

# How impacts the implementation of a sequential fleet behavior in the management strategy evaluation? The case of the Basque inshore fleet with FLBEIA.



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## Background

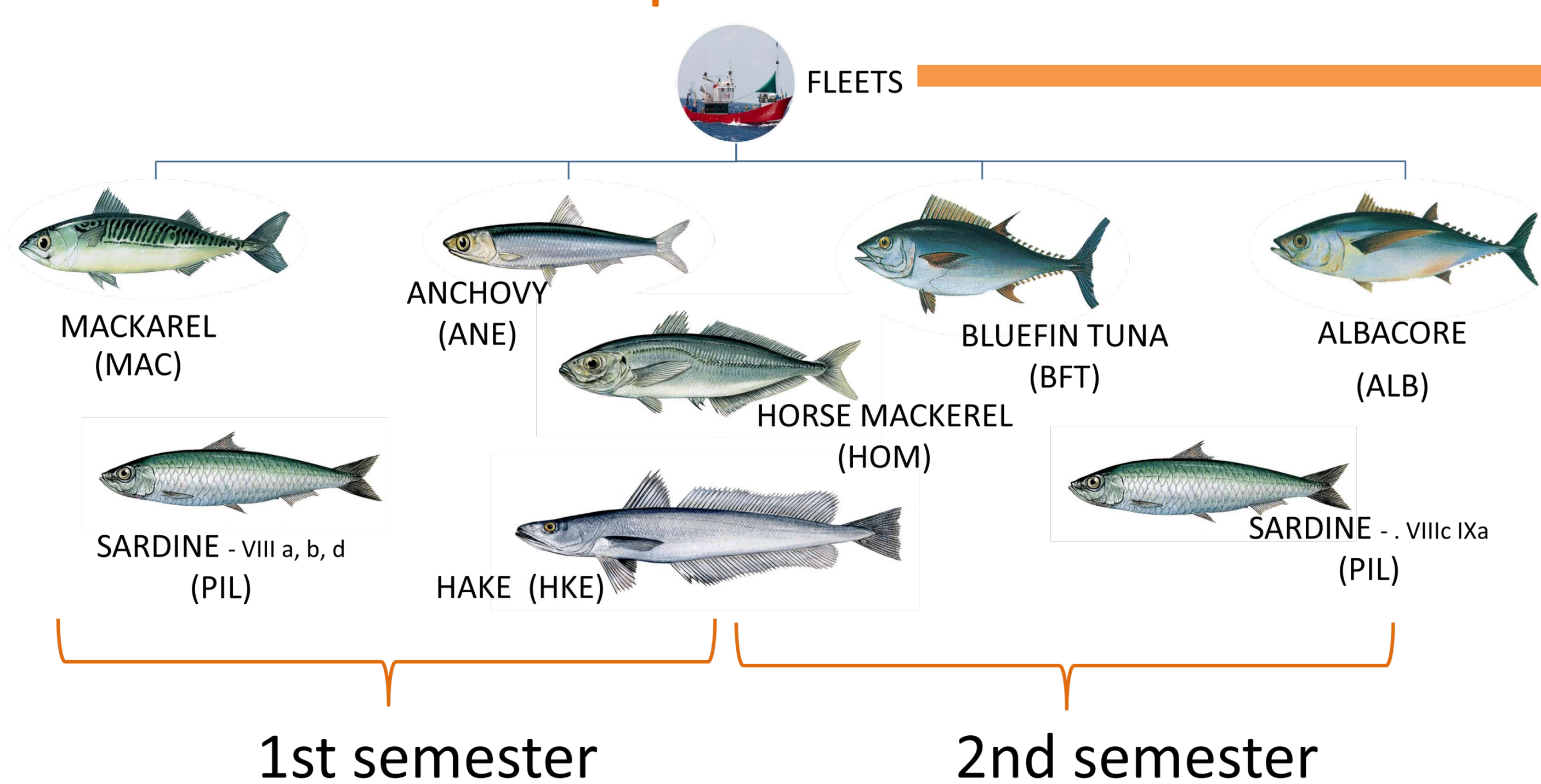
The management strategy is based on the scientific advice of the stocks and the management is done over fleets. However it is common evaluate the impact of harvest control rules without consider the real fleets' dynamics. Strong assumptions are taken, such as fleets always catch all TAC or a fixed effort, which it is not necessarily correct. In the management strategy evaluation, a correct definition and implementation of the fleet dynamics will allow to managers to take a better management decision. Three scenarios are simulated for the Basque inshore fisheries; two of them simulate a common but not necessarily correct fleet dynamics and another one with a more realistic approach.

## Question

What is the impact of an incorrect definition of the fleet behavior in a management strategy framework?

## Method and data

### CASE STUDY: Basque inshore fisheries



## Fleets

- CCE: Purse seiner
- CCV: Purse seiner + live bait
- CCV\_bft: Purse seiner + live bait \_bft
- CCU: Purse seiner + trolling
- LMCU: Hand lines + trolling
- OTH: Rest of fleets (no effort dynamics)

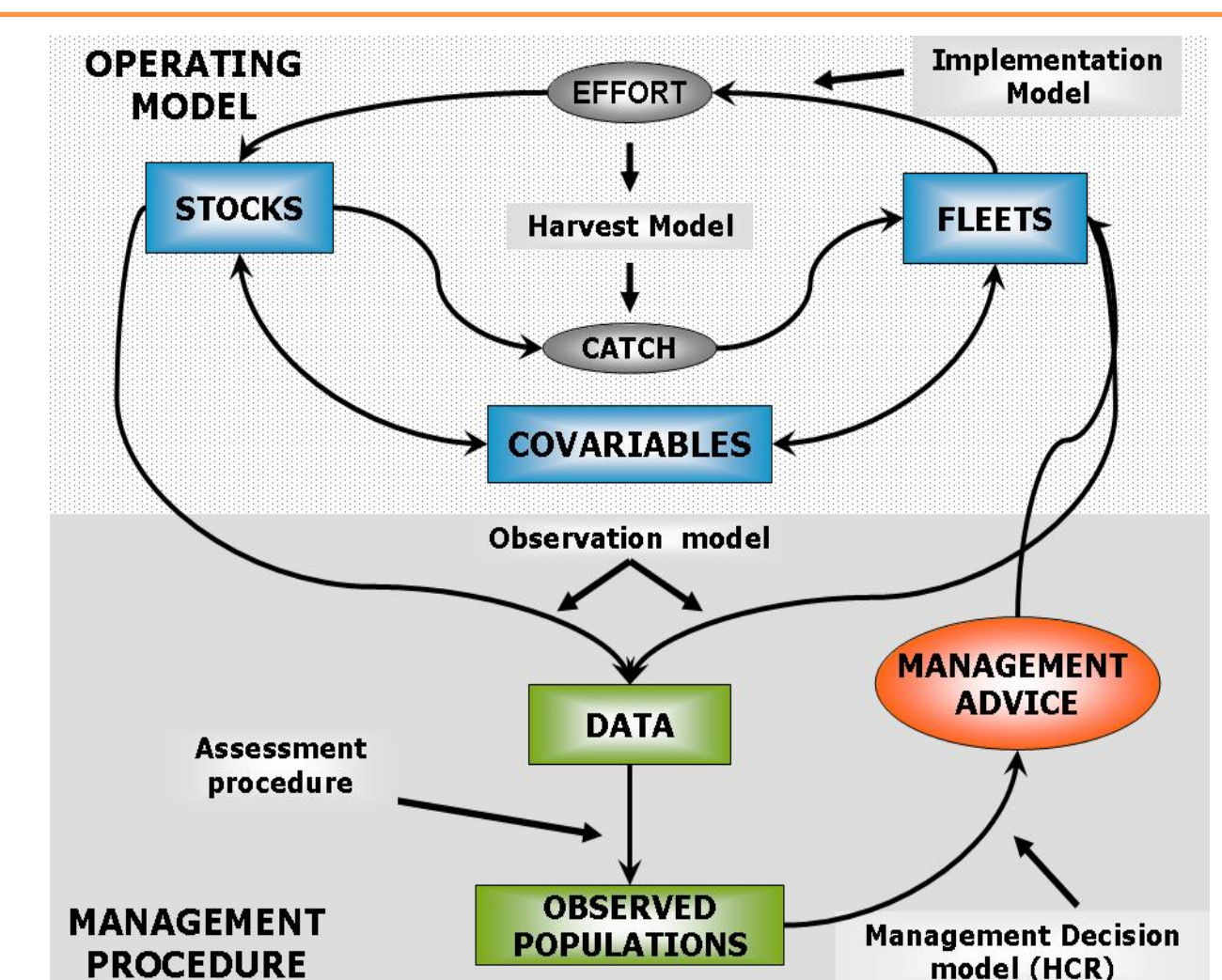
## Métiers

The definition of métiers is a cornerstone to simulate the 'real' behavior of the fleets. 52 métiers are defined on the basis of fishing gear, main target species and season of the year .

## Bio-economic model



FLBEIA is a simulation toolbox implemented as an R library which facilitates the development of bio-economic impact assessments of fisheries management strategies. It is built under a management strategy evaluation framework using FLR libraries. To feed the model, biological data from ICES and ICCAT; economic data from both logbooks and database of the Basque Government.

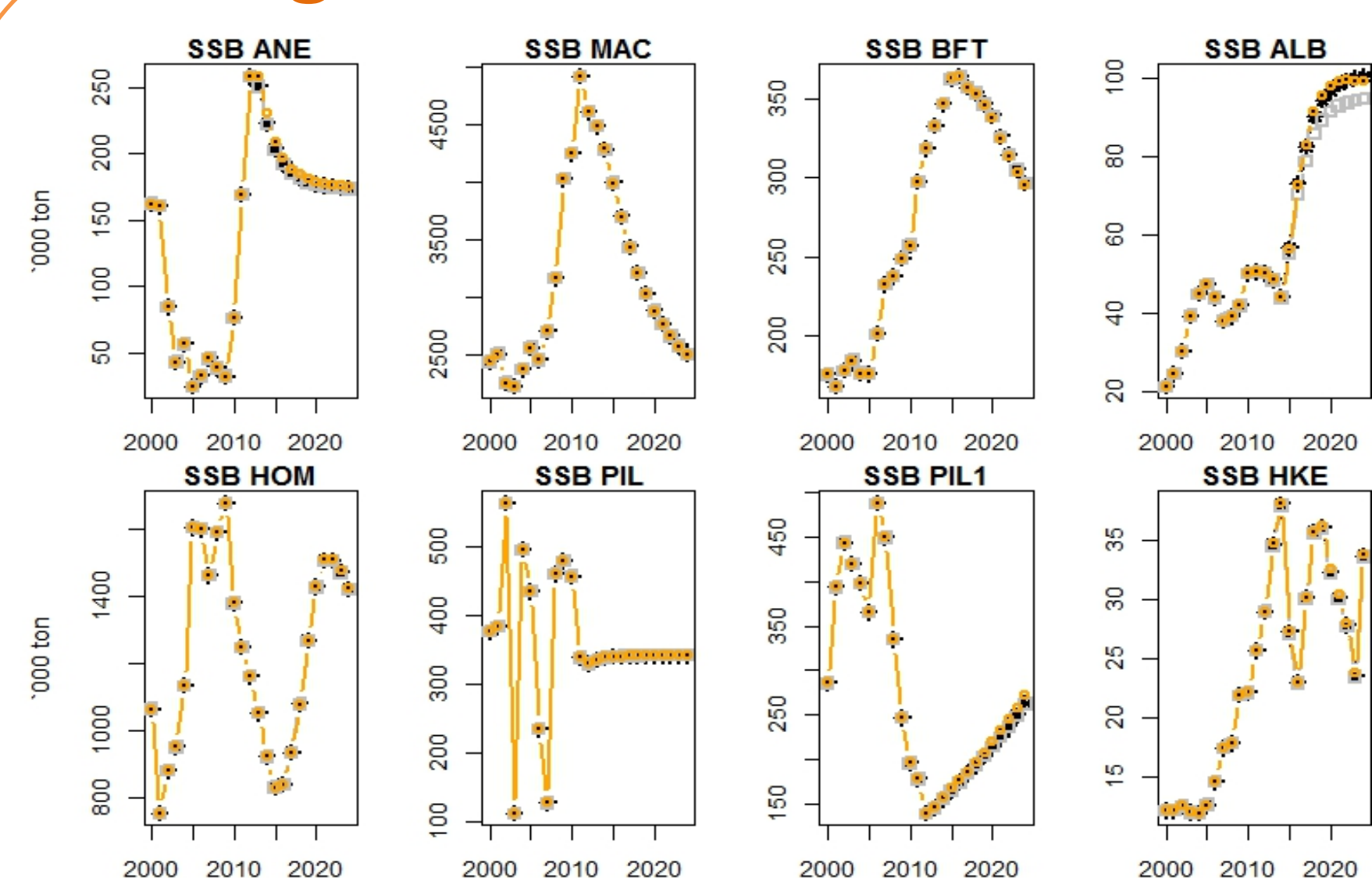


## Scenarios

- **FE**: Fixed effort along the projected period.
- **SMFB** : Effort among metiers is given as input data and total effort is calculated based on the TAC.
- **MP\_seq** : Total effort and effort among metiers maximizes the profits guided by 'real' sequential behavior of the fleet.

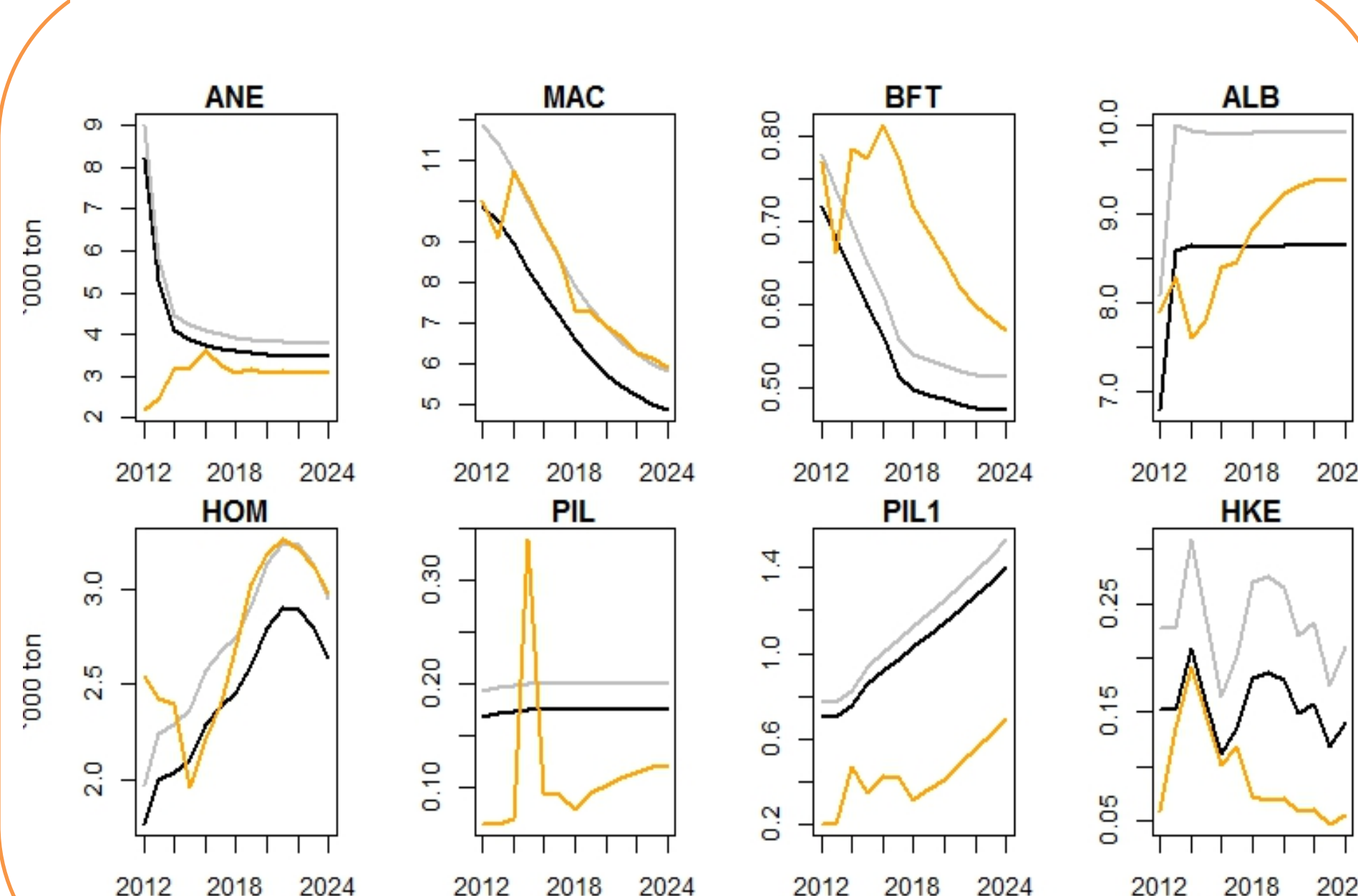
## Preliminary results

### Biological outcomes



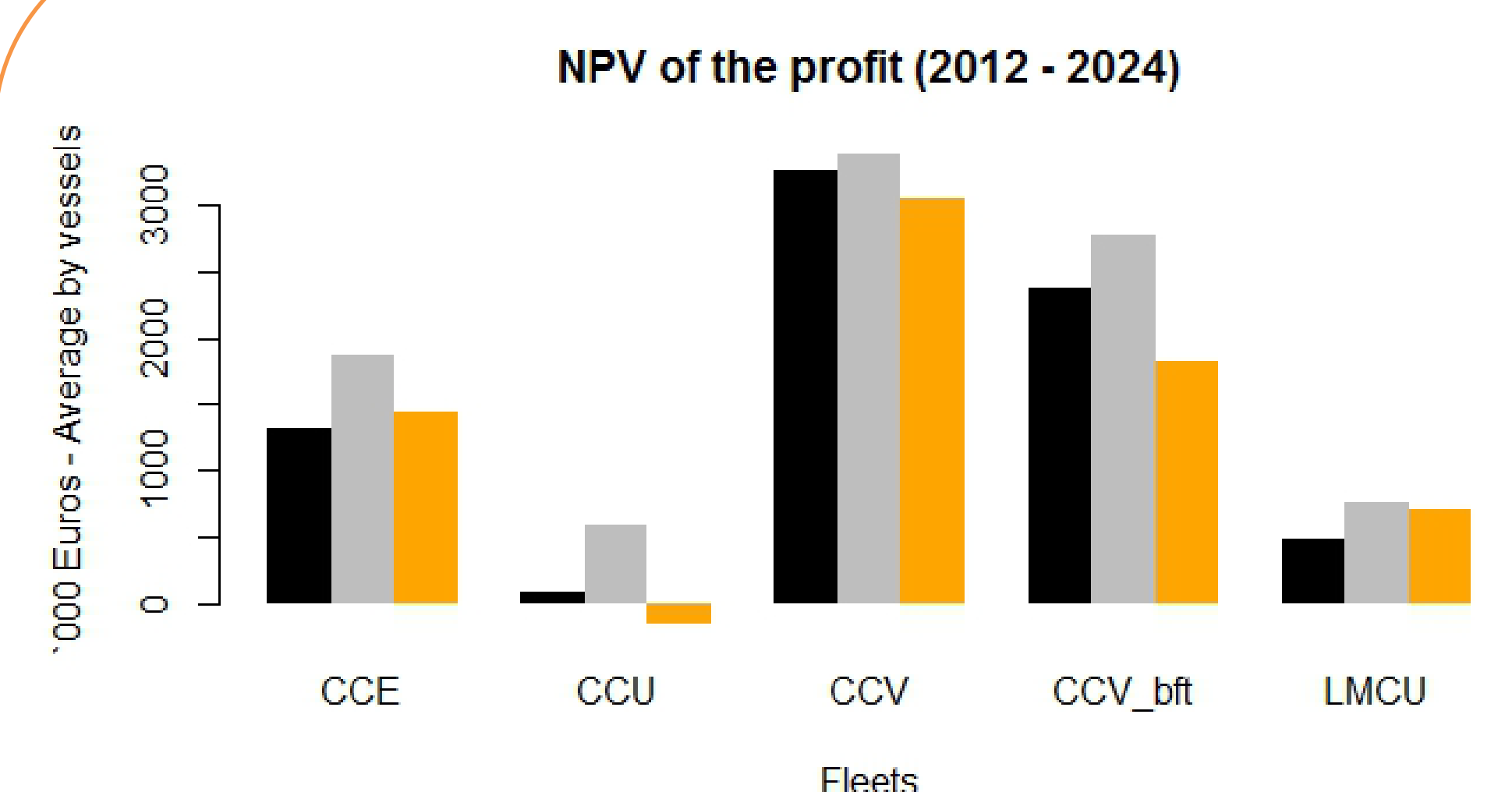
Differences between scenarios: SSB of ANE and ALB can reach 3,5% and 7,2% respectively depending on the year.

### Catches - Basque fleets



■ FE ■ SMFB ■ MP\_seq

### Economic outcomes



Net present value (NPV from 2012 to 2024) of the profit of CCU will be negative in **MP\_seq** scenario, while in the other two scenarios this value is positive.

## Conclusions

- There are differences in biological outcomes of those species which have a high percentage of catches made by Basque inshore fleet. To analyze the real impact, the effort dynamic of all fleets involved in the fisheries should be modelled.
- **FE** and **SMFB** follows the same trend along the projected period, but **MP\_seq** behaves differently.
- The economic results is worse in **MP\_seq** scenario than in the rest of scenarios. It specially due to sequential behavior of the fleet that is driven by the effort limitations.