Status of Mediterranean and Black Sea fish and shellfish stocks in European Waters in 2014

Results for stocks in GSA 1-29 (Mediterranean and Black Sea)

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Status of Mediterranean and Black Sea stocks: Outiline

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Status of Mediterranean and Black Sea stocks

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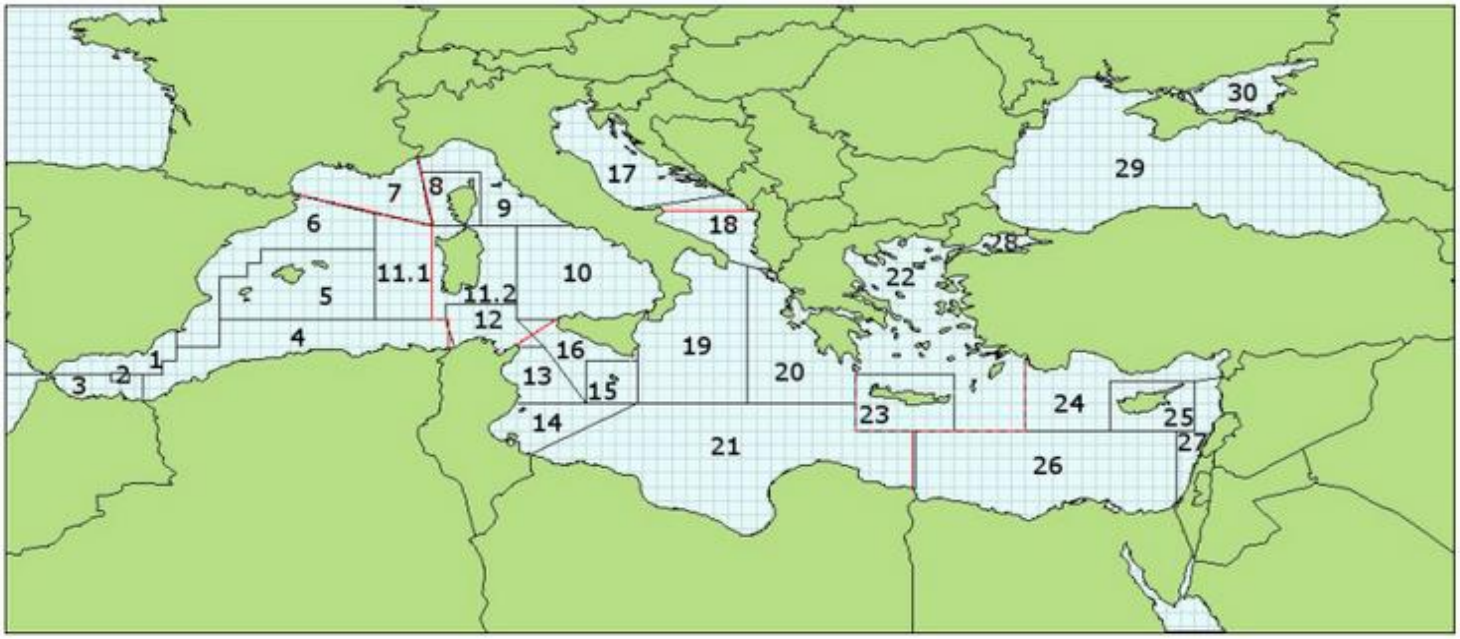
European Commission

Glossary

- Spawning stock biomass (SSB) is the biomass of the adult or reproducing fish
- Fishing mortality (F) is the proportion of fish in the stock that are taken by the fisheries
- F_{MSY} is the F associated to high long term yields and the long-term sustainable exploitation of the stock
- F/F_{MSY} indicates how far each stock is from the MSY target

Mediterranean and Black Sea areas and assessment unit

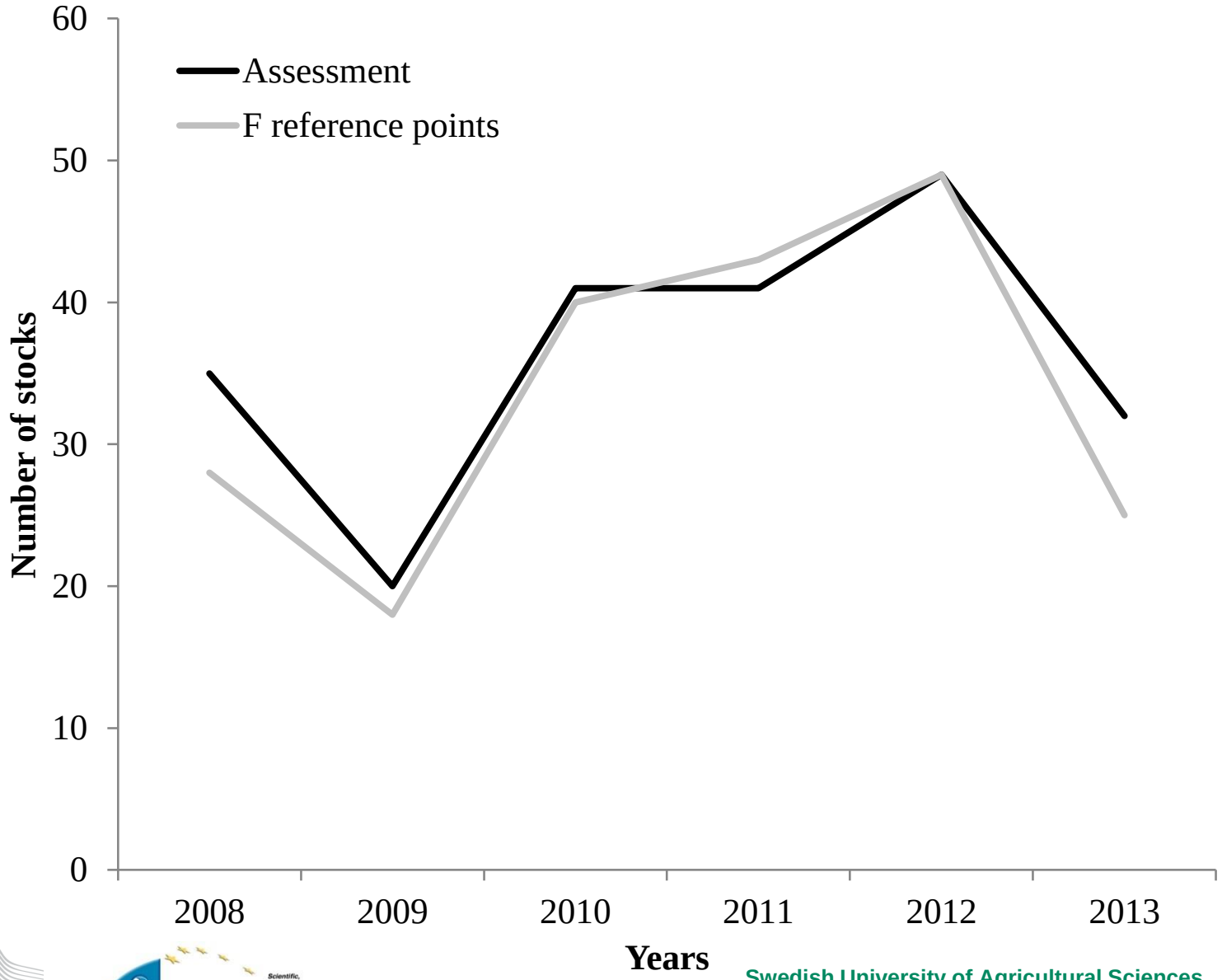
FAO GFCM sub-areas (GSA's)



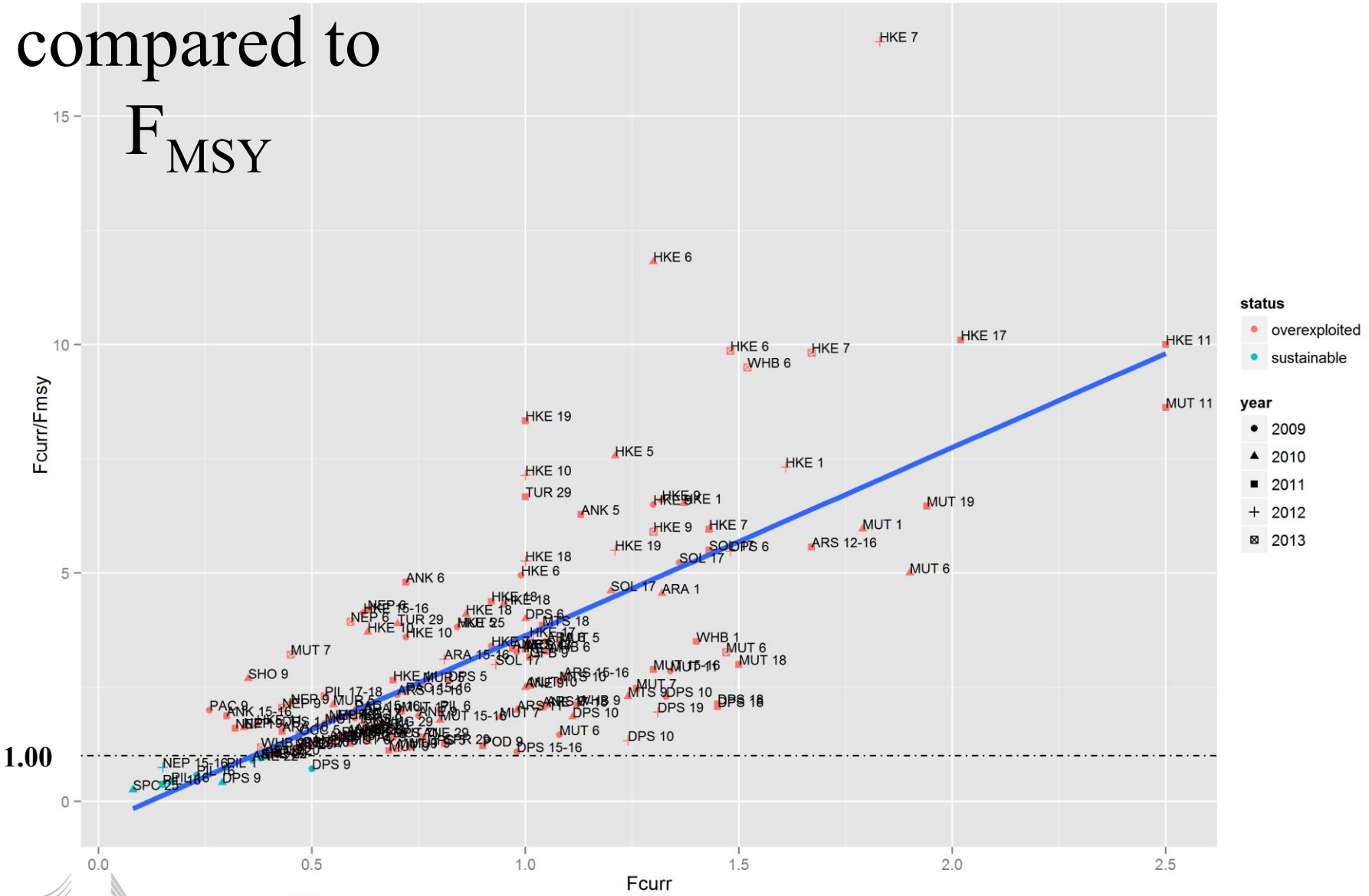
— FAO Statistical Divisions (red) — GFCM Geographical Sub-Areas (black)

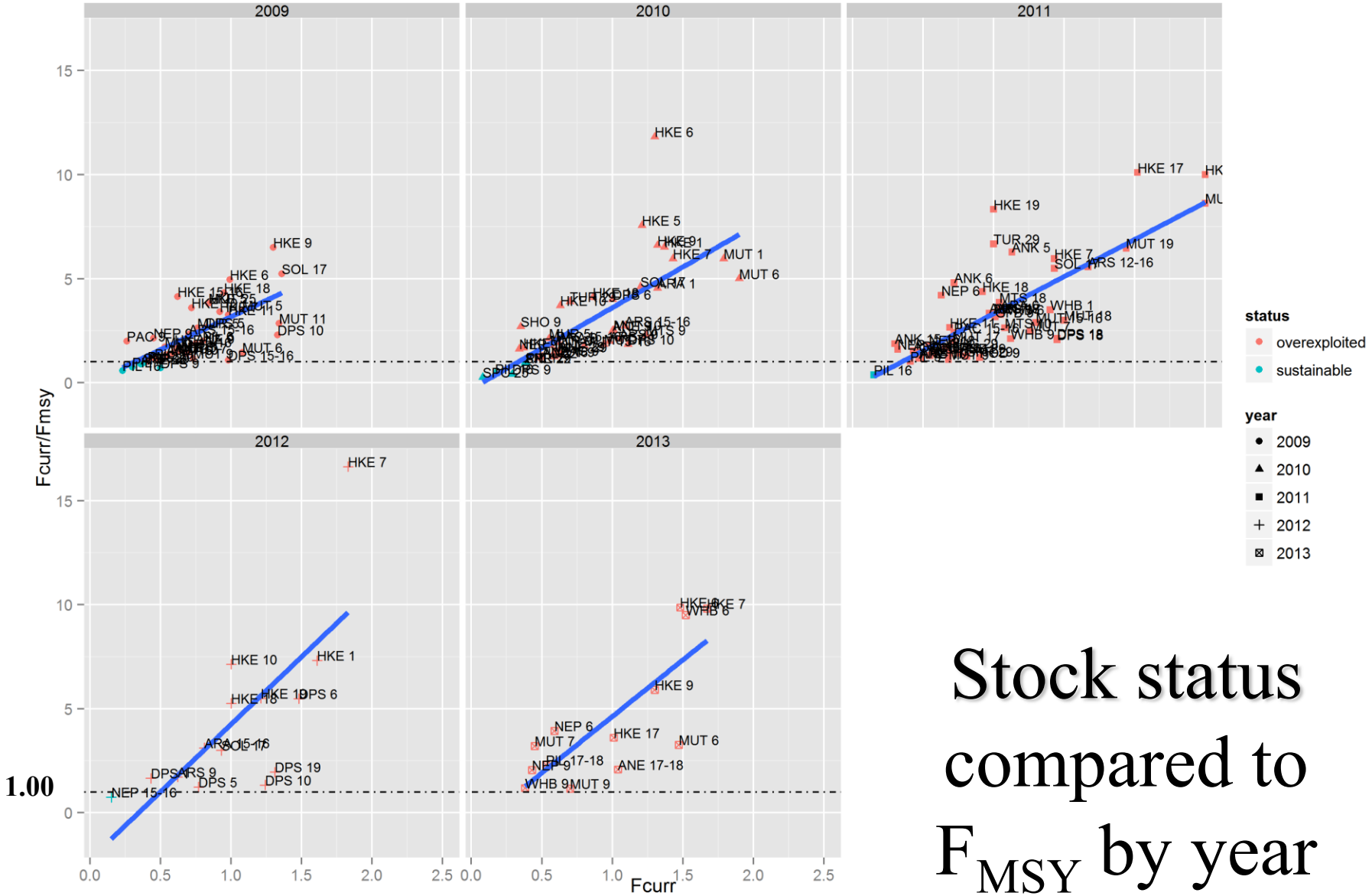
01 - Northern Alboran Sea	07 - Gulf of Lions	13 - Gulf of Hammamet	19 - Western Ionian Sea	25 - Cyprus Island
02 - Alboran Island	08 - Corsica Island	14 - Gulf of Gabes	20 - Eastern Ionian Sea	26 - South Levant
03 - Southern Alboran Sea	09 - Ligurian and North Tyrrhenian Sea	15 - Malta Island	21 - Southern Ionian Sea	27 - Levant
04 - Algeria	10 - South and Central Tyrrhenian Sea	16 - South of Sicily	22 - Aegean Sea	28 - Marmara Sea
05 - Balearic Island	11.1 - Sardinia (west) 11.2 - Sardinia (east)	17 - Northern Adriatic	23 - Crete Island	29 - Black Sea
06 - Northern Spain	12 - Northern Tunisia	18 - Southern Adriatic Sea	24 - North Levant	30 - Azov Sea

Historical trend of assessed stocks

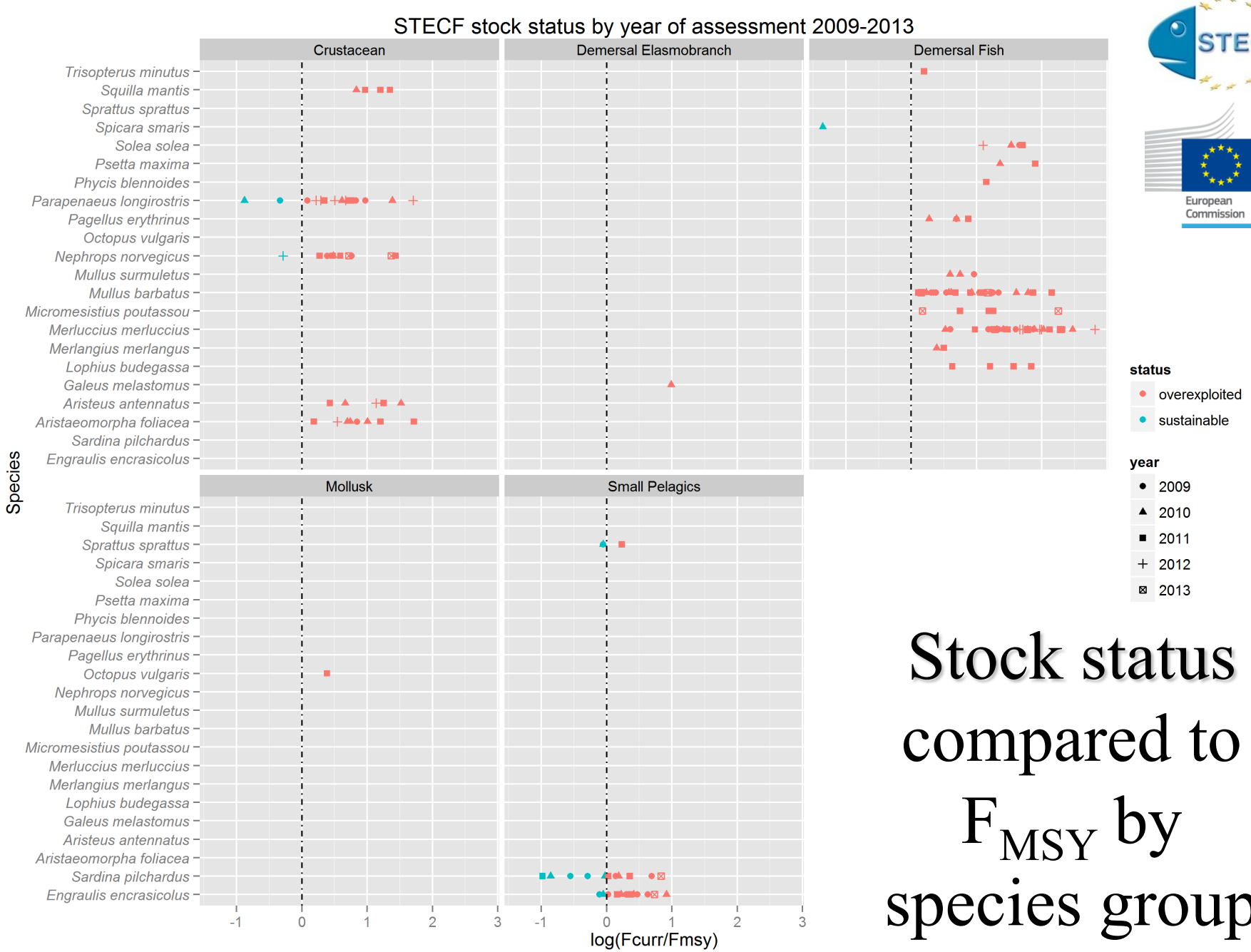


Stock status compared to F_{MSY}





Stock status compared to F_{MSY} by year



Stock status compared to F_{MSY} by species group

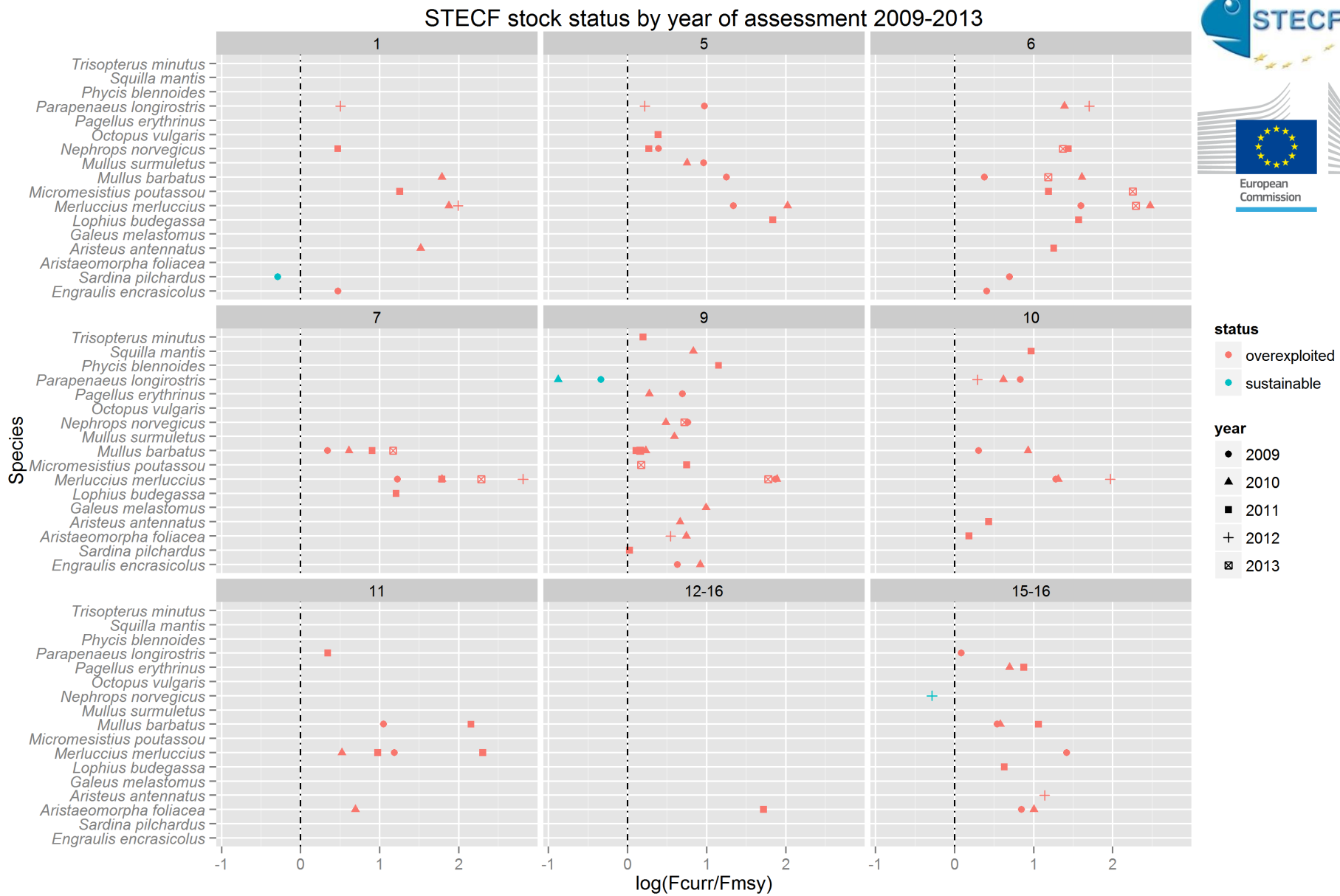
Status of Mediterranean and Black Sea marine resources

State of the art

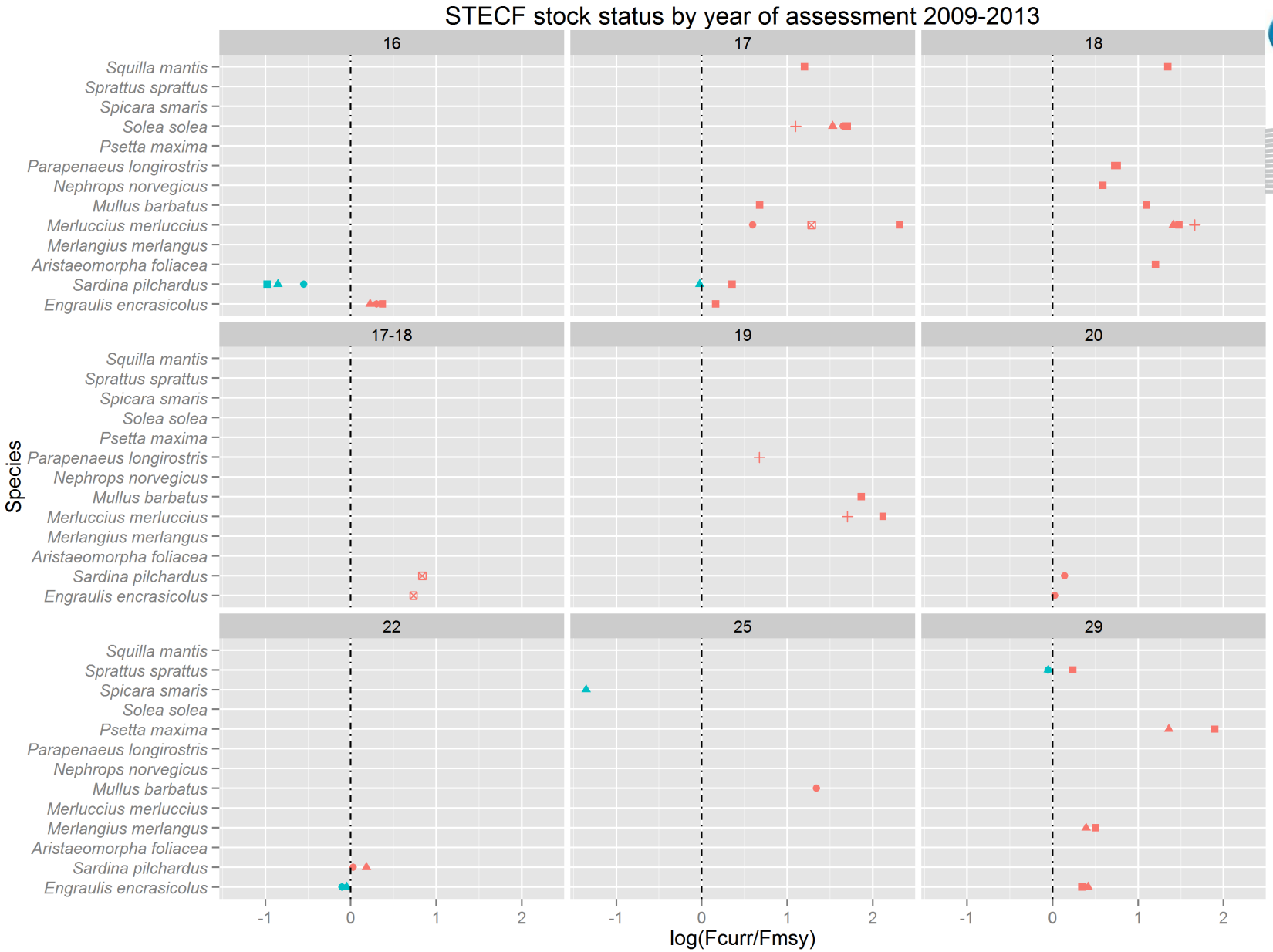
- State of knowledge on the Mediterranean and Black Sea stocks is improving but more resources are needed to increase the number of assessed stocks and for application of data poor methods.

- Around 94% of the stocks analysed is overexploited compared to F_{MSY}.

Stock status compared to F_{MSY} by GSA



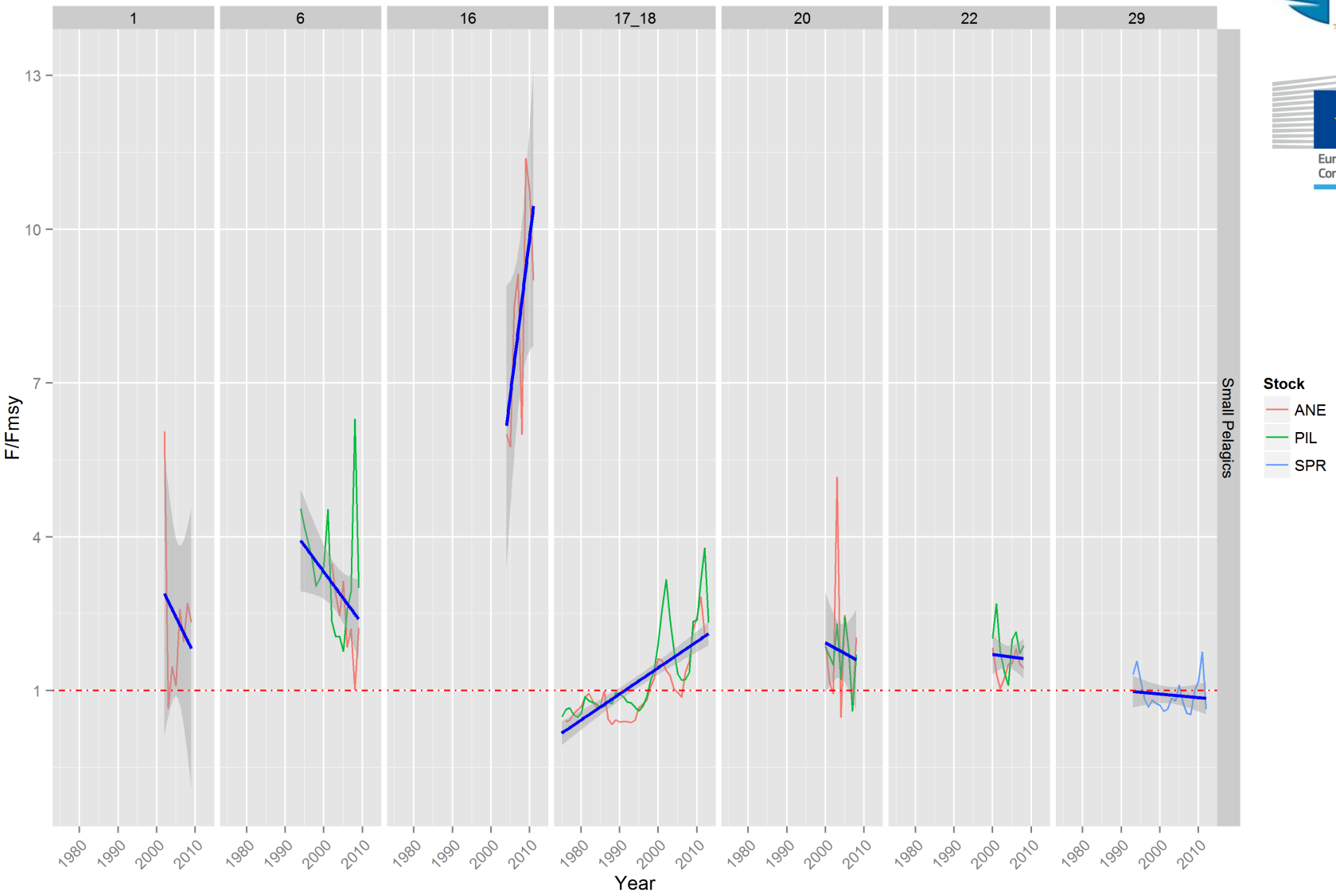
Stock status compared to F_{MSY} by GSA



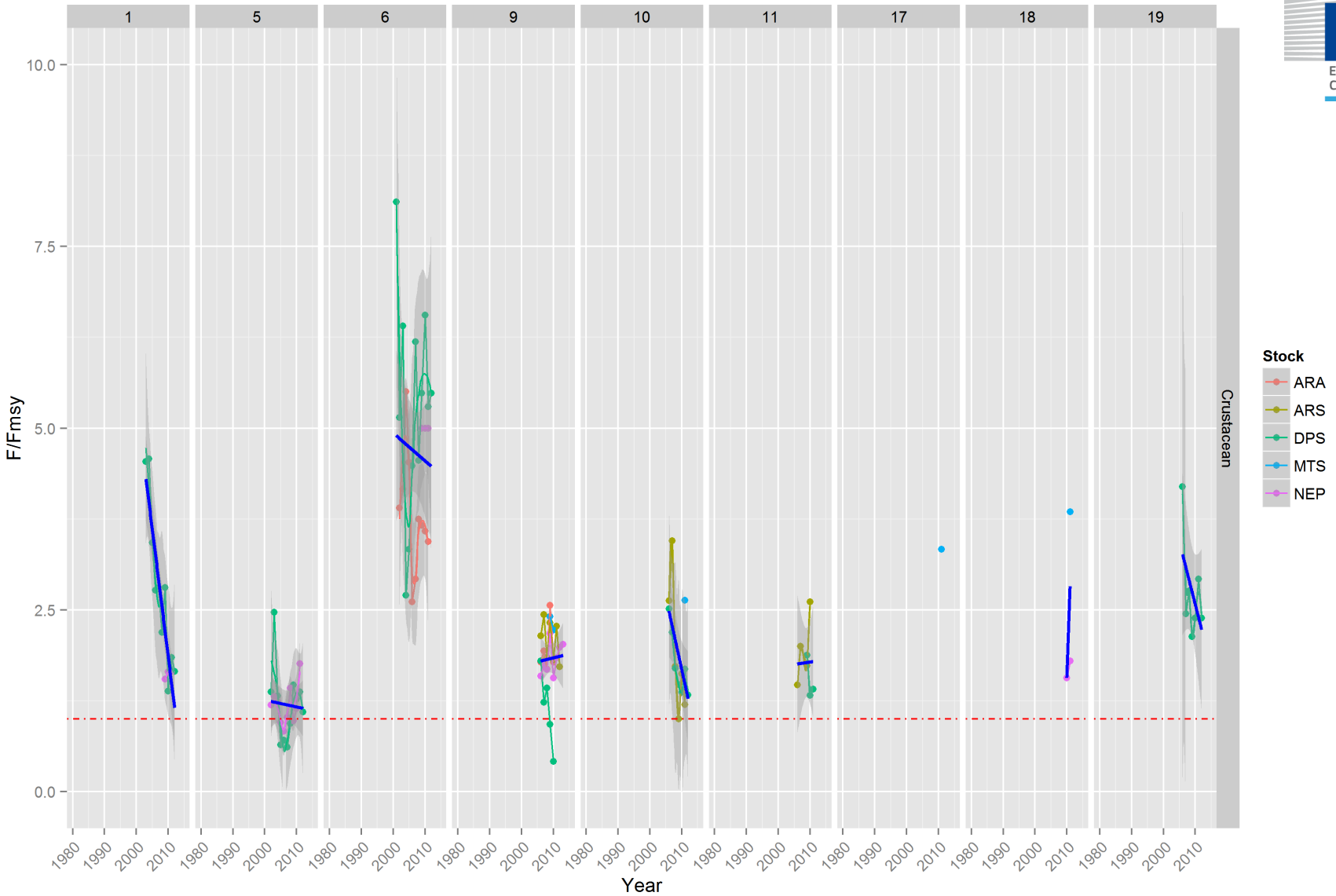
STECF Scientific, Technical and Economic Committee for Fisheries

European Commission

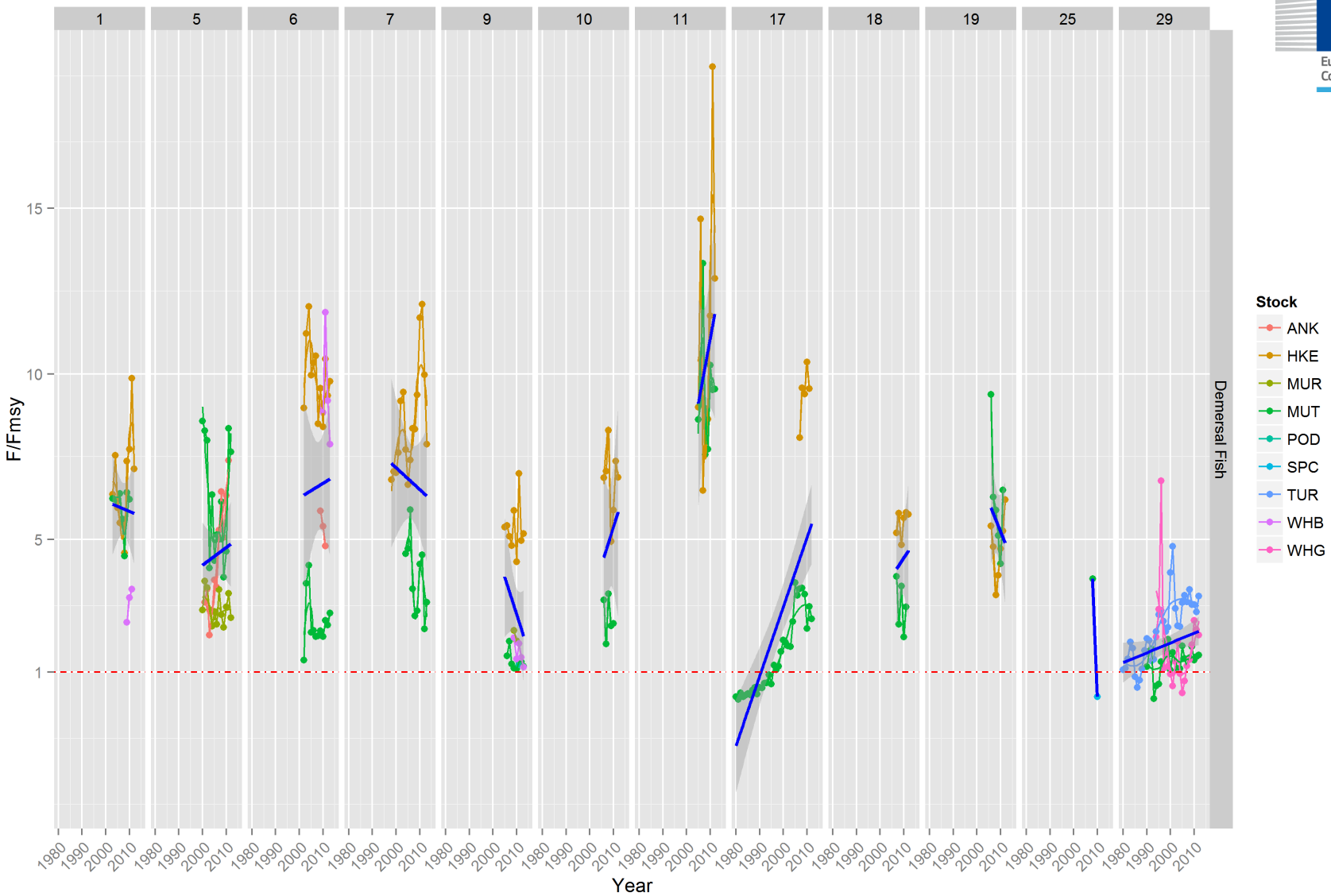
Stock status compared to F_{MSY} for small pelagics



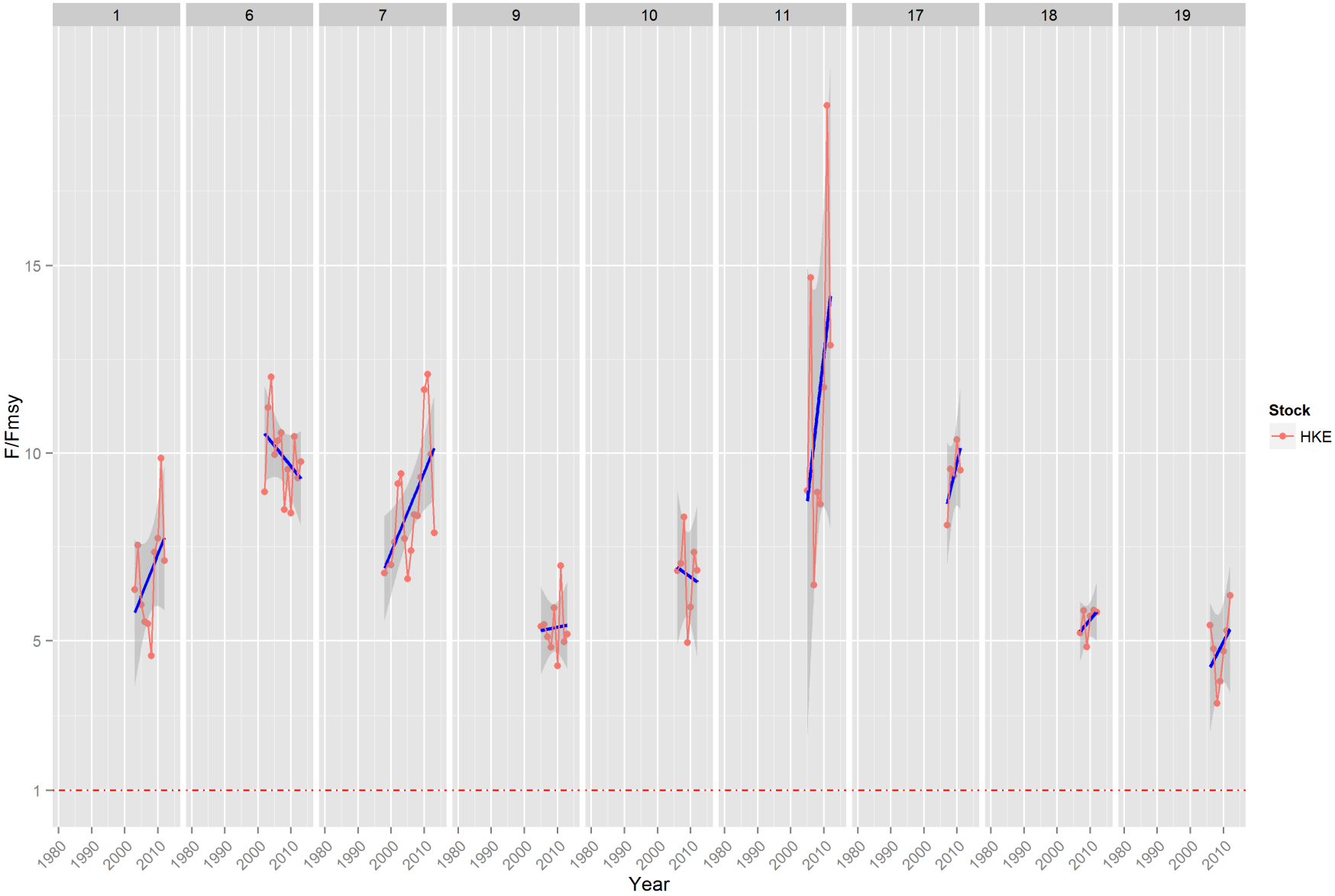
Stock status compared to F_{MSY} for crustaceans



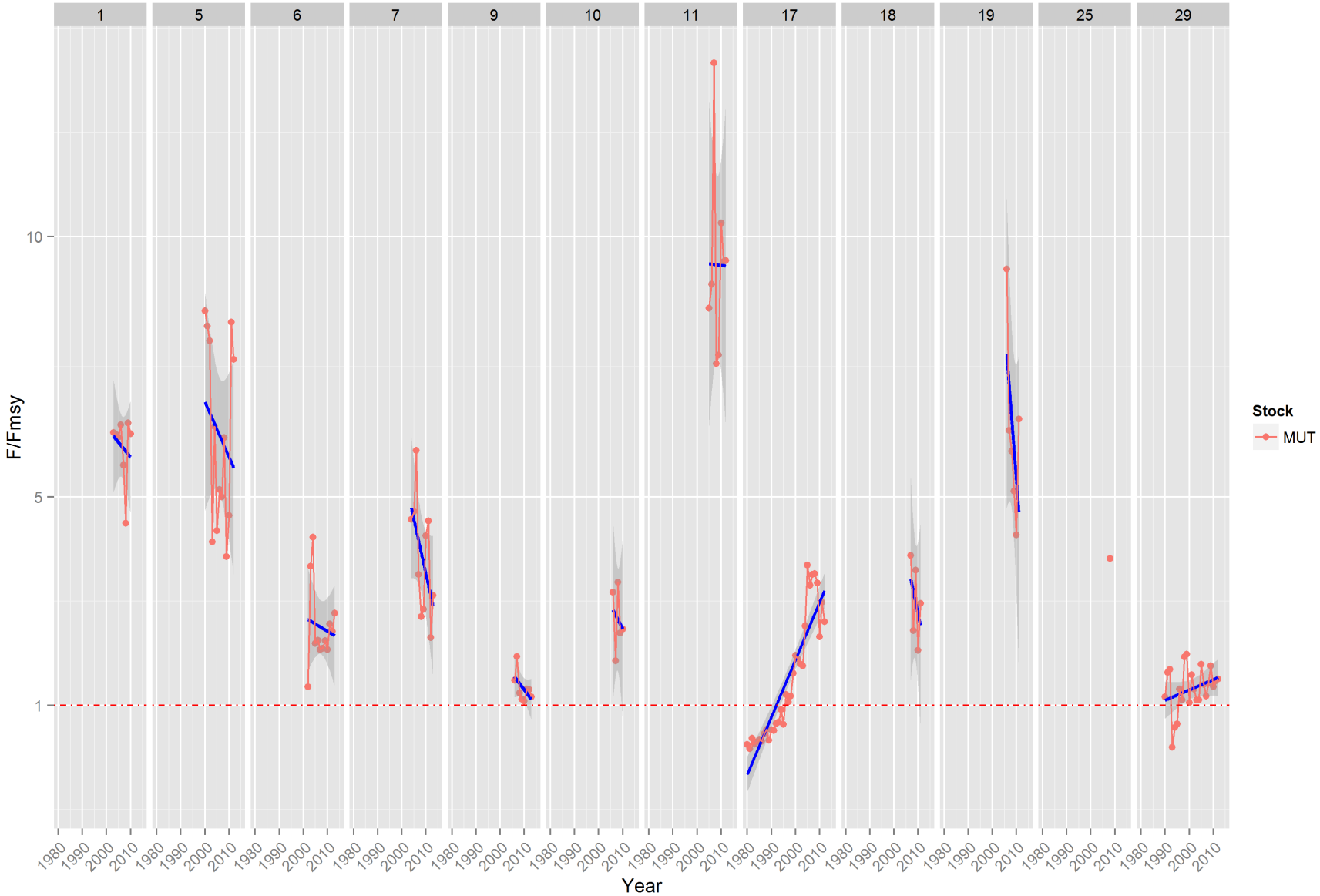
Stock status compared to F_{MSY} for demersal fish



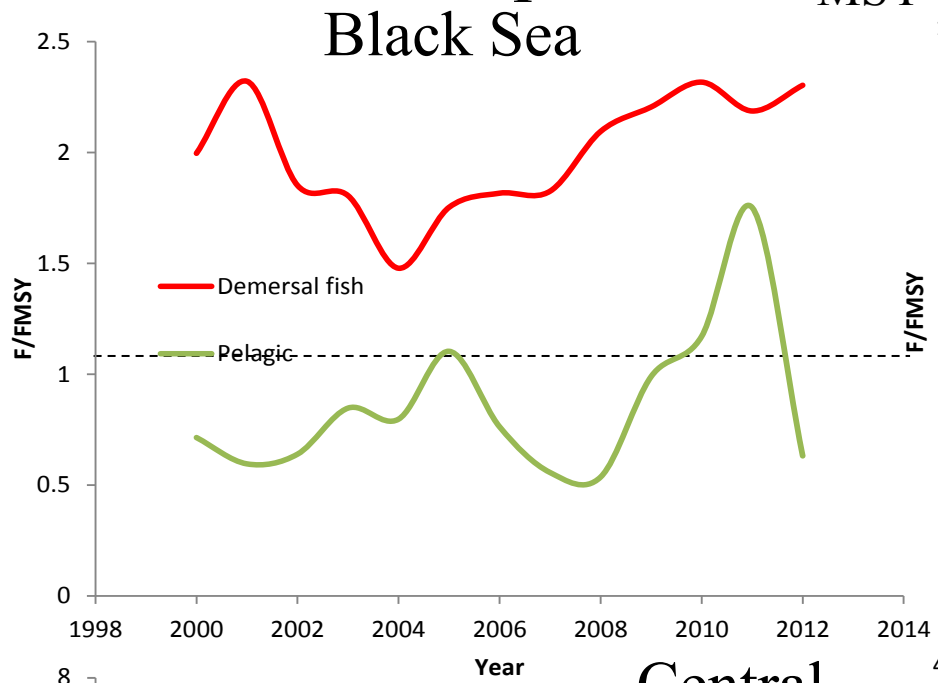
Stock status compared to F_{MSY} for hake

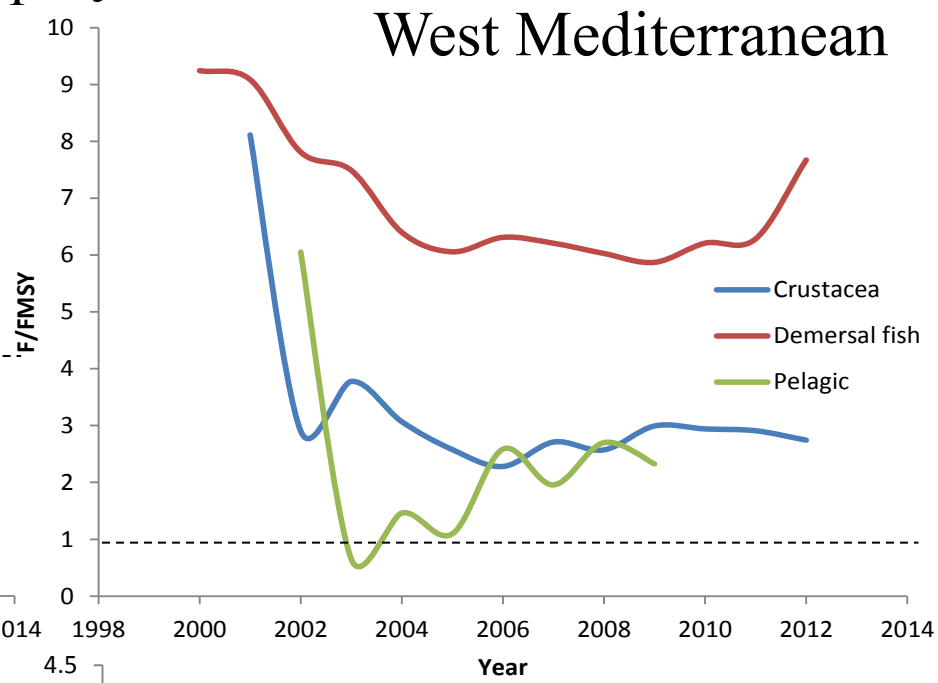


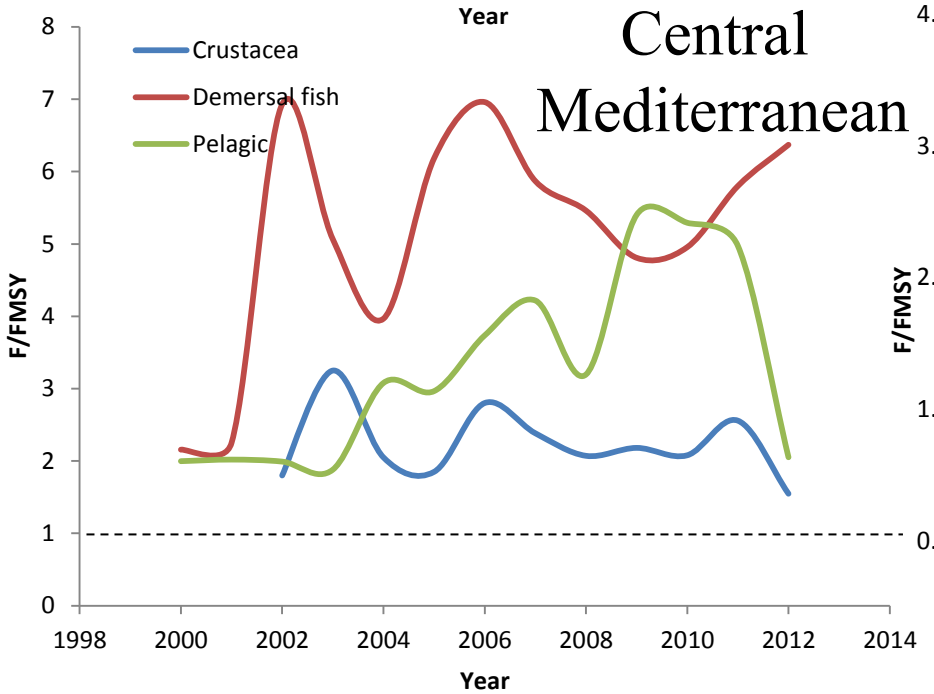
Stock status compared to F_{MSY} for red mullet

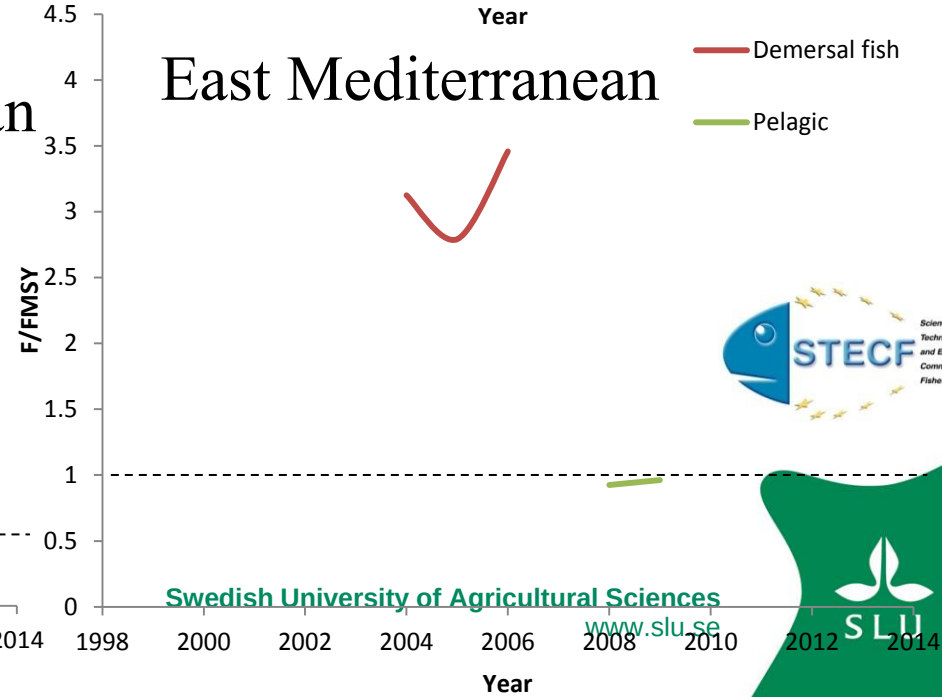


Stock status compared to F_{MSY} by macro-area









Stock status in the last assessment year compared to F_{MSY}

STECF assessments

Species	GSA	Year	F/F_{MSY}
Anchovy	16	2011	9.00
Anchovy	17	2013	2.08
Black-bellied anglerfish	5	2011	7.39
Black-bellied anglerfish	6	2011	4.80
Black-bellied anglerfish	15-16	2010	2.19
Blue and red shrimp	6	2011	3.44
Blue and red shrimp	9	2010	1.78
Blue whiting	1	2011	3.50
Blue whiting	6	2013	9.50
Blue whiting	9	2013	1.19
Common pandora	15-16	2011	2.40
Deepwater pink shrimp	1	2012	1.65
Deepwater pink shrimp	5	2012	1.10
Deepwater pink shrimp	6	2011	5.30
Deepwater pink shrimp	6	2012	5.48
Deepwater pink shrimp	9	2010	0.41

Species	GSA	Year	F/F_{MSY}
Deepwater pink shrimp	10	2012	1.33
Deepwater pink shrimp	11	2011	1.41
Deepwater pink shrimp	19	2012	2.39
Giant red shrimp	9	2012	1.72
Giant red shrimp	10	2011	1.20
Giant red shrimp	11	2010	2.61
Giant red shrimp	12-16	2011	5.57
Hake	1	2012	7.14
Hake	6	2013	9.87
Hake	7	2013	9.82
Hake	9	2013	5.91
Hake	10	2012	6.87
Hake	11	2012	12.88
Hake	17	2011	3.61
Hake	18	2012	5.76
Hake	19	2012	6.20

Stock status in the last assessment year compared to F_{MSY}

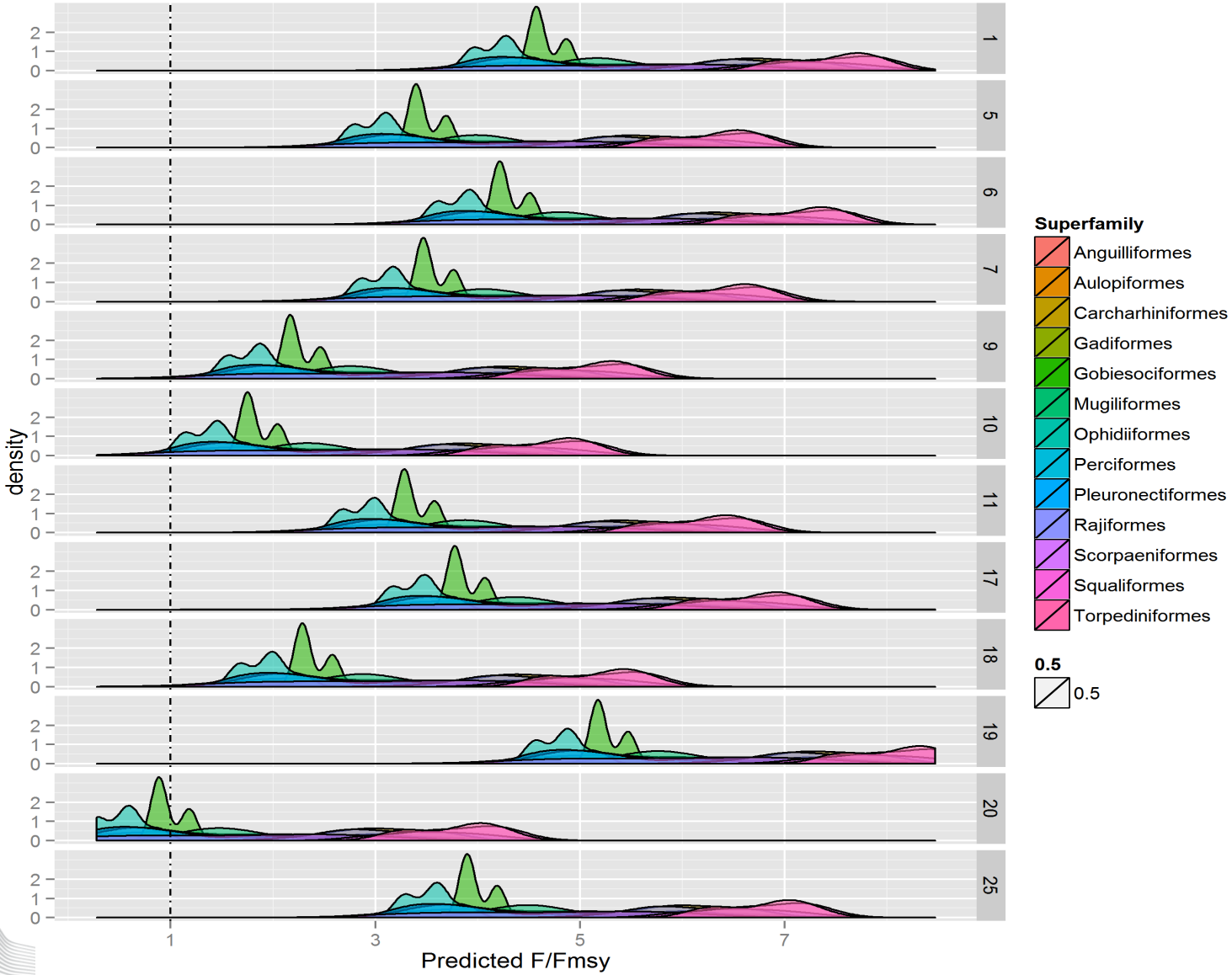
STECF assessments

Species	GSA	Year	F/F_{MSY}
Norway lobster	1	2011	1.65
Norway lobster	5	2011	1.76
Norway lobster	6	2013	3.93
Norway lobster	9	2013	2.05
Norway lobster	18	2011	1.80
Norway lobster	15-16	2012	0.75
Picarel	25	2010	0.26
Poor cod	9	2011	1.22
Red mullet	1	2010	6.21
Red mullet	5	2012	7.64
Red mullet	6	2013	3.27
Red mullet	7	2013	3.21
Red mullet	9	2013	1.17
Red mullet	10	2010	2.46
Red mullet	11	2012	9.54
Red mullet	17	2012	2.61

Species	GSA	Year	F/F_{MSY}
Red mullet	18	2011	2.96
Red mullet	19	2011	6.49
Red mullet	29	2012	1.51
Red mullet	15-16	2011	2.89
Sardine	17	2013	2.30
Solea	17	2012	4.25
Spottail mantis shrimp	9	2010	2.22
Spottail mantis shrimp	10	2011	2.63
Spottail mantis shrimp	17	2011	3.33
Spottail mantis shrimp	18	2011	3.85
Sprat	29	2012	0.63
Striped red mullet	5	2012	2.64
Striped red mullet	9	2010	1.94
Striped red mullet	15-16	2012	4.11
Turbot	29	2012	3.29
Whiting	29	2012	2.11

Around 94% of analysed Mediterranean stocks are estimated to be exploited not in accordnace with F_{MSY} in 2010-2013

Predicted exploitation status for un-assessed demersal fish stocks by area and super family



Osio et al. 2014, Fisheries Research

Status of Mediterranean and Black Sea marine stocks

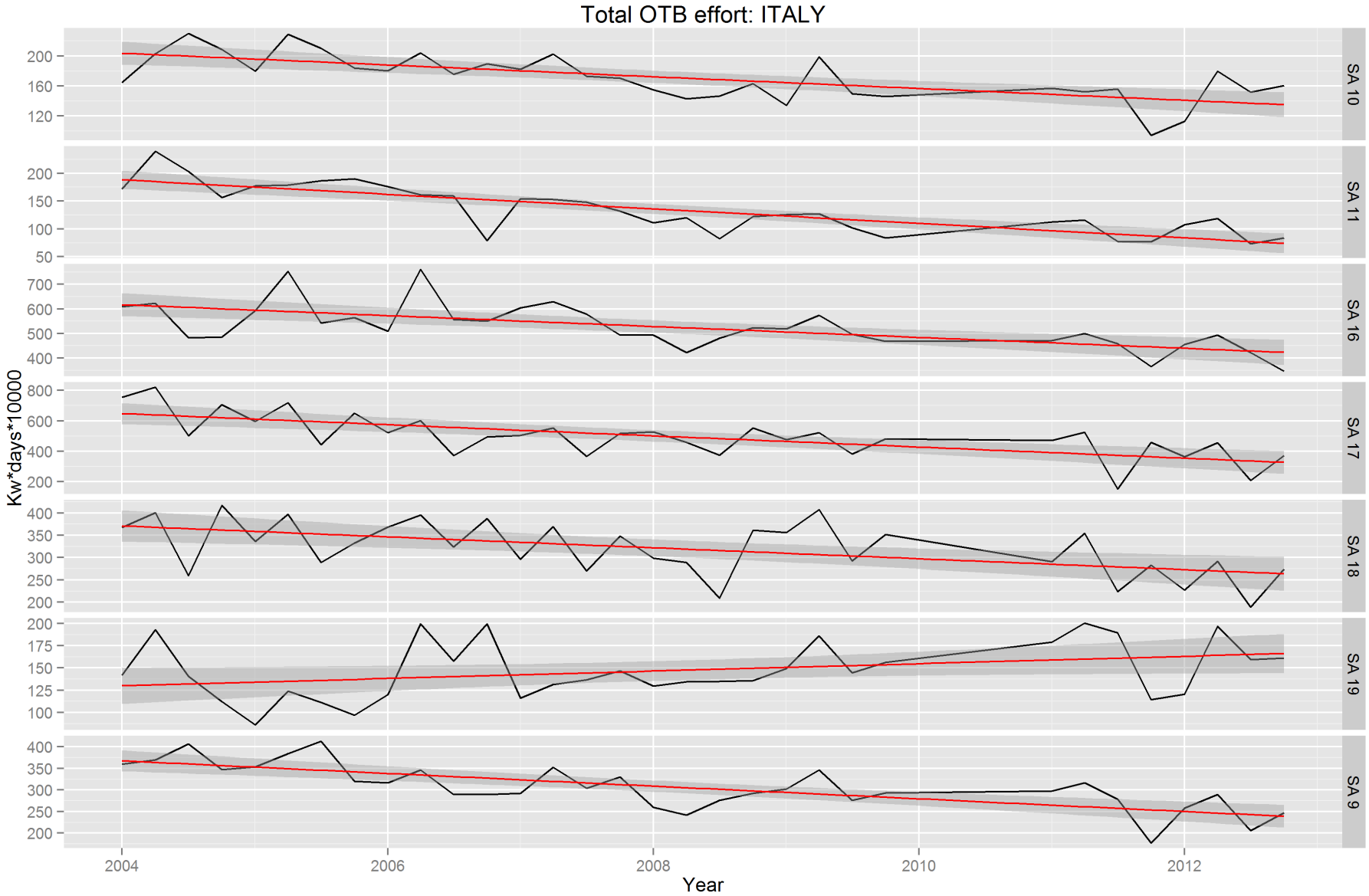
State of the art

- There are no major differences in the status of the stocks between areas.

- For demersal fish in most GSA's F/Fmsy is still increasing over time.

- Between functional groups, demersal fish are showing the worse stock status compared to demersal crustacean and pelagic stocks.

- Based on a productivity, vulnerability analysis and existing stock assessment results, around 97% of the unassessed demersal fish species are potentially overexploited in the evaluated areas.



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Unstandardized data from 2014 DCF datacall

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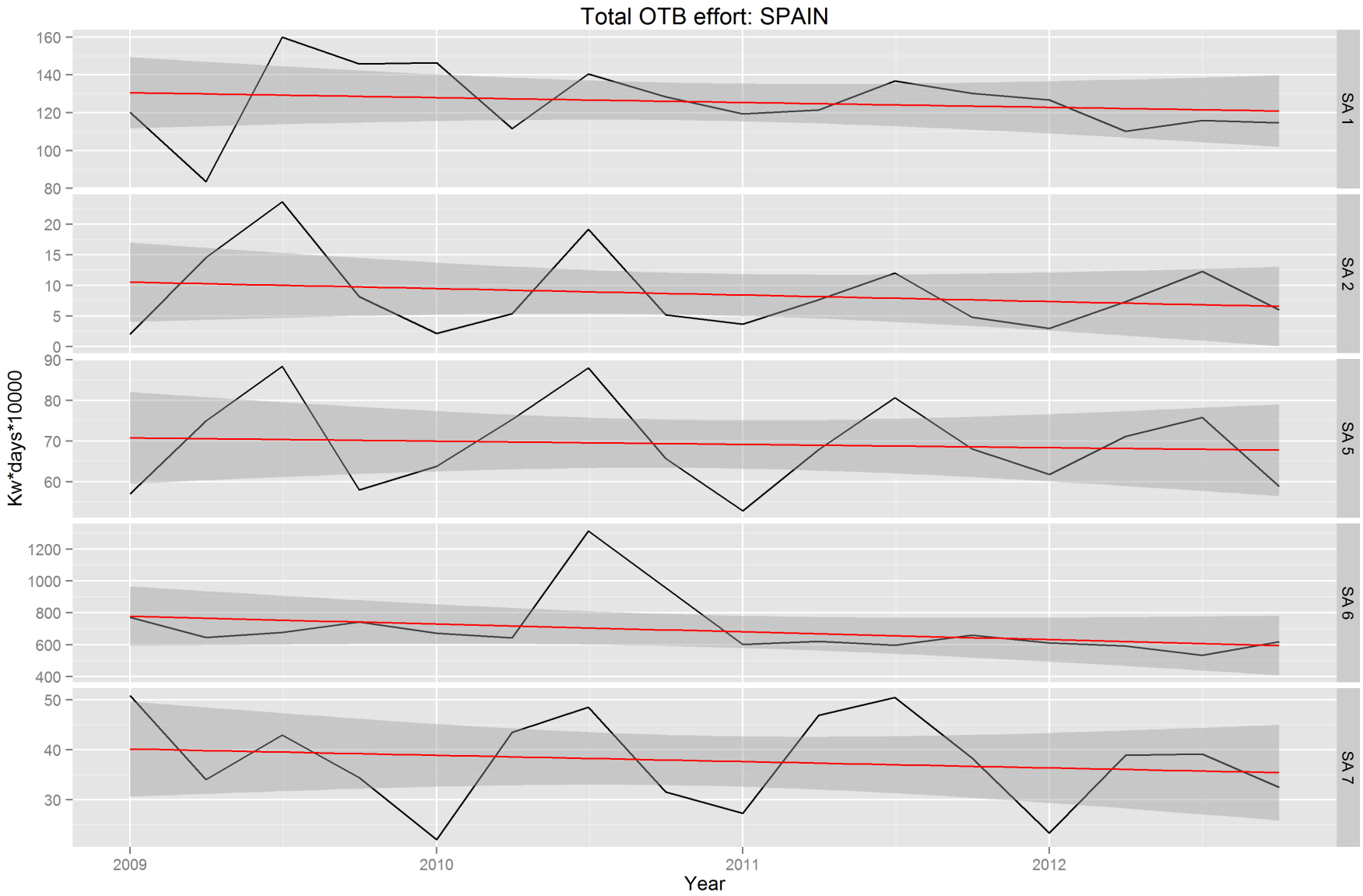
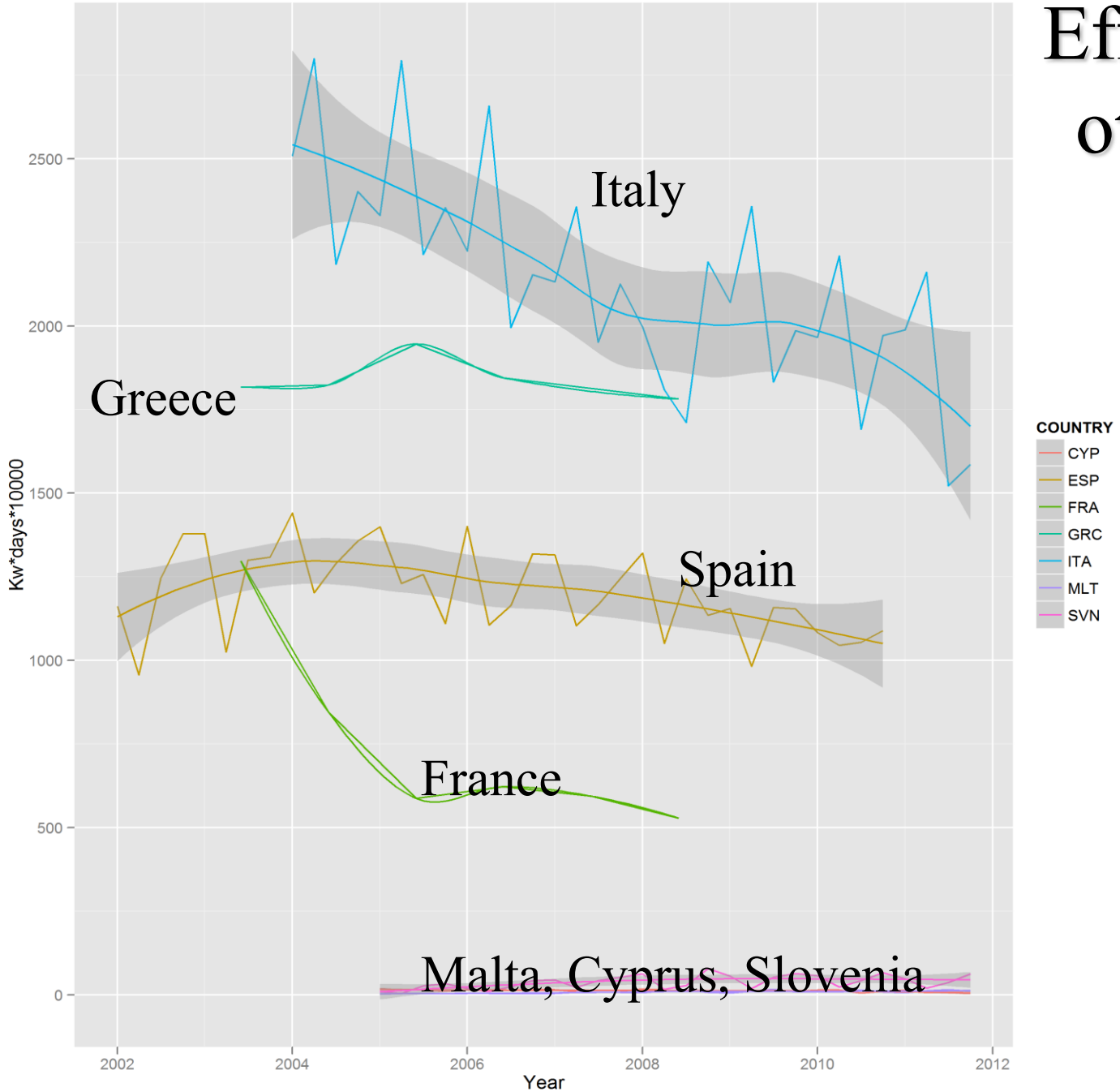


Unstandardized data from 2014 DCF datacall

Effort trends of otter trawlers



Unstandardized data from 2012 DCF datacall

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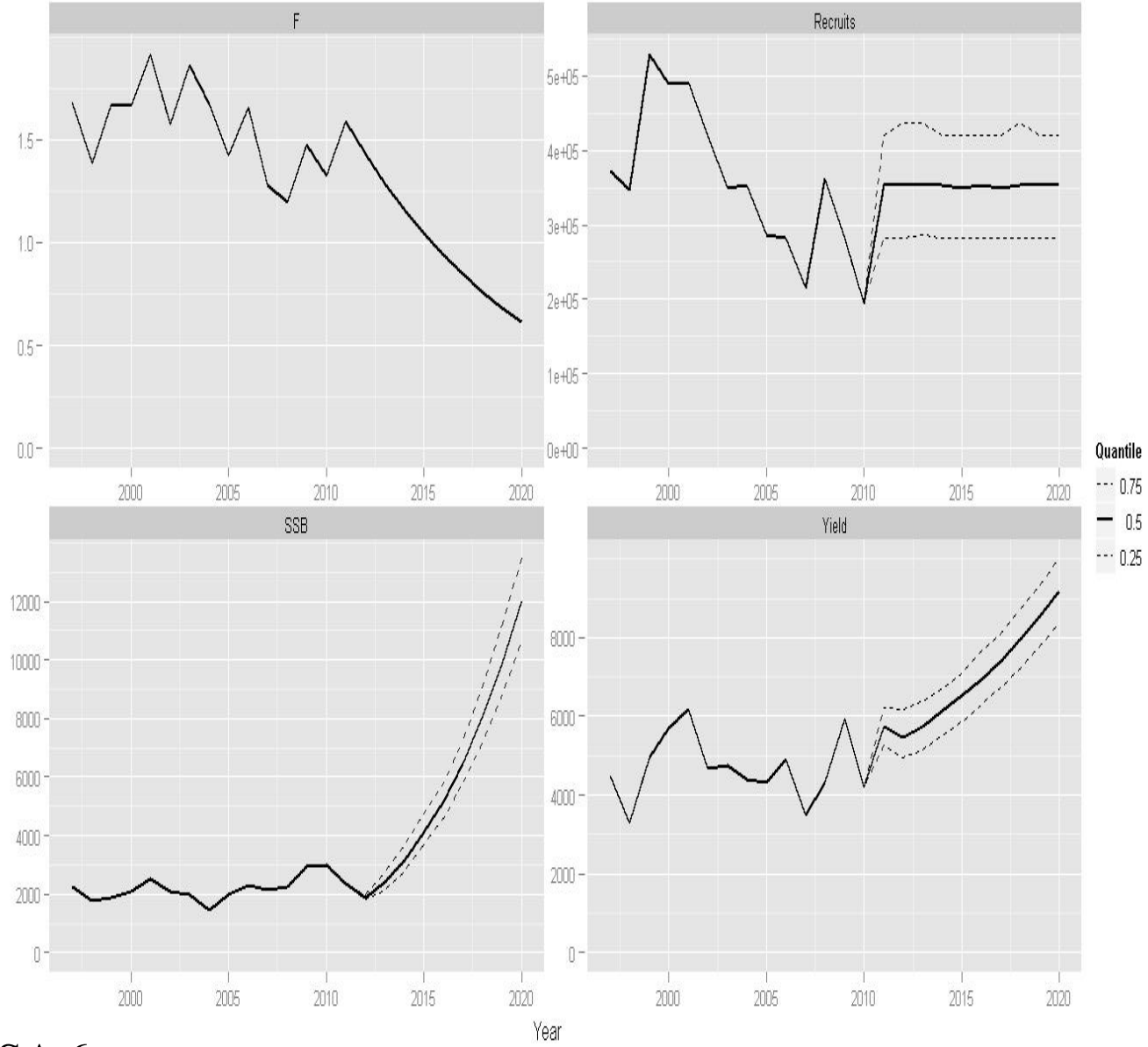
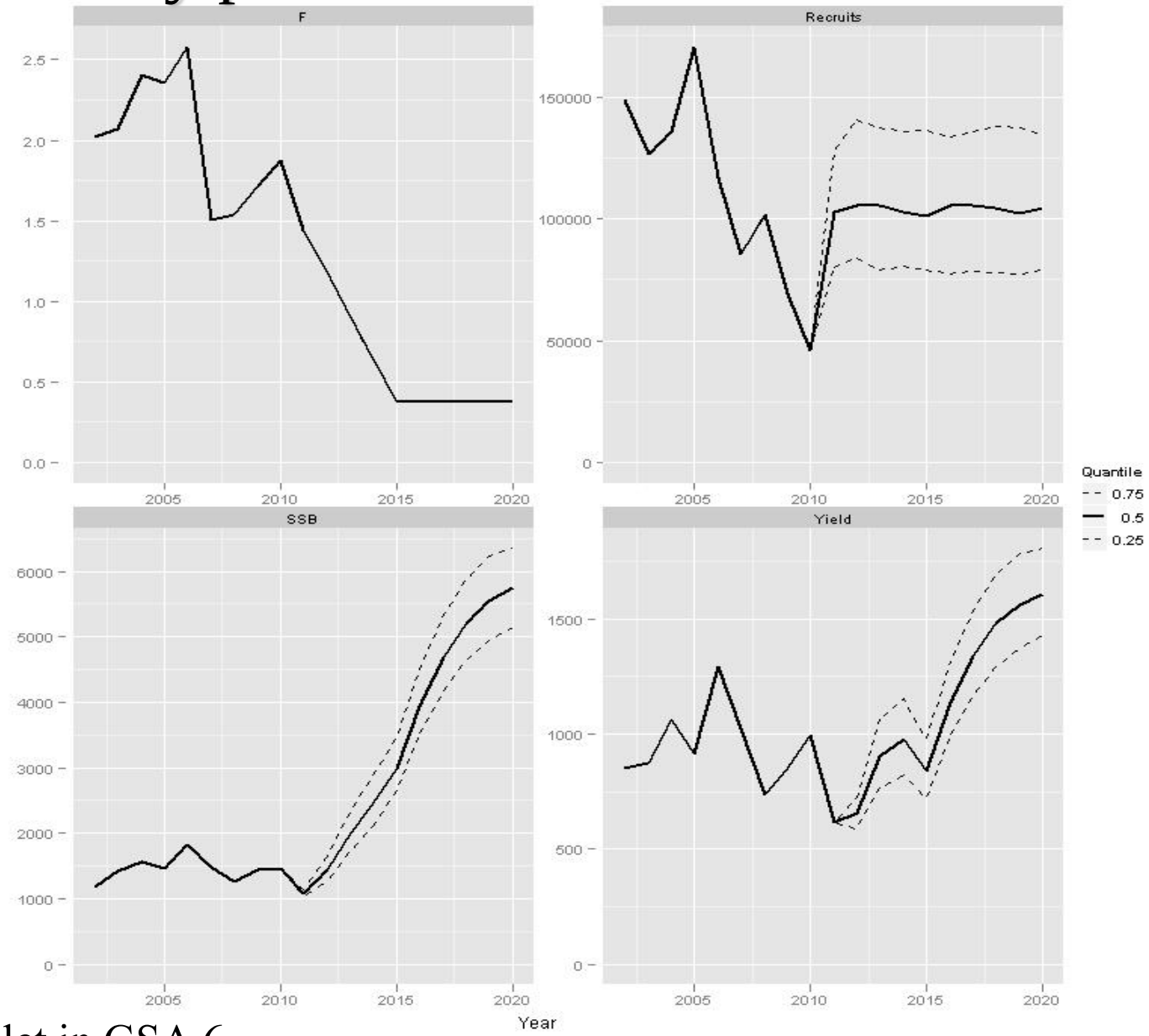
Recovery potential of Mediterranean stocks



Hake in GSA 6

10% reduction of F per year, MSY in 2020

Recovery potential of Mediterranean stocks



Red mullet in GSA 6

10% reduction of F per year, MSY in 2015

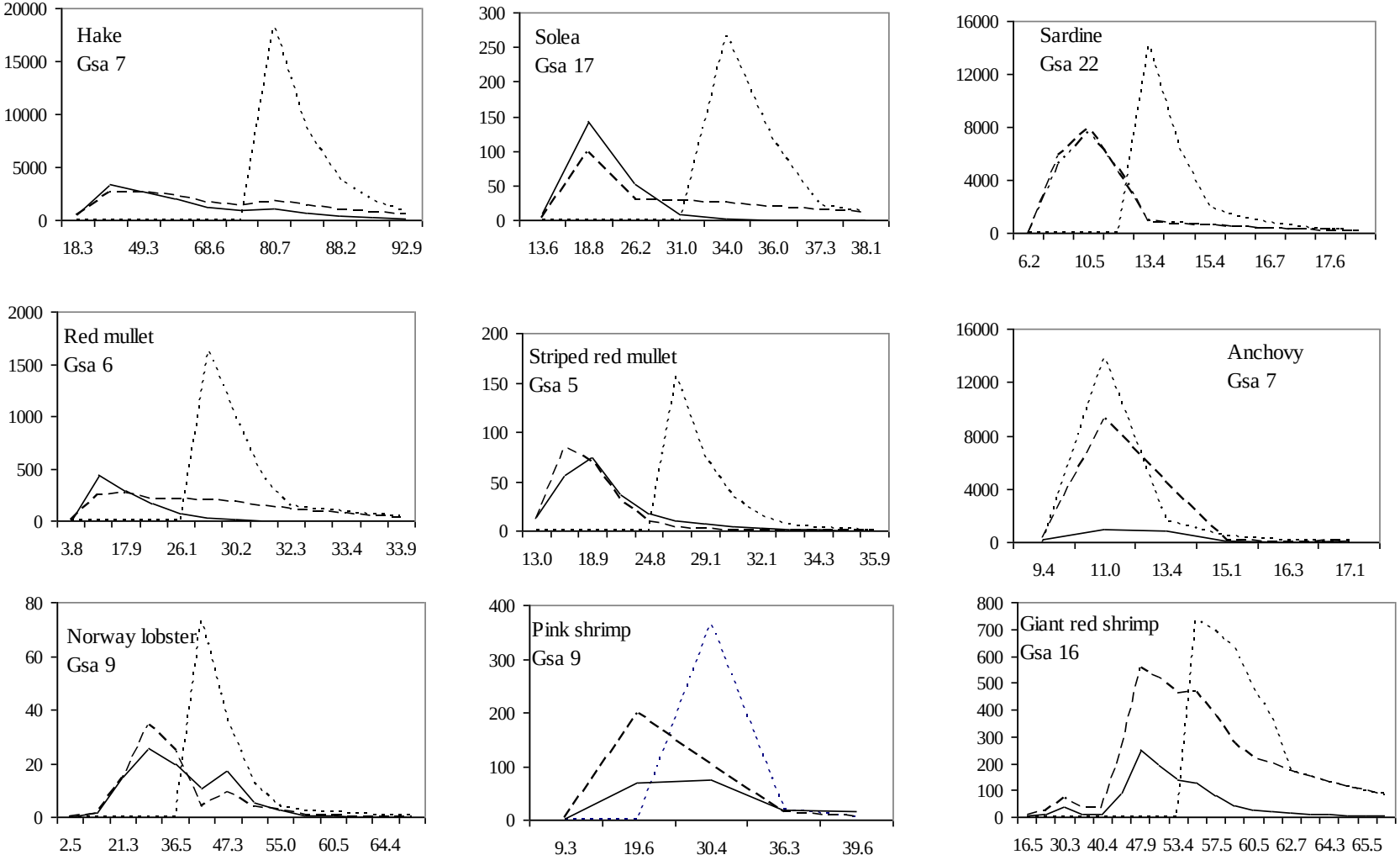
Status of Mediterranean and Black Sea stocks

State of the art

- Effort reduction have been, so far, inefficient to limit F; observed reduction in nominal effort did not result in a decline in F for demersal fish, while for crustaceans there are signs of lowering F.

- Recovering potential of Mediterranean stock is still very high.

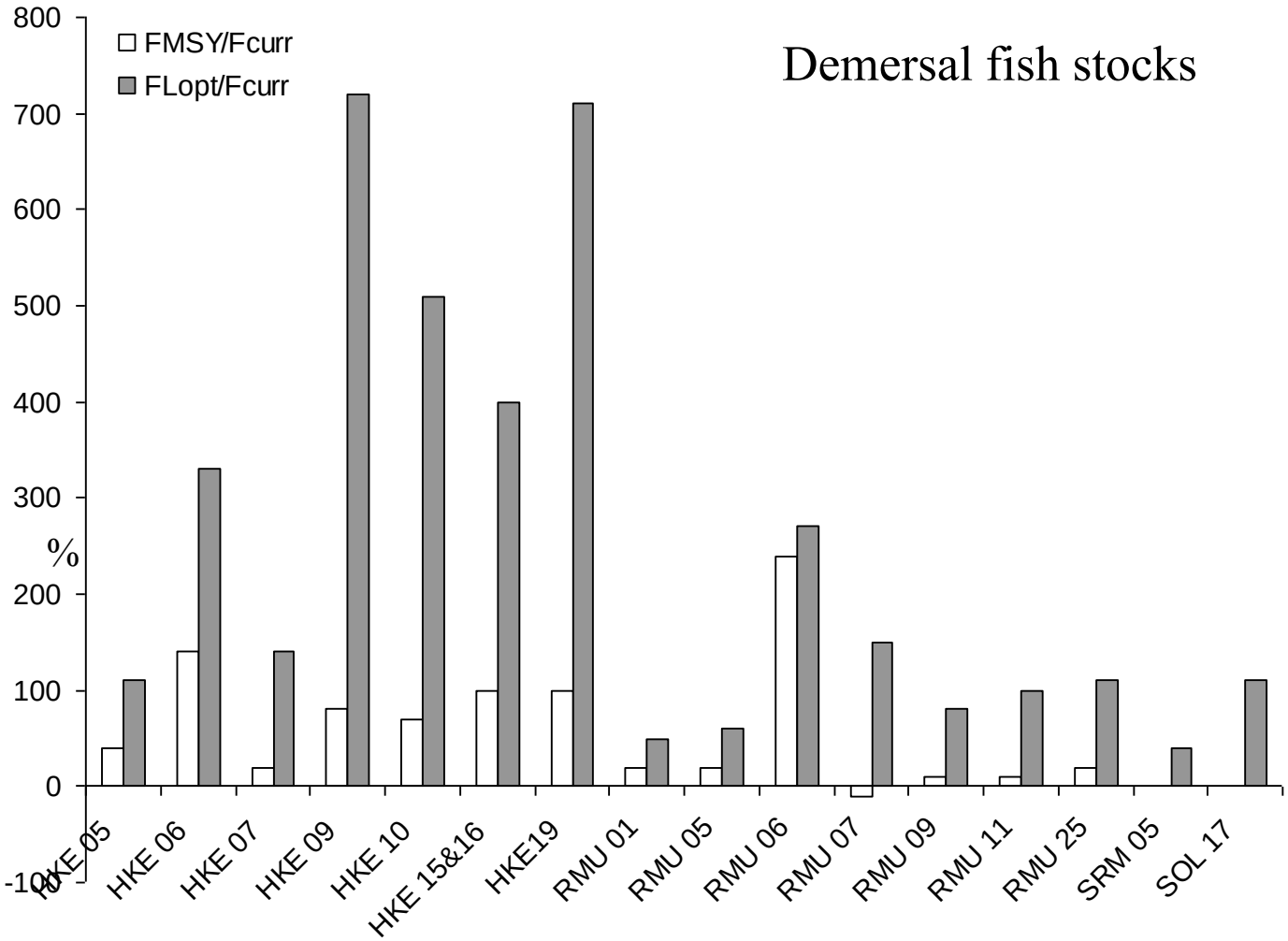
Current selectivity compared to the optimal one



F_{opt}
F_{MSY}
F_{curr}

Colloca, Cardinale et al. Fish and Fisheries, 2011

Changes in yield for different fishing selectivity regime



Colloca, Cardinale et al. Fish and Fisheries, 2011

Status of Mediterranean and Black Sea stocks

State of the art

•Current size at capture is much smaller than both L_{50} and L_{opt}

•Reducing F will not reach MSY without changes in selectivity; changing both will highly increase the revenue of the fleet assuring sustainable high long term yield

•Size selective harvesting can achieve several of the objectives of EAFM and it would represent the natural step forward after the implementation of the MSY framework

Status of Mediterranean and Black Sea stocks

How to achieve MSY by 2015-2020 for all stocks?

Immediate actions:

- Reduce F for all fisheries through reduction in effort or/and catches

- Modify gear selectivity to move towards MSY

- Implement a TAC system for small pelagics and some of the demersal species (e.g. sole in the Adriatic, deep sea shrimps)

- Implementation of management plans based on robust scientific basis and tested with a Management Strategy Evaluation

Status of Mediterranean and Black Sea stocks

Major data inconsistencies

- Collection of data, assessment and management should be at the stock unit level, which not necessarily match with the GSA classification
- The landings are incompletely reported for some important part of the fleet (e.g. gillnetting and longlines) while discard data are very scarce and thus rarely used in assessment
- GSA 8 (Corsica) is the only European GSA without any fisheries data
- MEDITS trawl survey is running with 1-2 months delay in Italy, while no trawl or acoustic surveys were performed in Bulgaria in 2014
- Time series are short and the reconstruction of historical data would be crucial to estimate biomass baselines for management