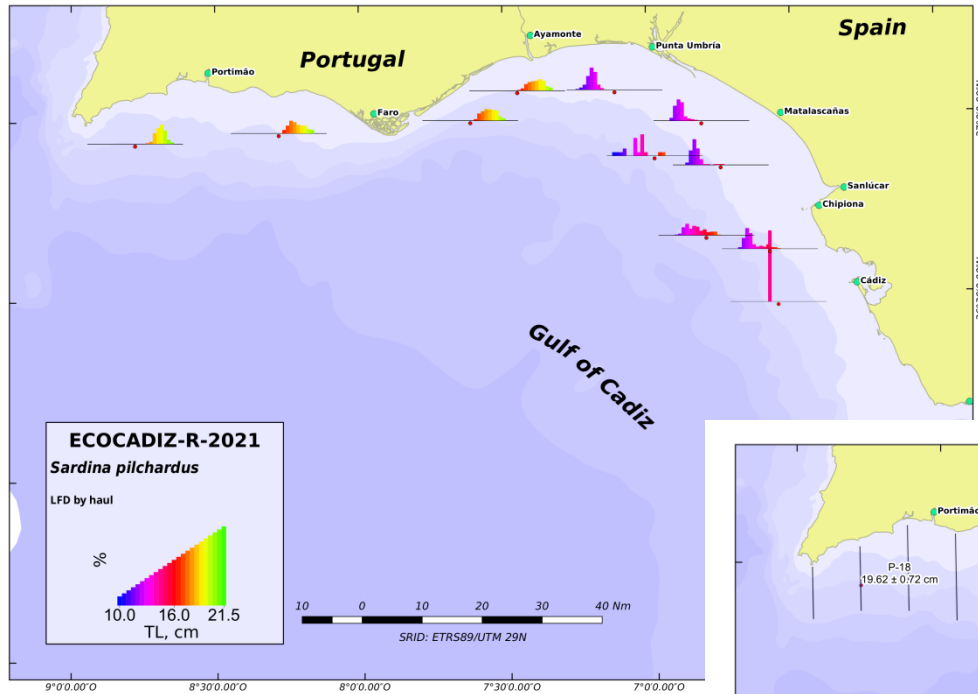


Anchovy biomass ECOCADIZ-RECLUTAS Surveys



(*) Spanish waters only

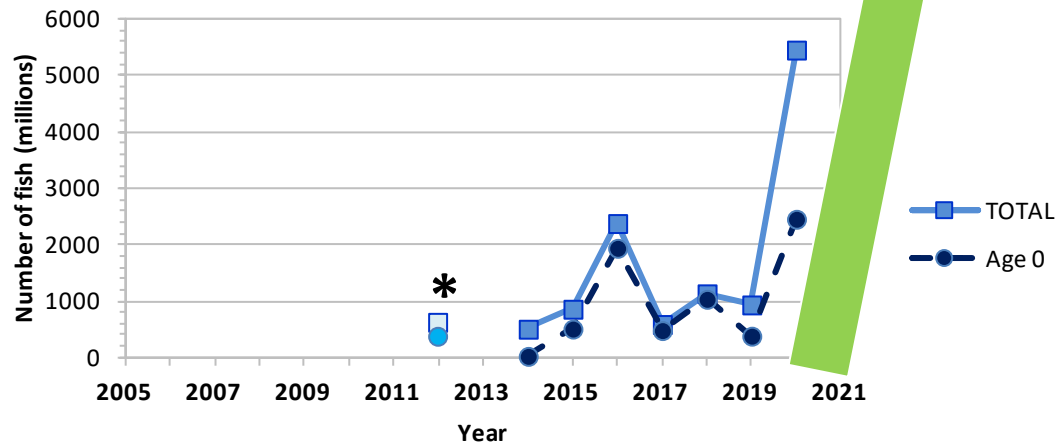
ECOCADIZ-RECLUTAS 2021-10: Sardine. LFD and mean size in fishing hauls.



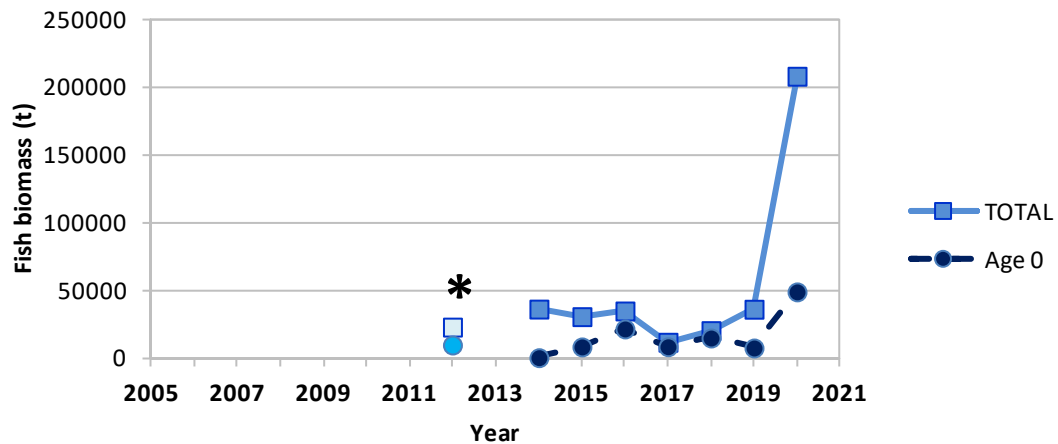
- The largest fish in Portuguese waters.
- The smallest fish in coastal waters between Chipiona and El Rompido.

ECOCADIZ-RECLUTAS 2021-10: Sardine. Trends.

Sardine abundance ECOCADIZ-RECLUTAS Surveys

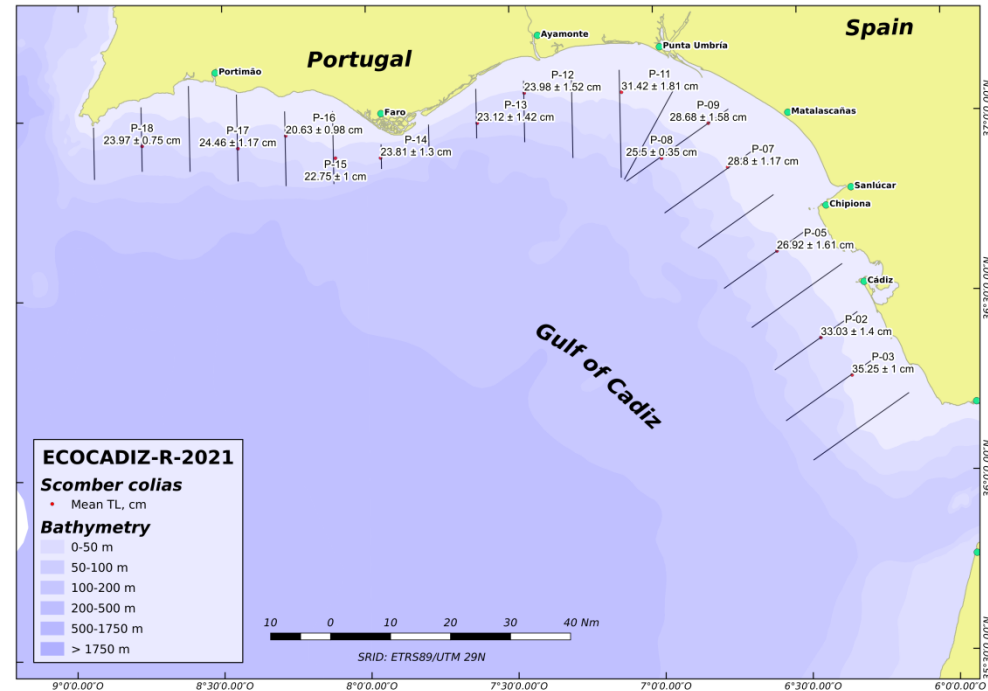
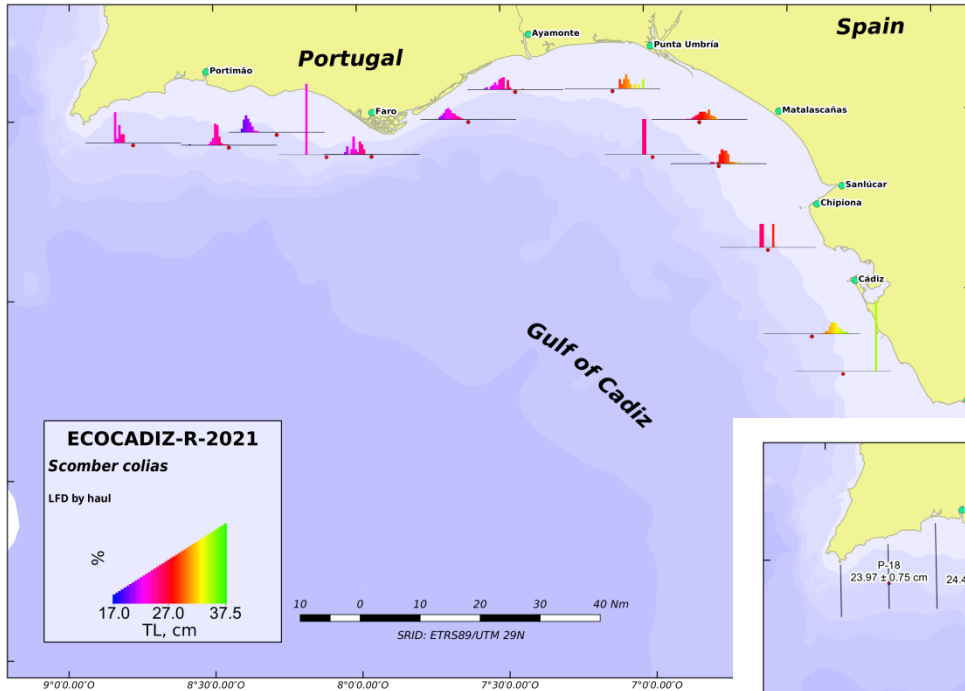


Sardine biomass ECOCADIZ-RECLUTAS Surveys



(*) Spanish waters only

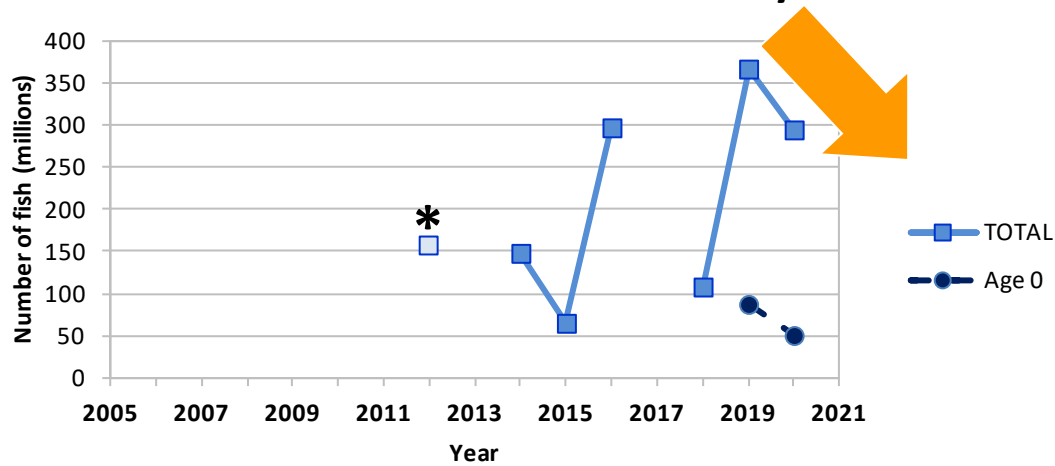
ECOCADIZ-RECLUTAS 2021-10: Chub mackerel. LFD and mean size in fishing hauls.



- The largest fish in Spanish waters.
- Smaller fish in Portuguese waters, the smallest in the middle-outer shelf waters between Albufeira and Alfanzinha.

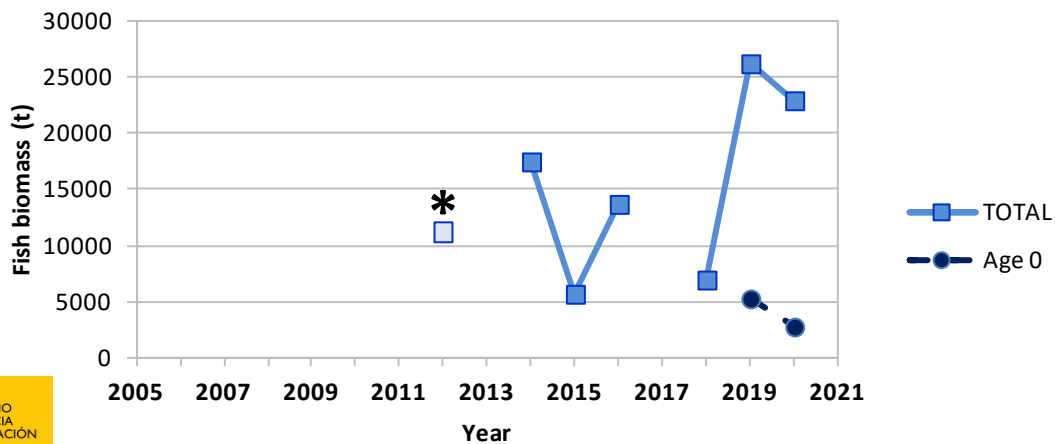
ECOCADIZ-RECLUTAS 2021-10: Chub mackerel. Trends.

Chub mackerel abundance ECOCADIZ-RECLUTAS Surveys

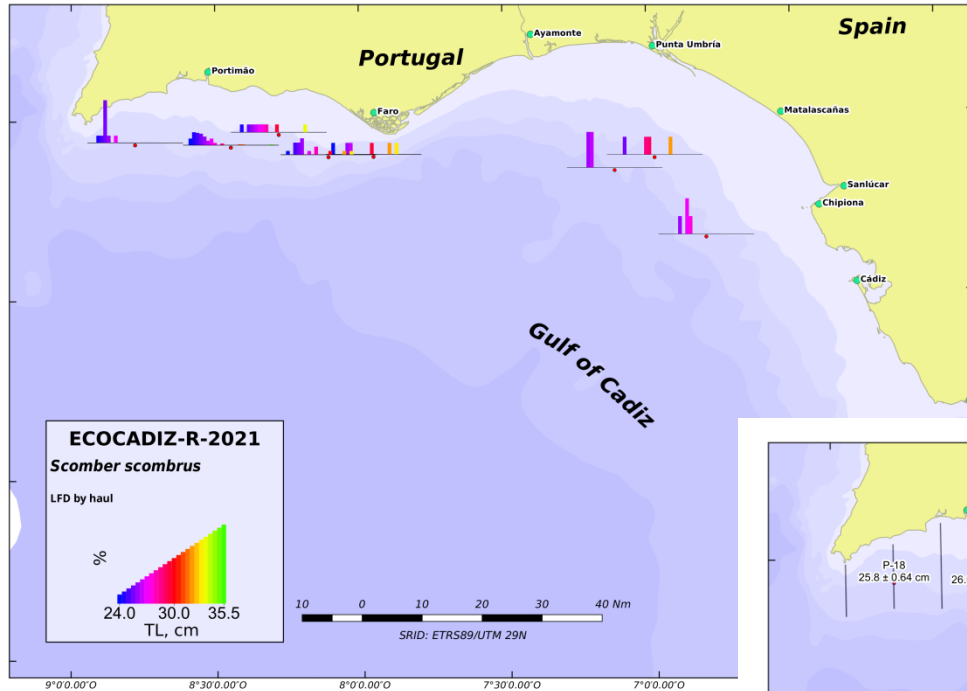


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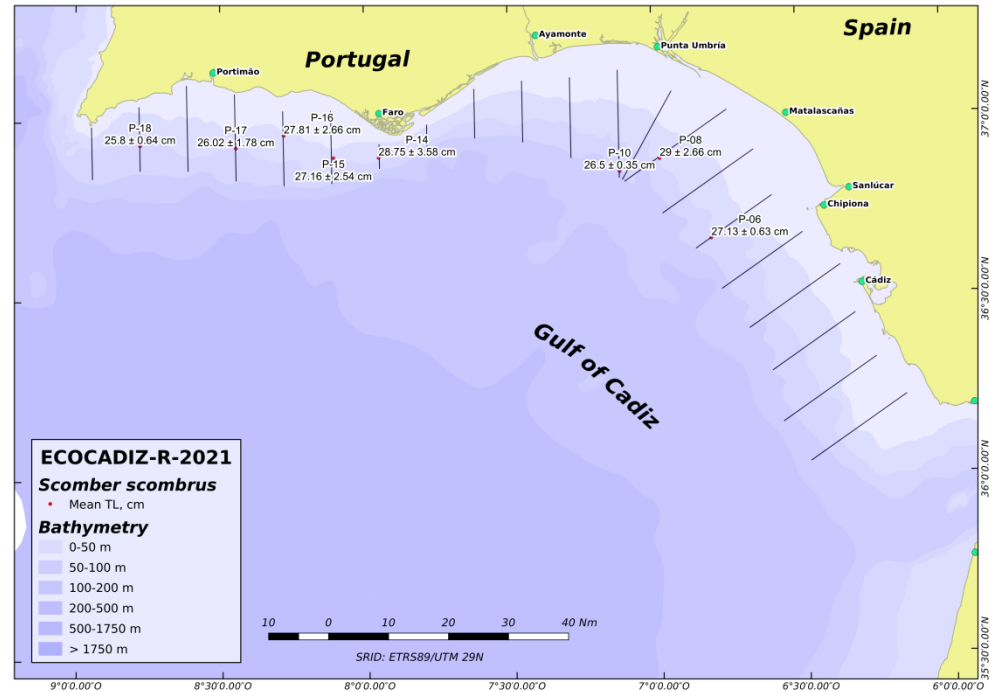
Chub mackerel biomass ECOCADIZ-RECLUTAS Surveys



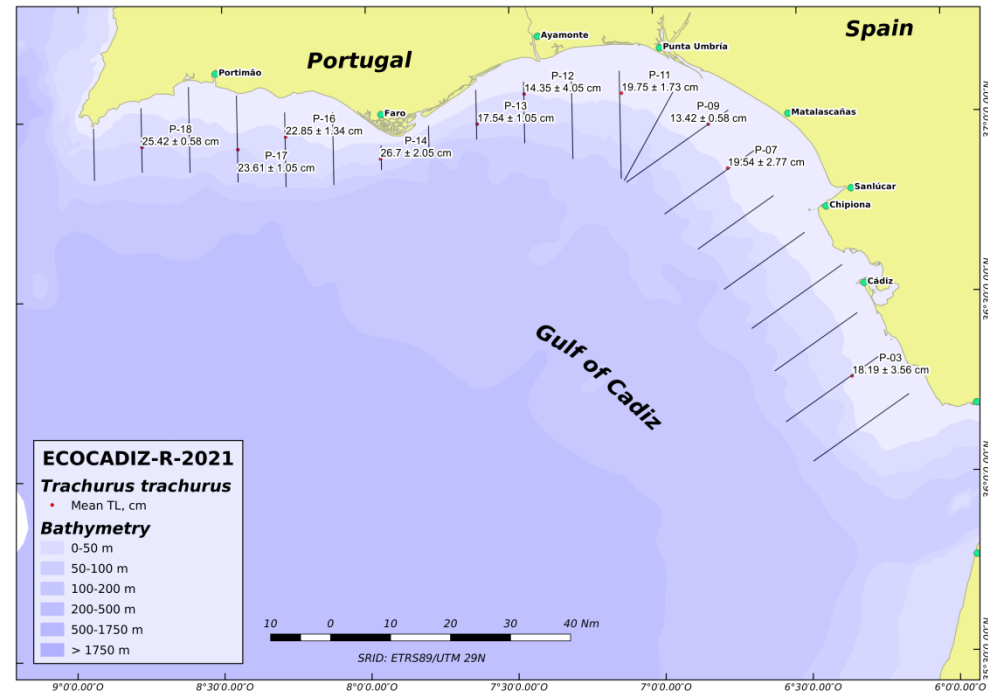
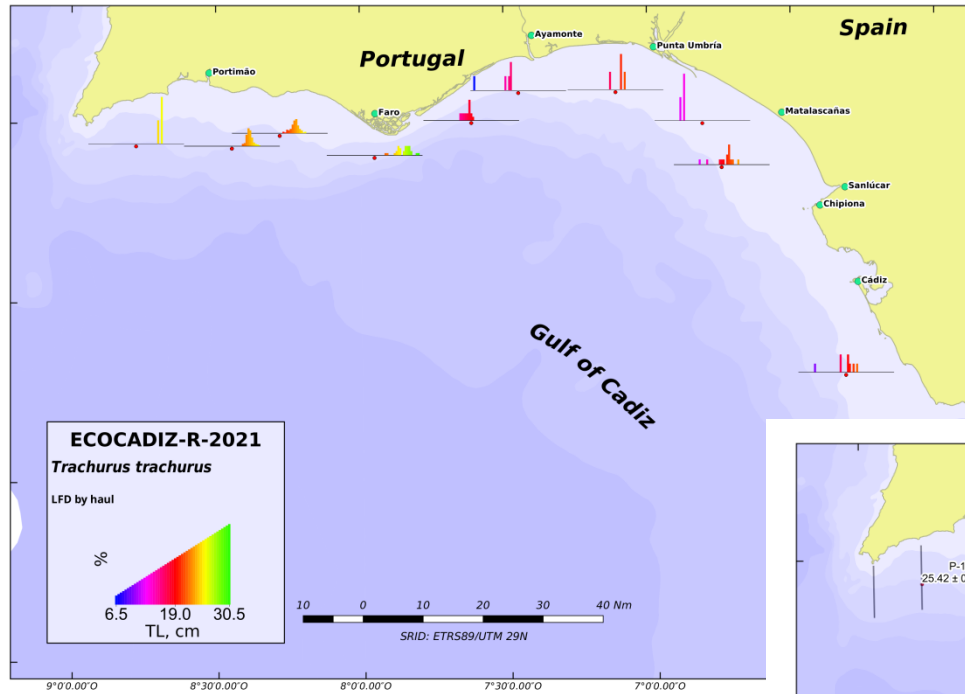
ECOCADIZ-RECLUTAS 2021-10: Mackerel. LFD and mean size in fishing hauls.



- No clear spatial pattern in mean size. Perhaps the smallest fish in Portuguese waters.

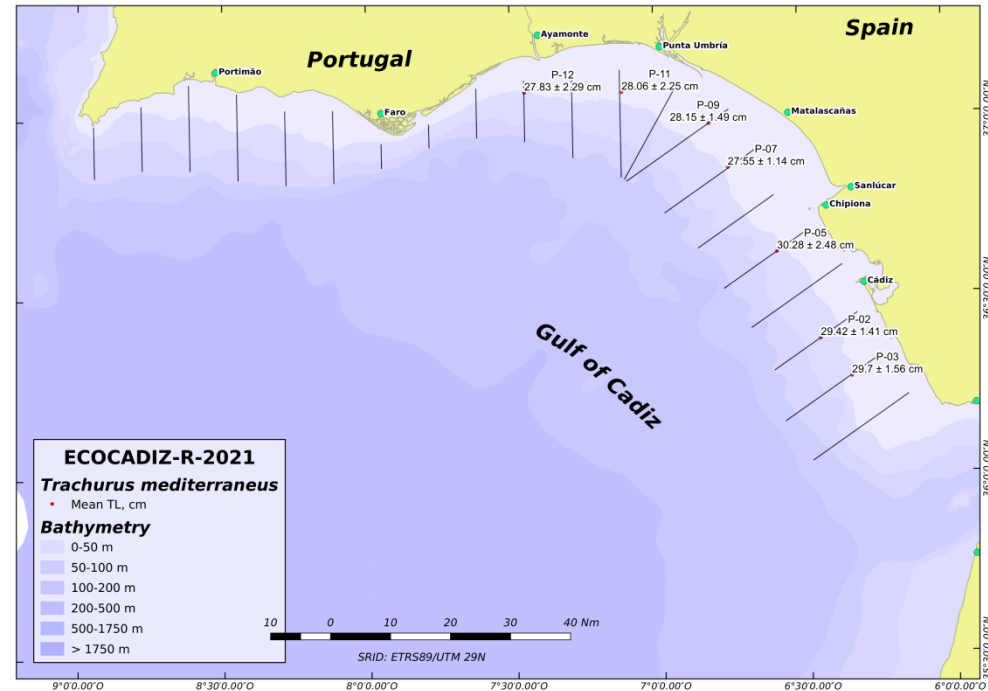
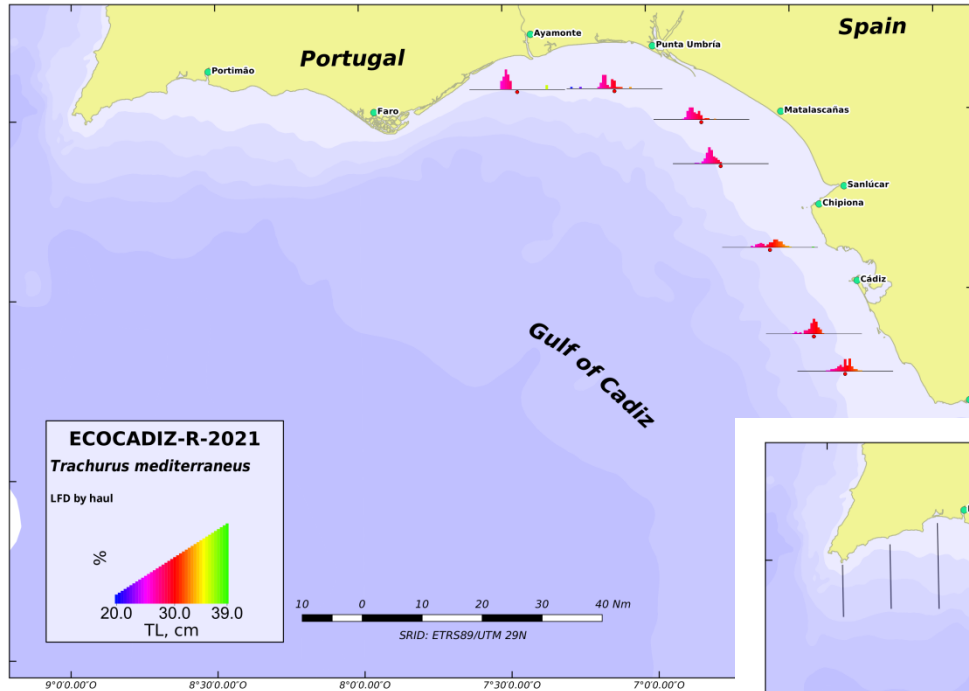


ECOCADIZ-RECLUTAS 2021-10: Horse mackerel. LFD and mean size in fishing hauls.



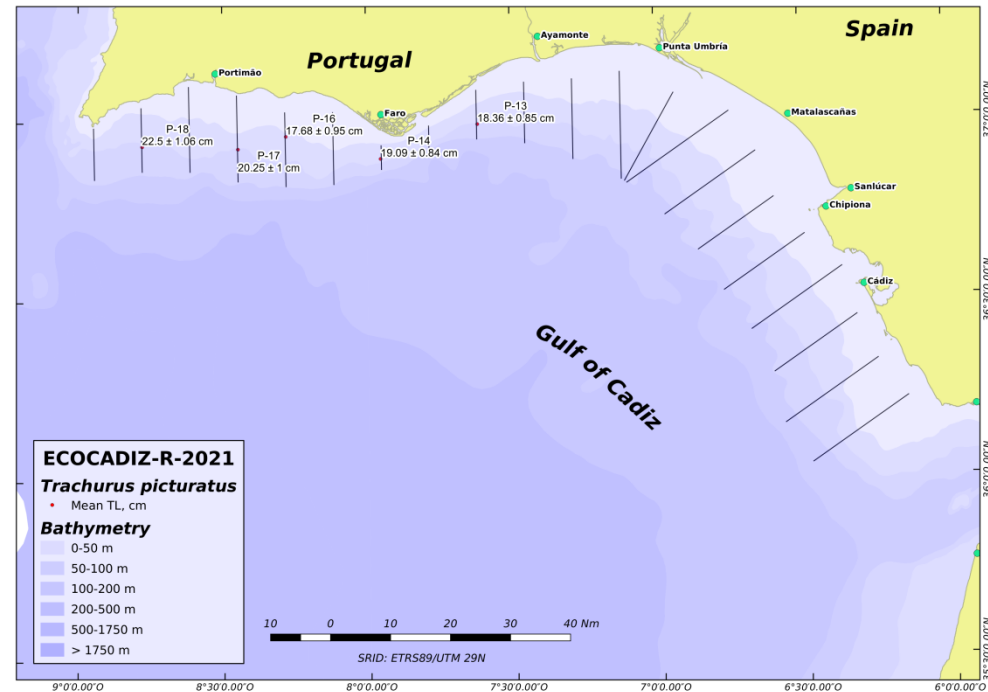
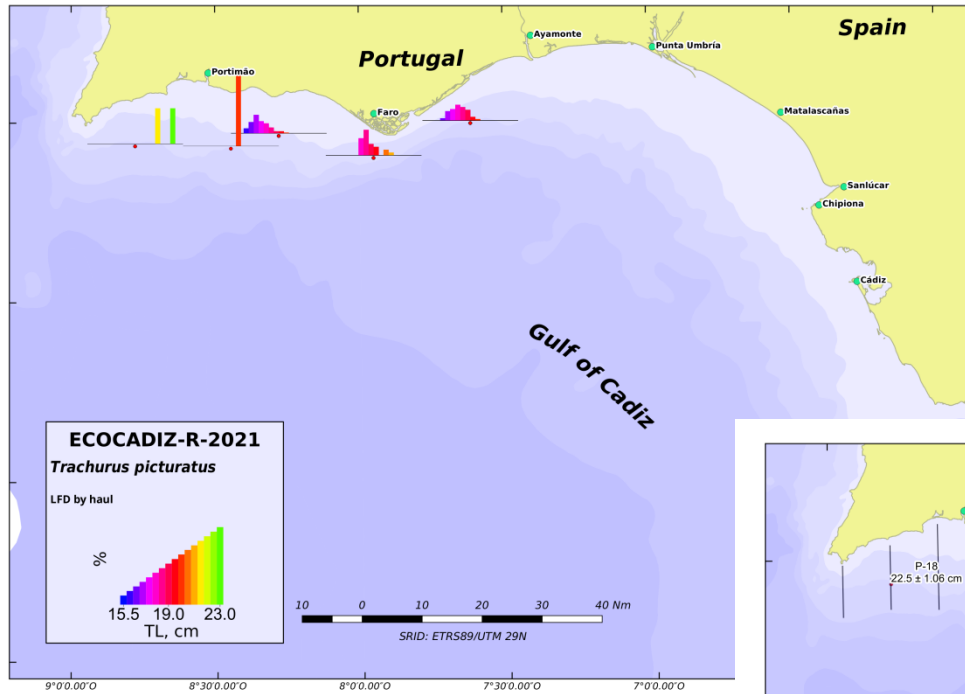
- No clear spatial pattern in mean size.
- The largest fish in Portuguese waters.

ECOCADIZ-RECLUTAS 2021-10: Mediterranean horse mackerel. LFD and mean size in fishing hauls.



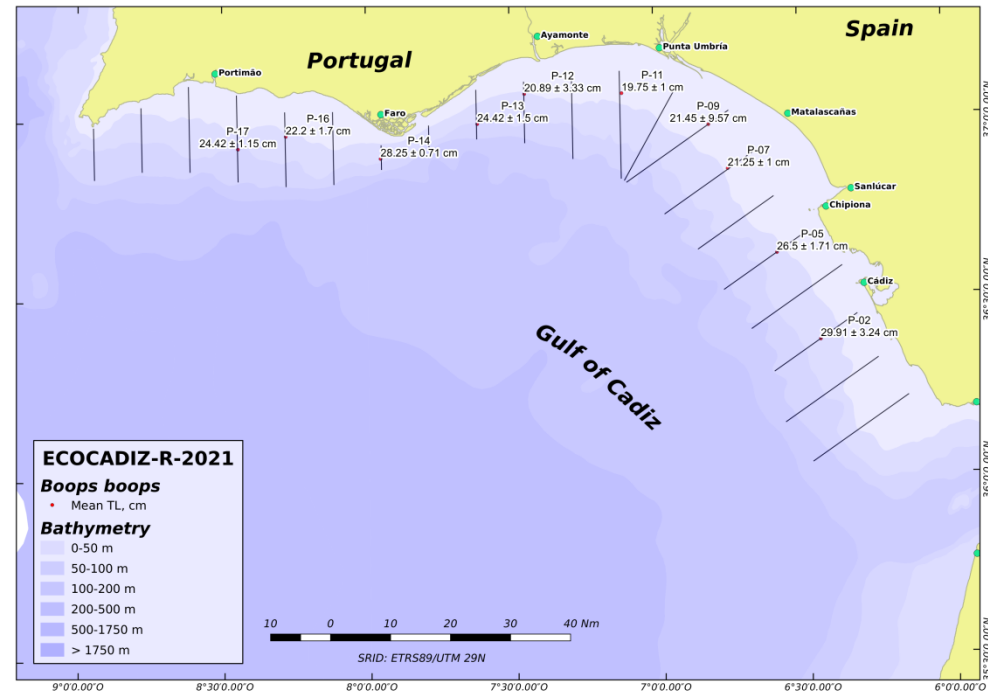
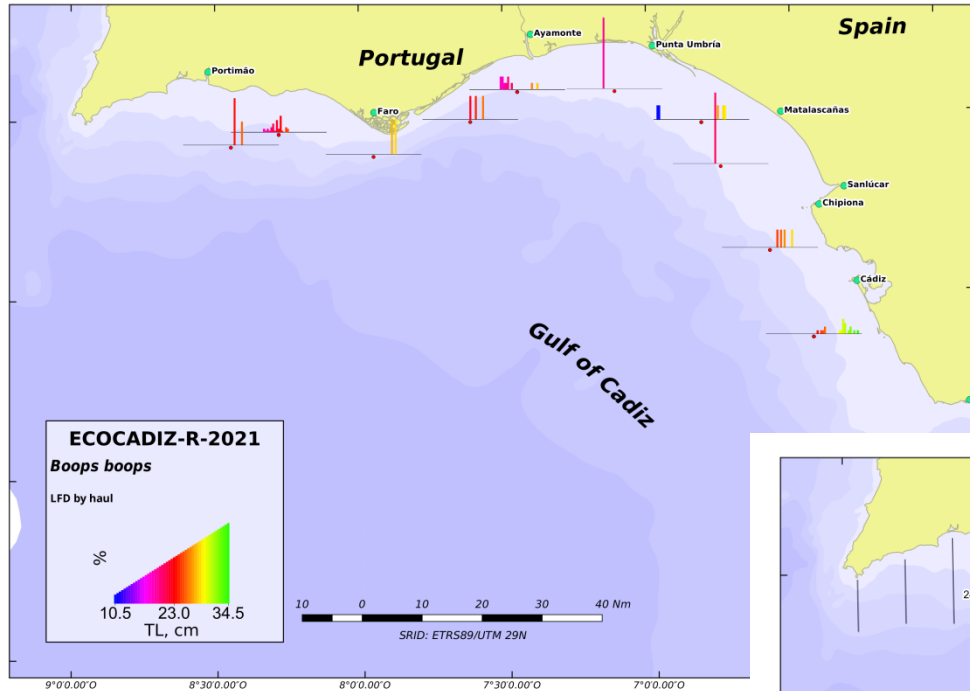
- No clear spatial pattern in mean size.
- The largest fish in the easternmost Spanish waters.

ECOCADIZ-RECLUTAS 2021-10: Blue Jack mackerel. LFD and mean size in fishing hauls.



- No clear spatial pattern in mean size.

ECOCADIZ-RECLUTAS 2021-10: Bogue. LFD and mean size in fishing hauls.



- No clear spatial pattern in mean size.
- The largest fish in the easternmost Spanish waters.

Thanks for your attention