The rise and fall of the northern blue whiting stock

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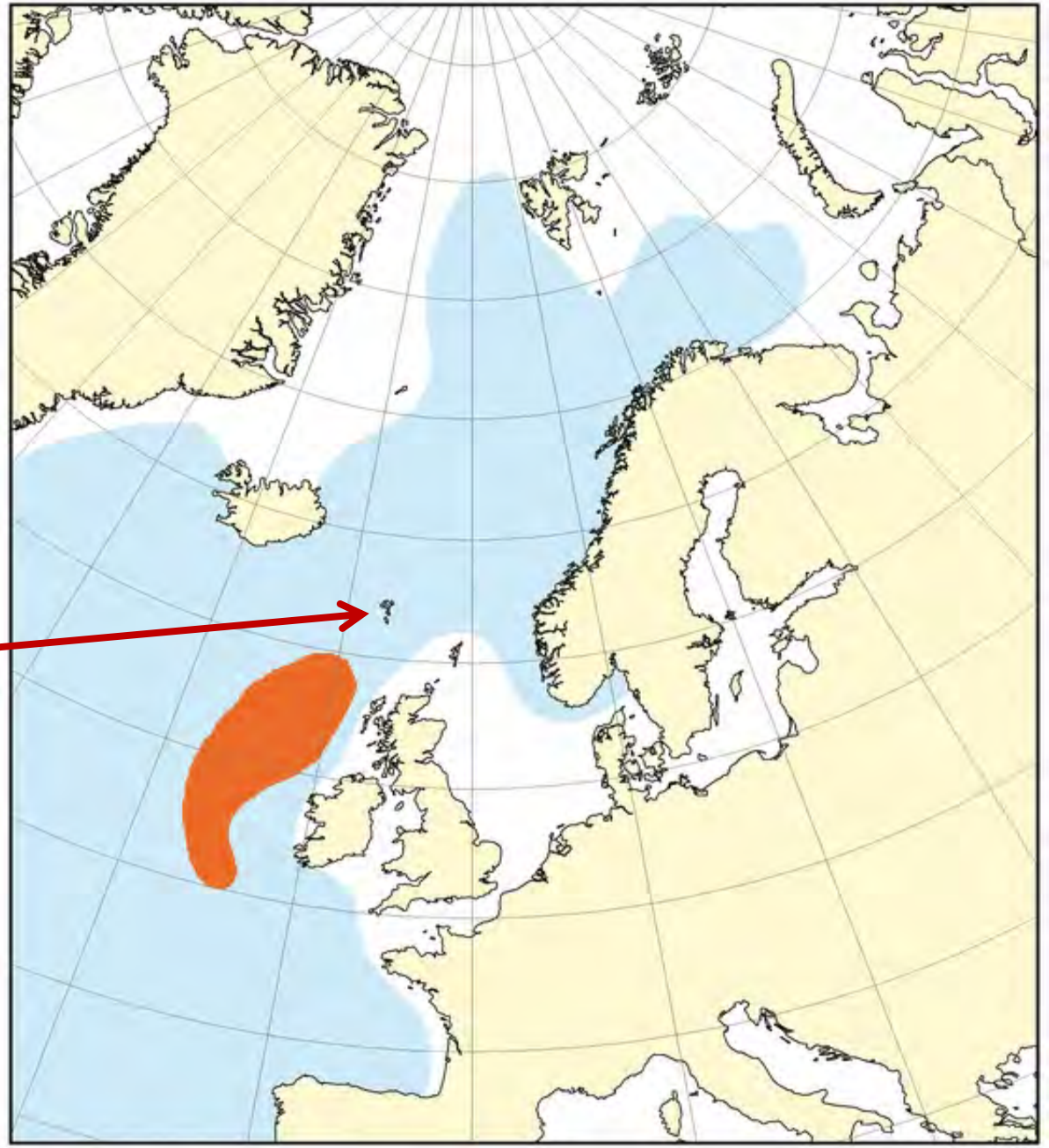
Outline

- Background
- The Subpolar Gyre
- Predation
- Feeding conditions
- Potential for predictions

Facts about blue whiting

- ✓ **Latin name:** *Micromesistius poutassou*
- ✓ **Family:** Gadoid (pelagic planktivorous gadoid)
- ✓ **Maximum size:** 50 cm and 800 g
- ✓ **Age:** Up to 20 year, but seldom above 10 year
- ✓ **Time of spawning:** February–April
- ✓ **Food:** Krill, amphipods and small fish
- ➢ **TAC 2010:** 540 000 tonn
- ➢ **TAC 2011:** 40 000 tonn

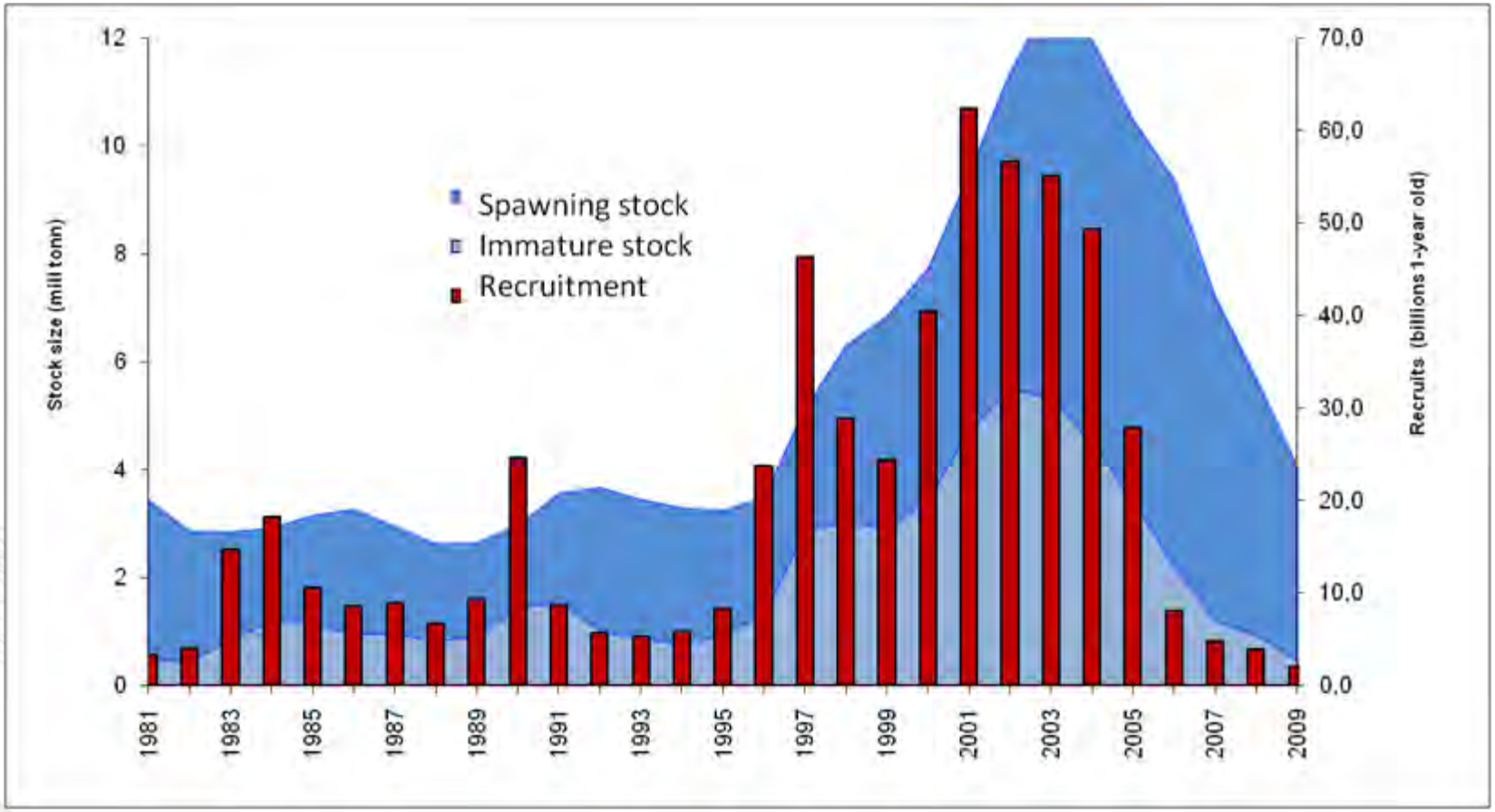
Dristribution of blue whiting



Distribution area

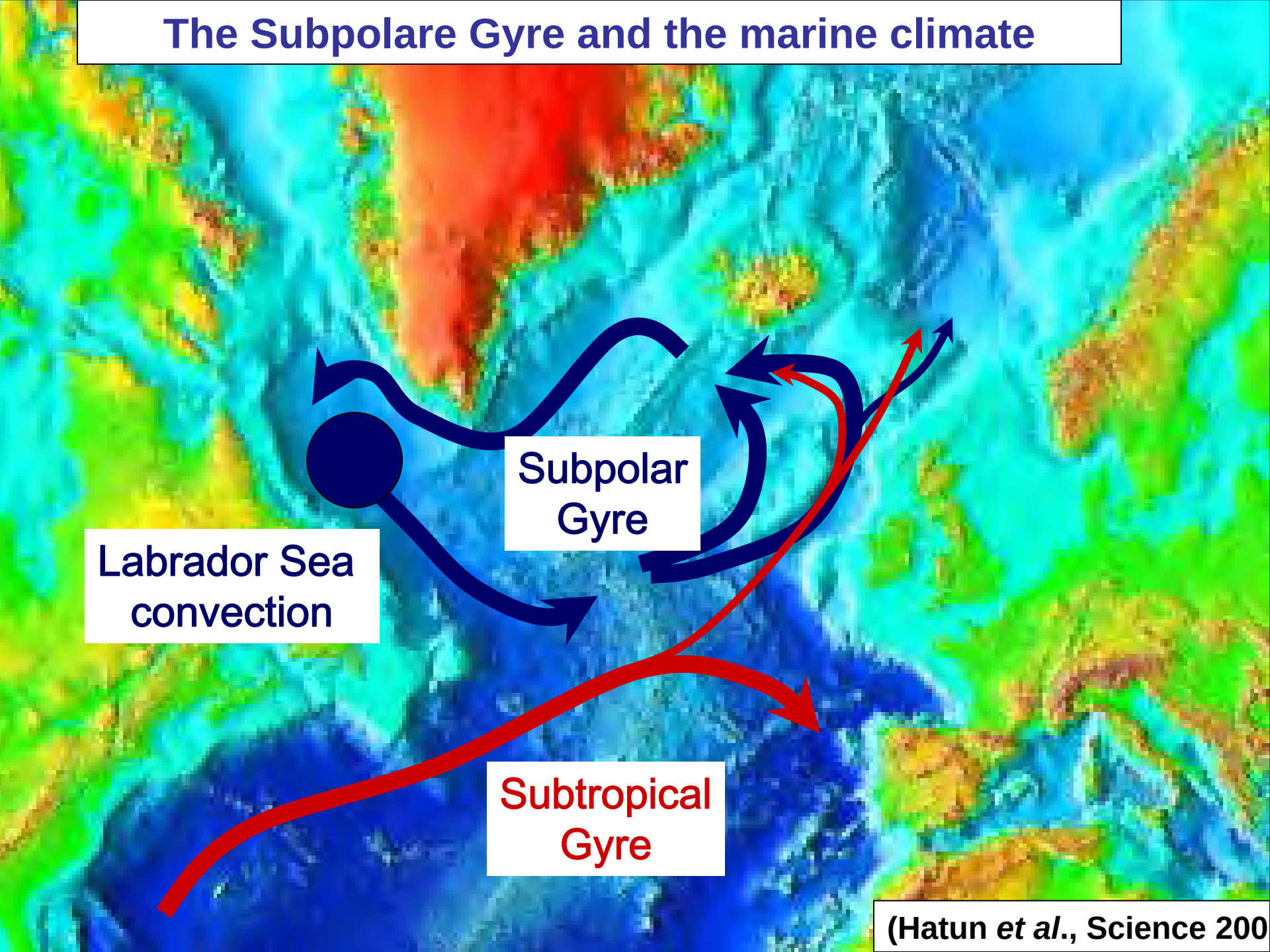
Main spawning area

What caused several successive years of good and then bad recruitment of blue whiting?



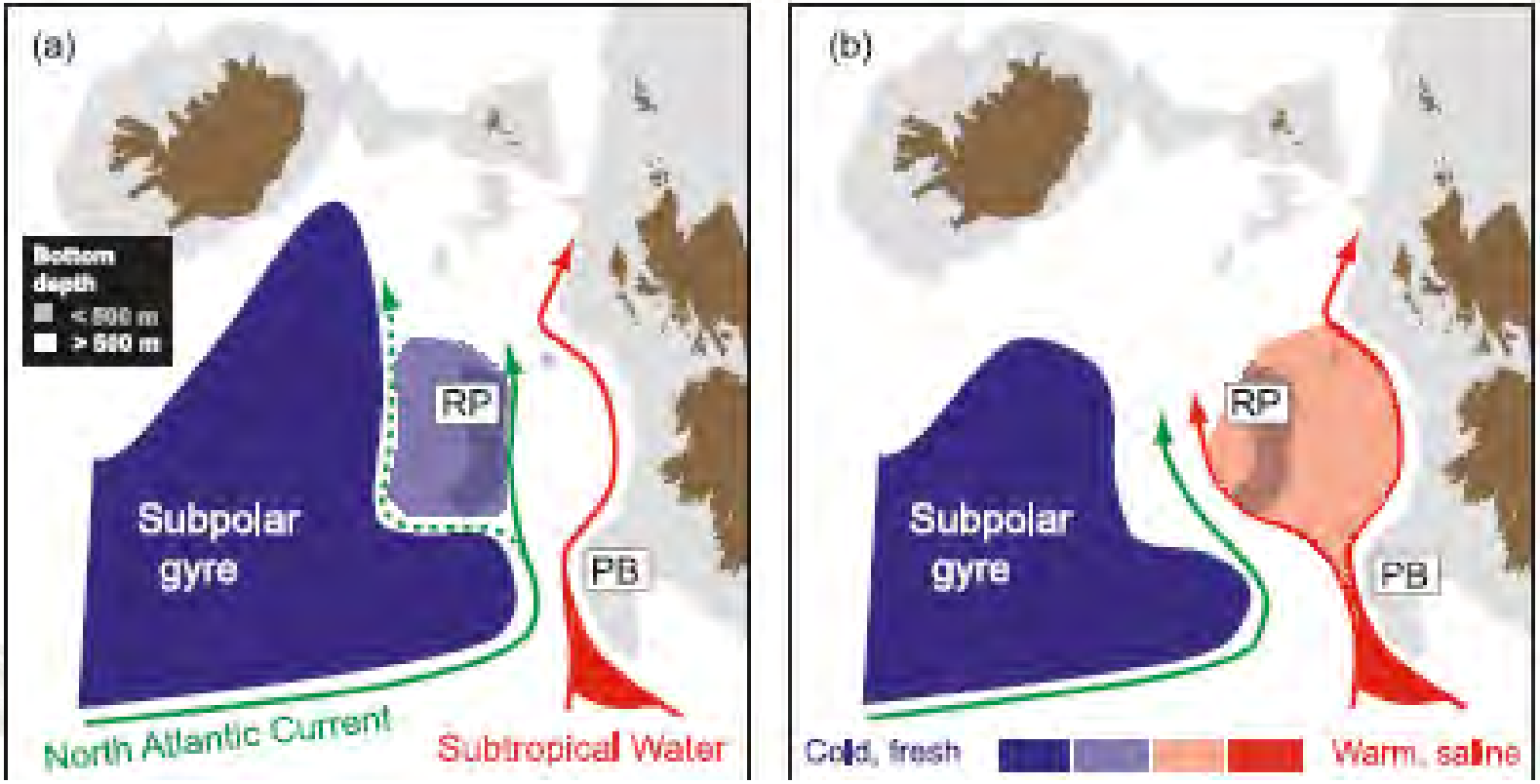
The Subpolar Gyre

The Subpolare Gyre and the marine climate



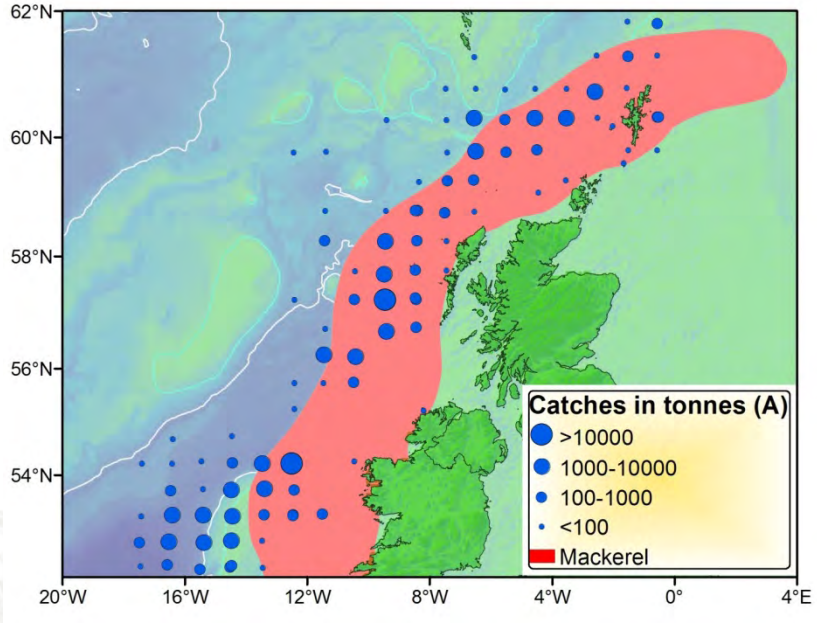
(Hatun *et al*., Science 200

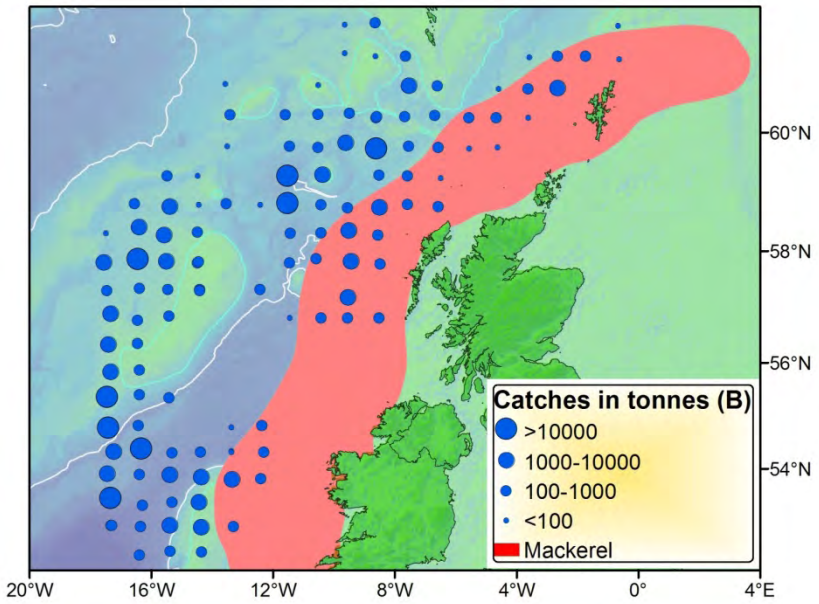
Variations in the physical conditions for the larvae



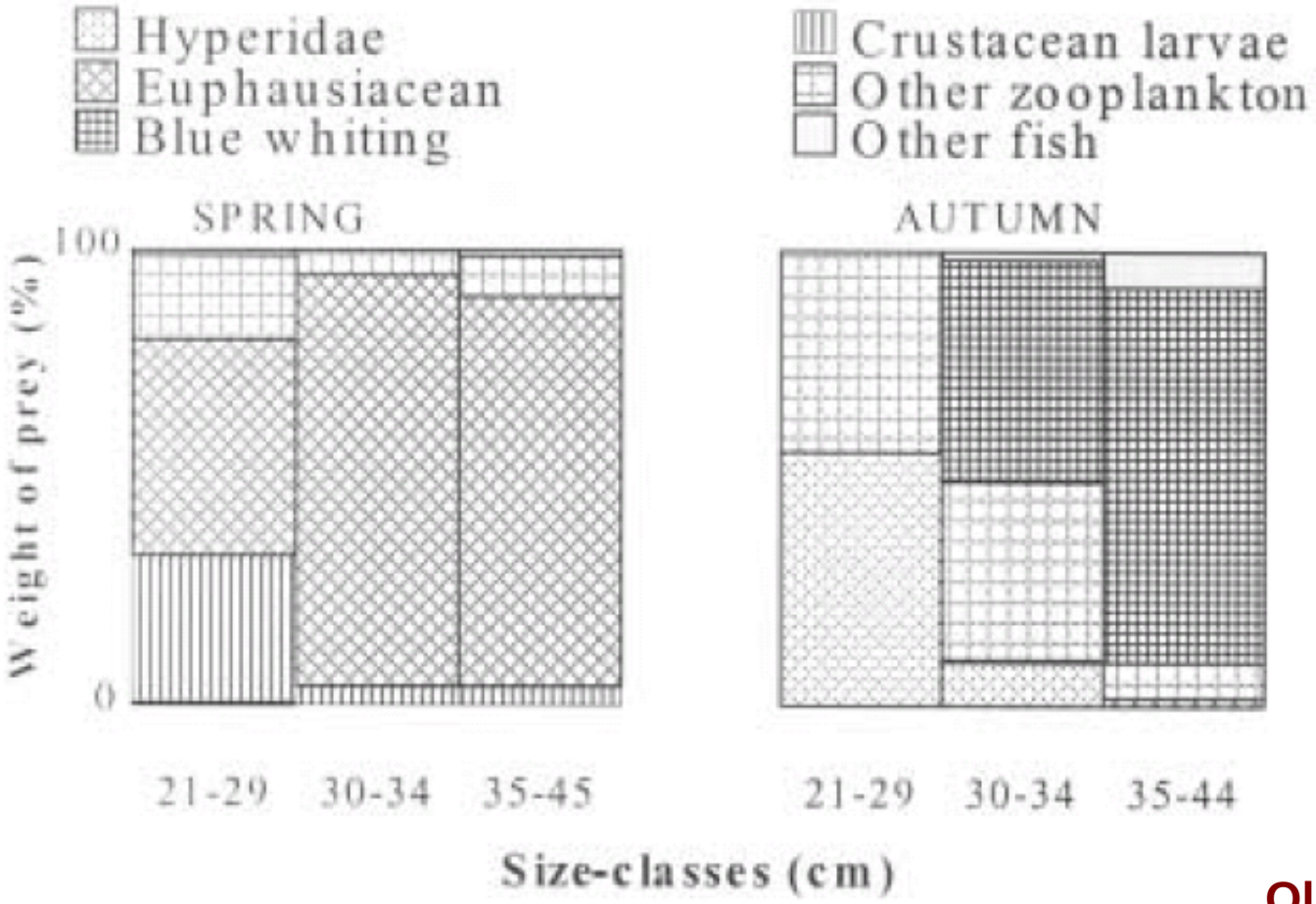
Predation

Variations in predation by mackerel on eggs and larvae





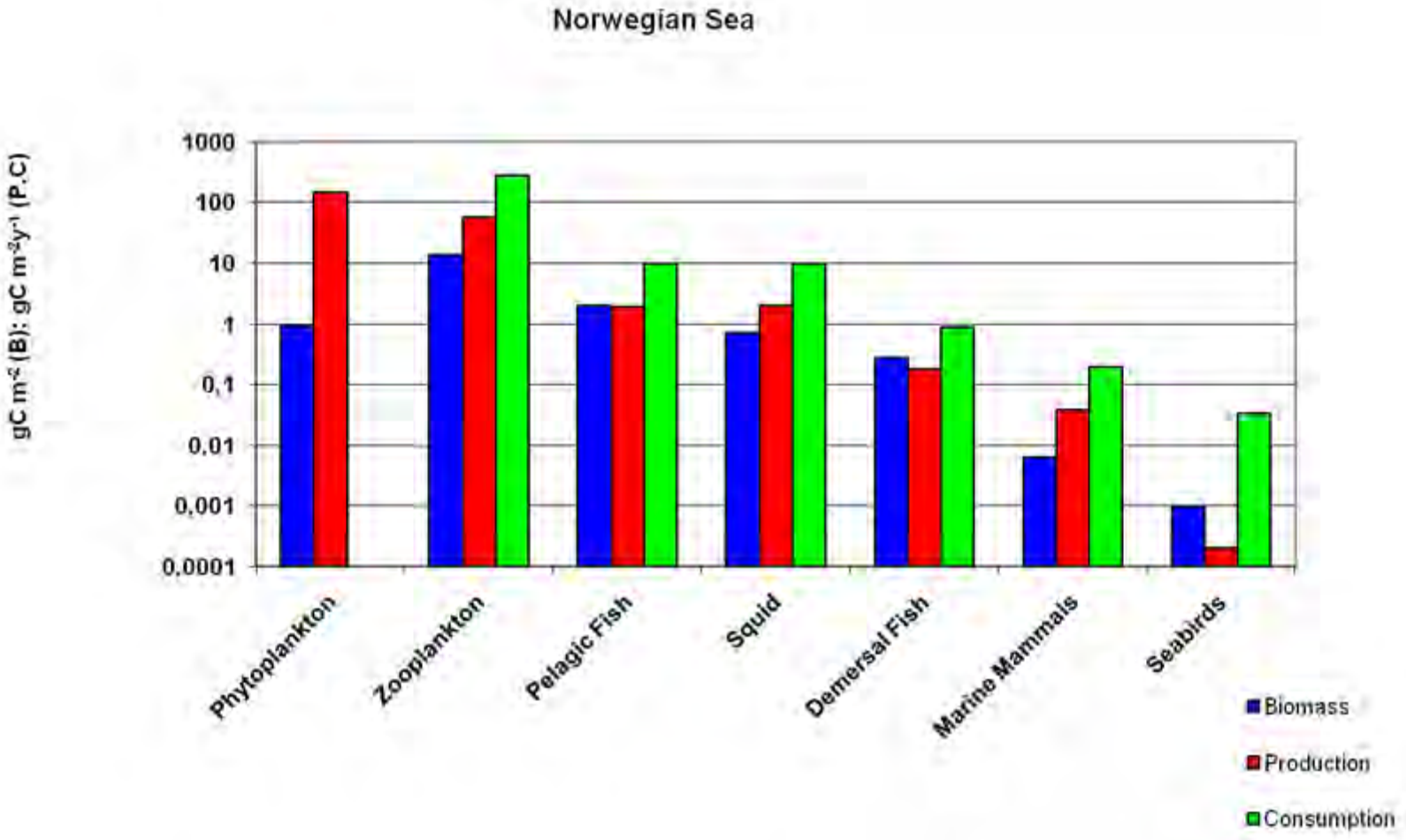
Mackerel diet in terms of weight of prey in percent off northern Spain in spring and autumn by length group



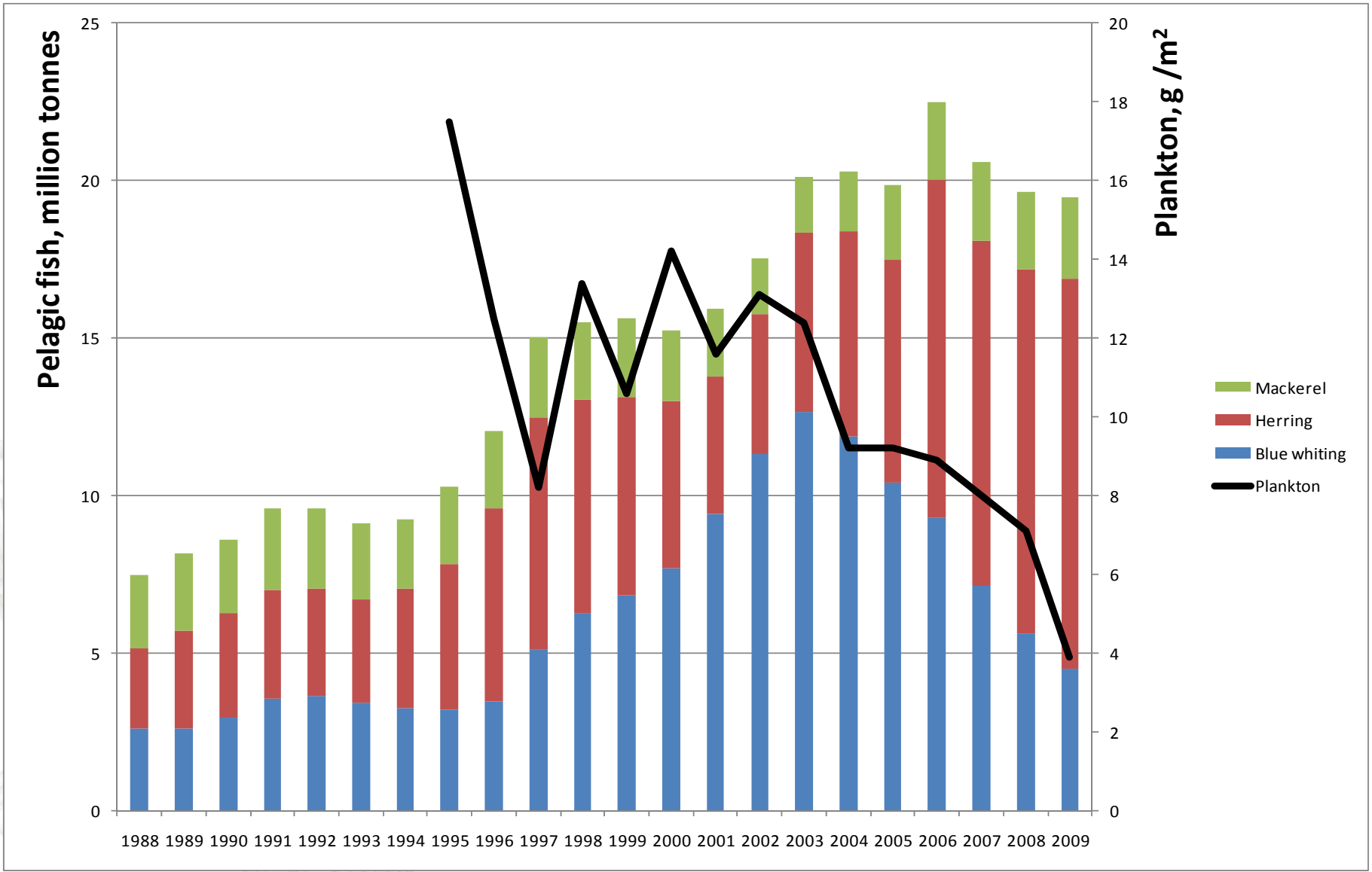
Olaso 2005

Feeding conditions

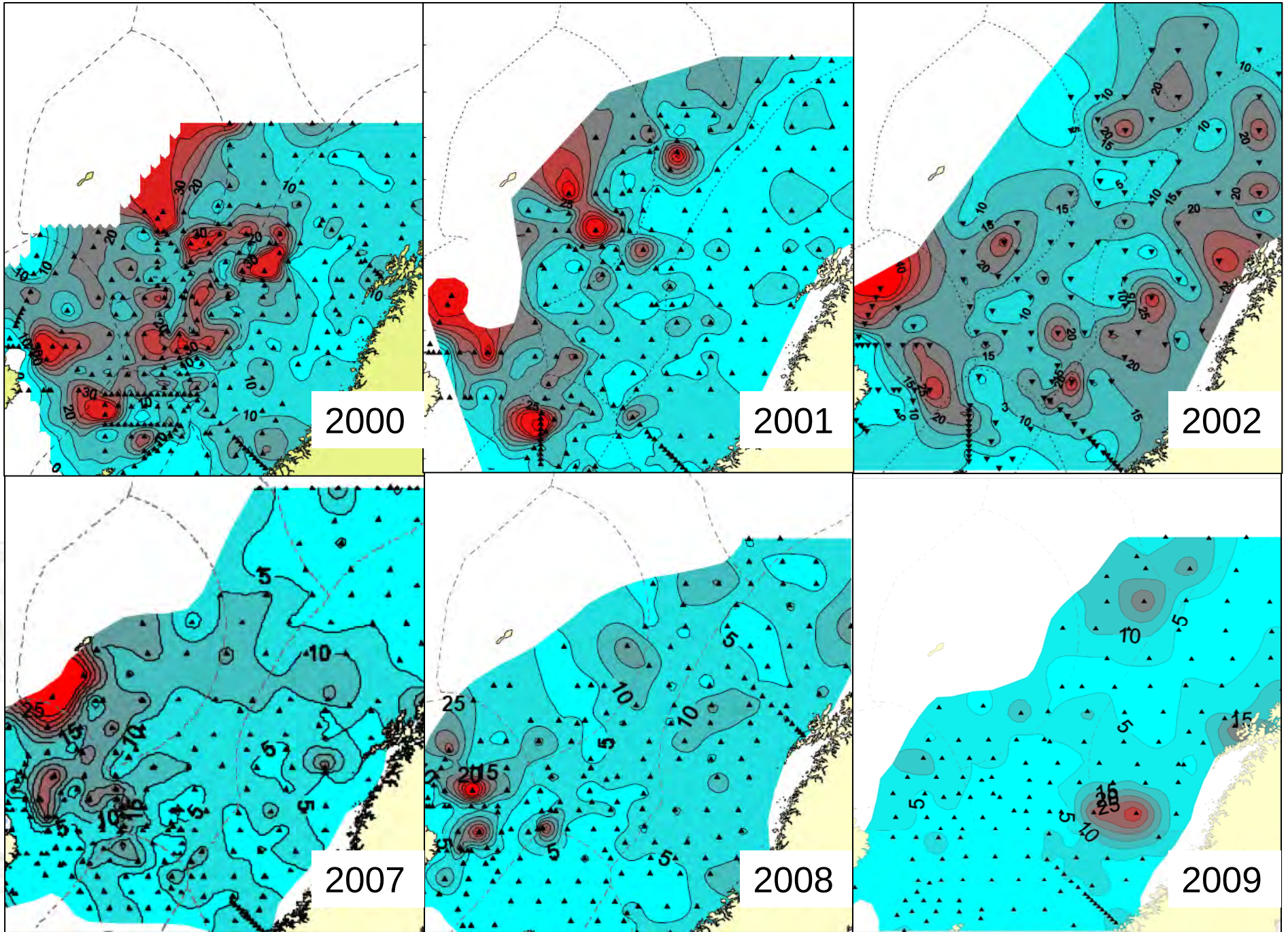
Estimated biomass, production and consumption by trophic level in the Norwegian Sea



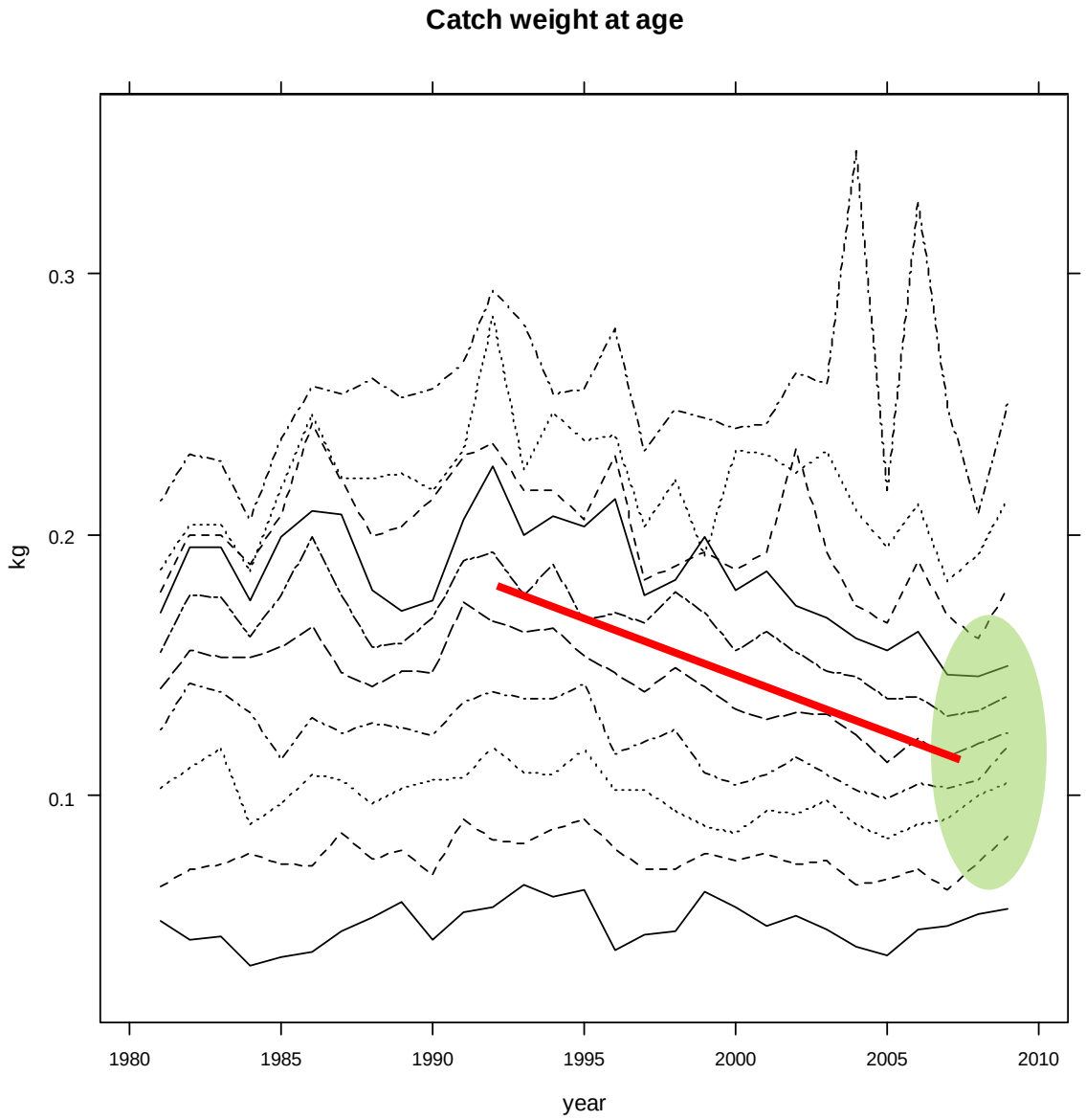
Development of stocks in the Norwegian Sea



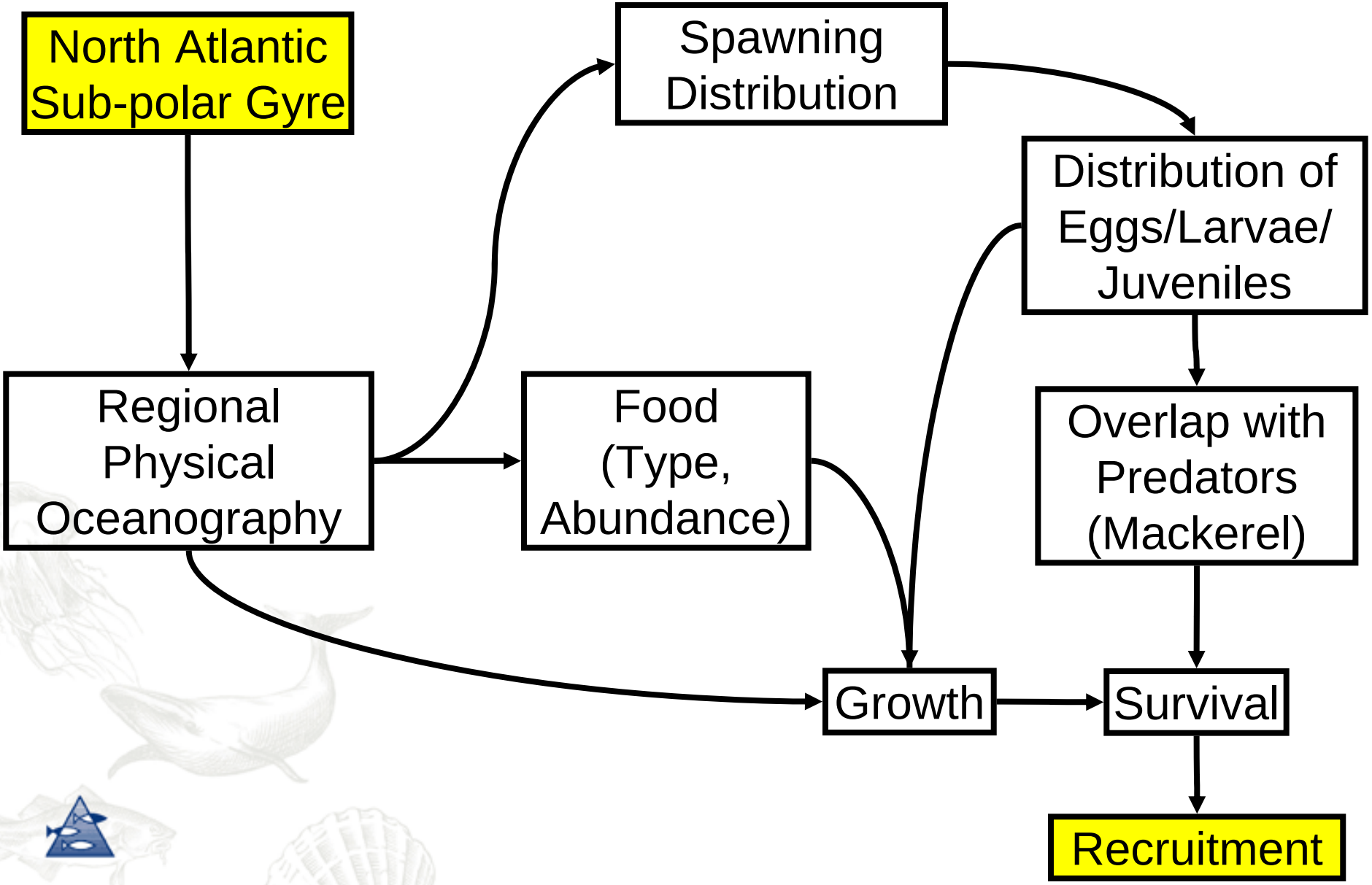
Distribution and density of zooplankton in May in the Norwegian Sea



Catch weight at age



A possible mechanism

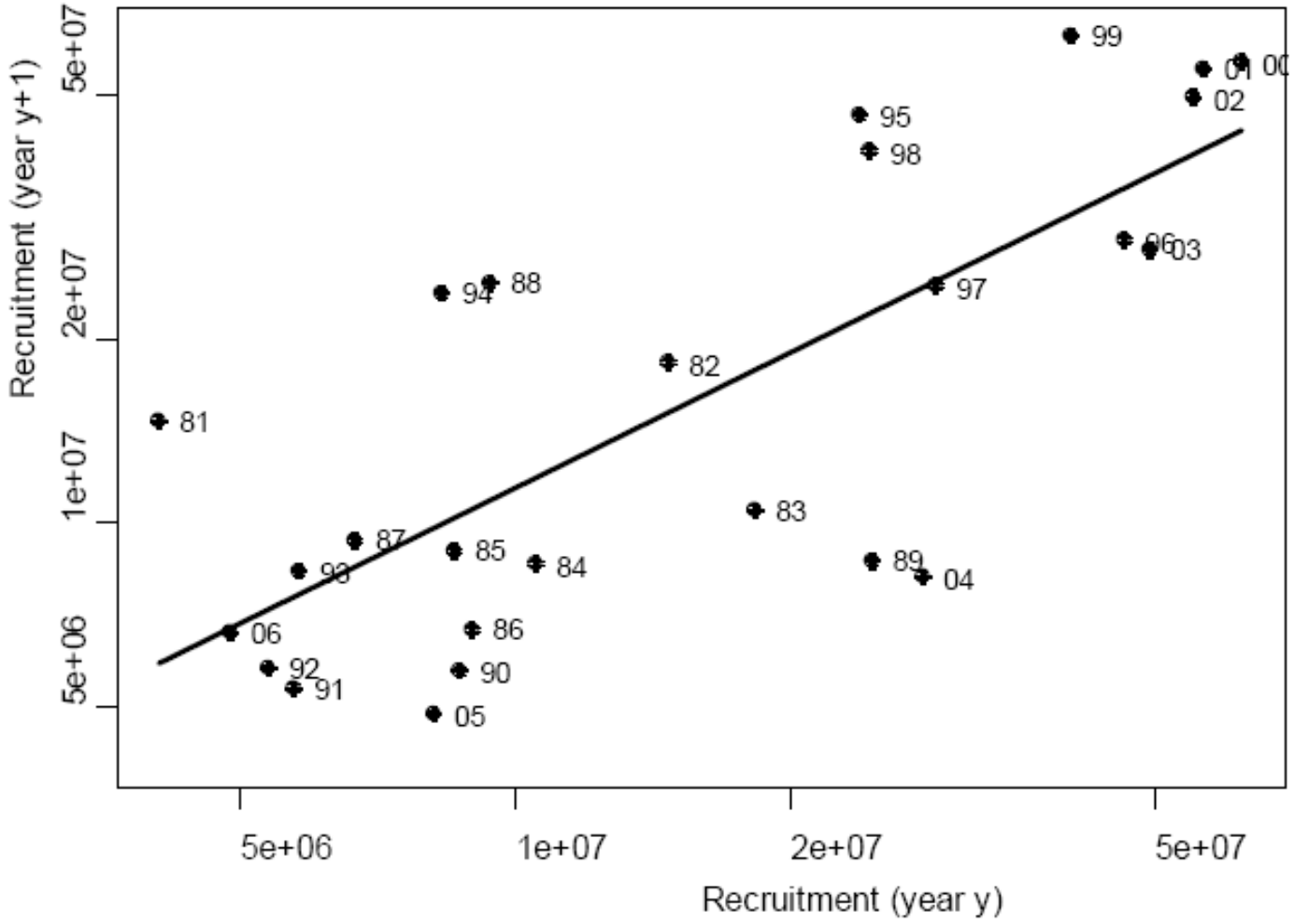


We hypothesise that physics explains changes in distribution while the mackerel feeding theory is the most likely direct causal effect on recruitment. The lack of food may have secondary effects on growth

Potensial for prediction

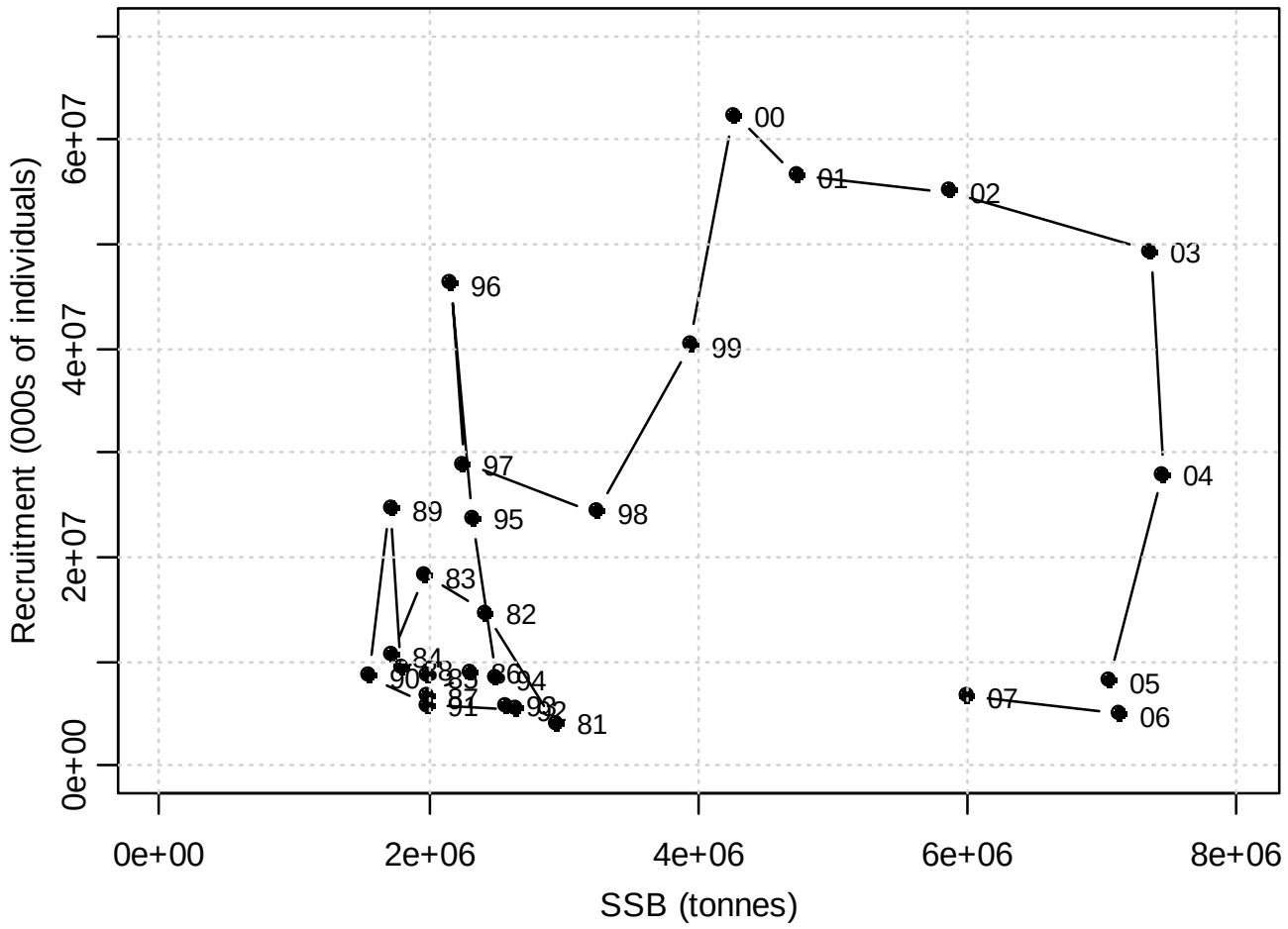
Prediction is easy, getting it right is the difficult part! **(Ken Drinkwater)**

"Recruitment next year will be the same as this year"

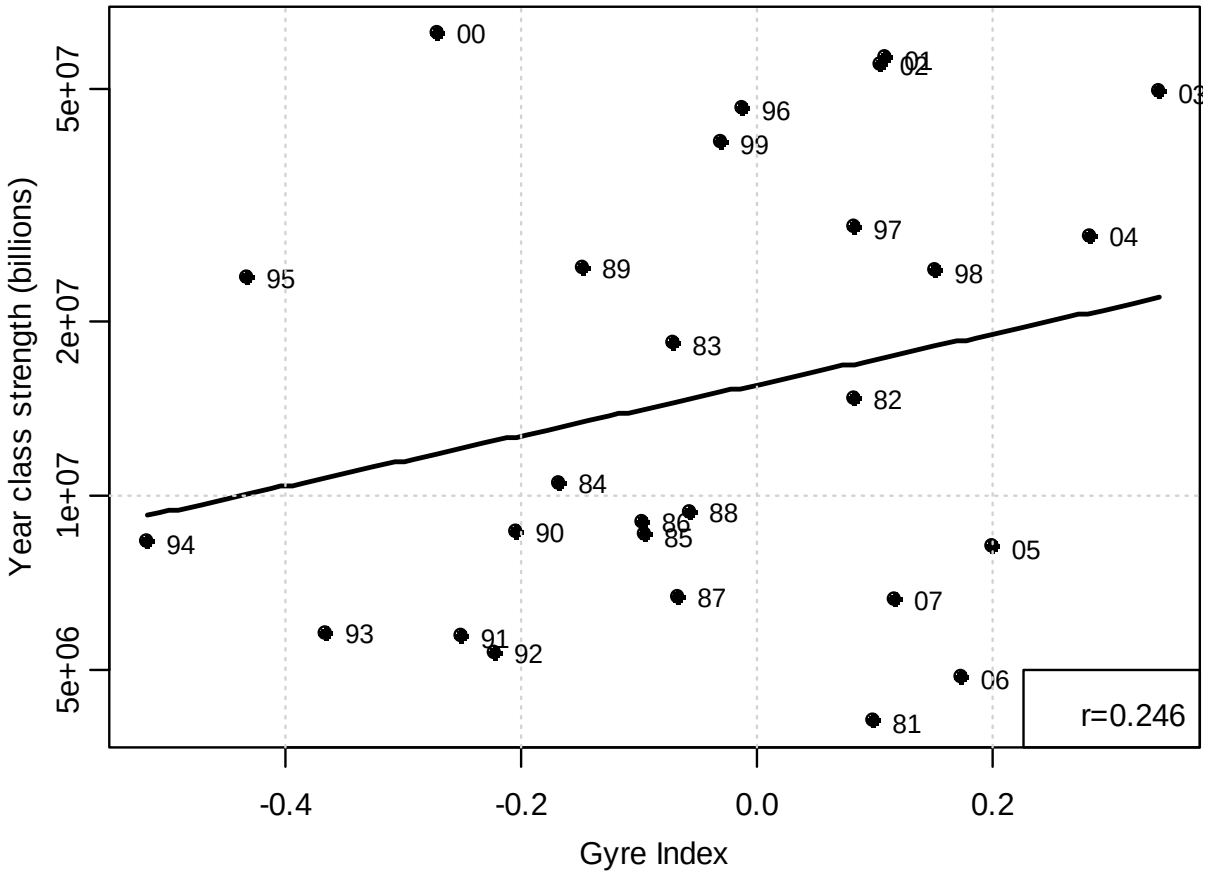


(p<0.001, r2=0.547)

Blue whiting stock-recruitment relationship.



Correlation between the sub-polar gyre index during a given year and the size of the cohort produced in that year

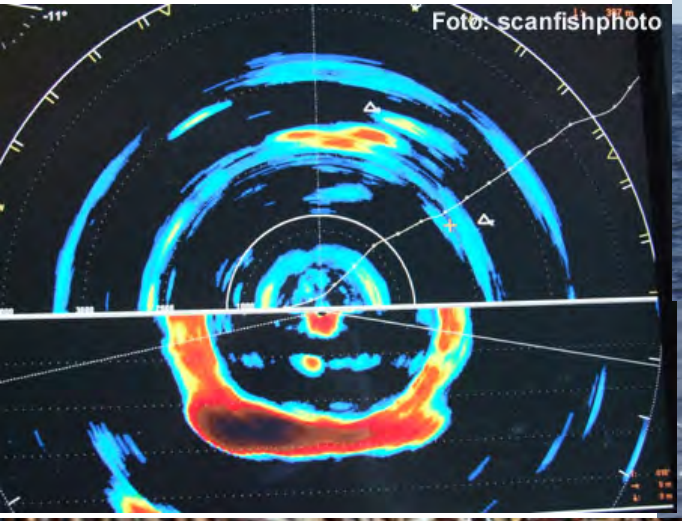


In summary

- **WKBLUR concluded that the in the current absence of mechanistic understanding, it is not currently possible to make recruitment forcasts**

Thank you


Foto: scanfishphoto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