

## Preparing a multi-annual plan for horse mackerel in the North Sea

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## ICES advice for Data Limited Stocks

Table 2.3.1. Information requirements for the DLS Categories 1 to 6.

Category	Information Required					
	Population estimate	Survey	Fishing mortality	Biomass	Discards	Landings
1	x	x	x	x	x <sup>1</sup>	x
2	trends	(x)	trends	trends	(x)	x
3		trends	relative	relative	x <sup>2</sup>	x
4					x <sup>2</sup>	X
5					(x)	X
6						(x)

<sup>1</sup> Either available, or can assume to be zero.

<sup>2</sup> If the landings or catches are unreliable, a directional advice (qualitative) can be given.



## Multi-annual plan taking stepwise approach

### Rational basis for TAC setting

1. Explore available data
2. Explore Harvest Strategies based on interpretation of the available information (stepwise approach)

### Develop the knowledge base

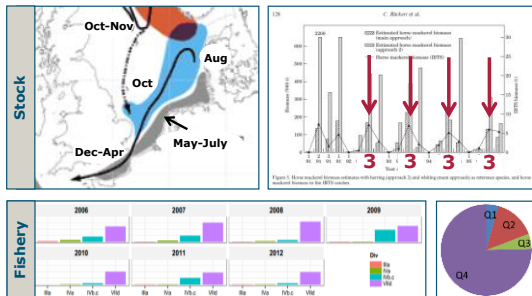
1. Identify and prioritise data knowledge gaps
2. Make a plan for improving the knowledge base (with contribution from the industry)



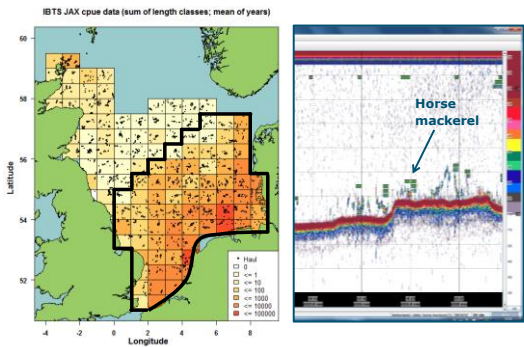
## Recap of where we stood in October 2013

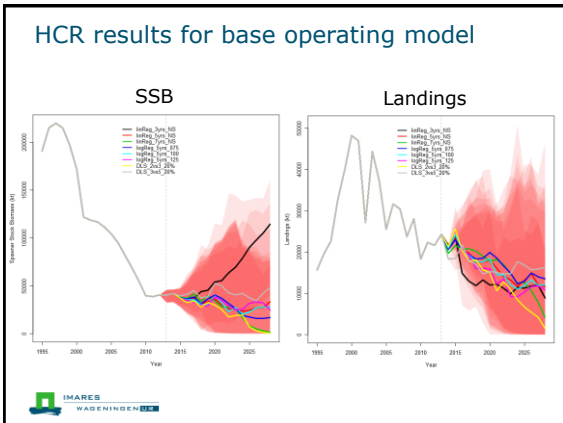
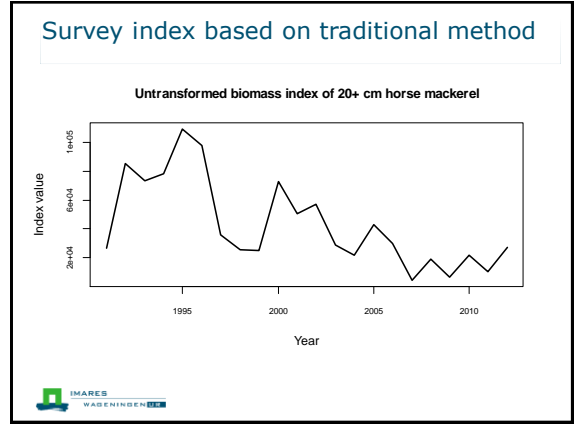
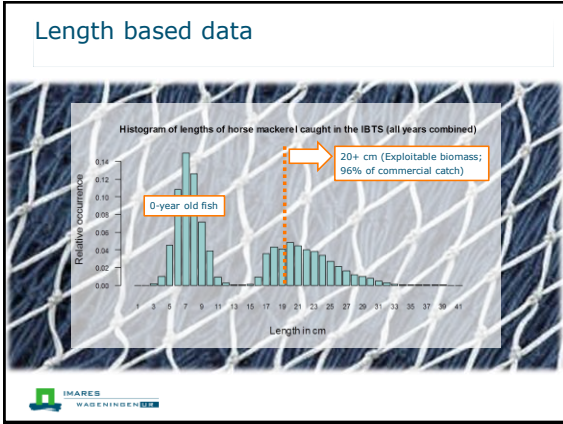


## North Sea horse mackerel



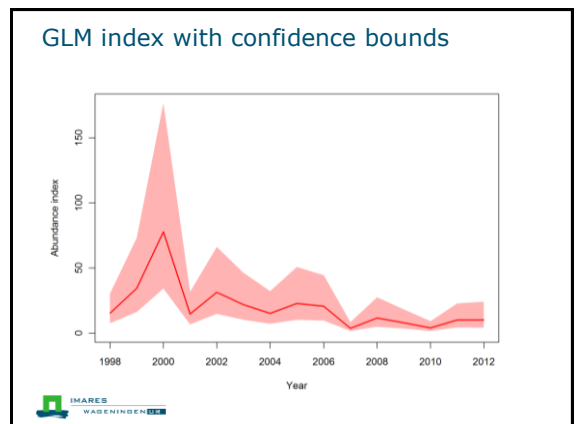
## Spatial and temporal coverage

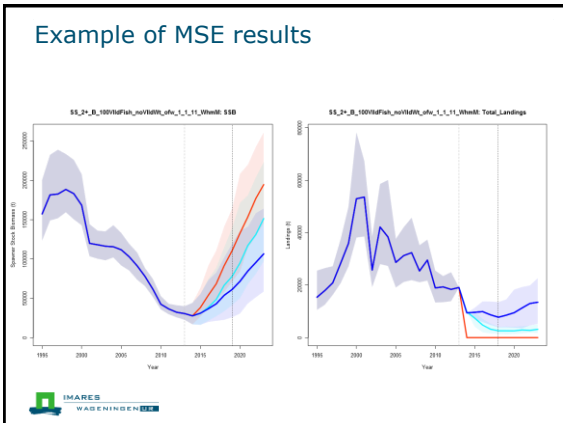
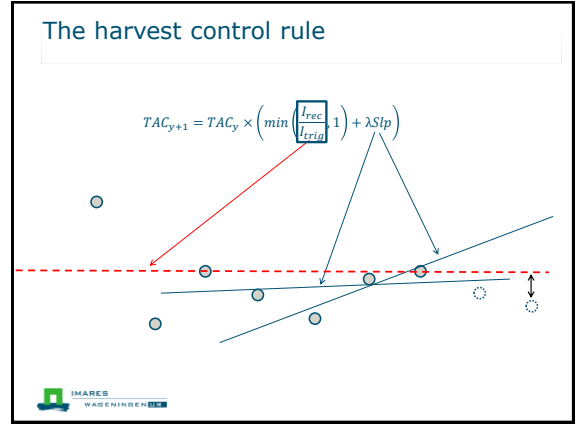
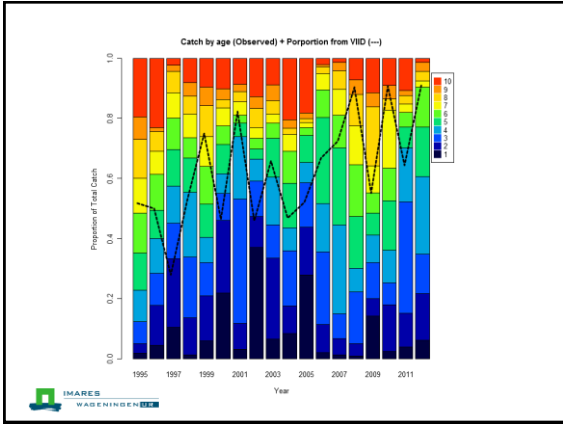




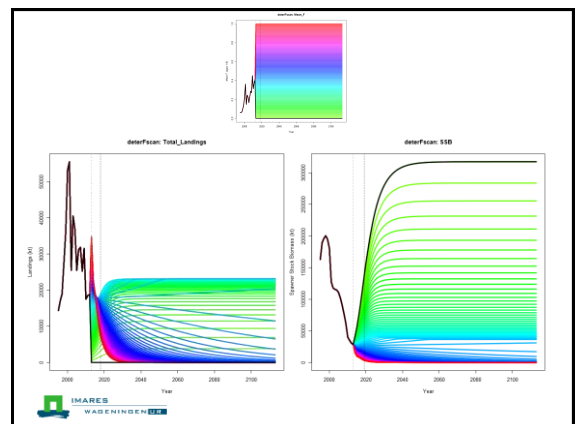
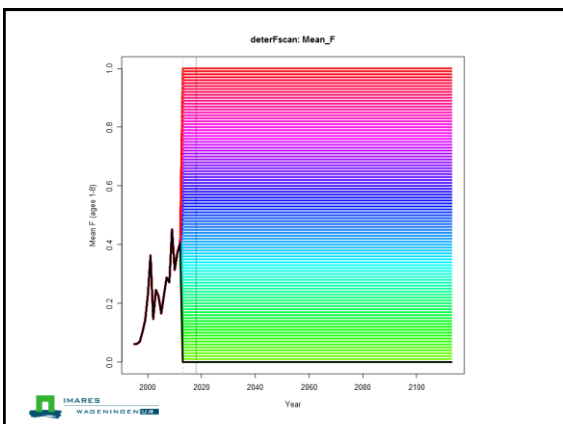
- ### Follow up from October 2013
- Establishing the index more sophisticatedly (transformation of the data / uncertainty bounds) (recommended by WGWISE)
  - Generate final MSE results
  - Examine those and discuss /decide with project partners the HCR to include in the multi-annual plan
  - Submit a special request to ICES to evaluate the plan
    - (One reviewer committed; a second asked)
  - Aim to have multi-annual plan evaluated by ICES by spring 2014
- IMARES  
WAGENINGEN UR

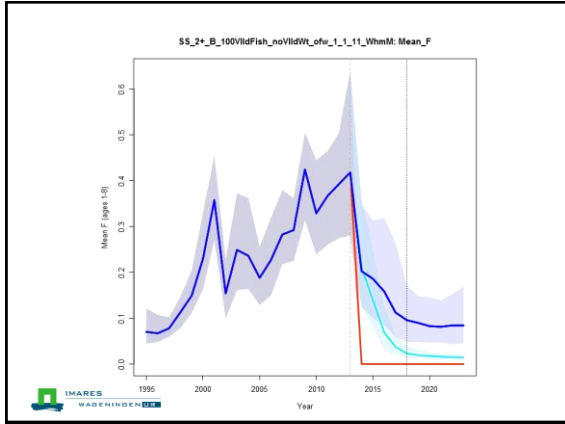
- ### Establishing the index more sophisticatedly
- A general linear model can:
    - Handle data that is not normally distributed (many zeros)
    - Account for effects of differences in gear, vessel or depth
  - The estimated year effects represent the index values
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### Maximum Sustainable Yield





- ### The plan (see document)
- HCR (parameters to be optimised)
  - Knowledge base improvements
    - Age information should be collected from horse mackerel caught in the third quarter International Bottom Trawl Survey (IBTS) in the North Sea
    - Information should be obtained on potential mixing of Western and North Sea horse mackerel in ICES area VIIId
    - The potential to utilise acoustic data from commercial vessels as a supplementary data source should be explored
  - Submit to ICES -> evaluation of the plan in a workshop with reviewers and stakeholders
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Thank you

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