AZTI Tool
Evaluation of Management Measures Impact

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Management Strategy Evaluation (MSE)

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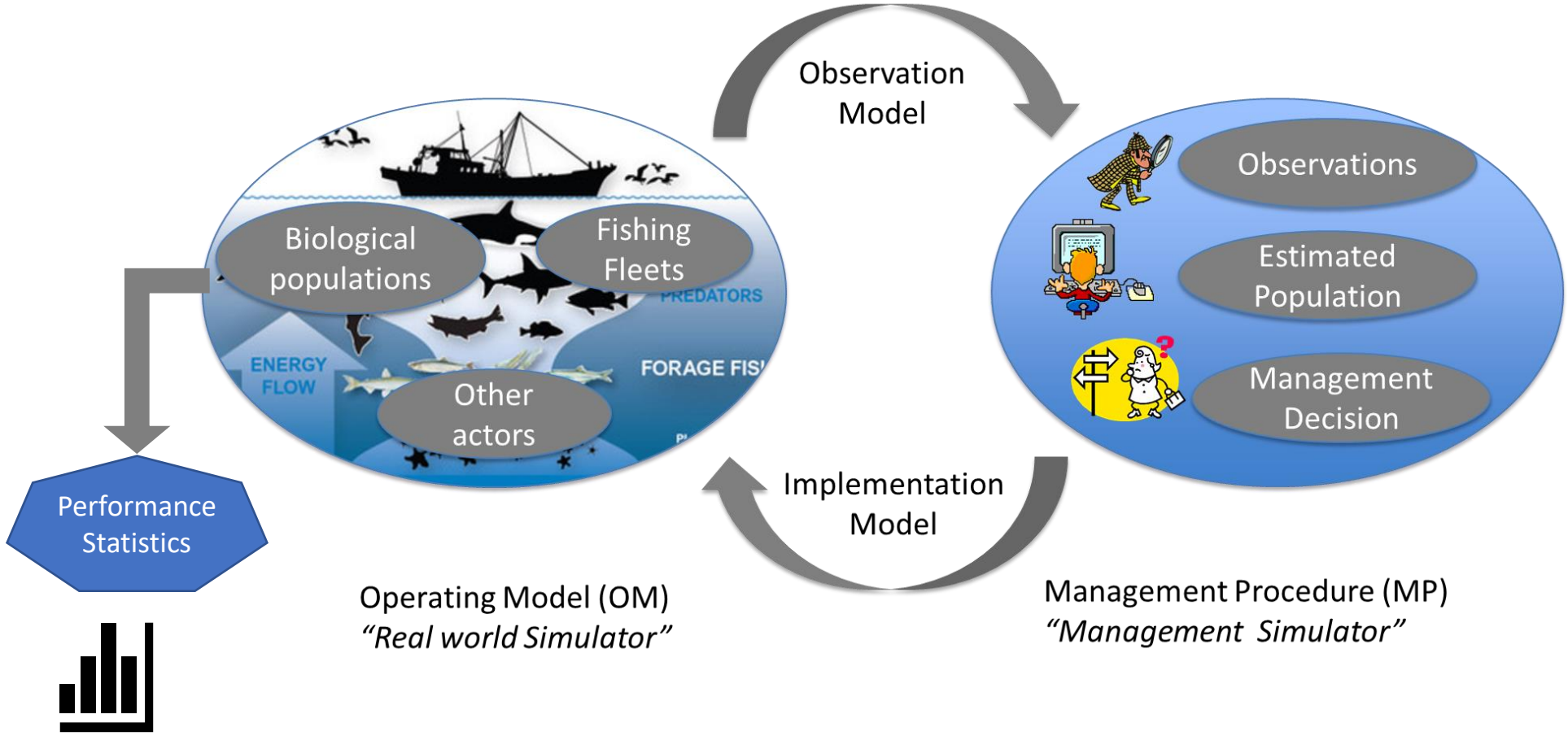


FLBEIA: Bio-Economic Impact Assessment in FLR

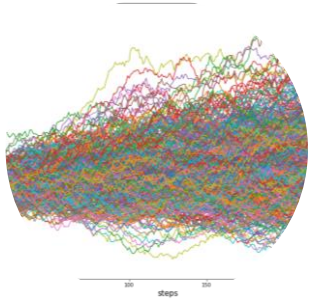
Bio-economic evaluation

MSE

FLBEIA by AZTI

Multi-stock + multi fleet

Source: https://www.researchgate.net/publication/236866843_The_unintended_consequences_of_simplifying_the_sea_Making_the_case_for_complexity



Stochastic

(Monte Carlo simulation)

R package

Seasonal

Source: https://www.istockphoto.com/es/foto/collage-de-la-temporada-de-tree-four-gm1287244794-383509723

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FLBEIA by AZTI

FLBEIA

Resources

- Scientific paper
- Source code: https://github.com/flr/FLBEIA
- Webpage: http://flbeia.azti.es/
- Documentation:
  - https://www.flr-project.org/,
  - https://github.com/flr/FLBEIA/blob/master/vignettes/FLBEIA_manual.pdf

SoftwareX 6 (2017) 141–147

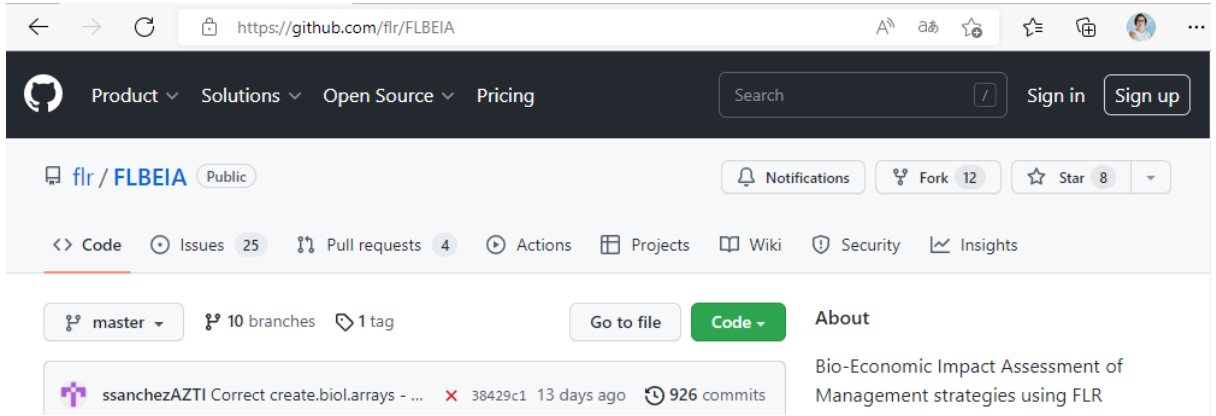
Contents lists available at ScienceDirect

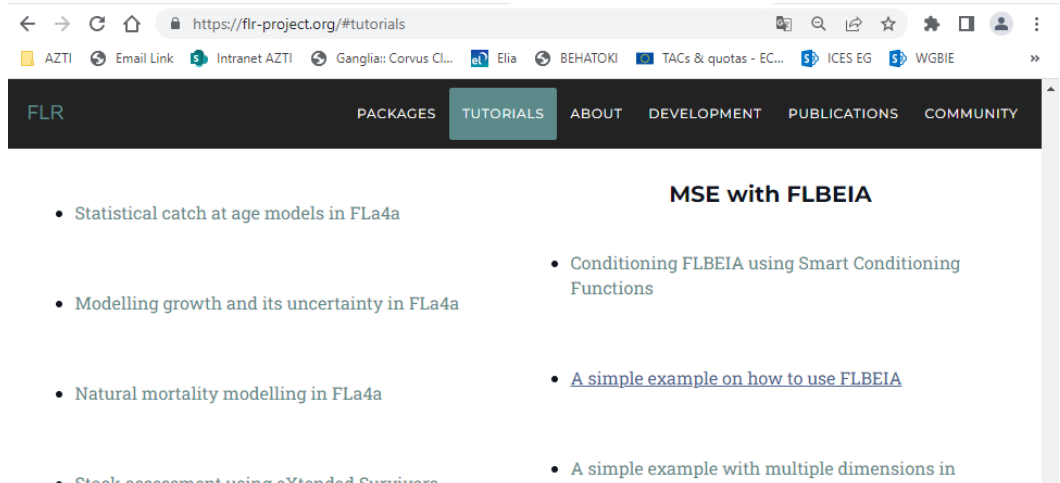
SoftwareX

journal homepage: www.elsevier.com/locate/softx

FLBEIA: A simulation model to conduct Bio-Economic evaluation of fisheries management strategies

Dorleta Garcia [a,*], Sonia Sánchez [b], Raúl Prellezo [a], Agurtzane Urtizberea [b], Marga Andrés [a]





FLBEIA

Applications

Stock-based

- Bay of Biscay anchovy.
- Iberian sardine.
- Bay of Biscay sardine.
- Northern hake.
- Redfish.
- Greenland Halibut - NAFO.
- NAFO COD (3M).
- …

Fleet-based

- Basque offshore fleet.
- Basque inshore fleet.
- Spanish OPPF-4 fleet.
- French mixed fisheries.
- Mixed Fisheries:
  - Iberian Waters
  - Bay of Biscay
  - North Sea
  - Celtic Sea
- Data-poor fisheries in the red sea.
- …

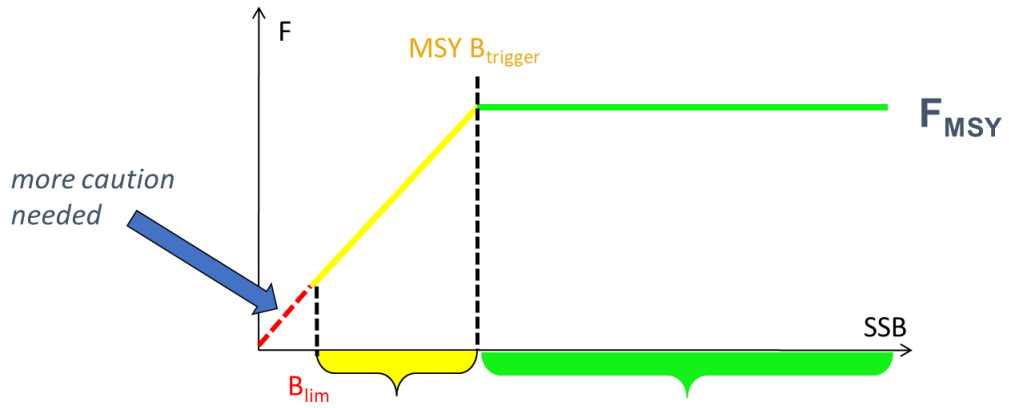
Management Objectives

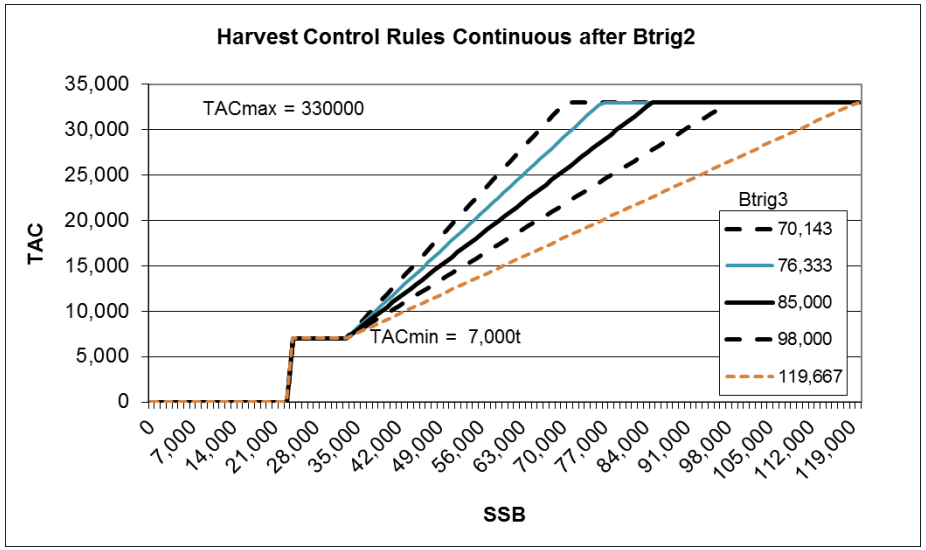
Definition of clear objectives is required

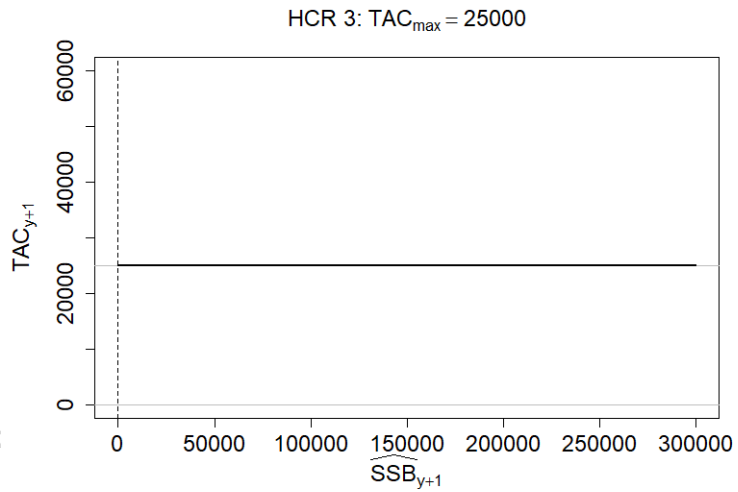
- Stock or fleet management?
- Yearly or multi-year management?
- Fixed TACs or HCR-based?
- Management objectives:
    i. Biological sustainability (level of acceptable risks)
    ii. Catch stability (maximum % TAC variation, minimum or maximum TACs….)
    iii. Catch levels based on MSY, % above B_{lim}…

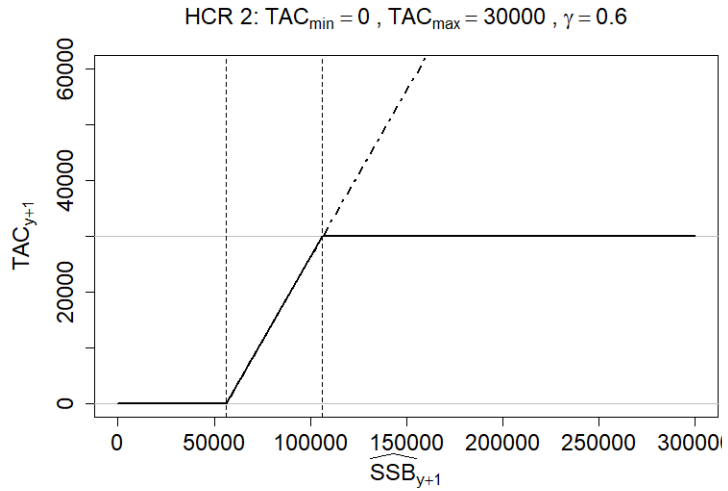
Examples: long-term management plans

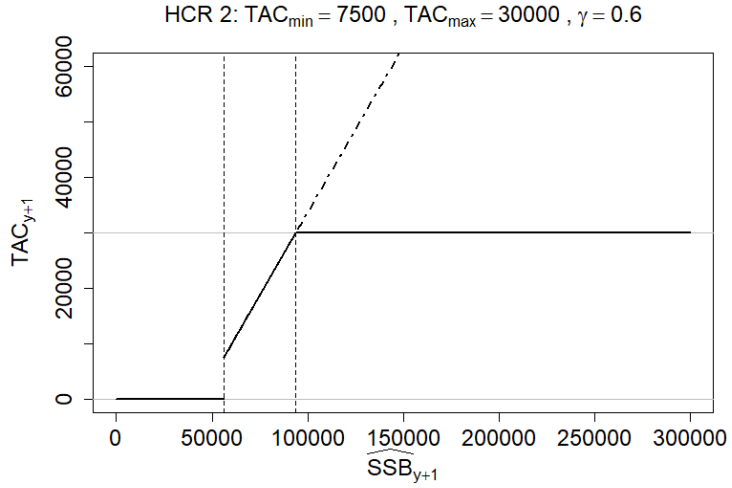
- Harvest Control Rules (single stock)





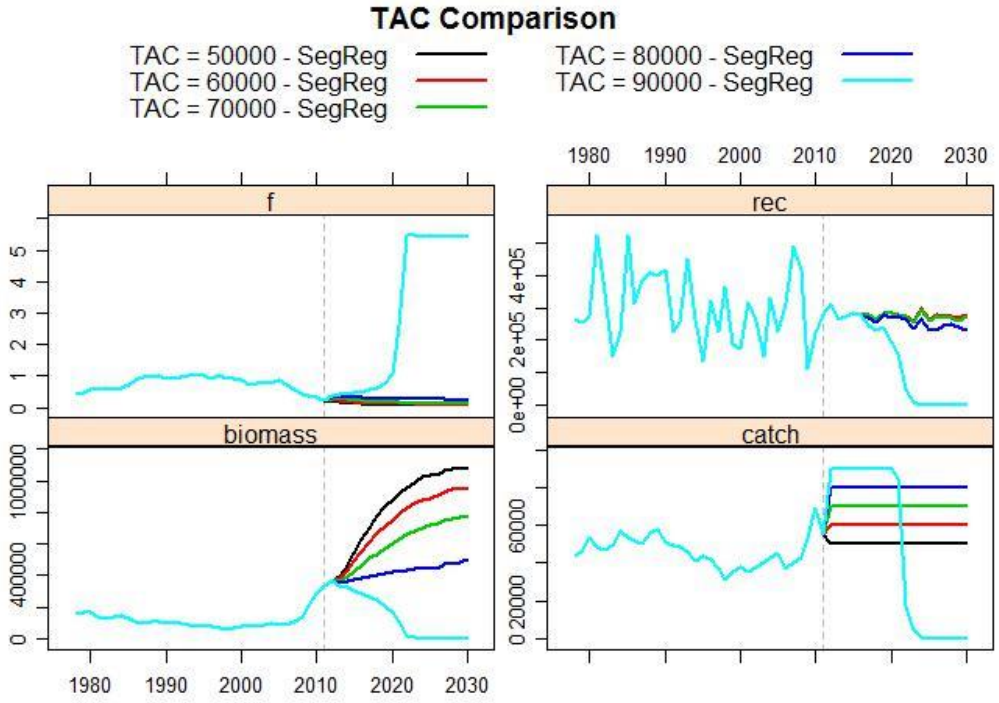


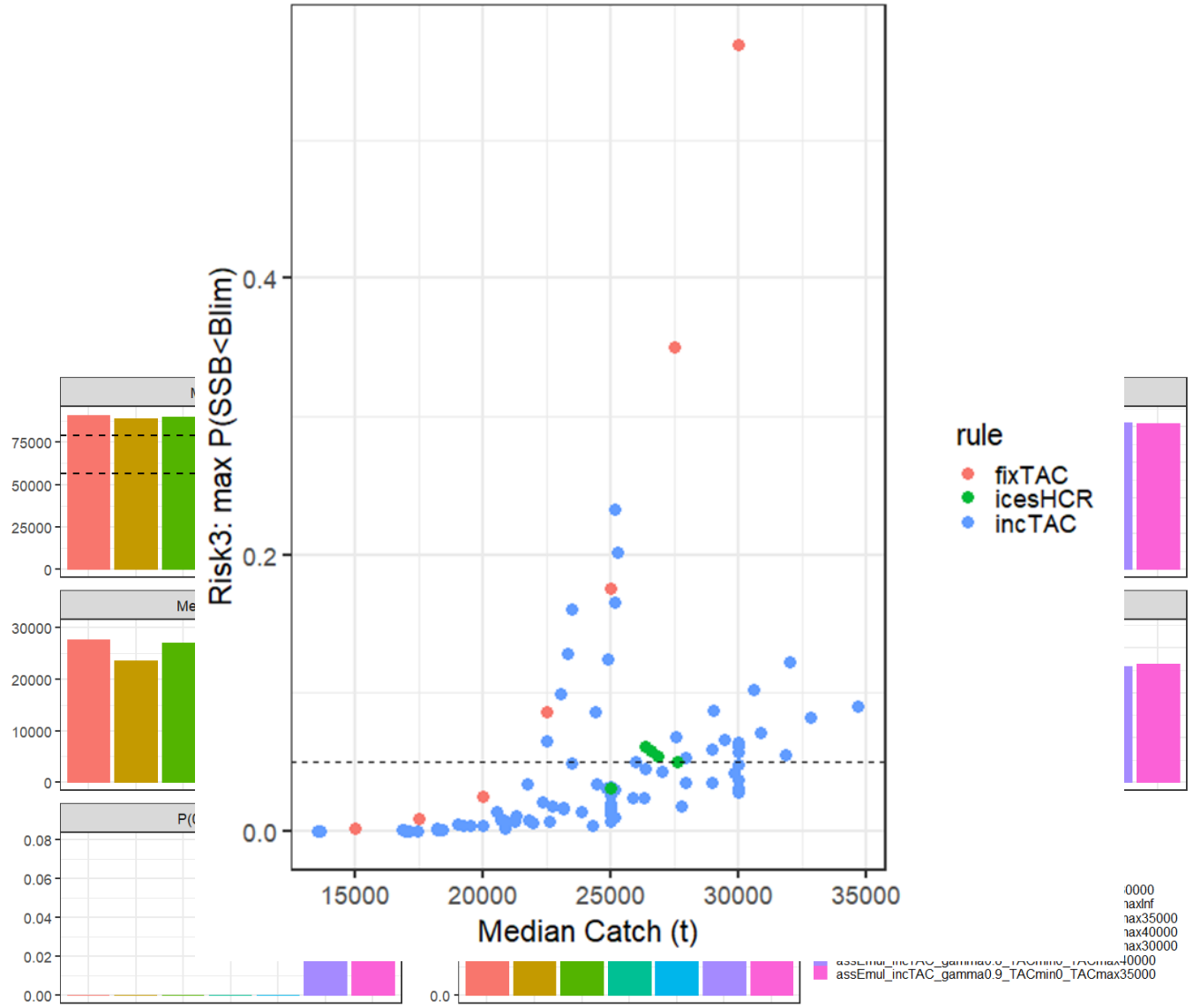




Examples: long-term management plans

- Results





Examples: long-term management plans

- Harvest Control Rules (multi stock)

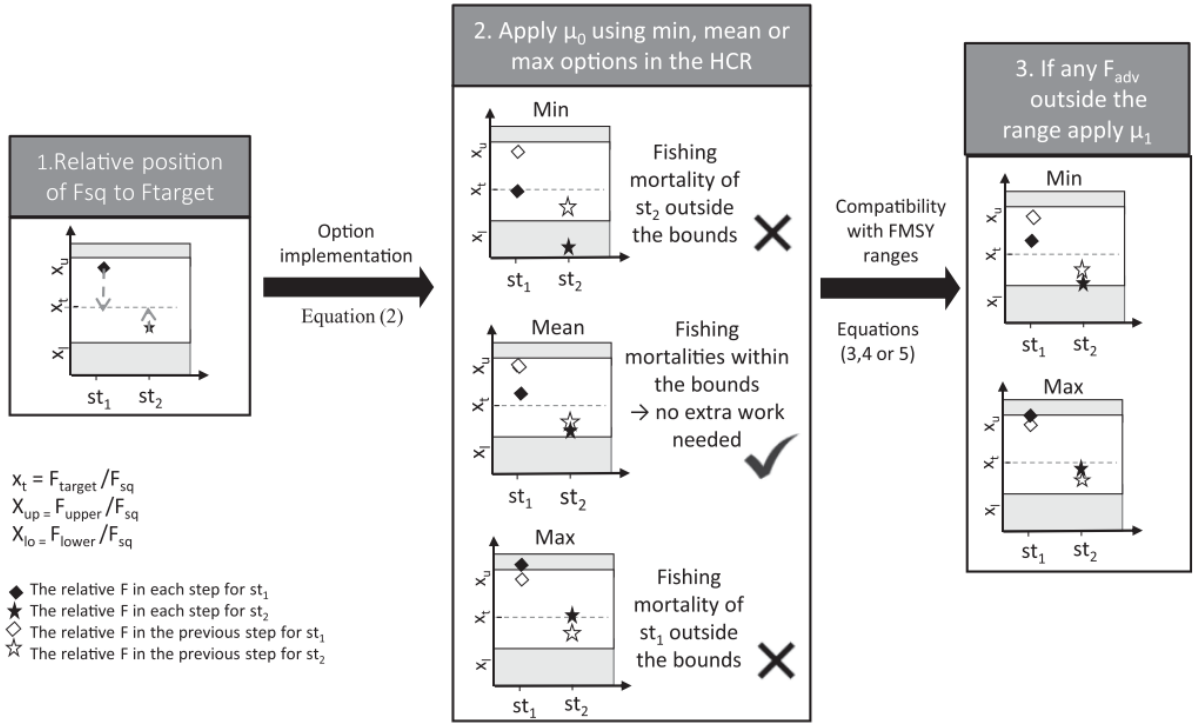
Multi-stock HCR

A multi-stock HCR was developed with the objective of fulfilling the following conditions:

(1) To produce compatible catch advice among the stocks.

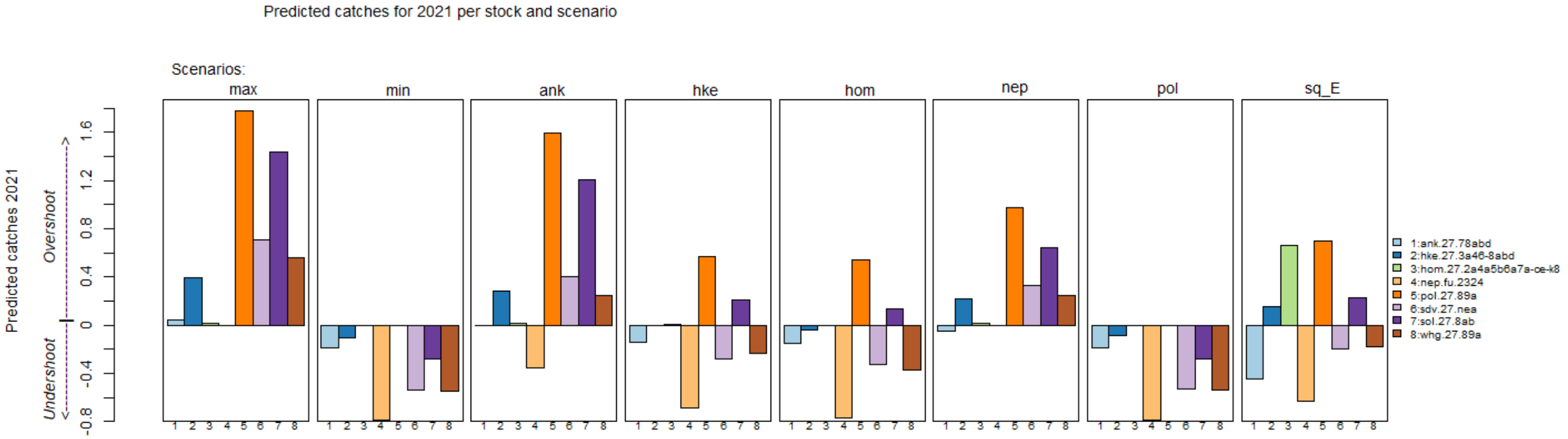
(2) To maximize uptake of fishing opportunities.

(3) To generate fishing mortality levels compatible with FMRs.



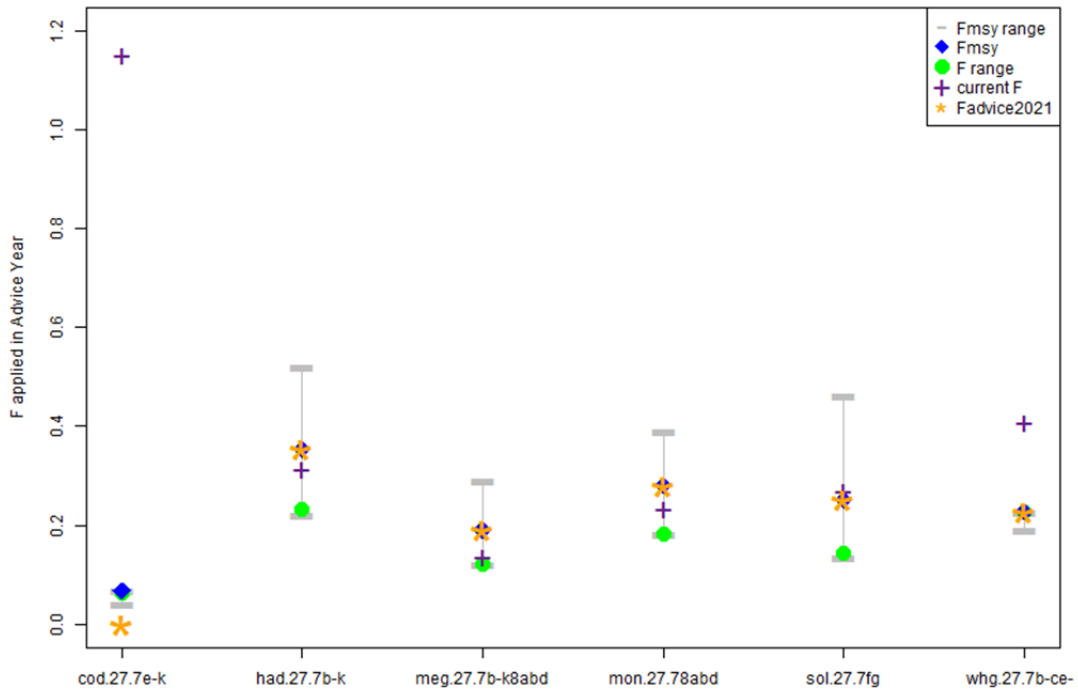
Examples: impact of ICES advice on Mixed fisheries

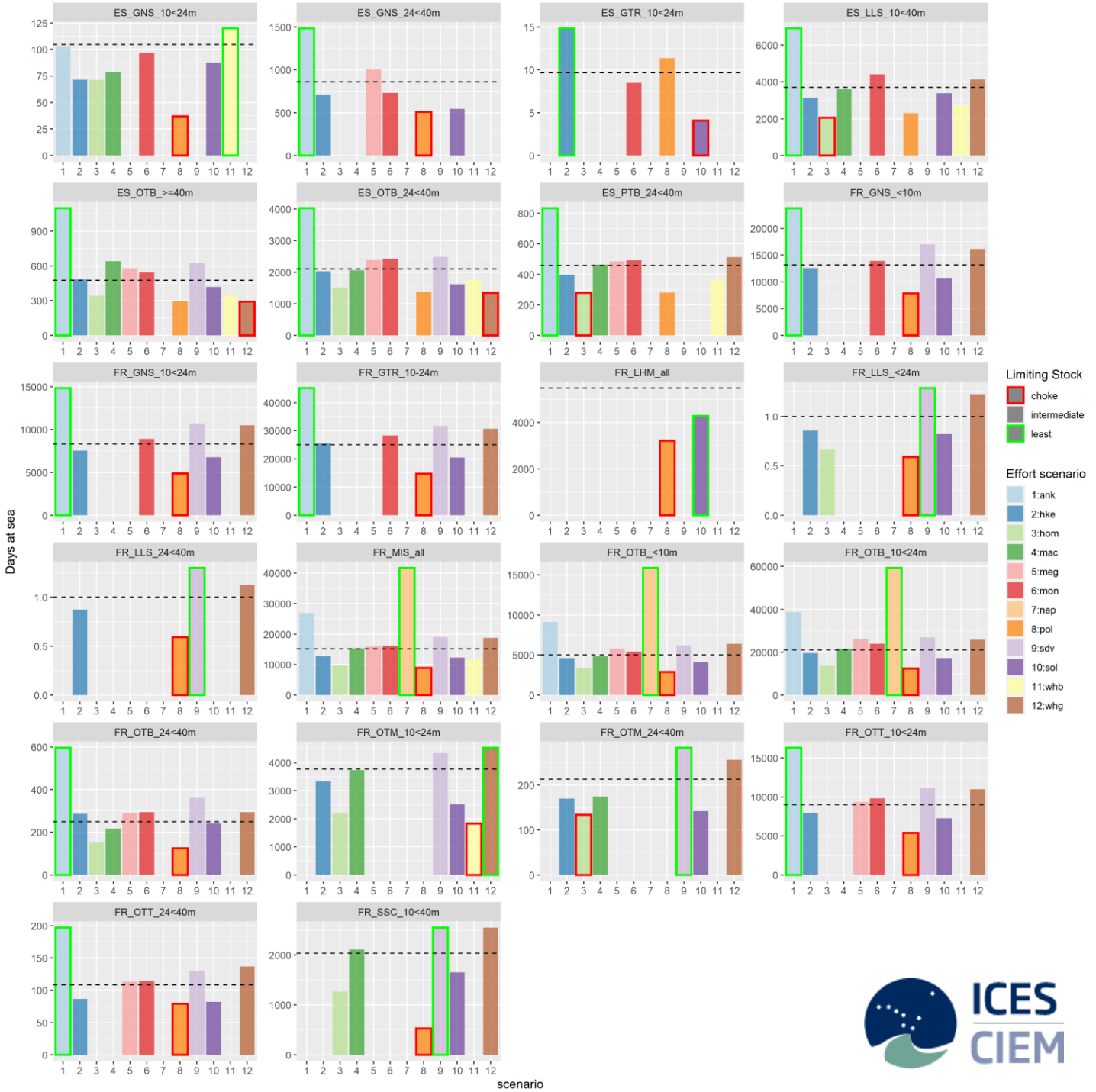
- Bay of Biscay



Examples: impact

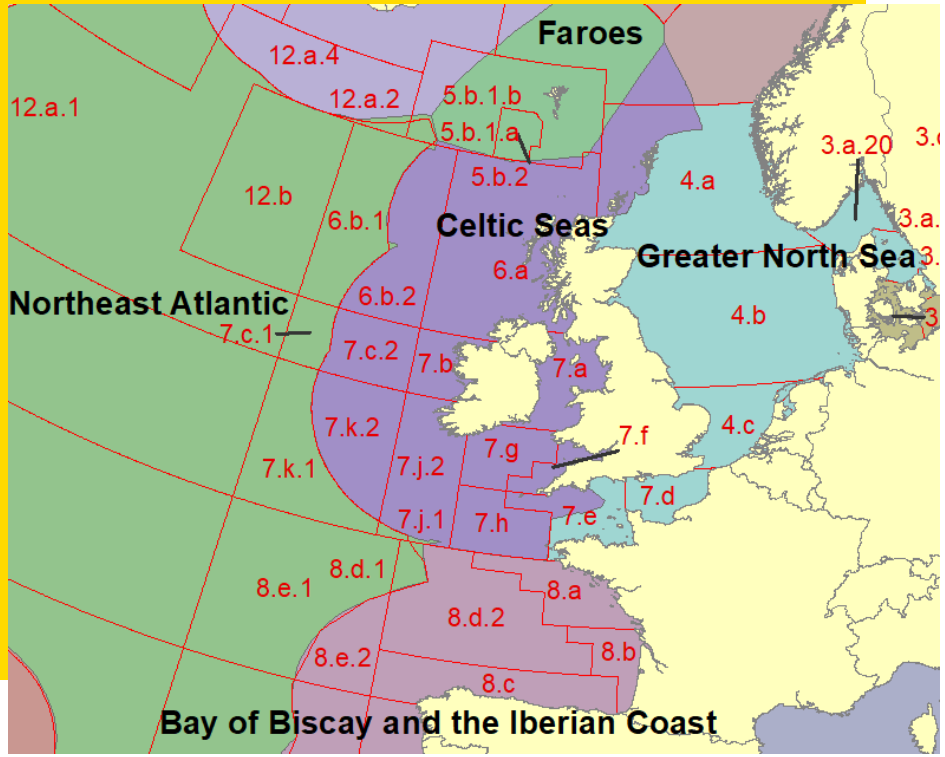
- Bay of Biscay





OPPF4 fleet

ICES subarea 7



ICES subarea 7: Irish Sea, West of Ireland, Porcupine Bank, Eastern and Western English Channel, Bristol Channel, Celtic Sea North and South, and Southwest of Ireland - East and West

OPPF-4 fleet

OBJECTIVE:
Assess the impact of the socio-economic impact of the implementation of management measures in the fleet.

Model conditioning: data requirements

- Stocks: based on best available science (e.g. ICES assessments)

- Fleets: requires fleet information with specific resolution
    - Effort
    - Fixed & variable costs
    - Prices
    - …

OPPF-4 fleet

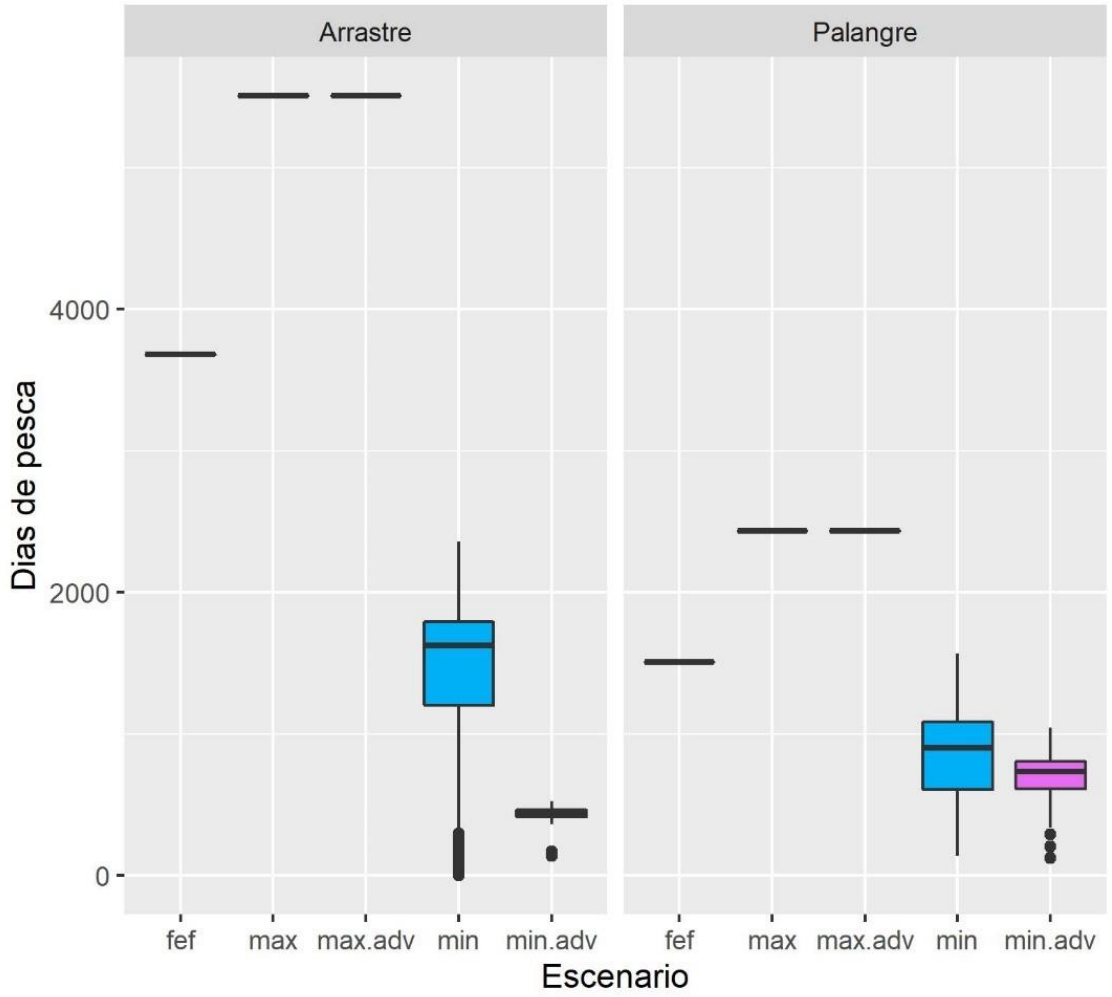
OBJECTIVE:
Assess the impact of the socio-economic impact of the implementation of management measures in the fleet.

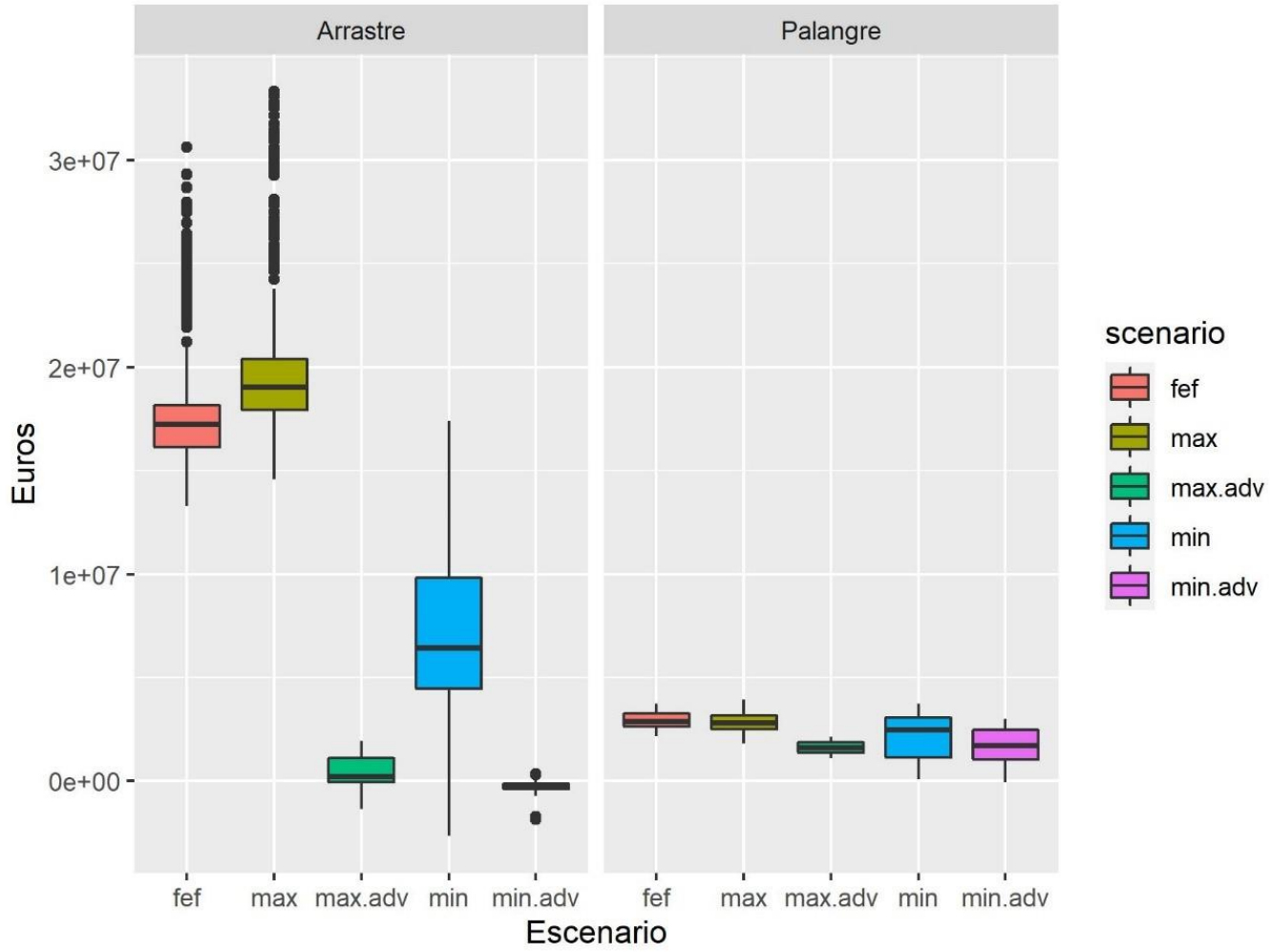
Simulations:

- Assessment of specific management measures (e.g. ICES advice on quotas for following year)

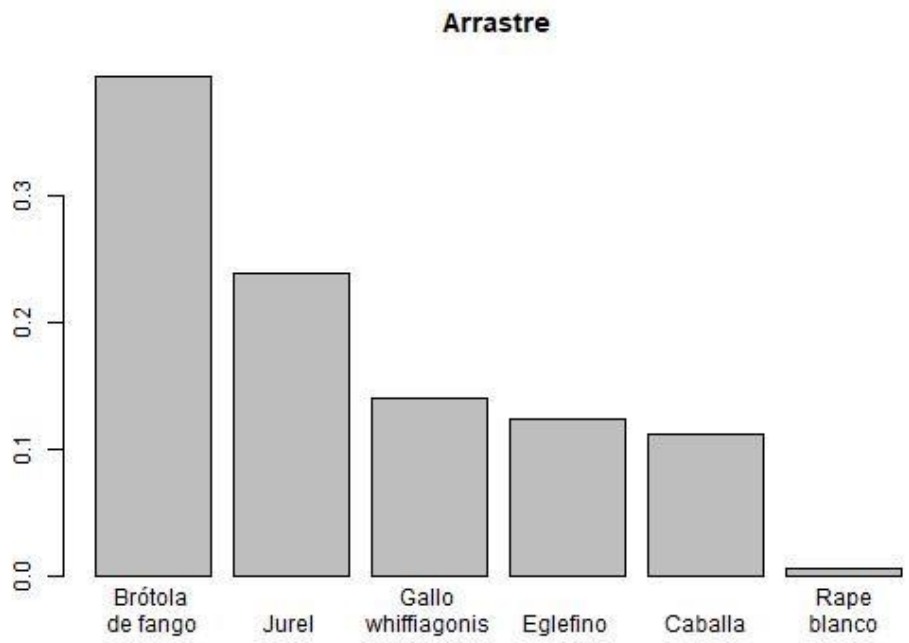
- Alternative strategies (under landing obligation):
    - Same effort as in previous years (fef)
    - Stop fishing when any quota is exhausted (min)
    - Continue fishing until last quota is exhausted (max) --> under LO the excess is discarded

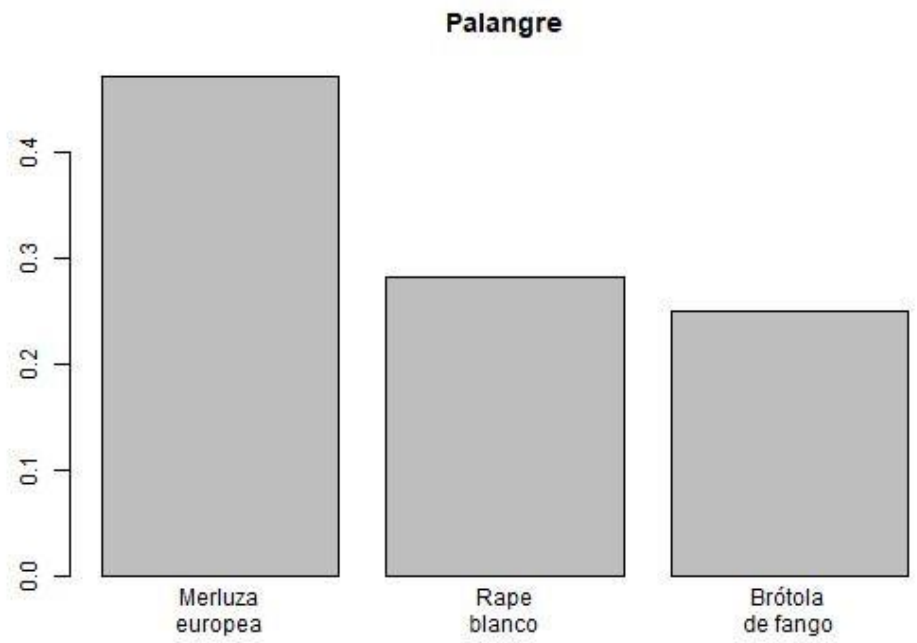
Results: impact of ICES advice on OPPF-4 fleet





Results: impact of ICES advice on OPPF-4 fleet



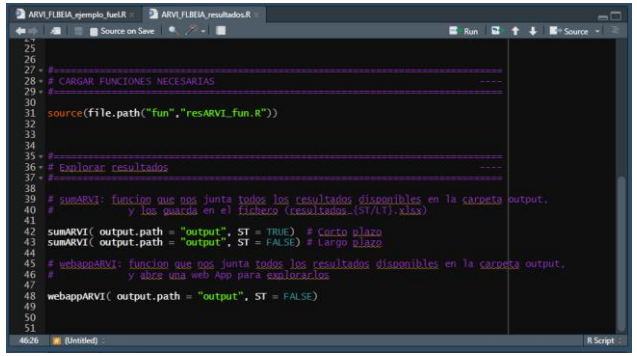


OPPF-4 fleet: stakeholders

USER-FRIENDLY TOOLS

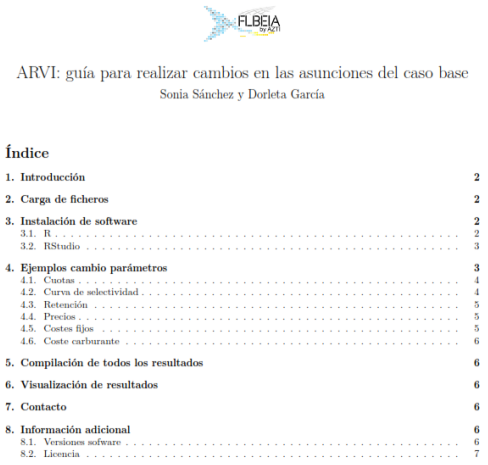
R code

Running alternative scenarios (short-term)



Tutorial

How to proceed



FLBEIA

ARVI: guía para realizar cambios en las asunciones del caso base

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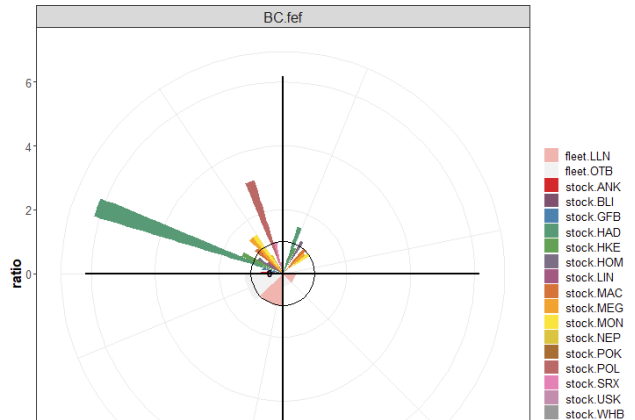
Índice

Shiny app

Visualising conditioning and results



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