



EUROPEAN UNION
European Regional Development Fund



Interreg
Central Baltic



MAREA

Main modelling outcomes and future directions

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MAREA project final event
02.11.2022



The need for process-based and quantitative estimations of ecosystem services

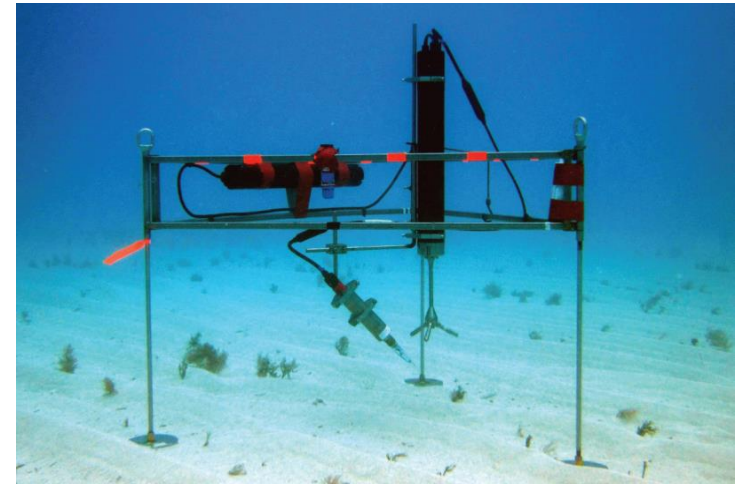
Most of our *current understanding of the spatial flow of services* from marine ecosystems is the result of approaches that rely on the *spatial representation of structural components of ecosystems and the qualitative* (or semi-quantitative) *assessment of their contributions* to specific services.



The need for process-based and quantitative estimations of ecosystem services

Spatially-defined and quantitative estimates of the flow of marine ecosystem services are needed more than ever *if we want to assess and predict expected changes in the course of Global Change*.

Major observational and experimental efforts to understand the contribution of species and overall communities to relevant ecosystem processes under a diversity of environmental scenarios allow us to go beyond assessments focusing on structural components.

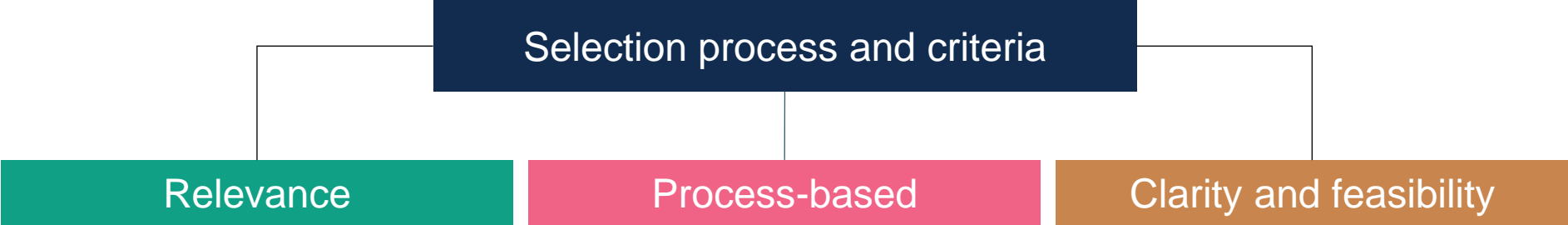


The need for process-based and quantitative estimations of ecosystem services

This *challenge was addressed in* the INTERREG Central Baltic project *MAREA*



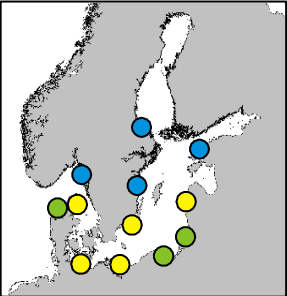
Ecosystem services analysed in the frame of *MAREA*



General modelling approach

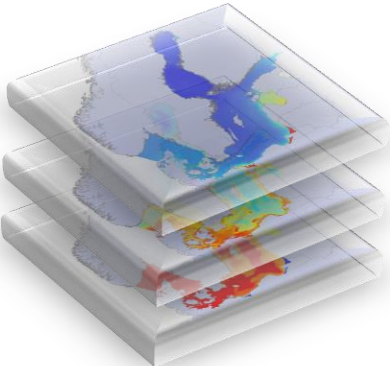
Structure:

e.g., point data of species biomass



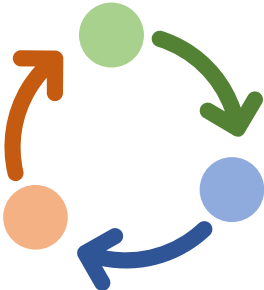
Environment:

GIS-layers of environmental data



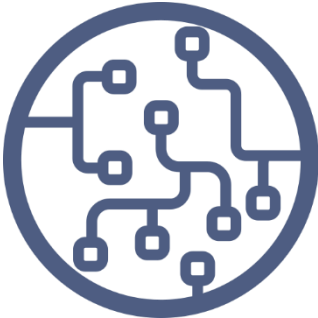
Functioning:

e.g., primary production, nutrients assimilation and content, growth



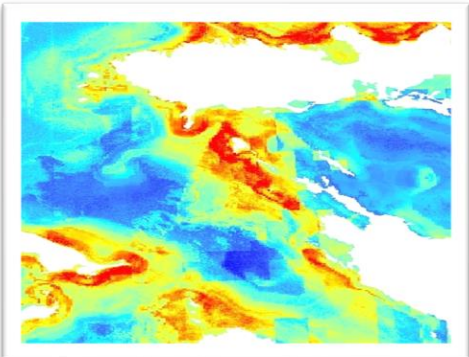
Machine learning:

e.g., BRTs



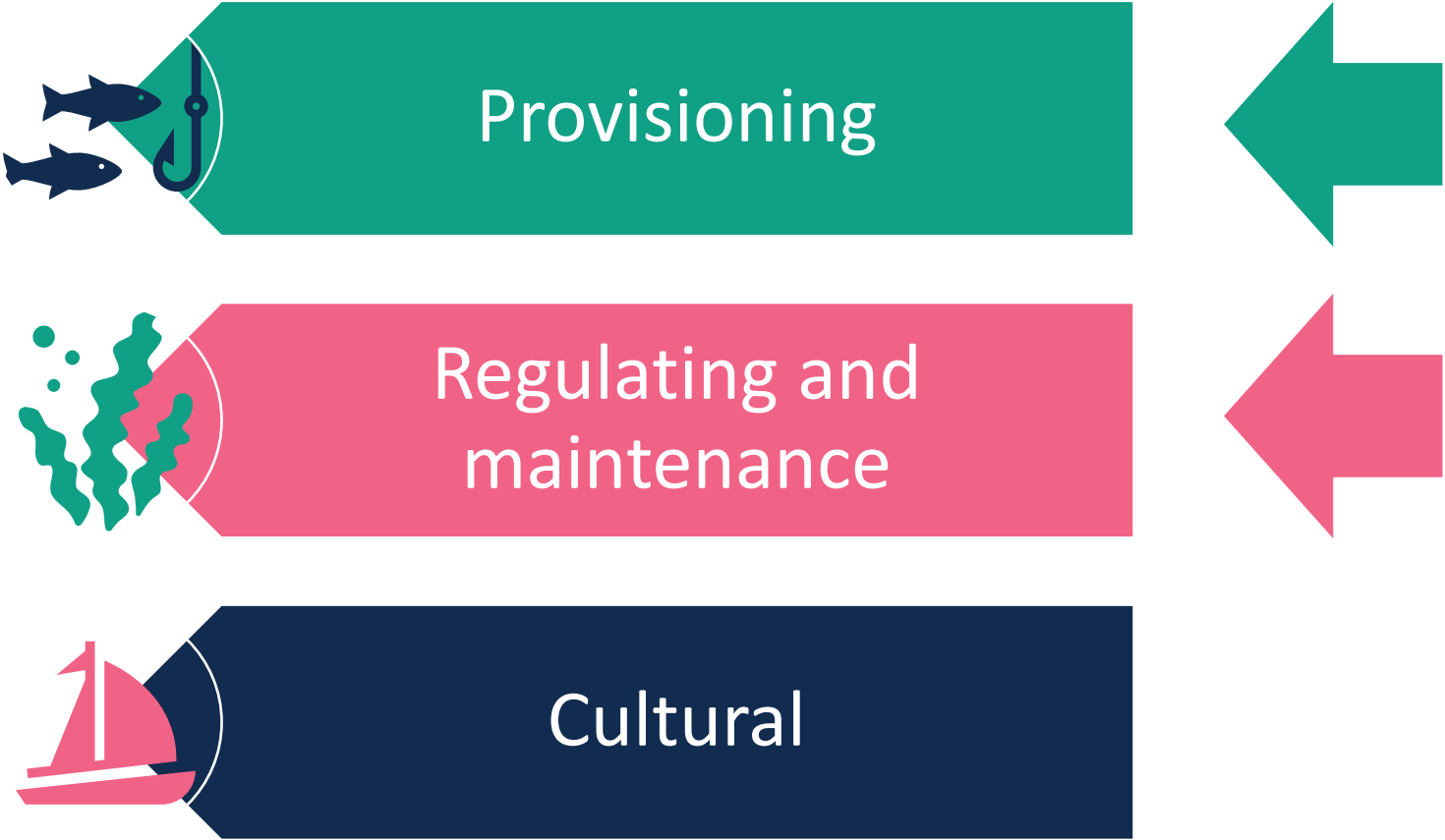
Spatial prediction:

e.g., N sequestration maps

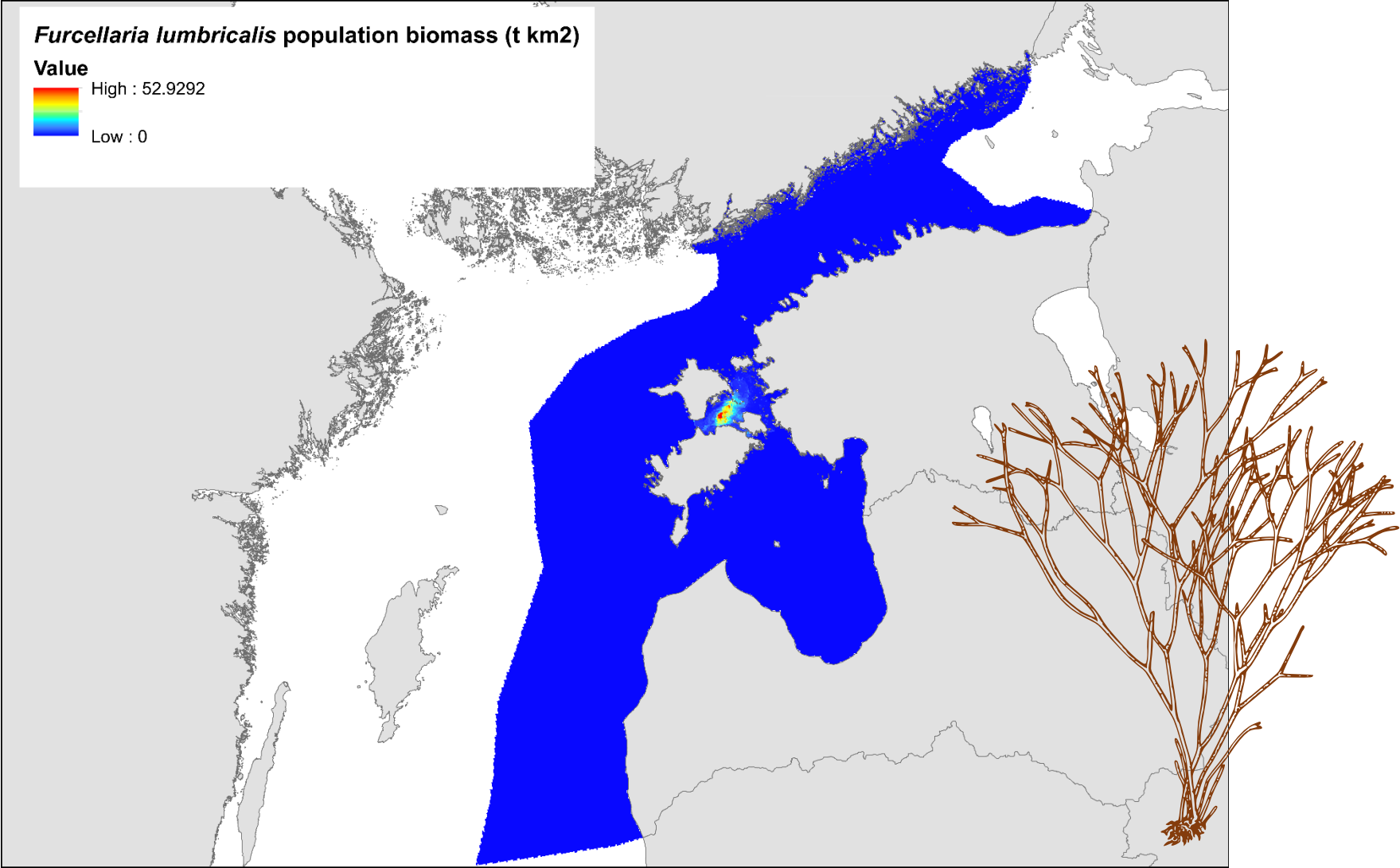


Ecosystems services

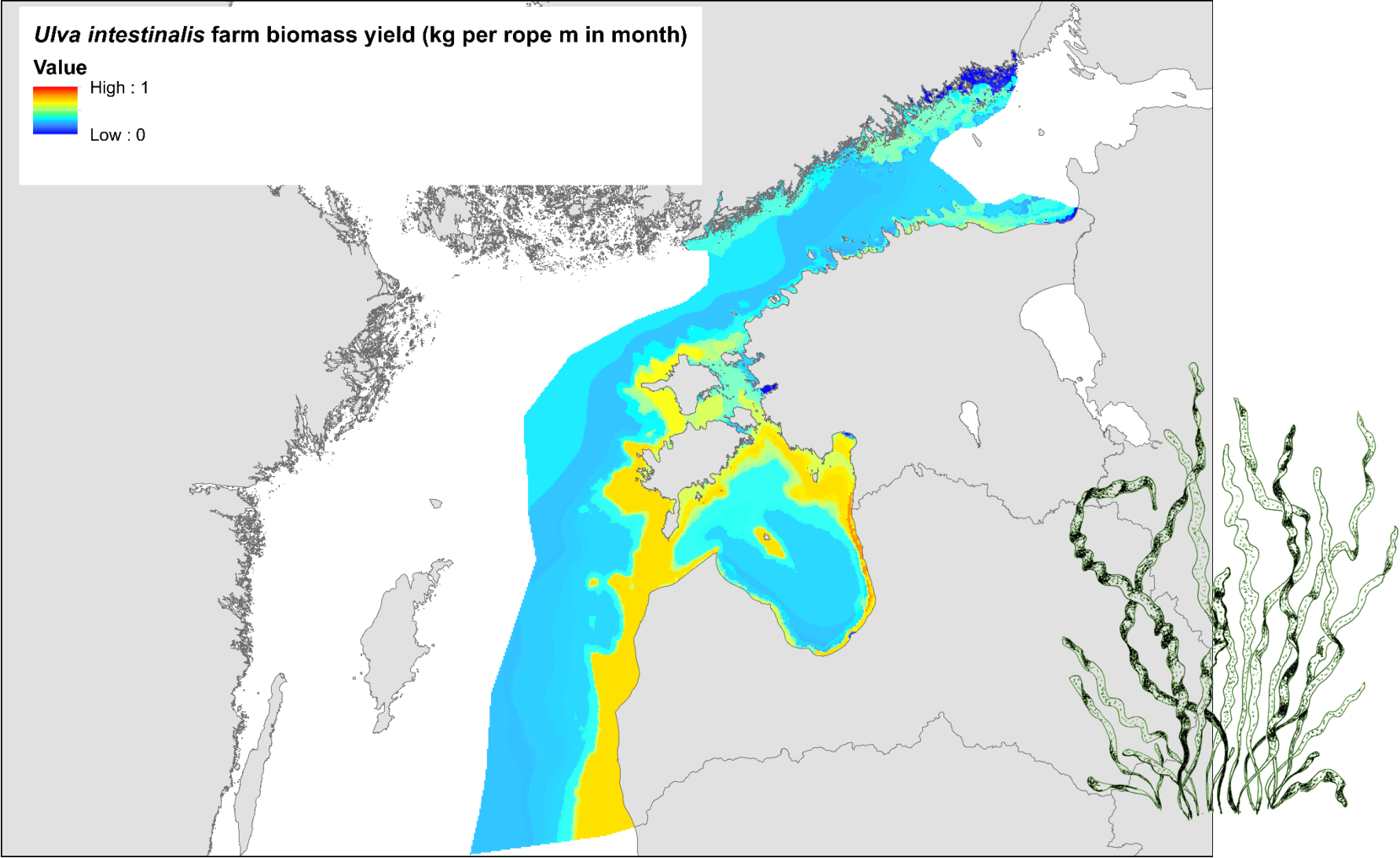
The set of *ecosystems services modelled in the frame of MAREA were explicitly framed and classified following the Common International Classification of Ecosystem services (CICES)*:



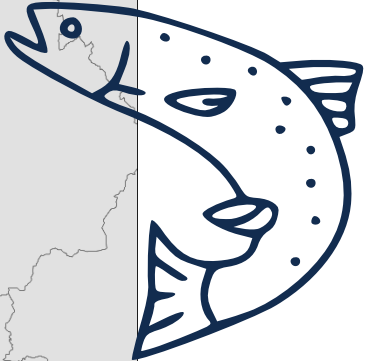
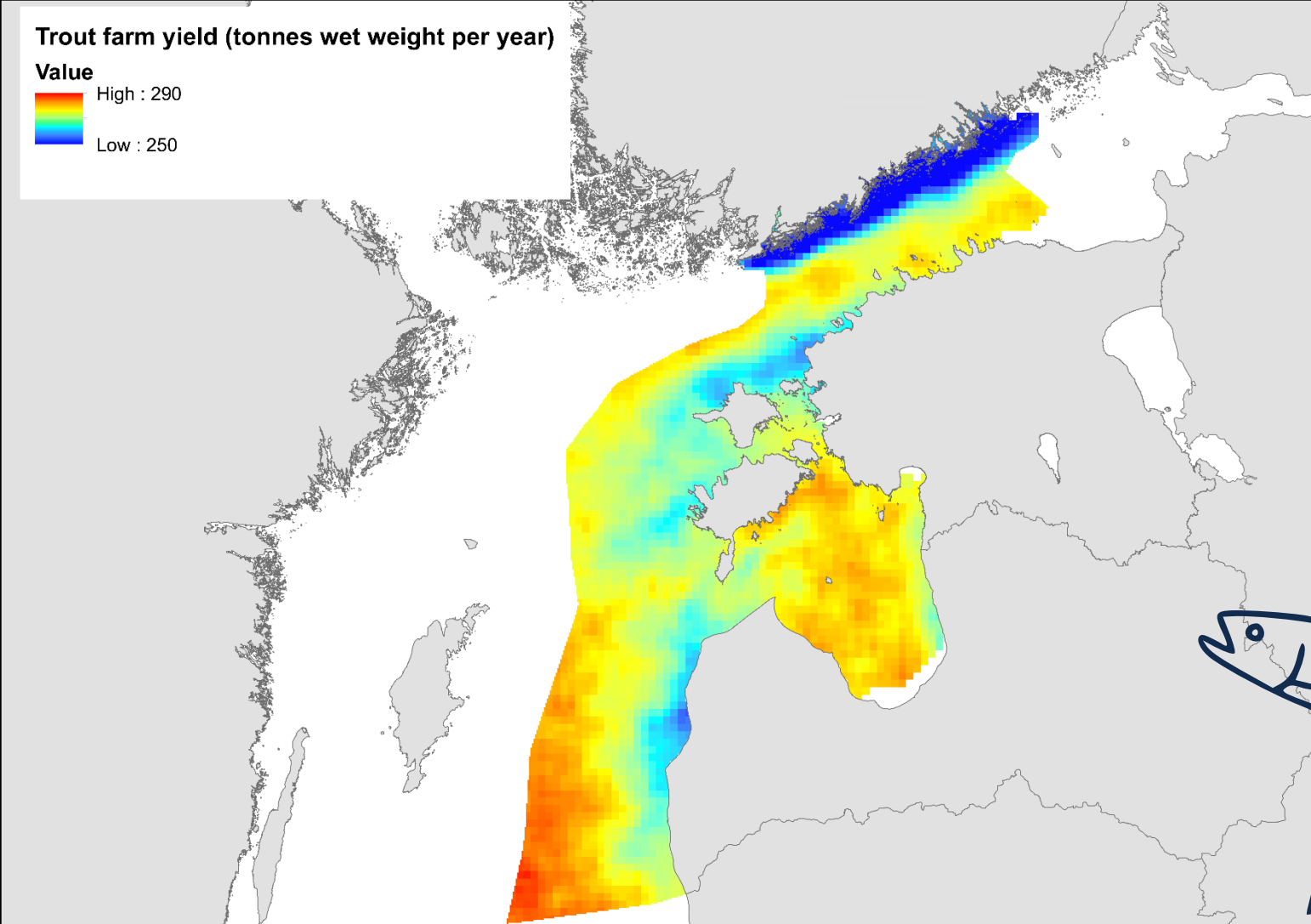
Provisioning



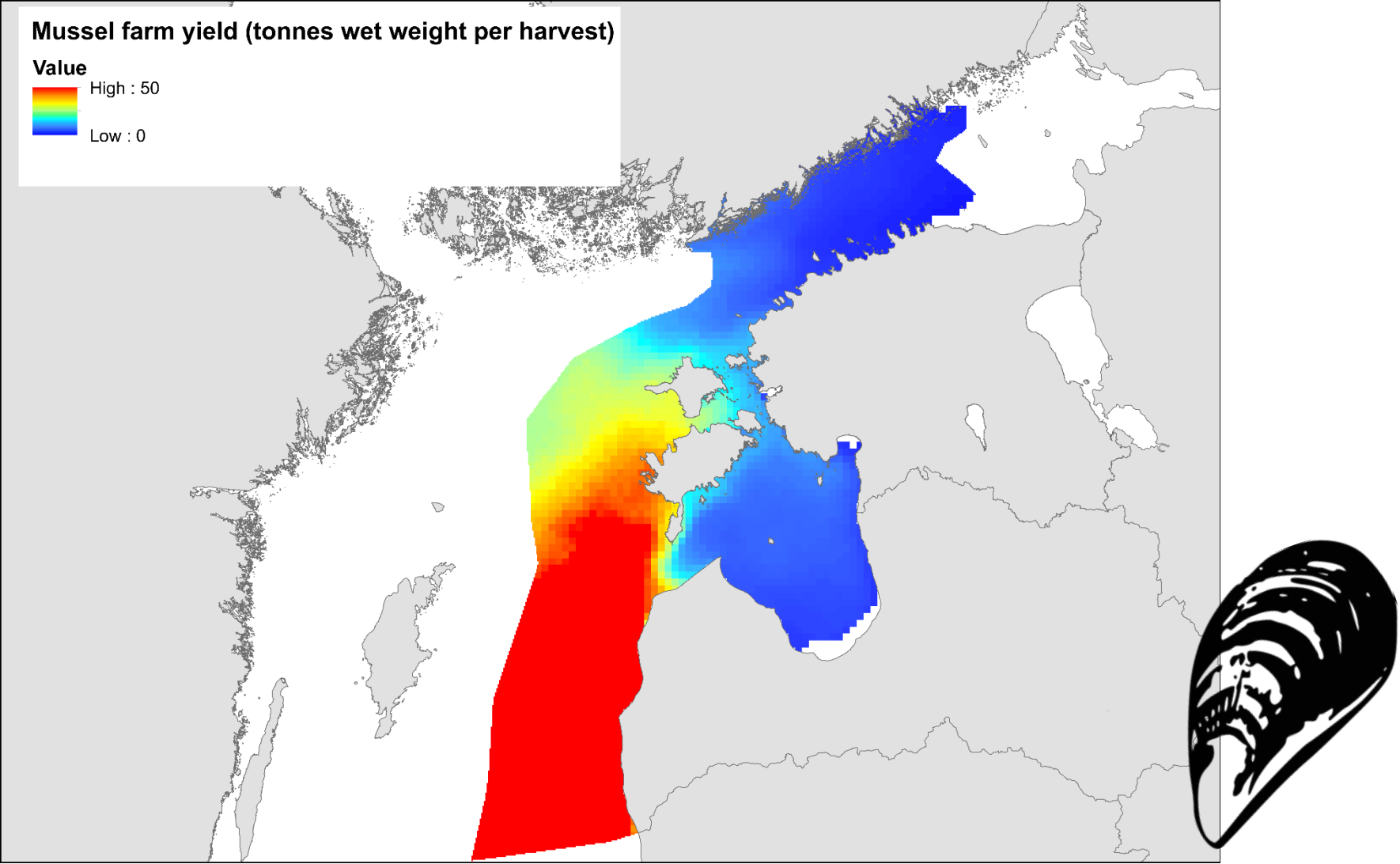
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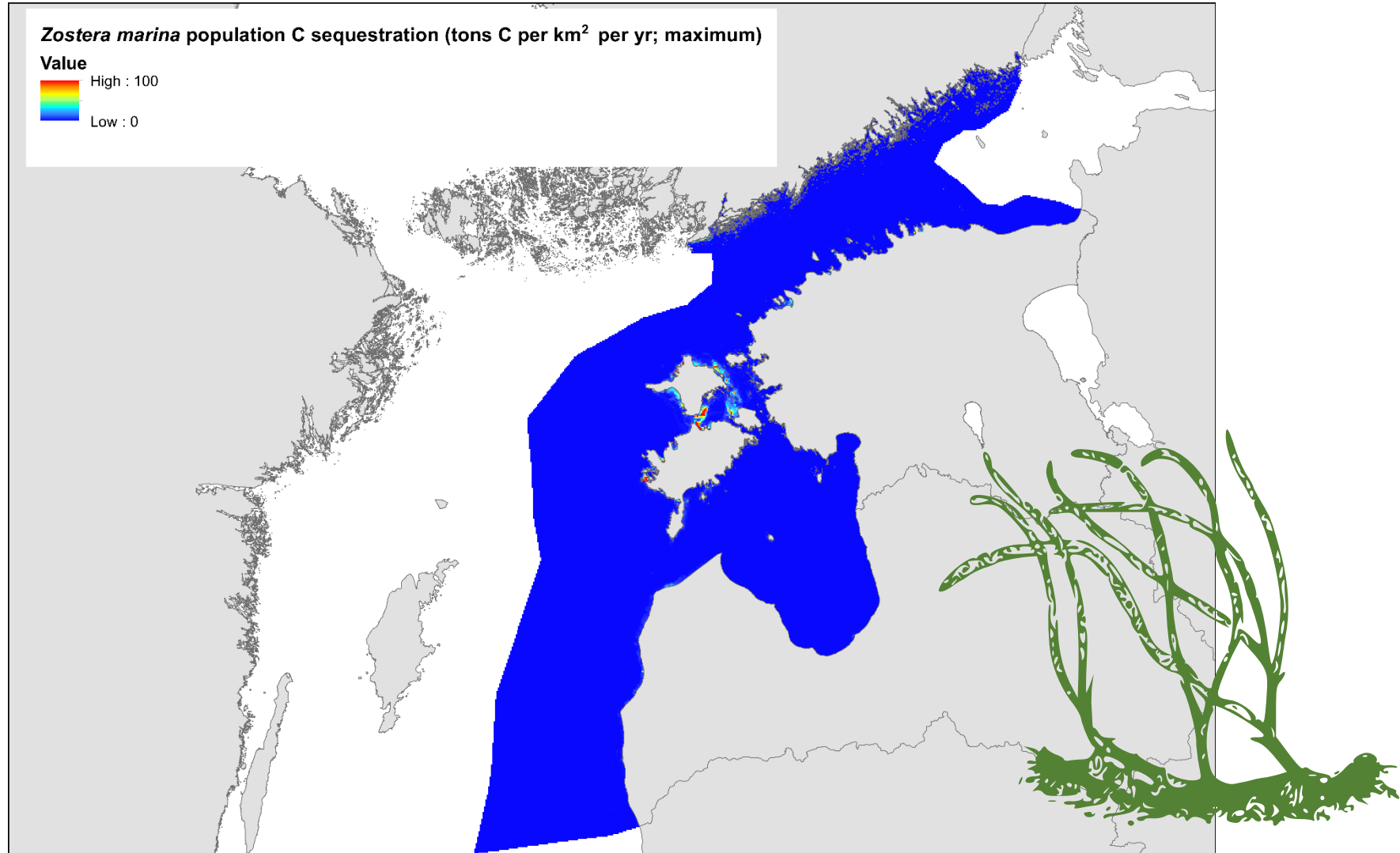
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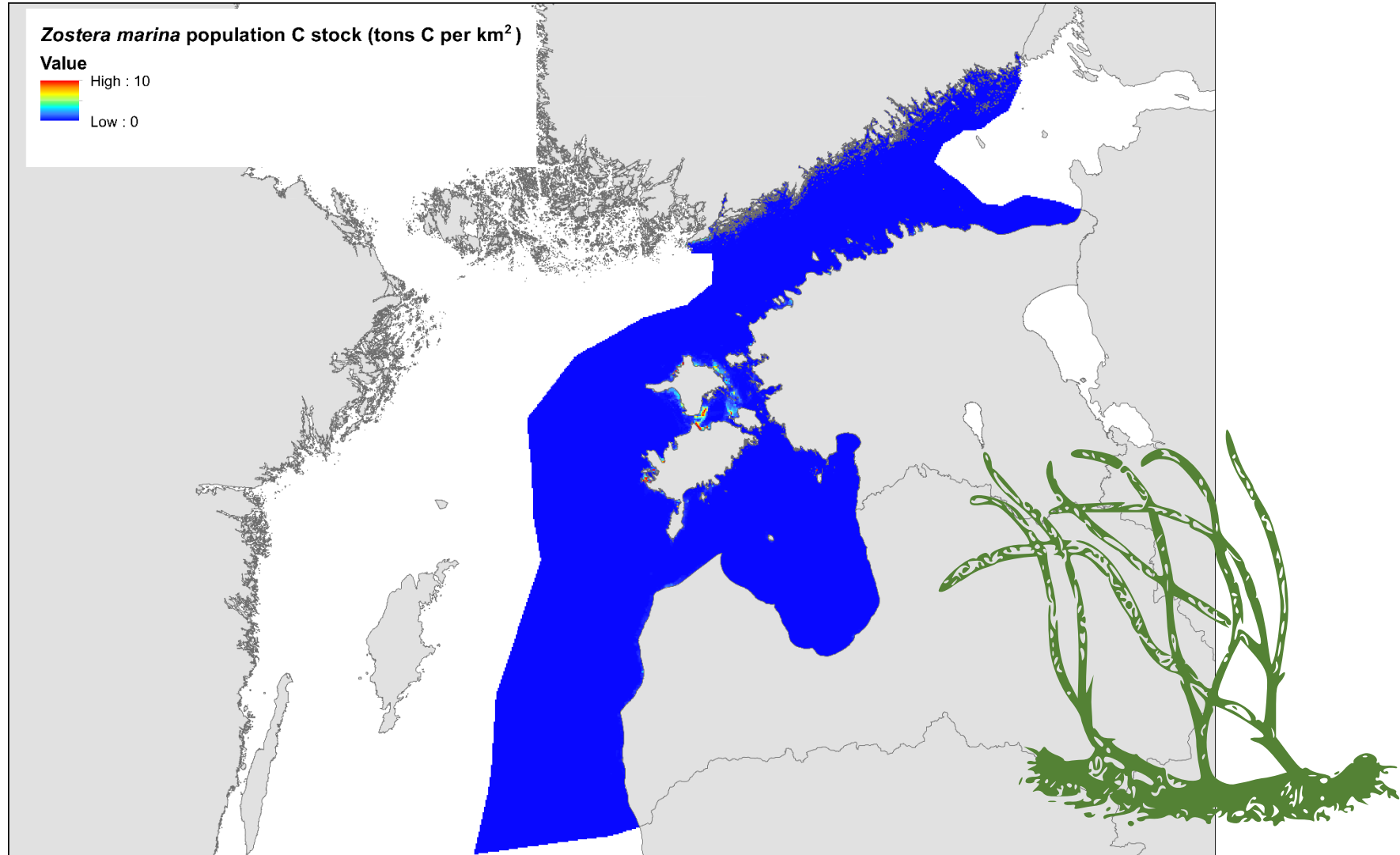
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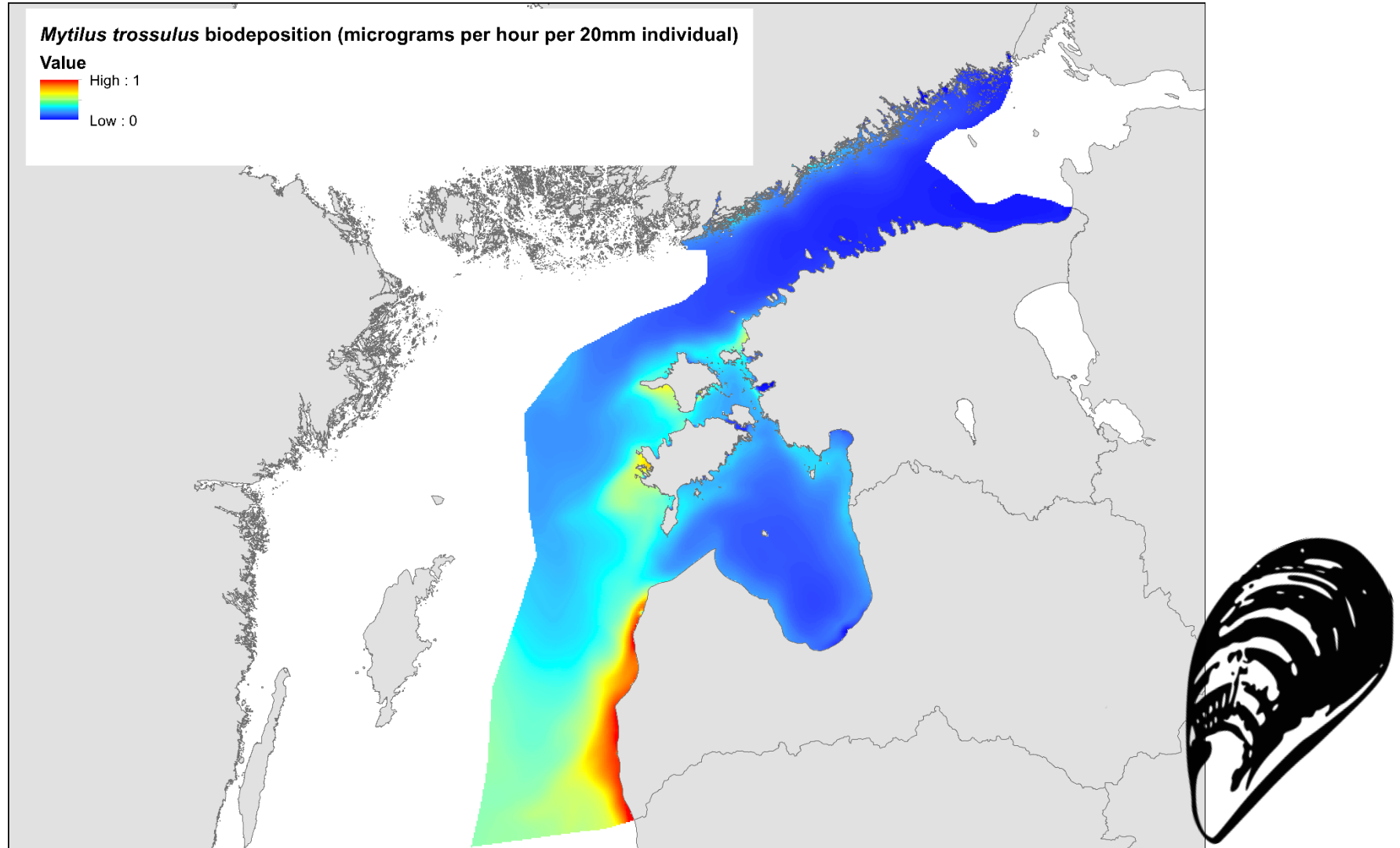
Regulating and maintenance



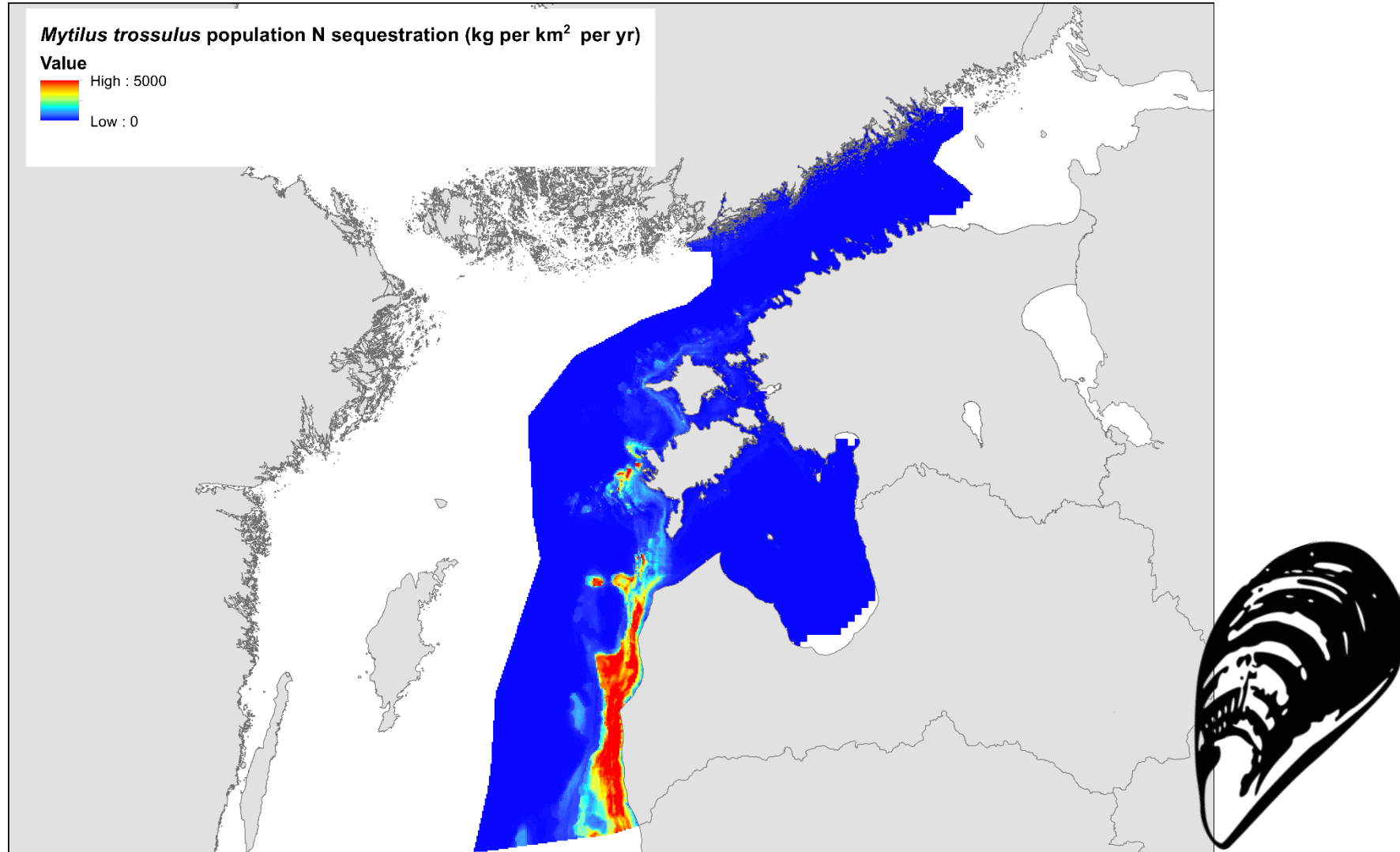
Regulating and maintenance



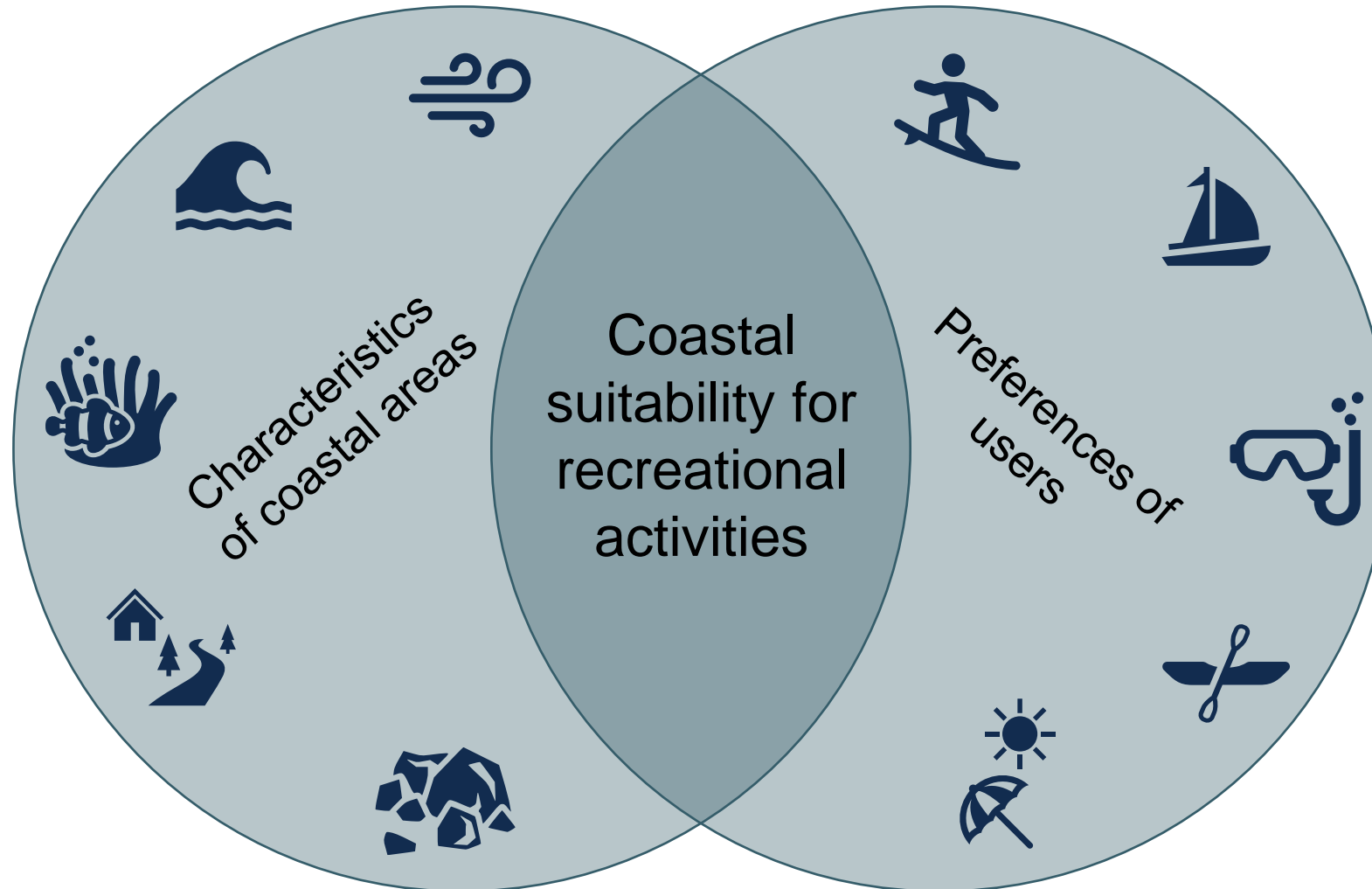
Regulating and maintenance



Regulating and maintenance



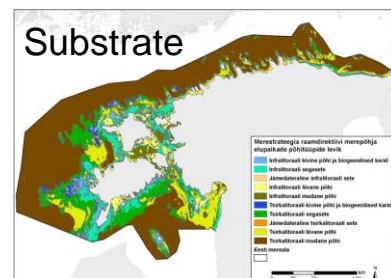
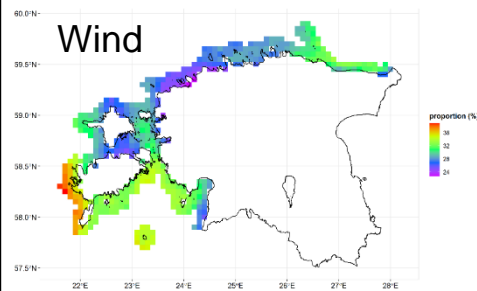
Suitability of coastal areas for different *recreational activities*



Definition of *coastal suitability* for *recreational activities*

Environmental layers

Maps of *relevant environmental variables* for the development of the activity



Opinion of users

Relative importance of different *variables and ideal conditions* defined *based on the preferences of users*

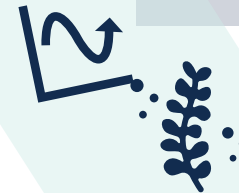


Future directions

Incorporate further ecosystem services considering new observational and experimental evidence



Integrate new conceptual and analytical developments to explore the link between biodiversity and ecosystem functioning across seascapes



Generated products are the basis for future developments planned in the context of upcoming pan-European projects





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Thank you for your attention

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