



Activity 2:
A2 – Improved regional assessment of biodiversity



BLUES



Co-funded by the
European Union

Introduction to the BEAT tool

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S Y K E



HELCOM



HELCOM Biodiversity assessment tool, BEAT

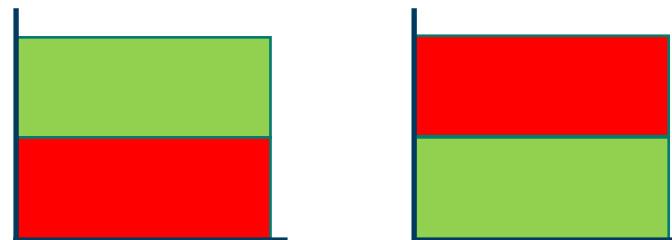
- BEAT is an indicator-based integration tool
- BEAT 3.0 was developed for use in HOLAS II in the BalticBOOST project (Nygård et al. 2018: <https://doi.org/10.5334/jors.226>, <https://github.com/NIVA-Denmark/BalticBOOST>)
- BEAT follows the same integration principles as the NEAT tool (Berg et al. 2016: <http://www.devotes-project.eu/neat/>), but is adapted to include HELCOM core indicators
- BEAT is using HELCOM spatial assessment units (4 levels)
- BEAT was also used in the EEA Marine Messages II and ETC/ICM report Biodiversity of Europe's seas



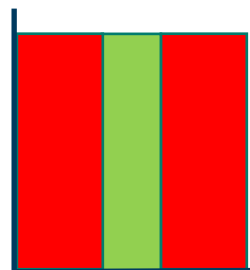


Indicator types

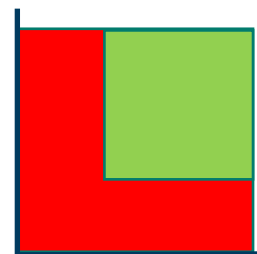
- GES above or below a threshold



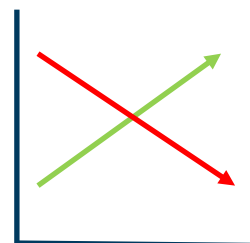
- Optimum range



- Conditional indicators



- Trend indicators



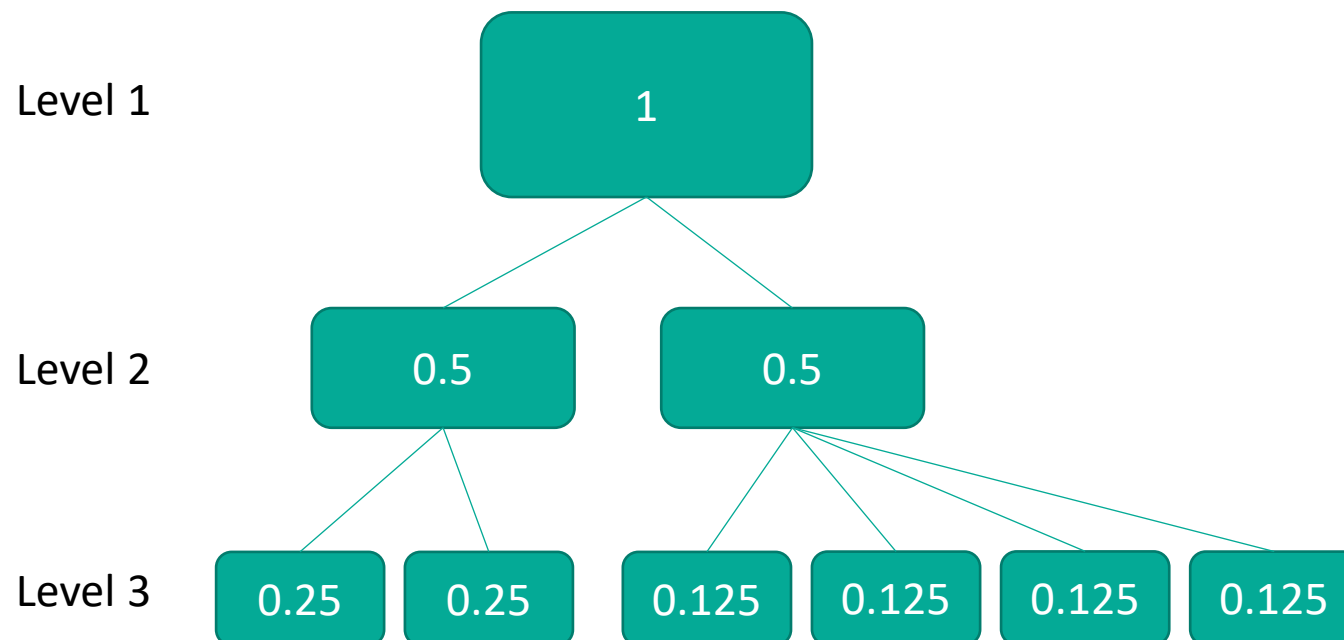
- Qualitative indicators





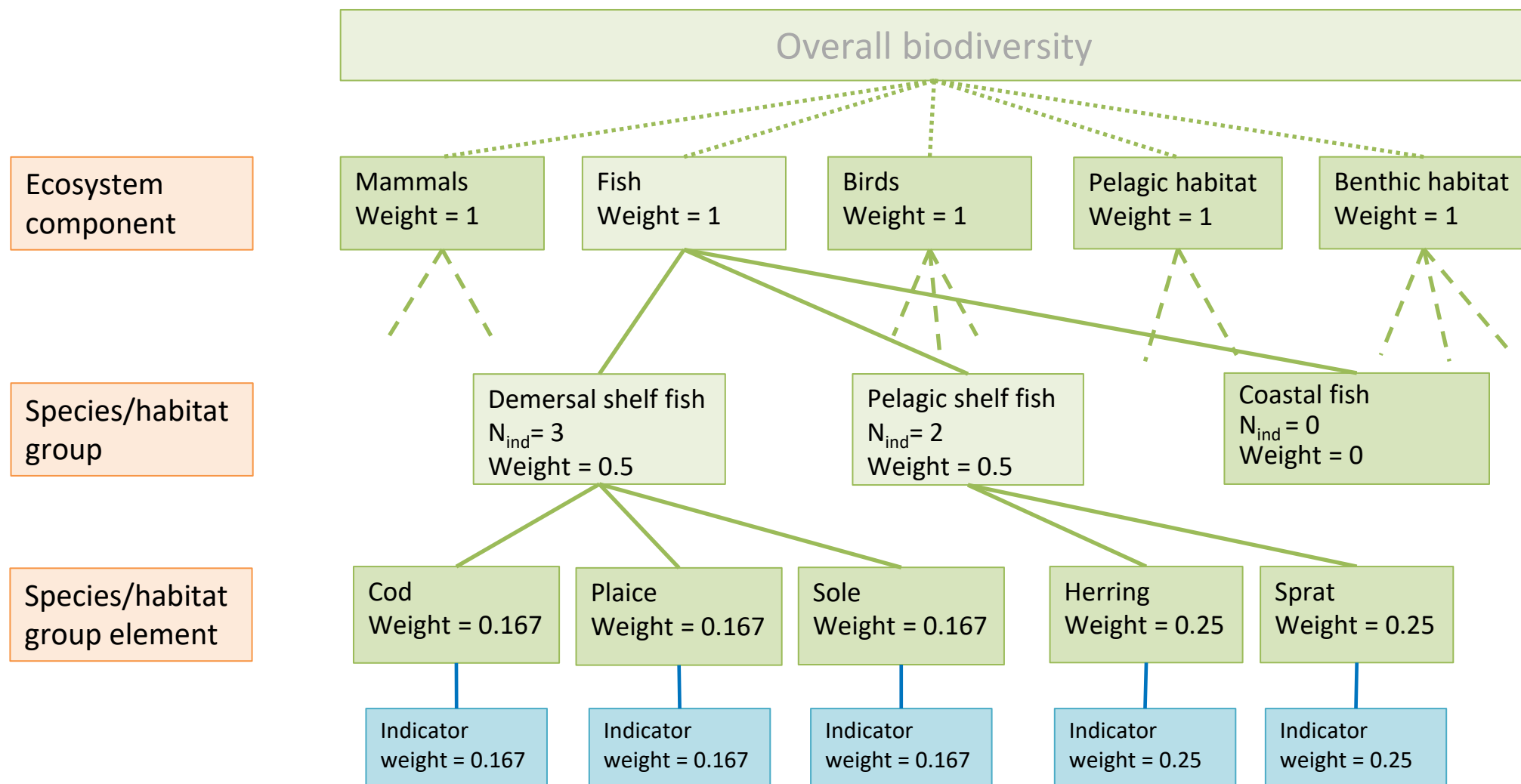
Tool structure and indicator weighting

- BEAT has a hierarchical structure, including both a spatial and an ecosystem component structure
- BEAT applies weighted averaging for integration of indicators:



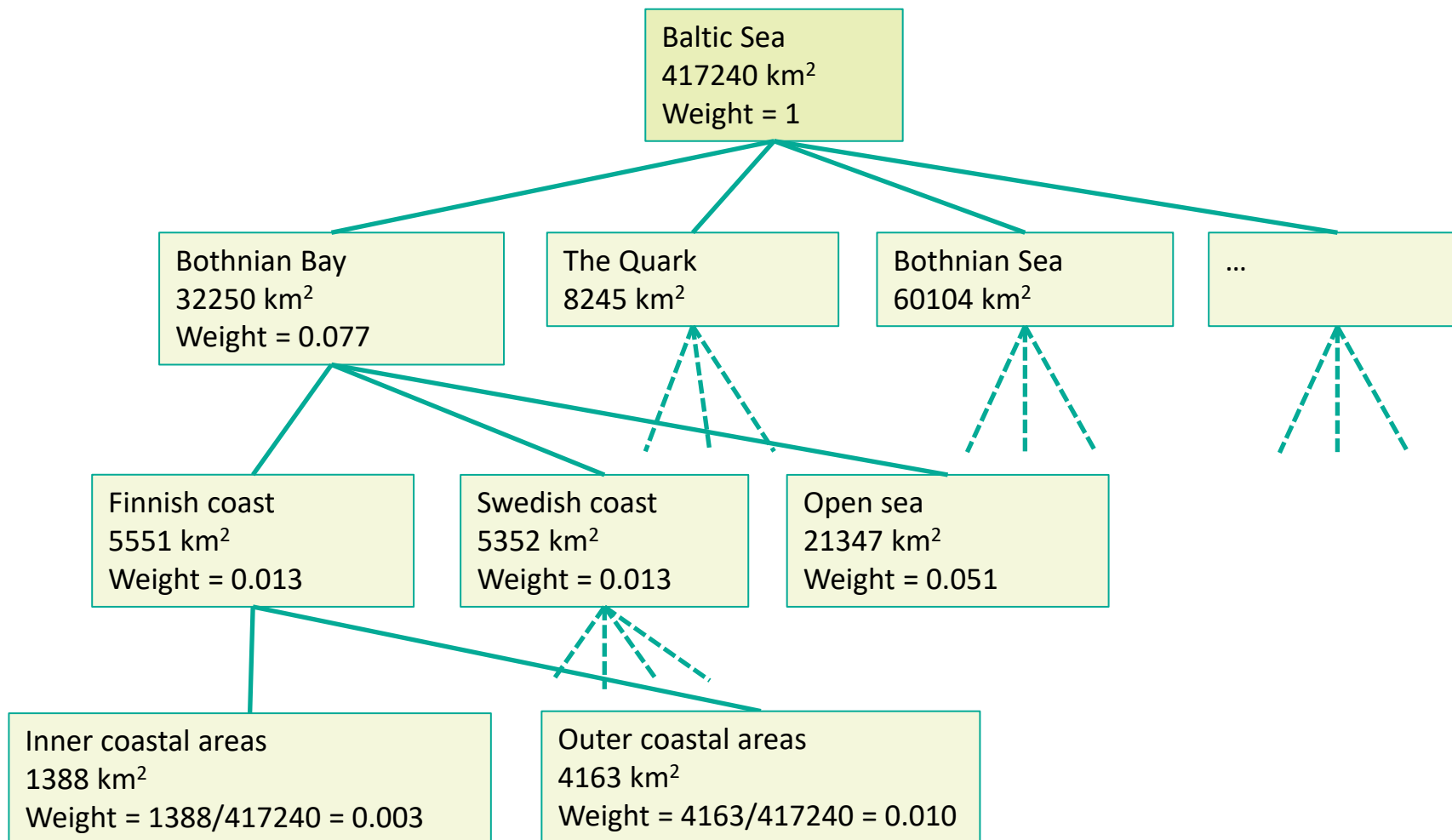


Ecosystem component structure





Spatial aggregation using area-based weighting (not used in HOLAS II)





Ecosystem components and spatial scales

- In HOLAS II no spatial aggregation was carried out, but the ecosystem components were assessed at an ecologically relevant scale (based on the indicators):
 - Mammals: SAU level 2 (based on aggregated management units)
 - Birds: SAU level 1
 - Fish: SAU level 3
 - Pelagic habitats: SAU level 4
 - Benthic habitats: SAU level 4





Tool function

- Based on the indicator value, threshold value, minimum and maximum values indicator results are standardized to a value (BQR) between 0 and 1 with the GES threshold set at 0.6
 - i.e. for each indicator the distance to the threshold is defined
- Indicators get their weights based on the assessment structure and are integrated based on weighted averaging
- The integrated result is a value between 0 and 1 with values above 0.6 indicating good status
- Optionally OOA0 is applied





Confidence assessment

- Confidence of the indicator results is evaluated by the indicator leads according to four aspects:
 - Confidence of classification → High (1), intermediate (0.5), low (0)
 - Temporal coverage → High (1), intermediate (0.5), low (0)
 - Spatial representation → High (1), intermediate (0.5), low (0)
 - Methodological confidence → High (1), intermediate (0.5), low (0)
- Integration is following the BEAT structure, i.e. similar weighting, and the result is presented as high, intermediate or low confidence
- For the assessment penalties can be applied, e.g. if certain criteria or species groups are not assessed. In practice, a penalty would lower the confidence with one step





Tool outputs

- Indicator results and weight used
- Results per ecosystem component in each spatial assessment unit
- Confidence per ecosystem component in each spatial assessment unit
- Results per ecosystem component
- Results per spatial assessment unit