Spatio-temporal distribution of the richness of large pelagic fishes in the Eastern Pacific Ocean

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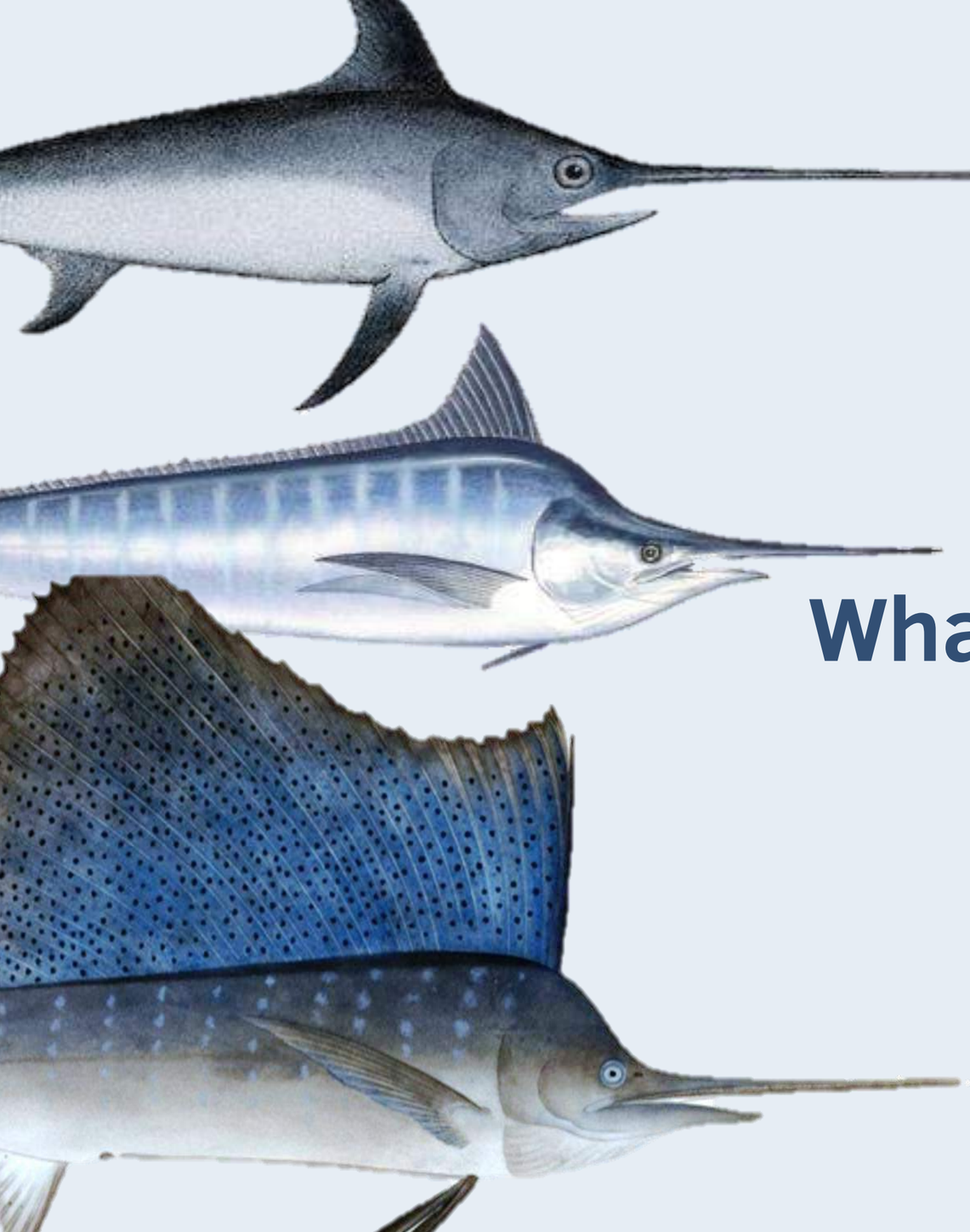
CICIMAR-IPN

PELAGICOS MAYORES
IPN-CICIMAR



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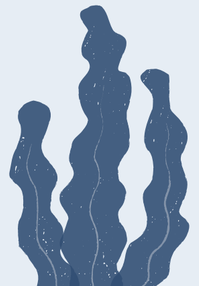
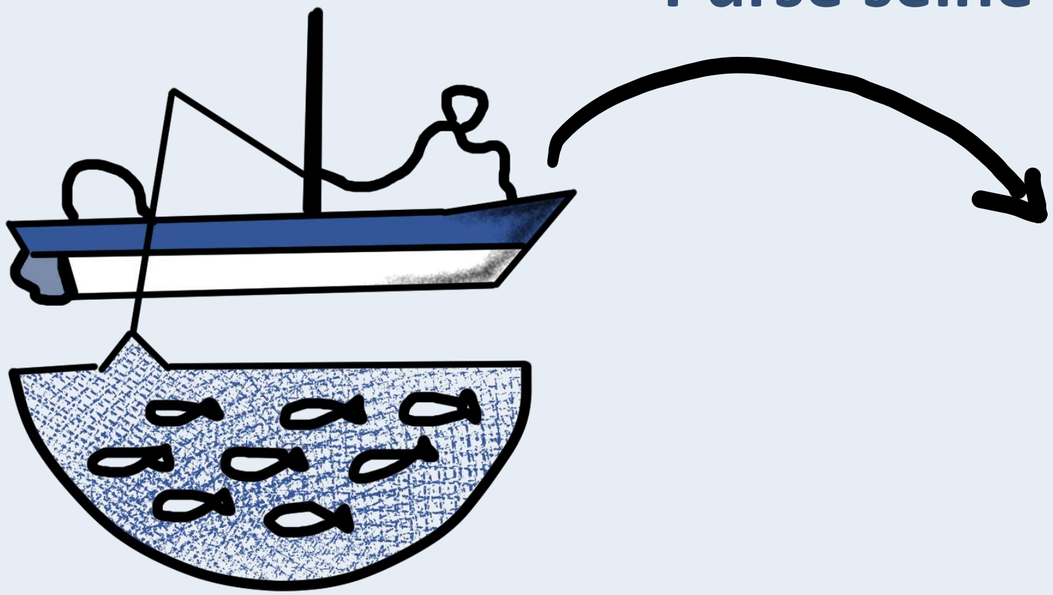
Work justification



Purse seine vessels



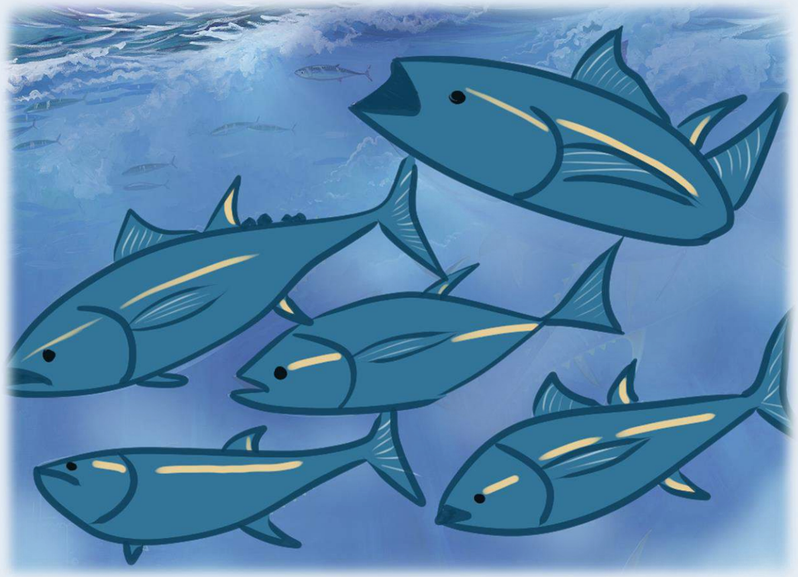
~ 90 % of the total catches

Catches of 638,102 t during 2021

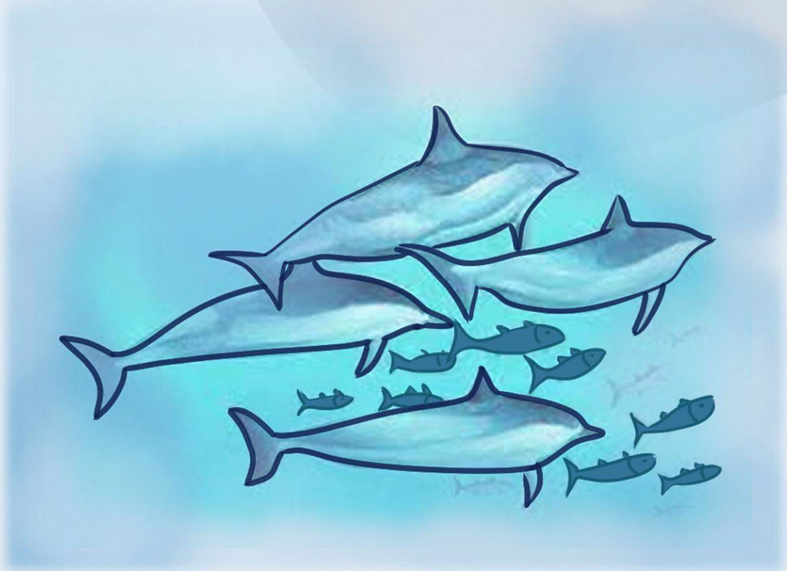
Set types

OBJ: floating objects

NOA: unassociated



DEL: dolphin associated



Bycatch by purse seine vessel in 2021

Blue marlin
117 t

Black marlin
38 t

Sailfish
10 t

Xiphias gladius
Swordfish

Near Threatened

Makaira nigricans
Blue marlin

Vulnerable

Kajikia audax
Striped marlin

Least Concern

Istiophorus platypterus
Indo-Pacific sailfish

Vulnerable

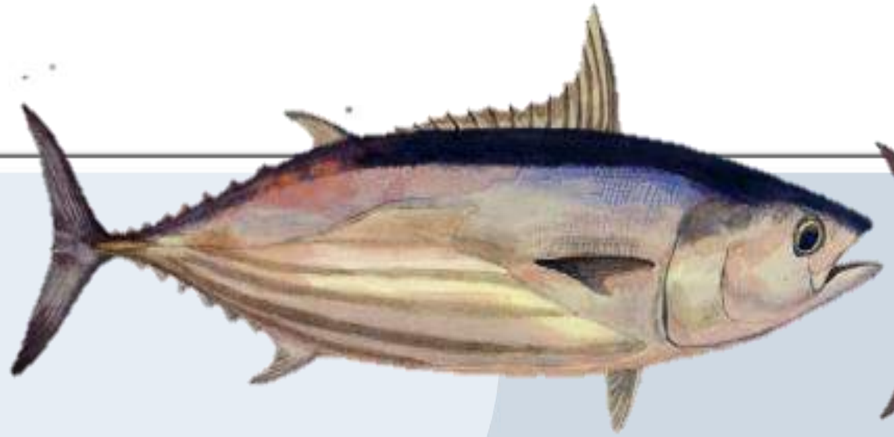
Istiompax indica
Black marlin

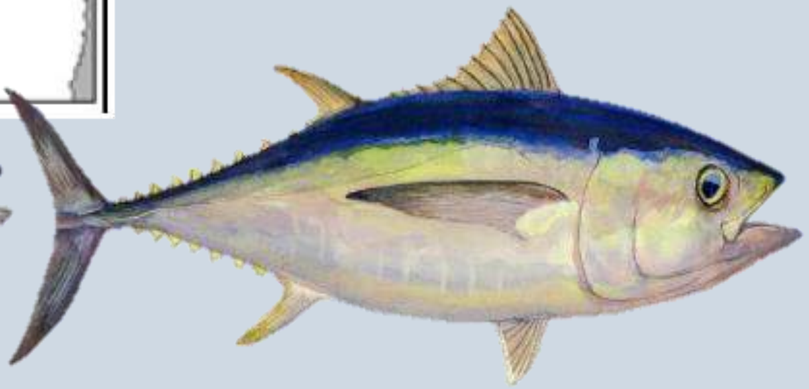
Data Deficient

Closure area “el corralito”

91st MEETING

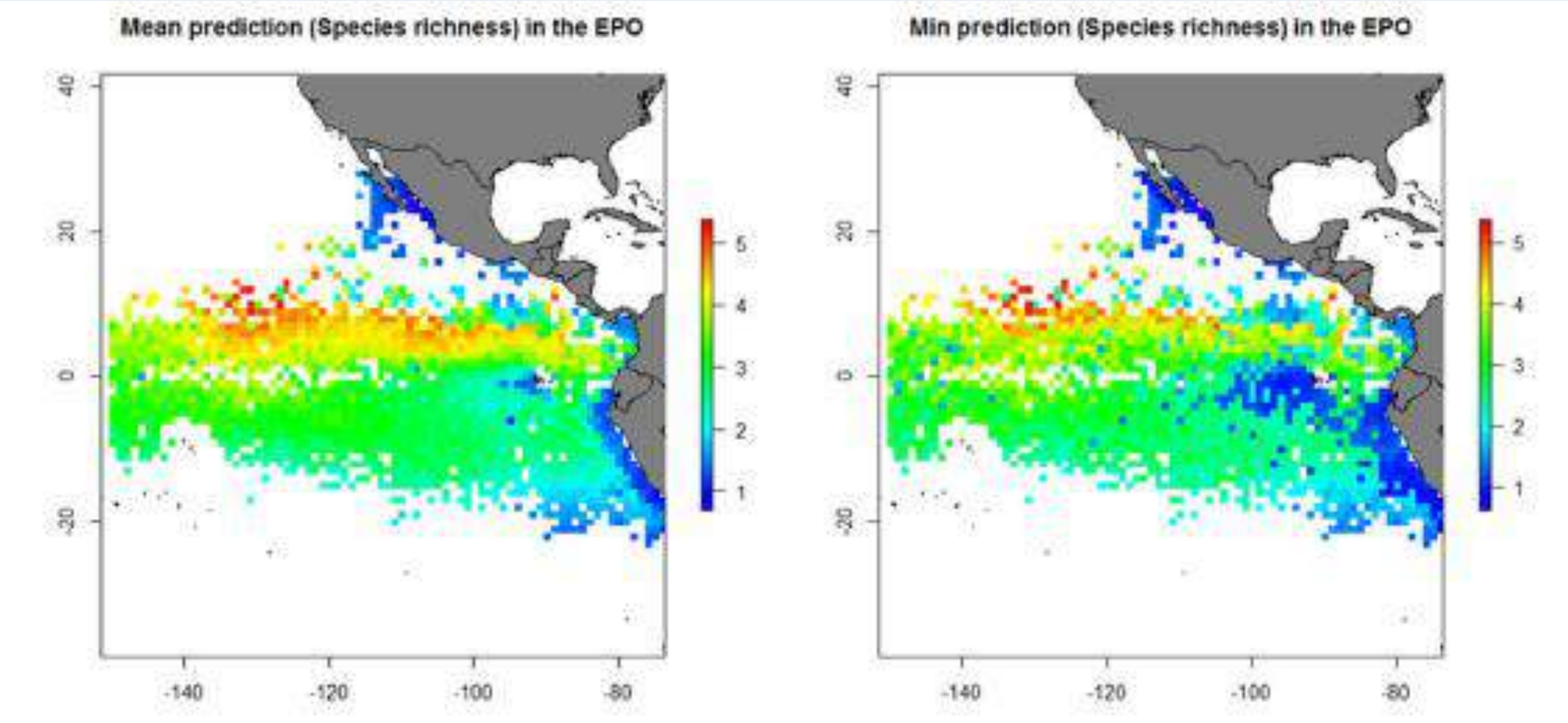
98th MEETING





CIAT (2017, 2021)

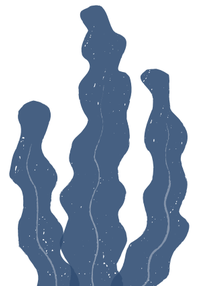
Importance of characterizing species richness distribution



Lezama-Ochoa *et al.* (2017)

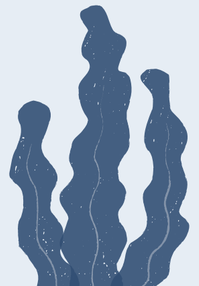
General objective

Determine priority areas for the conservation of larger pelagic fish in the Eastern Pacific Ocean and identify possible changes over the years 2000 - 2020



02

What we have done up to now



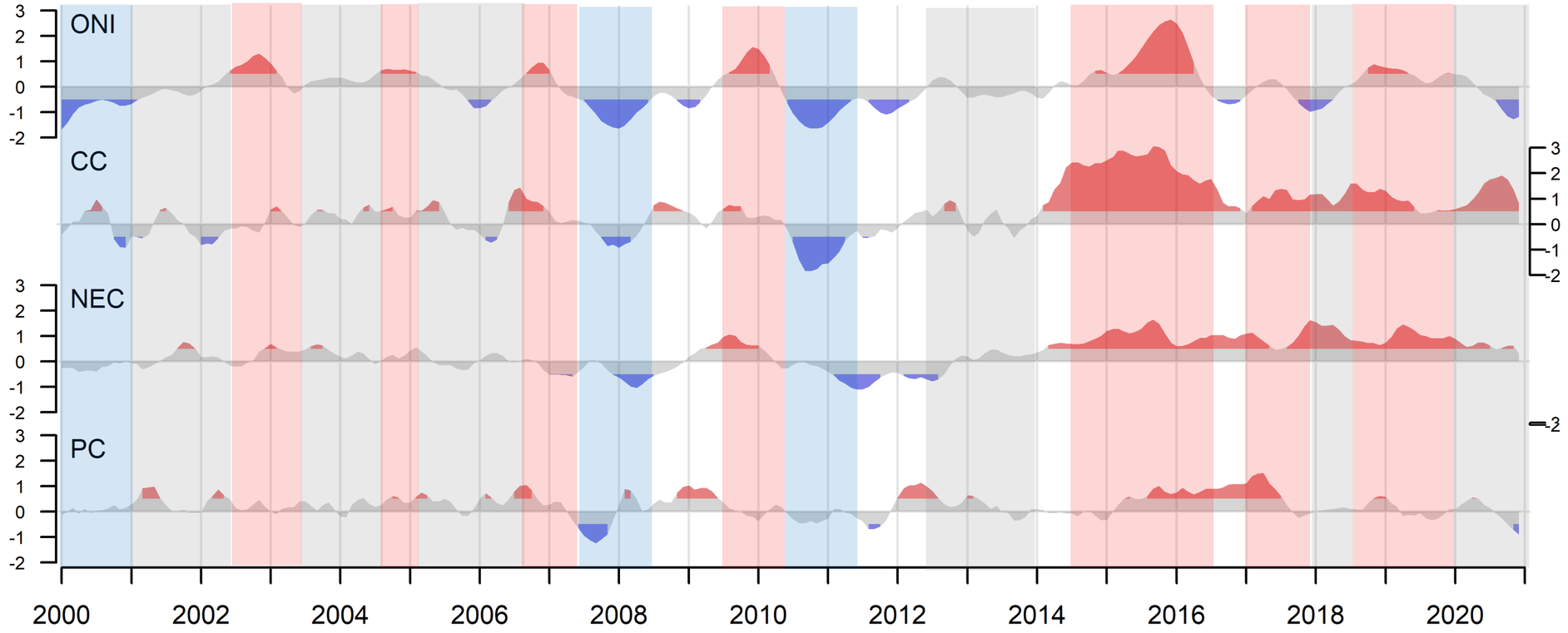
Spatial richness

Through the RichnessGrid function of the speciesgeocodeR v. 2.0-10 package in R.

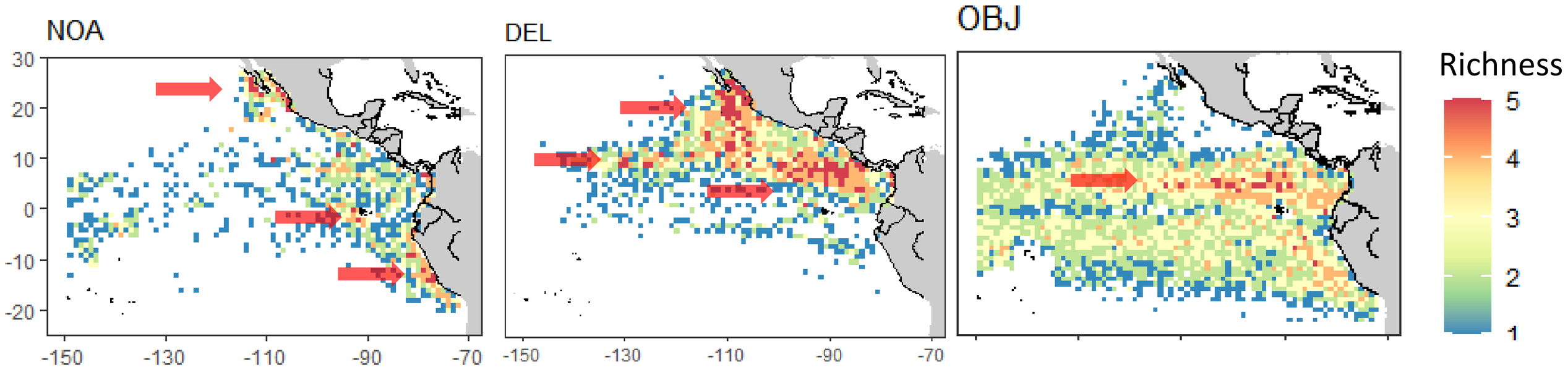
Richness as the number of species recorded in quadrants of 1°x1°

By set types

By El Niño-Southern Oscillation (ENSO)



Spatial richness (2000-2020)

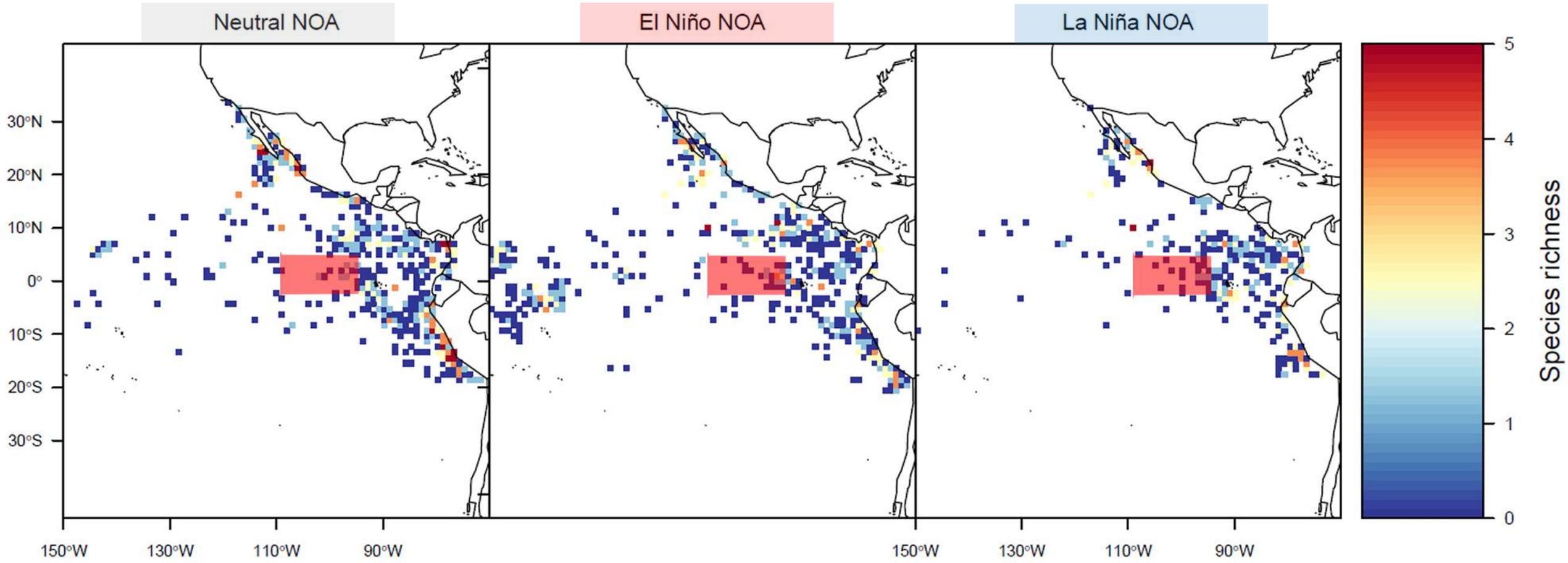


NOA: important areas were the Baja California Peninsula, around the Galapagos Islands and the coasts of Ecuador/Perú

DEL: areas such as the Baja California Peninsula, the EP warm pool, the Costa Rican Dome has high richness values

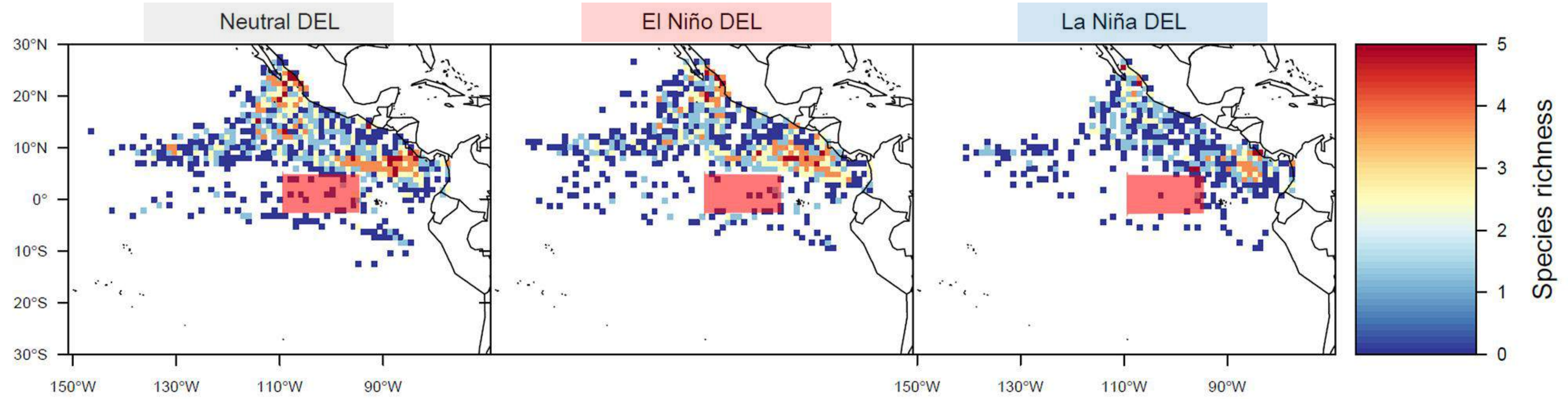
OBJ: high richness concentrated on the length of the Ecuador

NOA



Baja California peninsula, Galapagos Islands and South America coast
A coincidence with Lezama-Ochoa *et al*. (2017): upwelling regions close to the equatorial zone

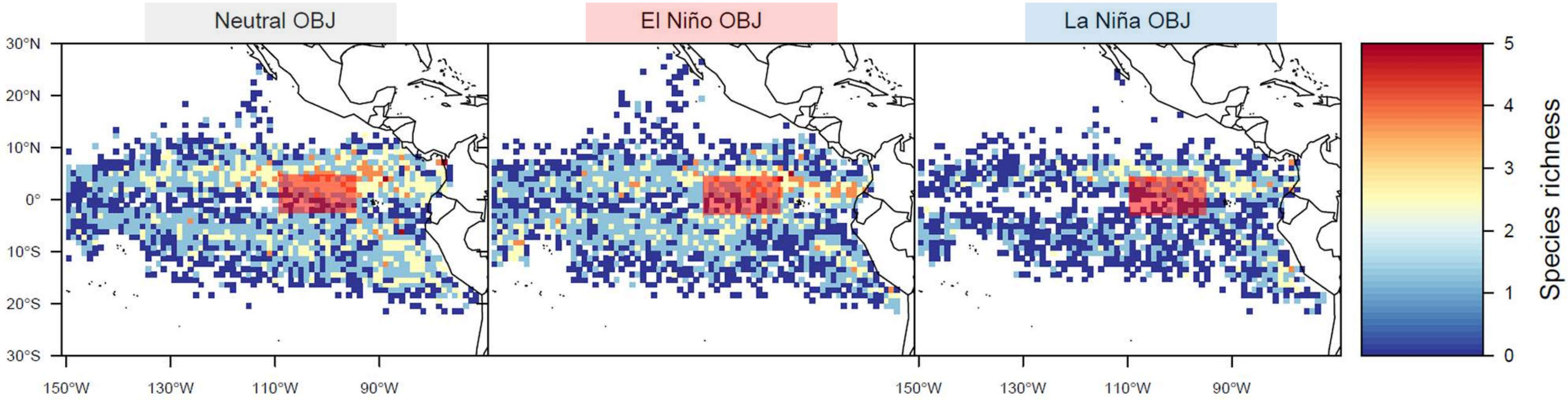
DEL



Important areas in the southern Gulf of California and near coastal upwellings such as the Costa Rica Dome.

In the three environmental scenarios, there was a coincidence of important areas, with a notable reduction in La Niña

OBJ



Main areas: closed area and along the Equatorial Countercurrent

Lezama-Ochoa *et al*. (2017): water masses with seasonality in coastal and equatorial upwellings

Preliminar conclusions

The distribution of richness among the set types shows notable differences, while some show affinity to coastal waters, others are more equatorial.

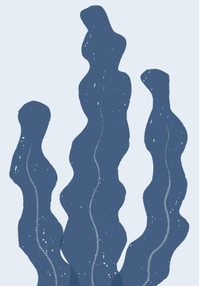
Areas with high richness values are highly productive, such as near the equatorial zone, the Costa Rican Dome and the Gulf of California, which may represent areas of food availability.

“el corralito” does not ensure the protection of other species and does not cover important areas for **DEL** and **NOA**.

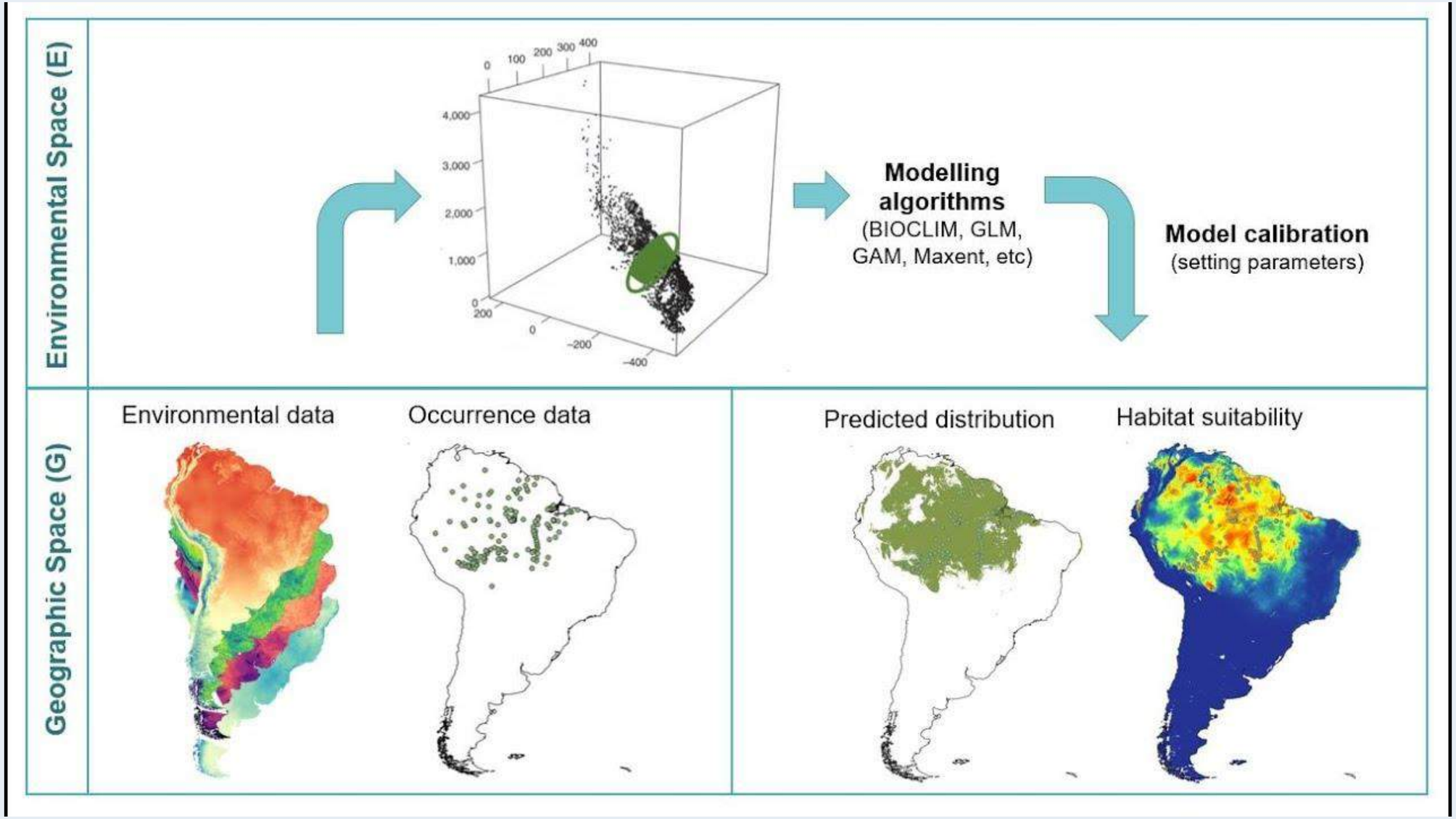
During La Niña the bycatch was lower, reflecting in a greater reduction of areas of species richness.

03

What is to be done



Ecological niche models



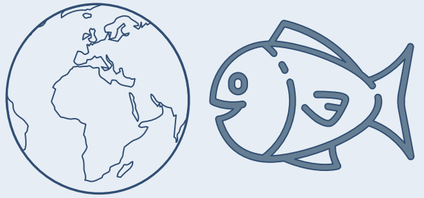
Planning tool

Conservation unit

Hexagons or quadrants at the scale at which conservation is to be carried out

Conservation targets

The species or ecosystems of interest to conserve

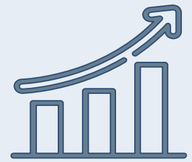


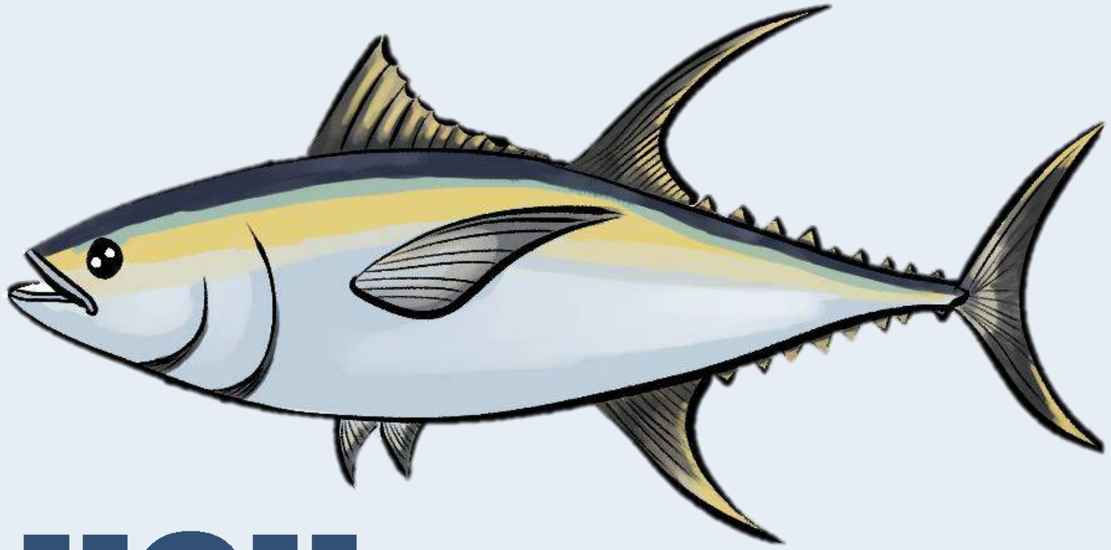
Cost unit

Relative cost associated with the conservation of each planning unit

Sensitivity

Percentage of relative importance of each conservation targets





Thank you