Surplus production models in ICES advice

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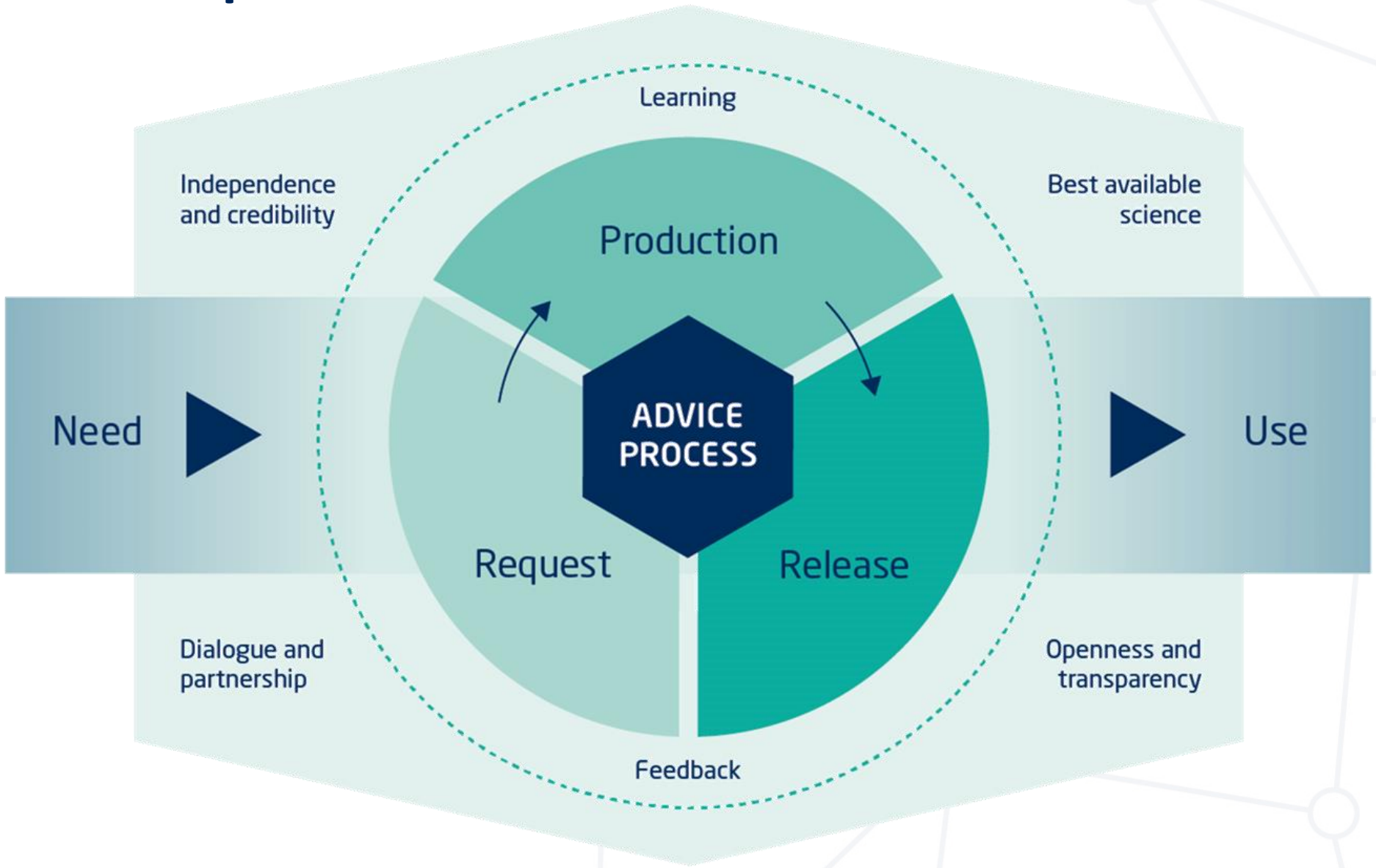
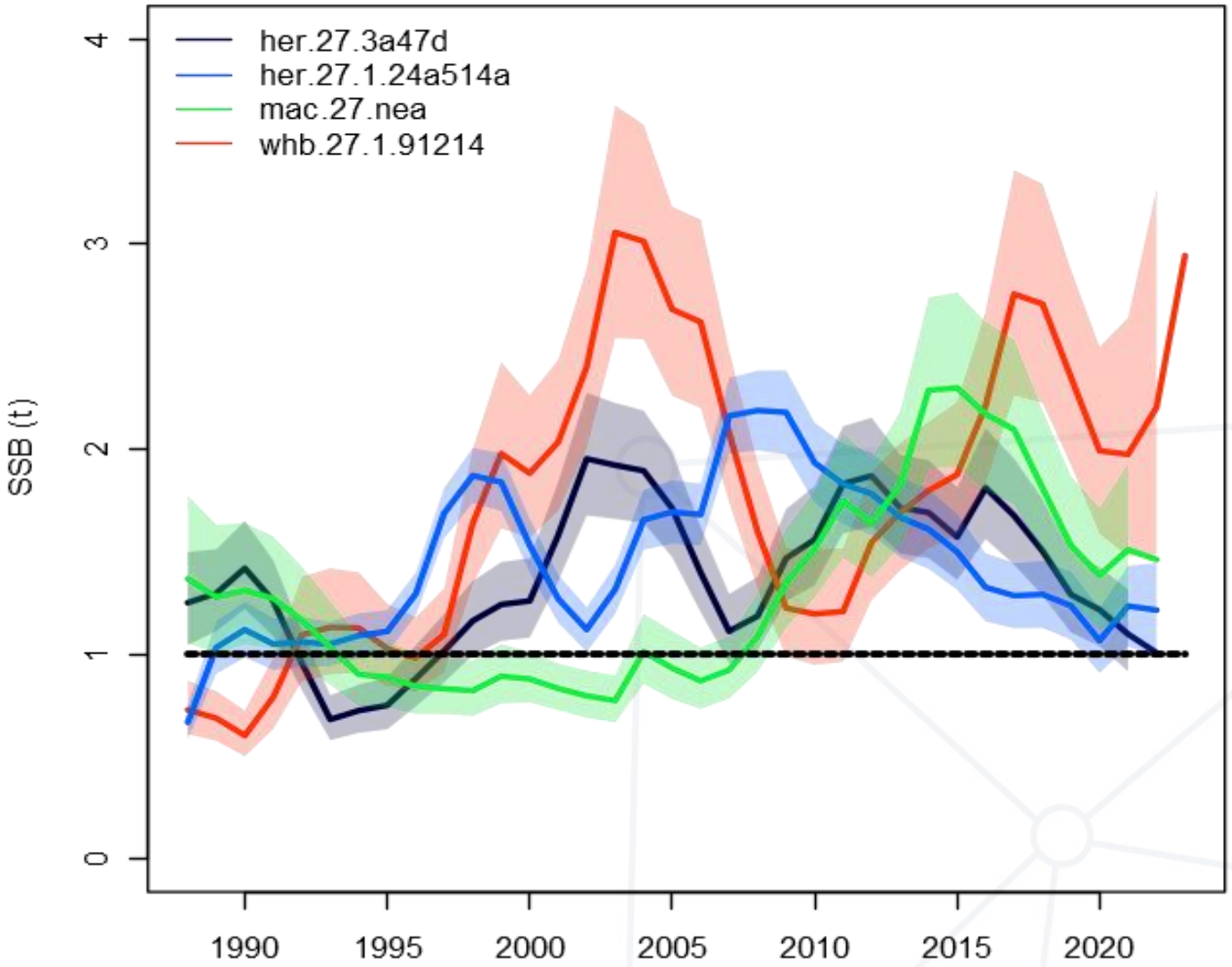
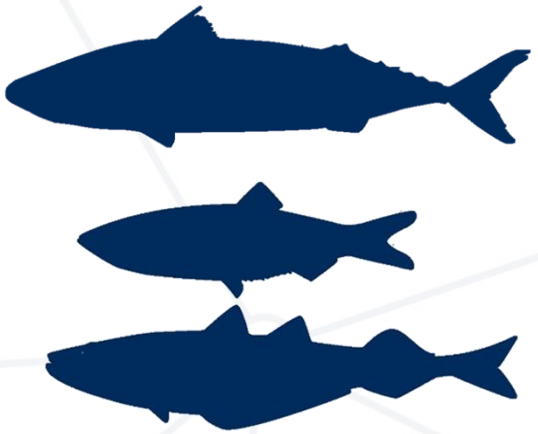
ICES advice process



Status of some key pelagic stocks





Surplus production models used for advice in ICES

- Used for advice for number of stocks – generally data limited
- Surplus production models provide a means of assessing stocks based on only survey and total annual catch time series.
- ICES is using them more.
- Assumption about growth over the time series & state of starting biomass

Advice for fisheries management objectives

ICES currently being asked to provide advice to

- Optimize yield at low risk to biomass (MSY & precaution, LoS FSA, CFP)
- Minimise impact of fisheries on ecosystem – minimum impact on species & habitats

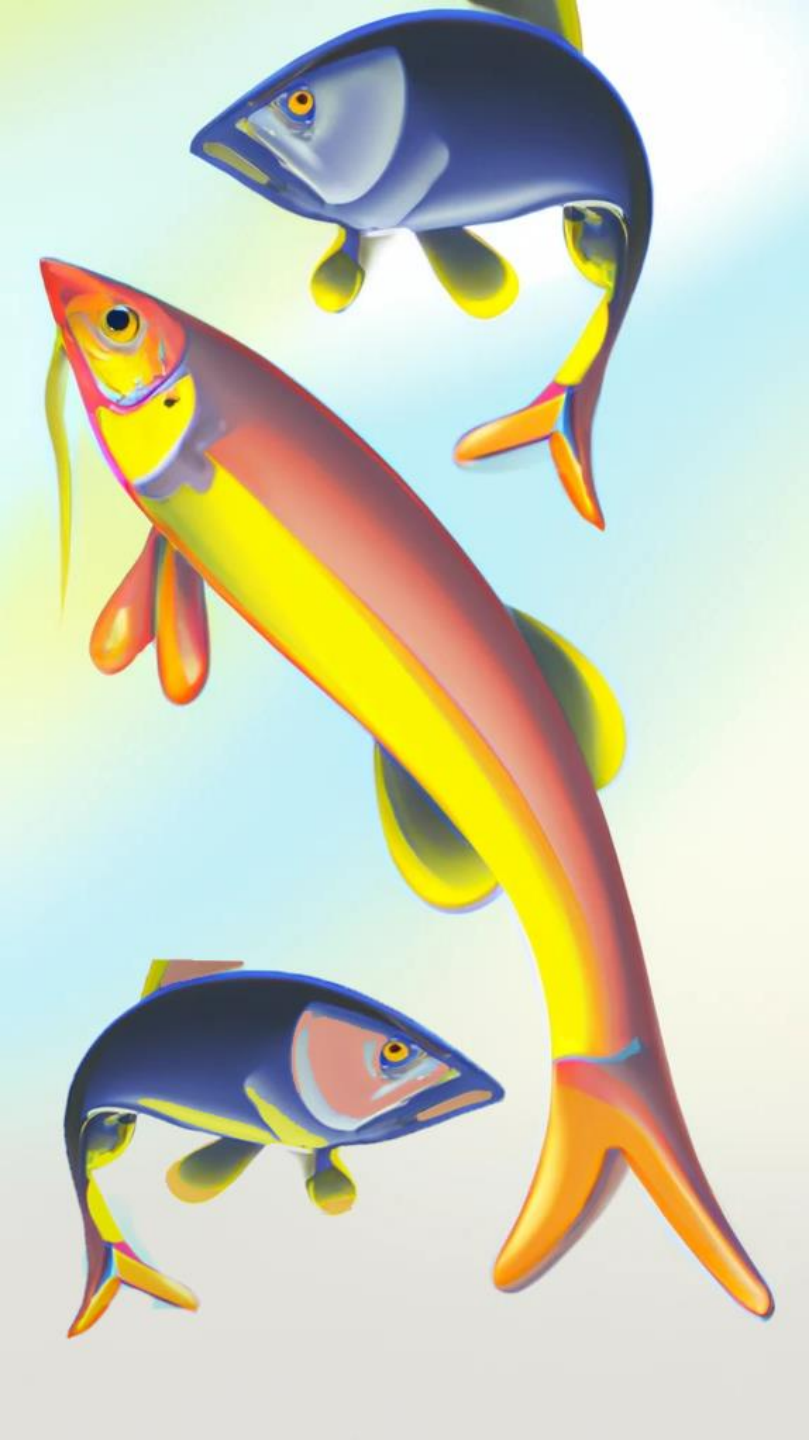
Challenges associated with surplus production models

- Although production models combine all aspects of productivity, these components are not separated & models can be slow to change.
- As population growth rate in most biomass production models is constant over time, they cannot detect changes in productivity.
- For forecasts, age structured models provide the opportunity to incorporate short term changes in productivity such as recruitment & biological variables (weight at age and maturity at age).
- This means that production models can be slow to respond to increased catching opportunities & also potentially result in overexploitation when productivity swiftly reduces.
- The risk of not achieving harvest or conservation objectives needs to be built in.

Examples of advice using surplus production models

• Northern shrimp 1-2	Bayesian surplus production model
• Megrim 4a,6a	Bayesian surplus production model,
• Megrim 6b	SPiCT
• Thornback ray 8abd	Bayesian surplus production model
• Boarfish 6-8	Bayesian surplus production model
• Greenland halibut 5,6,12,14	Bayesian surplus production model
• Turbot 3a	SPiCT
• Nephrops fu.26-27, 25, 31	SPiCT
• Porbeagle nea	SPiCT
• Black- bellied angler fish 8c,9a	SPiCT
• Whiting 6a	SPICT used for trends
• Plaice 7fg	SPiCT used for trends

Used for other category 3 stocks too



Application of surplus production models still being discussed…

- General proposed guidelines:
  - Category 1 with an MSE
  - Category 2 with a forecast
  - Category 3 as an assessment only (still being discussed)
- SPiCT is a surplus production model that was specifically developed for use with stocks that are data-limited.
- ICES agreed to provide MSY advice using surplus production model(s) for data-limited stocks. Thus support these tools to provide basis for advice.