Climate refugia in the Baltic Sea … and beyond

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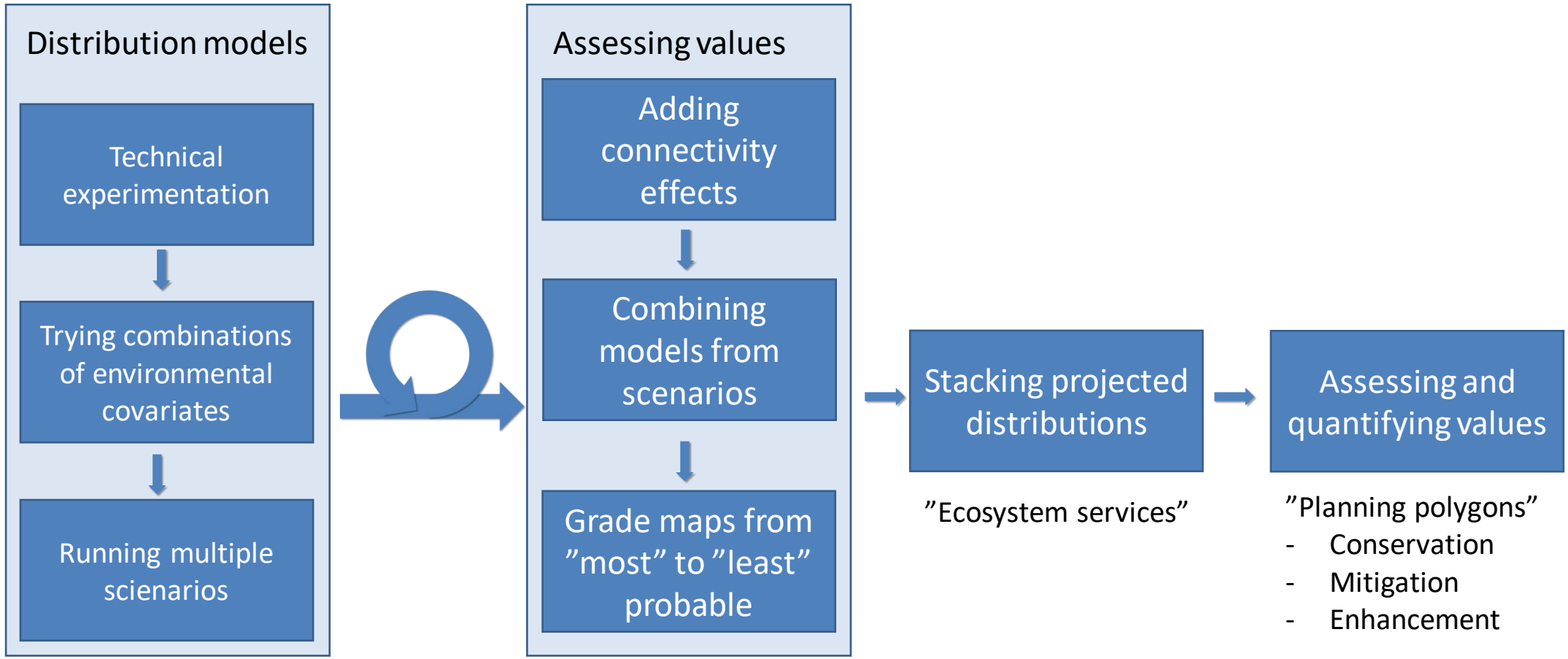
From climate change to ”planning polygons”

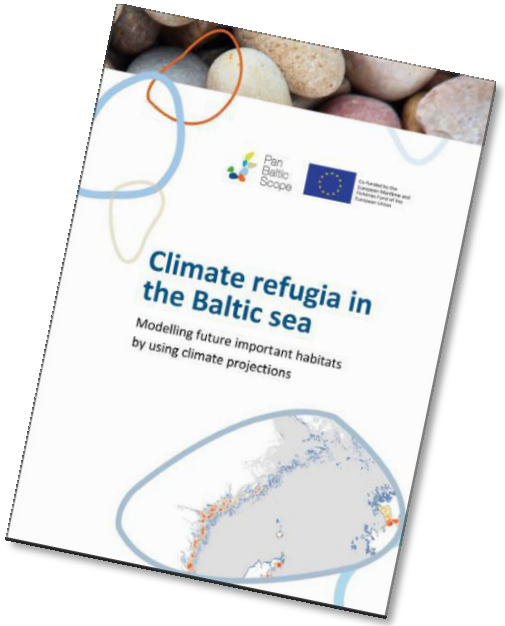
1. Focus on **projected situation** rather than estimated stress
2. What **loss and gain** of importance species can we project?
3. How do we handle the **aggregated effects** and identify ”planning polygons” for MSP?
4. … And how do we handle **uncertainty**?

Experiences from Pan Baltic Scope … and beyond



Experiences from Pan Baltic Scope … and beyond

- A dozen key species in the Baltic
- First assessment based on basic factors such as temperature and salinity
- The most uncertain factor – salinity – suggests radical shifts southwards
- Further work needed with more factors, e.g. nutrients, extreme values and uncertainty

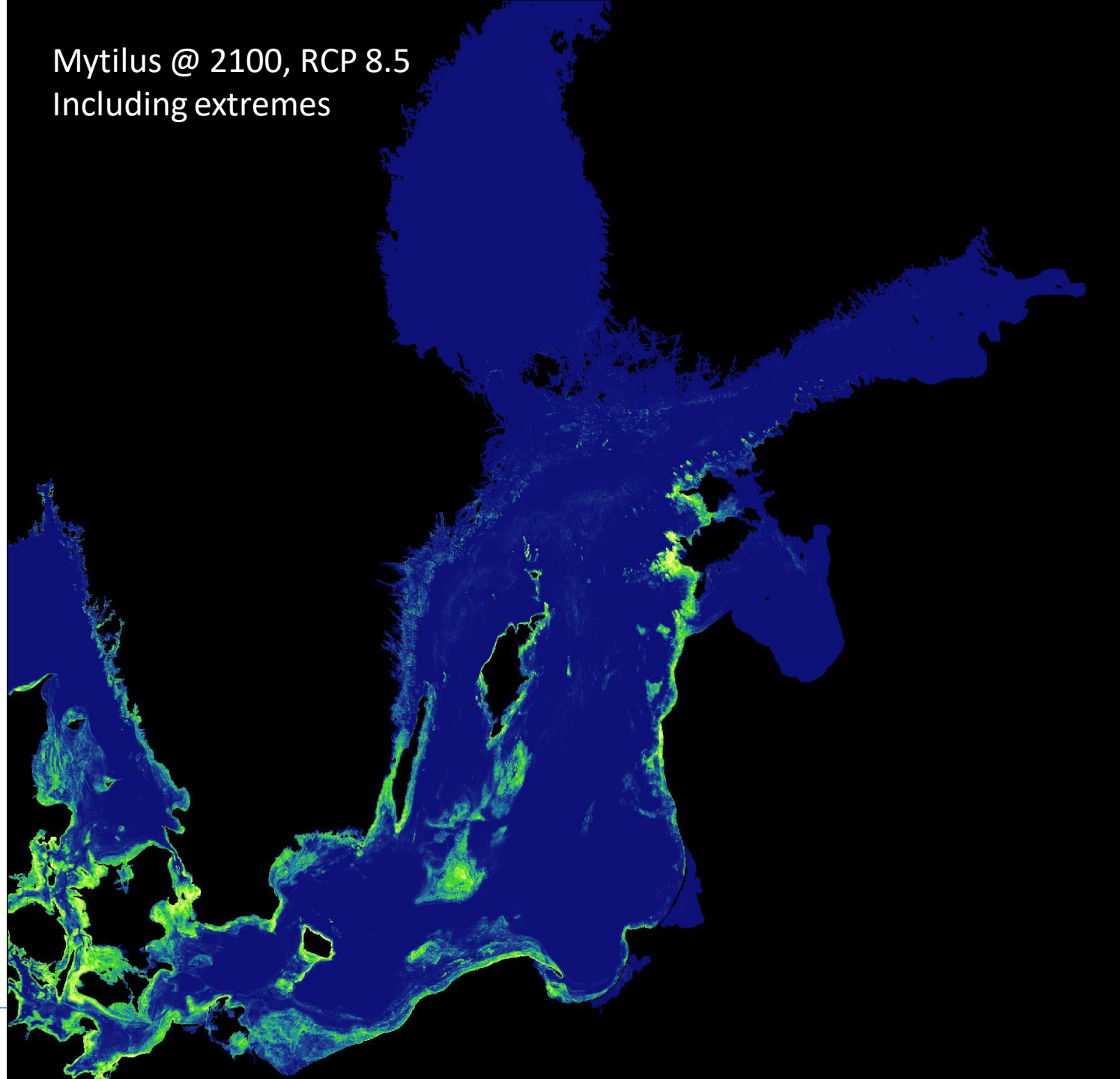


Lower salinity?
Temperature stress
Extreme events
Less sea ice

Better water quality
Less sea ice
Higher temperature

Ongoing work

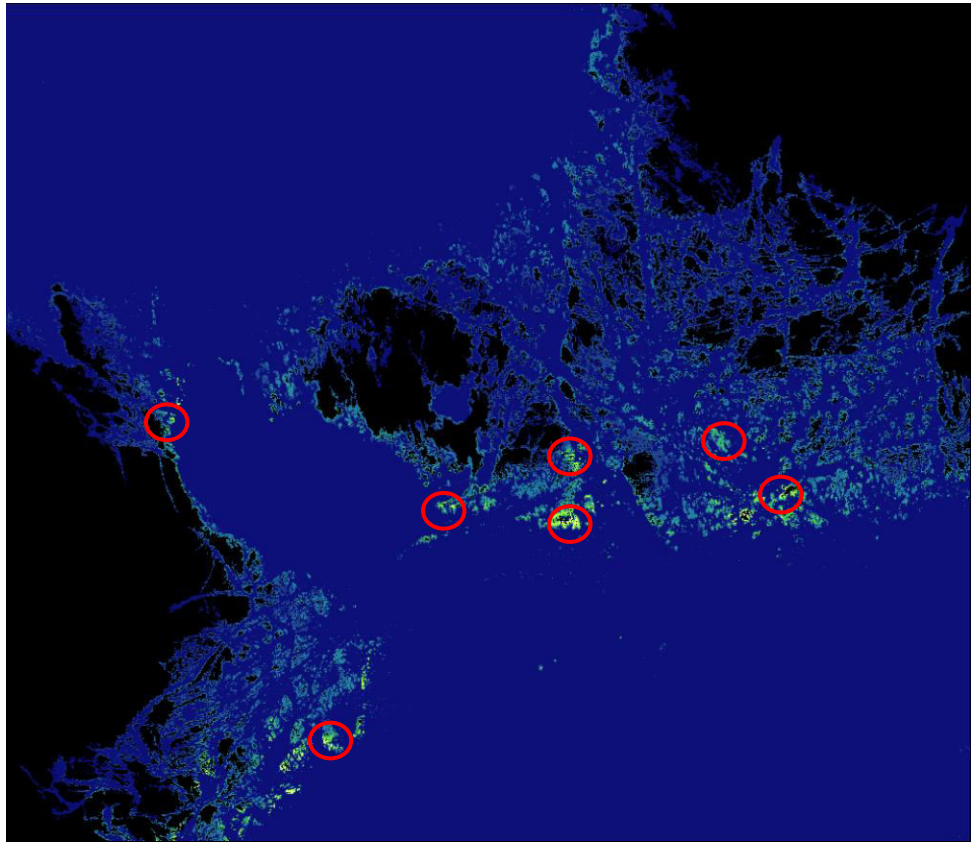
- Higher resolution - better predictors
- More data (50.000+ records/species)
- Added nutrients
- Added climate stress (extremes, e.g. heat waves)
- Modelling 100+ distributions



Implications for MSP

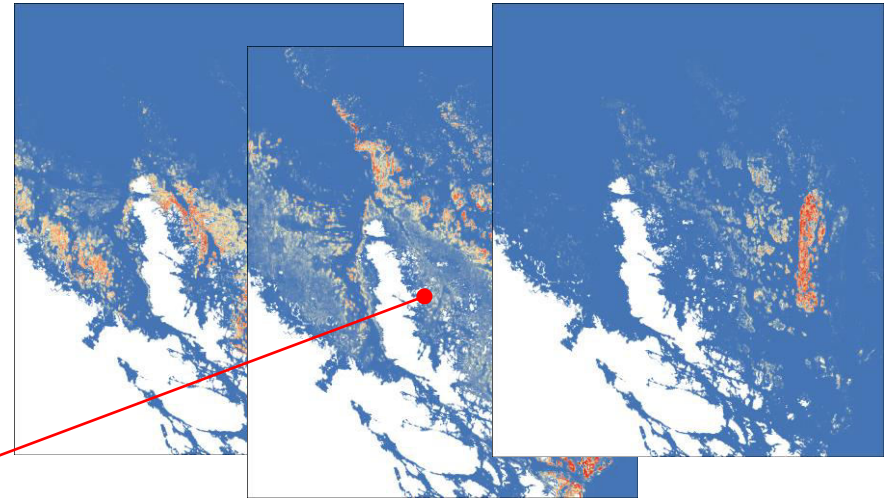
”Future-proofing environmental concern in MSP”

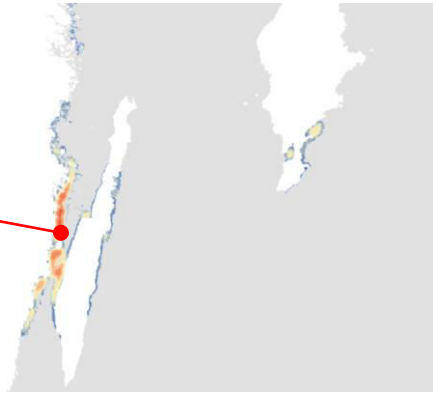
- Future species and ecosystem services
- New focal areas based on network & refugia
- Planning & mitigation efforts with future ecosystem values in mind
- Rank areas by probability given different models/scenarios

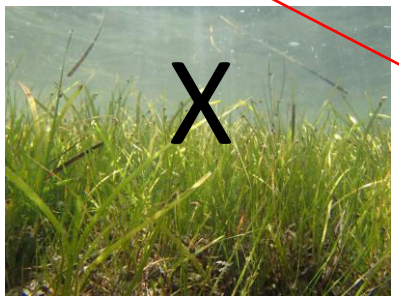


Proposed method

- **Model future ecosystem services** rather than key species today
  - "Stacked probable values" = "ESS models"
- **Prioritize resilient or "last" areas** in blue networks
- Accept reality: Focus on measures directed at **improve future conditions** (areas, species, ESS)







Thank you!

Questions & comments to

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