



Activity 2:
A2 – Improved regional assessment of biodiversity



BLUES



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HELCOM BLUES – Activity 2.2

17th January 2023

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Overview of Task A2.2 - fish

Task	Deliverable
Subtask 2.2.1.	Improved assessment approach -foremost for coastal fish -also for species where ICES do not provide analytical reference points (flatfish species and stickleback)
Subtask 2.2.2.	Development of a size-based assessment for the same species and communities

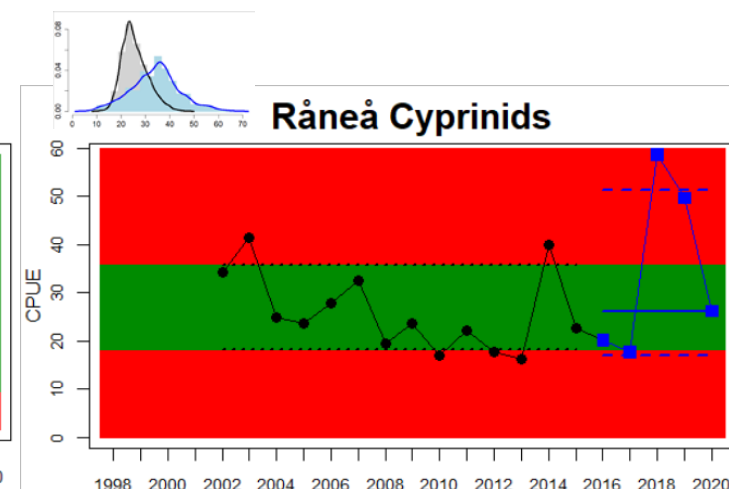
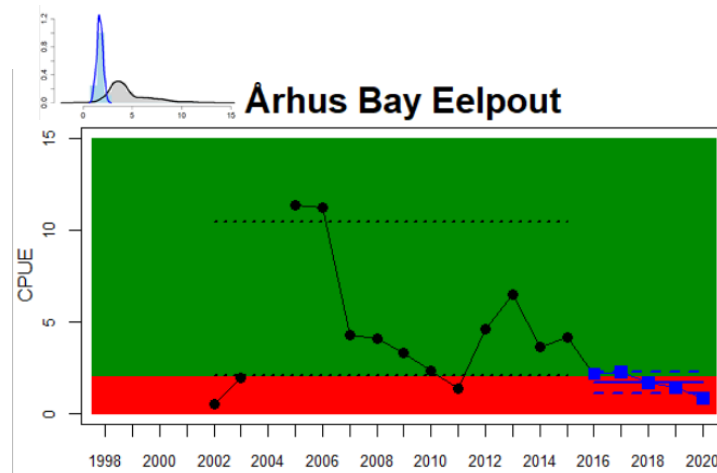
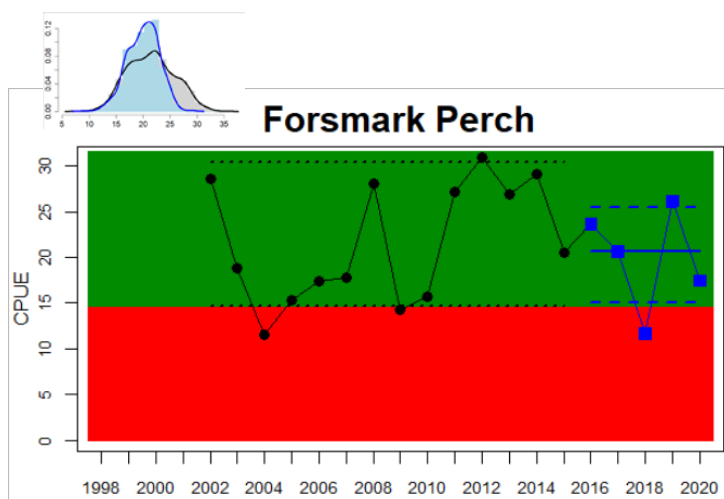




Results A2.2.1: Improved assessment approach

Coastal fish

- Applying an improved and newly developed methodology (ASCETS) on coastal fish
- Threshold setting and status assessment with confidence assessment of underlying data
- **Applied to:**
 - HOLAS III: Coastal fish key species (perch, flounder, whitefish, pike, pikeperch and eelpout)
 - HOLAS III: Coastal fish functional groups (cyprinids and mesopredators)

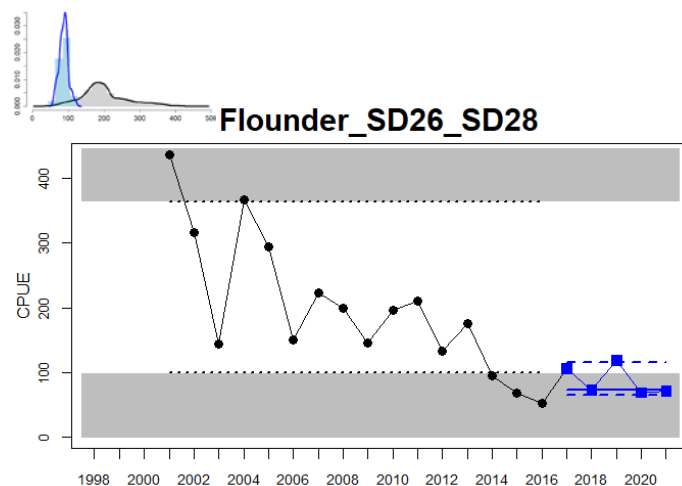




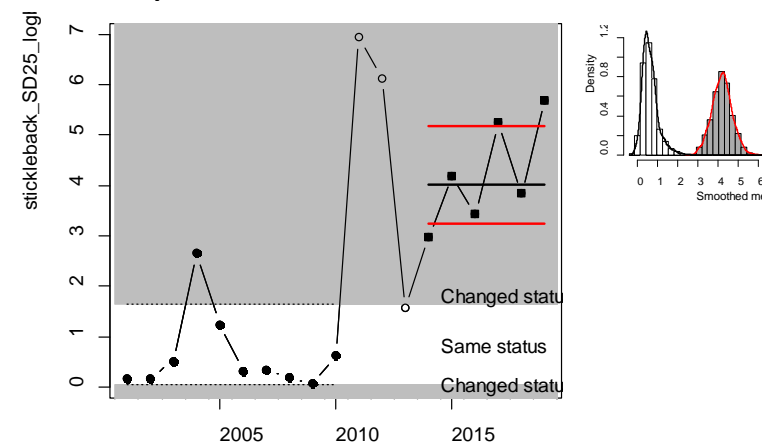
Results A2.2.1: Improved assessment approach

Flatfish and stickleback

- Applying an improved and newly developed methodology (ASCETS)
- **Applied to:**
 - Species where ICES do not provide analytical reference points (flatfish species: flounder, turbot, brill, and dab)
 - Three-spined stickleback



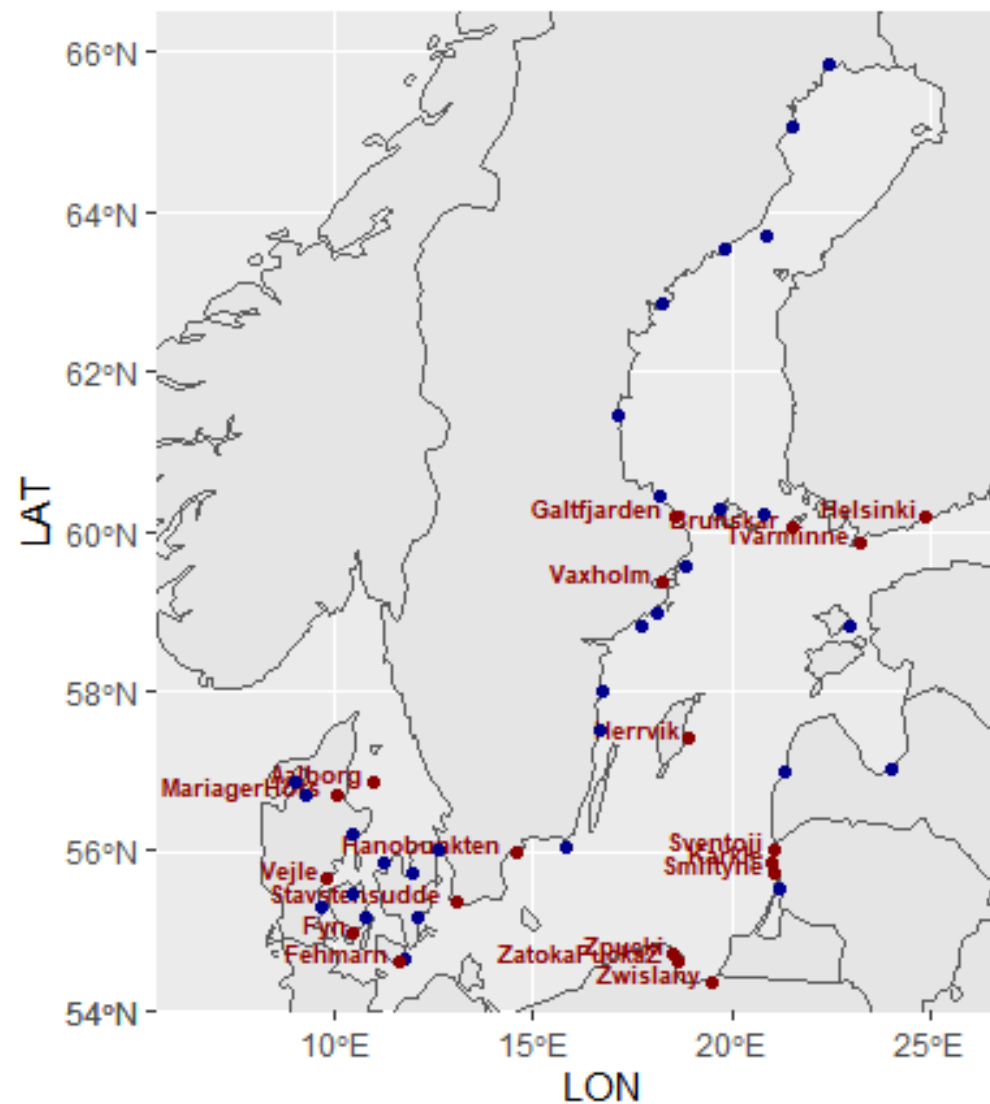
Three-spined stickleback in SD25





Results A2.2.1: Improved spatial coverage

- 19 new monitoring locations
 - 5 Danish
 - 3 Finnish
 - 3 Lithuanian
 - 3 Polish
 - 5 Swedish

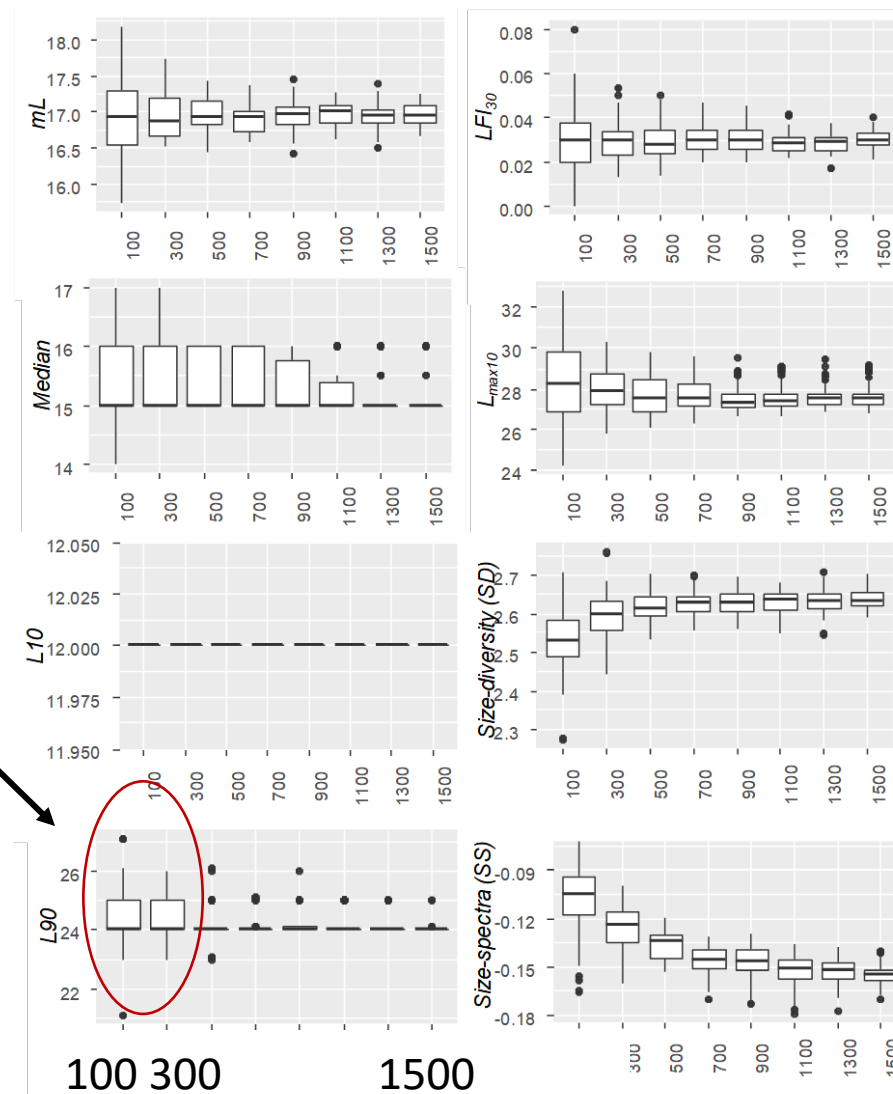
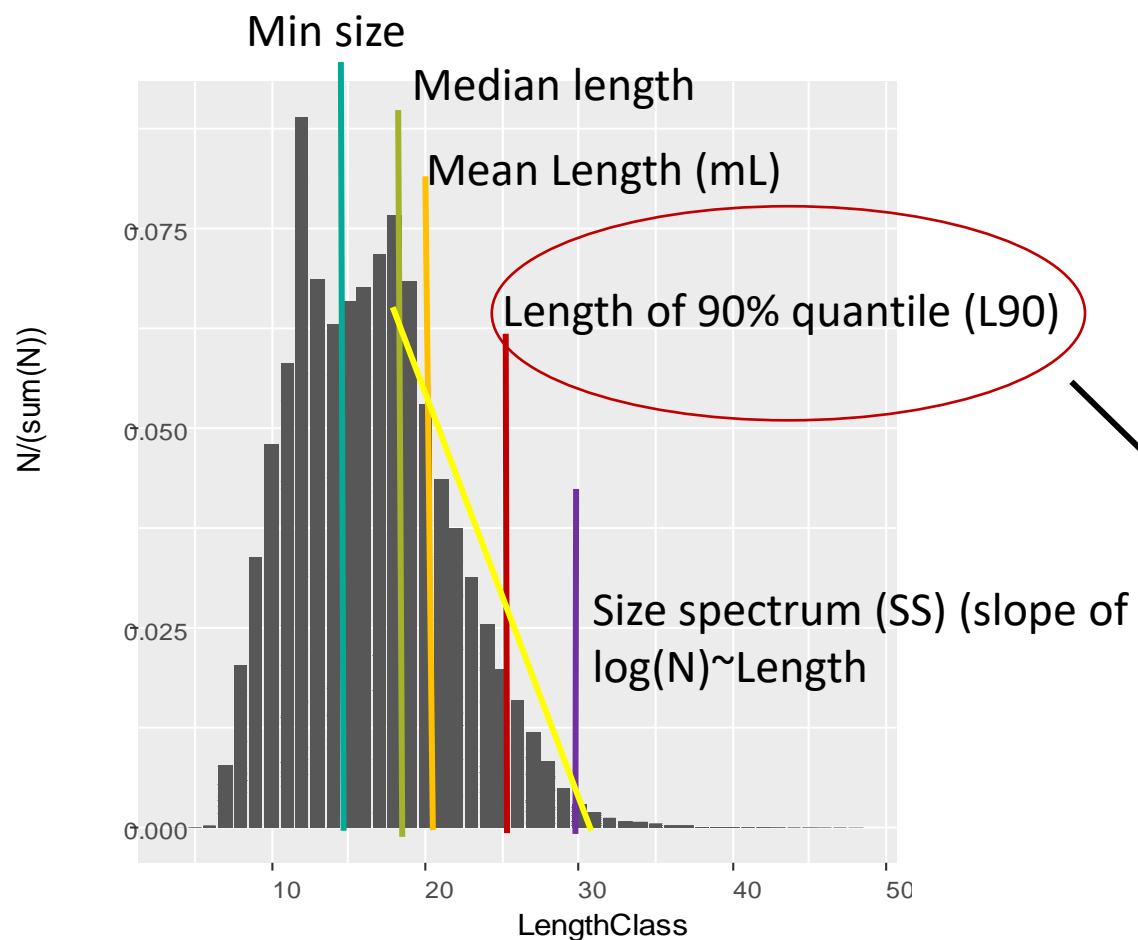




Results A2.2.2: Indicator selection

Coastal fish

- Why L90? Precision VS sample size

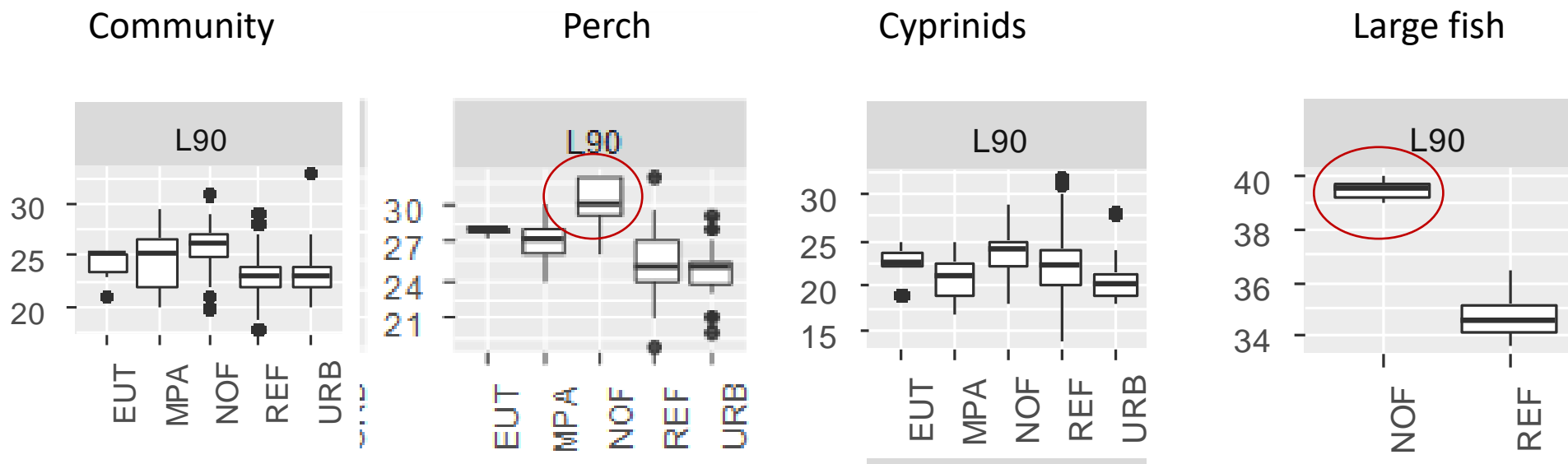




Results A2.2.2: Indicator selection

Coastal fish

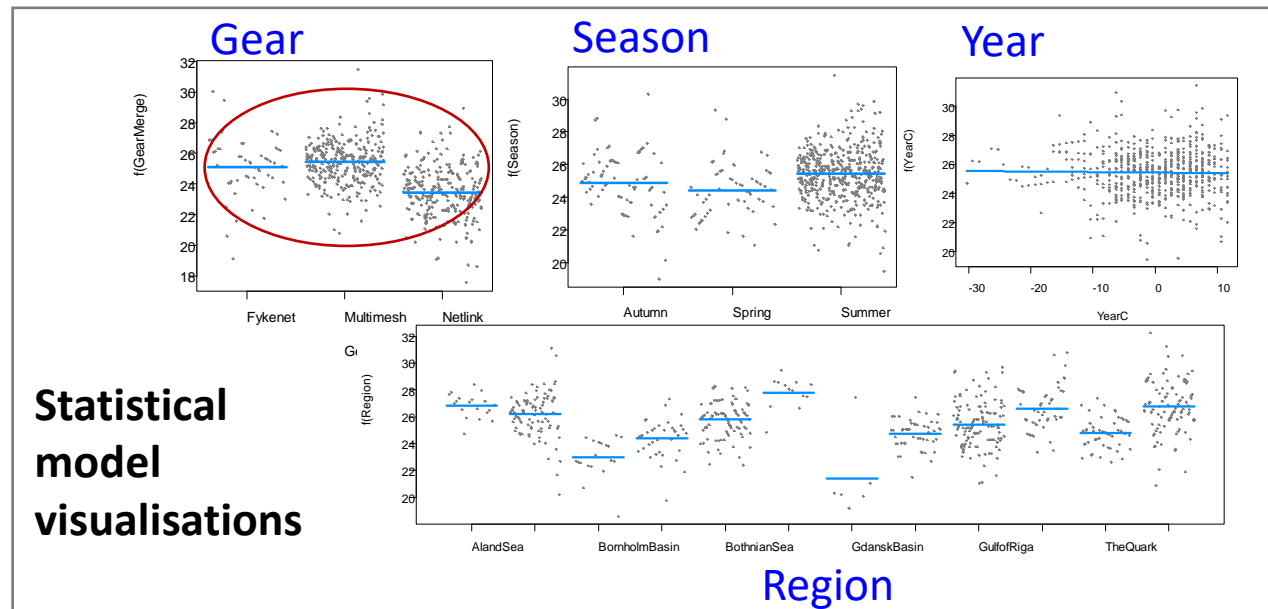
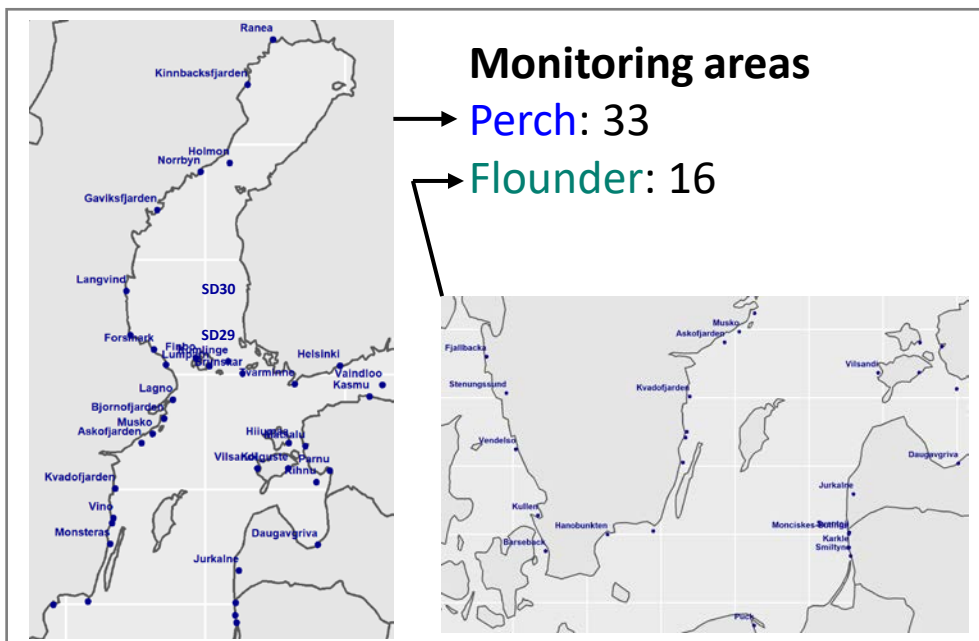
- Why L90? Response to human pressures



EUT- eutrophic areas, **MPA** – Marine Protected Areas (some fishing allowed),
NOF – No-fishing areas, **REF** – Reference areas with fishing but otherwise not directly impacted by human activities,
URB – Urban areas affected by physical disturbances and effluents.

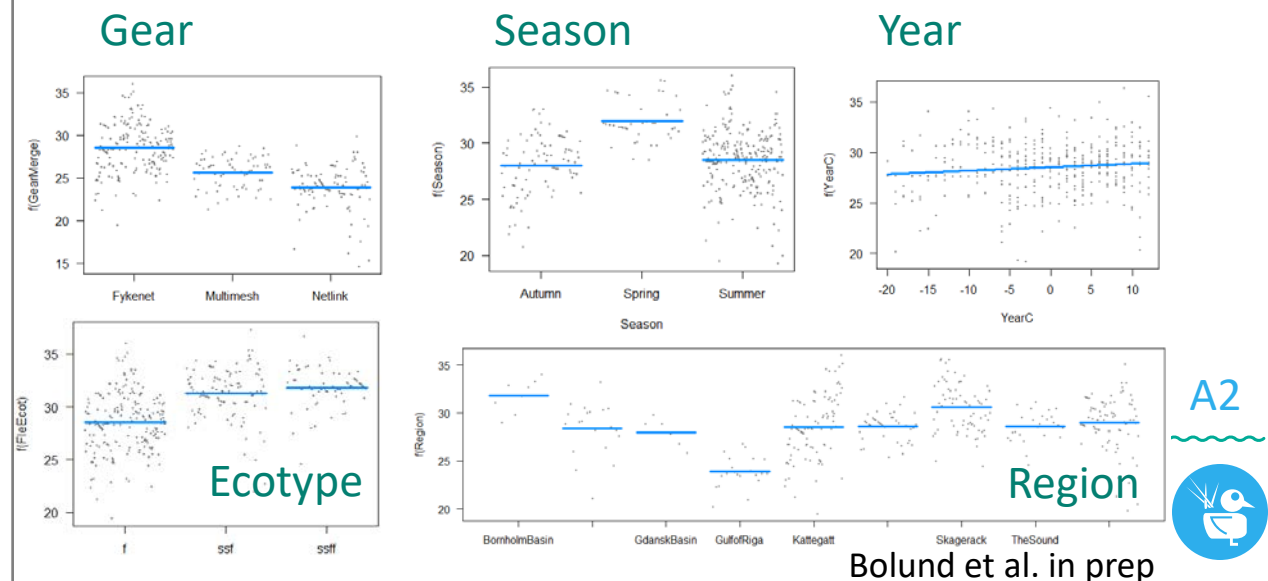


Results A2.2.2: Data and threshold values



Result

- **Perch:** gear-specific thresholds based on model-estimated grand means accounting for biasing factors
- **Flounder:** Difficult to disentangle effects of gears, ecotypes, and geographic location: no threshold implemented



A2

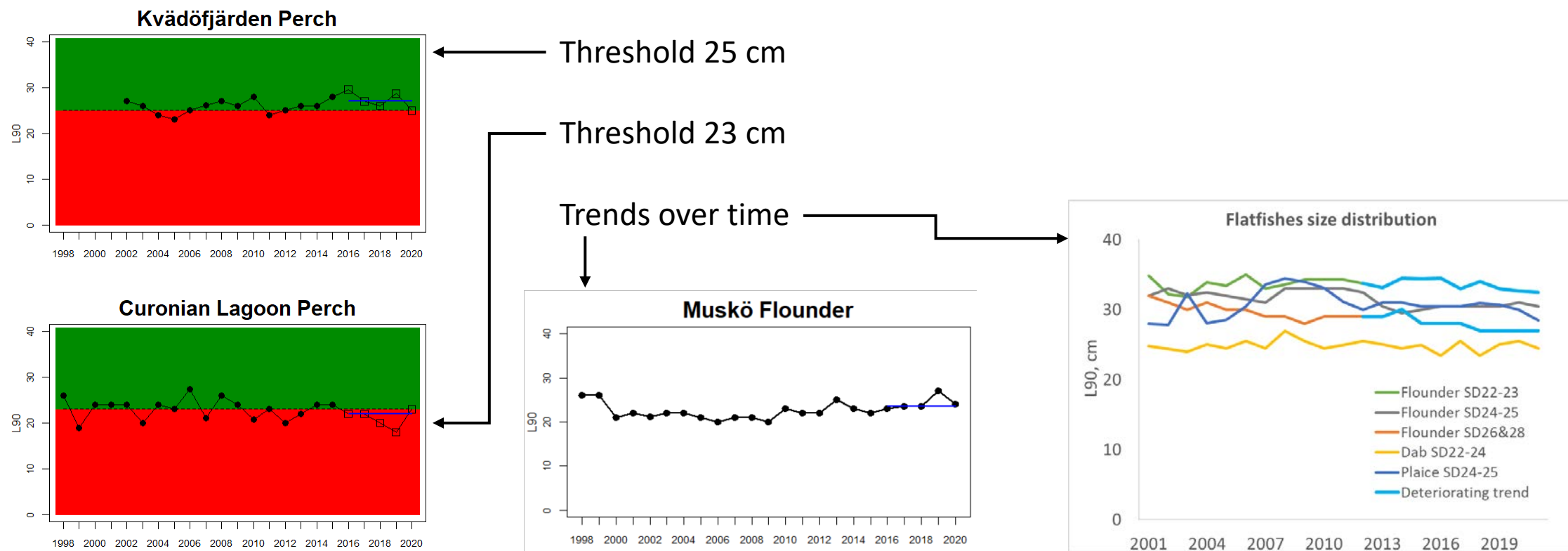




Results A2.2.2: Implementation

• Applied to:

- HOLAS III: Size structure of coastal fish (using national monitoring data & commercial catch statistics)
- HOLAS III: Commercial species where ICES do not provide analytical reference points (flatfish species, using ICES DATRAS database)





Results summary - fish

Task	Deliverable	Results
Subtask 2.2.1	Improved assessment approach -foremost for coastal fish -also for species where ICES do not provide analytical reference points (flatfish species and three-spined stickleback)	ACETS provides thresholds with associated uncertainty. Implemented in HOLAS III coastal fish core indicators and flatfish stocks, implemented on three-spined stickleback
Subtask 2.2.2	Development of a size-based assessment for the same species and communities	L90 operationalized. Implemented in HOLAS III with thresholds for coastal fish key species (perch), and HOLAS III flatfish stocks (trends over time)





Key messages

- Key messages for **science**

- 1) Improved methodology for analysing structural change in time-series including uncertainty
- 2) Improved functional understanding of spatial and temporal dynamics in coastal fish species and offshore data-limited stocks, including uncertainties in assessments
- 3) Improved understanding of spatial and temporal variation in size structure of fish in the Baltic Sea, and effects of human pressures (Östman et al. in review), with methodological sampling variation taken into account

- Key message for **policy makers**

- 1) Improved and extended status assessment (species and areas) for coastal fish
- 2) Assessment of changes in state of offshore data-limited stocks lacking ICES analytical reference points
- 3) Management targets for size structure for coastal key fish species and trends over time in the size structure of data-limited offshore species

→ Towards a more holistic and quantitative assessment of fish in the Baltic Sea



Use of results so far and in future

- HELCOM → Development and update of core indicators, development of a new indicator
- Applied in HELCOM HOLAS III Core Indicator Reports and Thematic Assessment of Biodiversity (sections fish and foodwebs)
- MSFD → improved reporting on D1C2, D1C3, D3C2, D3C3, and D4C2; Art. 8 Guidance;
- Supports the work towards relevant BSAP goals:
- BSAP Goal → “Baltic Sea ecosystem is healthy and resilient”
- BSAP Ecological objective → “Viable populations of all native species”
- BSAP Management objective → “Reduce or prevent human pressures that lead to imbalance in the food web”
- BSAP action B15;B33; B35





Outputs

- Indicator reports coastal fish for HOLAS III
 - Abundance of key coastal fish species
 - Abundance of coastal fish key functional groups
 - Size structure of coastal fish
- Thematic Assessment FISH for HOLAS III
- Thematic Assessment Food Webs for HOLAS III
- Östman et al. in review (scientific manuscript)
 - Size-based indicators of coastal fish – useful tools for assessments of ecological status in the Baltic Sea?
- Bolund et al. in prep (scientific manuscript)
 - An approach for deriving threshold values of the size distribution for data-limited coastal fish species in the Baltic Sea





Data for fish A2.2

This work was possible due to support from

- HELCOM database COOL
- ICES WGBFAS and DATRAS
- National coastal fish monitoring programs in Denmark, Estonia, Finland, Latvia, Lithuania, Poland, and Sweden
- HELCOM FISH PRO III (HELCOM expert network on coastal fish)





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Thank you!



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