



BONUS

SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION



PREHAB

PREdicting, mapping and valuing biodiversity
in coastal HABitats of the Baltic Sea



Åbo Akademi
University



UNIVERSITY OF HELSINKI



GÖTEBORGS UNIVERSITET



Swedish University of
Agricultural Sciences



SYKE



AquaBiota
WATER RESEARCH

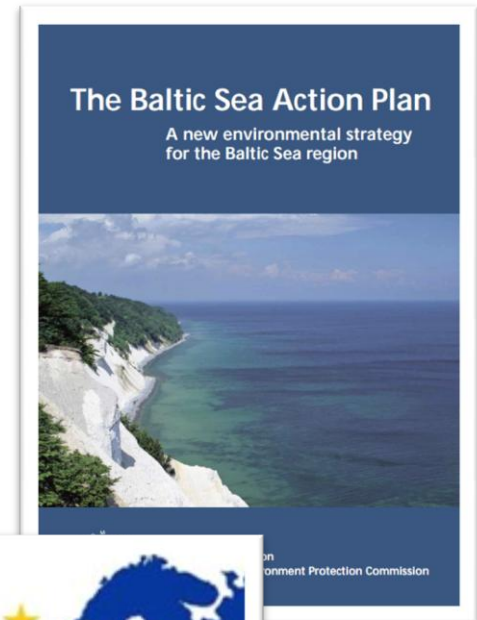
PREHAB

Implementation of Marine Spatial Planning (MSP) and other important policies, e.g. the BSAP and EU-directives (MSFD, WFD) require detailed knowledge about:

- distribution (i.e. maps), and
- value

of marine biodiversity and its associated goods and services.

RATIONALE





To develop and test (in a Baltic-wide context) cost-efficient methods for:

- predictive mapping of biodiversity
- evaluation of (a) ecological effects and (b) economic value of benefits due to different policy scenarios.

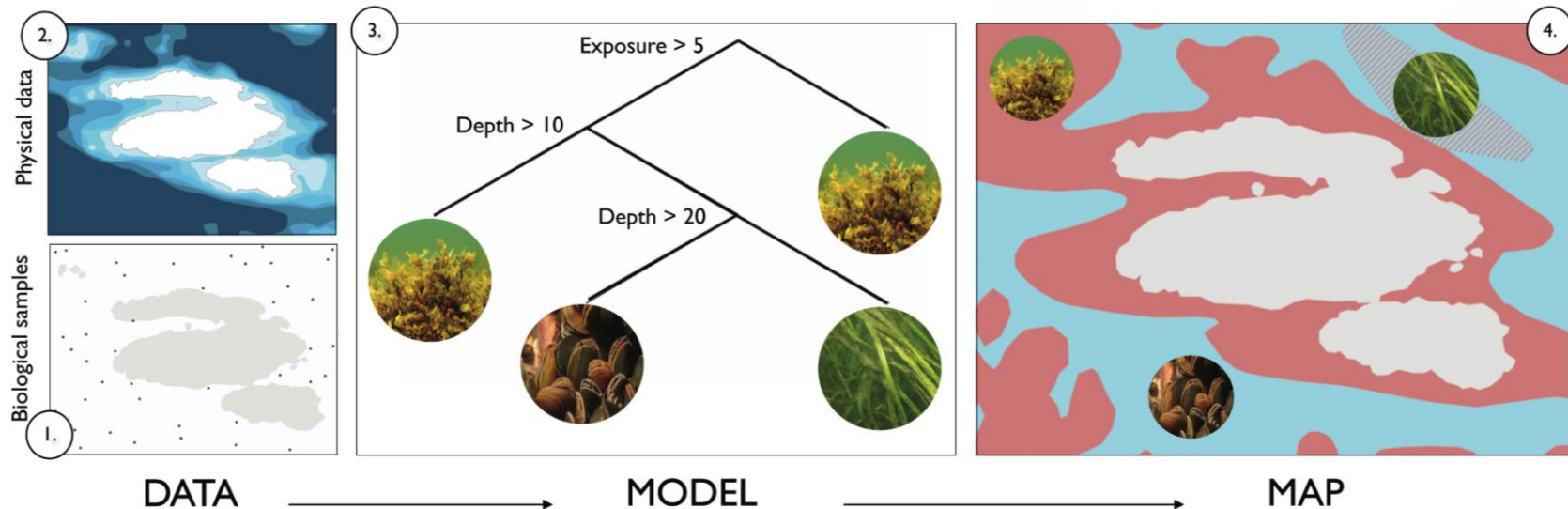


WHY PREDICTIVE MAPPING?



It provides a economically feasible way to interpolate scattered biological data into coherent maps based on traditional species-environment relationships!





What can be modelled and mapped?

How accurately can it be modelled?

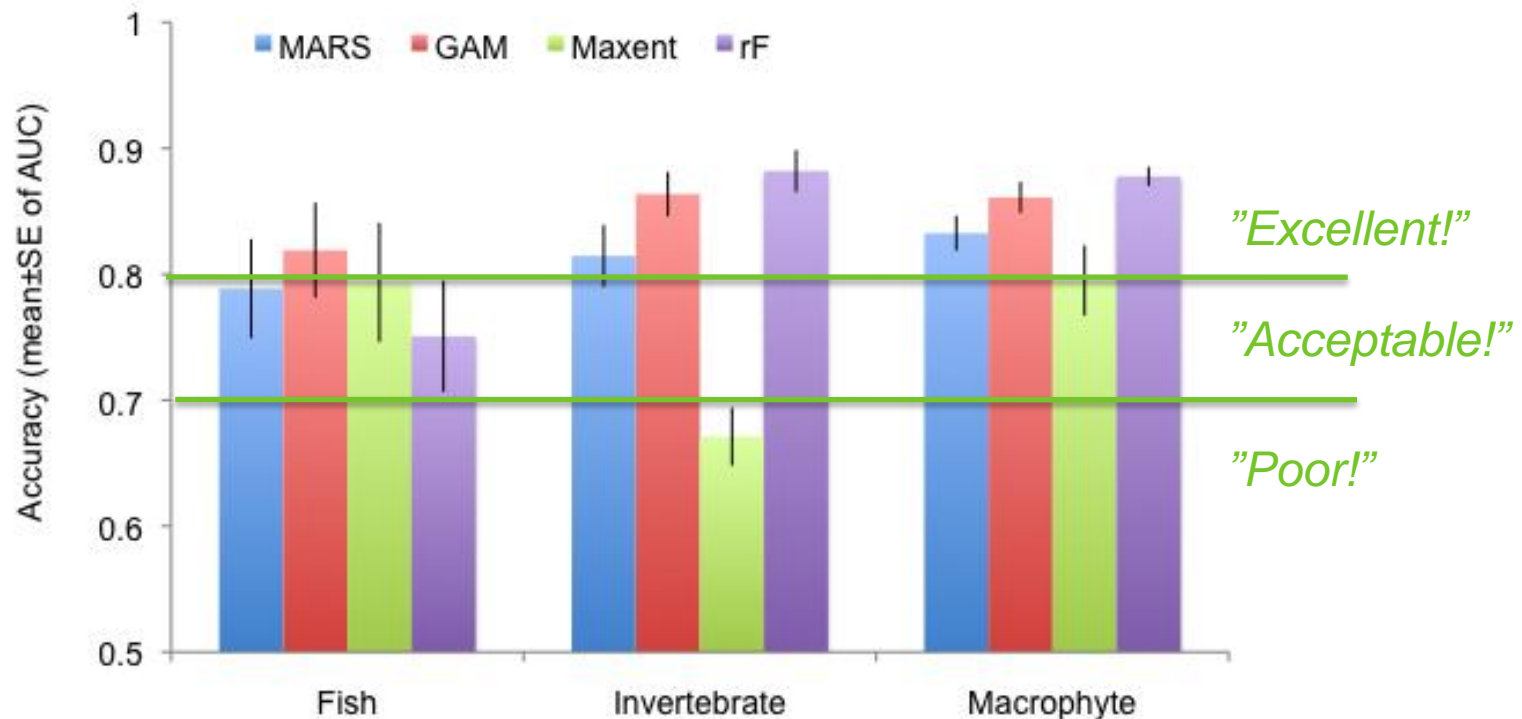
Which are the most useful tools for modeling?



- Useful models of fish and vegetation in all case-study areas!
- Need for accurate data on water depth and substrate!
- Quality and amount of biological data important for improving models and maps!



DISTRIBUTION OF SPECIES

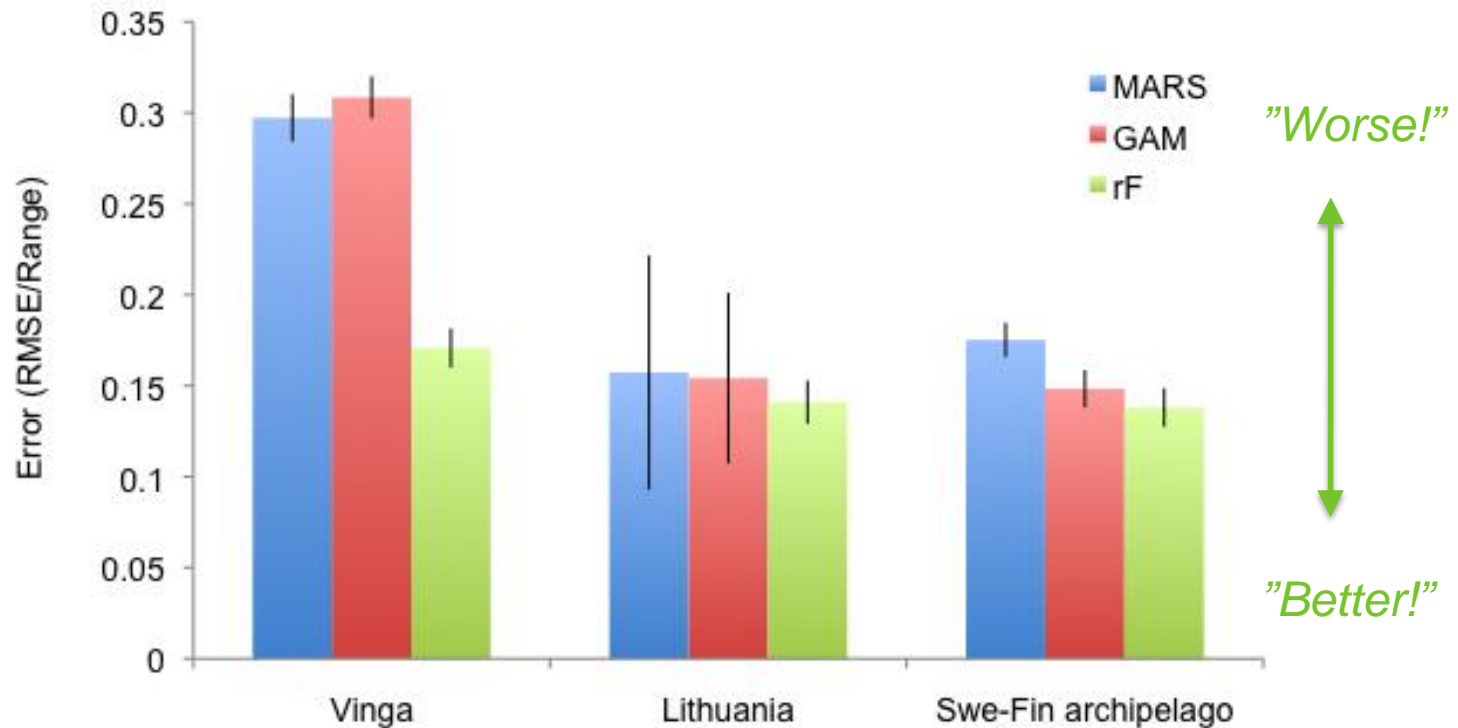


- Several techniques can provide useful models.
- Macrophytes > Invertebrates > Fish (but beware of confounding factors)



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Abundance



- Useful models in all areas!
- $rF > GAM > MARS$

Note: units include %cover, individuals per m² and richness



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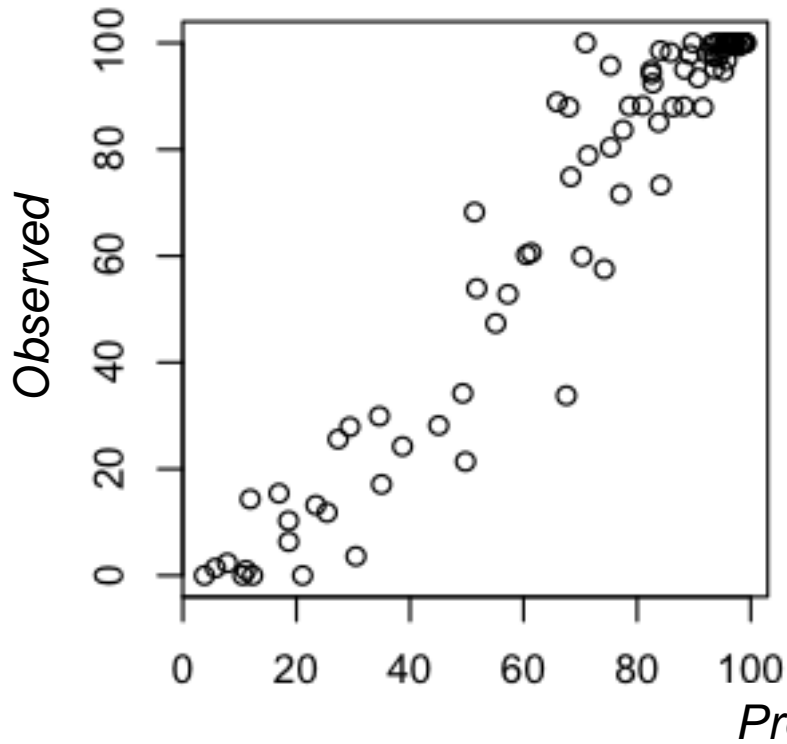
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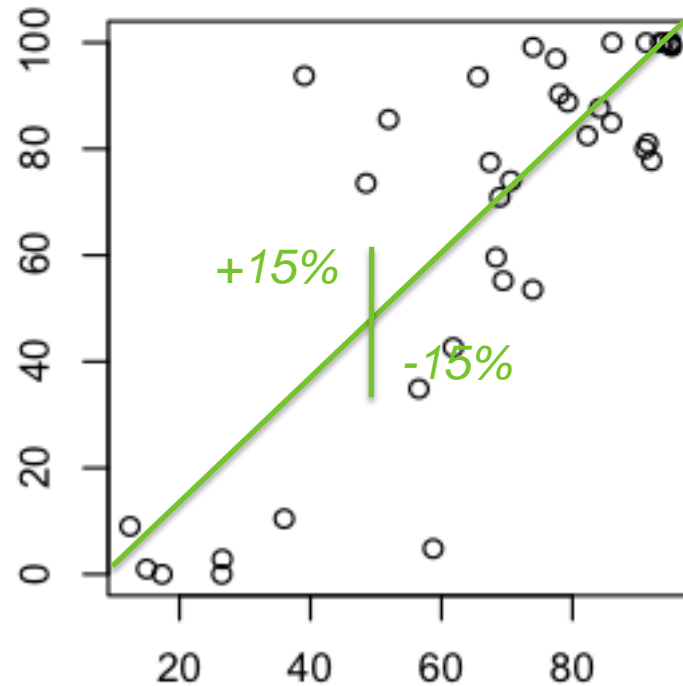


Example: Total vegetation at Vinga

Model fit



External validation

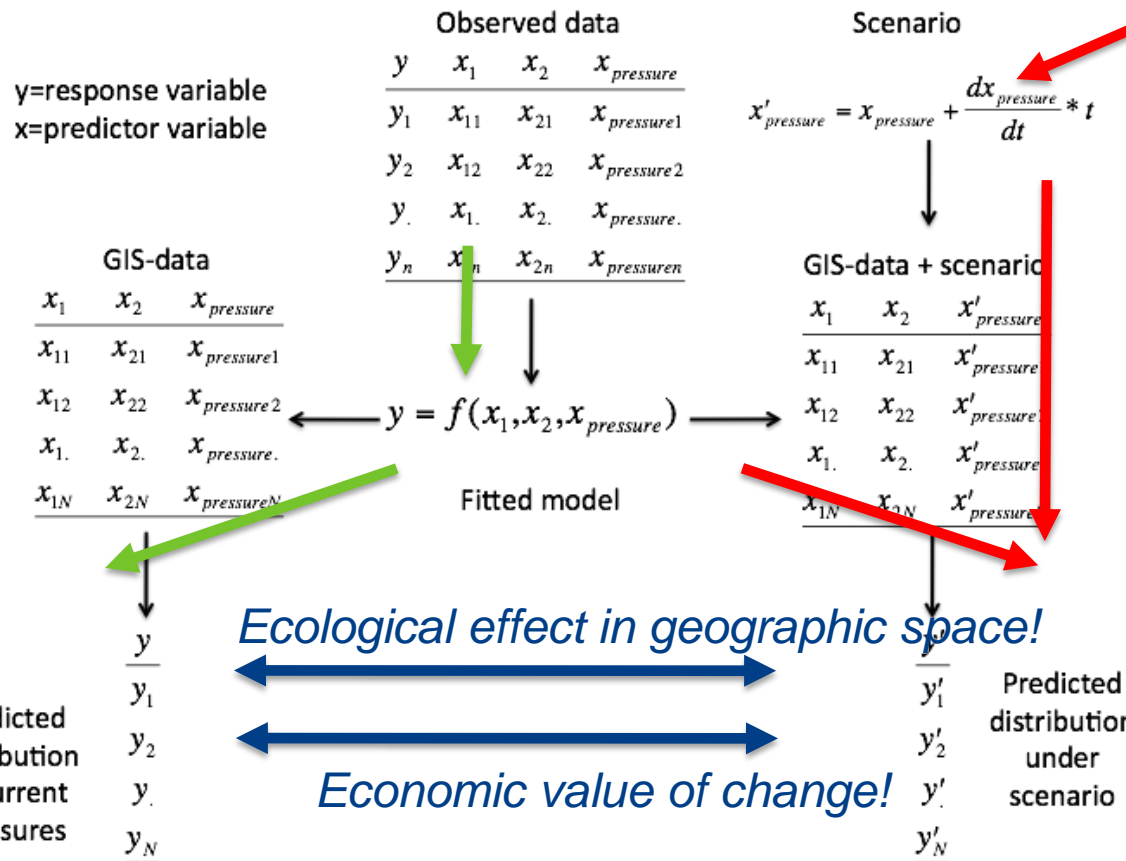


EVALUATING MANAGEMENT SCENARIOS!

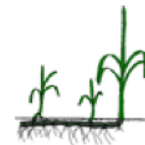
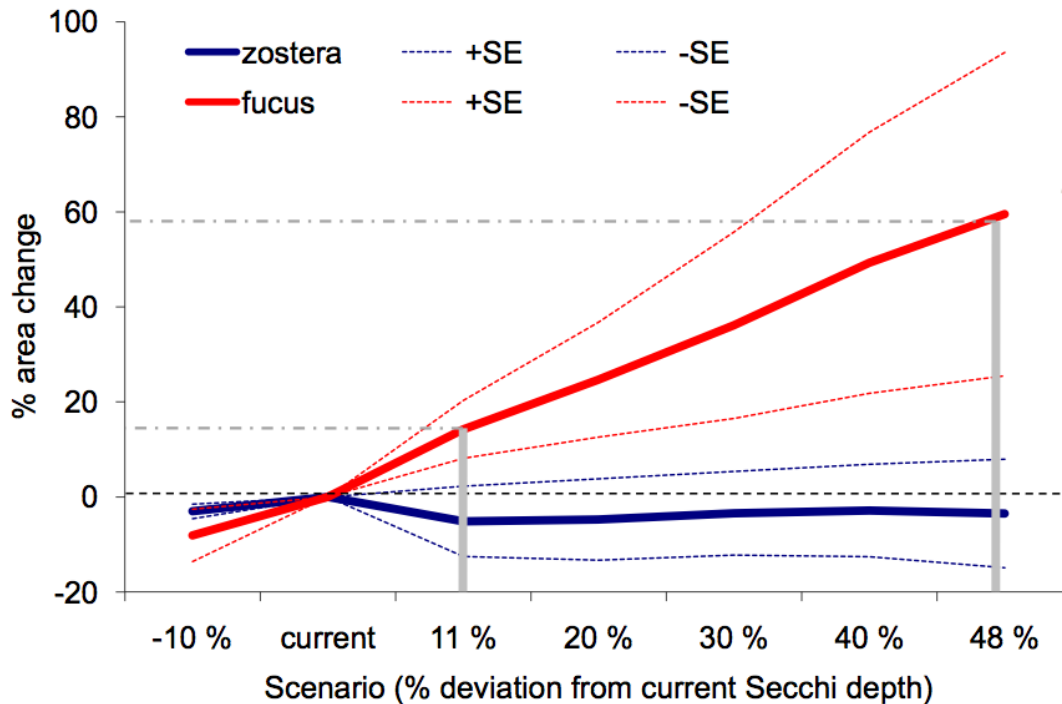
Pressure indicator

Scenario

BSAP targets for Secchi depth are transformed into geographic space!



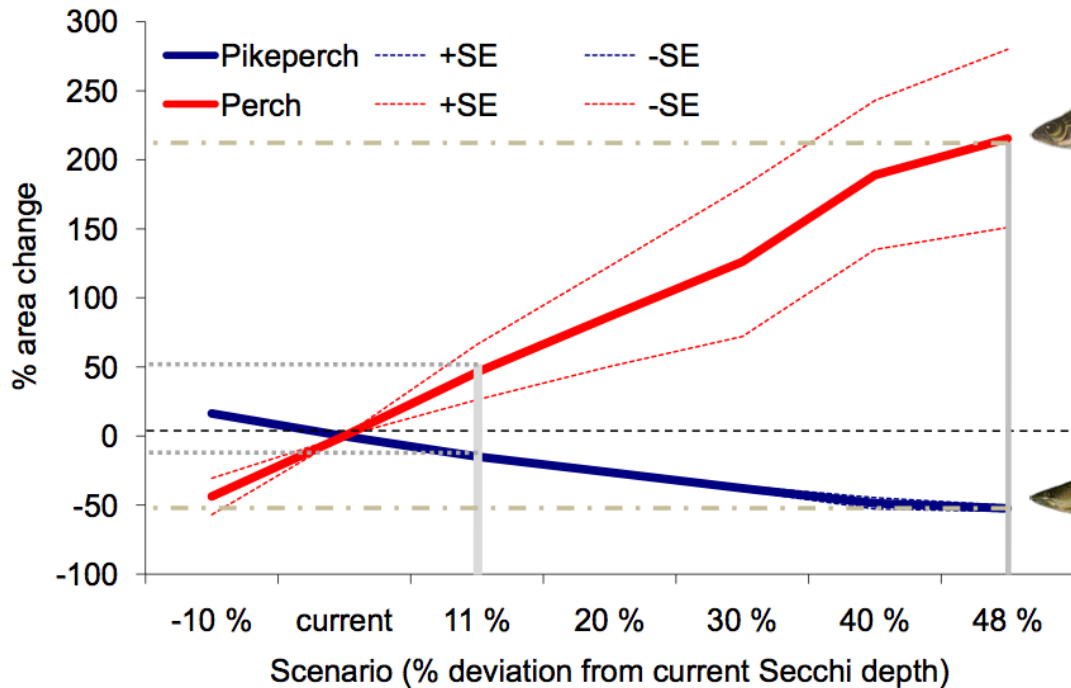
SCENARIOS FOR COASTAL MACROPHYTES!



Varying eco-logical responses to BSAP eutrophication targets!



SCENARIOS FOR COASTAL FISH!



Varying eco-logical responses to BSAP eutrophication targets!



Conflicts interest?



HOW DO WE VALUE IMPROVEMENTS DUE TO MANAGEMENT ACTIONS?

Attribute	Country	Mean citizen WTPs (€)	Aggregated national WTPs (millions of €)
Amount of healthy vegetation (macrophytes)	Swe	2,8	18,5
	Fin	0,9	3,8
	Lit	0,3	0,8
Preservation of currently pristine areas	Swe	2,1	13,9
	Fin	1,0	4,3
	Lit	0,2	0,6
Size of fish stocks	Swe	2,3	15,6
	Fin	0,7	3,1
	Lit	0,2	0,6

“Willingness to pay” for improvement in eutrphication is larger than the costs, but different among regions!



PREHAB

USER-FRIENDLY WEB RESOURCE!

Recommendations
and examples for
local managers on
the web!

www.prehab.gu.se

SEE YOU THERE!

THANK YOU FOR
LISTENING!

PREHAB
Spatial PREDiction of benthic HABitats in the Baltic Sea

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Mapping coastal habitats

Planning of human activities to minimise impacts on coastal ecosystems is of fundamental importance for promoting sustainable use of the Baltic Sea. Successful planning requires that solid information is available about which biological values are present in the coastal zone, where these are found and which socio-economic values these represent in terms of ecosystem goods and services. In order to meet these demands, PREHAB will develop methods for ecological mapping and economic valuation of benthic habitats in Baltic coastal habitats. Our aim is to deliver a scientifically sound and user-friendly framework for regional planning.

PREHAB started in January 2009 and will run for three years. Participants come from Finland, Lithuania and Sweden. The project is coordinated by the Department of Marine Ecology at the University of Gothenburg.

News

Mats Lindgarth will present PREHAB at a "Bonus-day" arranged by Gothenburg University. The purpose of the meeting is to discuss ongoing and future research in The Baltic Sea. All Bonus-project coordinated at GU will participate, as well as Kaisa Kononen, Executive Director for Bonus EEG.

[More \(in Swedish\)](#)

PREHAB PhD course

Ecological mapping and economic valuation of coastal waters
A multi-disciplinary course for PhD- & advanced MSc-students

When: 22 Feb - 3 March 2011
Where: Husö biological station, Åland Islands, Finland

[More information](#)

BONUS
Baltic Region Action Network for Improving Sustainable Use

OUTREACH!

PREHAB will communicate results to stake holders and other users.

MODELLING

We evaluate empirical models for making maps that show the distribution of benthic habitats.

VALUATION

The socio-economical values of the ecosystems are important aspects in regional planning.

SCENARIO PLANNING

Impact from alternative management options can be evaluated through scenarios.



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