Biomass and geographical distribution of seven small pelagic fish species in relation to temperature conditions in Mauritanian waters

Sidi Ahmed HEMED   IMROP
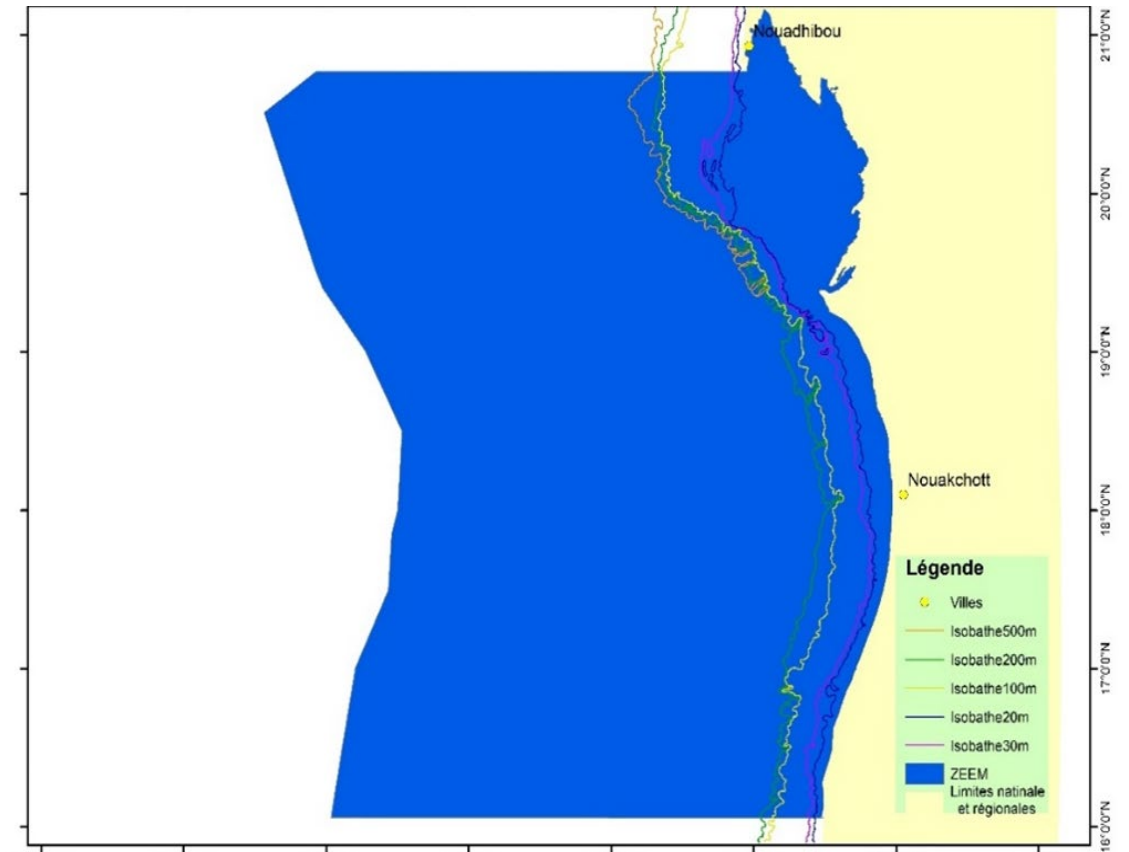
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Outline

- Introduction
- Objectives
- Methodology
- Results
- Conclusion

Introduction

- EEZM of 200 nautical miles, with an area of 234,000 km²,
- Continental shelf of 39,000 km².
- 600 species of fish have been inventoried
- 200 can be commercially exploited

Introduction

- Potential available in Mauritanian waters is 1.830 140 tons (IMROP 2020)

- of which 1.383 000 tons are small pelagic fish stocks (IMROP 2020)

- Nine small pelagic species dominate pelagic resources in Mauritanian waters.

Introduction

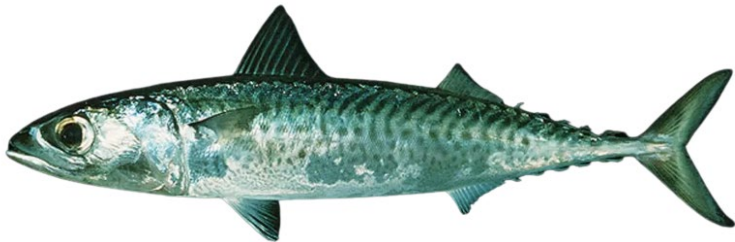*Sardina pilchardus*

Sardinella aurita

Sardinella maderensis
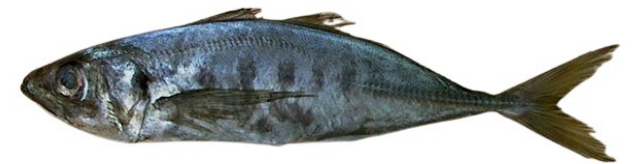
Engraulis encrasicolus

Scomber colias

Trachurus trachurus

Trachurus trecae

Objectives

- The goal of this project is to acquire knowledge to scrutinize raw acoustic backscatter.
- To calculate stock biomass index from survey data and relate species distribution to environmental conditions.

The development of such skills will strengthen the research capacity for small pelagic fish in Mauritania

Specific objectives

a) Scrutinize raw acoustic data of fish species according to R/V DR Fridtjof Nansen survey from June 27. to July 9. 2017.

b) Calculate stock biomass.

c) Analyze environmental data (Temperature in the water column).

Methodology :survey protocol

Direct Method used to estimate biomass and stock abundance

Track survey
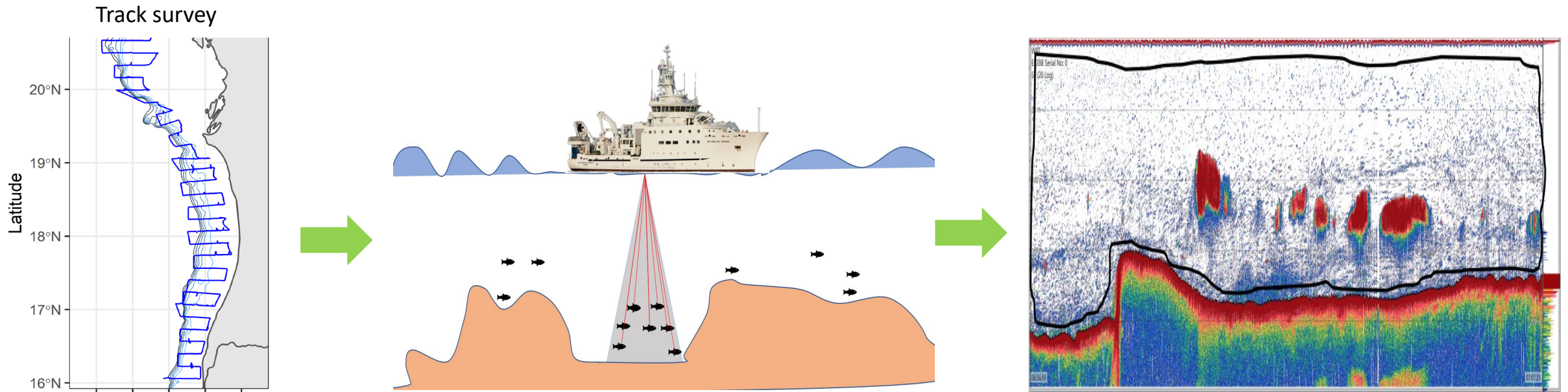
Methodology: data analysis

Acoustic data were processed using the post-processing software called Large-Scale Survey System (LSSS) Version 2.0.

The acoustic data was preprocessed. The scrutinizing and allocation of species target made based on the species target proportion in the catch.

Track survey and trawl sampling

30 trawling stations were sampled for composition by weight and numbers of each species caught. Temperature distribution according to 34 CTD stations.
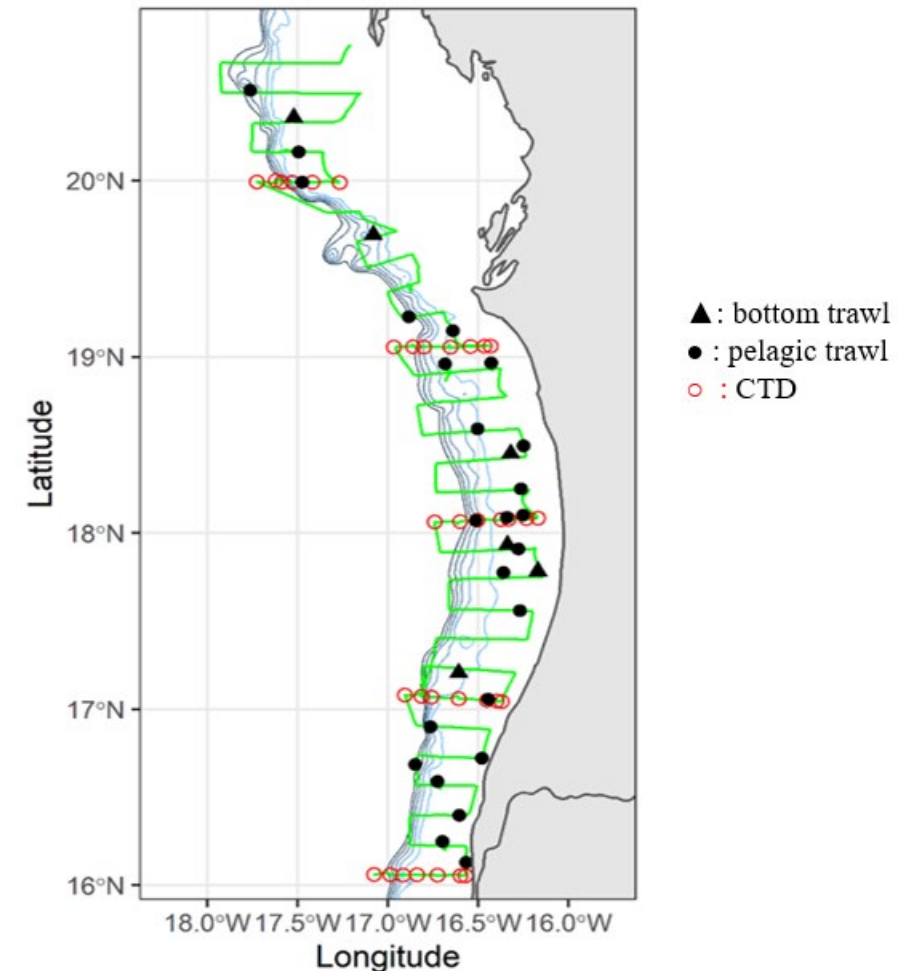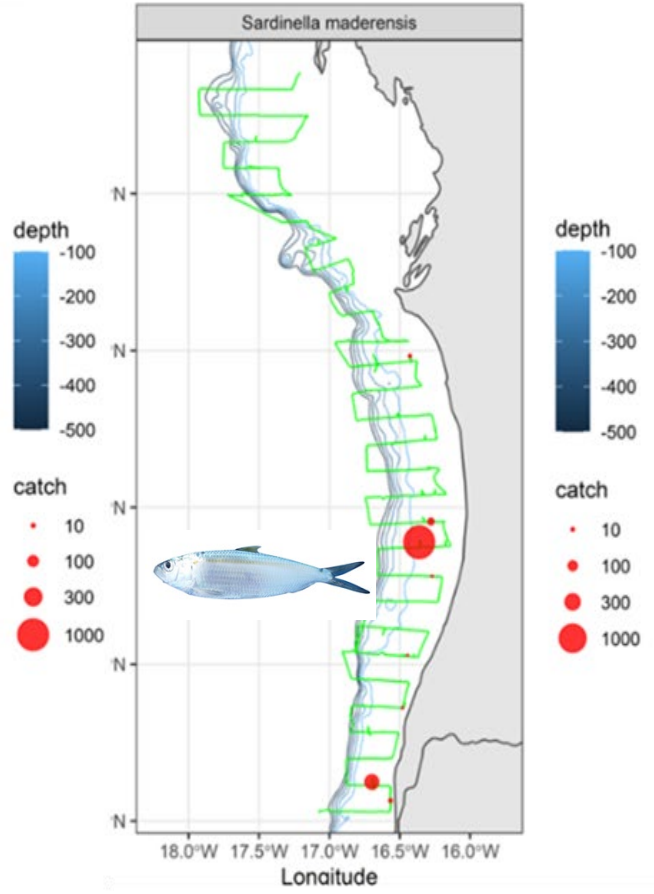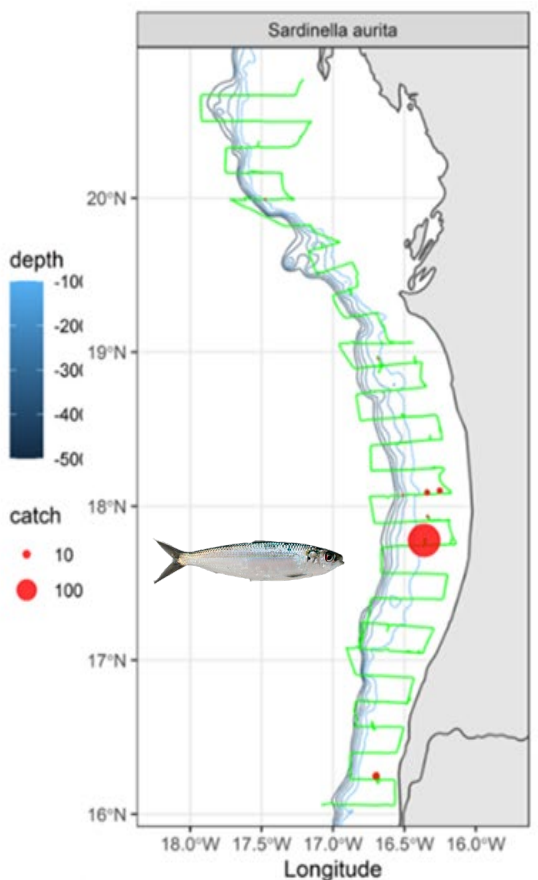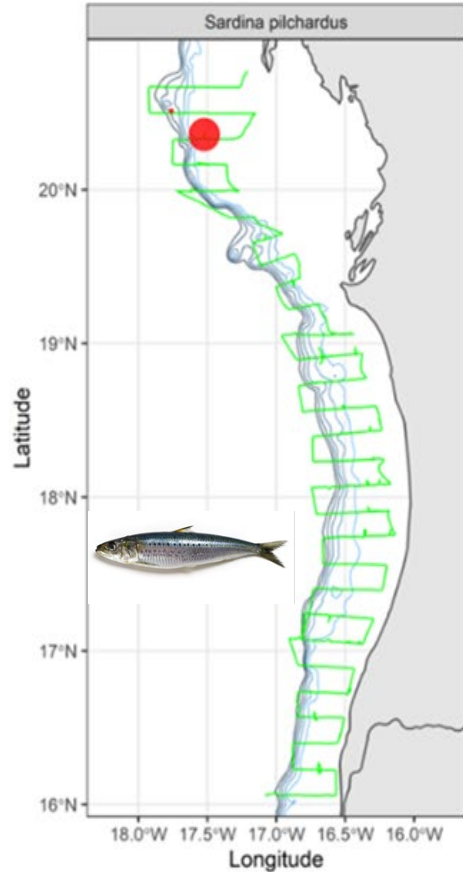
Results

- ✓ Catch distributions per species
- ✓ Distribution by the depth of target species
- ✓ Distribution of the target species on the track survey
- ✓ Environmental condition
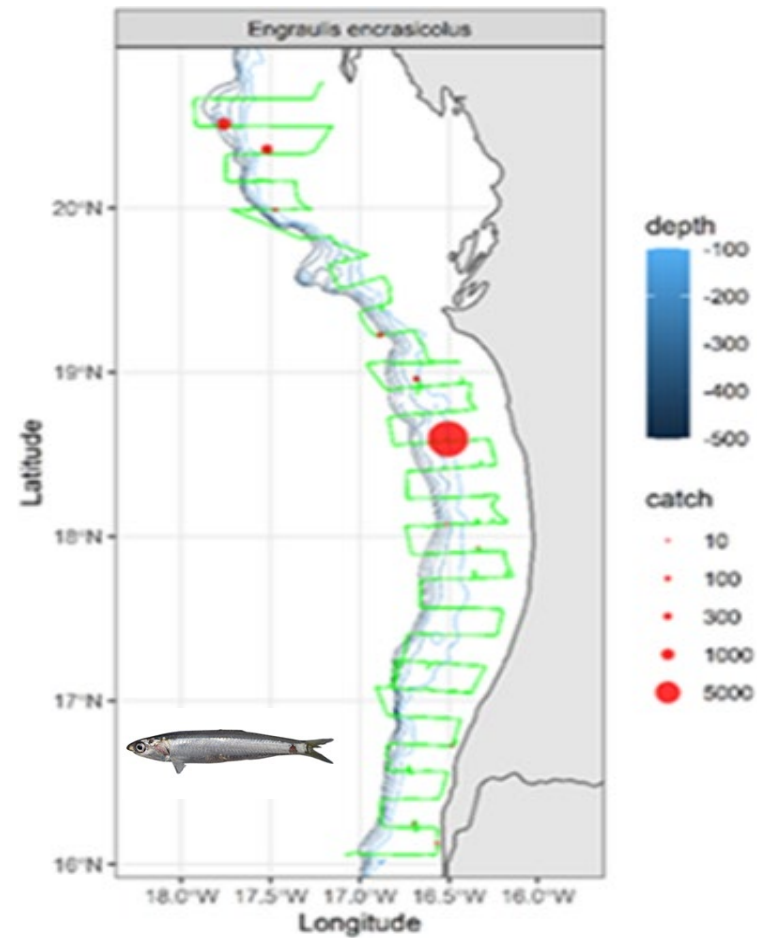- ✓ Biomass estimate
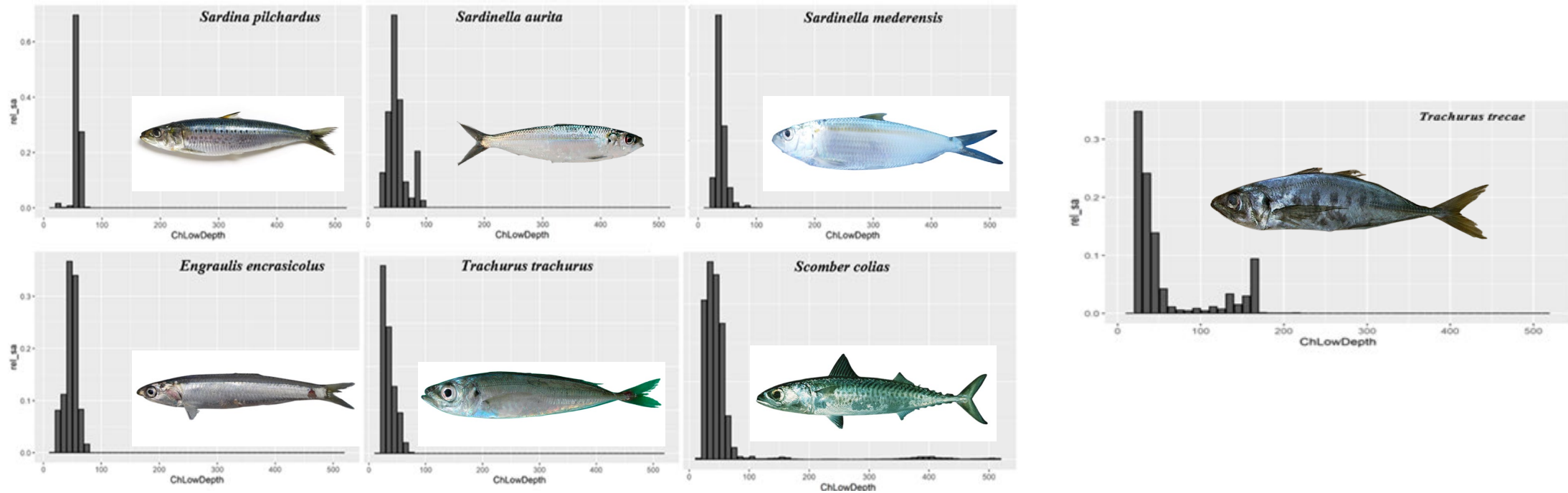
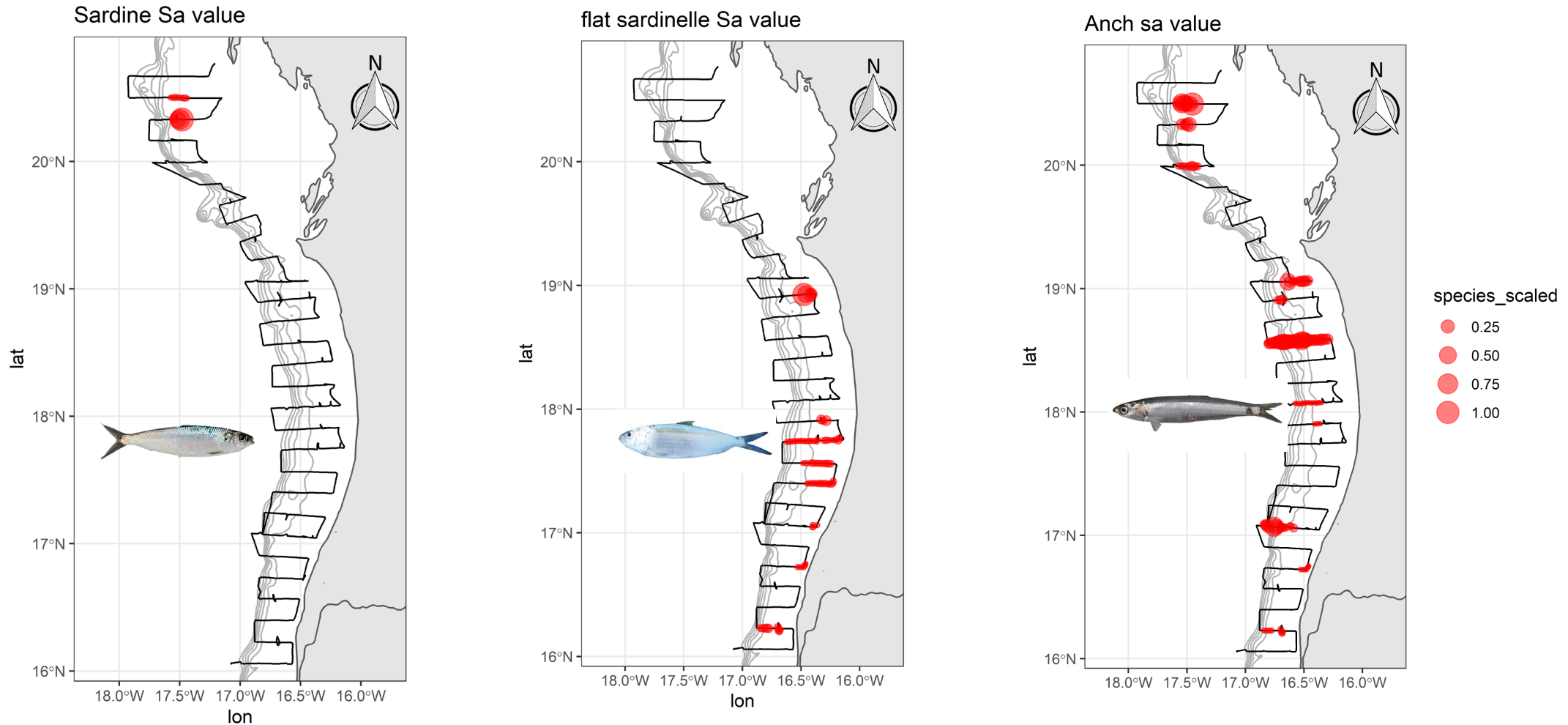# Catch distributions per species
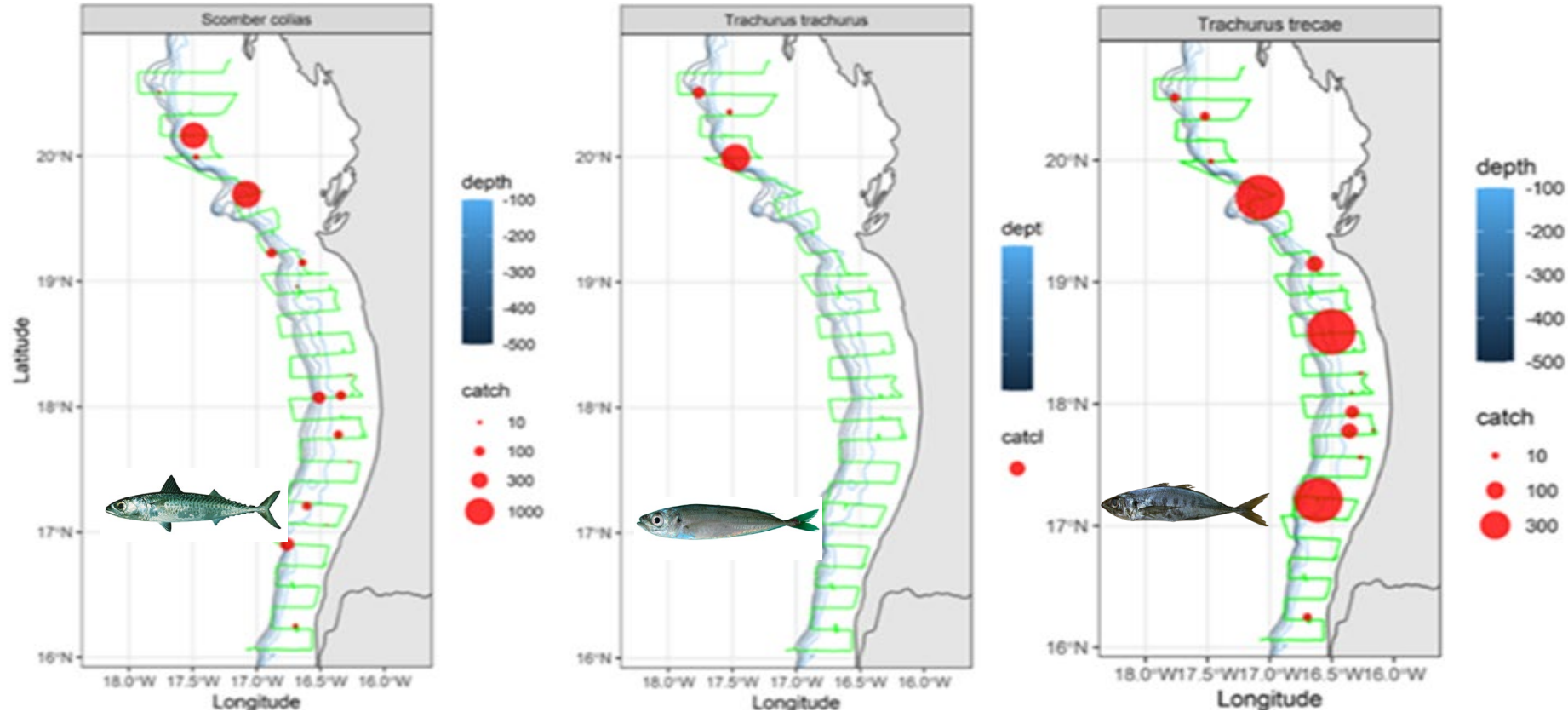
Catch distributions per species

Catch distributions per species

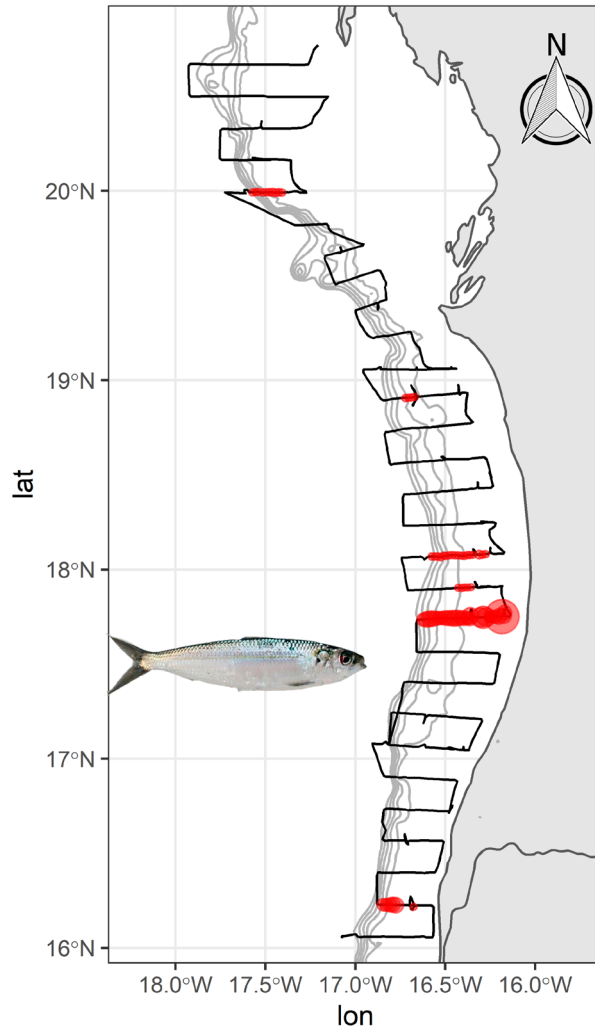# Distribution by depth of target species

S$_A$ Distribution of the target species

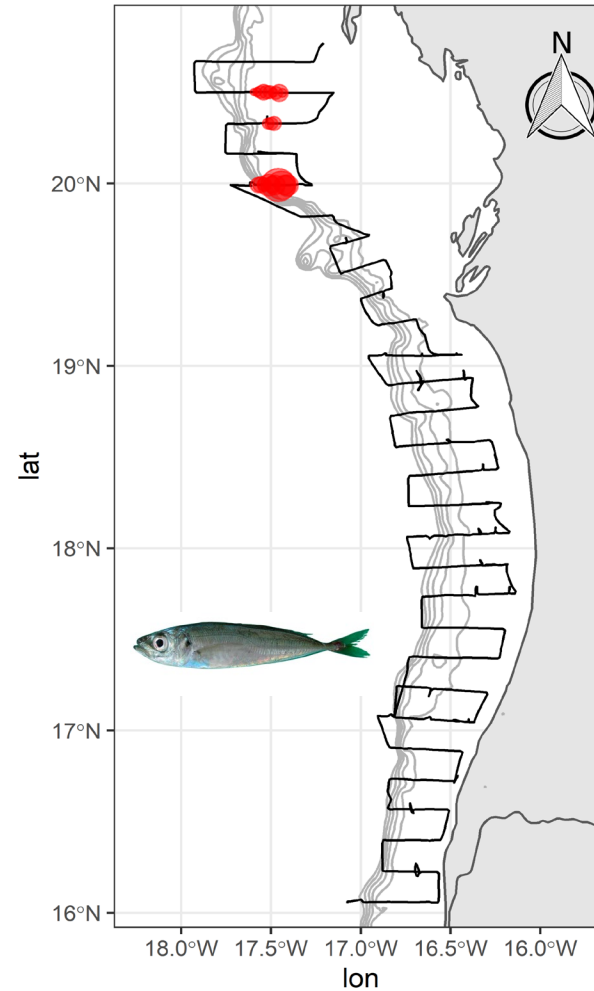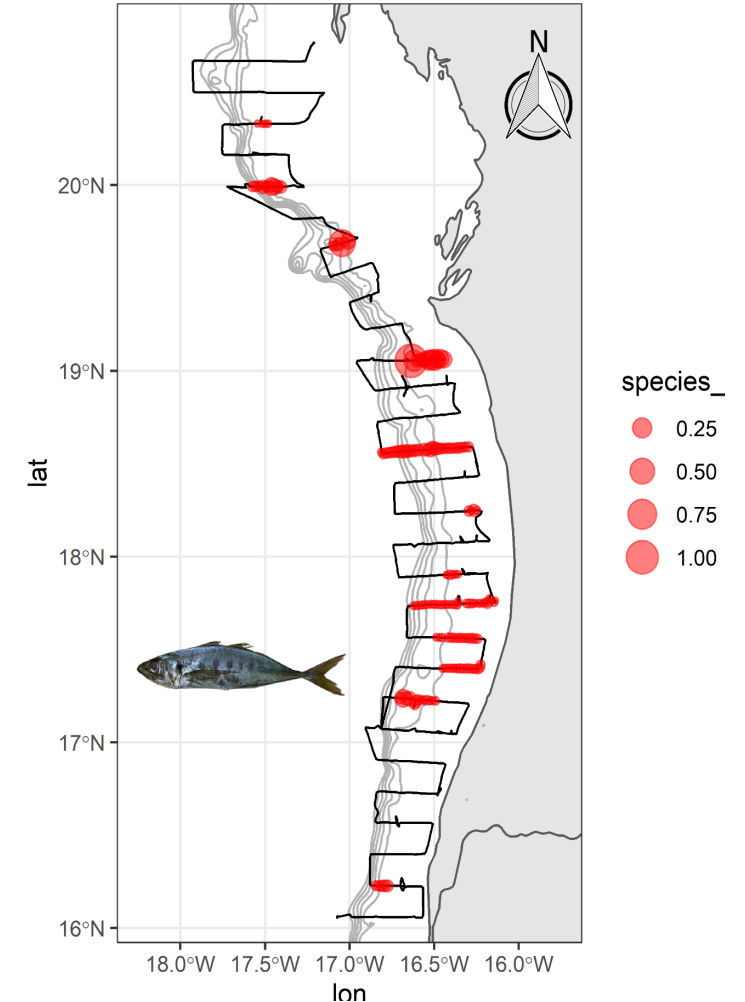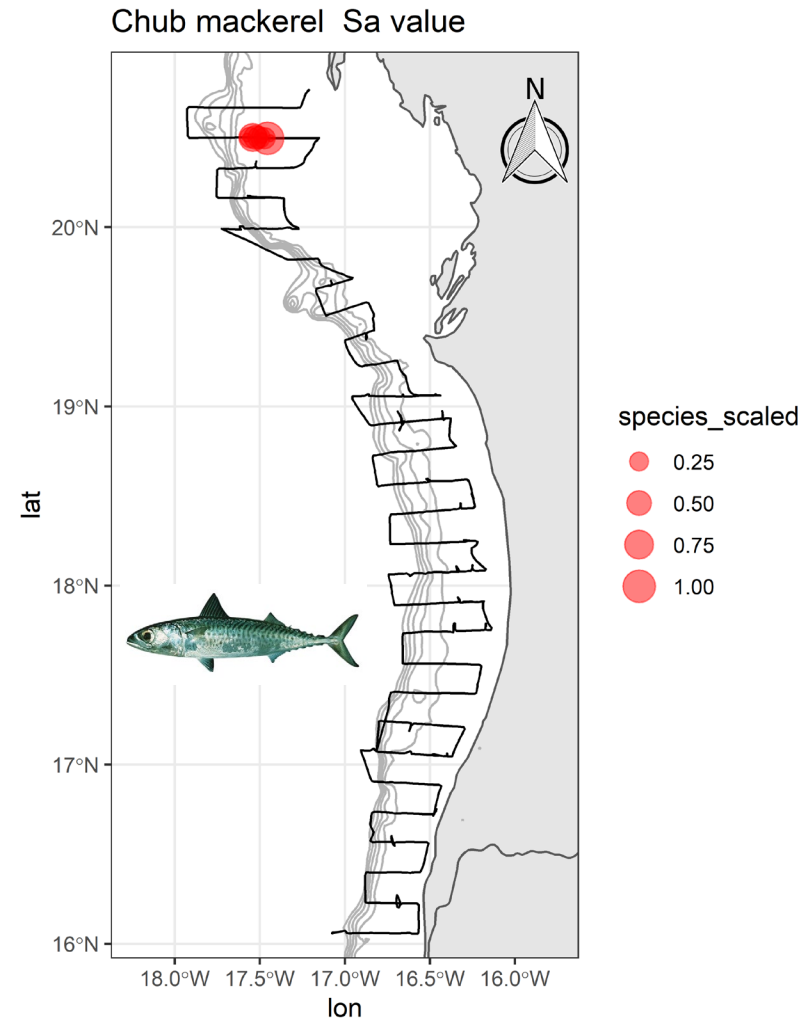# S_A Distribution of the target species

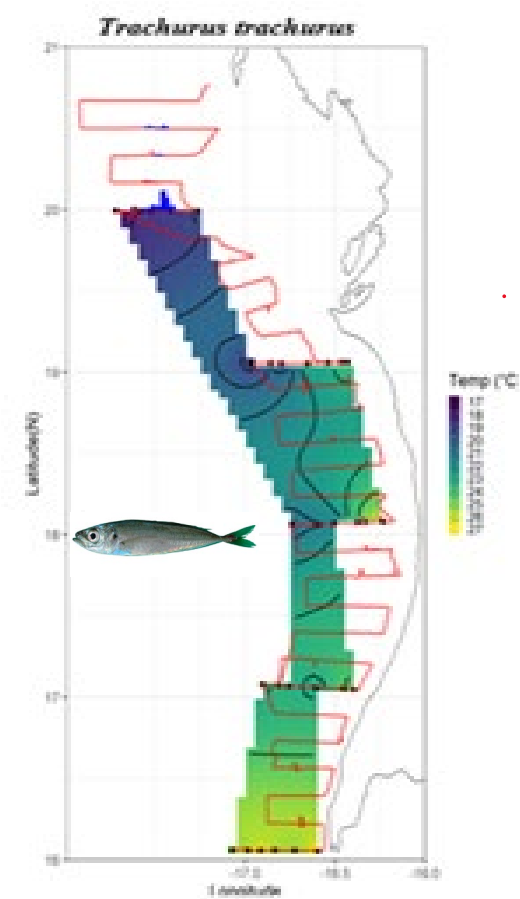Round sardinelle Sa value
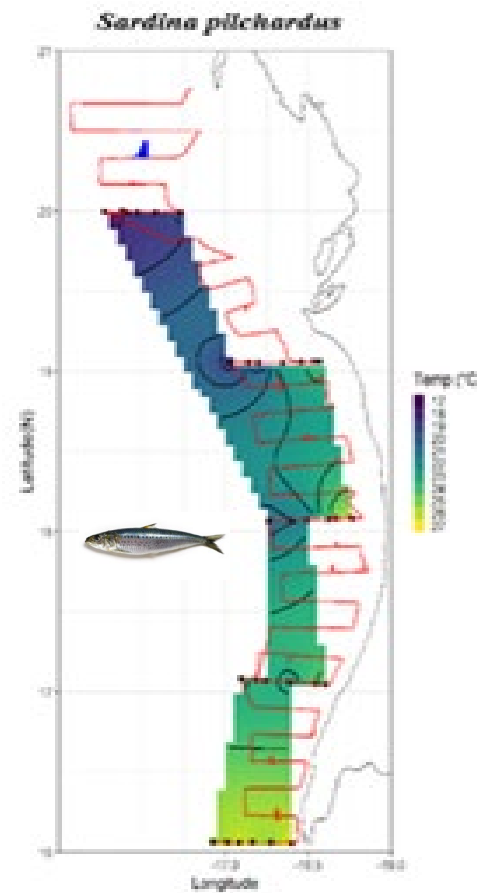
Atlantic hors mackerel Sa value

Chm sa value

species_
- 0.25
- 0.50
- 0.75
- 1.00

S$_A$ Distribution of the target species

S$_A$ value and temperature distribution
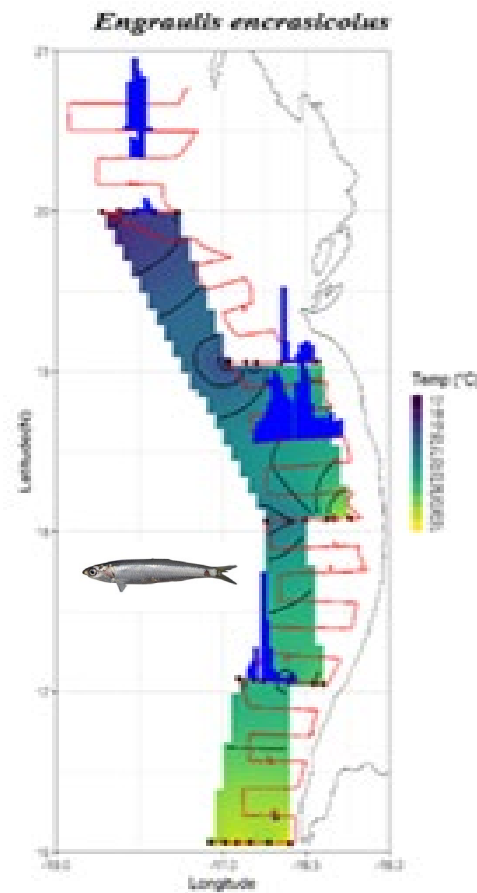
S~A~ value and temperature distribution
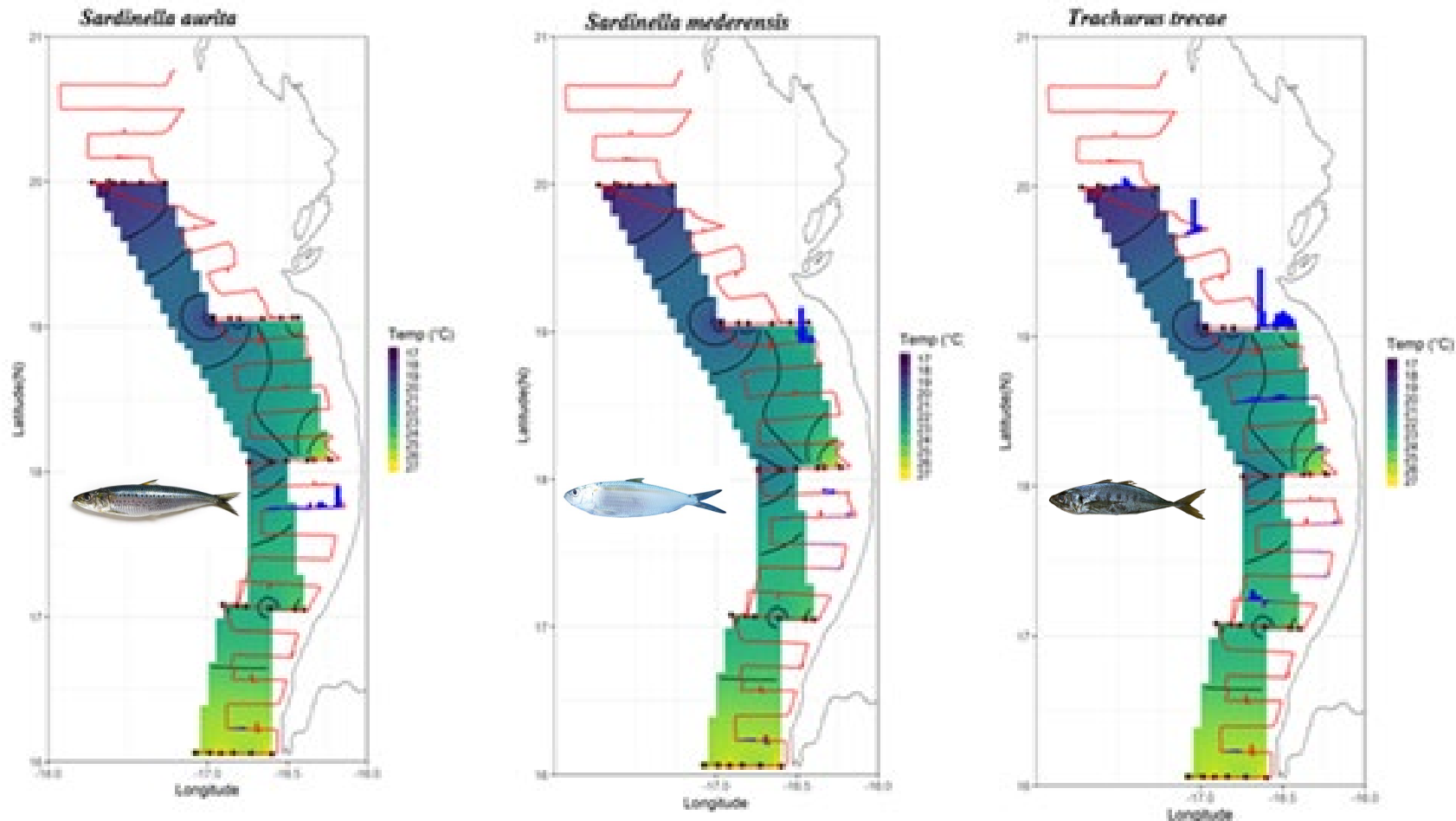
Biomass estimate (1000 tons)

Species	*Sardina pilchardus*	*Sardinella aurita*	*Sardinella mederensis*	*Trachurus trachurus*	*Trachurus trecae*	*Engraulis encrasicolus*	*Scomber Colias*
Calculate Biomass	21	62	116	37	130	High value	0.166
Dr FN biomass	61.3	34	115.9	2	89.8	78.2	25.3

Conclusion

These results show that :

o The grouping of these species is identical to the Canary Current Large Marine Ecosystem (CCLME), which identifies two thermal preferences for small pelagic species,

    o Cold water preferences (chub mackerel, Atlantic horse mackerel, and sardine)

    o Warm water preferences (round sardinella, flat sardinella, and cunen horse mackerel).

Conclusion

- Chub mackerel, sardine, and Atlantic horse mackerel favored colder water in the north area with ranged temperature 17° C to 22°C.
- The round and flat sardinella were found in the center and the southern area in warmer waters with temperature more than 20 °C.
- Though anchovy and cunen horse mackerel could adapt themselves in both colder and warmer waters from the north to the southern area.

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Conclusion

The biggest biomass estimate was the anchovy followed by cunen horse mackerel and flat Sardinella.

Generally the target species were found in a shallower area with depth less than 100m.

Discrepancies in biomass may be due to area estimation value (we estimate surface area), in addition to allocation based solely on the species proportions in the catches made during the cruise

Thank you for your attention

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