



# SPRFMO

South Pacific Regional Fisheries Management Organisation

Jack Mackerel Working Group



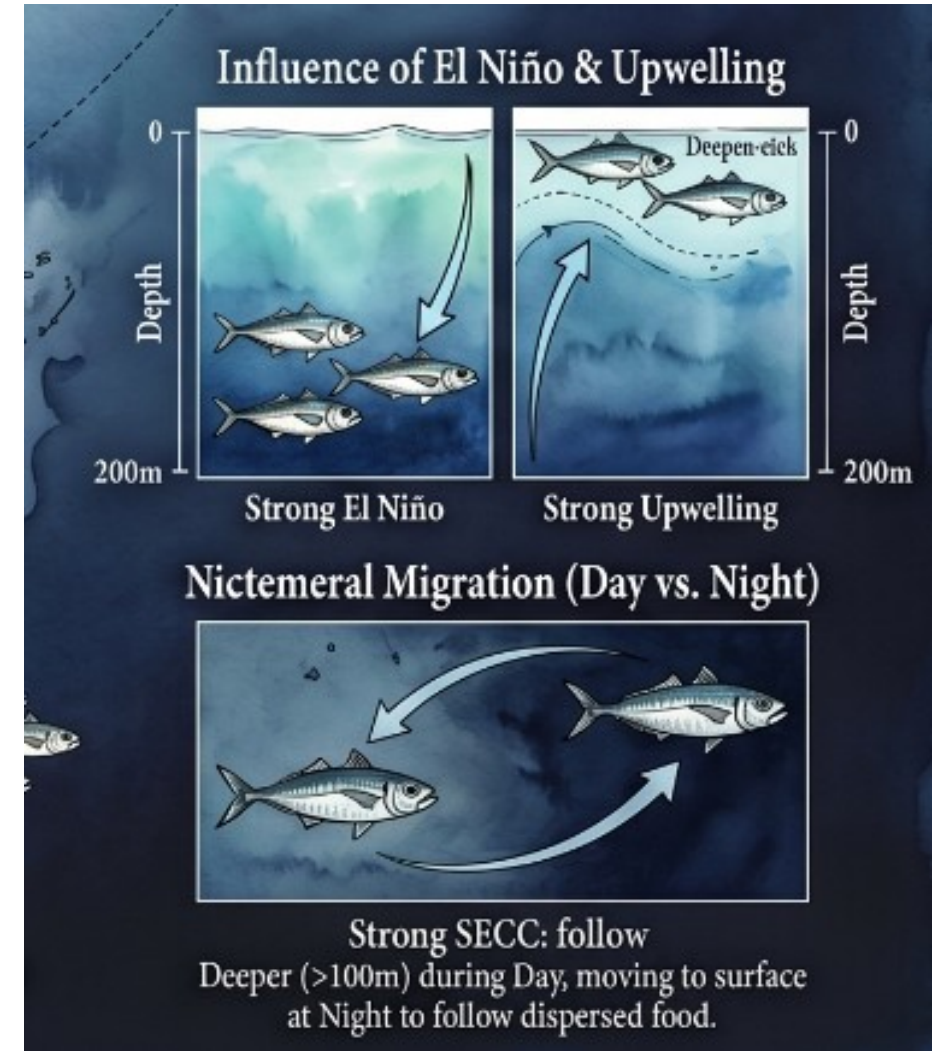
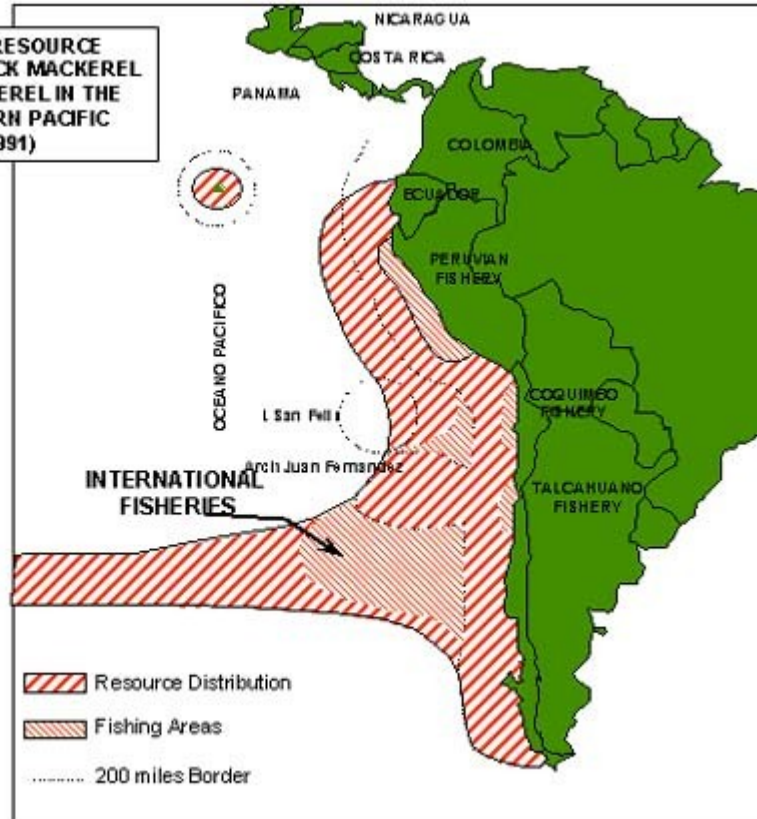
## “Review of jack mackerel acoustic assessments conducted in Peru”

**May 18-22, 2026**

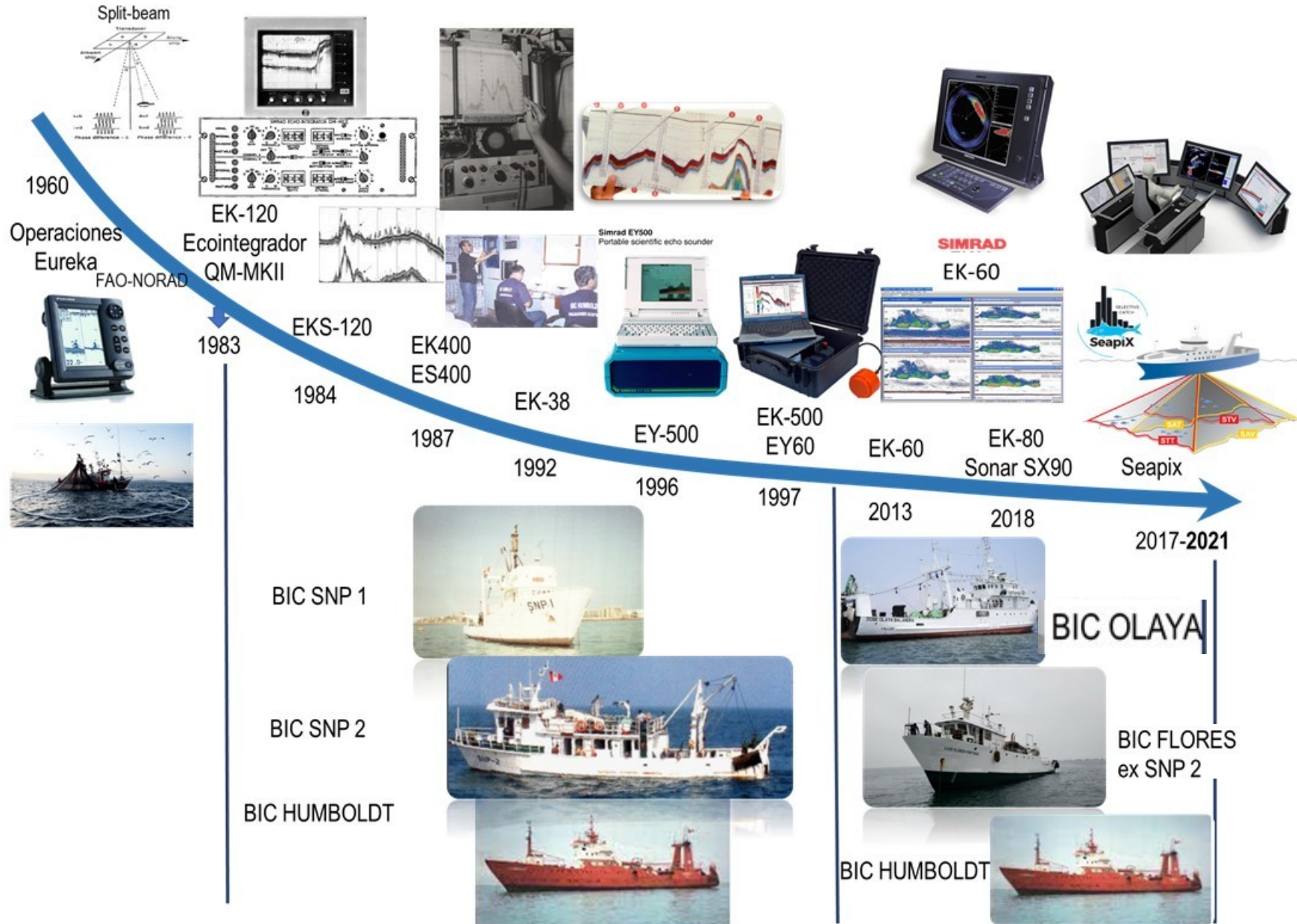
*Carlos Valdez*

# CONTEXT

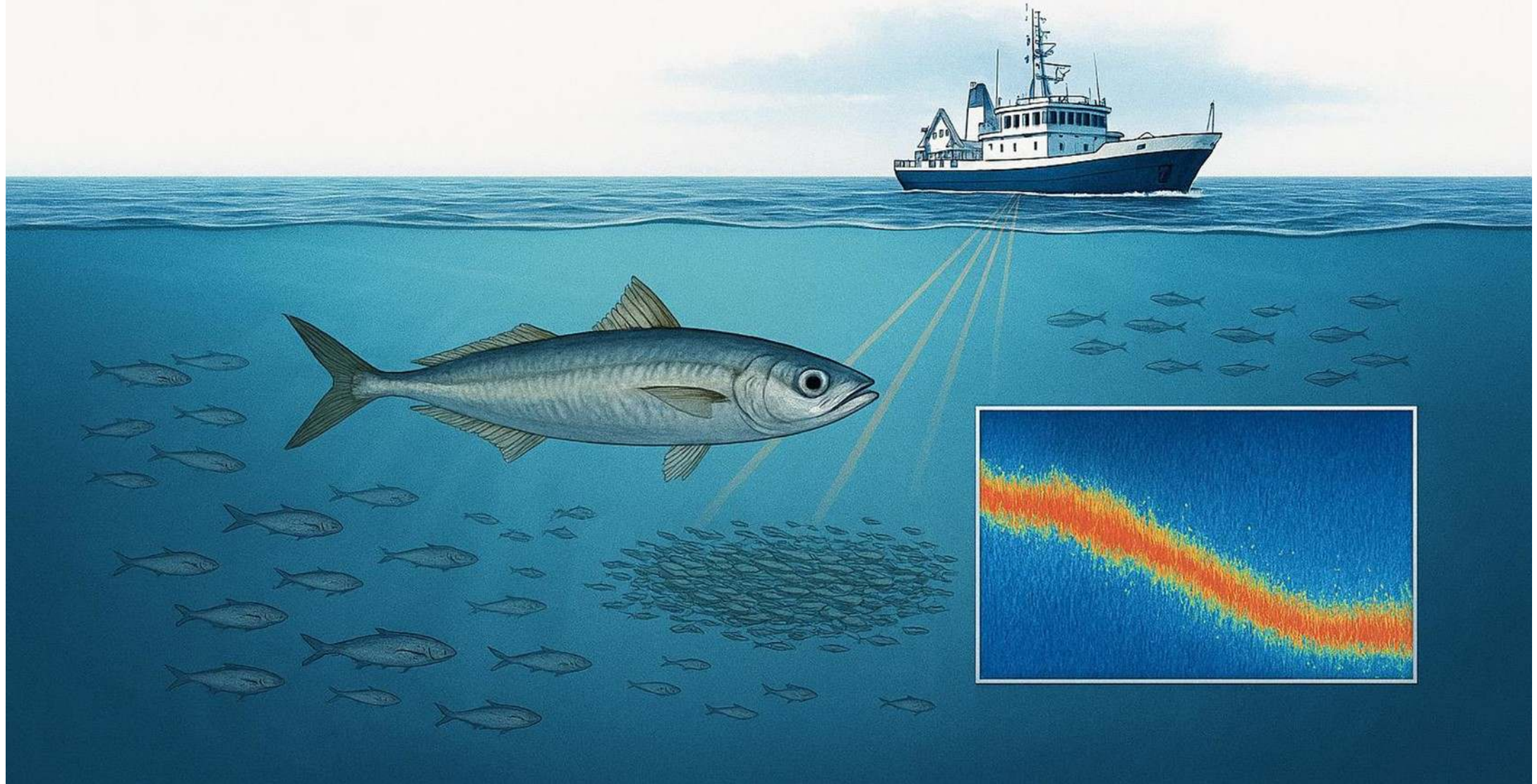
FISHERIES AND RESOURCE DISTRIBUTION OF JACK MACKEREL AND HORSE MACKEREL IN THE SOUTHERN EASTERN PACIFIC (SERRA, 1991)



# ACOUSTIC EQUIPMENT EVOLUTION

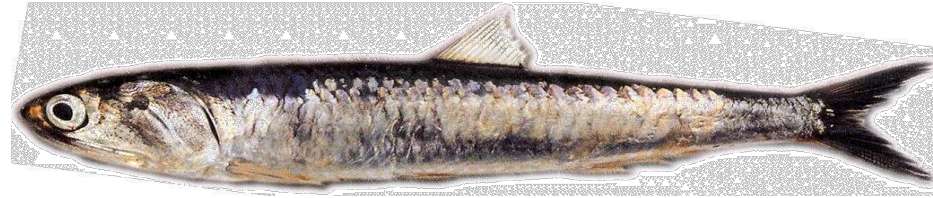


# Hydroacoustic surveys for acoustic assessment of anchovy and other pelagic resources



# Goal

To determinate the distribution, biological-fisheries aspects and biomass estimates of anchoveta and other abundant pelagic resources..



*Engraulis ringens*



*Anchoa nasus*



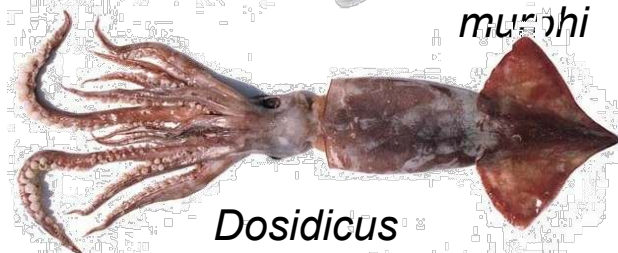
*Scomber japonicus*



*Trachurus murohi*



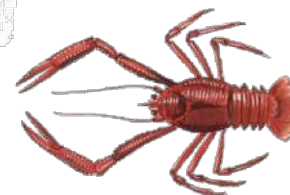
*Galeichthys peruvianus*



*Dosidicus gigas*



*Vinciguerria lucetia*



*Pleuroncodes monodom*



Macrozooplankton

# Sample strategy

North-center zone: Puerto Pizarro - Chala

South zone: Chala - Morro Sama

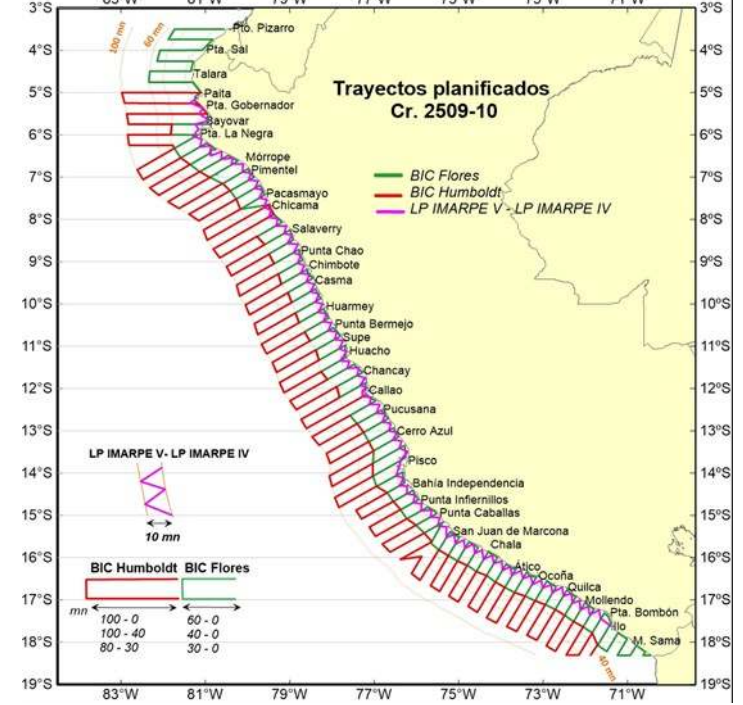
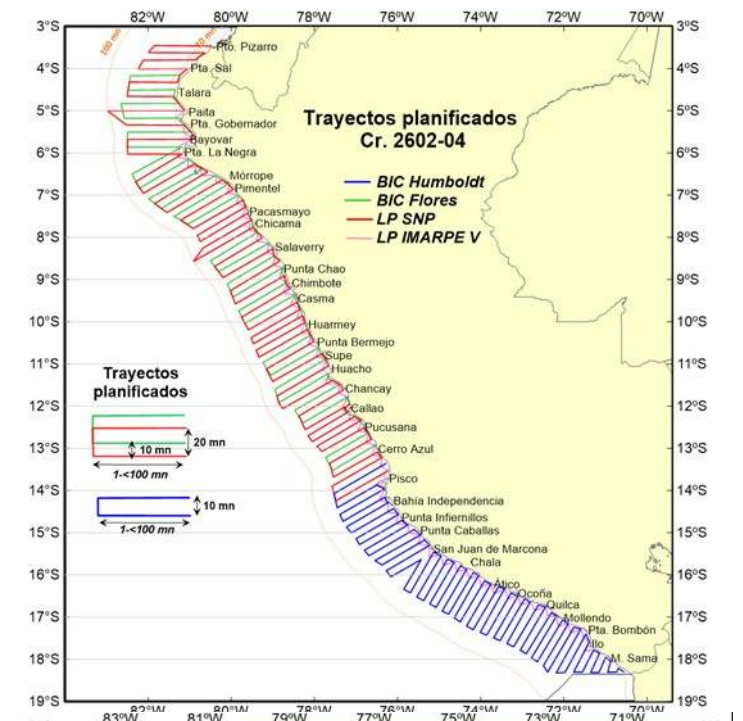


**Calibration:** At the beginning, Tungsten sphere 38.1 mm

**Echosouder:** EK80 – 5 freq

**Length of transects:** 80 nmi (summer), 120 nmi (spring)

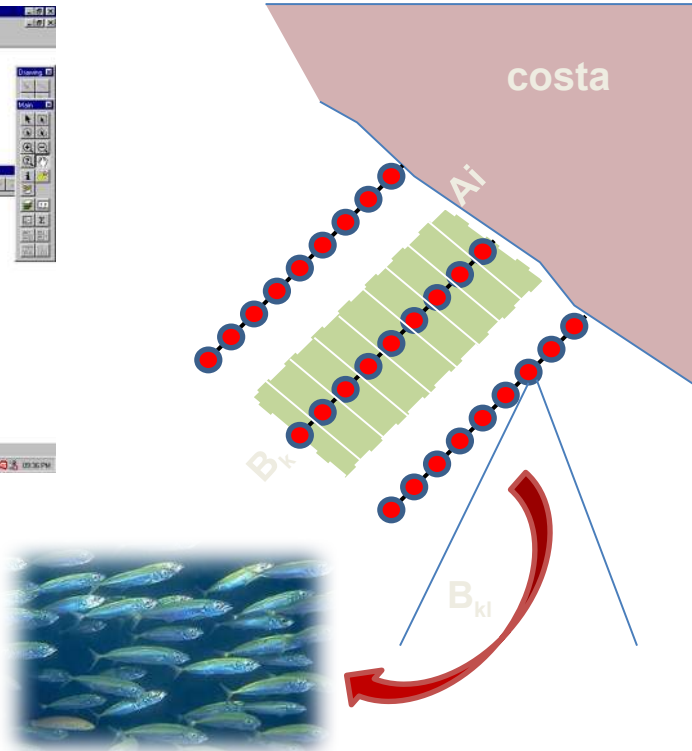
**Space between transects:** 10 nmi (summer), 15 nmi (spring)



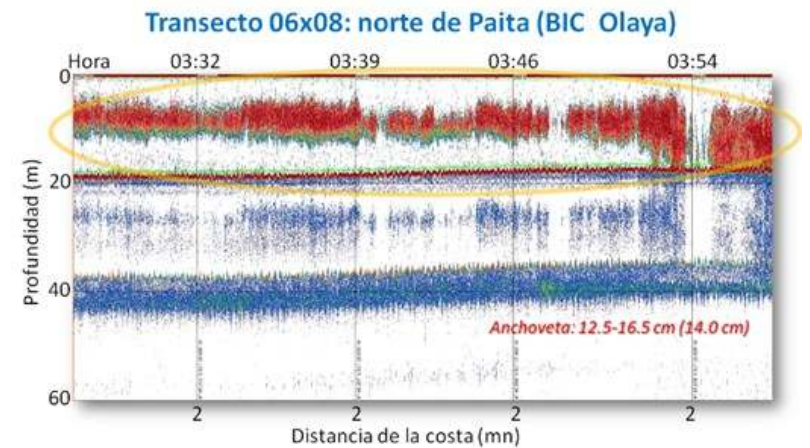
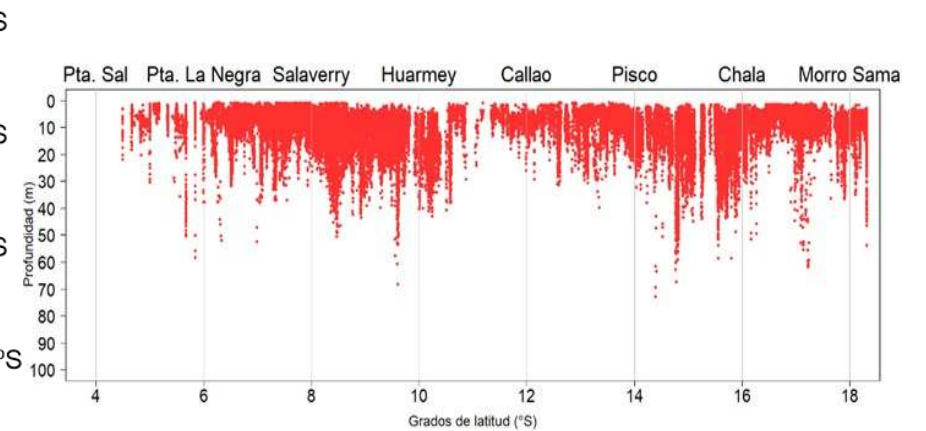
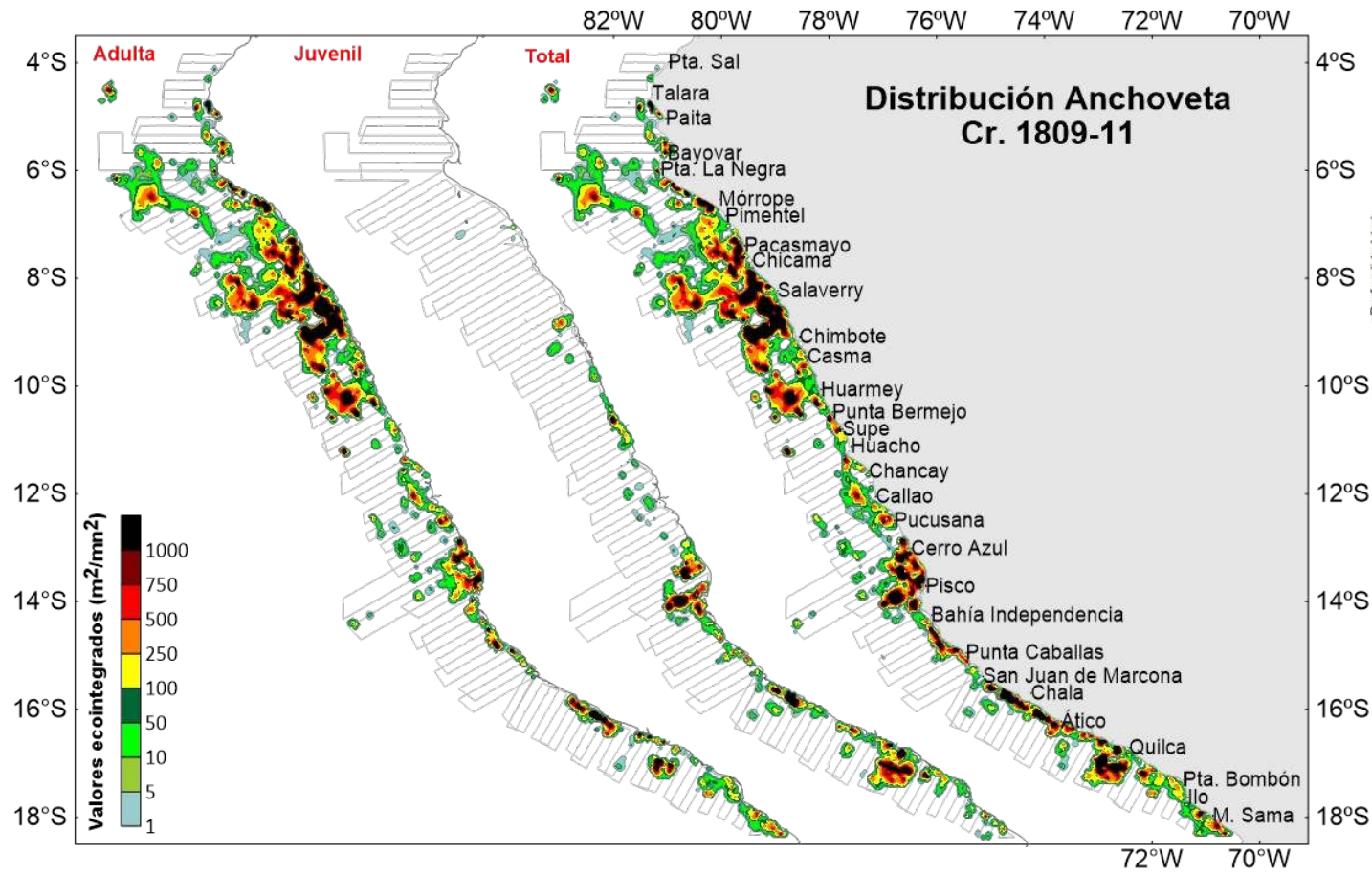
# SPECIFIC OBJETIVES :

1. Estimate the biomass of the main pelagic species, especially anchoveta, in the evaluated area.

Stratification method in isoparalittoral areas of 10x30 nmi

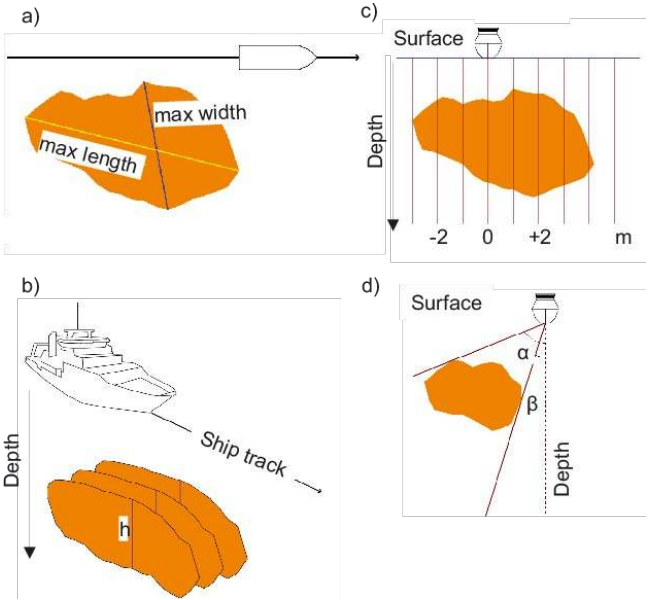


2. Represent the distribution and concentration of the main pelagic species and others that present significant abundances, using thematic maps.

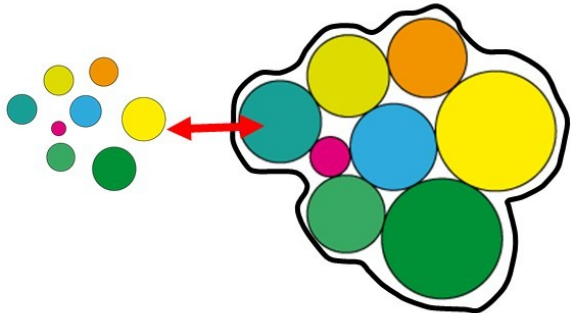


### 3. Determine anchoveta/other resources indicators such as: dispersion-concentration, size of schools and relationship with other species.

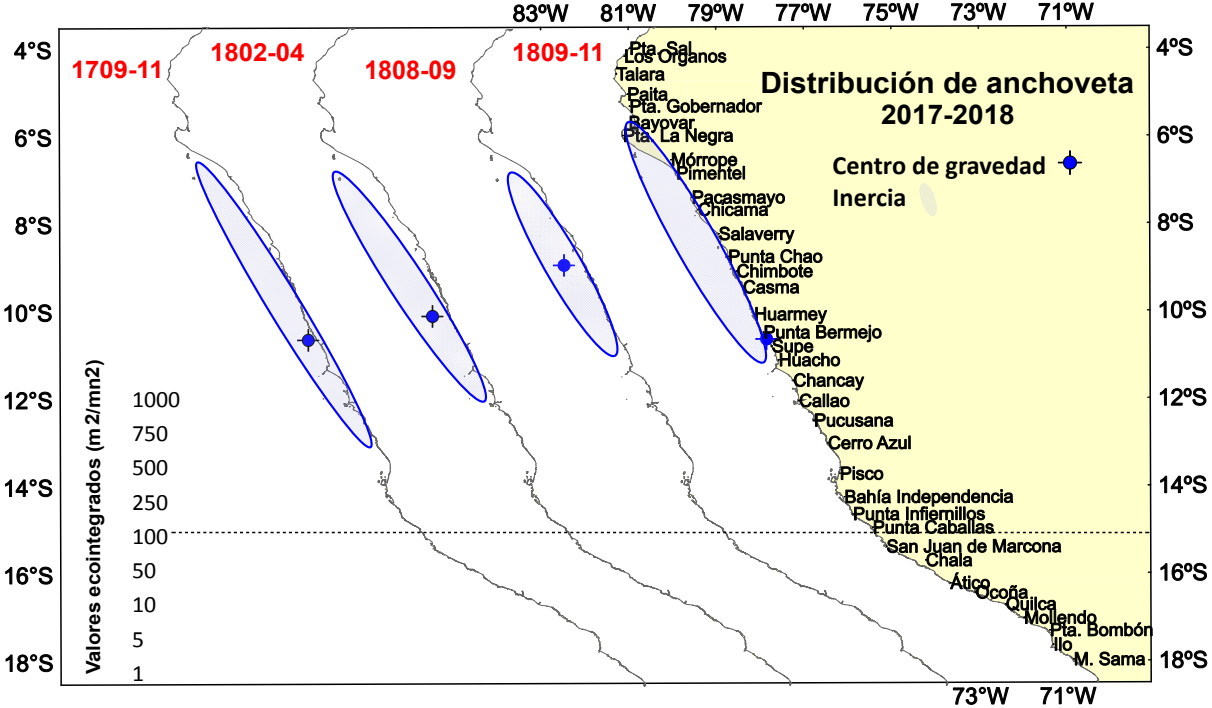
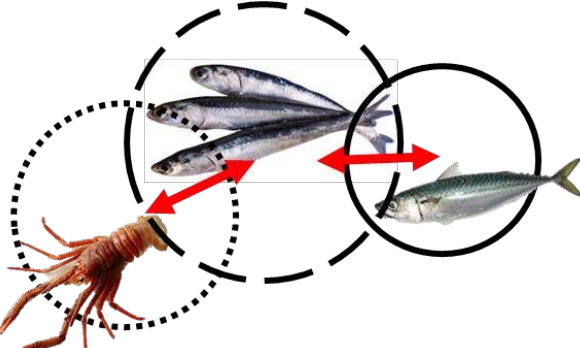
a) Dimension of schools and swarms



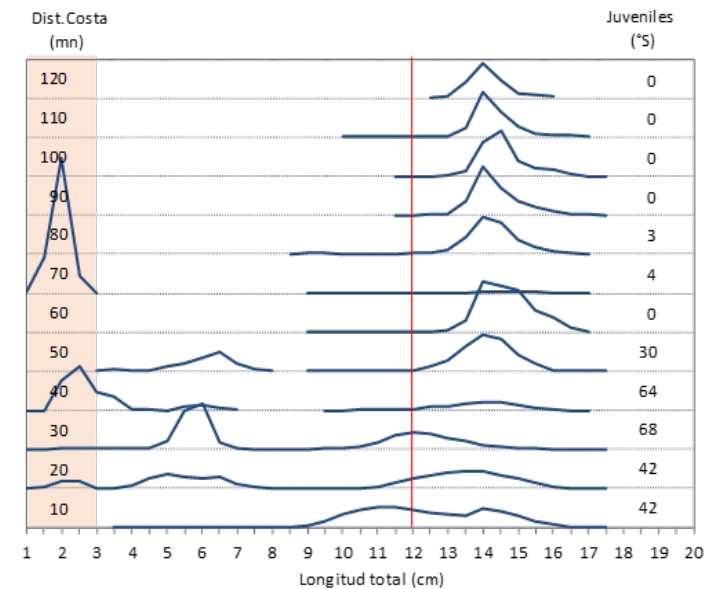
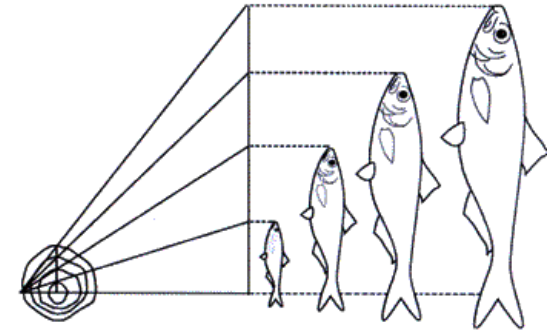
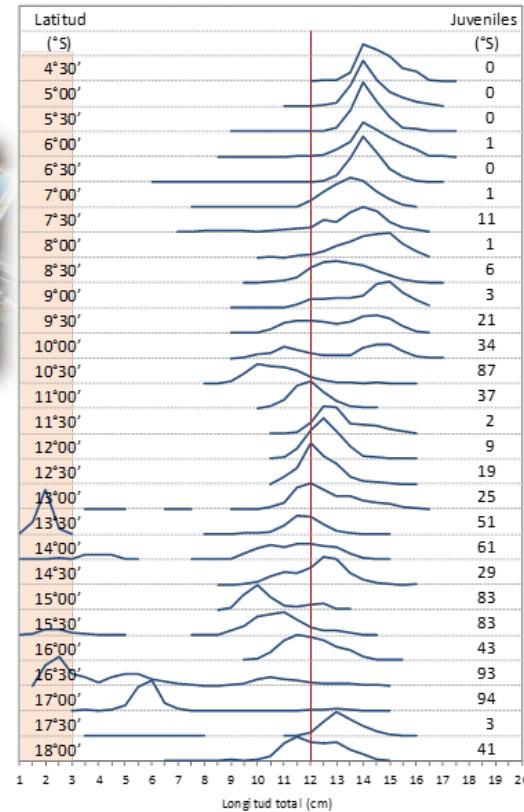
b) Dispersion-Concentration



c). Relation with other species



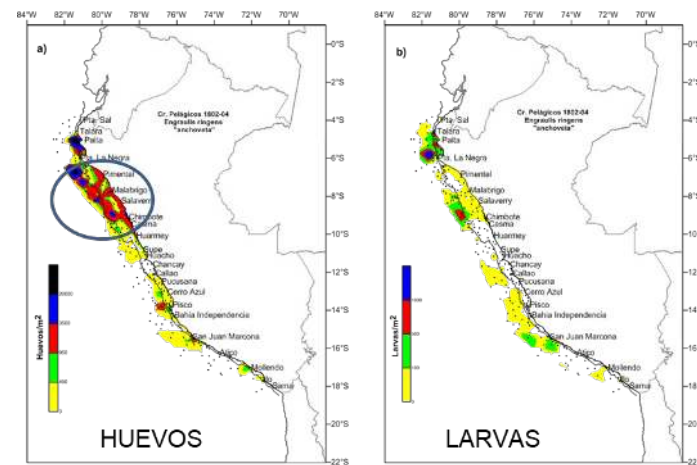
## 4. Determine the size structure of the anchoveta population and other pelagic resources



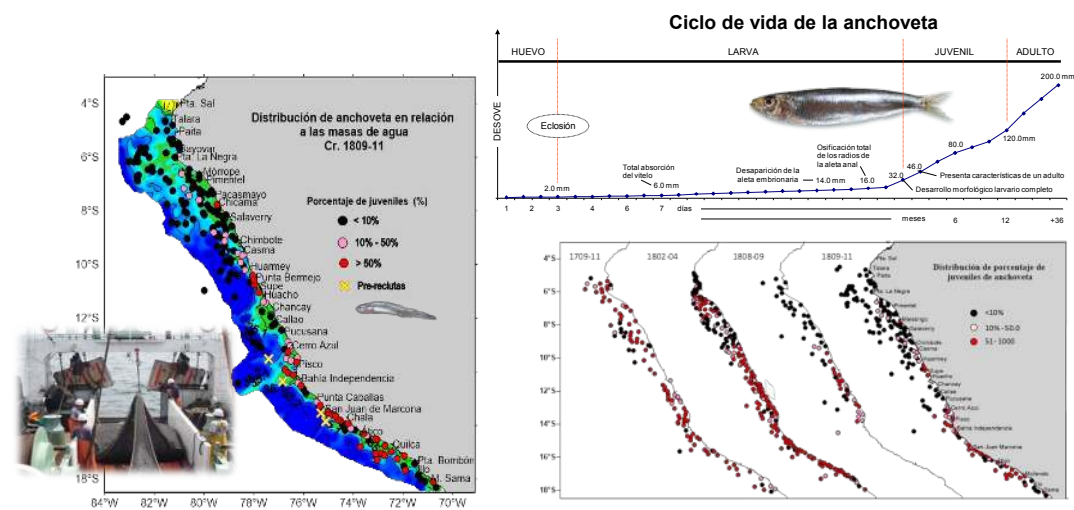
5. To determinate the evolution of the reproductive process of pelagic species, primarily anchoveta.



6. To determinate the concentration of anchoveta eggs and larvae and verify the spawning areas.



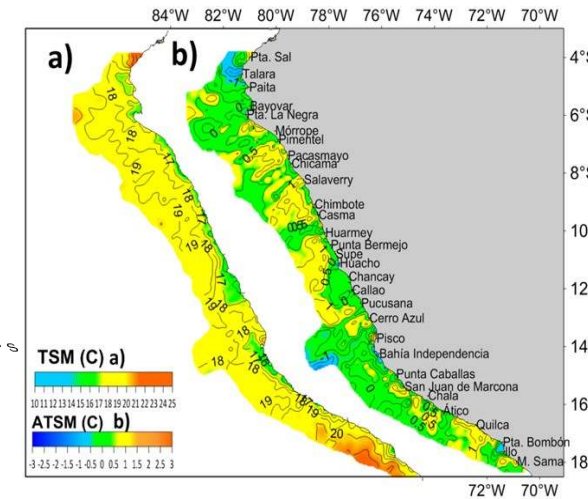
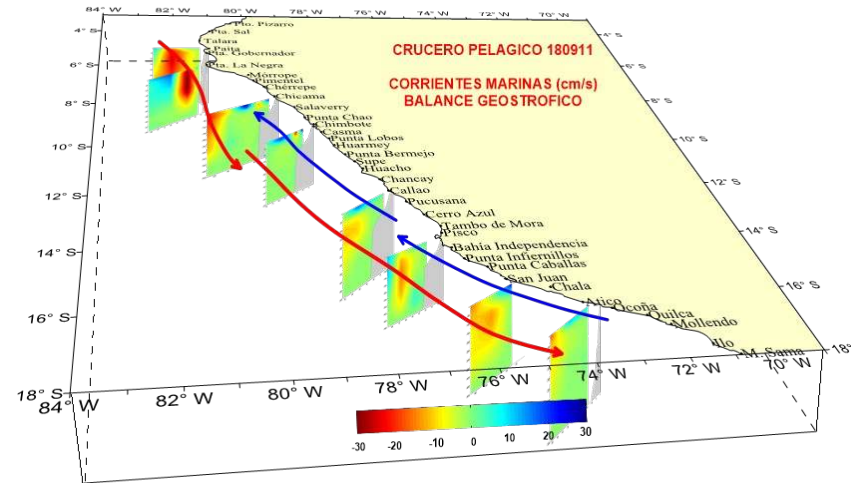
7. To observe or measure anchoveta recruitment in the evaluated area.



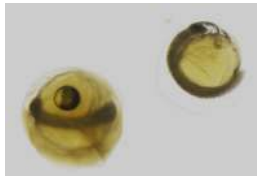
8. To determinate the presence of anchoveta predators.



9. To obtain up-to-date information on the characteristics of the marine environment by measuring physical, chemical, and biological parameters of the sea.

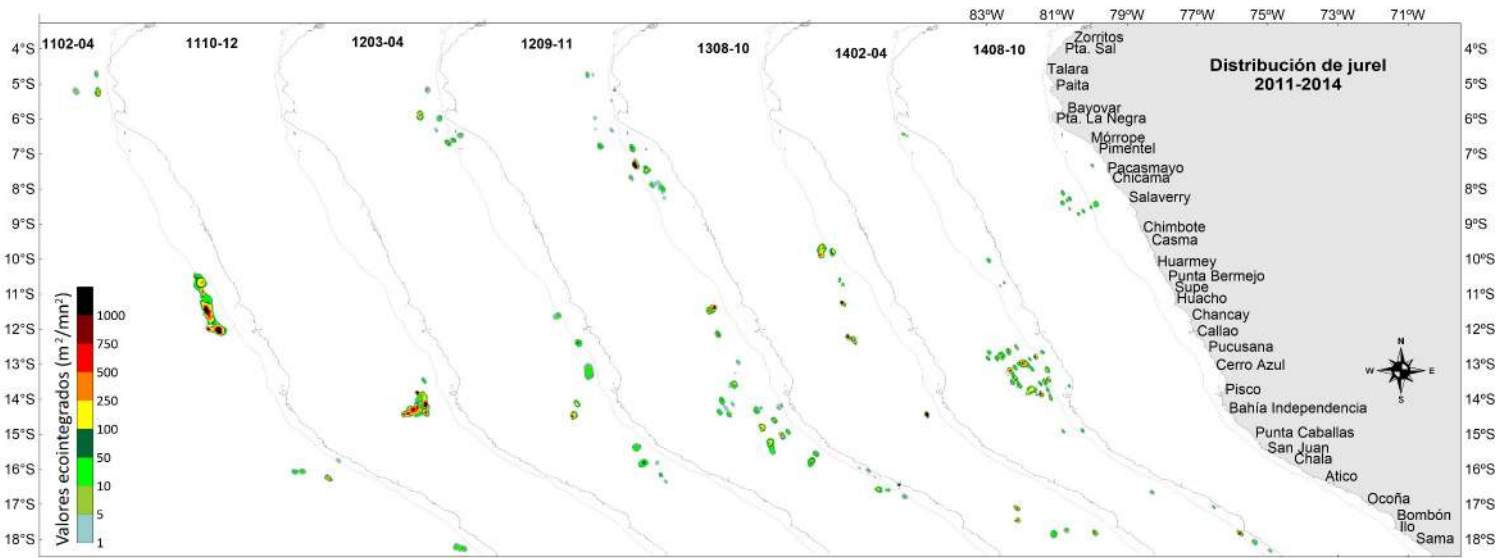


10. To determinate the composition and abundance of zooplankton and ichthyoplankton.

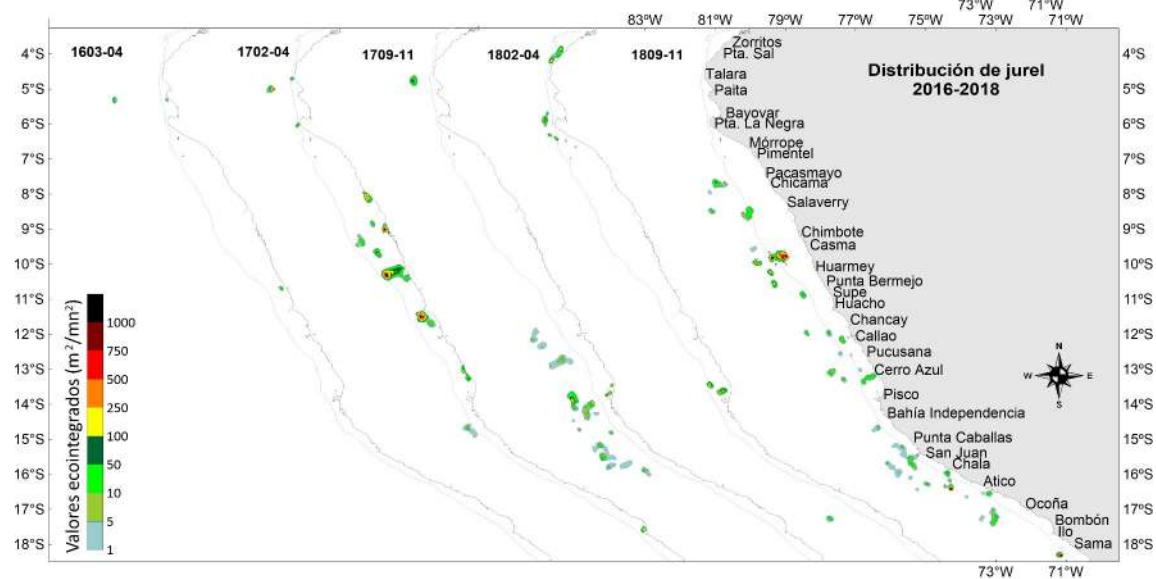


# **MAIN HISTORICAL ACOUSTIC RESULTS**

# Distribution of the last 15 years (2011-2025)

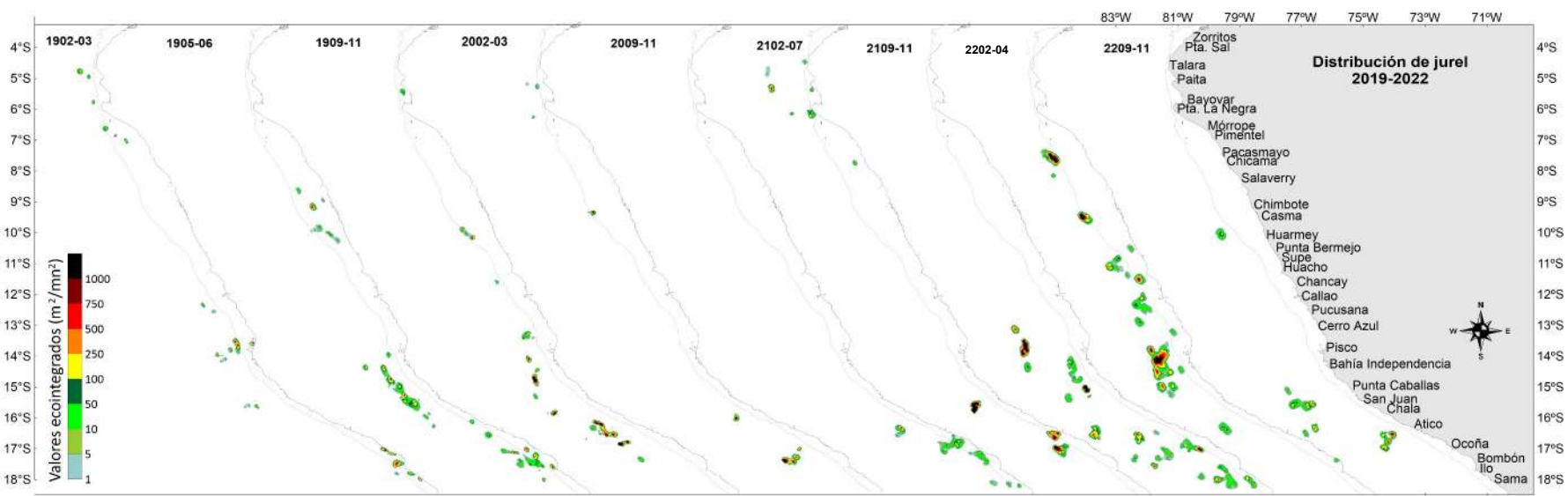


Concentrated in the northern zone (6-12°S), high abundance

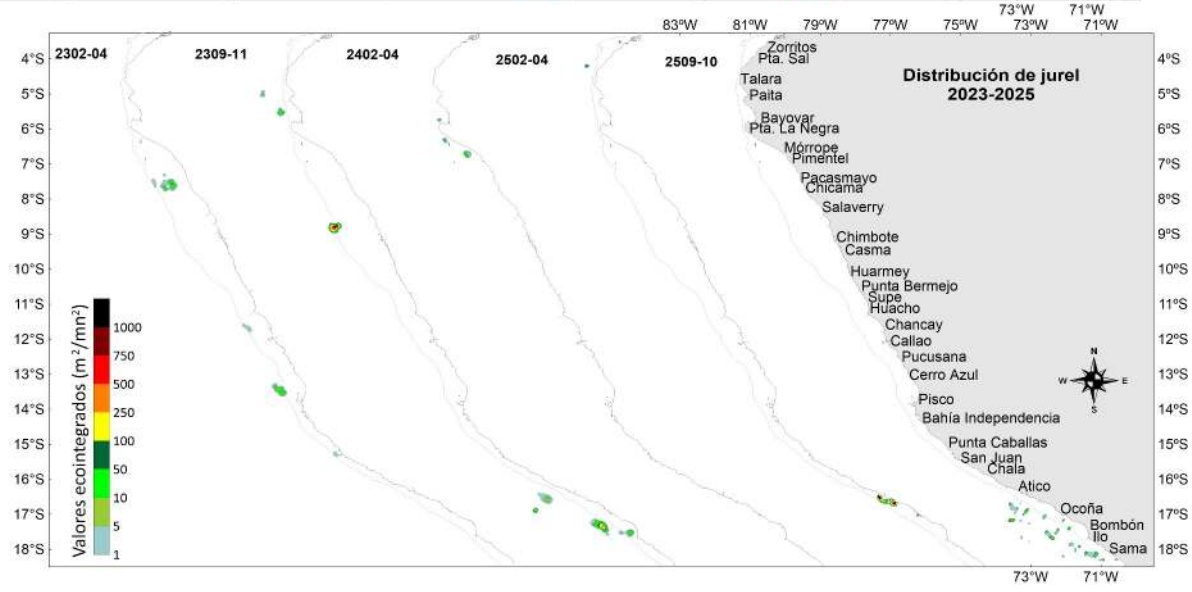


Shift to central zone (12-16°S)

# Distribution of the last 15 years (2011-2025)



Greater heterogeneity and variable patterns



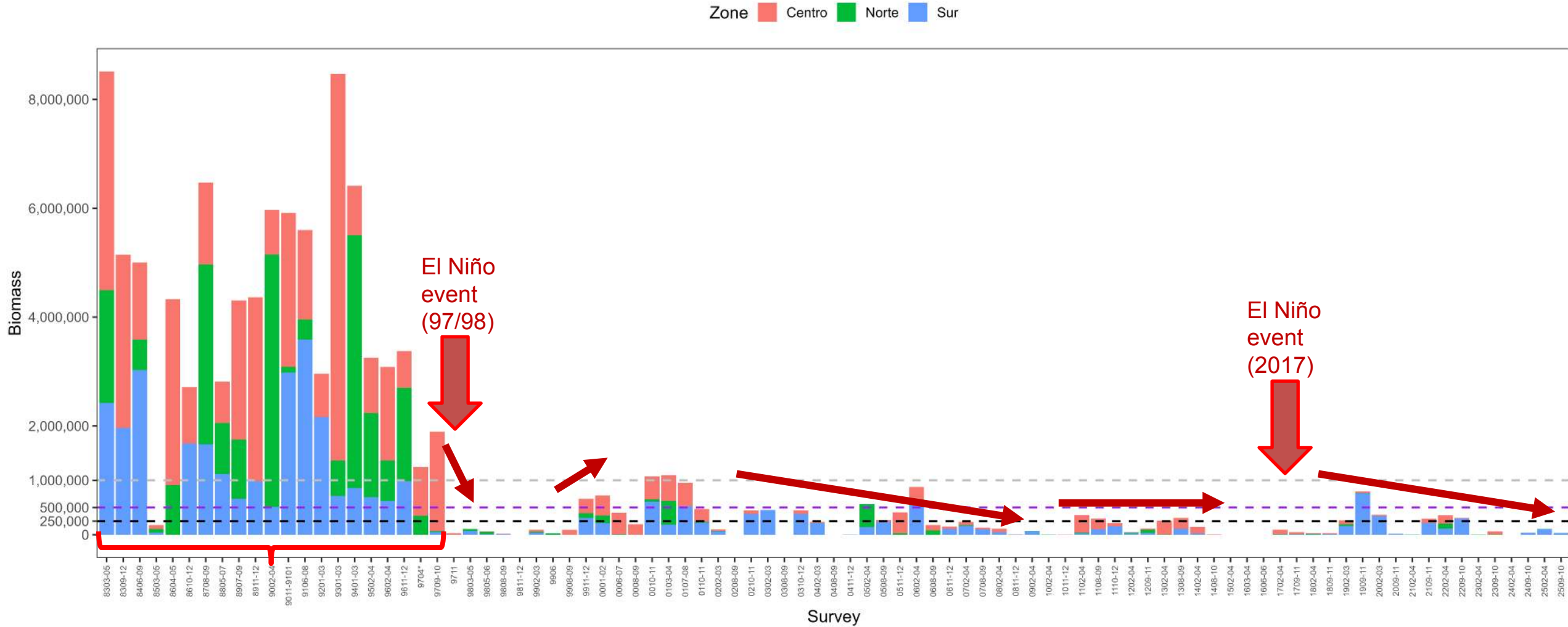
Significant reduction, increased dispersion

# Historical biomass

North: 03-08°S  
Center: 09-14°S  
South: 15-19°S

## Jack mackerel biomass by latitudinal zones

Stacked biomass by survey

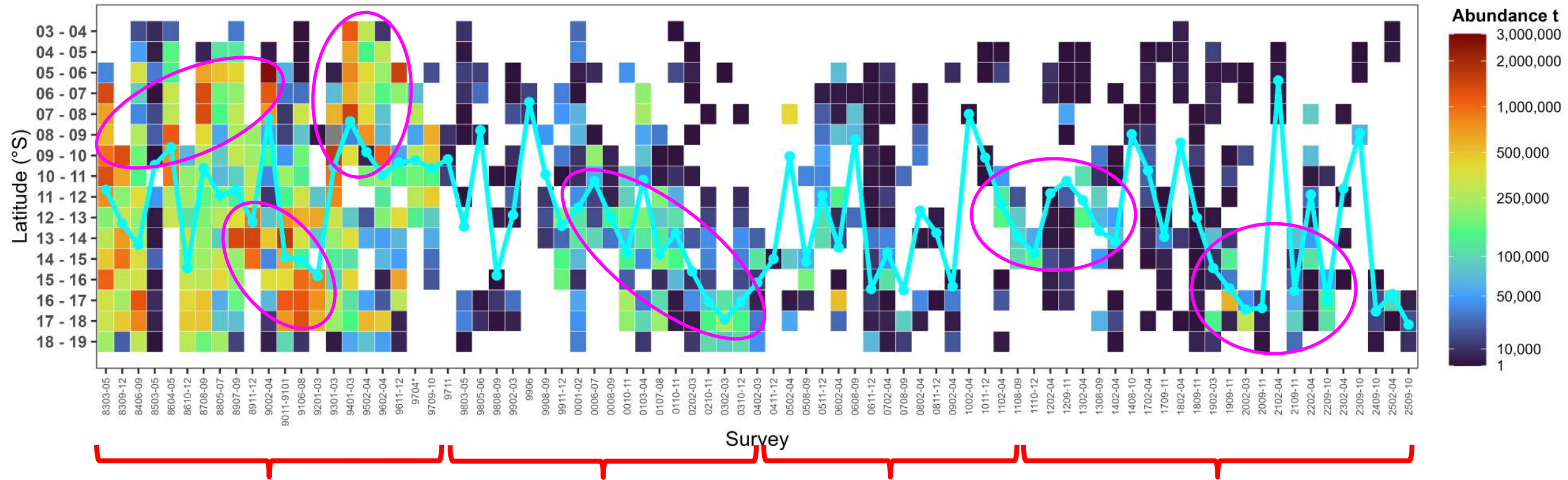


# Abundance vs centroid

$$C = \frac{\sum_{i=1}^n (L_i \times A_i)}{\sum_{i=1}^n A_i}$$

## Latitudinal distribution abundance of jack mackerel and its centroid

Historical acoustic surveys in Peru



# CONCLUSIONS

## 1. METHODOLOGICAL LIMITATIONS

- Long transects in summer/spring limit coverage
- El Niño phenomenon forces coastal cruises
- **IMPACT:** Uncertainty in stock assessment

## 2. CURRENT STATUS OF THE RESOURCE

- High concentration and abundance before 1998, after that, everything change
- Atypical distribution in the last 3 years

## 3. INFORMATION GAP

- Gap limits interpretation of trends, absence of jack mackerel in some surveys
- Lack of knowledge of transboundary movements (Peru-Chile), exist?



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