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Northern hake population dynamics

Dinámica poblacional Merluza del Norte

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EUSKO JAURLARITZA
GOBIERNO VASCO



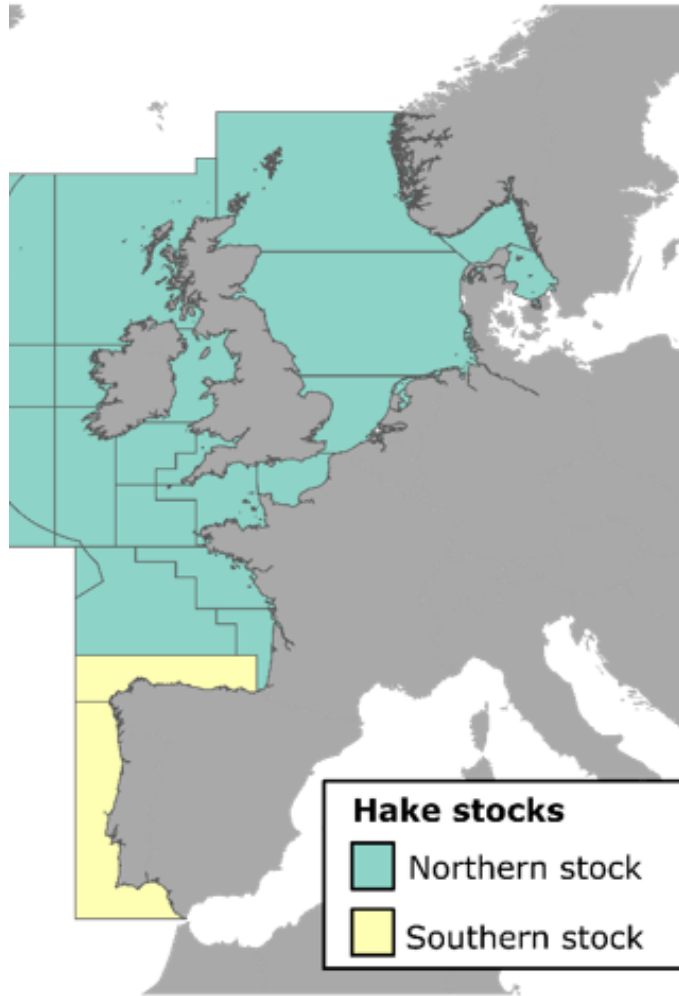
Europar Batasunak
kofinantzatua

VarMer. FEMPA 2024-2026

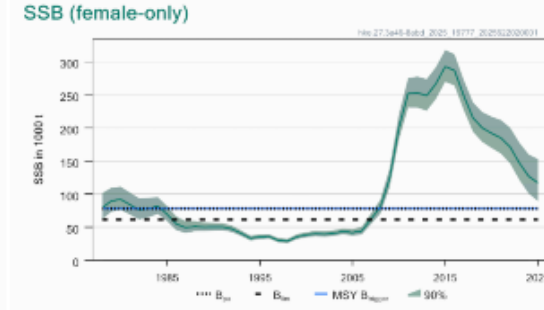
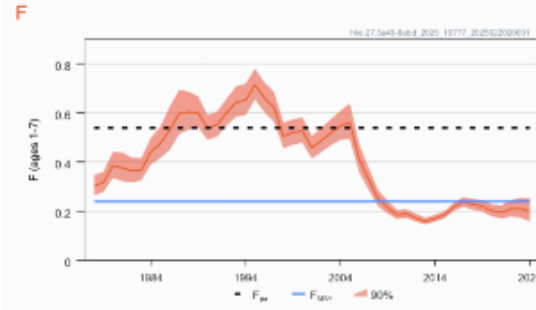
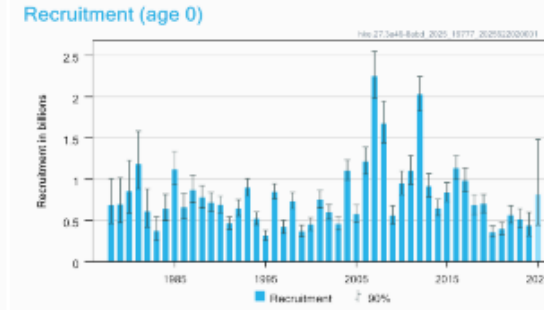
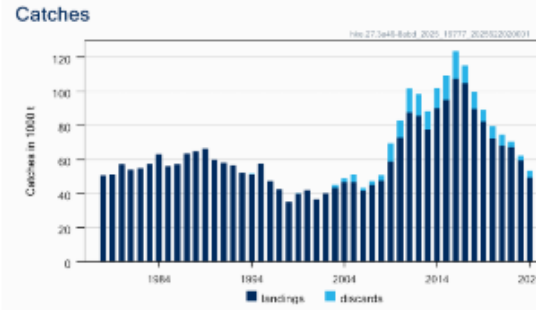
Evaluación del Stock

Stock Assessment

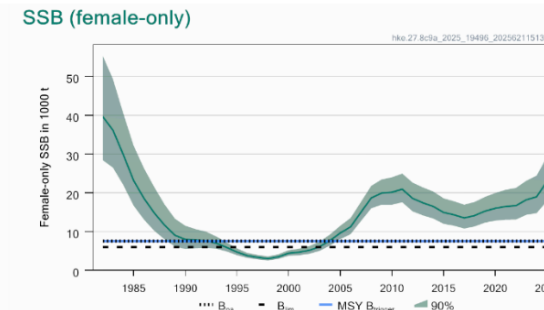
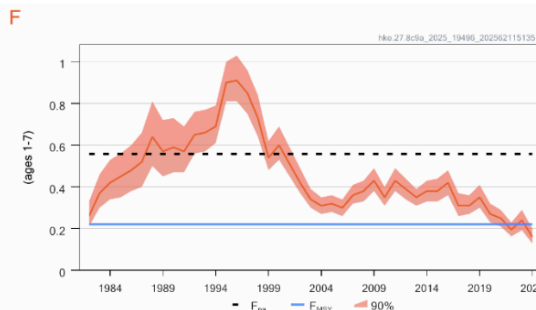
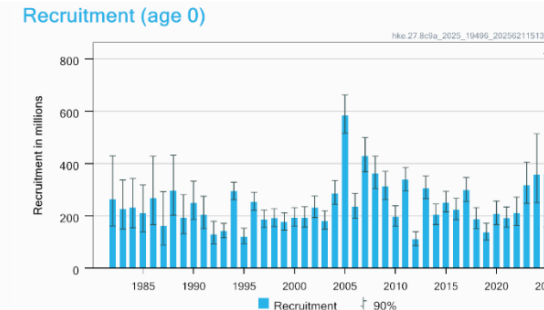
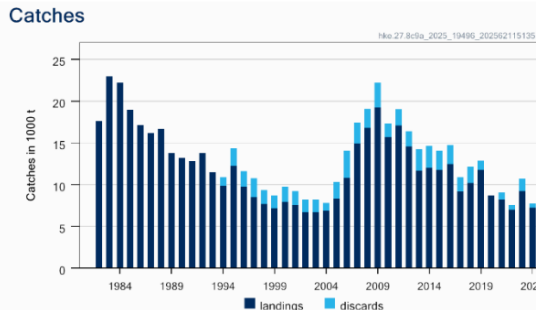
The two hake stocks



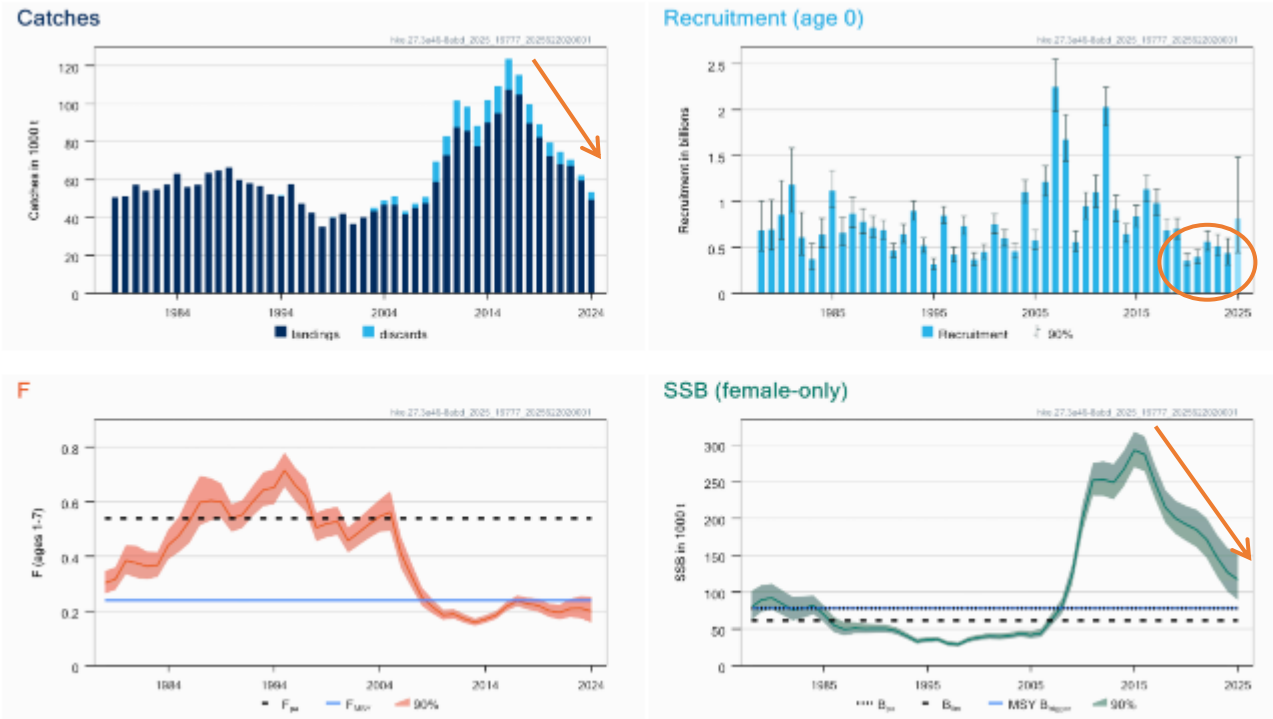
Northern stock



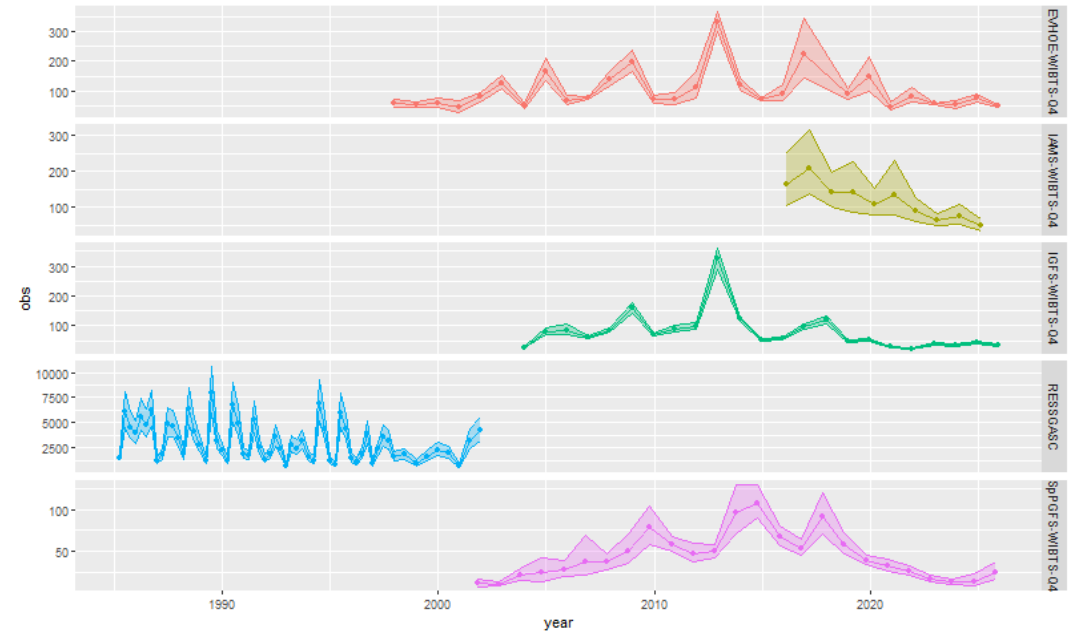
Southern stock



Assessment of Northern Hake



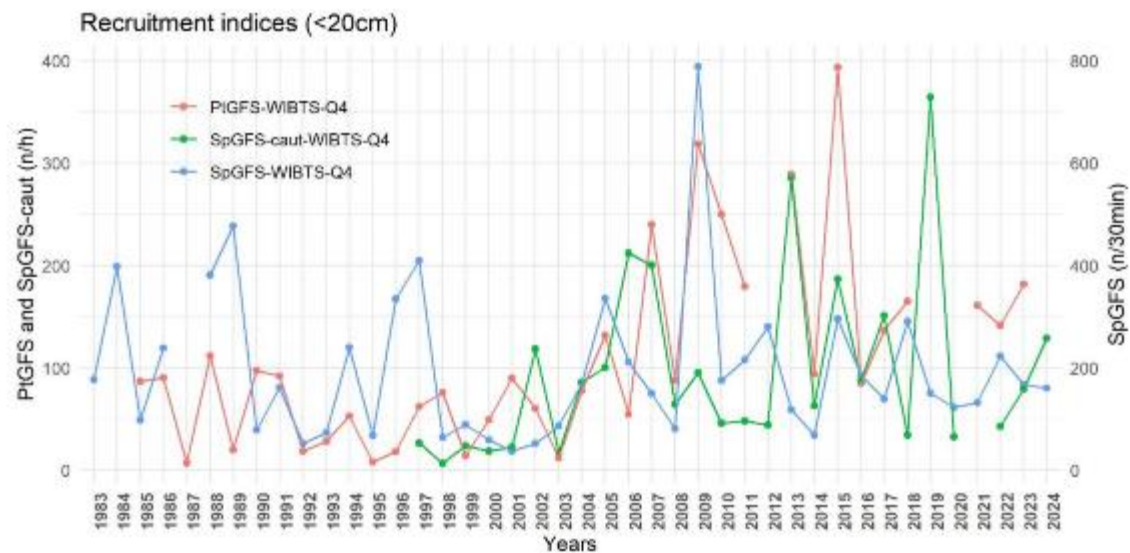
Abundance indices



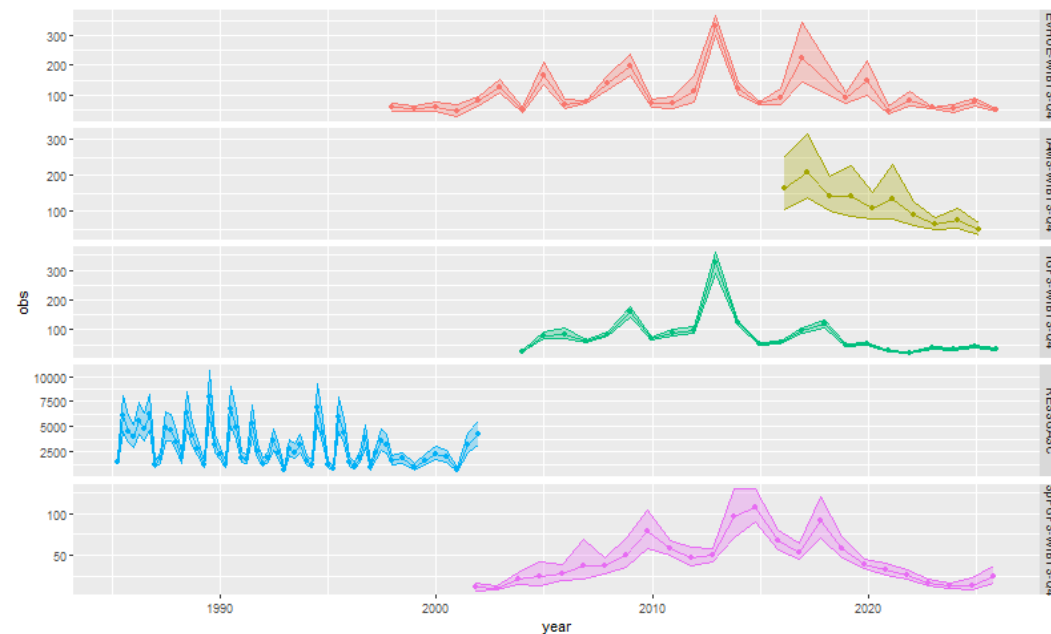
Updated with 2025 Data

Both the assessment and the abundance indices point to a significant decline in biomass and low recruitment

Surveys: South and North

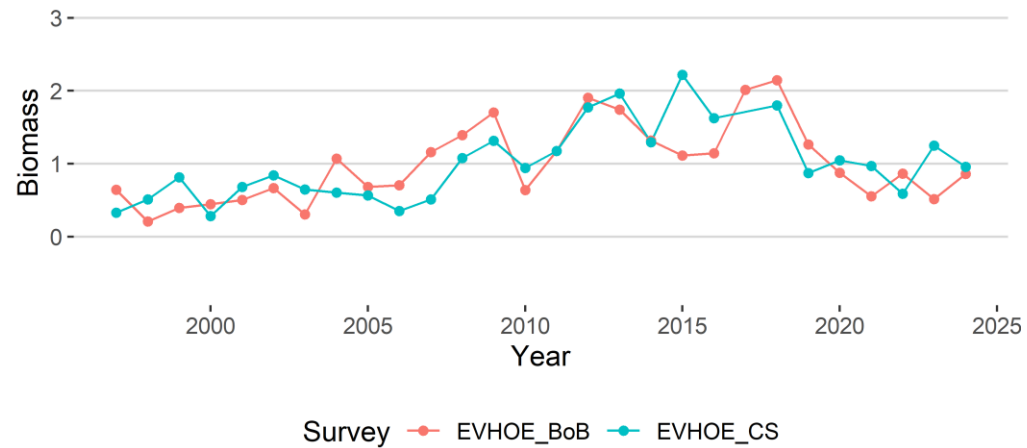
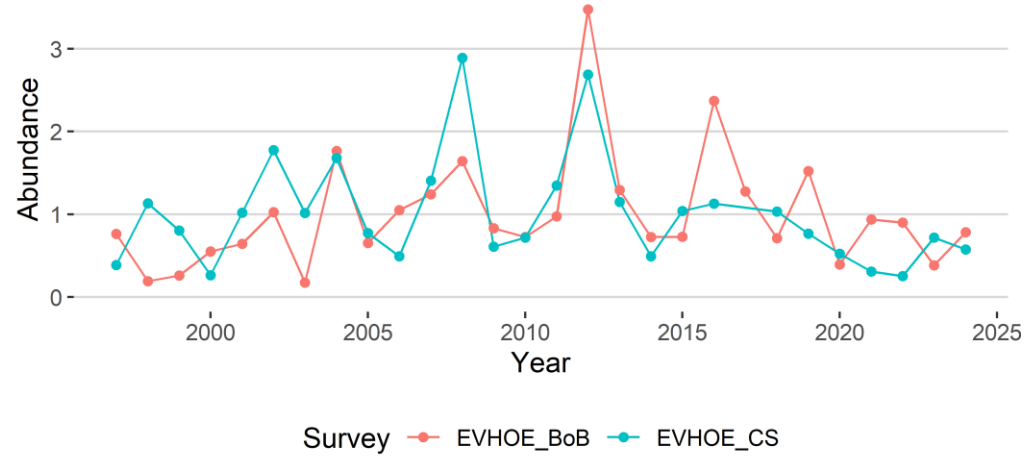


Abundance indices

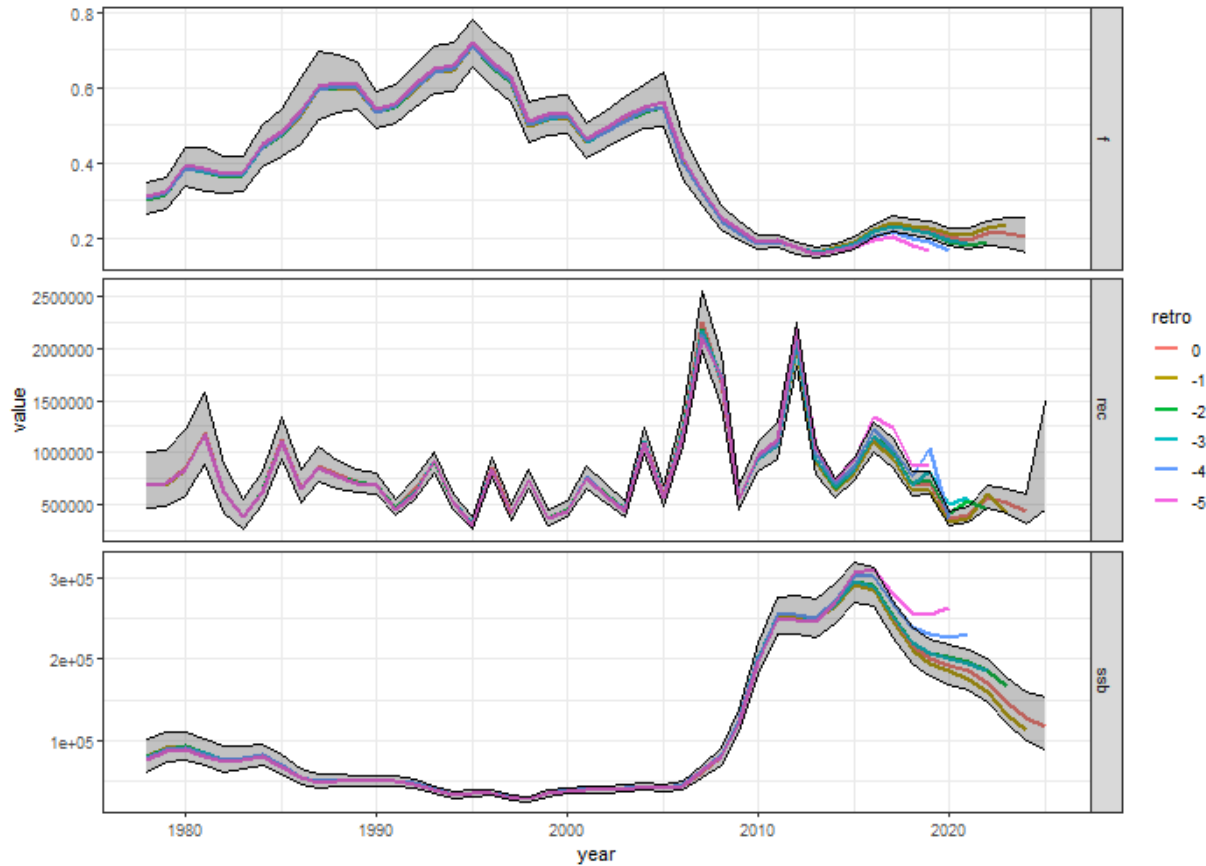


Updated with 2025 Data

Surveys: Bay of Biscay & Celtic Sea



Assessment of Northern Hake



Big retrospective patterns could result in the assessment to be rejected specially when stock below reference points



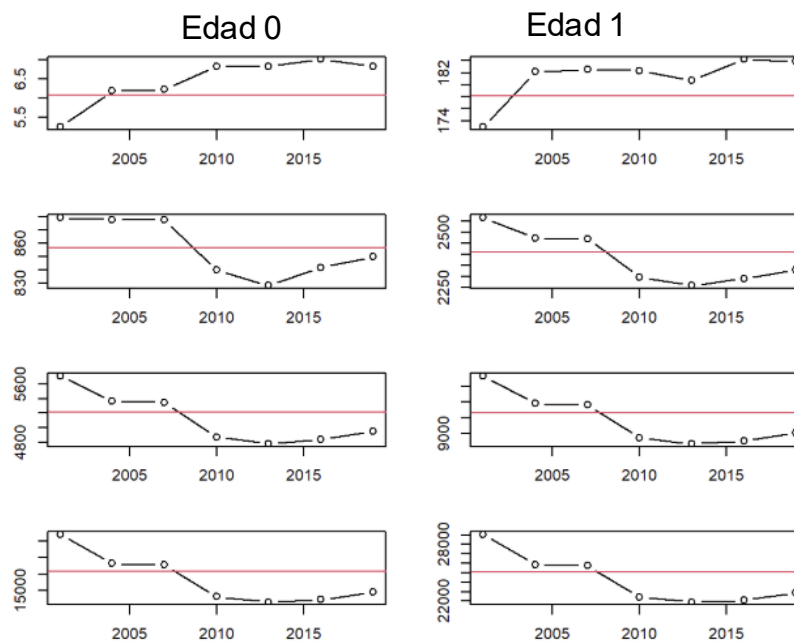
Almost perfect retro now!

Densodependence

Maturity



Weights at age



Assessment with variability in weight

Food for thought



- Why is the Southern stock doing better than the Northern Stock now?
¿Por qué es mejor ahora la situación en el sur?
- Do you think the assessments reflects the reality, now and in the past?
¿Crees que las evaluaciones reflejan la realidad, tanto actual como pasada?
- Have you observed recovery signs in recent months?
¿Has observado signos de recuperación en los últimos meses?

Food for thought

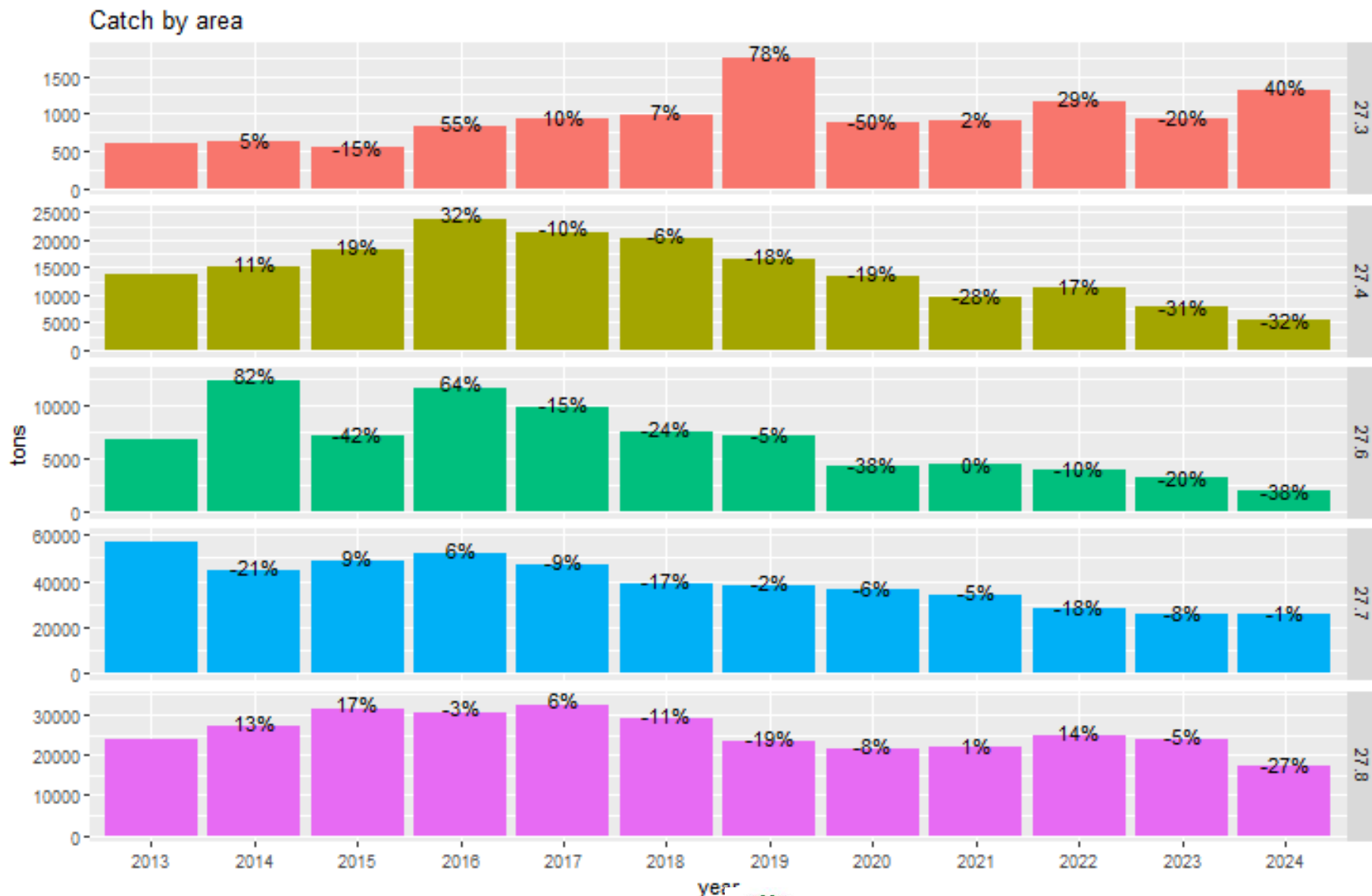


- Has the condition of the fish improved in recent years?
¿Ha mejorado la condición de los individuos en los últimos años?
- Is the situation as bad as in the late 90s?
¿Es la situación actual tan mala como a últimos de los 90?

Distribución Espacial

Spatial Distribution

Spatial distribution of catches



Difference relative to 2013 catches

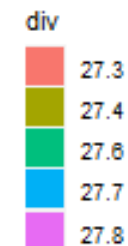
+ 116%

- 61%

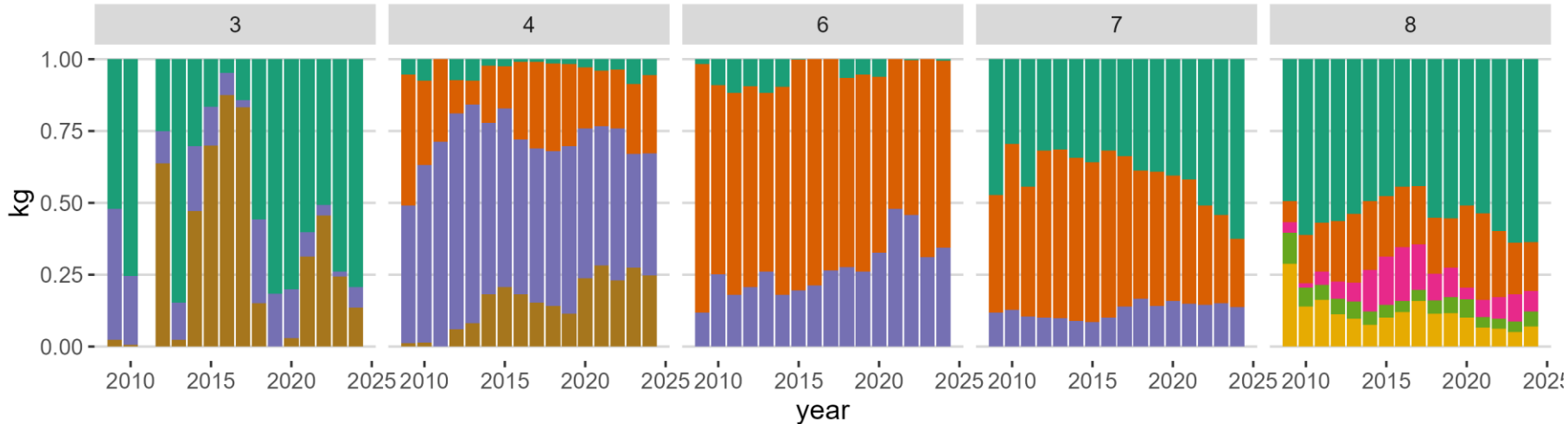
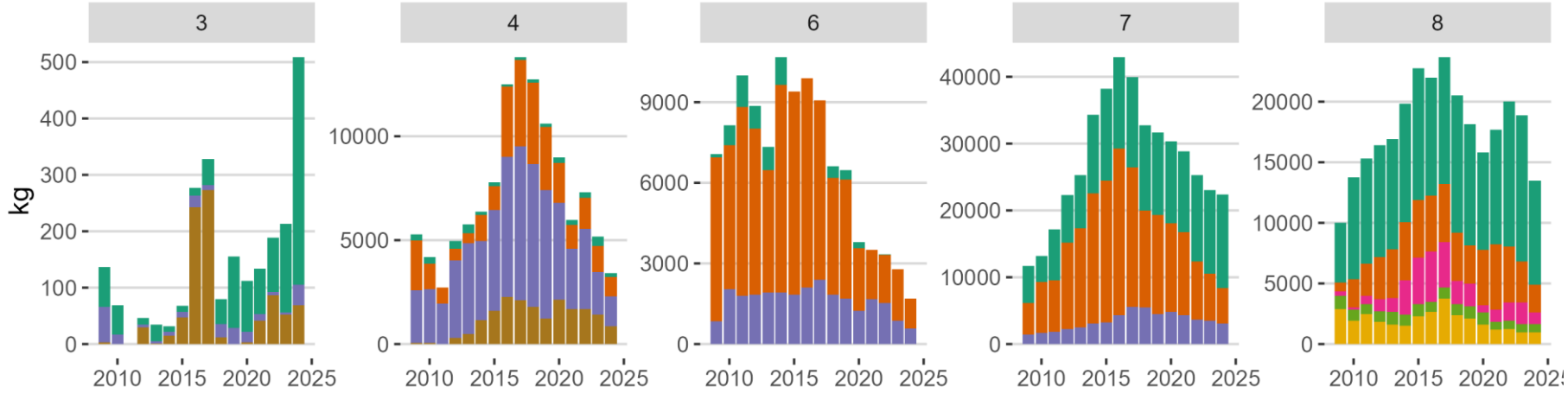
- 71%

- 55%

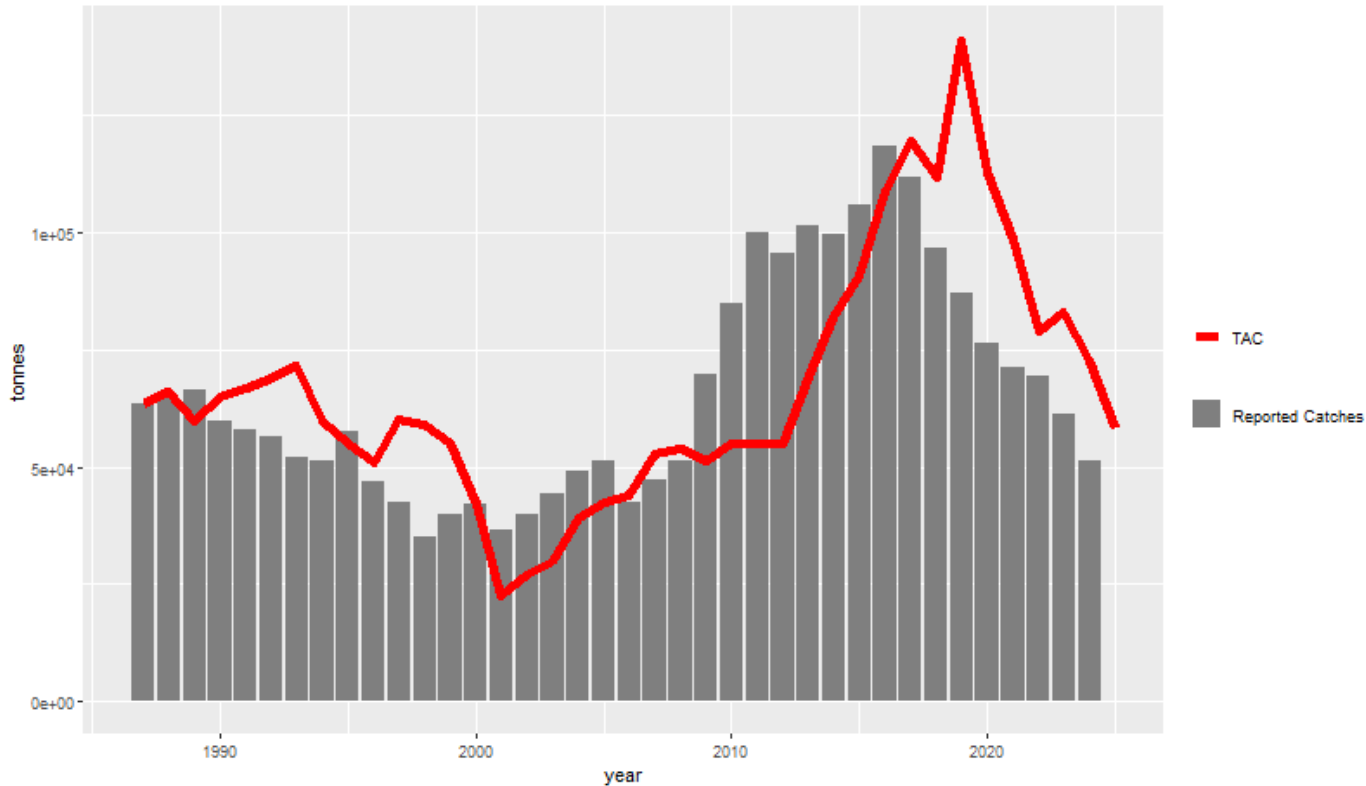
- 28%



Spatial distribution of catches by gear

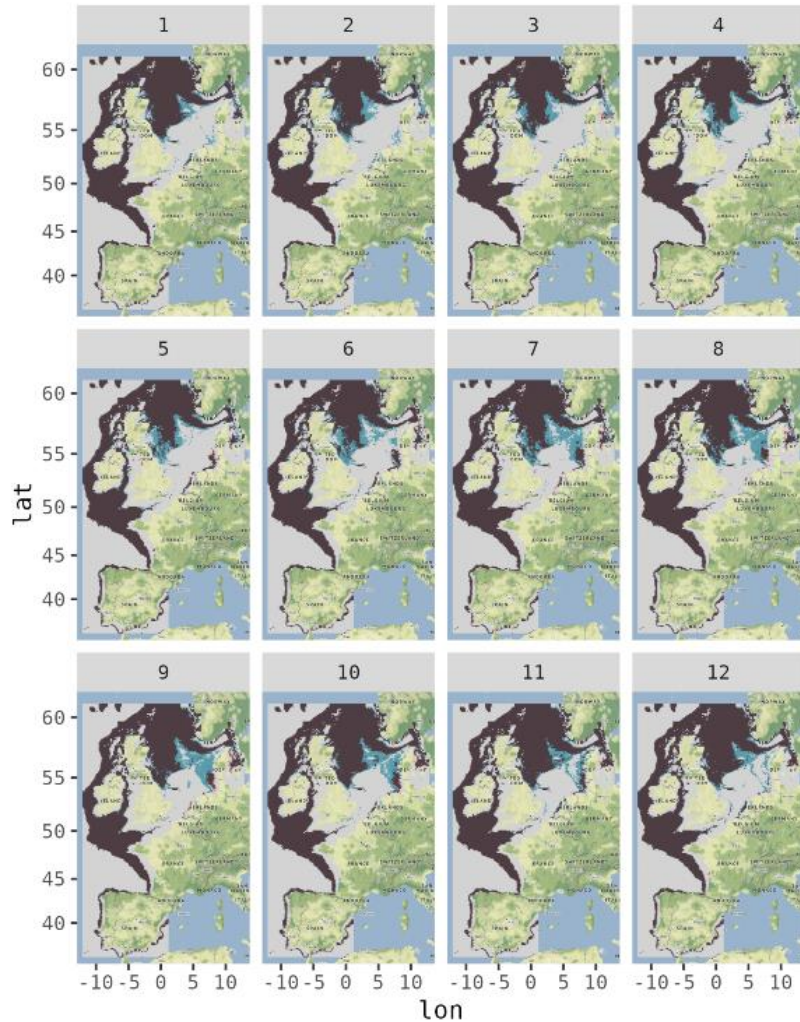


Quotas by Area in 2024



Area	Quota 2024	Catches 2024	Ratio Quota & Catch	Catch % by area & stock
3a	2182	508	23%	1%
2ac4	4396	3419	78%	8%
567	40599	24106	59%	58%
8	27532	13486	49%	32%
8c910	17445	7750	44%	100%
Total	92154	49269.19	53%	

Distribución espacial



Adult presence forecast:
Difference between 2015 & 2030

	Presence		Abundance	
	Juvenile	Adults	Juvenile	Adults
	Depth			
	Phytoplankton biomass			
	Sea Water Potential temperature			
	Phytoplankton biomass			
	Salinity		Salinity	Salinity
	Oxygen	Oxygen	Oxygen	
		Ocean mixed layer thickness		Net Primary Production
Deviance Explained	51%	47%	36%	25%

- Depth preference: Juveniles 100 –200m depths, Adults: 100 – 500m
- T°: Juveniles: 0-21 ° C, Adults: up to 23 ° C.
- PH: [8, 8.15]

Food for thought



- Have you observed differences in Hake distribution in recent years, not attributable to changes in abundance? Both in the plane and in depth.

¿Ha observado diferencias en la distribución de la merluza en los últimos años que no se deban a cambios en su abundancia? Tanto en el plano horizontal como en profundidad.

- Do you think Hake is doing better in the Bay of Biscay than in the Celtic Sea?

¿Crees que a la merluza le va mejor en el golfo de Vizcaya que en el mar Céltico?

- Why is the TAC not being caught?

¿Por qué no se pesca el TAC en los últimos años?

Genética y Estructura Poblacional

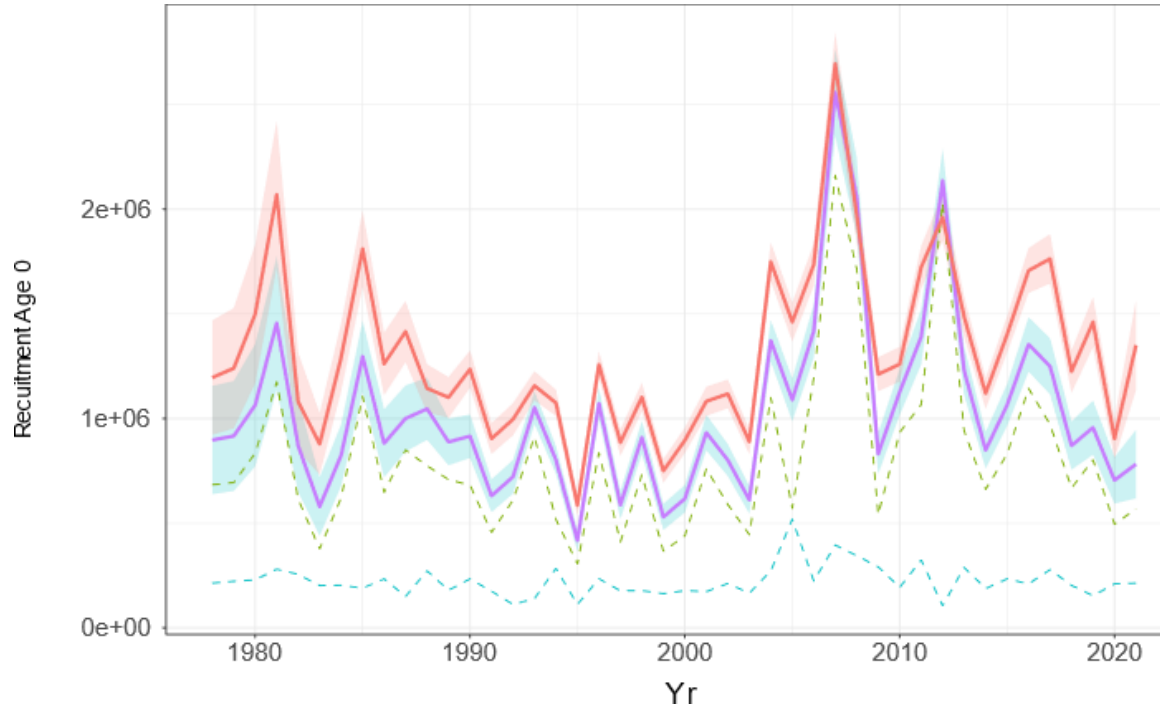


Genetics and Population Structure

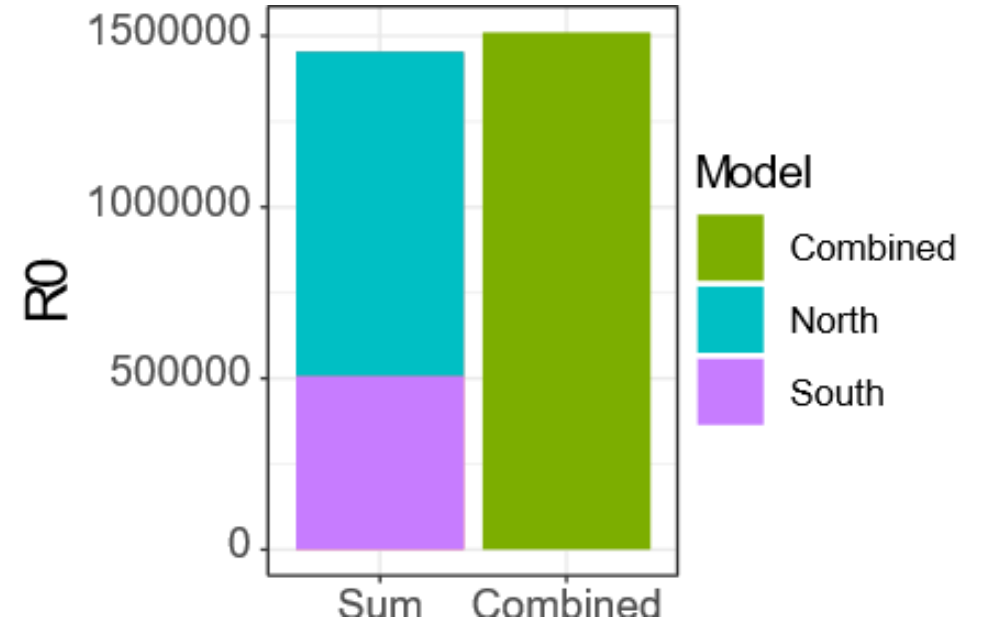
AZTi Genetics: Stock ID

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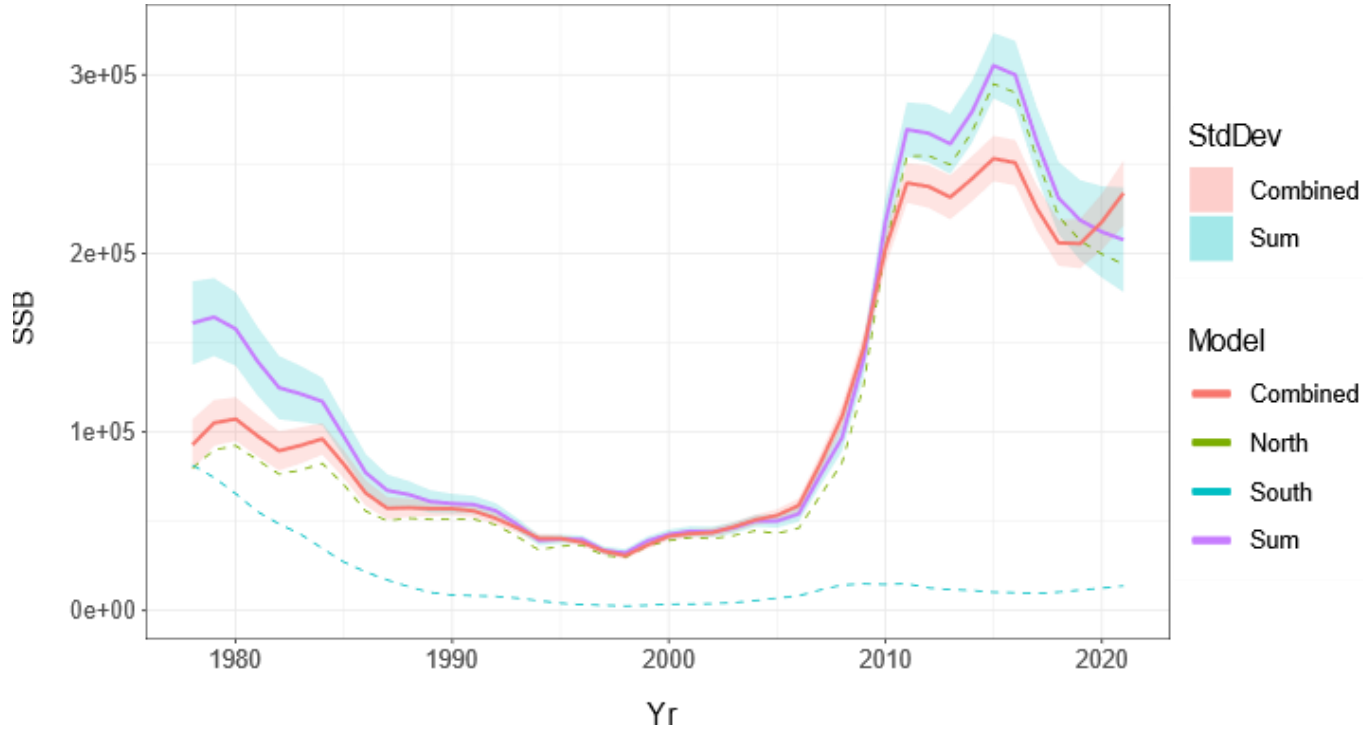
Differences between separate and joint assessments



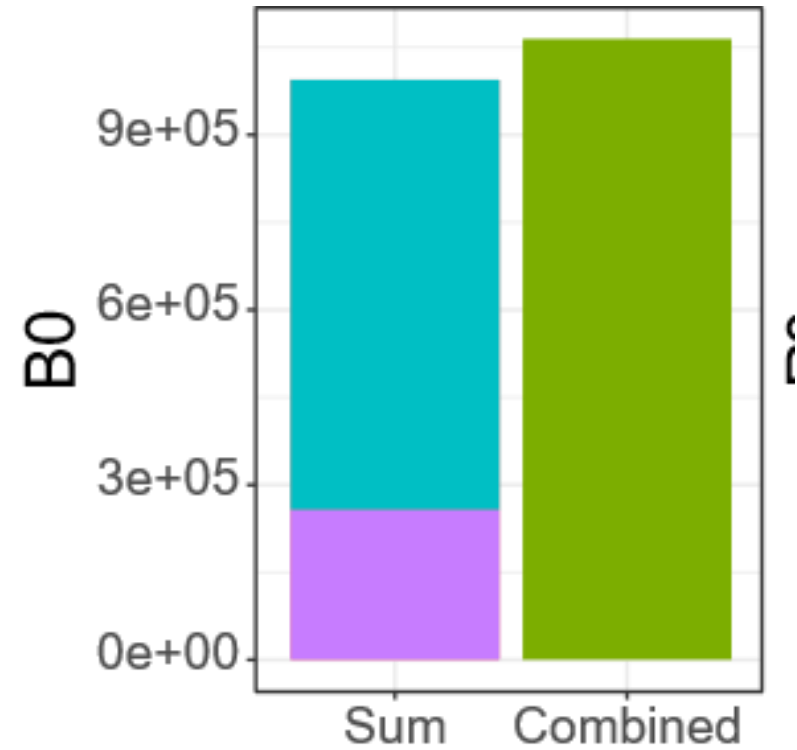
***Recruitment** estimation series for the northern, southern, and combined stocks and their sum of the two former ones.*



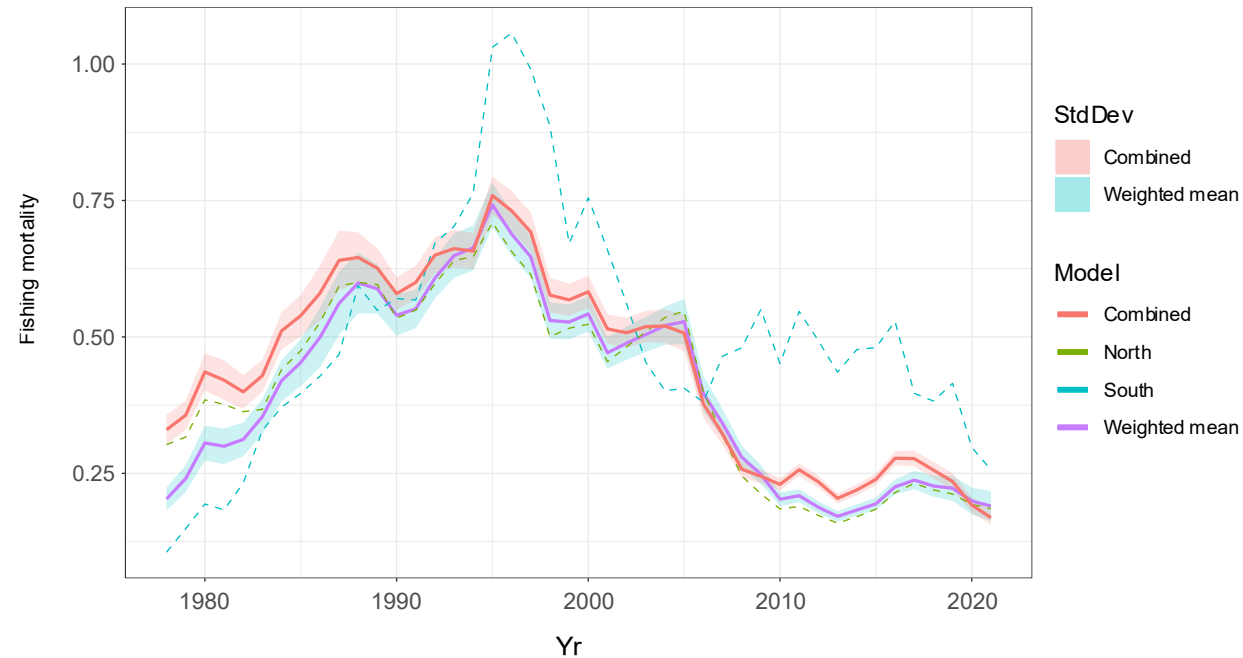
Differences between separate and joint assessments



SSB estimation series for the northern, southern, and combined stocks and the sum of the two former ones.

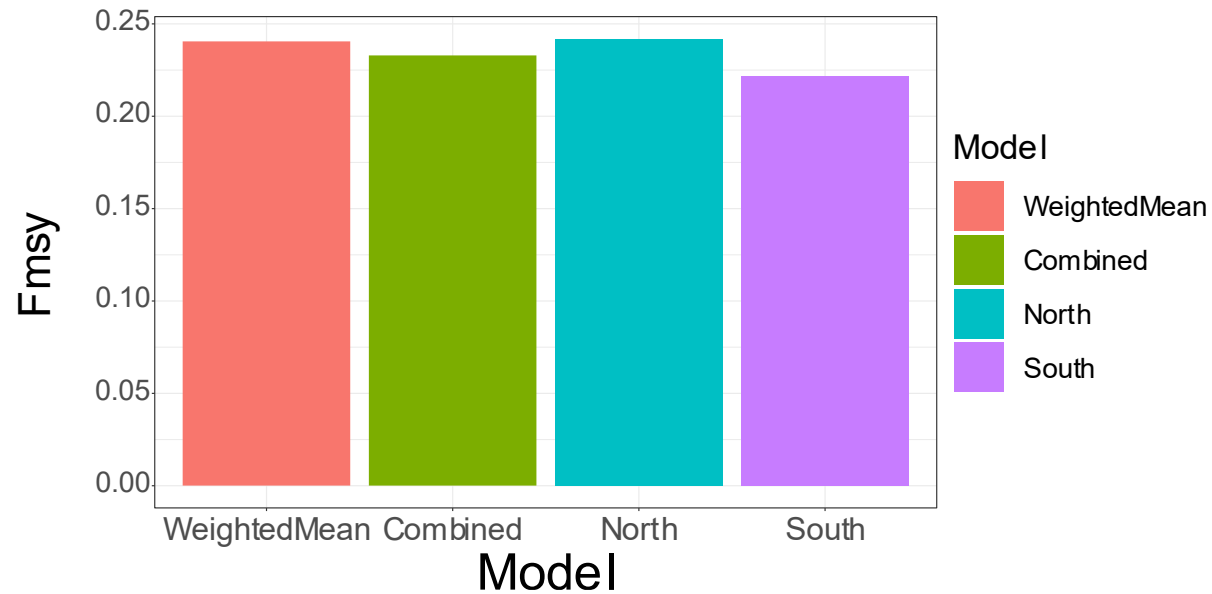
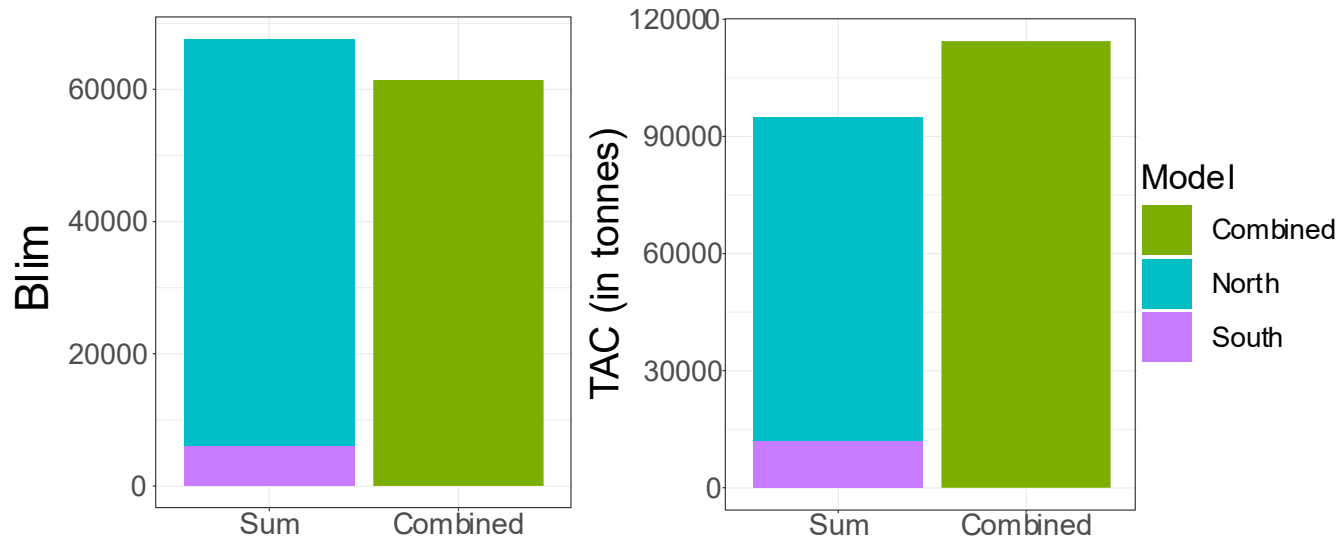


Differences between separate and joint assessments



Fishing mortality estimation series for northern, southern, and combined stocks and the corresponding weighted mean of the two former stocks, accounting for abundance contribution to the total sum.

Potential implications for advice



AZTi Genetics: CKMR

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Food for thought



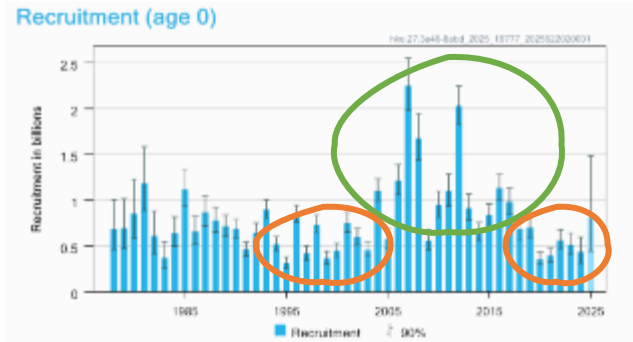
- Do you think the estimated population scale is accurate enough? (i.e the catch advice seems in line with reality)
¿Crees que la estima de la población es lo suficientemente precisa? (es decir, que las recomendaciones de captura parecen ajustarse a la realidad)
- Would it be feasible to take genetic samples on board?
¿Sería posible tomar muestras genéticas a bordo?
- Under a limited exchange between areas, what do you think is better to manage and guarantee a sustainable exploitation of the stock, to assess the stock as a single population, or consider smaller stock units?

En el marco de un intercambio limitado entre zonas, ¿qué crees que es mejor para gestionar y garantizar una explotación sostenible de la población: evaluar la población como un todo o considerar unidades de población más pequeñas?

Perspectiva Ecosistémica

Ecosystem Perspective

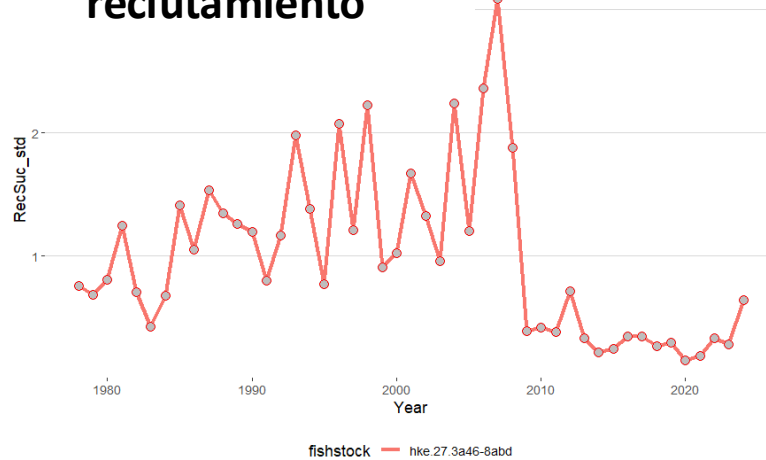
What factors influence the recruitment of the stock?



The recruitment is inversely related with the SSB.

Lost of environmental variables and abundance of other stocks at different locations and times were considered.

Éxito en el reclutamiento



¿Cuáles son los factores que impulsan la productividad del stock (reclutamiento)?

- There is inverse relationship between SSB and recruitment.
- Environmental variables related with winds correct the peaks.

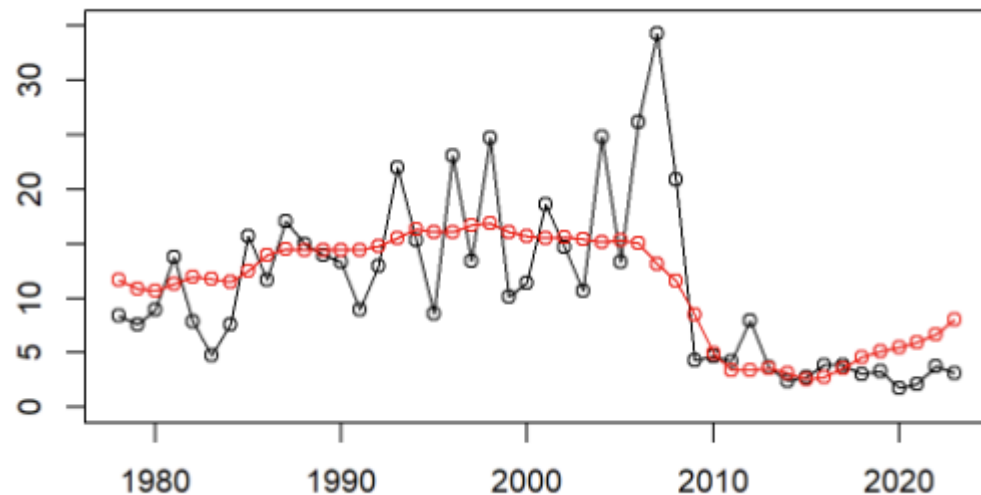
Eastern Winds Jun-August Area 8

Eastern Winds March-May Area 8

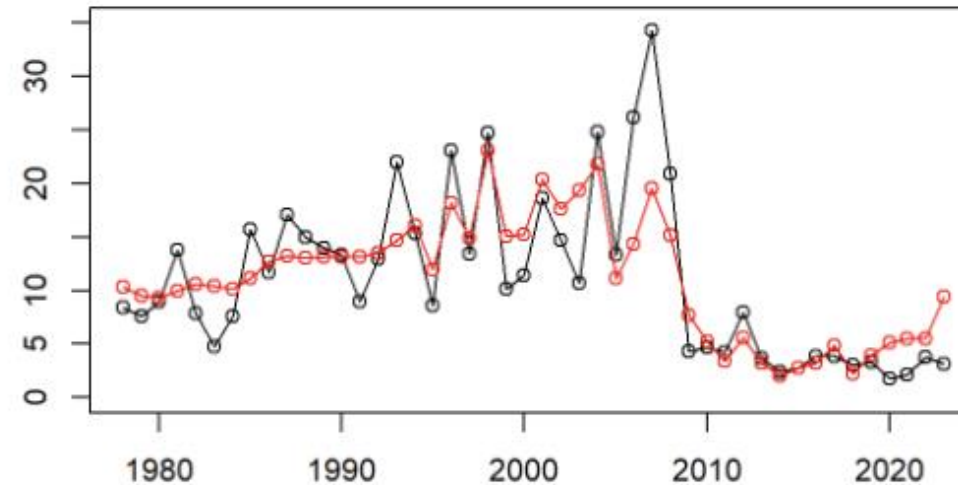
Northern Winds April-June Area 8

Eastern winds May-Jul Area 7

SSB only



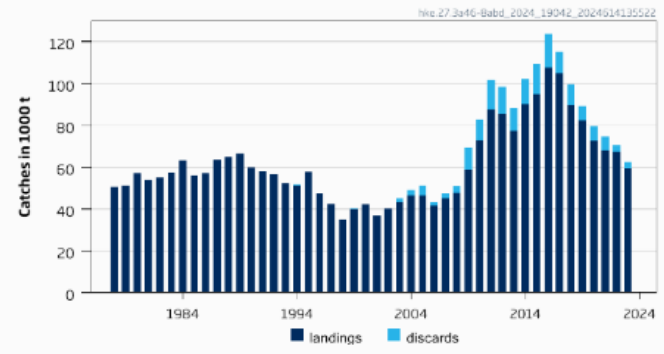
SSB + Environmental variables



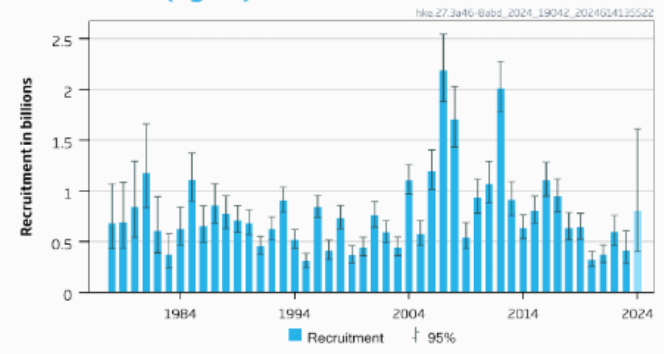
Merluza y su entorno

Merluza

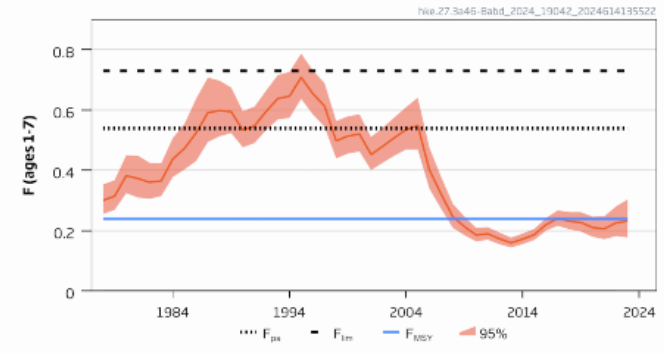
Catches



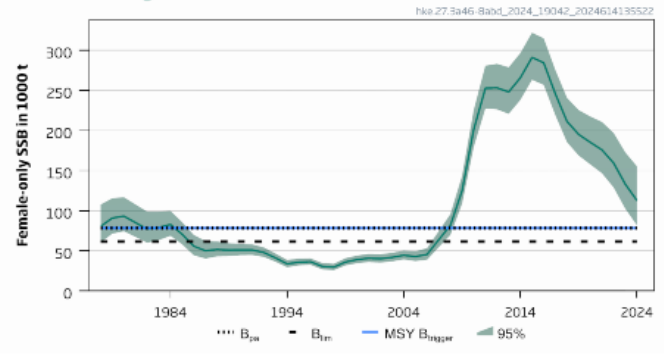
Recruitment (age 0)



F

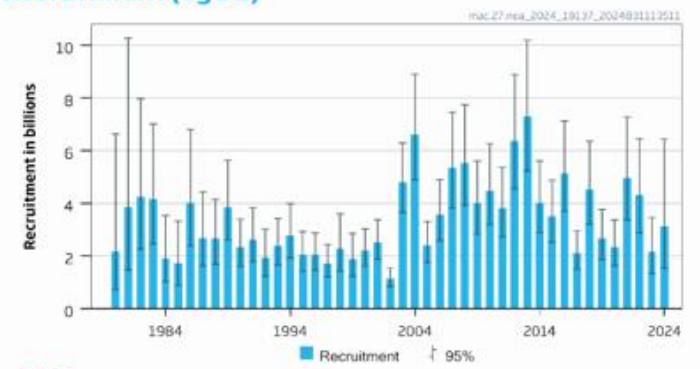


Female-only SSB

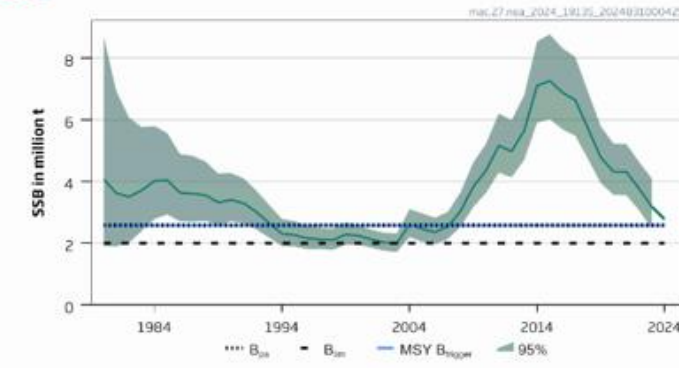


Verdel

Recruitment (age 2)

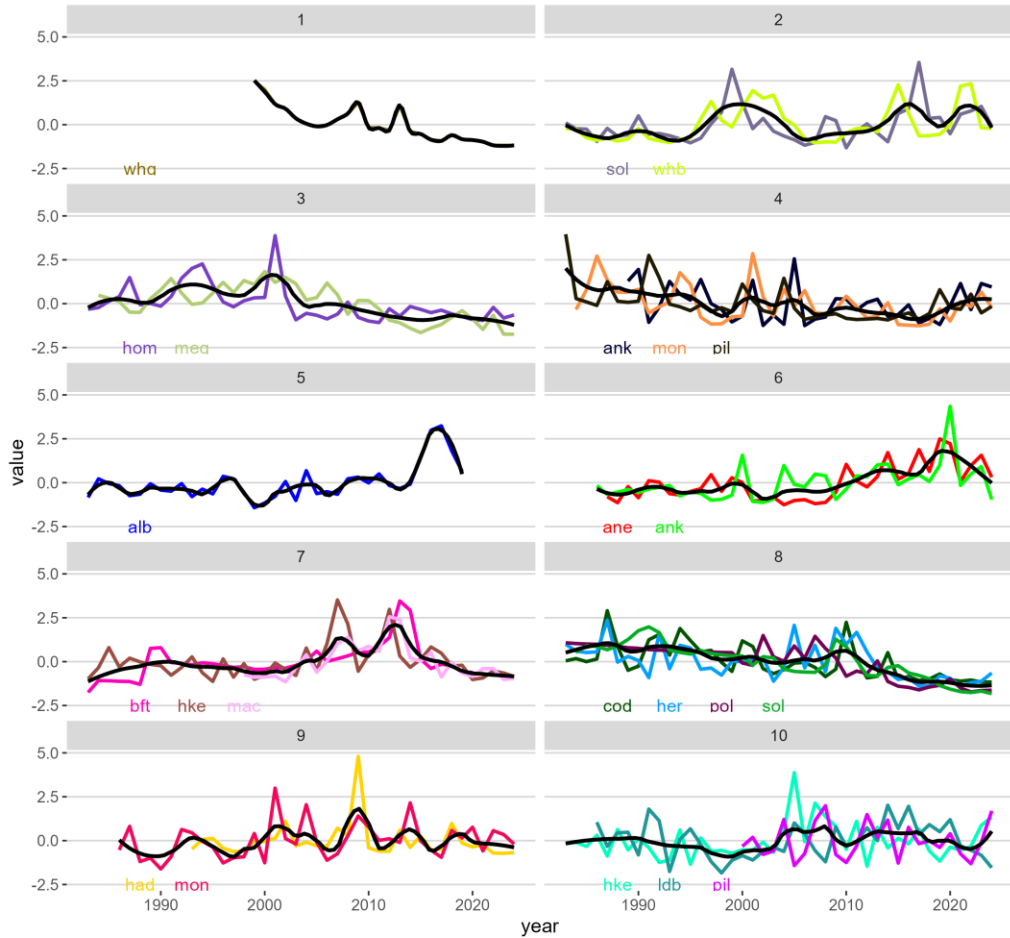


SSB

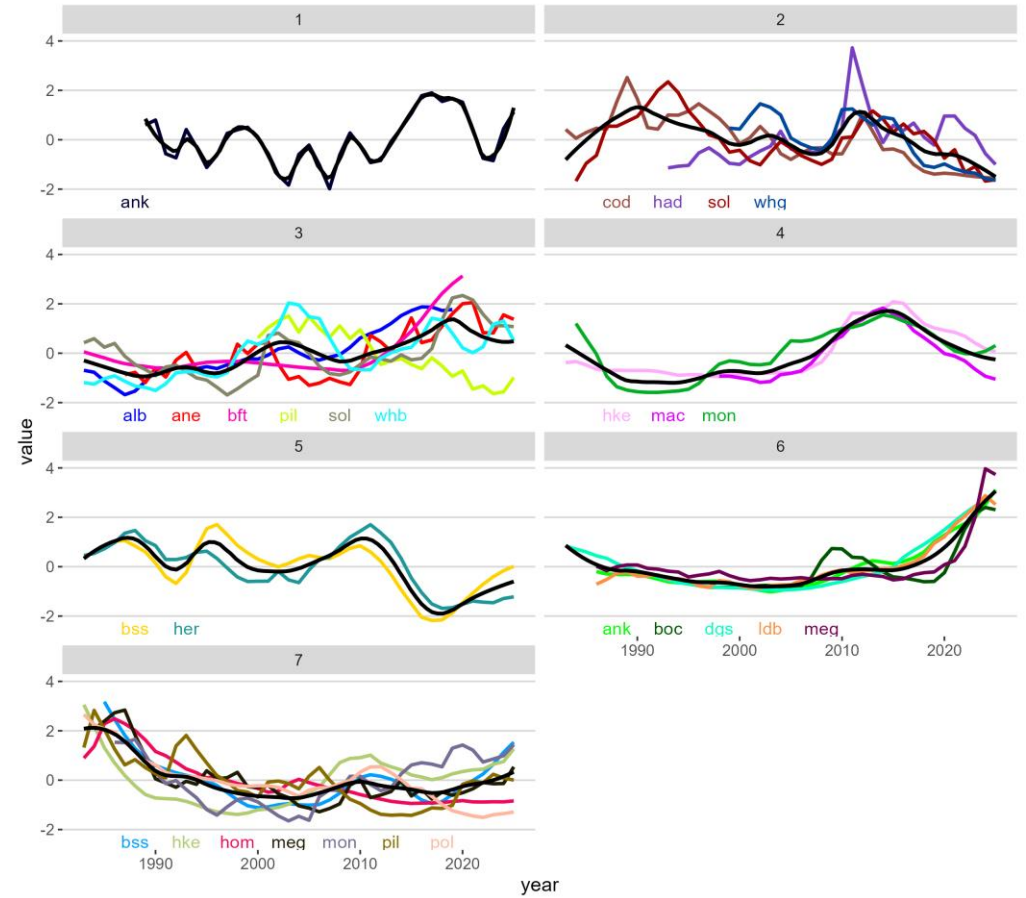


Hake in the ecosystem

Reclutamiento



SSB



Food for thought



- What do you think motivated the high recruitment success around 2008?
¿Qué crees que motivo el alto éxito de reclutamiento alrededor de 2008?
- Do you recognize or have you detected any relationship between stocks or group of stocks?
¿Has observado o detectado alguna relación entre las poblaciones de peces o entre grupos de poblaciones?
- Which can be the link between Mackerel and Hake? And seabass and herring?
¿Cuál podría ser el vínculo entre la caballa y la merluza?

Eskerrik asko!
¡Gracias!
Merçi!
Obrigada!
Thank you!



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