

A need for ecosystem-based management of
Western Baltic herring
under climate change and altered mortality rates

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Tale of hope

The background image shows three men standing on a rocky outcrop. The man on the left has a beard and is wearing a dark green cloak with a quiver of arrows on his back. The man in the middle is smiling and wearing a dark grey cloak. The man on the right is wearing glasses and a dark grey cloak, holding a wooden staff with a diamond-shaped object at the top. In the background, there are snow-capped mountains and a large, dark, spiky castle built on a cliffside.

A need for ecosystem-based management of
Western Baltic herring
under climate change and altered natural mortality rates
- A Tale of Hope -

- Northern Europe
- Small area bordering Denmark, Sweden & Germany
- Brackish water conditions
- ICES Sub-divisions 22-24



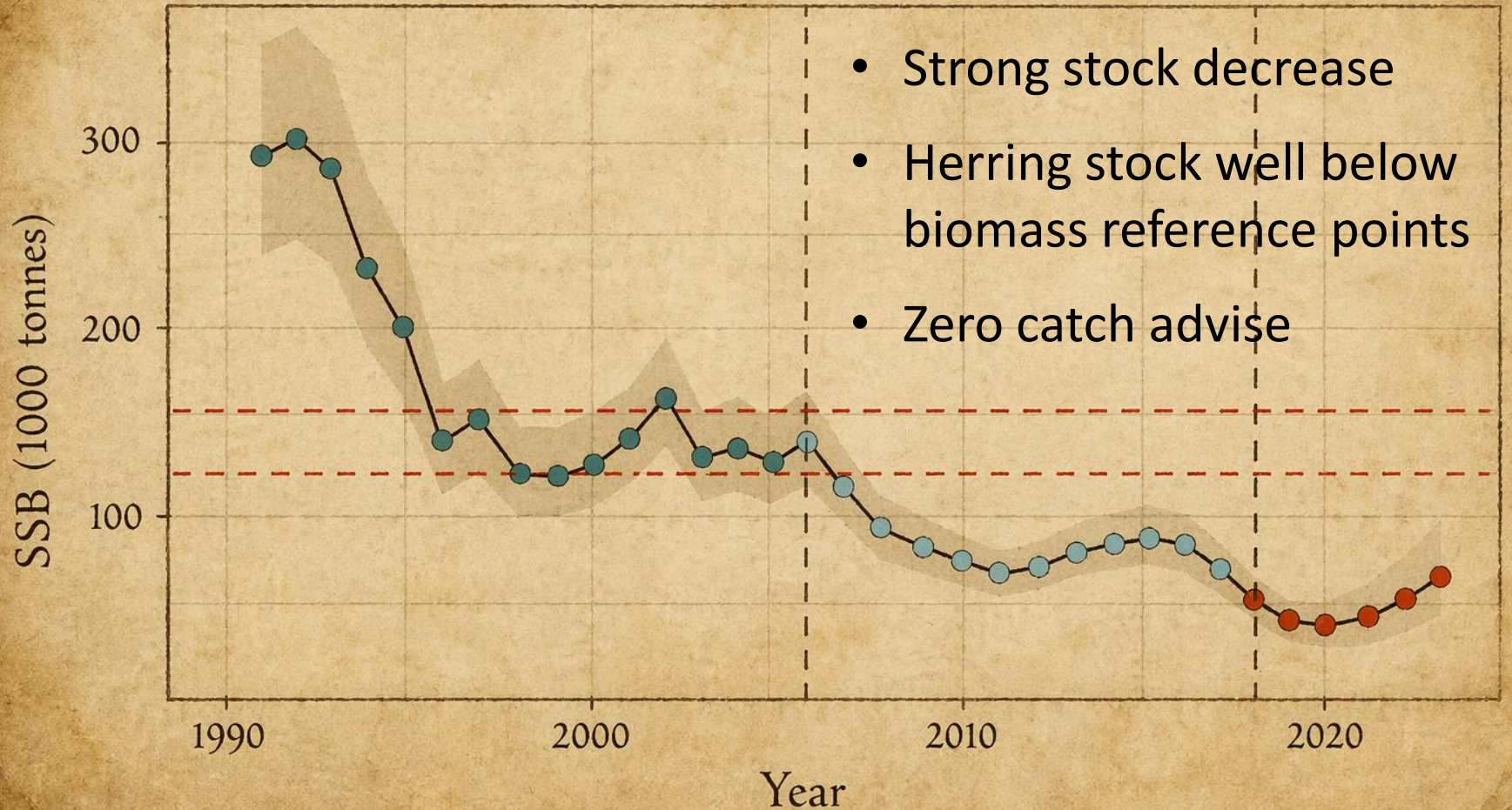


- Historically one of Europe's most important fisheries
- High socio-economic importance
- Strong cultural connection



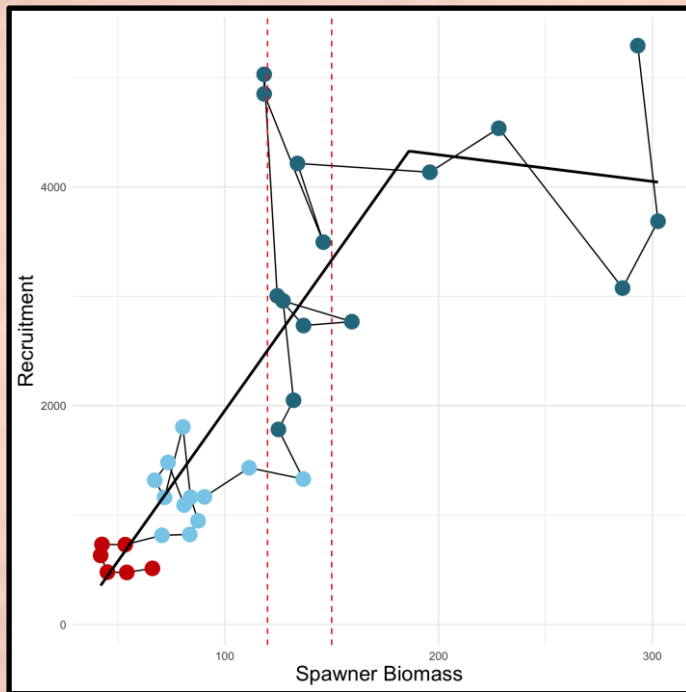
The Western Baltic isn't any longer what it used to be...

Western Baltic Spring Spawning Herring (WBSSH)

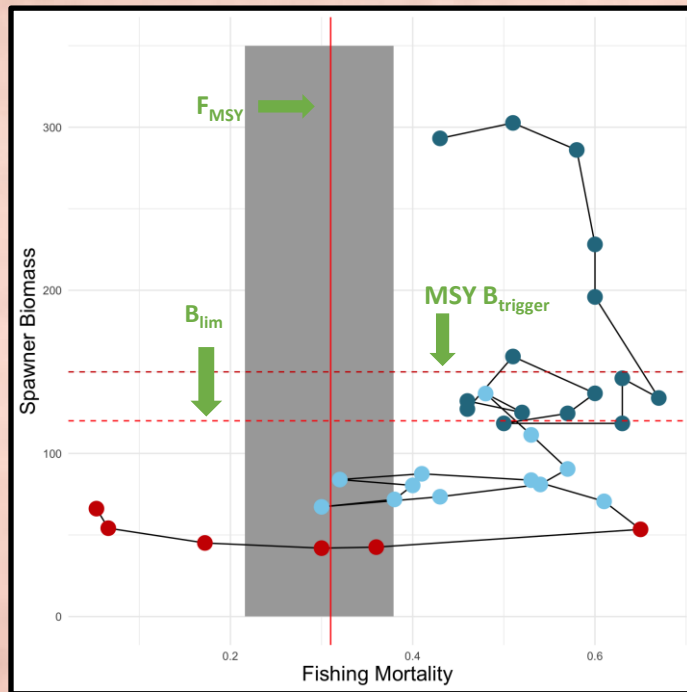




- Low biomass impairs productivity

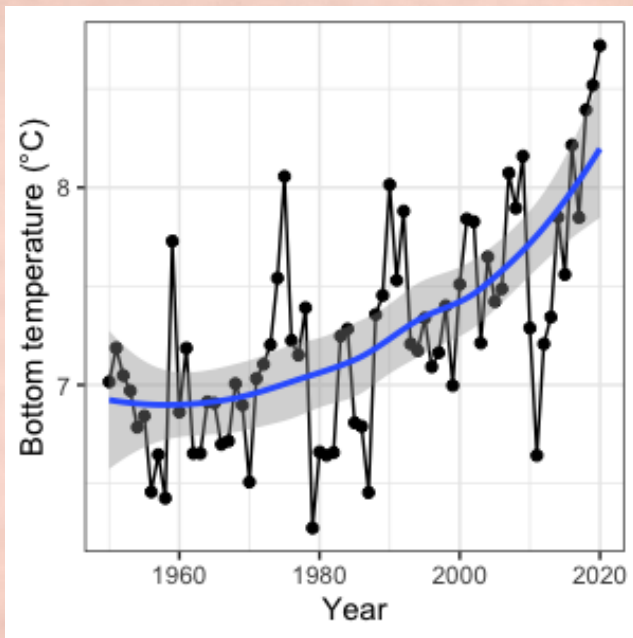
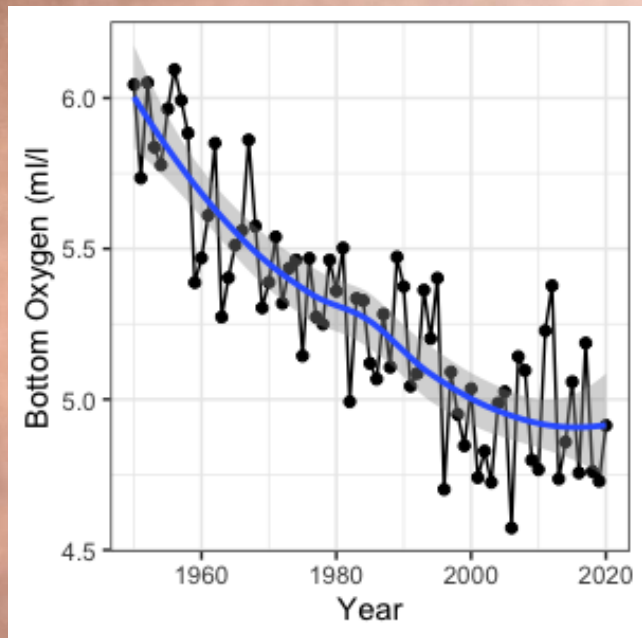


- Stock size becomes decoupled from fishing pressure



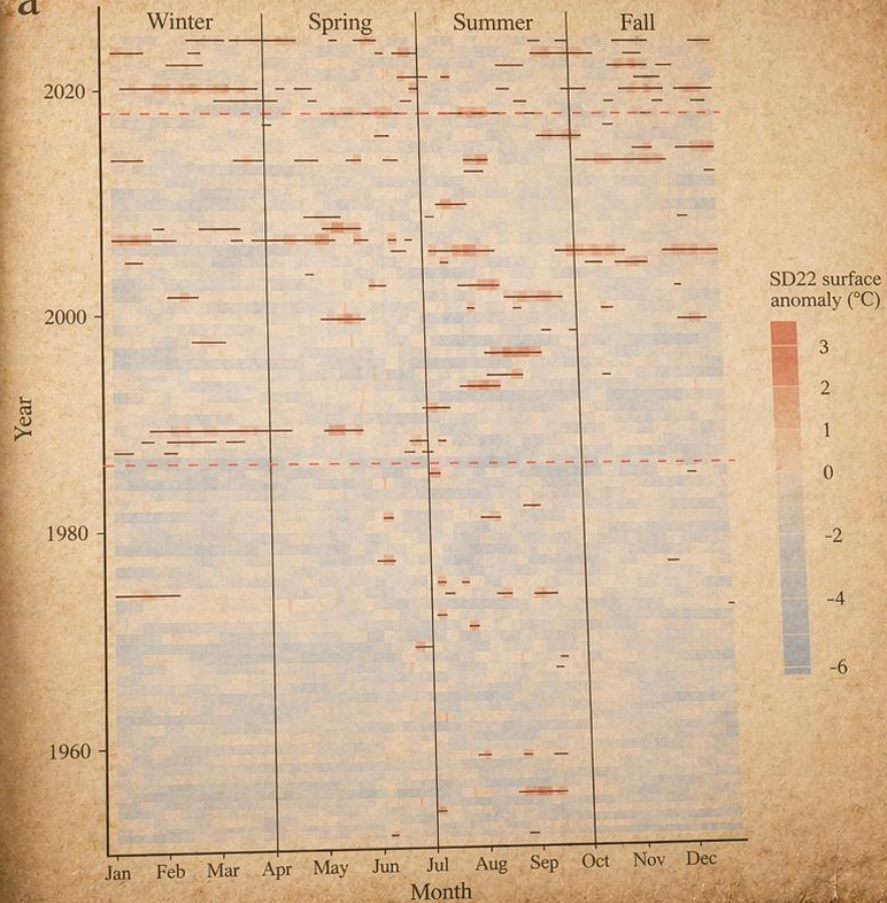
We need to destroy the ring

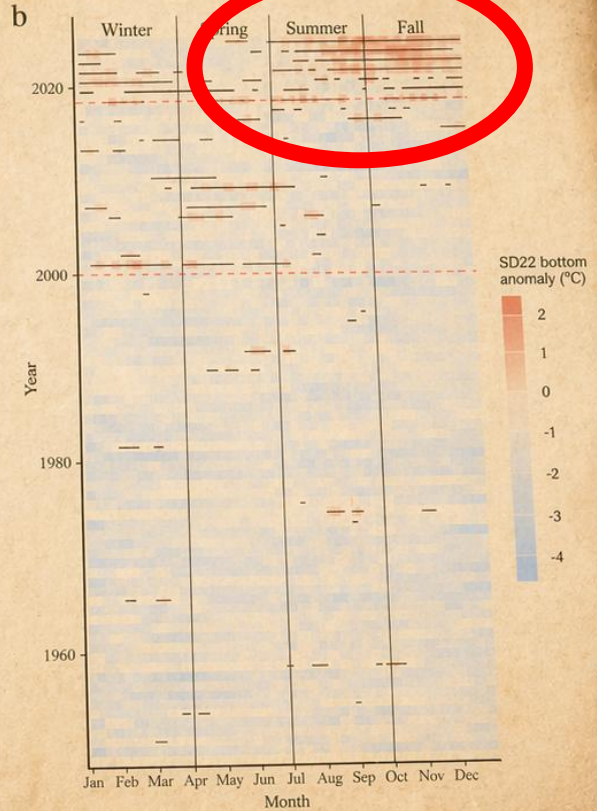
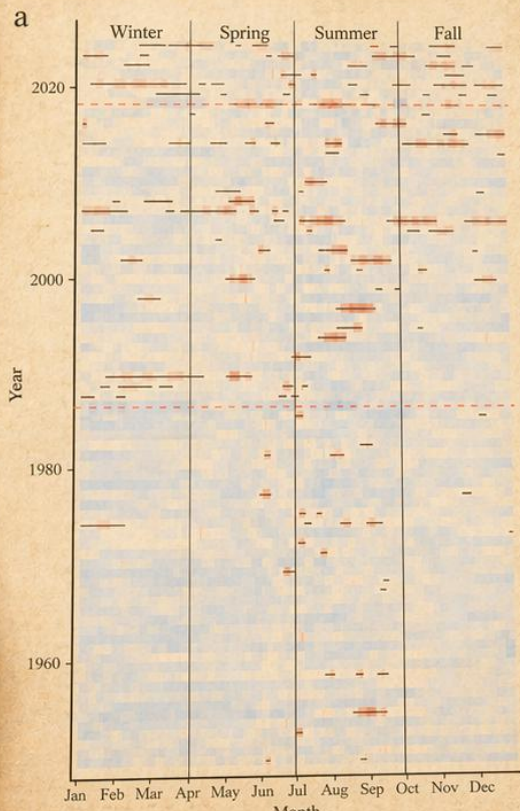




Marine heatwaves increase

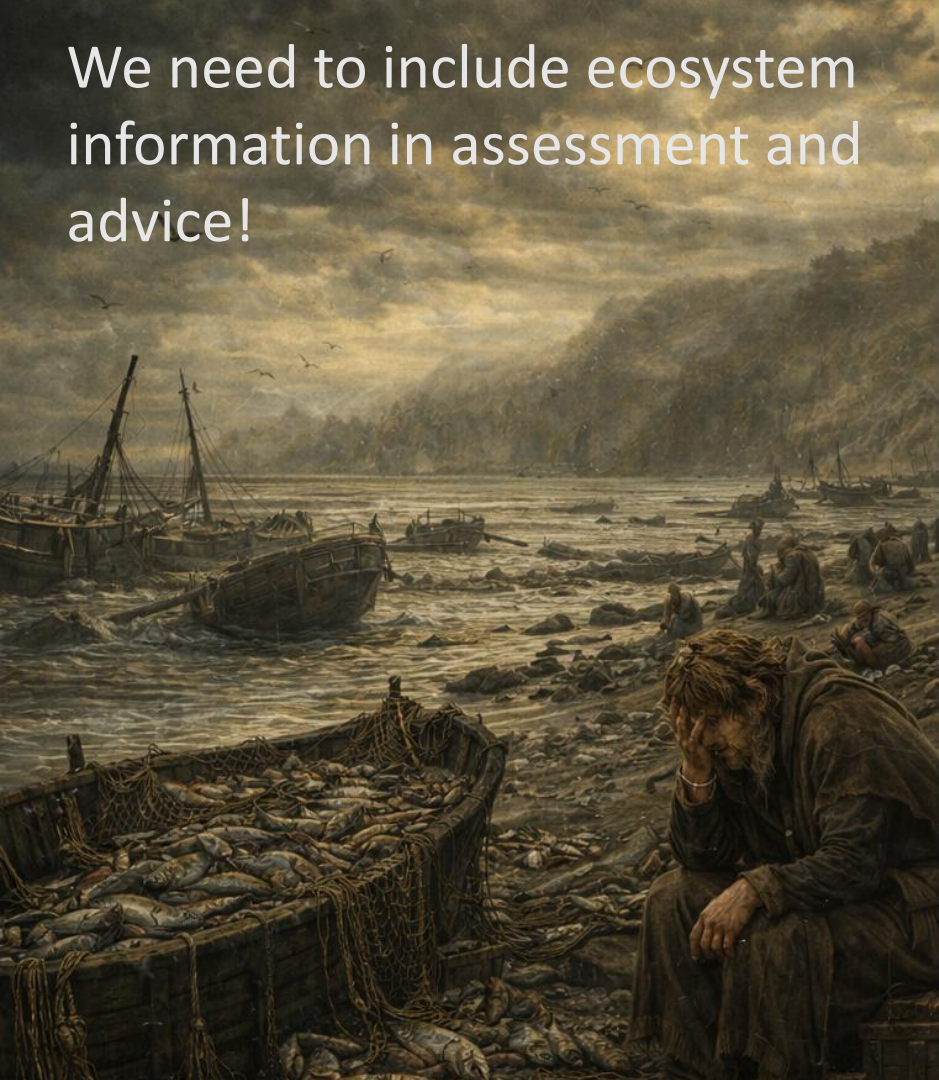
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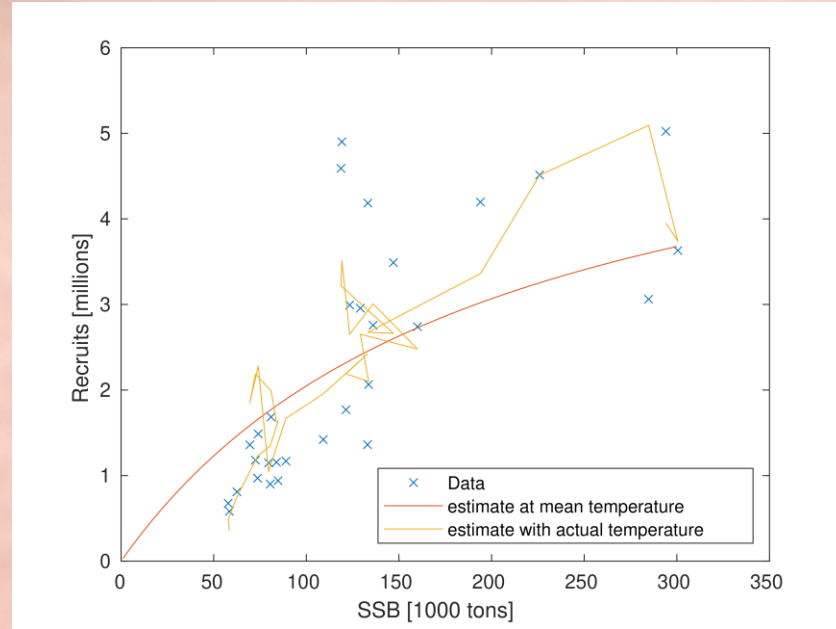


Marine heatwaves: strong increase @bottom

We need to include ecosystem information in assessment and advice!



- Temperature improves stock-recruitment relationship



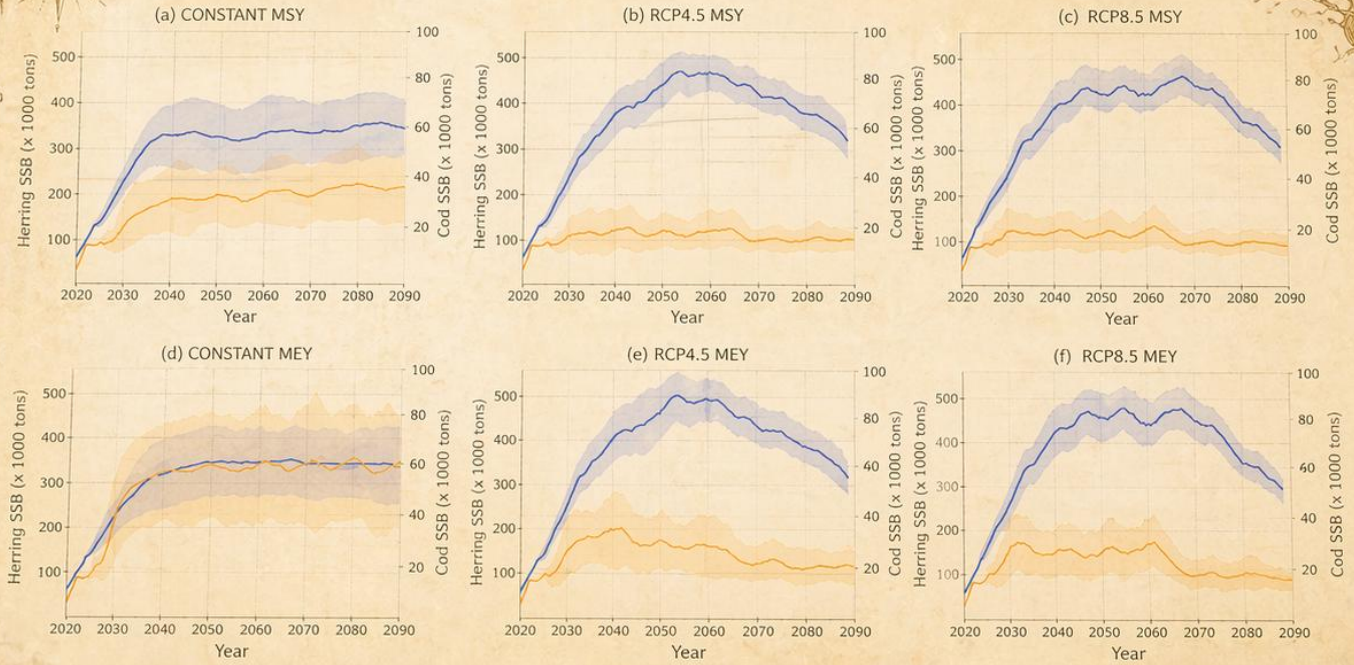
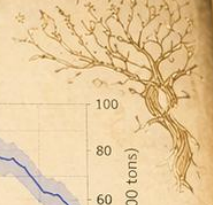
Ecological-economic multispecies model

- Ecological interaction: Predation (stomach content data)
- Age-structured (8 age-classes) to meet standard assessment
- Population variables acc. to ICES
- Environmentally-sensitive S/R functions
- Price dependent on demand and supply
- Cost functions dependent on stock size and effort
- Scenarios: RCP8.5 & RCP4.5 vs. No Climate Change
- Management: Multispecies MSY vs. MEY



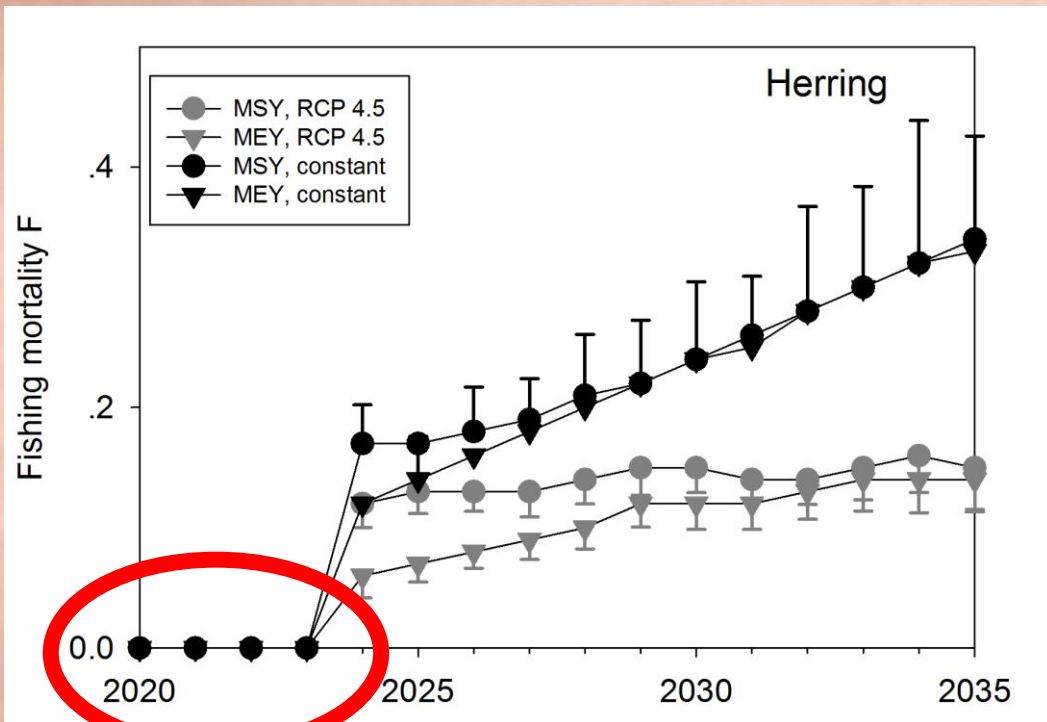


— Herring SSB — Cod SSB



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Conclusion

- Environmental conditions are rapidly changing
- Stock productivity is negatively impacted
- Needs to be included in assessment, advice & communication
- Western Baltic Spring Spawning Herring might recover...
- ... but a period of zero catch needed
- Adopting EBFM is crucial for the future of Baltic fisheries



Thanks for listening!

