



Mixed-fisheries management plans in Europe: Can we formulate a simplebioeconomicadvice on a complex reality?Examples from the North Sea

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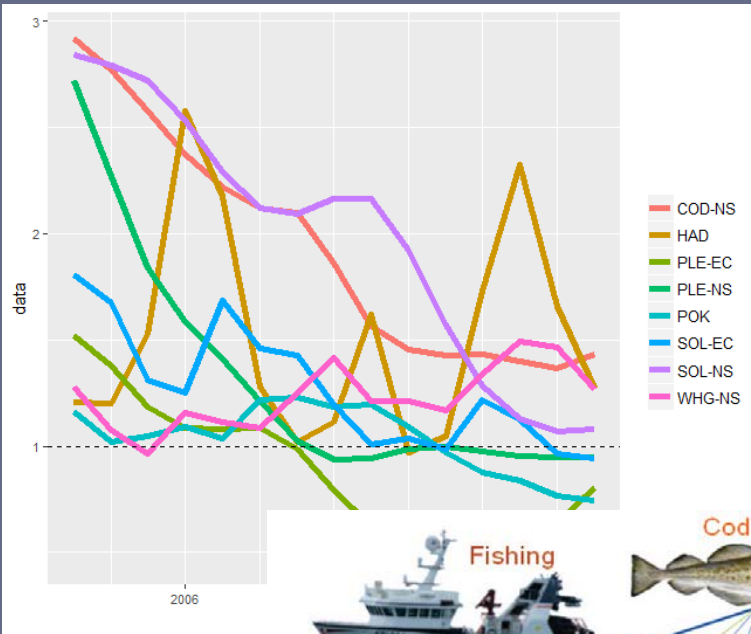
Mixed-fisheries management plans in Europe: Can we formulate a simple bioeconomic advice on a complex reality?

Examples from the North Sea

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Youen Vermard



MSY in mixed-fisheries... Do we have a problem?

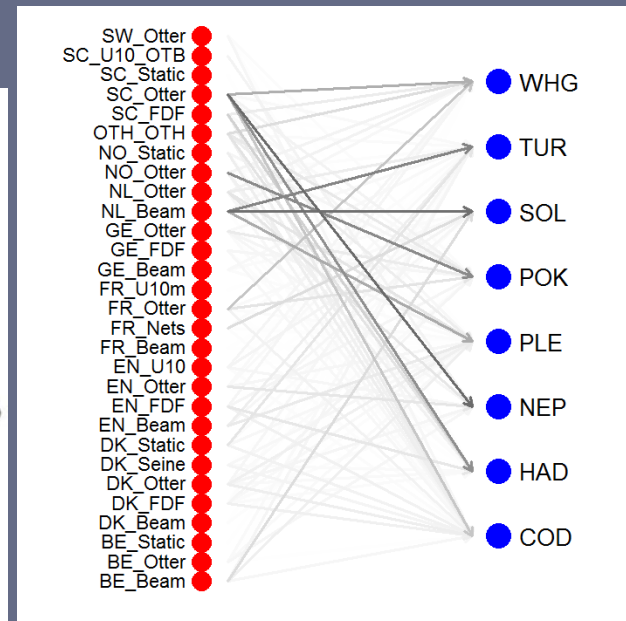
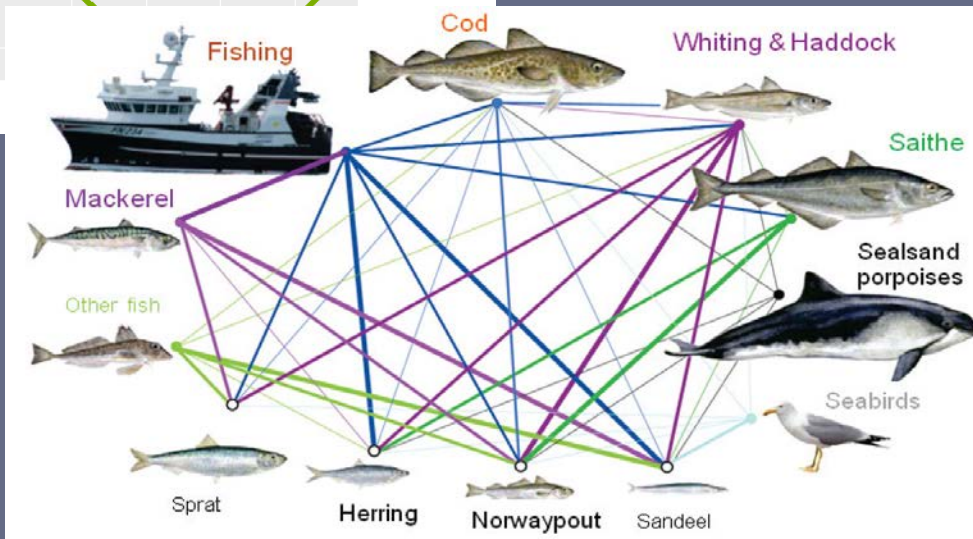


F/Fmsy, North Sea stocks

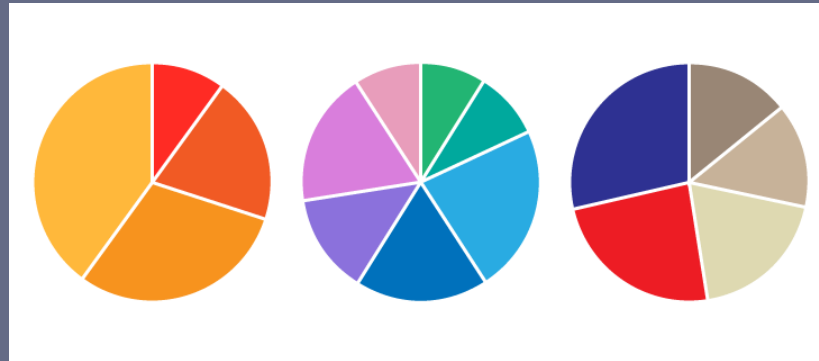


Biological interactions

Technical interactions



Further complicated by EU policy constraints

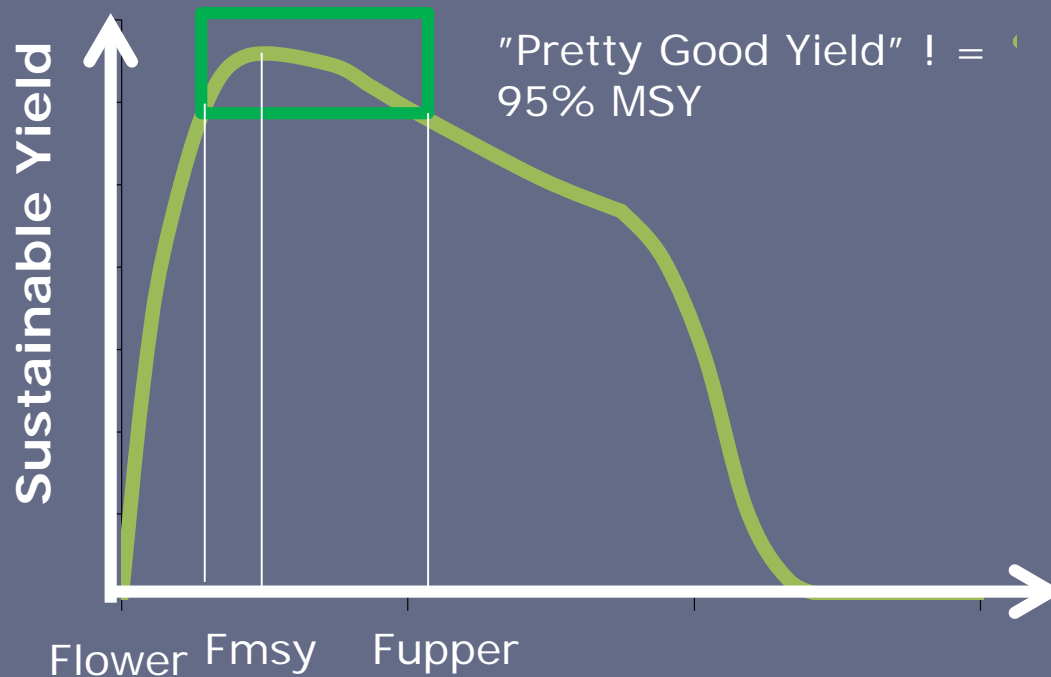


Relative stability of historical TAC sharing

Choke categories:

- Category 1: Sufficient quota at Member State level.
- Category 2: Insufficient quota at Member State level.
- Category 3: Insufficient quota at EU level.

EU Mixed fisheries management plans



- The plan also include provisions for
- Bycatch stocks
 - Landing obligations
 - Technical measures

4. Notwithstanding paragraphs 2 and 3, fishing opportunities for a stock may be fixed in accordance with the fishing mortality ranges set out in Annex I, column B, provided that the stock concerned is above the minimum spawning stock biomass reference point set out in Annex II, column A:

- if, on the basis of scientific advice or evidence, it is necessary for the achievement of the objectives laid down in Article 3 in the case of mixed fisheries;
- if, on the basis of scientific advice or evidence, it is necessary to avoid serious harm to a stock caused by intra- or inter-species stock dynamics; or

How to provide scientific advice in this multidimensional plan?

MANAGERS' SORT OF QUESTIONS...

- How are the species linked with each others?
- What are the risks of not achieving the management objectives for each individual stock, and what are the consequences if we don't?
- What are the choke species, and for who?
- What are the economic incentives?
- What is the impact at short and medium-term?

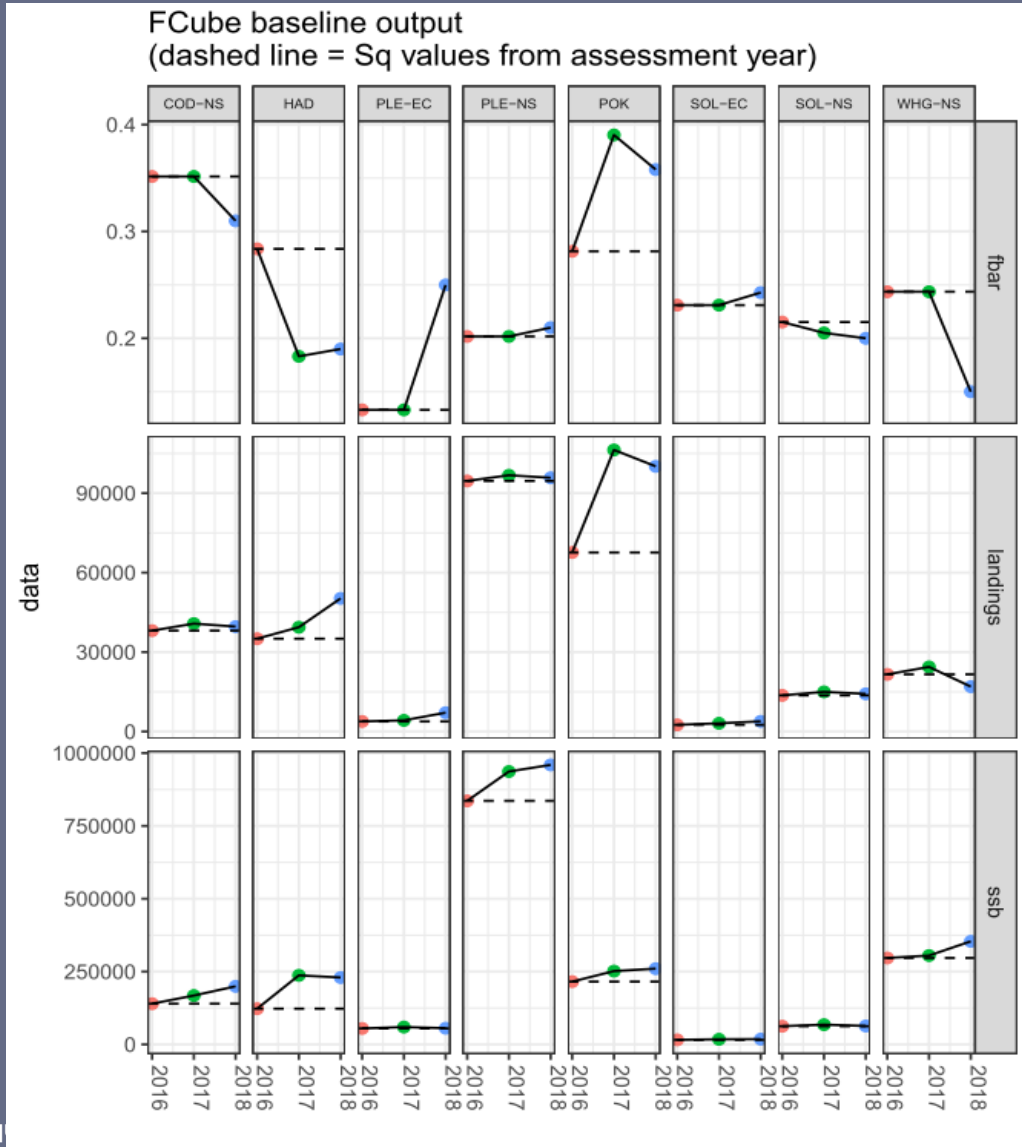
SCIENTISTS' SORT OF QUESTIONS

- Which models and data are available? Are they compatible and consistent?
- Which assumptions for which parameters?
- Which scenarios to run?
- Which results to present?

Starting from single-stock advice for next year's fish quota



(2017 advice)



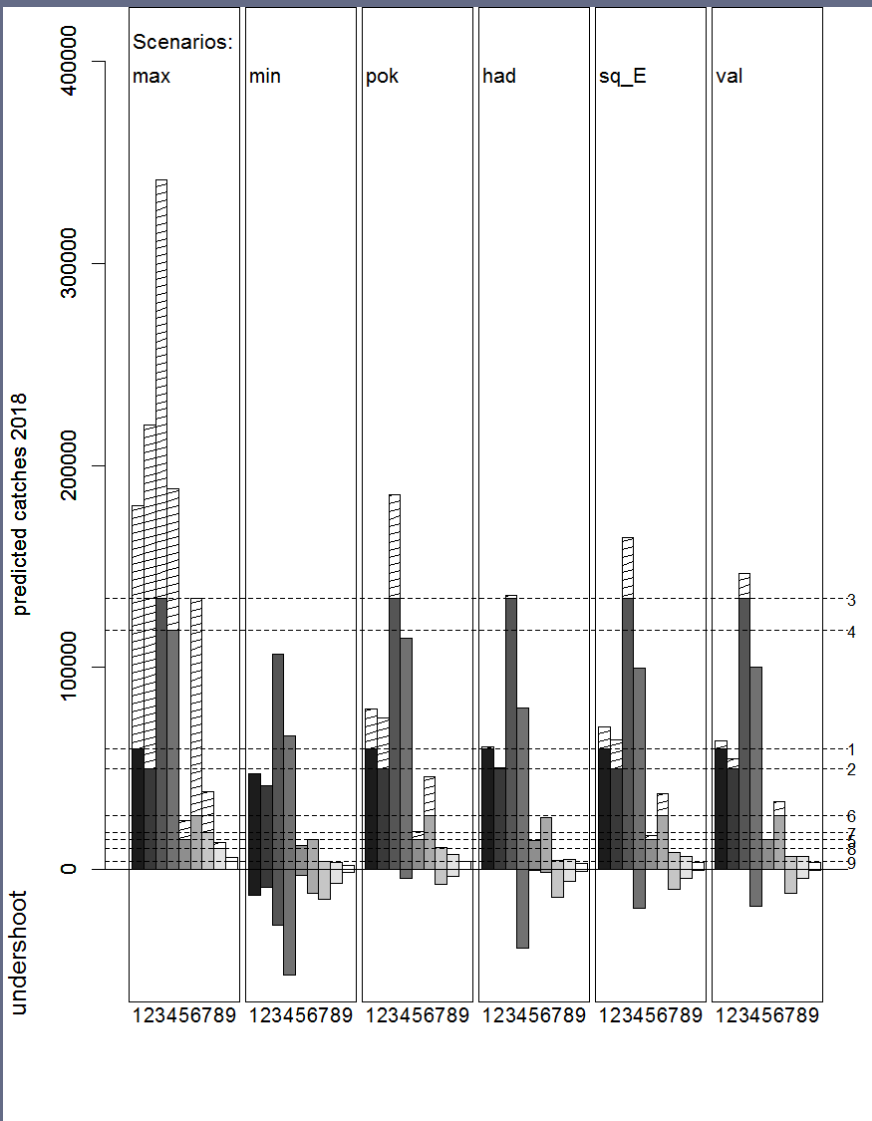
Fisheries mortality

Landings

SSB



Short-term Mixed-fisheries advice (I): Risks of over/under-shoots



**Mixed fisheries 2018:
Most limiting** (potential choke-species):

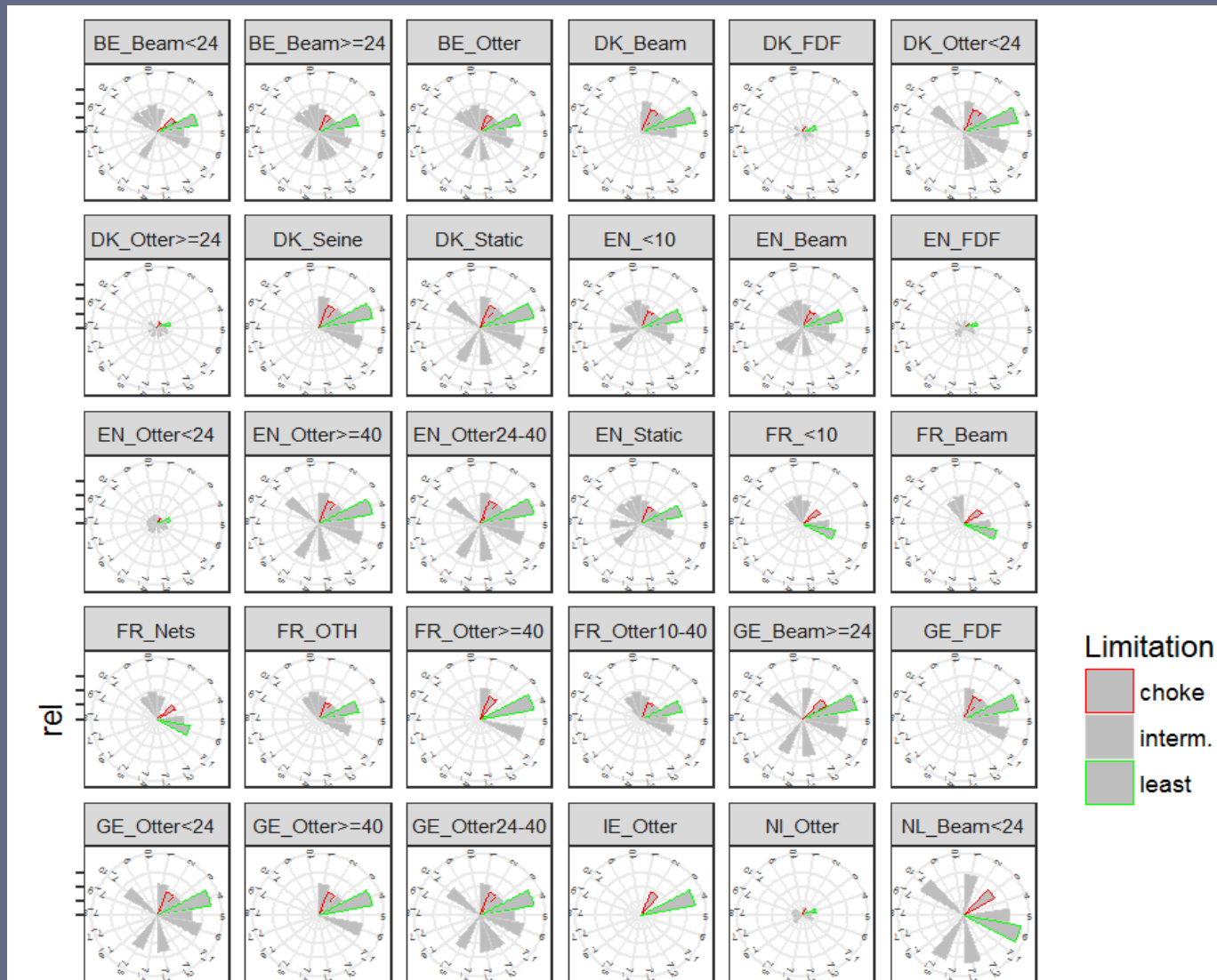
- Haddock
- Whiting

Least limiting:

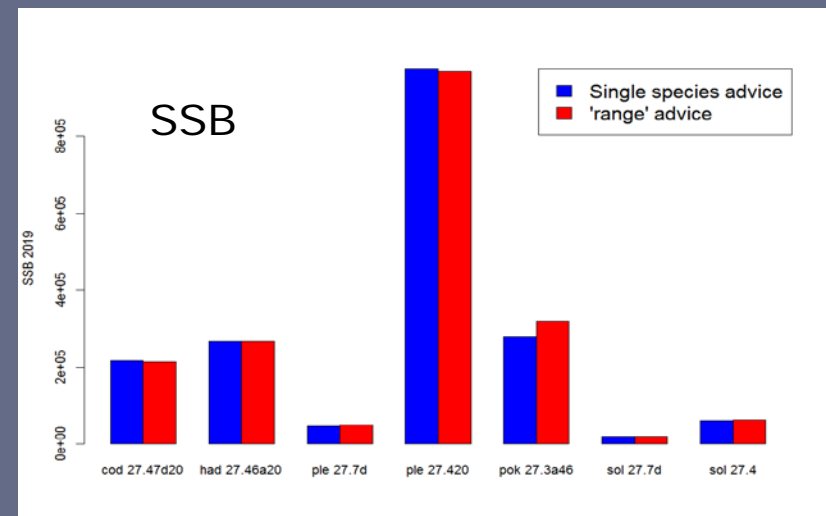
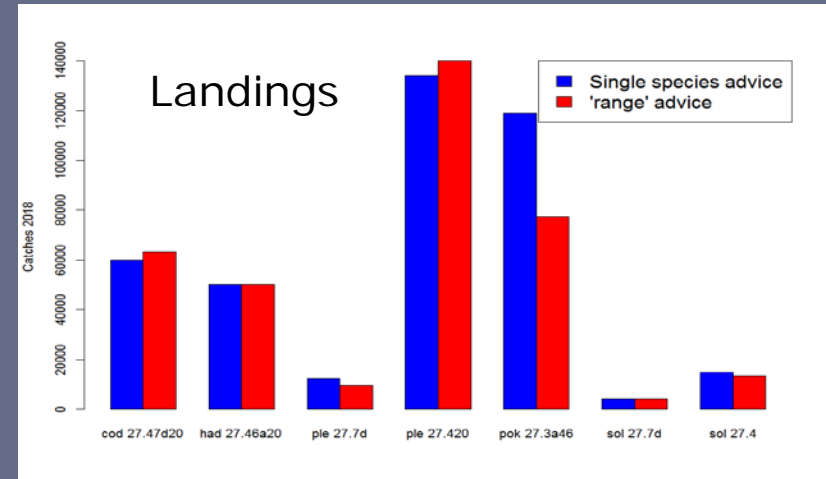
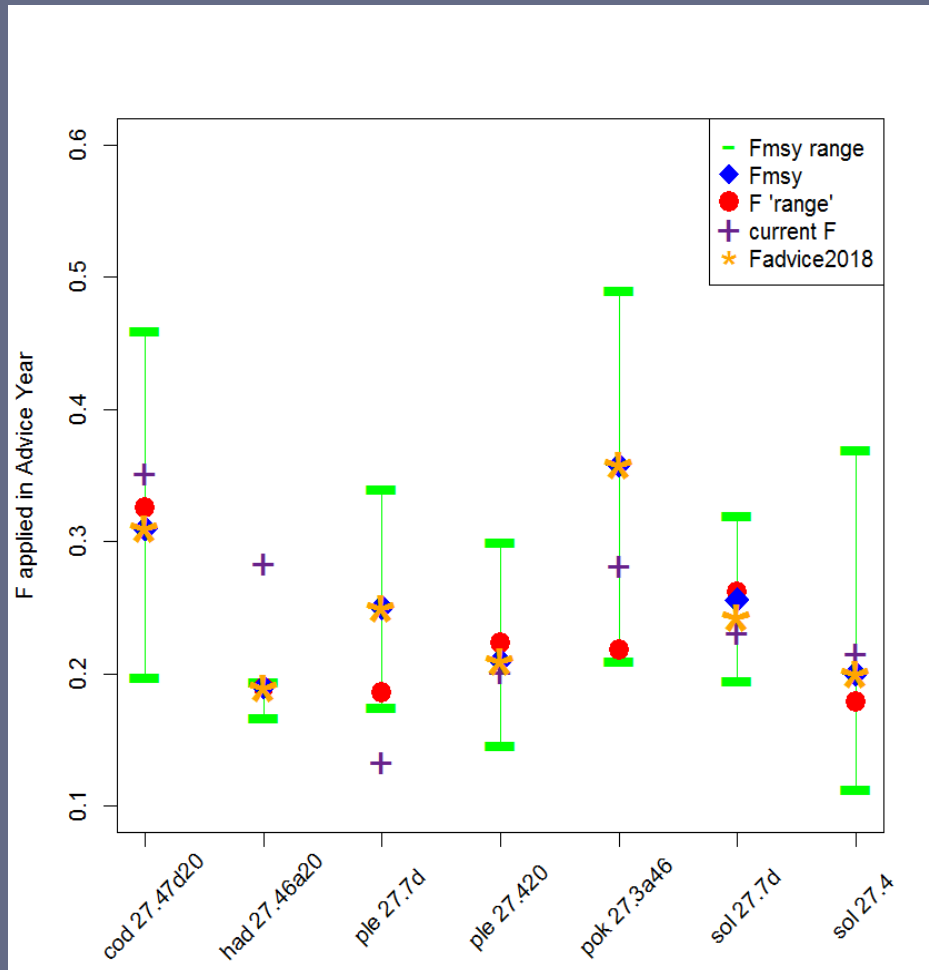
- Plaice
- Saithe
- Some Nephrops stocks

Short-term Mixed-fisheries advice (II): Choke species by fleet

(Subset)



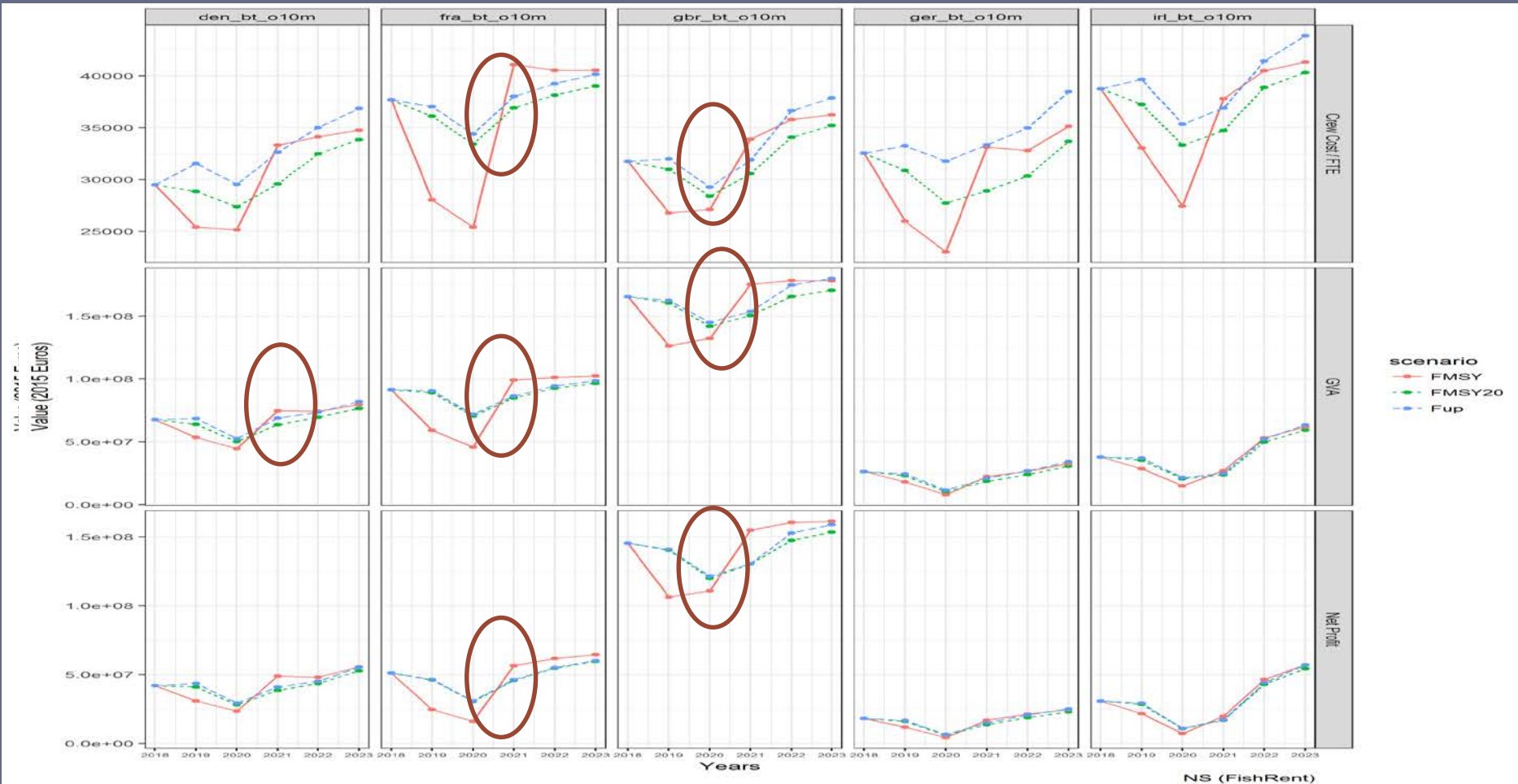
Short-term Mixed-fisheries advice (III): Minimising risks within Fmsy ranges



Short vs. medium-term bioeconomic impact analyses (I)



Higher TACs (Fupper) maintains the short term perspective (better results next year)
 But in the mid term there is a shift (due to the higher F's)

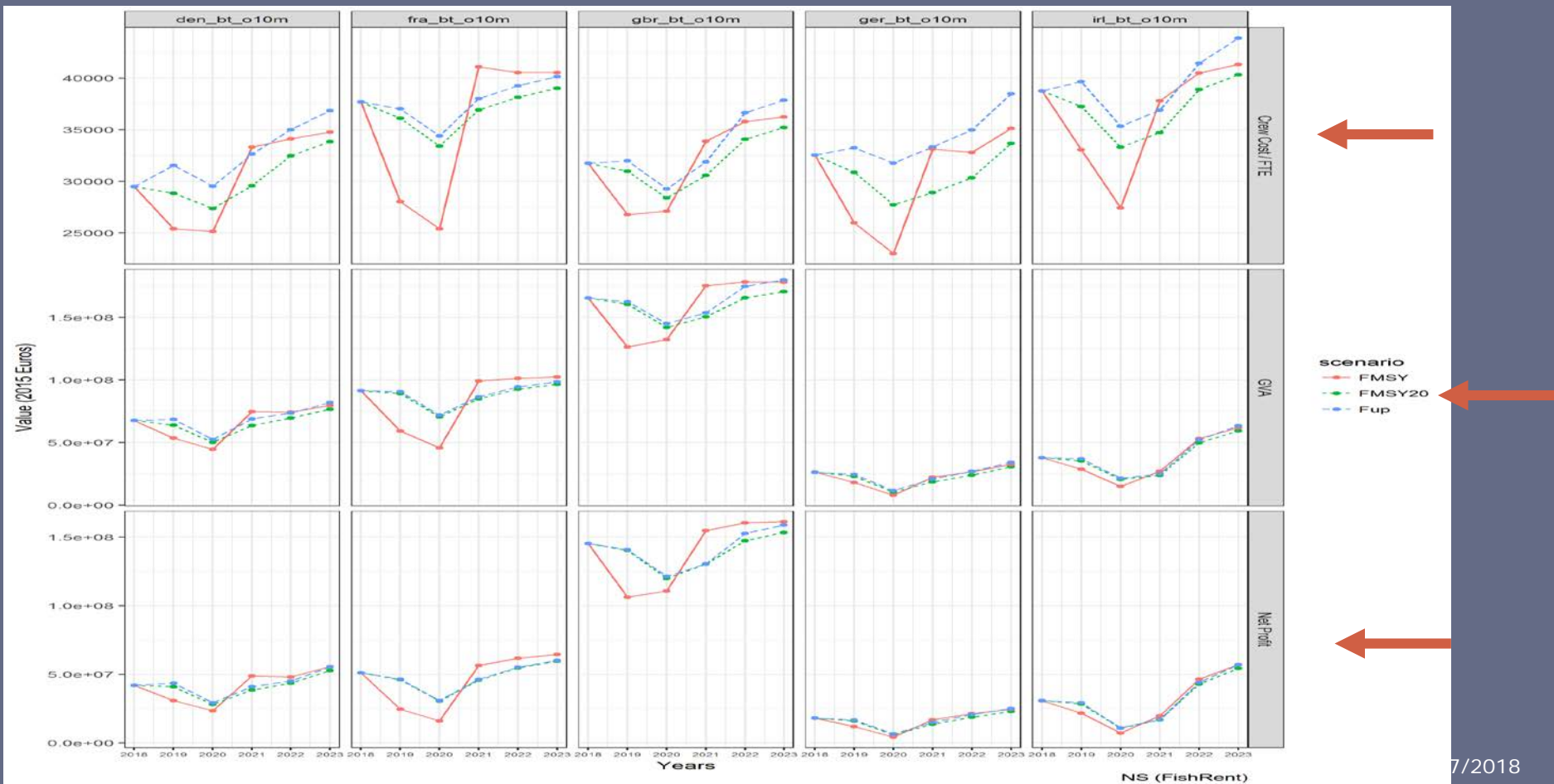


Short vs. medium-term bioeconomic impact analyses (II)



Projecting further (2023)

perspective for society (GVA), capital (Net profit) and labour (Wages)



Short vs. medium-term bioeconomic impact analyses (III)



Changes in likely choke species over time

Fleet Segment	Scenario	2019	2020	2021	2022	2023
den_bt_o10m	FMSY19	Hake	Hake	Hake	Hake	Hake
	FMSY20	Hake	Hake	Hake	Hake	Hake
	FMSYUP	haddock	haddock	haddock	haddock	haddock
fra_bt_o10m	FMSY19	Cod	Cod	Cod	Cod	Cod
	FMSY20	Cod	Cod	Cod	Cod	Cod
	FMSYUP	Cod	Cod	Cod	Cod	Cod
gbr_bt_o10m	FMSY19	Hake	Hake	Hake	Hake	Hake
	FMSY20	Hake	Hake	Hake	Hake	Hake
	FMSYUP	Cod	Cod	Cod	Haddock & Cod	Haddock & Cod
ger_bt_o10m	FMSY19	Hake	Hake	Hake	Hake	Hake
	FMSY20	Hake	Hake	Hake	Hake	Hake
	FMSYUP	Cod	Cod	Cod	Cod	Cod
irl_bt_o10m	FMSY19	Cod & Hake	Cod & Hake	Hake	Hake	Hake
	FMSY20	Hake	Hake	Hake	Hake	Hake
	FMSYUP	Cod	Cod	Cod	Cod	Cod

Summary



- FROM ACADEMIA TO ADVICE...
 - Many bio-economic models available in academia, focusing on different aspects of the same fisheries
 - Bioeconomic advice not standardised as biological advice
 - Not all models thus equally consistent, updated and timely
 - Challenge to define what is needed
- MIXED-FISHERIES MSY AND MANAGEMENT PLANS
 - No unique best solution
 - Trade-offs between stocks and between short and medium-term
 - Choke species vary over years and fleets
- WHAT'S NEXT?
 - 2018: test case – First year of implementation of the North Sea plan
 - Co-developement between managers and scientists

As simple as possible,

As complicated as necessary

