Main issues and results related to the West Med effort regime

Clara Ulrich, STECF Chair
MEDAC
17 February 2021

A suite of STECF Working Groups

- Part I (EWG 18-09): Pros and cons of effort regimes and review worldwide; First analyses of F-E relationships; Analyses of differences in CPUE per trip; review of changes in Med gear technology
- Part II (EWG 18-13): Continuation of the above; comparison of datasets; Road Map for mixed fisheries advice
- Part III (EWG 19-01): Review of existing bioeconomic models in West Med mixed fisheries and development workplan
- Part IV (EWG 19-14): Further progresses on models
- Part V (EWG 20-13): Update of models and running of scenarios

Each report available on https://stecf.jrc.ec.europa.eu/reports/management-plans

ABOUT MANAGING MIXED FISHERIES WITH EFFORT LIMITS

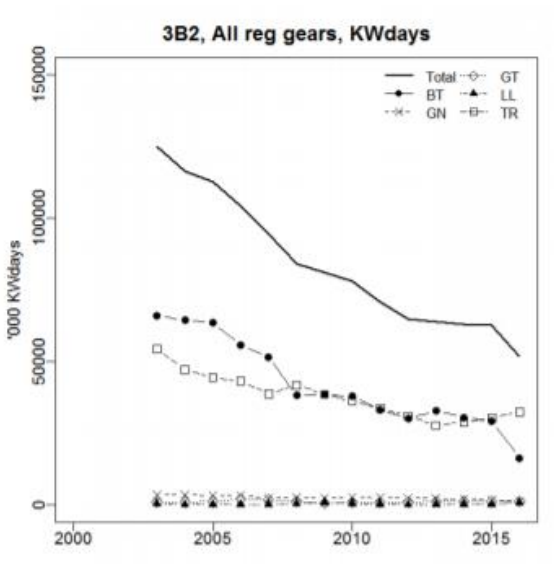
general considerations

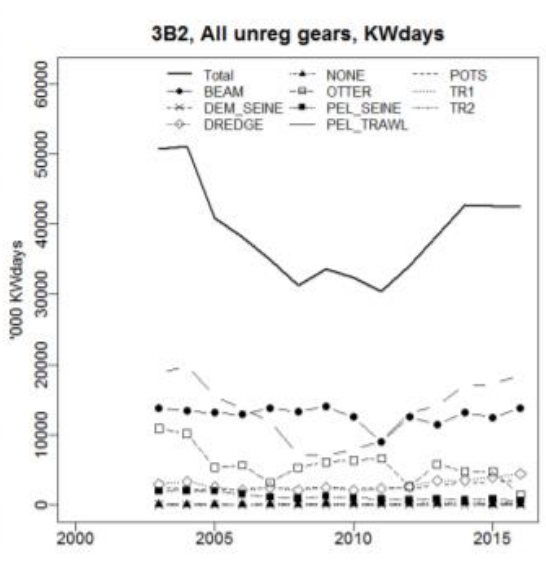
EWG 18-09, EWG 18-13

Effort regimes in the world – what did they teach us?

EWG 18-09

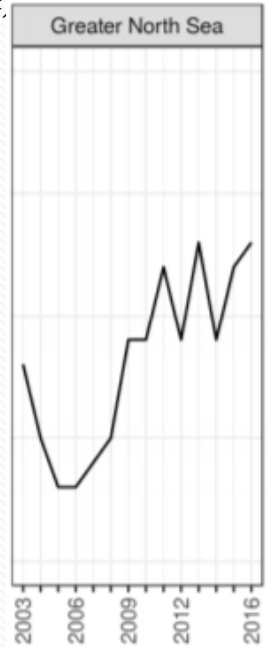
- Faroes Islands: Pure effort regime since 1998… system not limiting, overfishing. Will re-introduce TACs in 2019
- Queensland, Australia: Tradable effort units since 2001… Complex system with conversion rules. has re-introduced harvest limits in 2016
- EU effort regimes in the Baltic and Atlantic: effort limitations set in addition to TACs, either as fast reductions (-10% per year) or indexed on F reduction…





<- Effort trends in the North Sea
(STECF 17-09, FDI database)

Nbr of stocks where F≤Fmsy ->
(STECF 18-01, CFP monitoring)



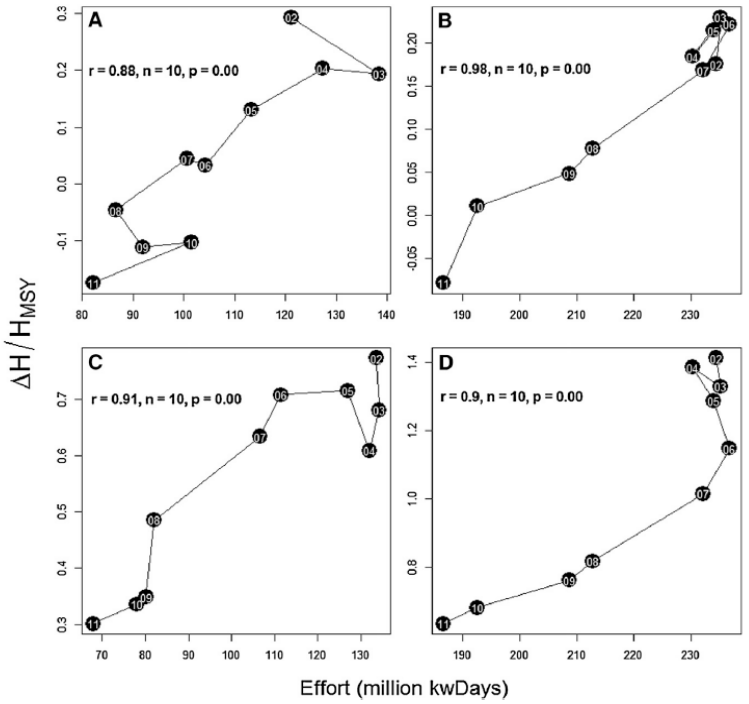
Effort regimes in the world – what did they teach us?

EWG 18-09

- *Monitoring and control: Is it really easier to measure effort than catches?*
- *Measure and definition of nominal effort: Hours, days, kWdays?*
- *Relationship between nominal fishing effort and fishing mortality*
- *Effective fishing effort, targeting behavior and skipper effect*
- *Vessels move to less regulated segments*
- *Input substitution, technological creep and hyperstability*
- *Idle overcapacity (inactive and partly active vessels)*

- *Pros and cons of TAC vs TAE*
- *hybrid system best: limit effort and monitor that catches decrease*

=> What are the implications for the Western Med?

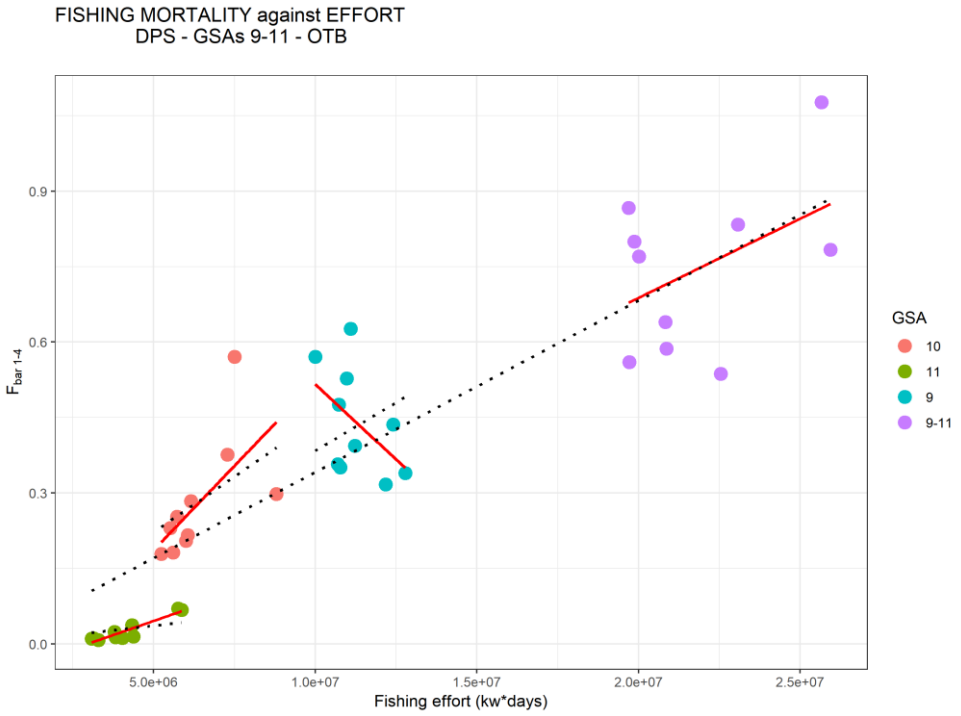


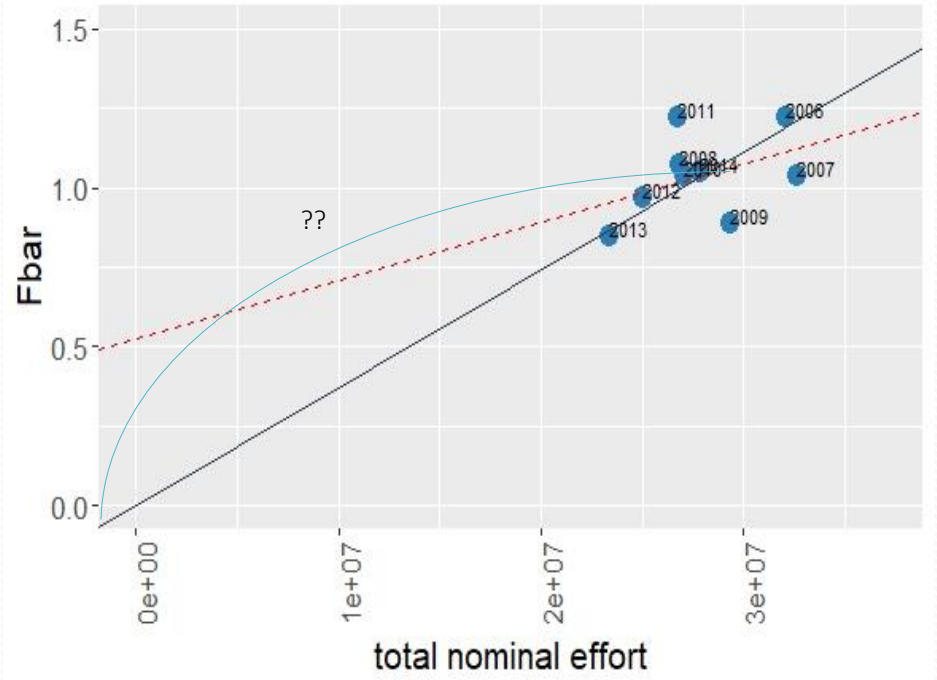
F-E relationship for 4 types of stocks

Fernandes and Cook 2013, 10.1016/j.cub.2013.06.016

Is West Med fishing effort correlated with fishing mortality?

EWG 18-09





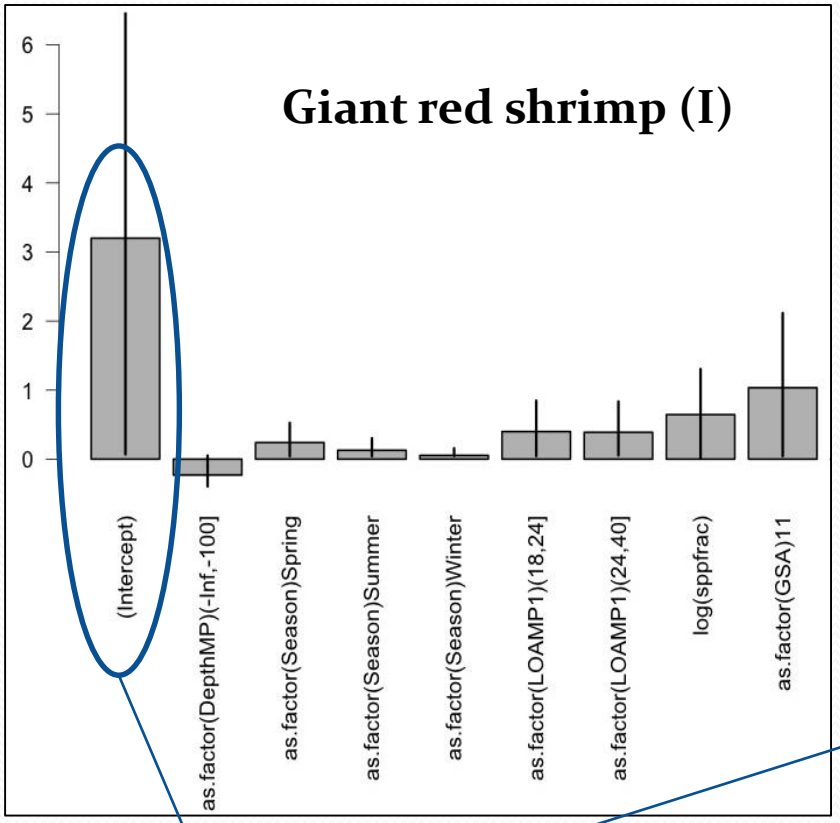
total nominal effort and Fbar for hake in GSAs 9-10-11.

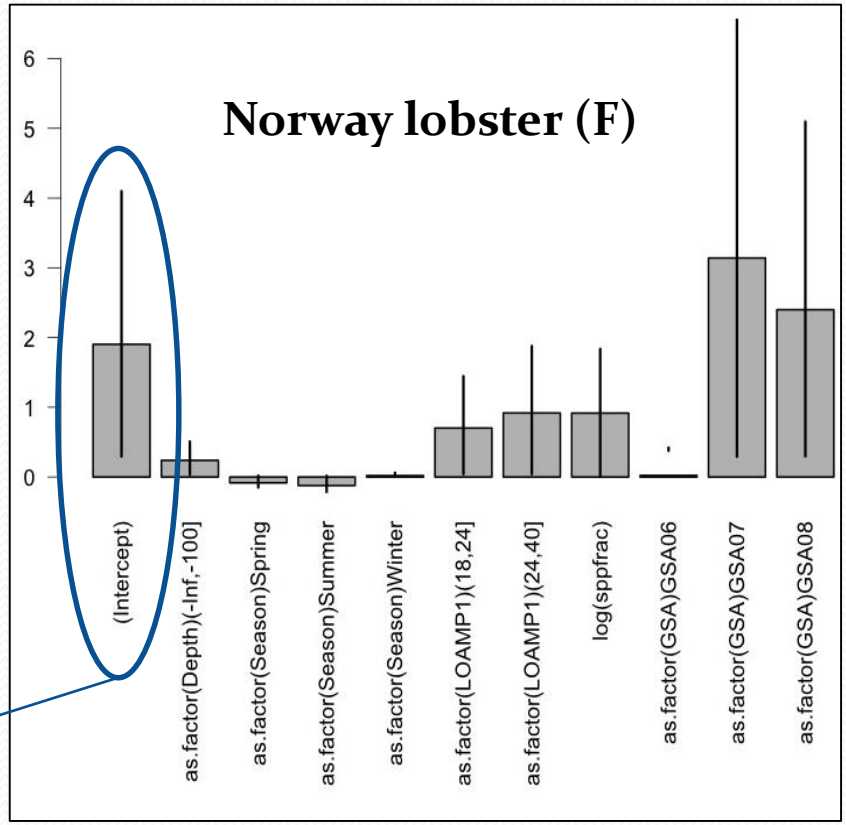
Do some fishers catch more than others with the same fishing effort, and why? EWG 18-09

Length	Percentiles	TOTAL	*A. antennattus*	*N. norvegicus*	*P. longirostris*	*A. foliacea*	*M. merluccius*	*M. barbatus*
X <12	HR p0,50							
	HR p0,85							
12≤ X ≤ 18	HR p0,50	16	21	12	20	20	16	30
	HR p0,85	65	41	30	76	69	40	90
18≤ X ≤ 24	HR p0,50	18	20	12	28	24	13	19
	HR p0,85	70	60	30	79	60	56	79
X ≥24	HR p0,50	20	19	8	44	15	16	19
	HR p0,85	60	44	22	98	40	68	61

An example (Italian data) of catching efficiency (harvest rate): landing per day for the median trip (p 0.5) compared to the 15% most efficient trips (p0.85). *EWG 18-09 table 5.2*

Do some fishers catch more than others with the same fishing effort, and why? EWG 18-09



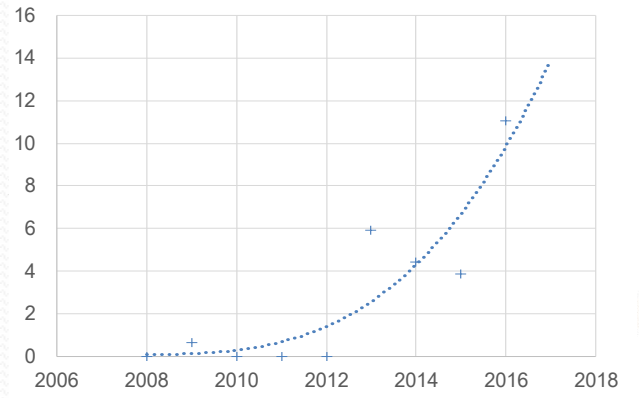


Large part of « unexplained variability »

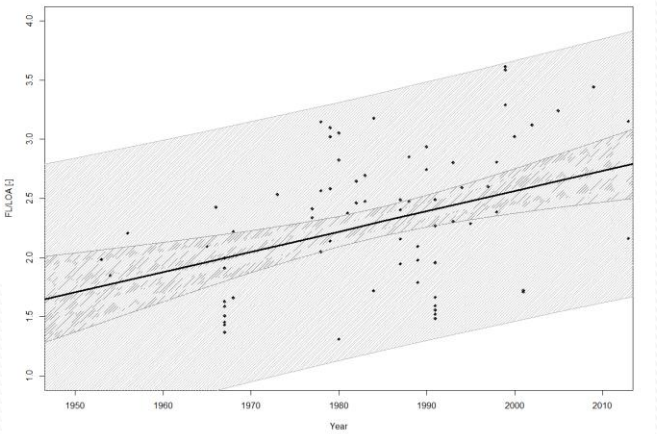
Statistical analysis of catch efficiency (landing per day)

Can technical creeping annihilate the effects of effort reduction?

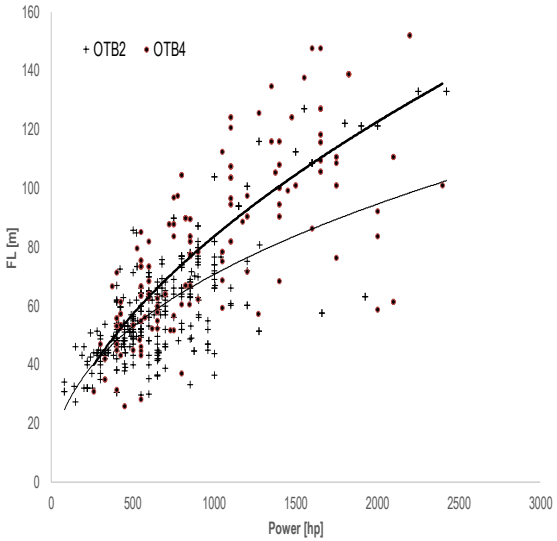
EWG 18-09



% twin trawl in trawl effort



Increase in relative headline length (FL/FOA) and Otterboard area



Potential for shifting to more efficient gear with same horsepower

Fishing effort is a poor descriptor of the efficiency of the gear used

conclusions regarding common challenges with effort regimes, to be aware of

- There are several ways to measure fishing effort. Hours (combined with VMS for precise location) is likely a more accurate measure than days
- The relationship between F and E is likely less than 1:1 linear. Fishing mortality will decrease less than fishing effort, especially at the beginning
- There is a huge potential for technical creep and efficiency increase that will maintain high catches (and thus high F) if effort is decreased
- Effort management requires patience and long-term commitment… Visible effects will first be seen after a few years of implementation

UPDATED DATA AND SCENARIOS MODELLING FOR WEST MED MAP

EWG 20-13

EWG 20-13 - scenarios

a) 10% reduction in 2020 + no additional reduction of effort;

b) 10% reduction in 2020 + **cumulated reduction of 10% from 2021 to 2024 + closures**;

c) 10% reduction in 2020 + cumulated reduction of **20%** from 2021 to 2024 + closures;

d) 10% reduction in 2020 + cumulated reduction of **30%** from 2021 to 2024 + closures;

e) 10% reduction in 2020 + cumulated reduction of 30% from 2021 to 2024 + closures **+ increased capturability (e.g. annual increase of 3% in selectivity or technical improvement of fishing gear)**;

f) 10% reduction in 2020 + cumulated reduction of 30% from 2021 to 2024 + closures **+ effort reduction of other fishing gears**;

g) 10% reduction in 2020 **+ 30% reduction in 2021 then no further fishing effort reduction** + closures ;

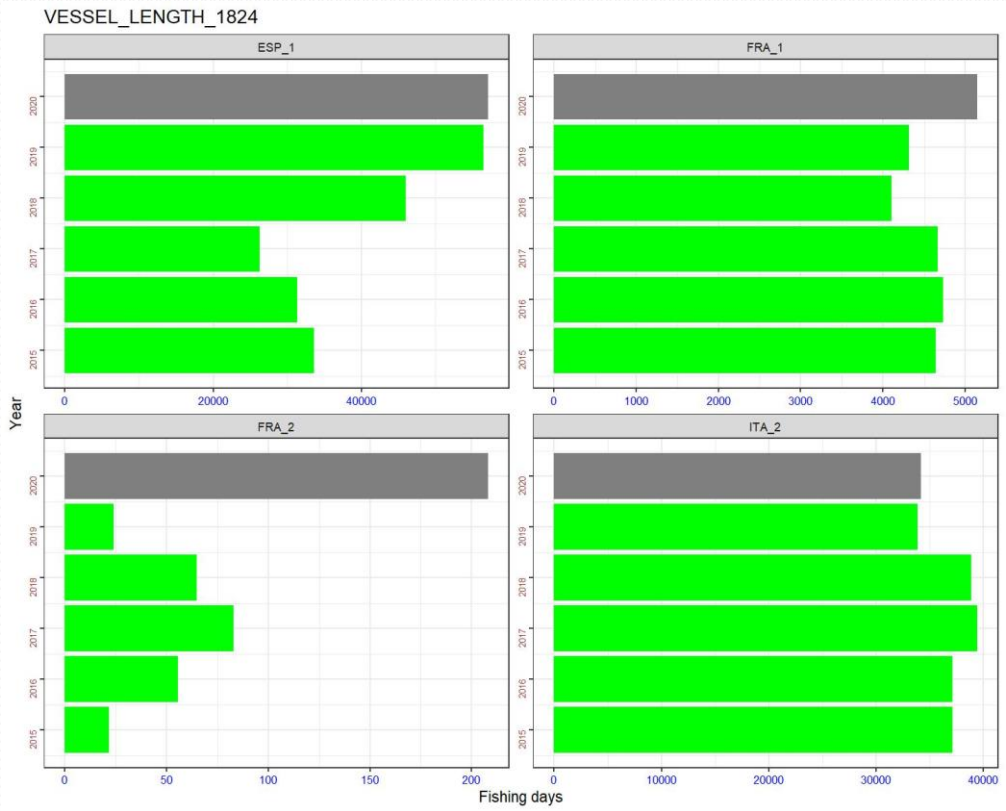
h) 10% reduction in 2020 **+ reduction of 15% in 2021 + reduction of 15% in 2022 then no further fishing effort reduction** + closures;

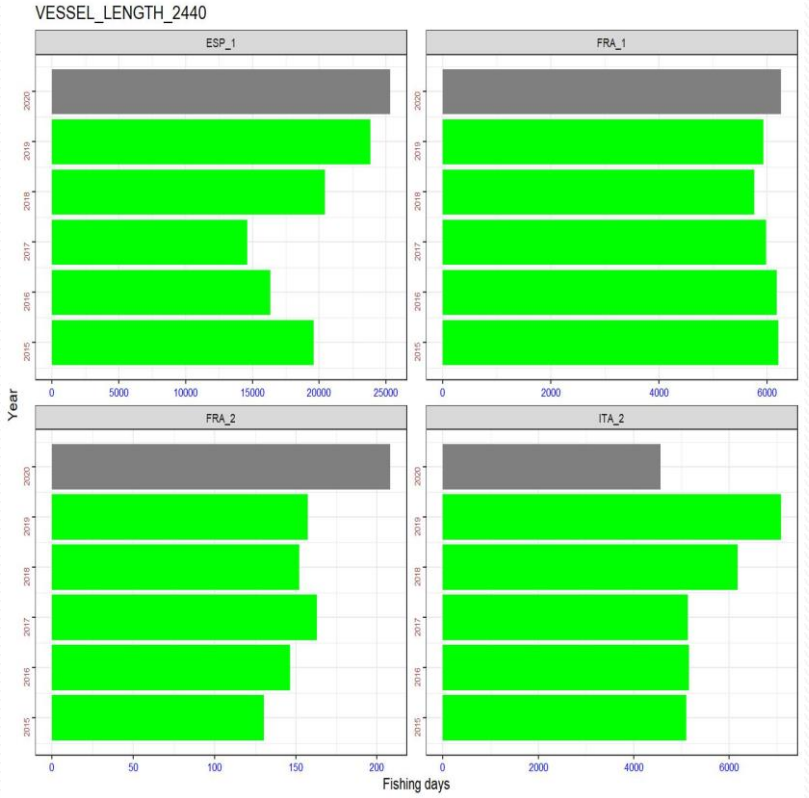
i) 10% reduction in 2020 + reduction of 15% in 2021 + reduction of 15% in 2022 then no further fishing effort reduction + closures **+ effort reduction of other fishing gear**;

j) 10% reduction in 2020 + cumulated reduction of **40%** from 2021 to 2024 + closures ;

k) 10% reduction in 2020 + cumulated reduction of **50%** from 2021 to 2024 + closures ;

Monitoring fishing effort: discrepancies in effort data sets need to be resolved!



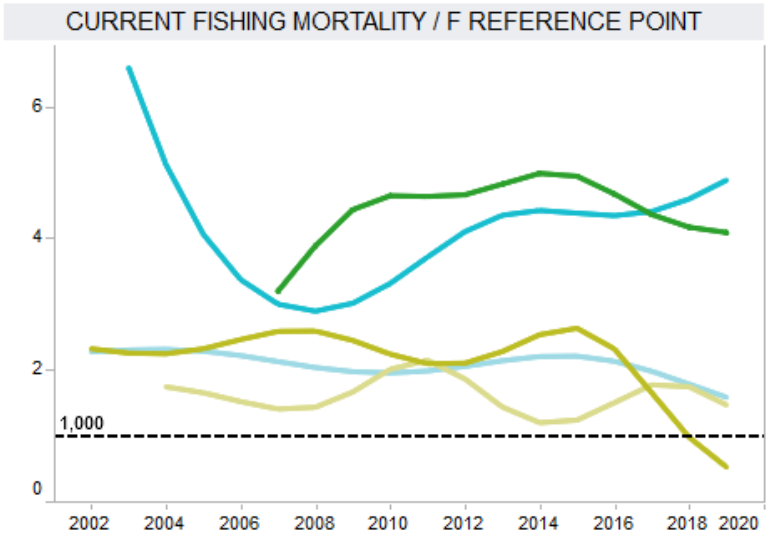


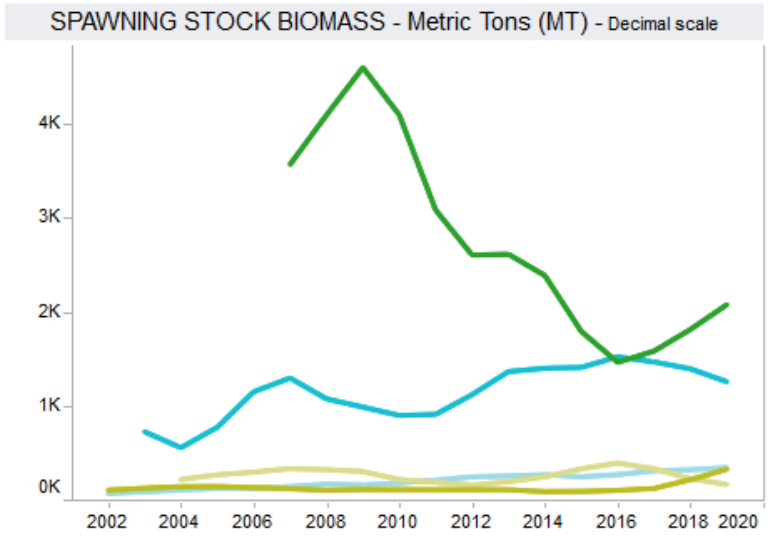
Green : FDI effort per year and EMU 2015-2019
Grey : Effort ceiling 2020 CR 2019/2236

EMU 1 – GSAs 1 2 5 6 7: state of the stocks

HKE_01_05_06_07_EWG20_09
MUR_05_EWG20_09
MUT_01_EWG20_09
MUT_06_EWG20_09
MUT_07_EWG20_09

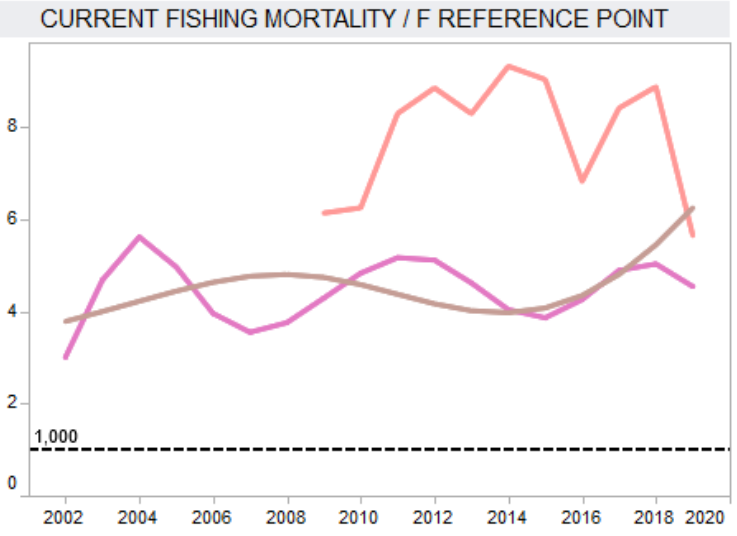
MACROAREA
Western Mediterranean

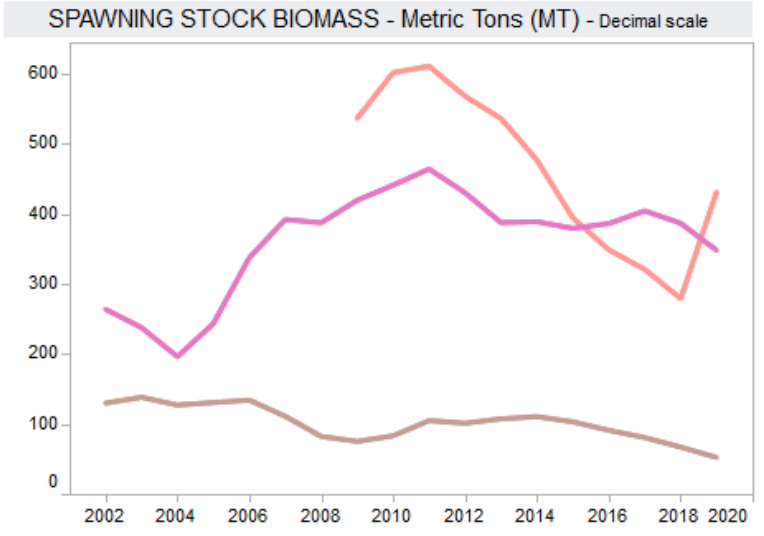




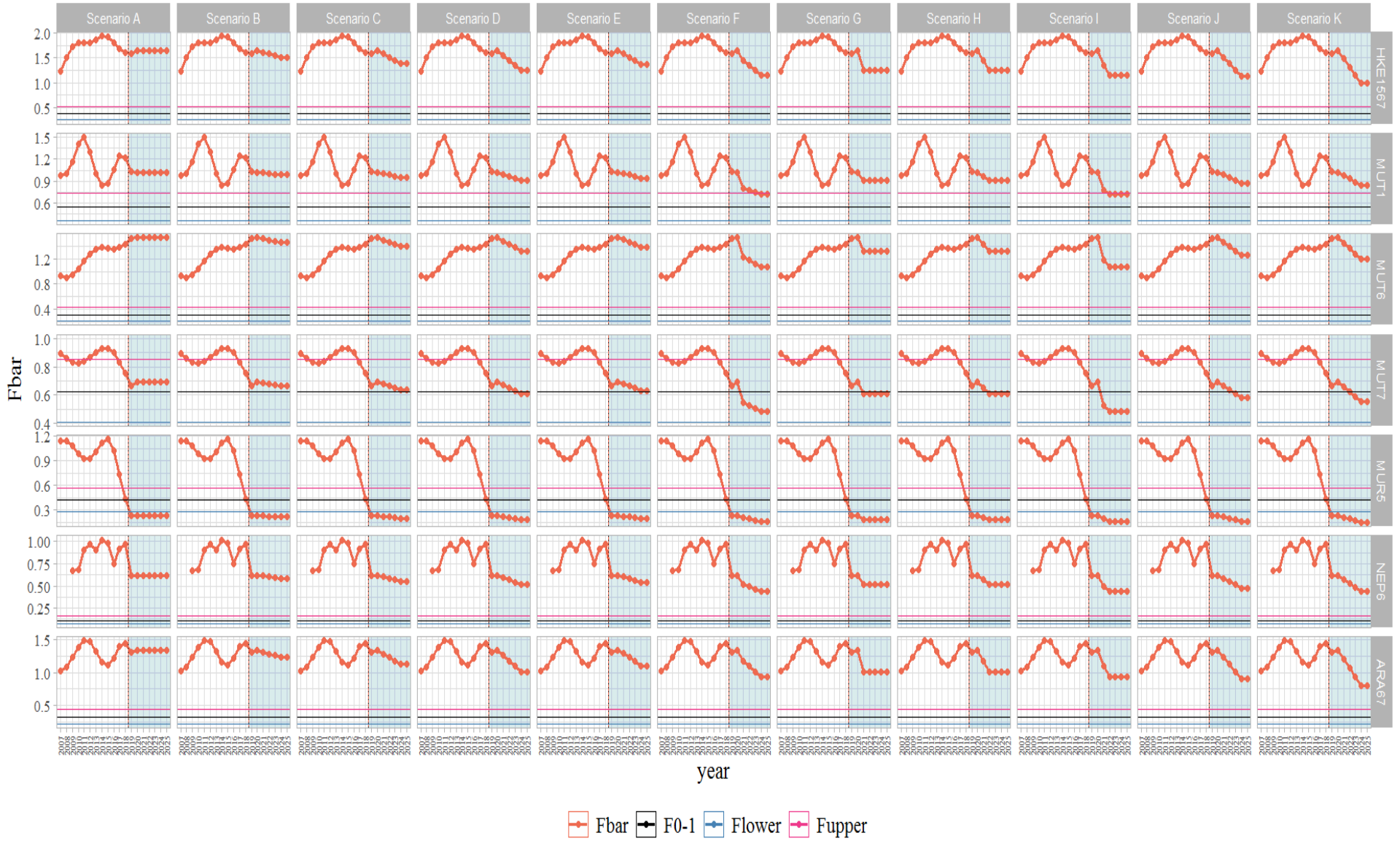
ARA_01_EWG20_09
ARA_06_07_EWG20_09
NEP_06_EWG20_09

MACROAREA
Western Mediterranean





EMU 1 – GSAs 1 2 5 6 7: scenarios



KEY FINDINGS EMU 1 – GSAs 1 2 5 6 7

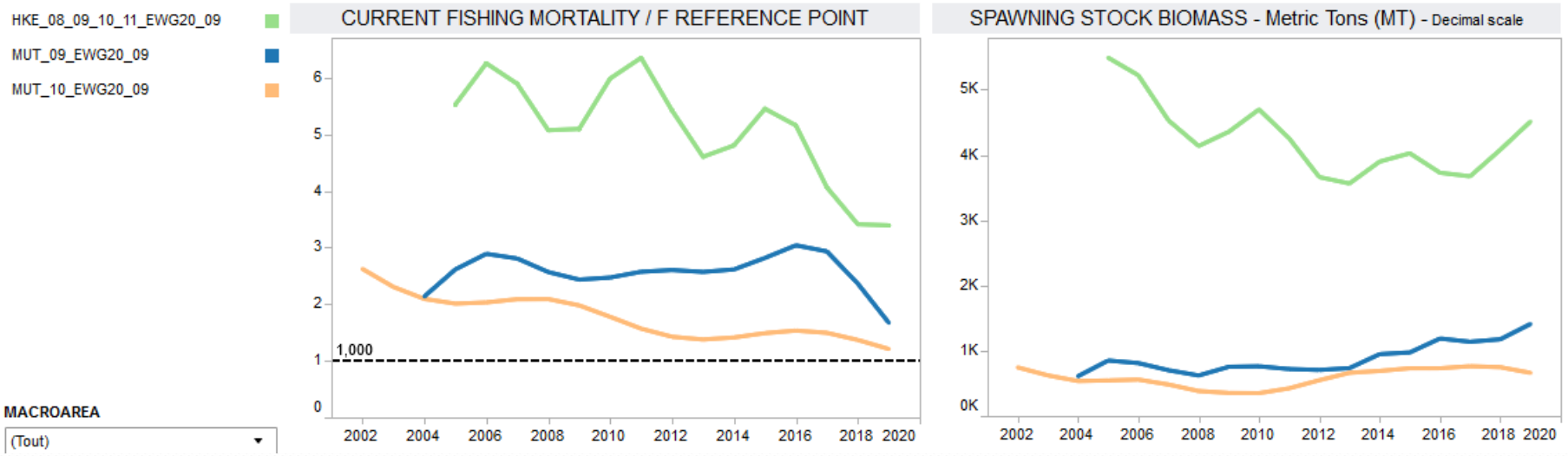
- In EMU 1, several stocks are strongly overexploited, including Hake (HKE) in GSAs 1-5-6-7, red mullet (MUT) in GSA 6, Norway lobster (NEP) in GSA 6 and blue and red shrimp (ARA) in GSAs 6-7. For these four stocks, none of the scenarios investigated allows reaching Fmsy (nor Fmsy upper) in 2025.

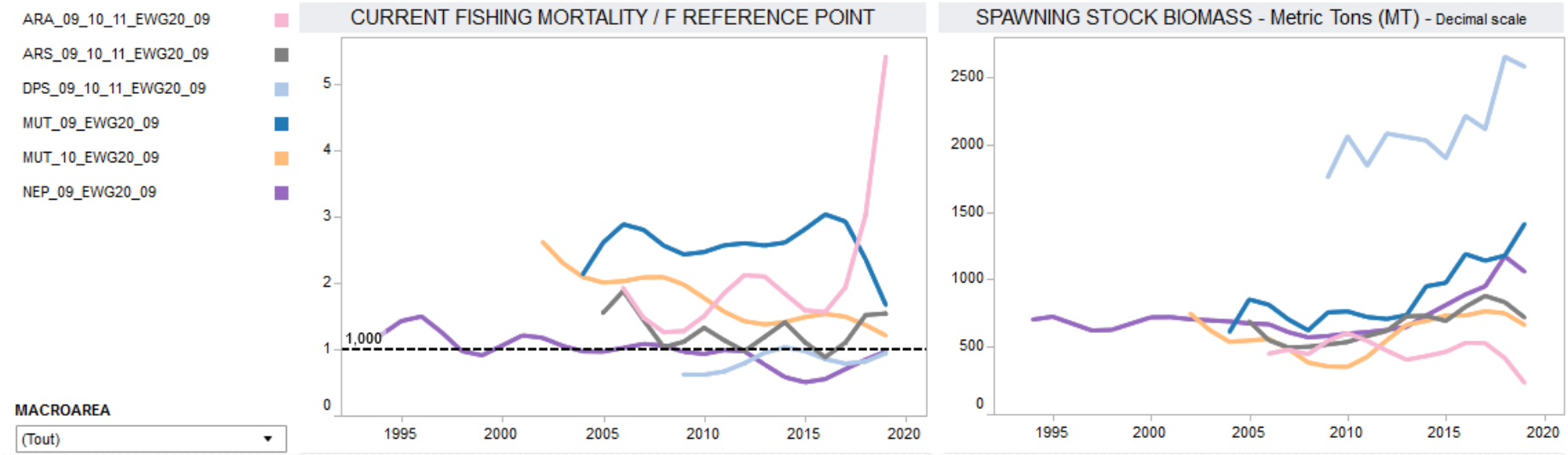
- Nevertheless, all scenarios from c) to k) (with effort reductions) foresee some positive effects on the biomass of the stocks even under the current poor levels of recruitment.

- Fishing mortality of red mullet in GSA 1 reaches Fmsy upper in 2025 under scenarios f) and i), which consider some effort reduction for other gears in addition to trawlers.

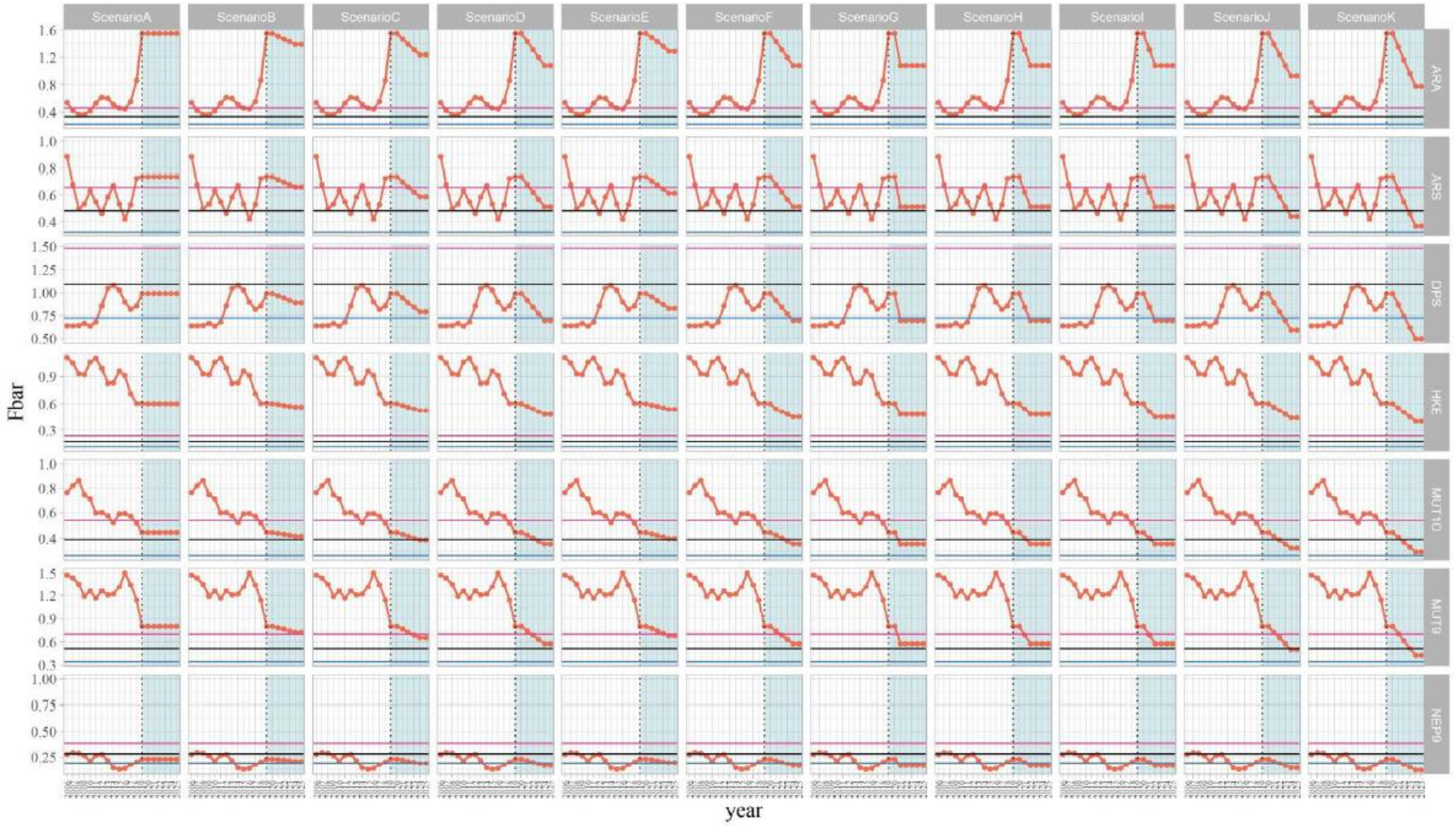
- For red mullet in GSA 7 and stripped red mullet (MUR) in GSA 5, which are currently exploited around Fmsy, all scenarios foresee exploitation levels in line with the objectives of the plan, or below, and stable or increasing biomass.

EMU 2 – GSAs 8 9 10 11: state of the stocks





EMU 2 – GSAs 8 9 10 11: scenarios



KEY FINDINGS EMU 2 – GSAs 8 9 10 11

- The most overexploited stocks in EMU 2 are blue-and-red shrimp (ARA) and hake (HKE), for which a constant effort may lead to a further decrease of biomass. The reduction of fishing effort foreseen in the MAP would not be sufficient to reach Fmsy in 2025 for these stocks.

- red mullet (MUT) in GSA 9 would reach Fmsy with scenario j), as well as the giant red shrimp (ARS).

- Hake is the stock that would benefit most, in terms of SSB, of the scenarios in which the reduction is applied also to the fishing gears other than trawlers.

- The stock of red mullet in GSA10, deep-water rose shrimp (DPS) and Norway lobster (NEP) in GSA9 will remain exploited below Fmsy with most scenarios.

- The closure areas would add a benefit which however is not enough for a substantial change of the exploitation pattern for hake stock.

OVERALL CONCLUSIONS

- Status quo fishing effort will lead to further deterioration of several stocks
- Fmsy not expected to be reached by 2025 for all stocks with current scenarios, but several scenarios lead to biomass stabilisation/increase
- These are simplified scenarios, reality more complex
- History and science show that it takes some years before the effects of effort limitations can be fully seen

Thank you for your attention