

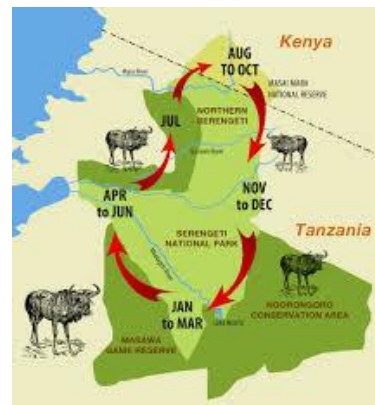


**CSIC**  
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



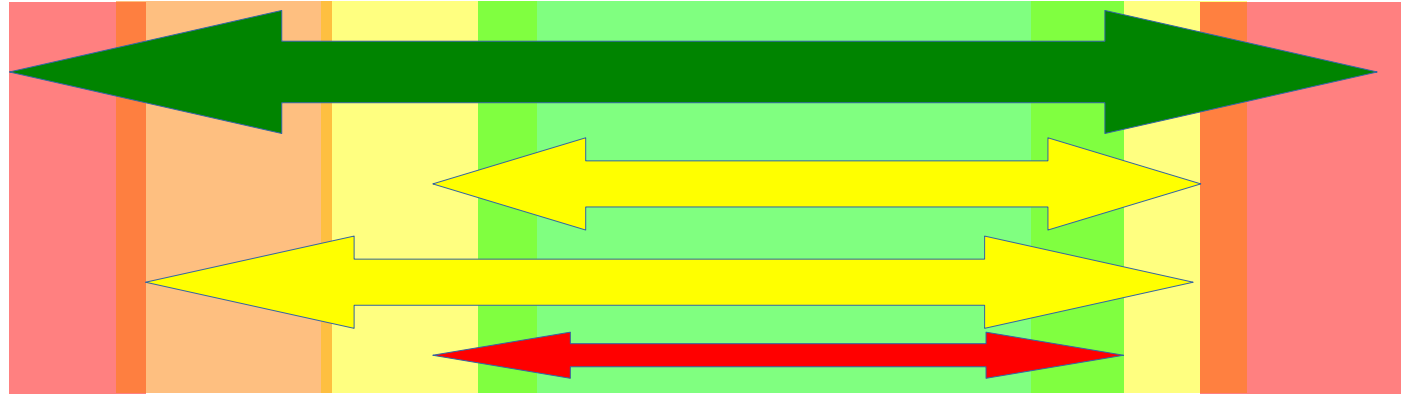
INSTITUTO ESPAÑOL DE OCEANOGRAFÍA (IEO)

# ESTUDO DA PESQUERÍA DE LIRIO E OUTRAS ESPE

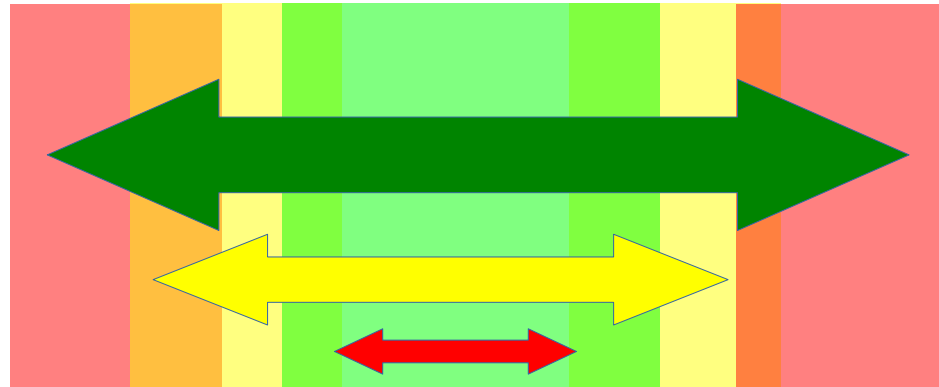


# HÁBITATS

**PRECARIO** **AXEITADO** **PROPICIO** **AXEITADO** **PRECARIO**



CAMBIO



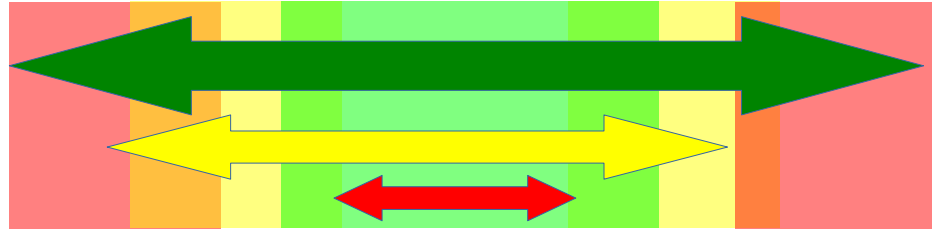
STATUS QUO

S

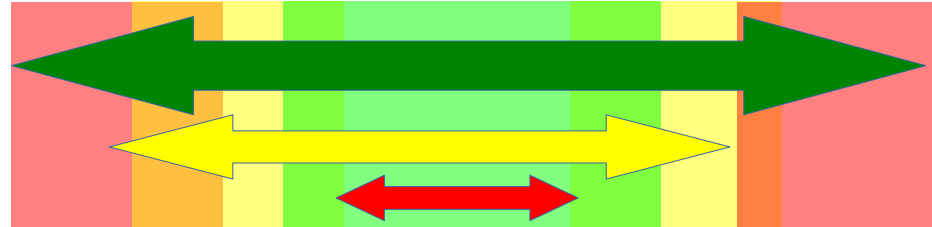
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# HÁBITATS

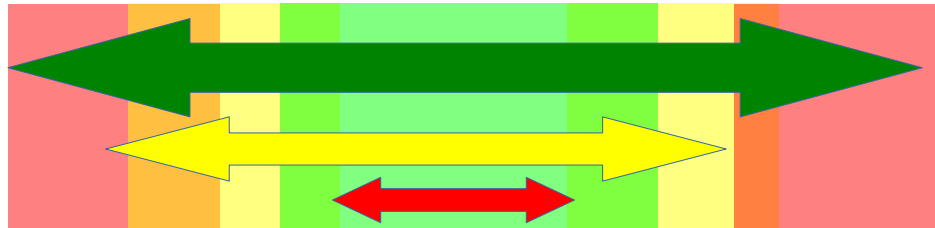
PRECARIO AXEITADO PROPICIO AXEITADO PRECARIO



RECRUTAMENTO



ALIMENTACIÓN



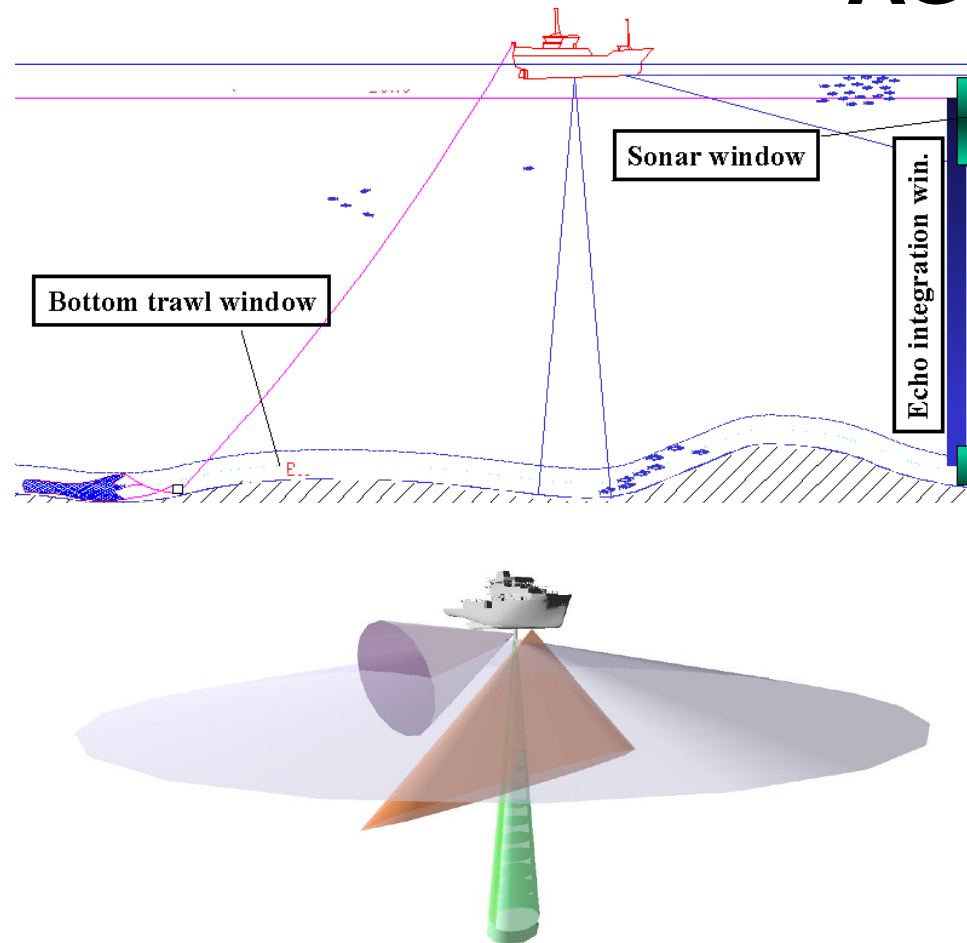
REPRODUCCIÓN

S

N

# MÉTODO DE ESTUDO:

## ACQUISITION



Fully loaded cod end



The catch operation is less time consuming with one-boat trawling. The fish pump reduces draining time considerably.

ed. Concentrations at the spawning depths are such that bursting of the cod end was one of the first problems. A reinforced midwater trawl has been developed and a new technique for hauling in the trawl under speed will prevent the trawl from «jumping out of the sea» when surfacing.

In addition to the vessels which have taken part in the organized research and studies, some Norwegian boats have been fishing on the blue whiting. British trawlers are also engaged, and the Faroe Islands show interest. However, in Spain the interest is even higher and commercial fishing has begun. Spain has a fleet of modern trawlers and some combined stern trawlers/purse seiners. In this fleet Simrad equipment has an excellent reputation. Three of the combined vessels were on the spawning areas actively fishing and in production during spring of 1974. These vessels are each 1400 tons and have each an engine of 2400 hp. A fish meal factory with a capacity of 120 tons fish per day is installed.

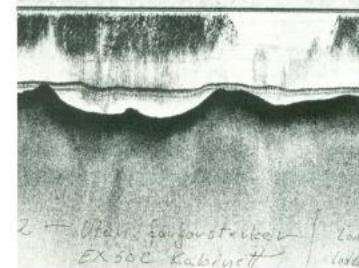
The Spanish trawlers are equipped with the following Simrad instruments:

Simrad SB3 Sonar  
Simrad CM Sonar Sco  
Simrad EX Echo Soun  
Simrad MA Echo Magr  
Simrad FB Trawl Eye v  
Simrad EX50 Echo S  
Trawl Eye.

The sonar is used to blue whiting, and for unknown waters, in (damage to the trawl. Trawl Eye is used for control the situation. The experience gained in the Norwegian's was known. This limitation was in having evaluated the made by Trawl Eye. hauled in the final position at a speed of 2-3 the capacity of the fish three hauls a day we

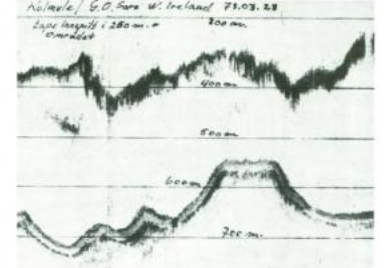
The blue whiting is like the cod. It is four exceeding 200 meters gian Sea and beyond the continental shelf. concentrations are found west of Britain thereby gaining control about how the cod end is being loaded.

Recording made by Simrad FB Trawl Eye. At 350-400 meters depth the trawl is towed just above sea bed.

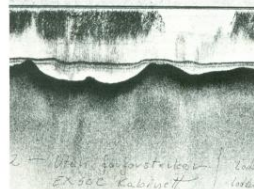


10

Large concentrations of blue whiting at a depth of 400 meters.

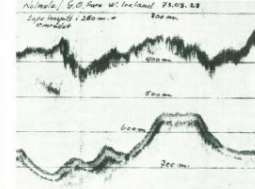


Recording made by Simrad FB Trawl Eye. At 350-400 meters depth the trawl is towed just above sea bed.



10

Large concentrations of blue whiting at a depth of 400 meters.



# Historia da acústica:

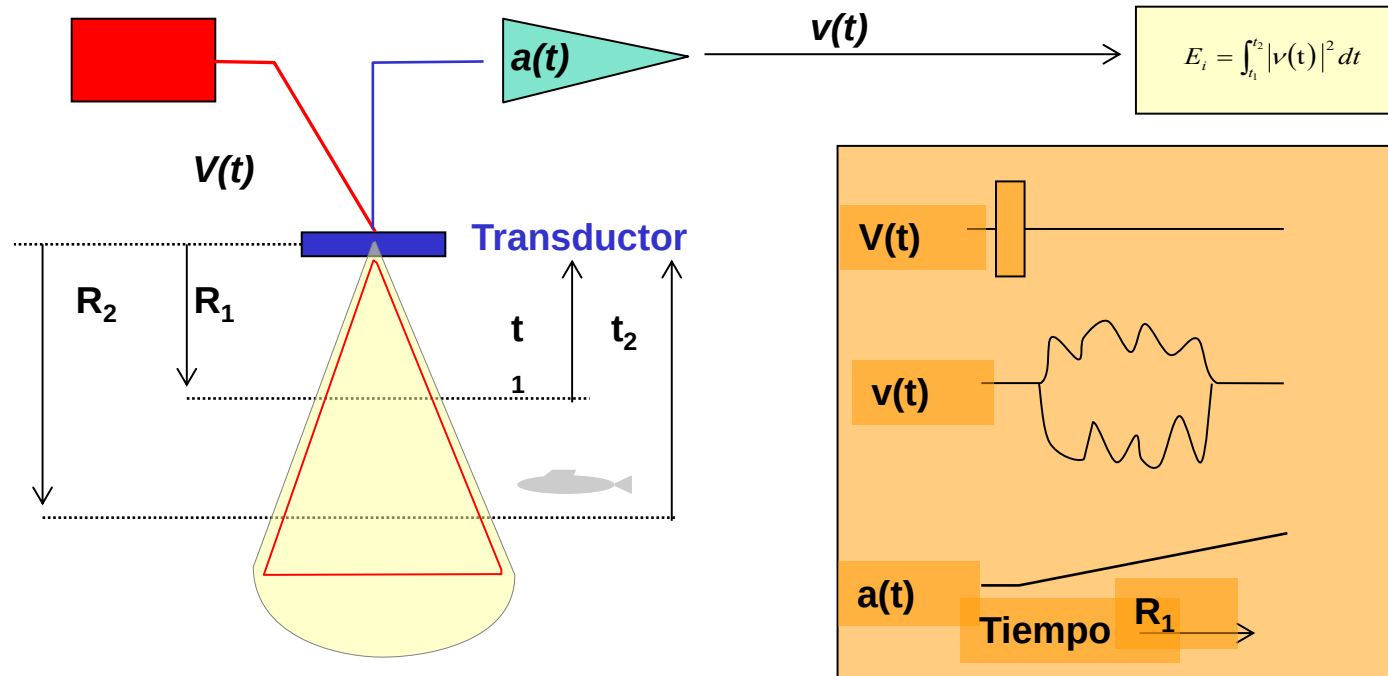
- Uso batimetría (sondeo) (equipos pasivos)
- Paul Langevin (circa 1917) equipos activos de detección
- Kimura (1929): Primeira experiencia sobre ecos de peixes
- Sund (Nature, 1935): Potencial para observar peixes
- Rápido desenvolvemento técnico durante a 2ª G. M.
- Uso en pesca en Portugal a partires dos años 50
- Dragesund e Olsen (1965): Uso cuantitativo para estimar poboacións de peixes: ECOINTEGRACION ~ DENSIDAD

# Ecointegración

**Transmisor**

**Receptor con GVT**

**Integrador**





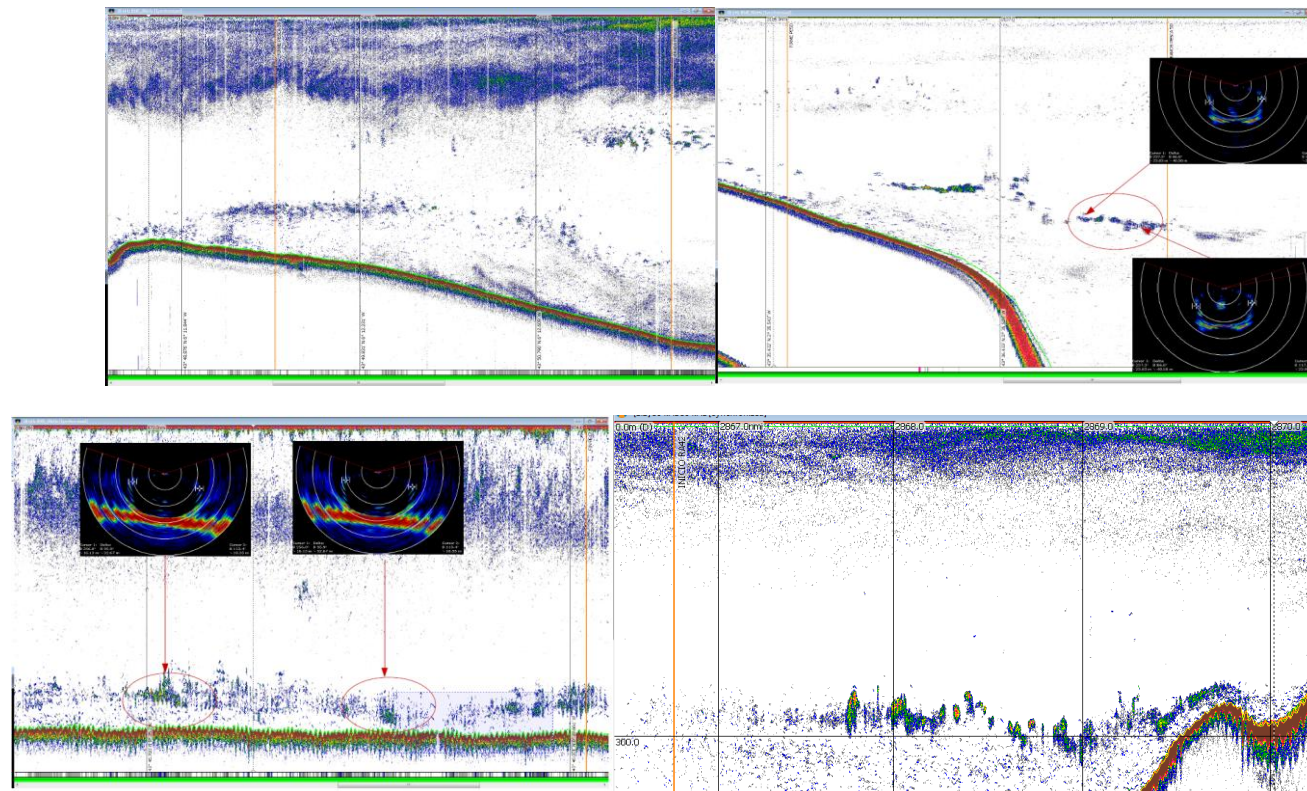
## Stock WHB:

- Unha unidade de xestión
- Dous compoñentes de posta:
  - Sur Porcupine
  - Norte Porcupine
- Posta en inverno/primavera
- Zona preferente de alimentación estival dos adultos: Mar de Noruega

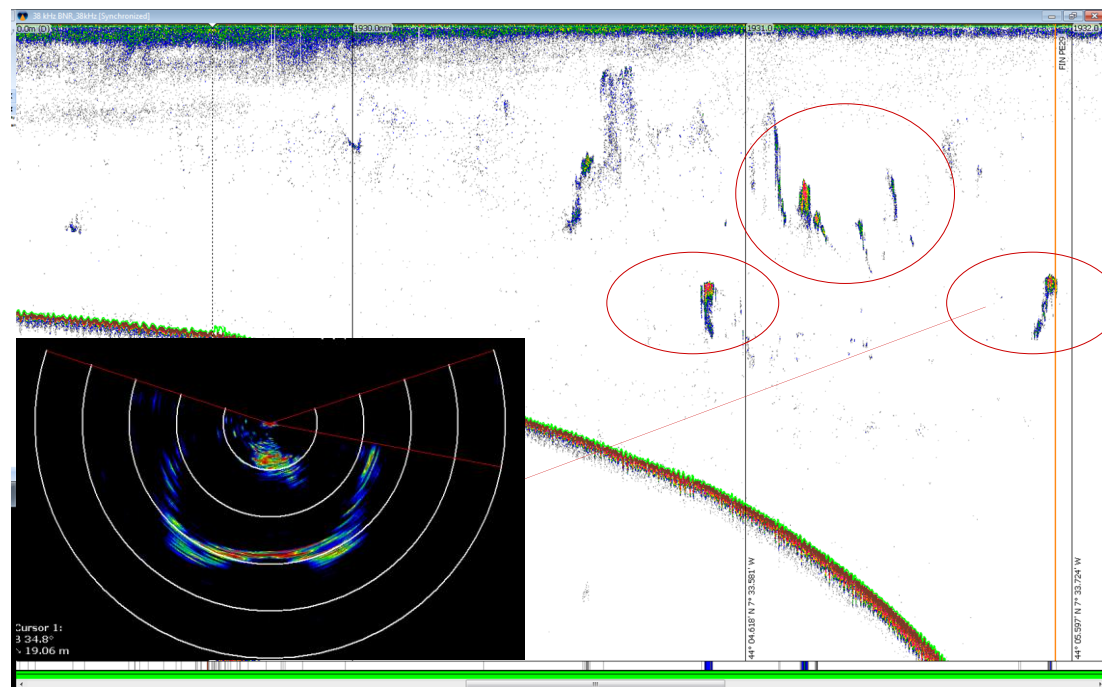


# DISTRIBUCIÓN: CANTÁBRICO

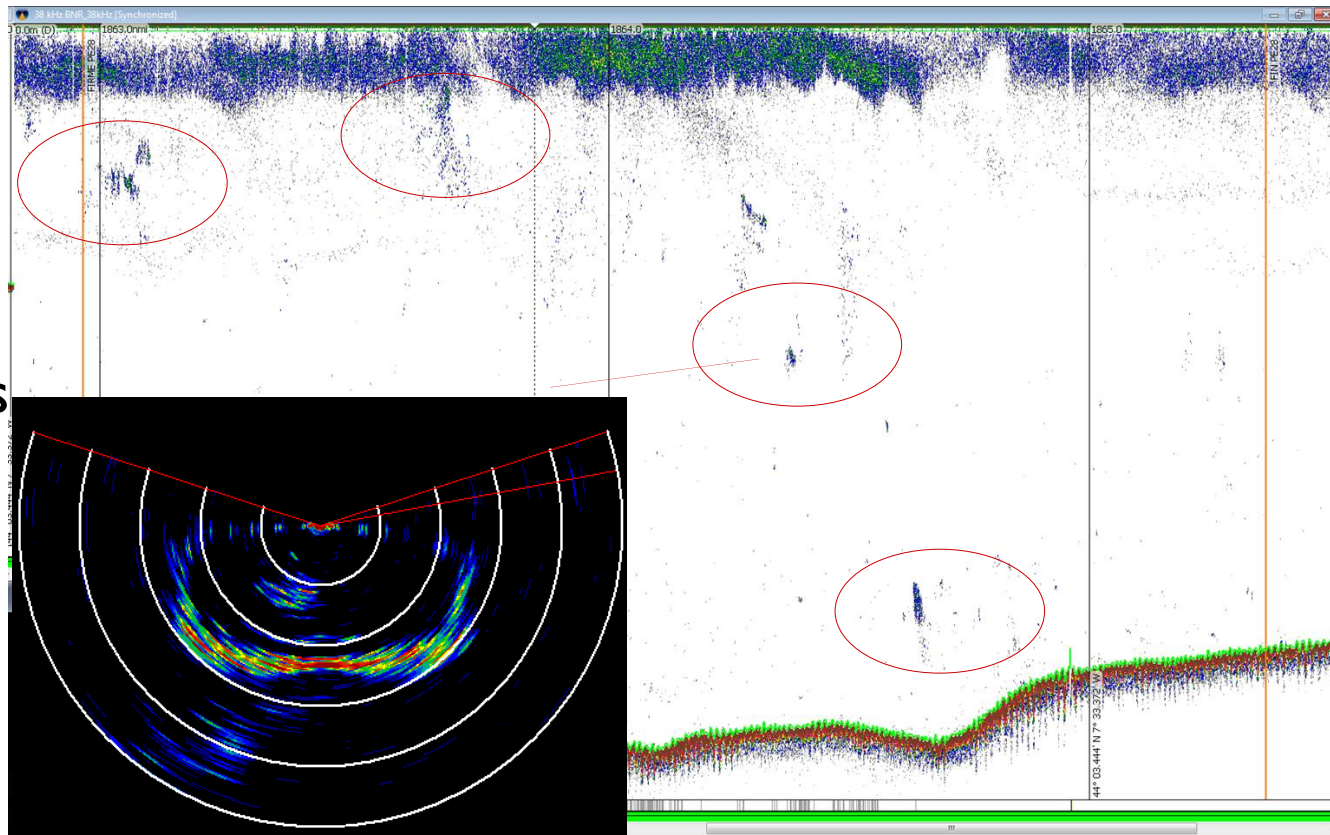
ADULTOS



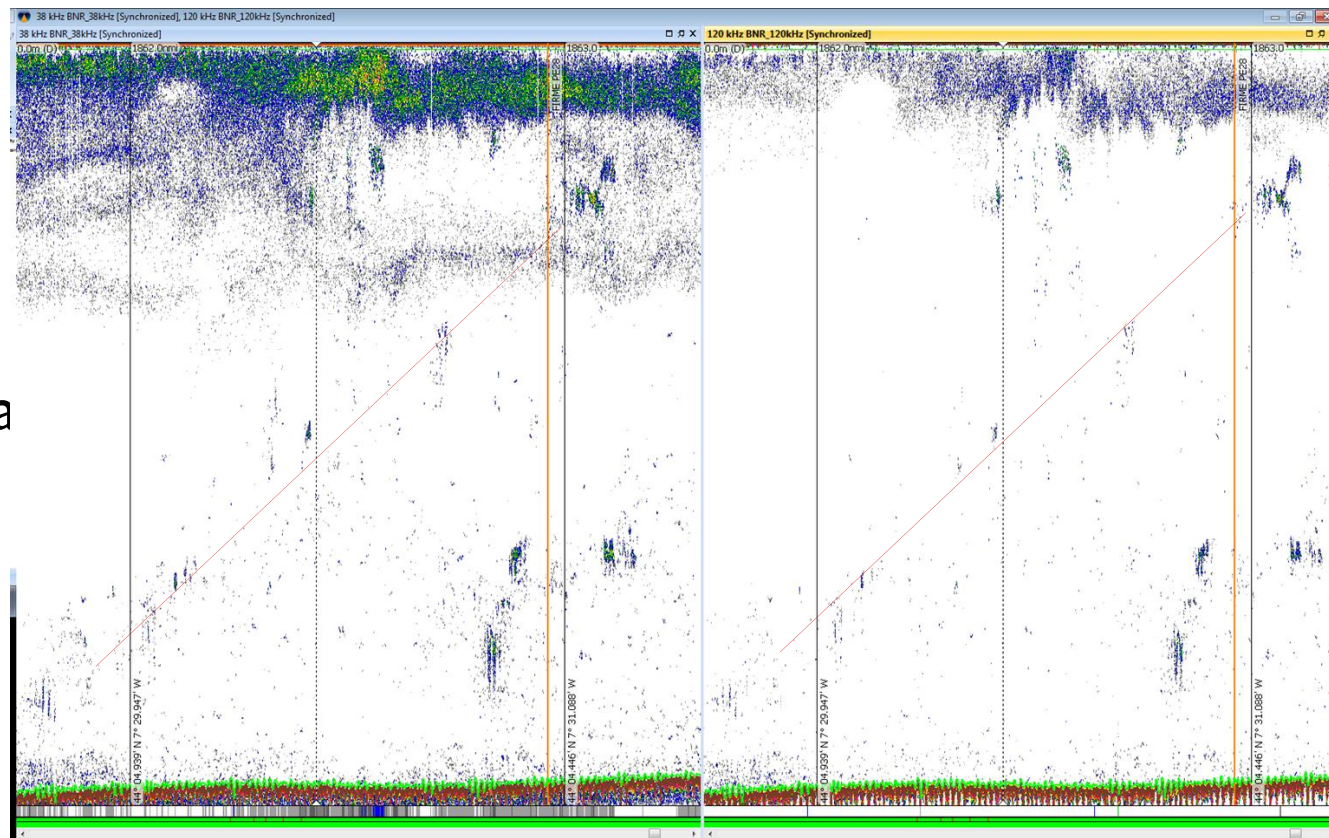
# XUVENILES (migracións nictimerais)



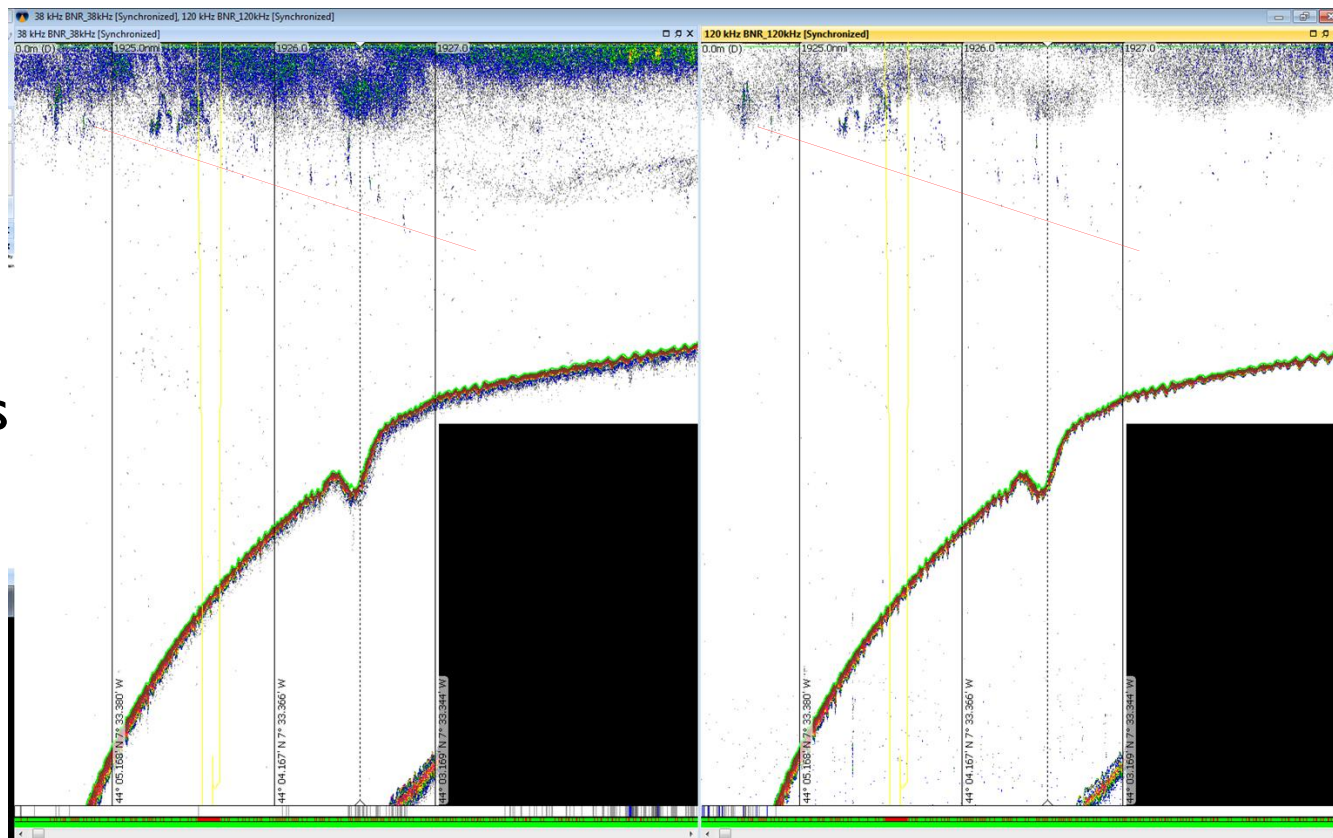
# XUVENILES (migraciones nictimerais)



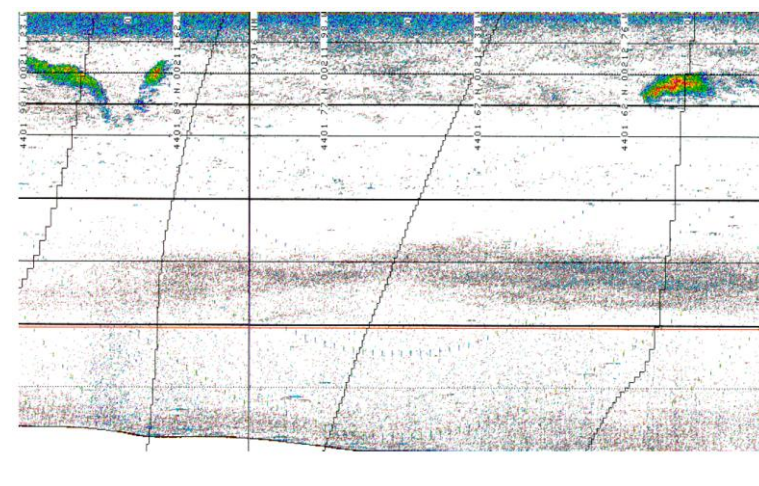
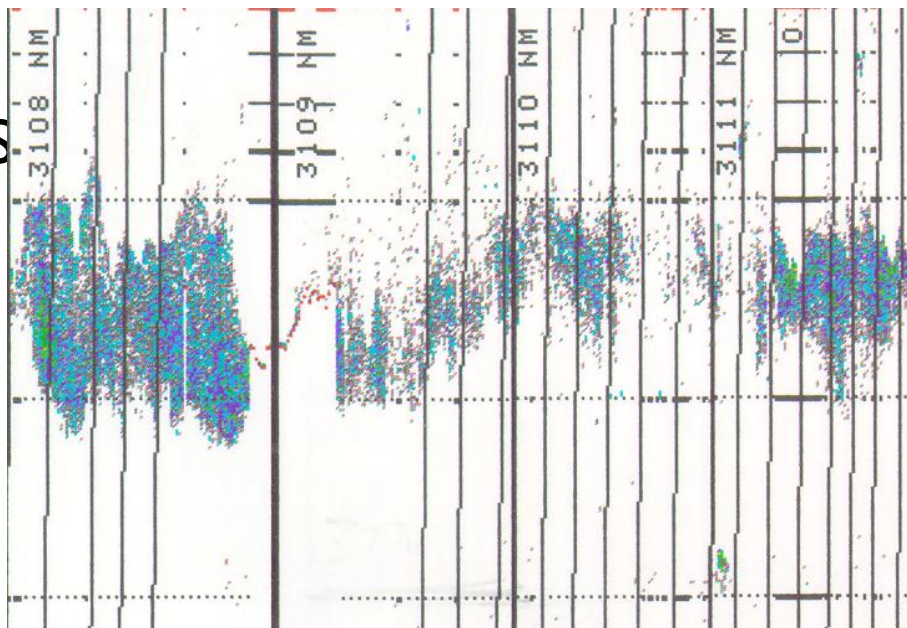
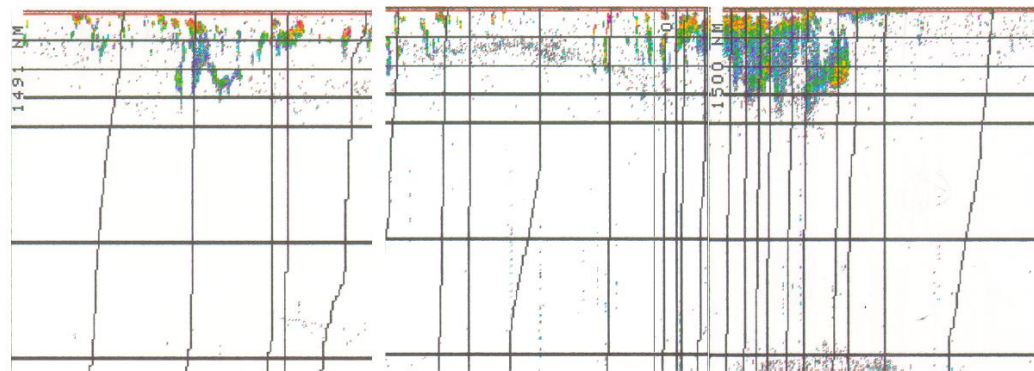
# XUVENILES (migracións nictimera)



# XUVENILES (migraciones nictimerais)

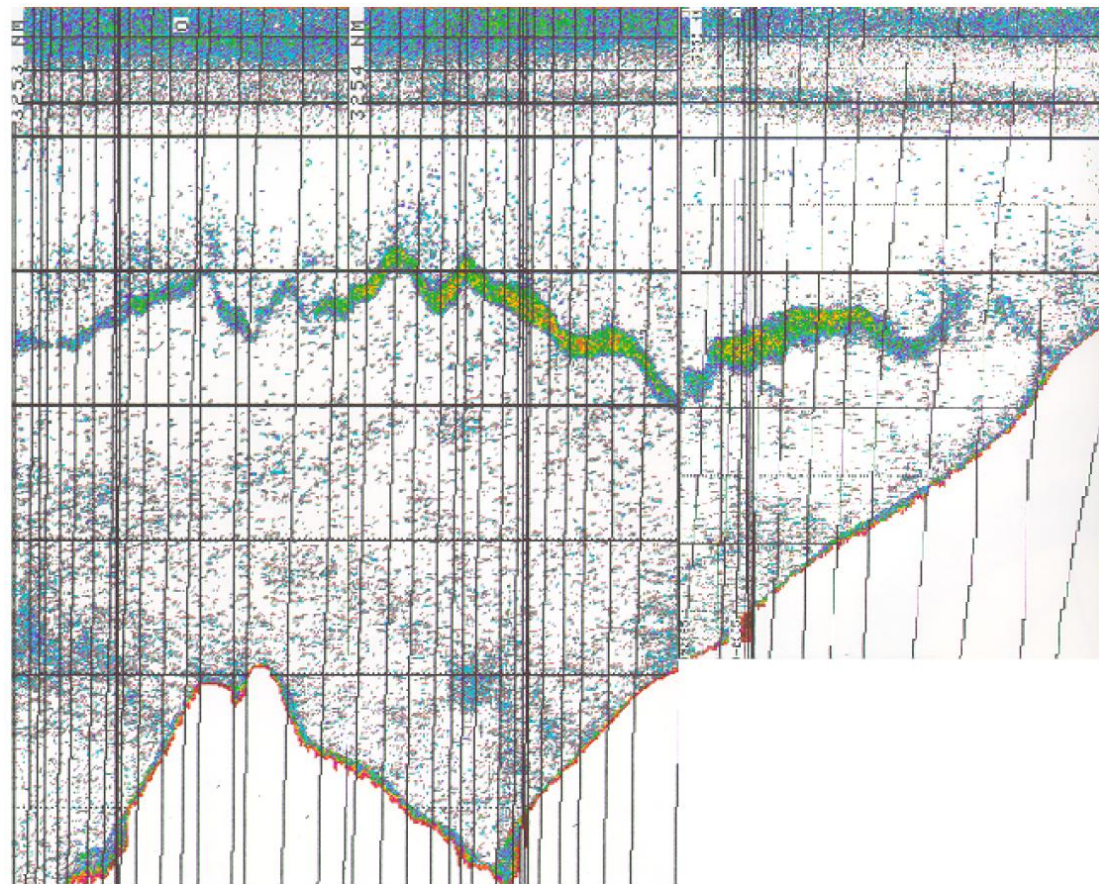


XUVENILES



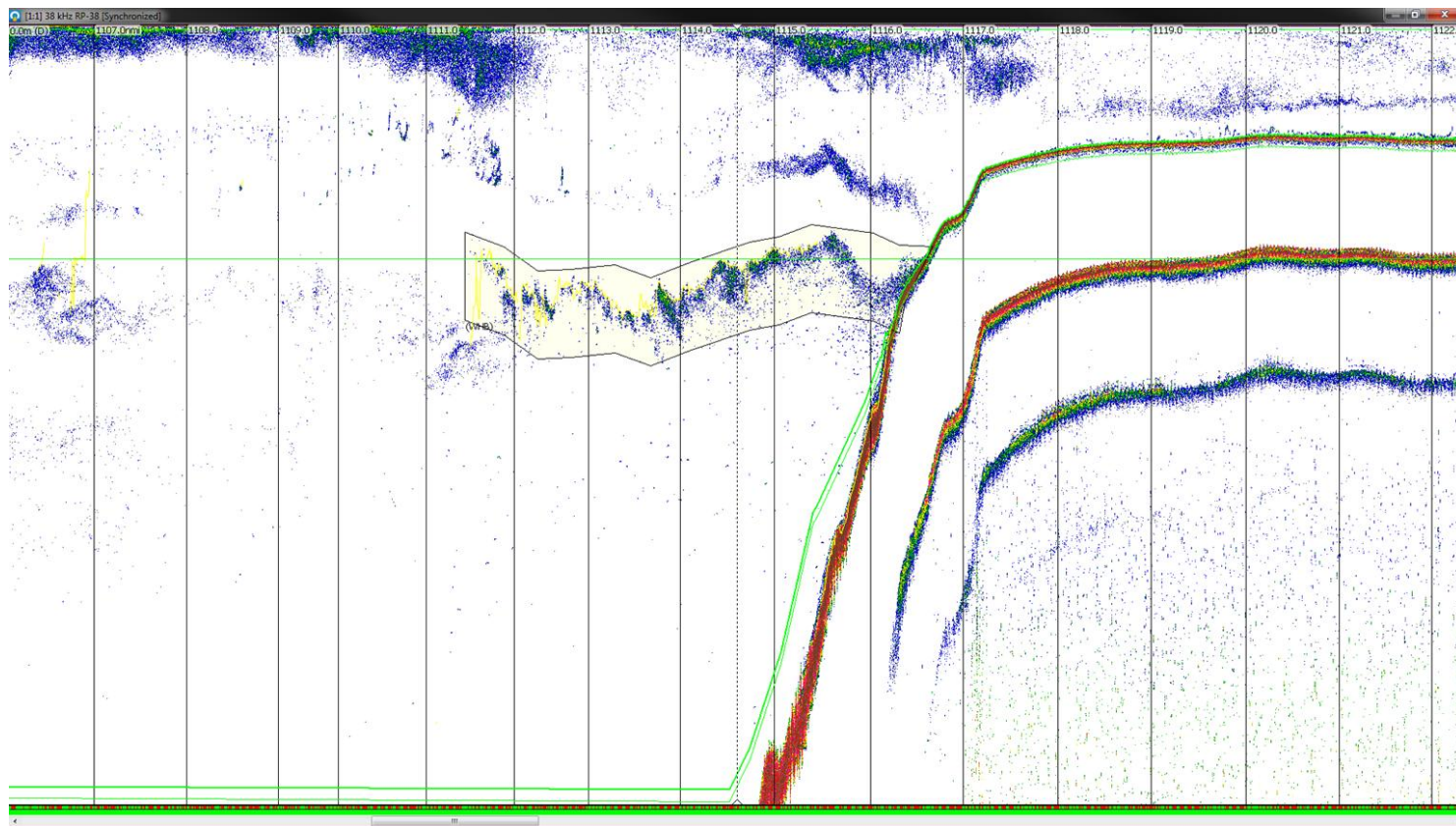
# DISTRIBUCIÓN: FRANCIA

ADULTOS



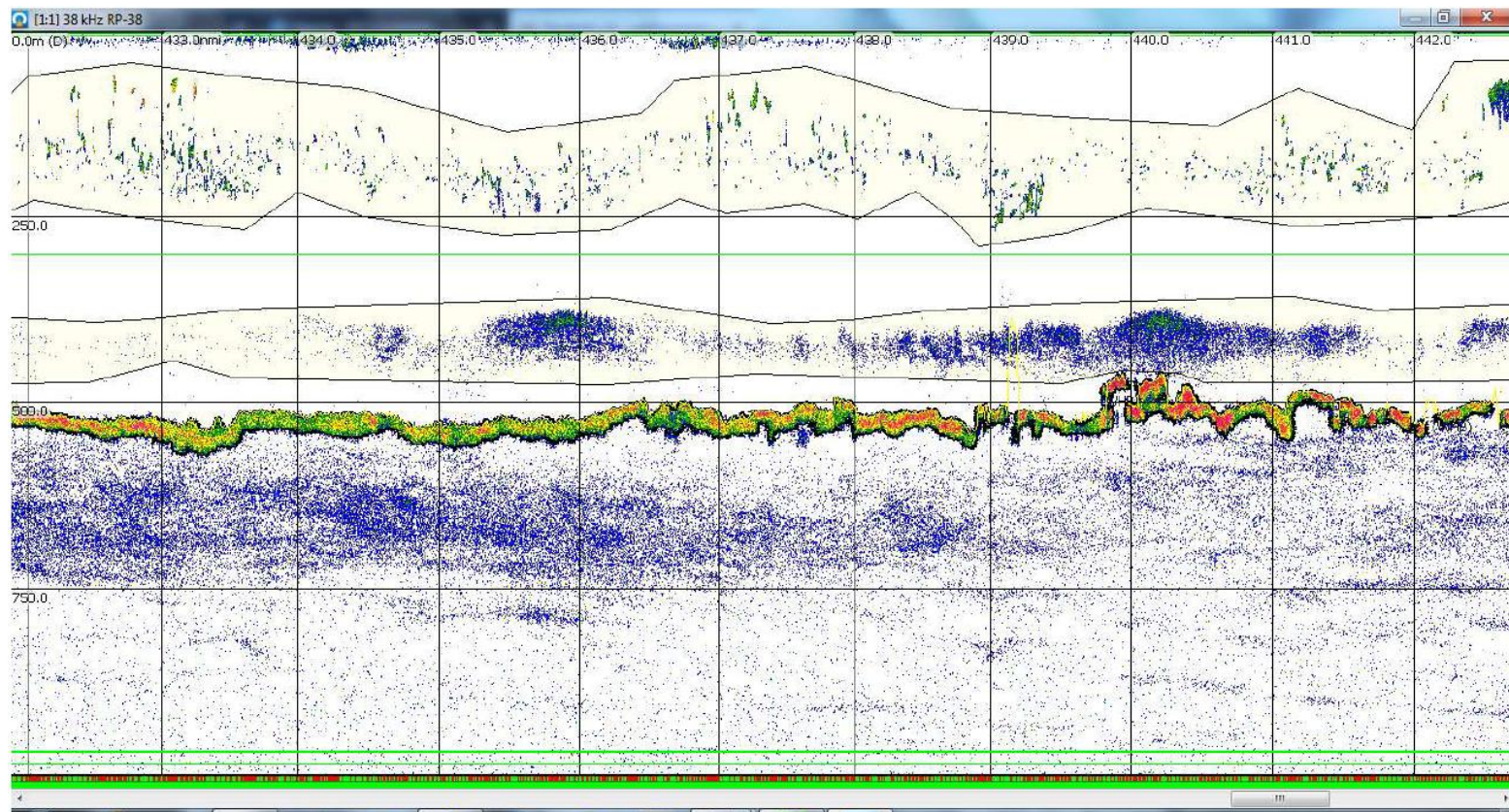
# DISTRIBUCIÓN: FRANCIA

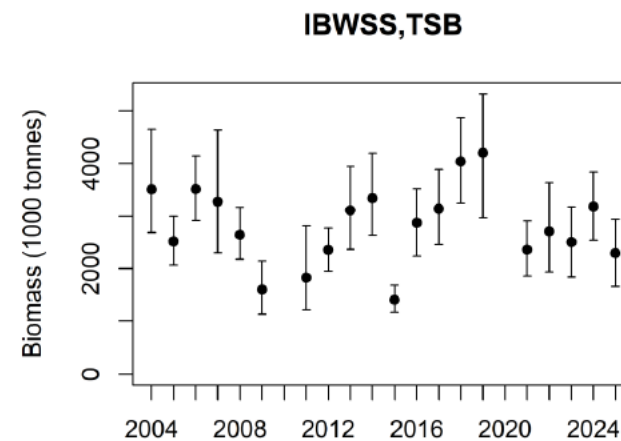
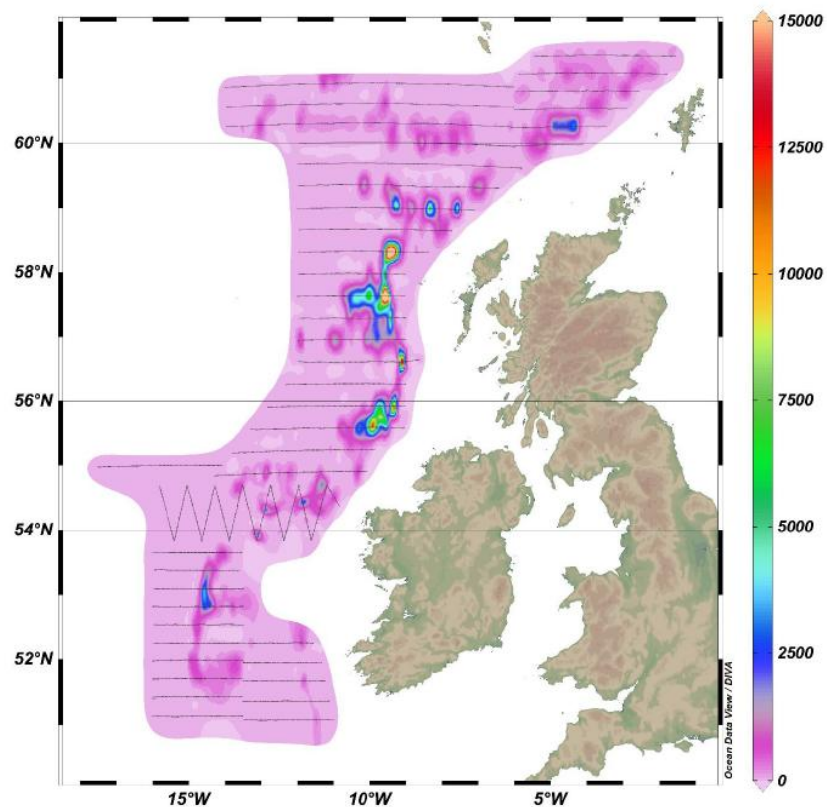
ADULTOS



# DISTRIBUCIÓN: PORCUPINE

ADULTOS

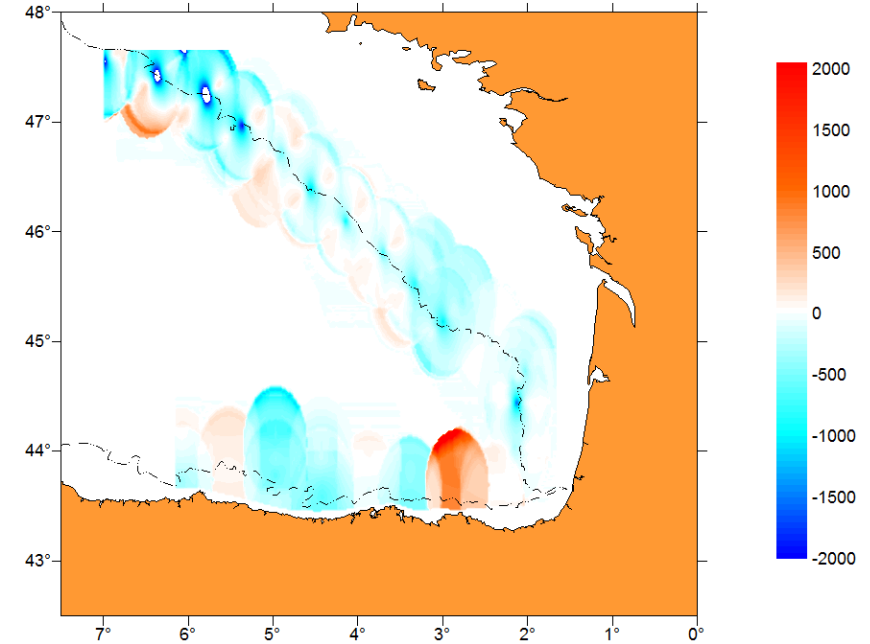
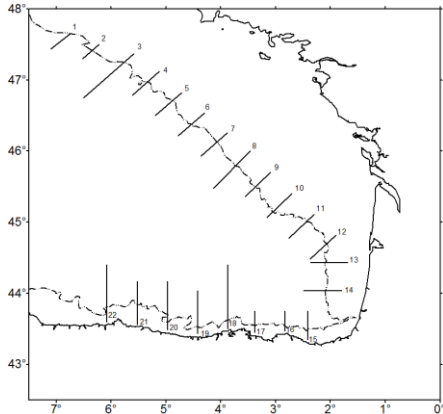




# ESTUDIOS LLEVADOS A CABO POR EL IEO

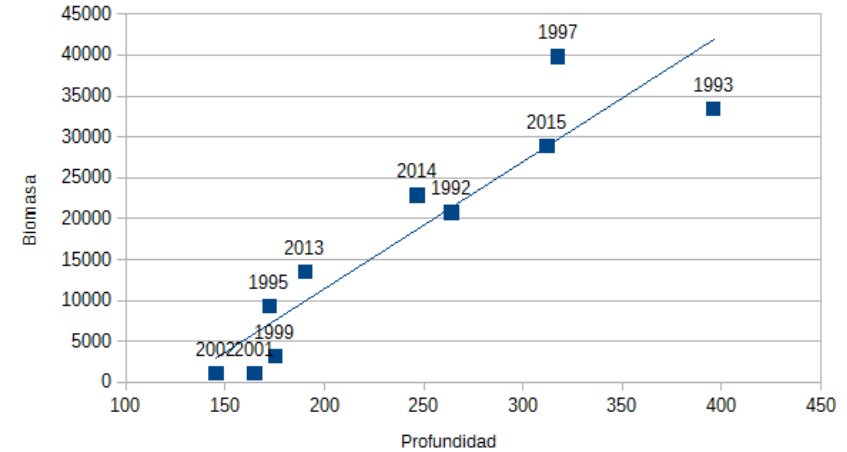
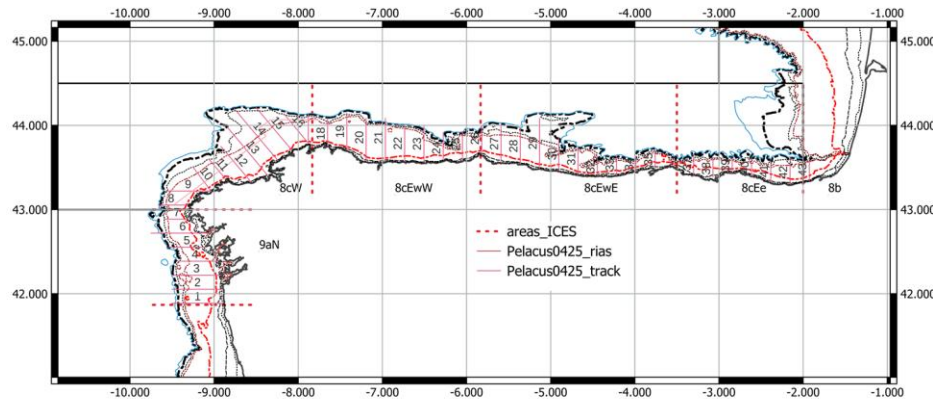
## • Migración:

- Campañas 1994 y 1996 doble cobertura
- Cambios significativos en abundancia:
- Incremento 1994
- Descenso 1996

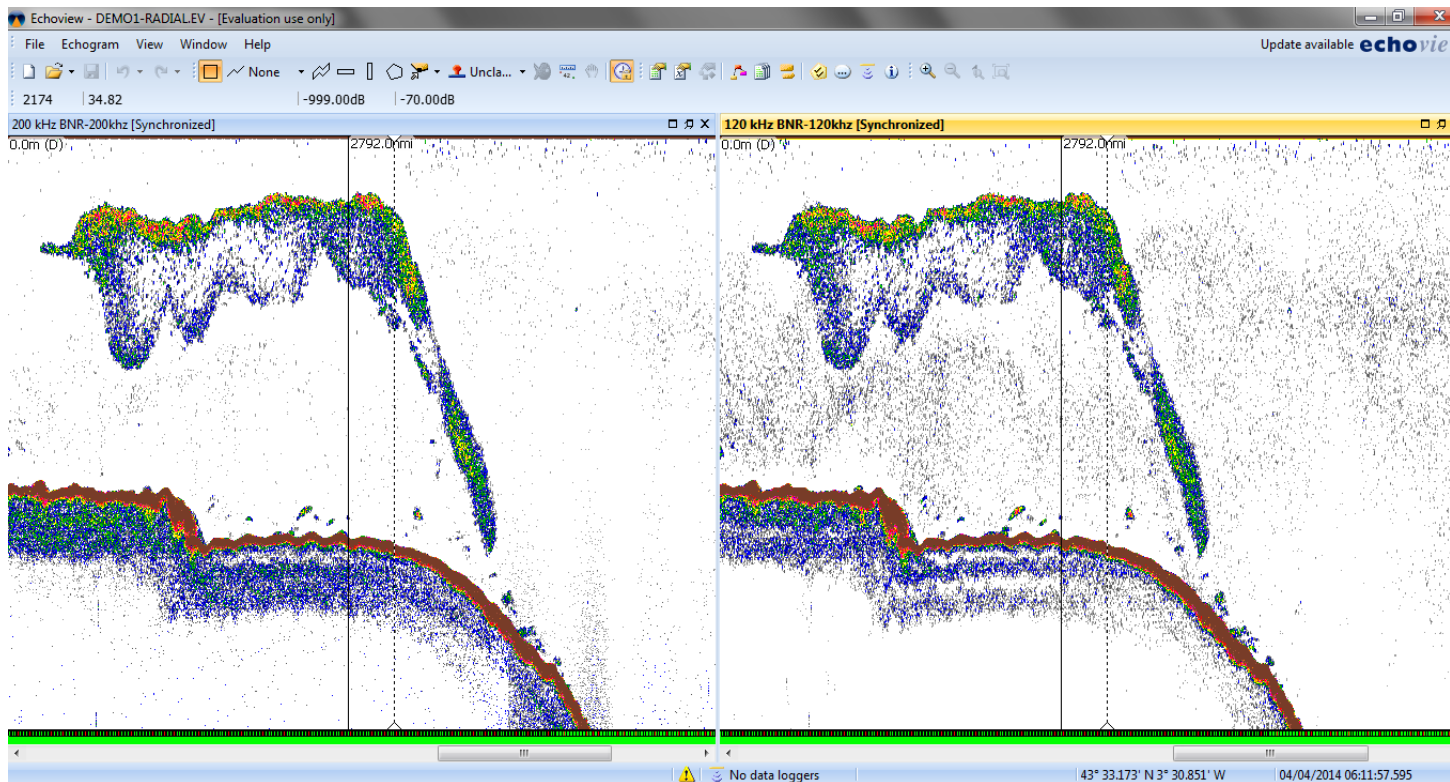


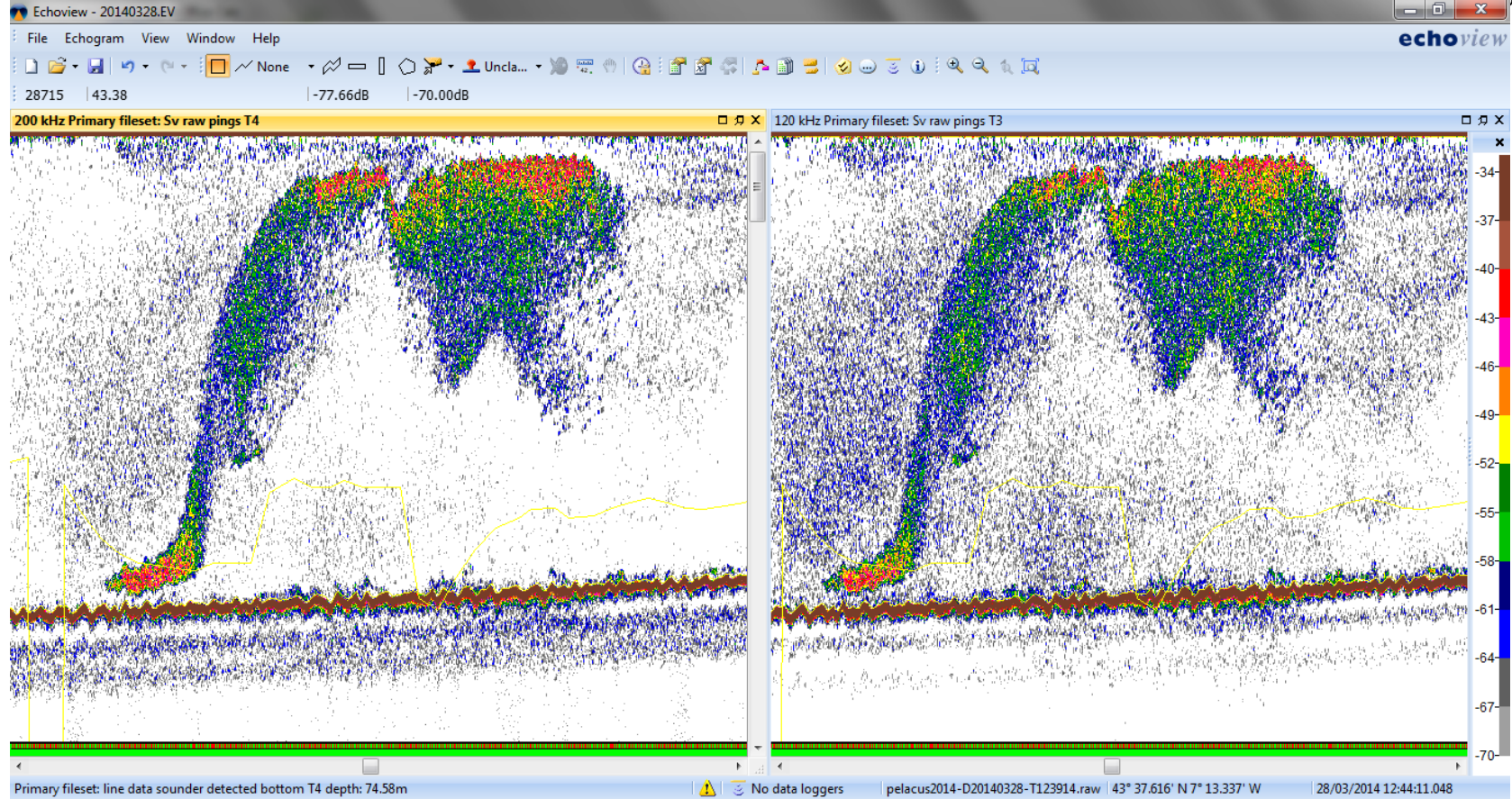
# ESTUDIOS LEVADOS A CABO POLO IEO

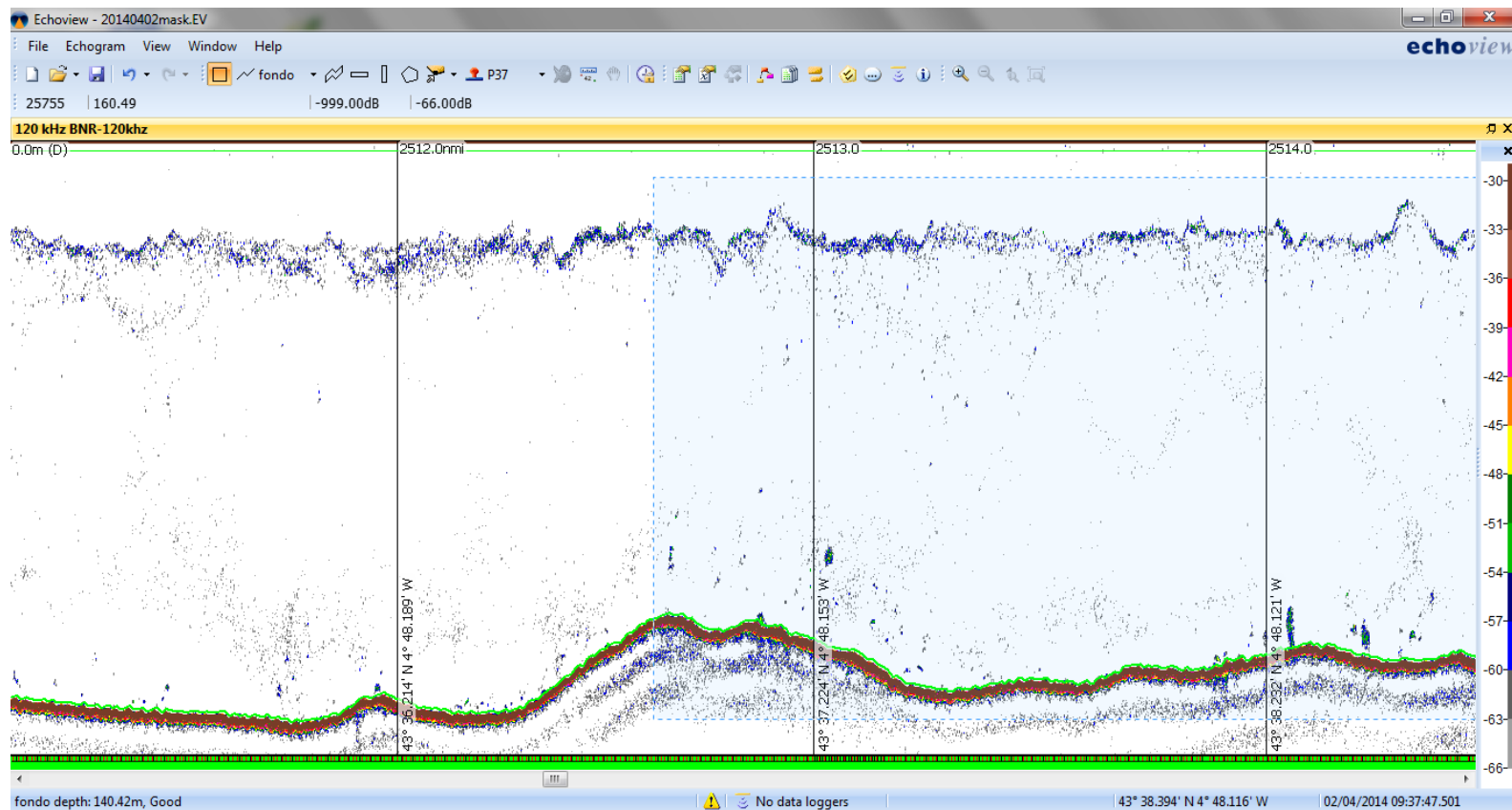
- Campañas no Cantábrico:
- Distribución densodependiente
- Correlación positiva entre área e abundancia

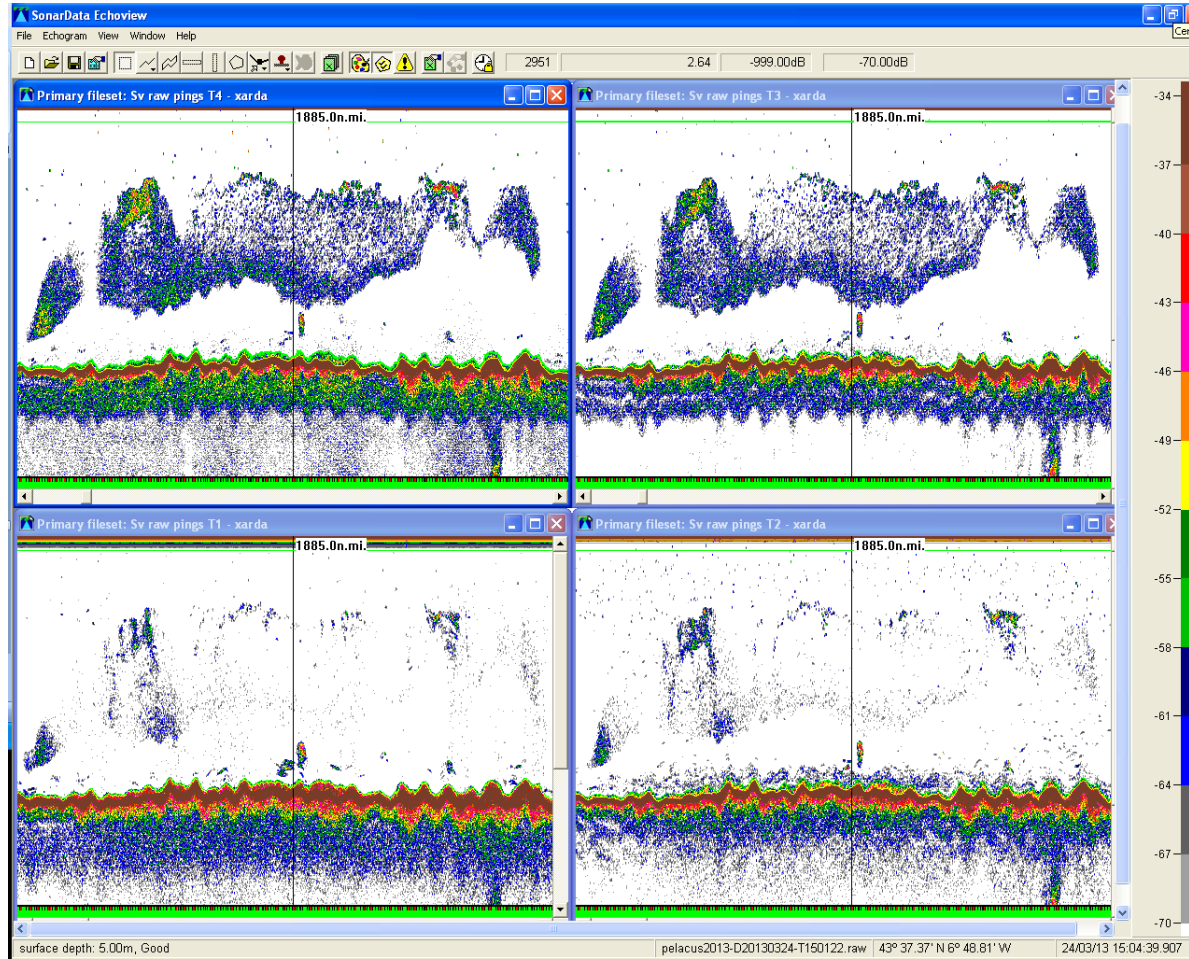


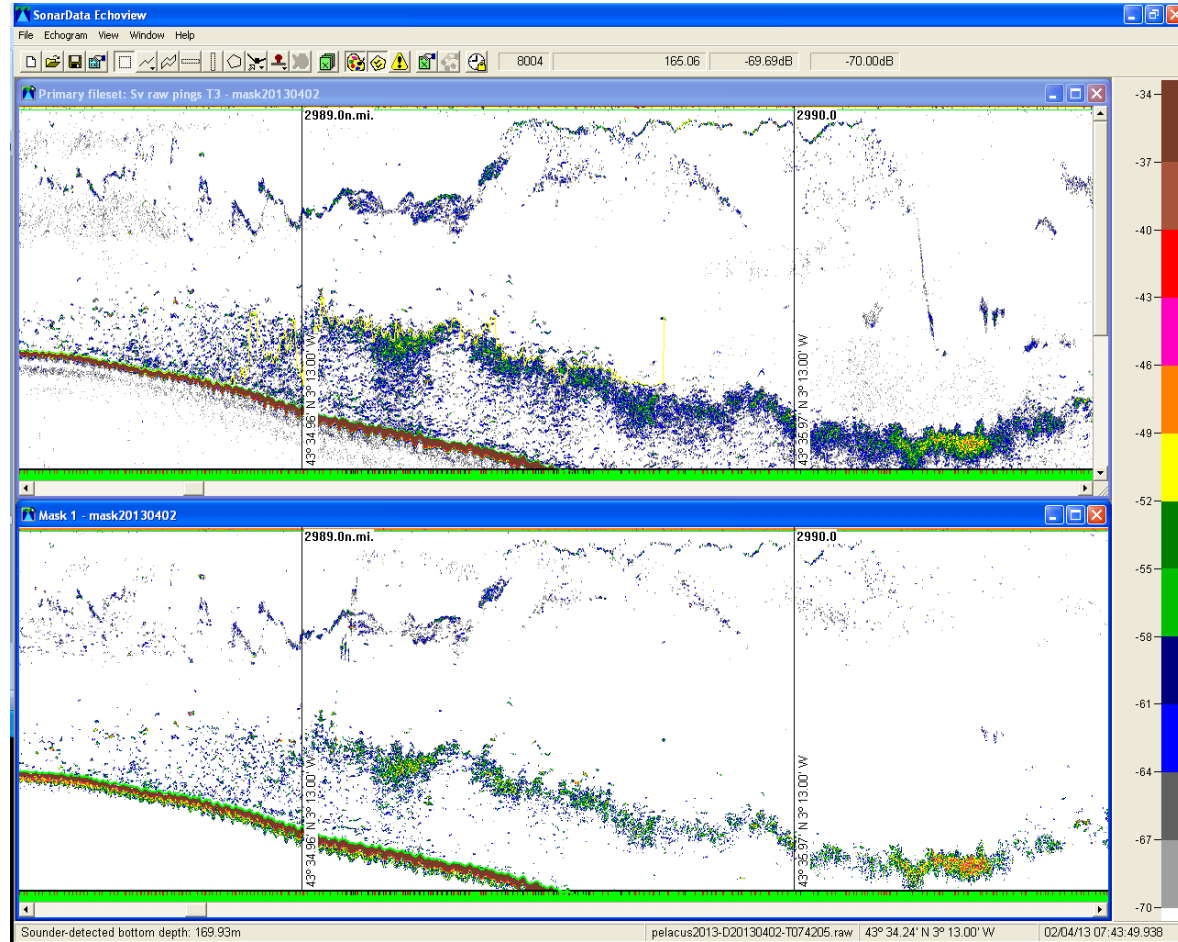




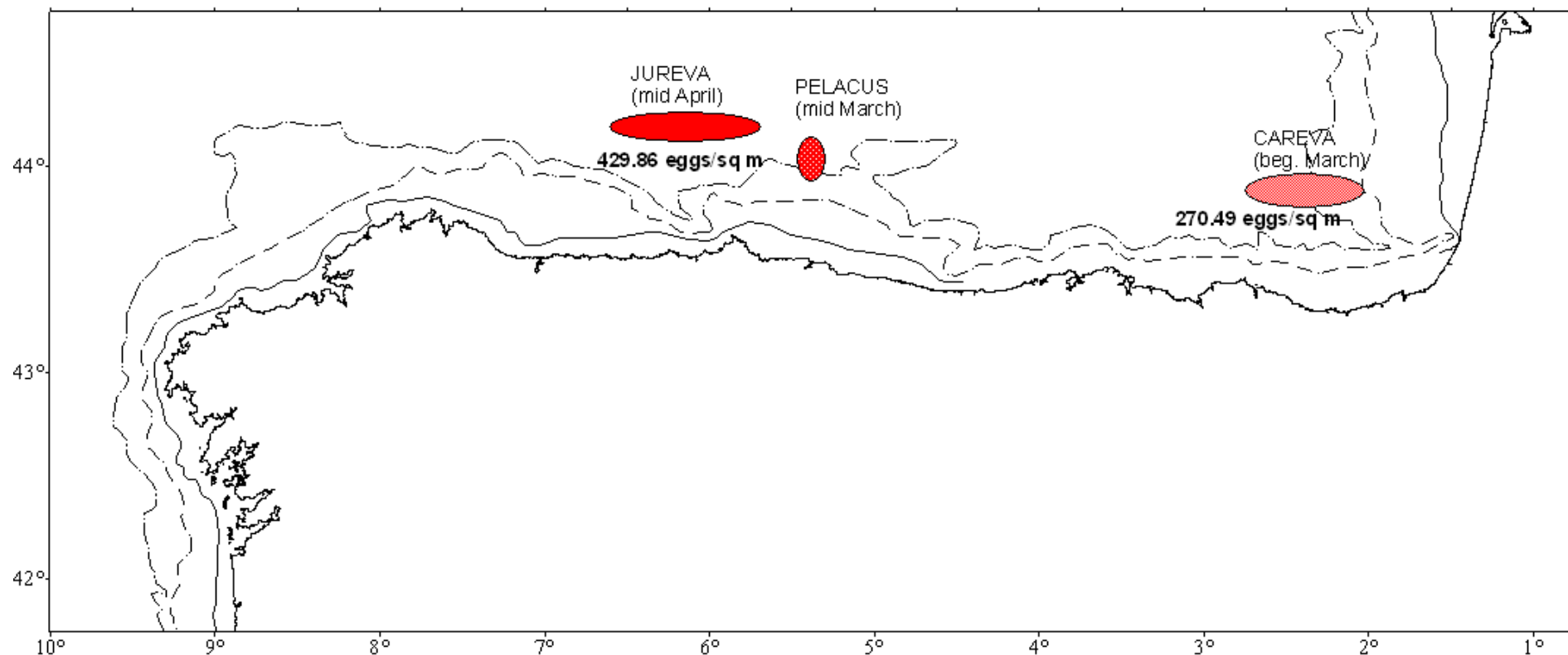






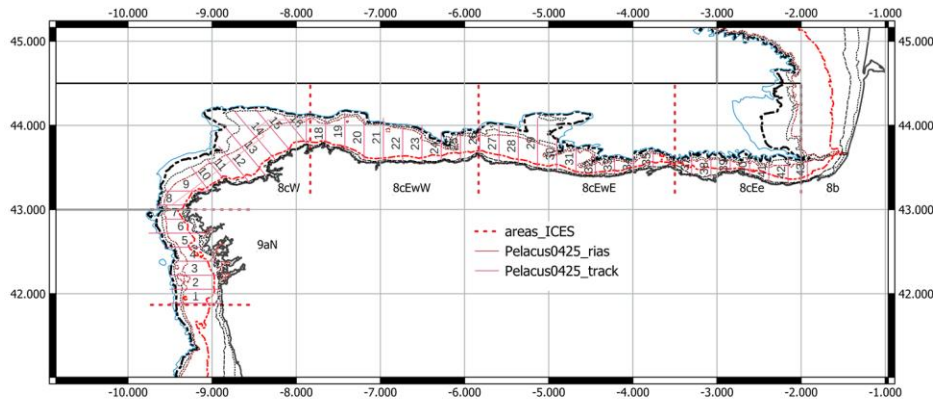


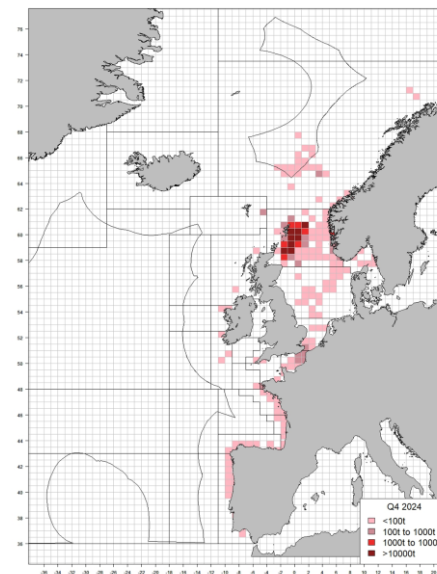
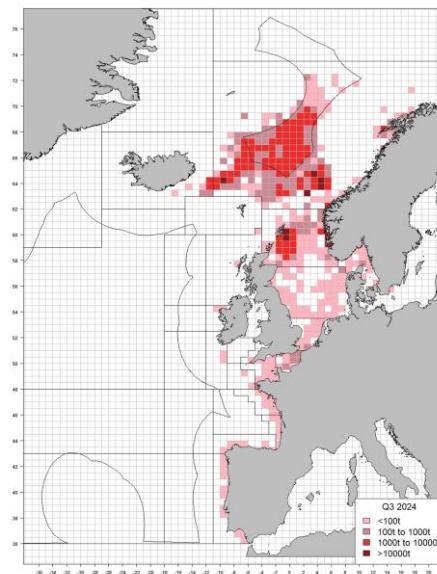
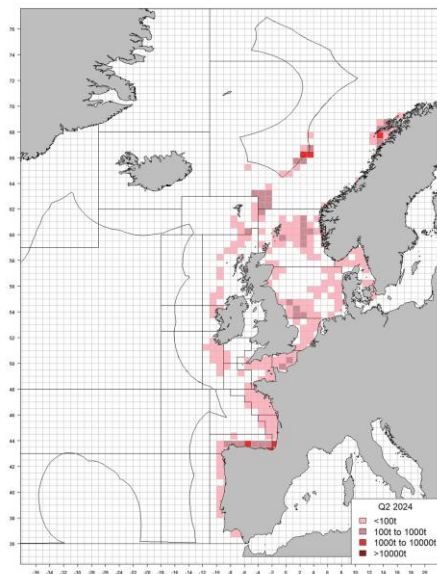
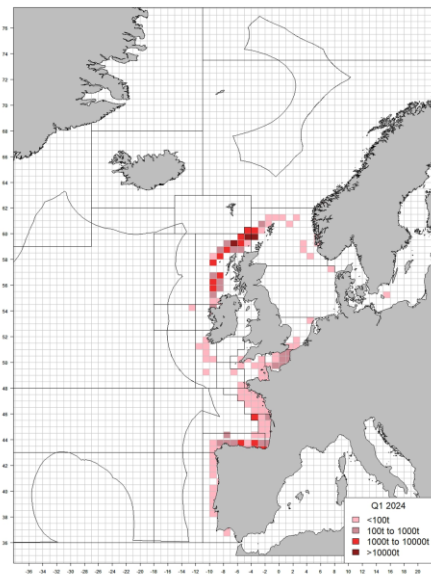
## Movemento cara o oeste

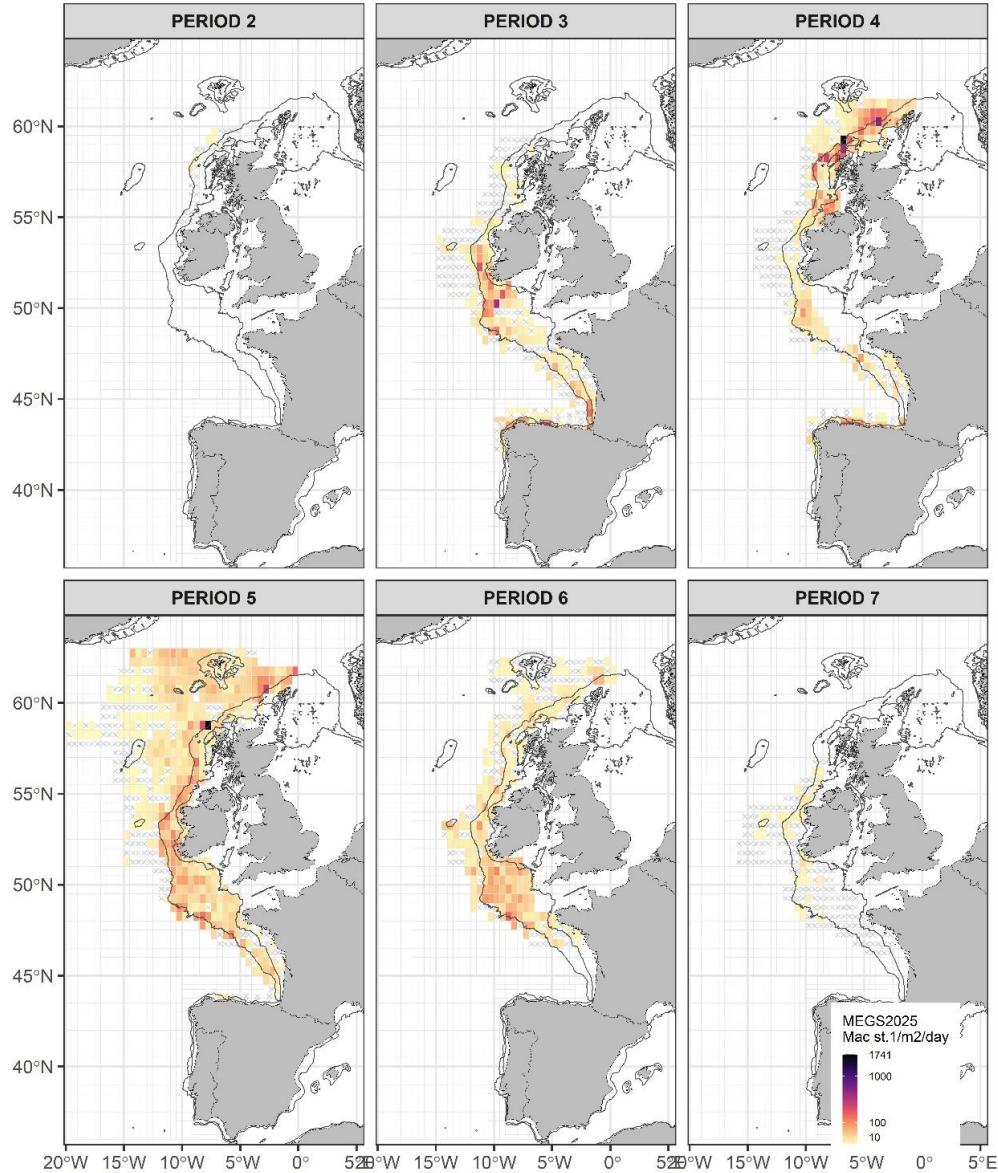


# ESTUDOS LEVADOS A CABO POLO IEO

- Campañas no Cantábrico:
- Distribución densodependente
- Correlación positiva entre área e abundancia











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