

## Question

All individual fishes in a population are not identical. Phenotypic diversity within a population may modulate a resilient population response to changing conditions. Allozymes, which relate to gene expression, characterize phenotypic diversity and may serve to identify the adaptation to specific conditions in habitats.

## Diversity vector

12 loci with different allozymes implicated in glycolysis, Krebs cycle, lipid generation and catalysis of proteins (« -m »: in the muscle; « -f »: in the liver)  
 PGI-m ; LDH1-m ; LDH2-m ; ME2-m ; MDH1-m ; PGM-m ; aGPD-m ; IDH-f ; AAT-f ; LGG-f ; PP-f ; IDH-m

## Sampling

On board R/V Thalassa during PELGAS acoustic surveys, a dedicated protocole for genetics:

- 50 anchovies at trawl station are frozen (-70°C)
- 5 to 16 opportunistic stations per year ; 5 years : 3356 individual fishes covering all habitats

In the Laboratory:

- Extraction of muscle and liver ; Preparation of proteic material
- Separation of allozymes by Electrophoresis on a polyacrylamide gel

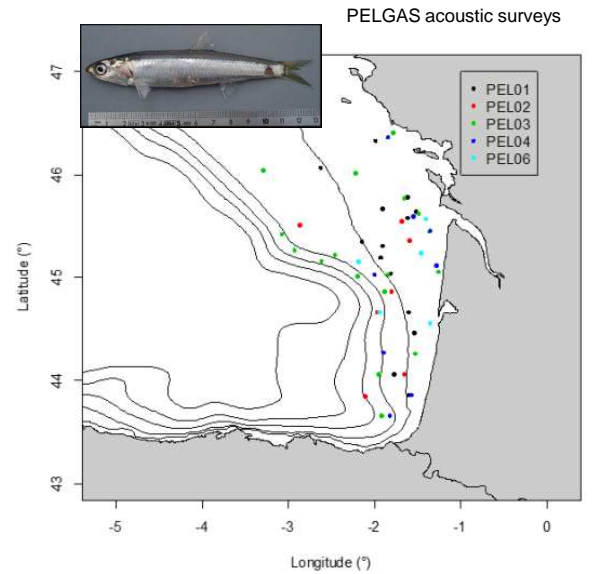
## Data

The allozyme data matrix:

- It contains the results of the electrophoresis
- Lines are individual fishes, columns are the loci. Each matrix cell [i,j] has a value 'codeAcodeB' characterizing the two alleles for individual i at locus j.
- Allelic diversity is based on the values of codeA and codeB.

Other associated data:

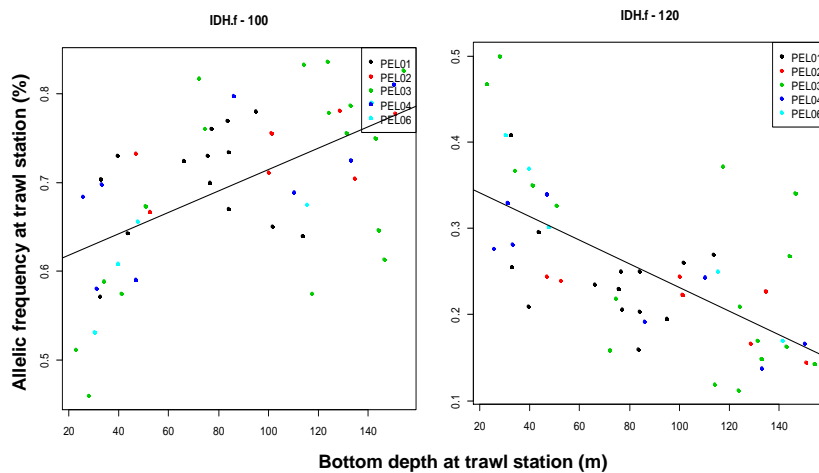
- Individual fish biometry (Length, weight, Age), trawl location, bottom depth at trawl location
- Acoustically derived anchovy biomass (tonnes/n.mi.<sup>2</sup>) averaged in the vicinity of the trawl locations (4 n.mi.)



## Results

Three Loci only are polymorphic (5% level): PP-f, PGI-m, IDH-f

IDH.f : Significant antagonistic gradient with bottom depth of allele 100 and 120 frequencies



## Discussion

Similar result for Steelhead Trout : Redding et al. (1979), who also demonstrate that the combination 120xxx is favored in case of higher temperature and/or less oxygene

Are individuals with the allele 120 favored in coastal habitats ?

Allelic frequencies do not correlate with biometric parameters unlike in Bembo et al. (1996)