

Porpoises in the context of marine spatial planning – Examples of what SAMBAH results could look like and how they could be used

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Objectives of SAMBAH

- Estimate density, abundance and distribution within the project area.

Density calculations and habitat modelling →

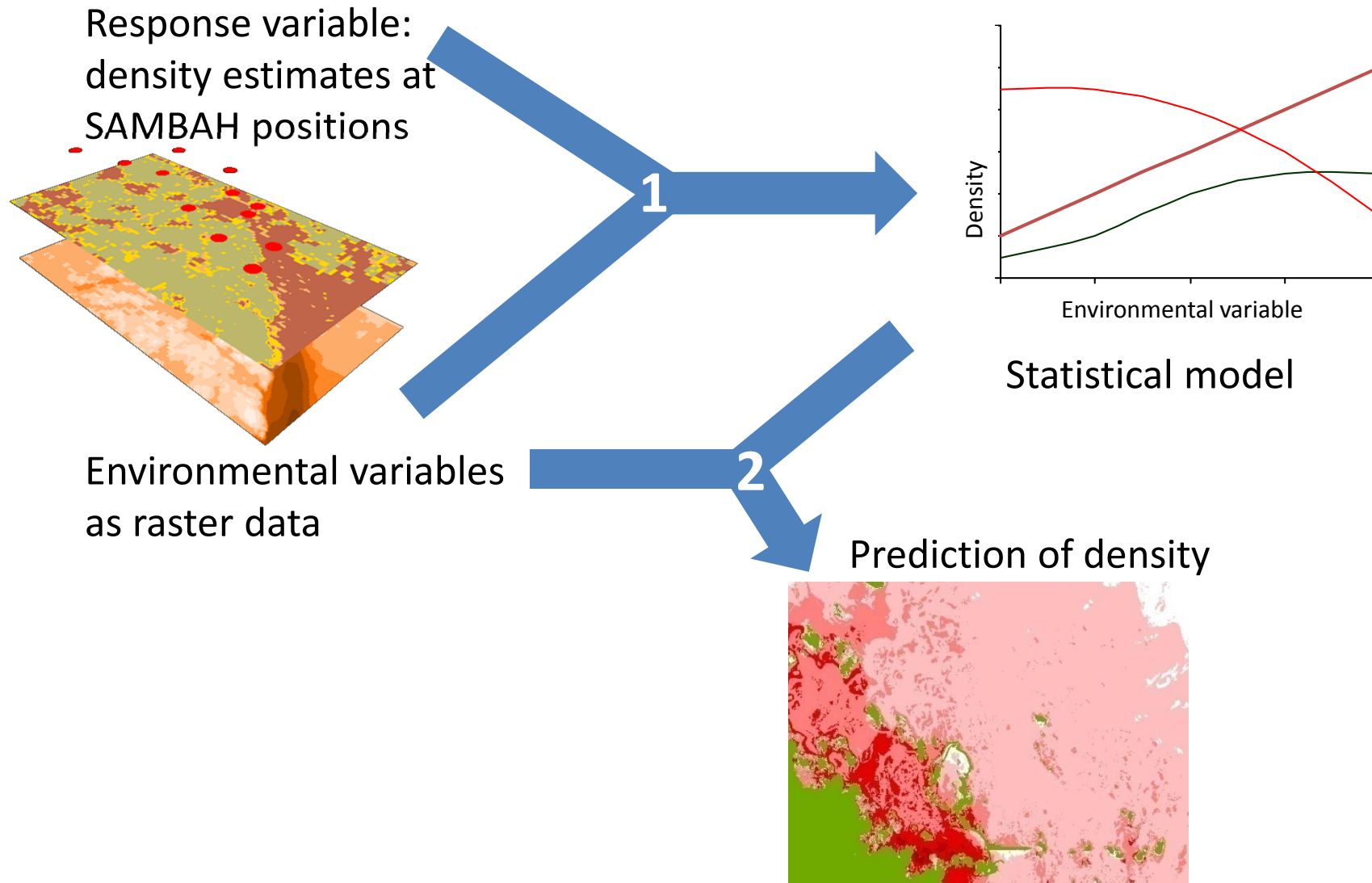
- Density estimates per country or similar
- Abundance estimates
- Model predictions of distribution of porpoises in the entire study area

- Identify habitat preferences, hotspots and areas with higher risk of conflicts with anthropogenic activities

Habitat modelling and overlay analyses →

- High density areas, may change between seasons
- Shape files of hotspots
- List of important habitat variables to govern porpoise distribution
- Overlay analyses giving areas with higher risk of conflict

Habitat modelling



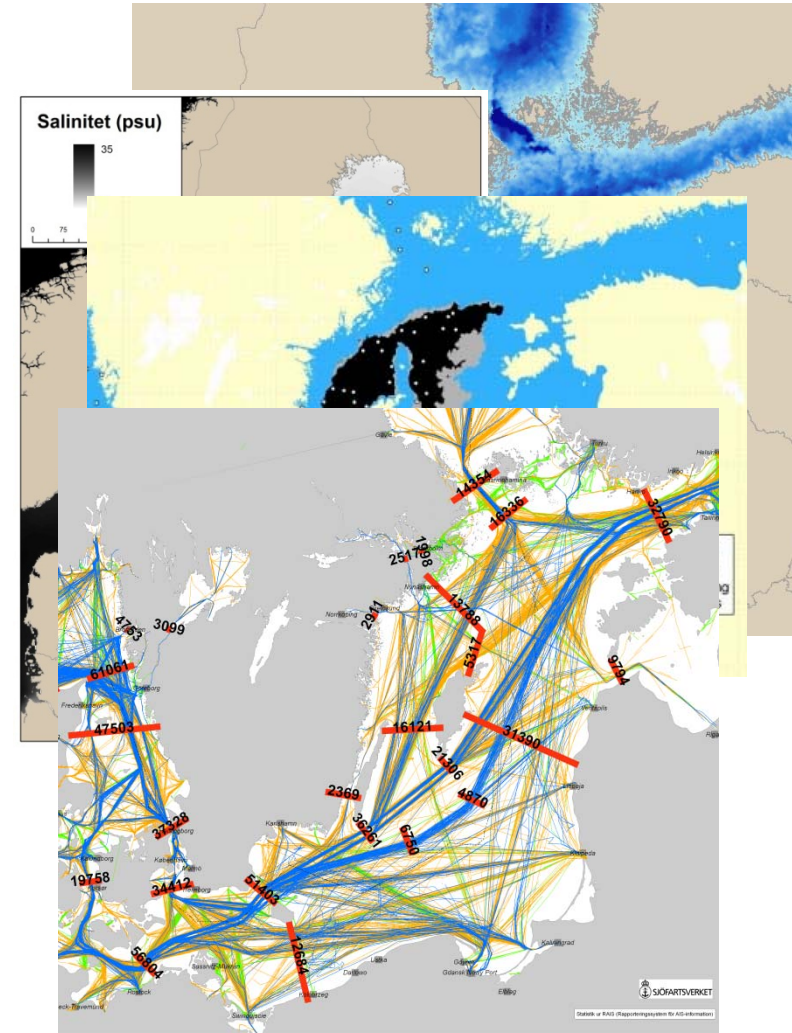
Variables for habitat modelling

Response variable:

- Porpoise density at C-POD positions

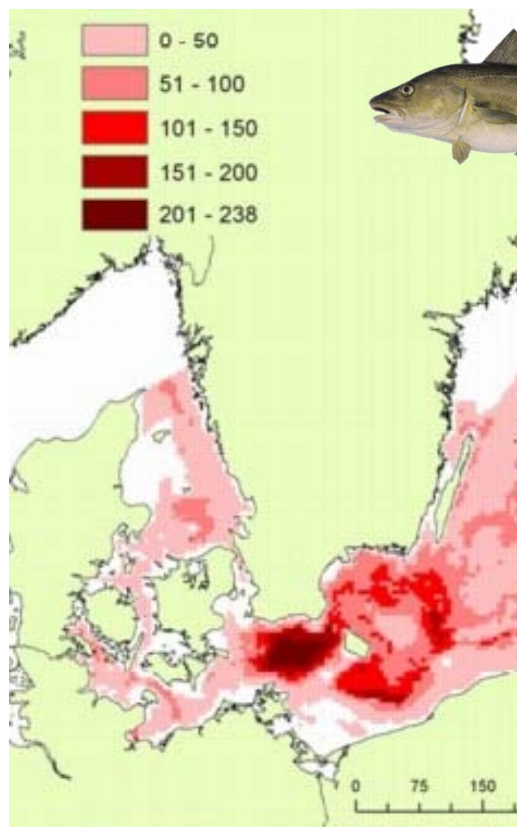
Prediction variables, e.g.:

- Depth, bottom slope, aspect
- Substrate
- Temperature, salinity, current
- Oxygen concentration
- Vessel traffic

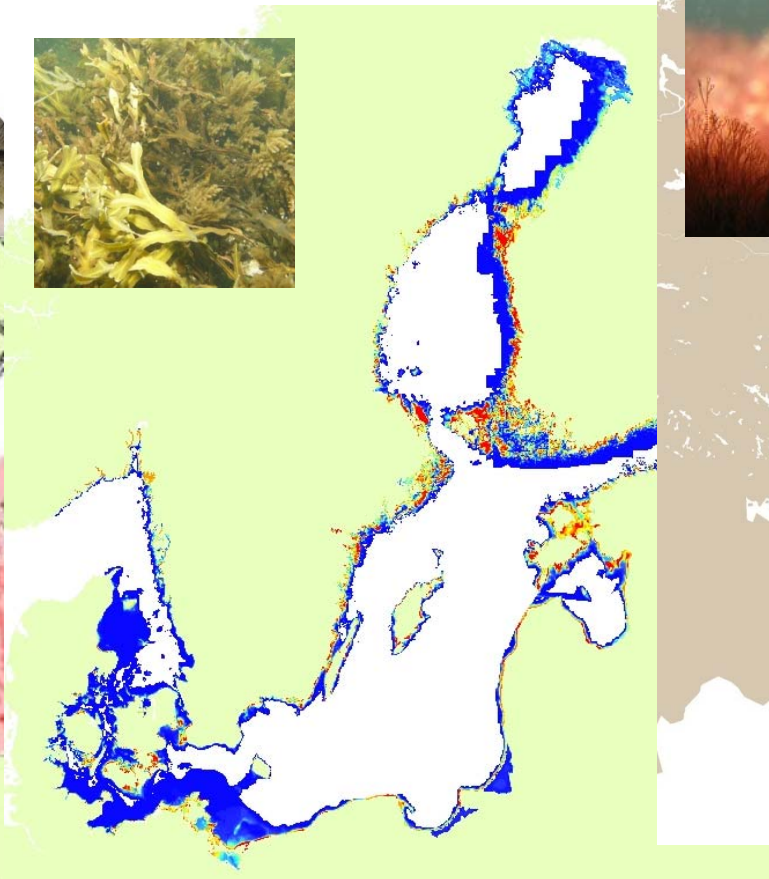


Examples of results from habitat modelling

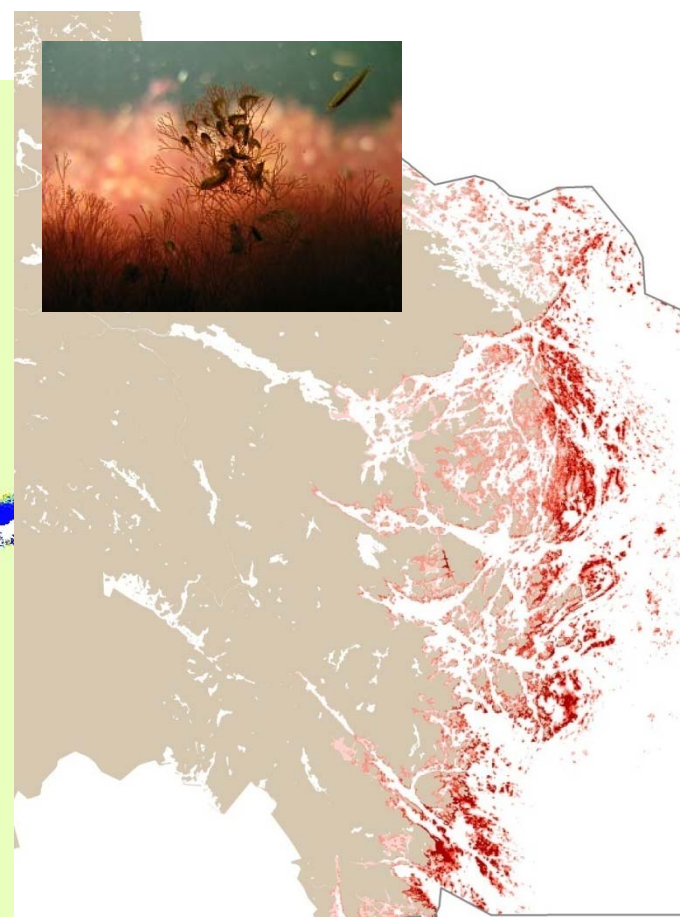
Cod, catch per unit effort



Fucus, probability of presence



Ceramium, probability of presence



How can SAMBAH results be used in management?

- Spatially explicit results
 - Useful for marine spatial planning
 - Investigate overlap with anthropogenic activities
 - What areas are most important to protect, and when?
 - Specific and spatially and temporally restricted mitigation measures



Tools and methods

Overlay analyses

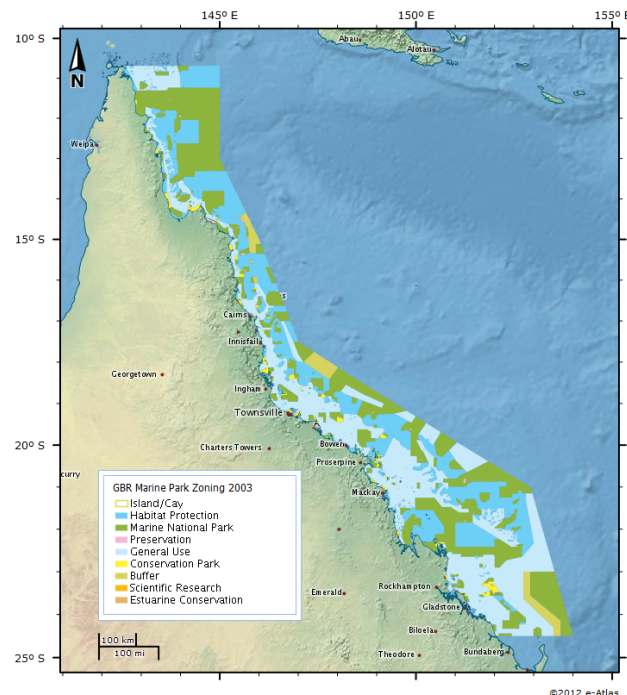
Distribution maps from SAMBAH can be combined with e.g:

- Already protected areas, for example BSAP and Natura2000
- Shipping
- Fishing data from for example VMS
- Existing and planned windfarms

→ GIS example

Marxan, Marxan with zones

- Tools for marine spatial planning
- Developed in year 2000 for optimising location of protected areas on the Great Barrier Reef, Australia
- The most commonly used spatial planning tools today



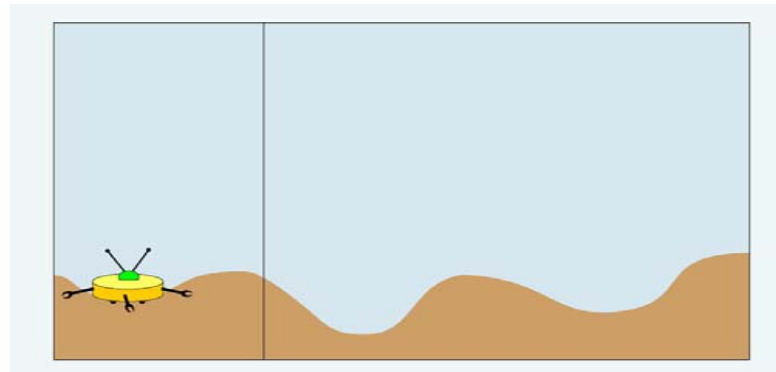
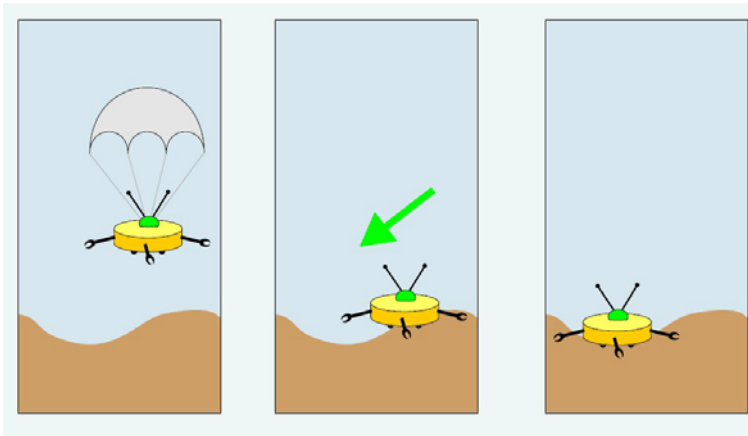
Marxan – what do you need?

- Specify the “planning units”: type, size, min number...
- Input layers with natural values and human activities
- Set conservation target = % of natural values to be protected
- Set values for how well natural values and human activities can share the same space or be neighbours



Marxan – how does it work?

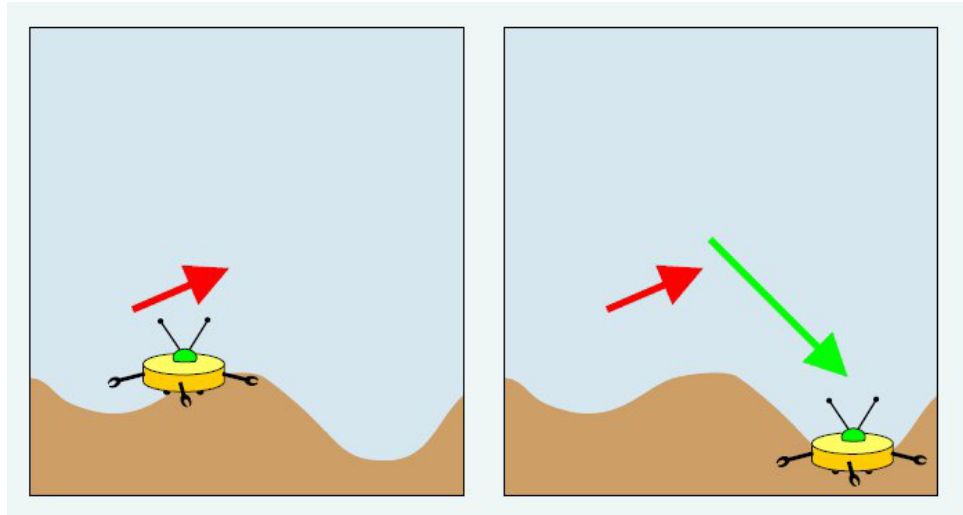
1. Calculate and map the costs for all planning units
2. Identify the combination yielding the lowest costs



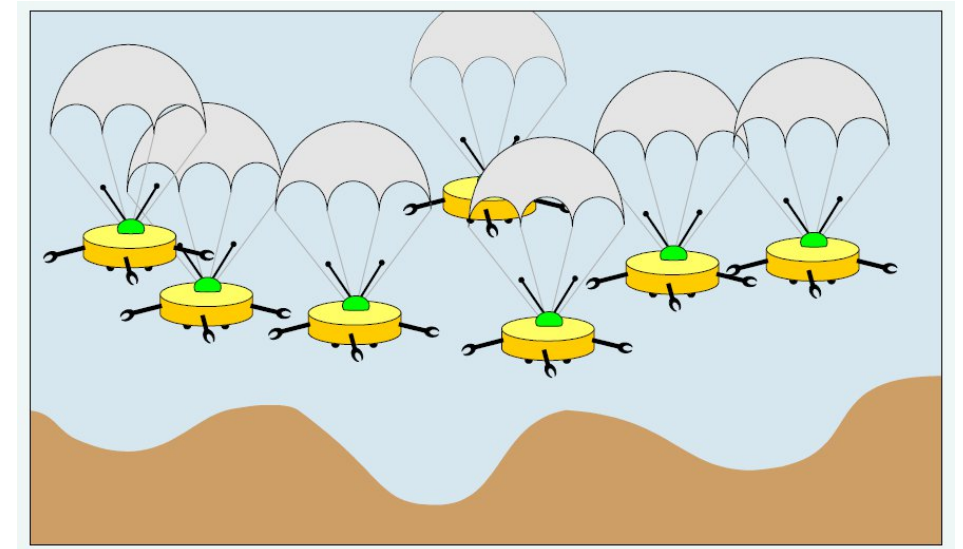
?

Marxan – finding the lowest costs

- Random steps “uphill”

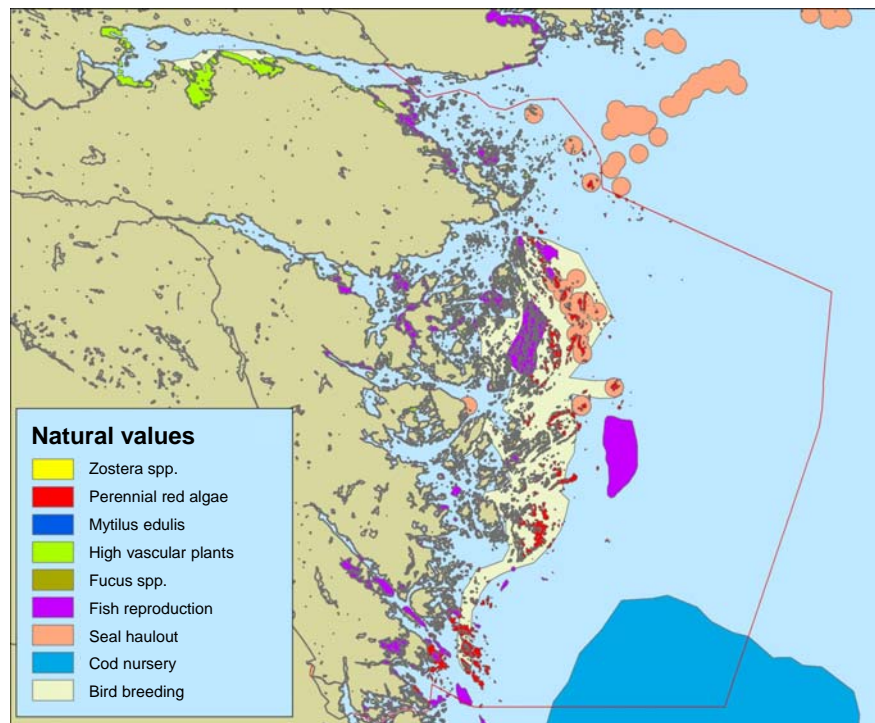


- Several runs, e.g. 100

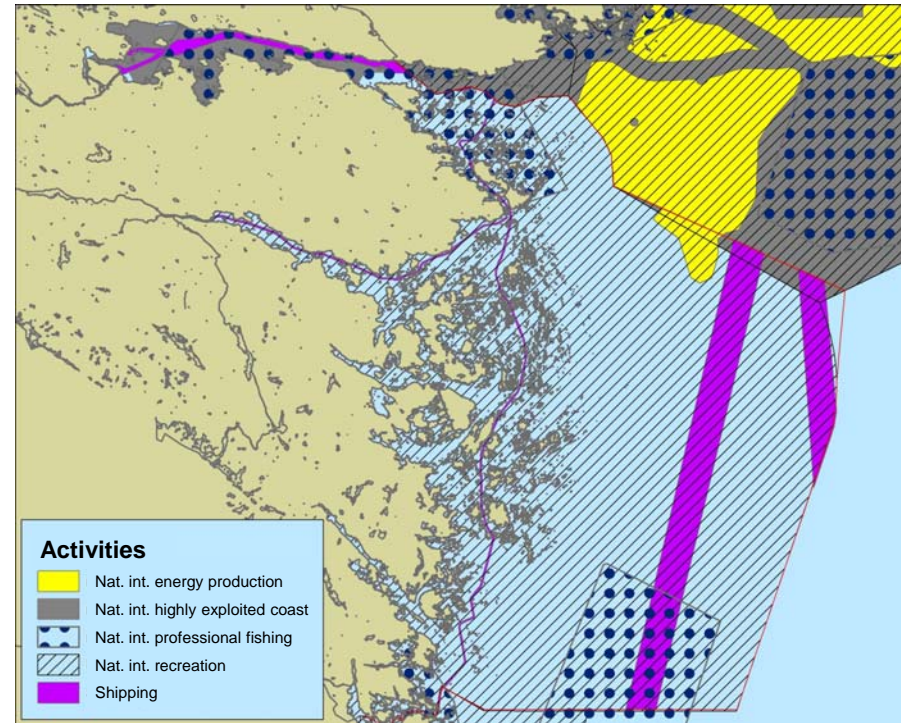


Example Marxan with zones Östergötland County, SE

Natural values

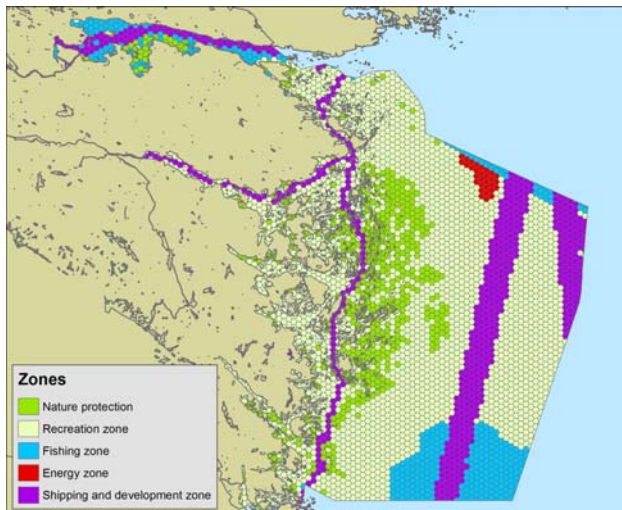


Activities



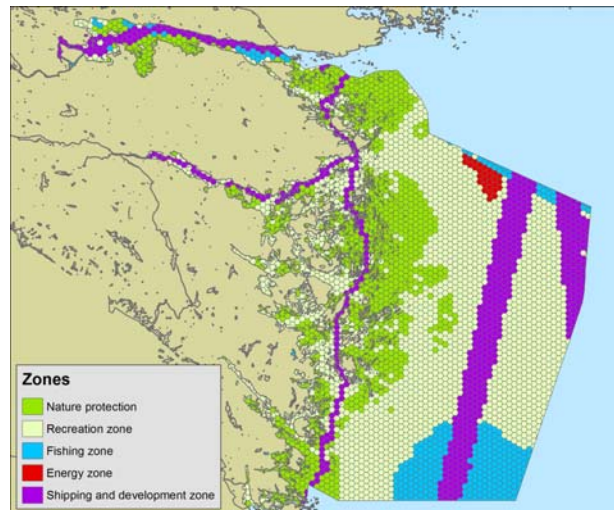
Results Marxan with zones Östergötland County, SE

“Best run” 1



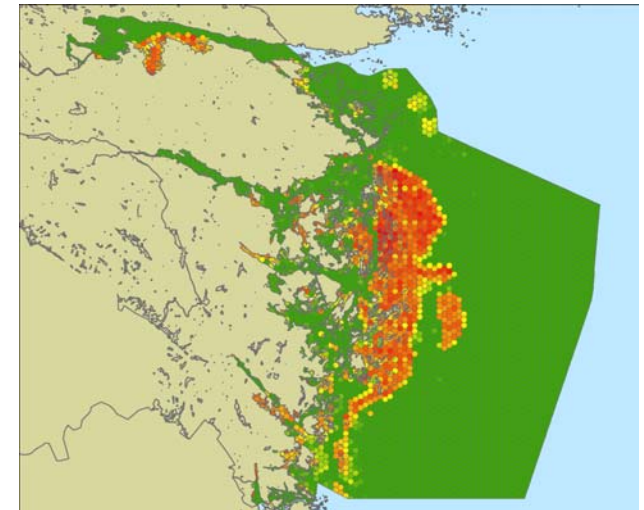
- Shipping lanes locked
- Location of natural values and other activities unbiased

“Best run” 2



- Shipping lanes locked
- Existing nature protected areas locked

Selection frequency



- Selection frequency of natural values

Sea Sketch – a tool for stakeholder involvement



MPAs for harbour porpoises

Usefulness and proper management of porpoise MPAs

- MPAs should ideally protect important breeding areas and possibly critical feeding areas.
- Pinger use should be restricted to avoid displacing animals from important habitat
- Restrictions in fisheries is probably necessary
- Certain fishing gear may be ok to use





**Thanks for
listening!**