

The Baltic GRASS project and its legacy

17. June 2021 @ 5th Coastal Biogas

Efthalia Arvaniti, PhD Programme Manager
SUBMARINER Network



EUROPEAN
REGIONAL
DEVELOPMENT
FUND

GRASS

EUROPEAN UNION

SUBMARINER Network members



- SME
- University
- Research Institute
- Science & Technology Park
- Government
- Regional cluster

- Sweden
- Germany
- Denmark
- Poland
- Lithuania
- Finland
- Latvia
- Estonia
- Norway



Innovation, Bioeconomy,
Spatial Planning, Nutri, Tourism,
Culture, Energy, Ship



SUBMARINER topics

2021 – 2027

Macroalgae
harvesting,
cultivation &
processing



Mussel
Cultivation
&
Processing



Reed
Beach Cast
Macro-
Halophytes



Cultural
Heritage /
EcoTourism



Blue Bio-
technology
Microalgae



Marine
Litter



Side Streams
New Species
Aquaculture



Smart
Combinations



Strategic Action Fields

Actors &
Match-
Making



Digitalisation
Data & Tools



Sub-
regional
solutions



Access to
Pilot sites &
Large scale
Demonstrations



Training &
Capacity Raising



Technology
Development
& Transfer



Finance
&
Funding



Regulation
&
Licensing



Awareness
&
Marketing



Multi-Actor and Sector Approach

Companies, Research, Authorities, Civil Society

Natural and Social Science, Informatics, Creative Arts, Economics

Vision 2030



Contribute
to decrease
of GHG
emissions



Ecosystem
Restoration
Increase
Biodiversity



A smart,
resilient
Baltic Sea
Region
Promote
local, circular
economy



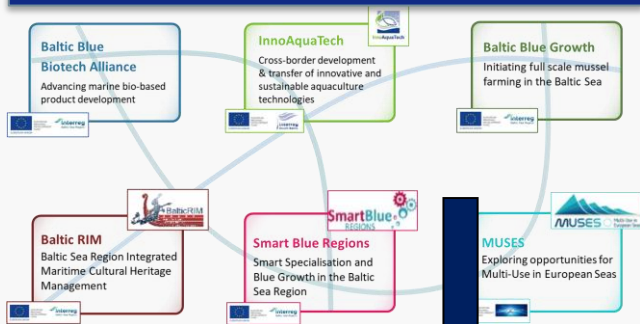
Improve
human
well-being



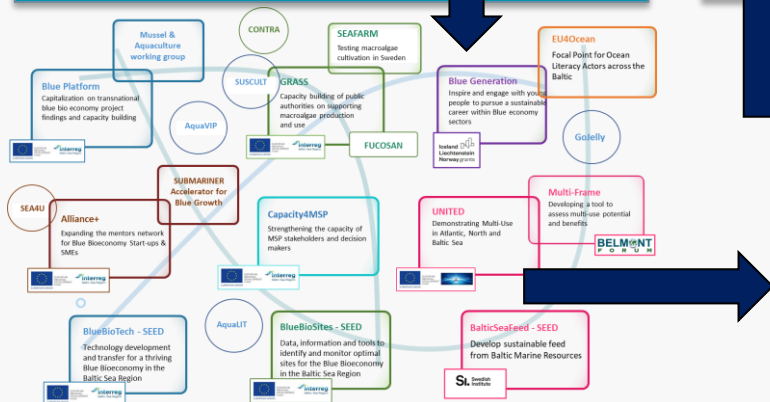
Promote
bio-based
innovations

From projects to working group & vice versa

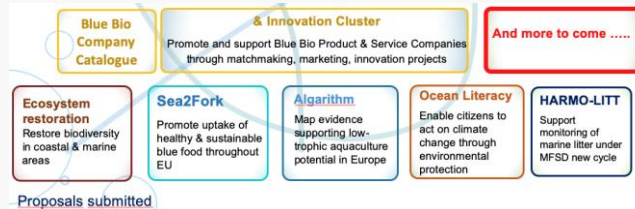
Completed projects (2014-2019)



Current projects (2019-2021)

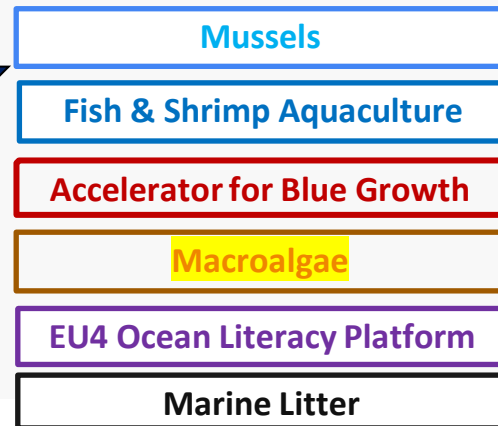


Next GEN SUBMARINER projects (submitted)



Proposals submitted

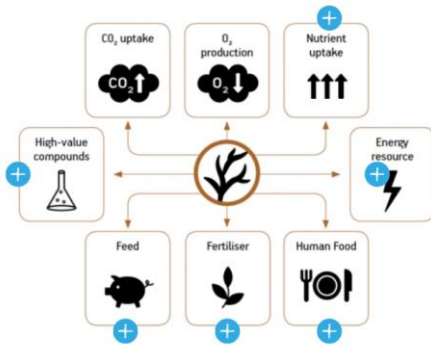
Permanent Working Groups



About GRASS



POSSIBLE APPLICATIONS OF MACROALGAE HARVESTING AND CULTIVATION



→ GRASS aims to raise **awareness** and build **capacity** on macroalgae cultivation & applications among public authorities, ministries, planning regions and counties who are the key **legislative & funding** bodies to facilitate growth of the sector



UPPSALA
UNIVERSITET



NATIONAL
MARINE
FISHERIES
RESEARCH
INSTITUTE



GRASS Project Flyer

GRASS Dissemination Plan

<https://submariner-network.eu/grass>



Project Outputs

Work Package 2

Work Package 3

Work Package 4

Raising capacity of public authorities and practitioners on the environmental and ecological benefits and risks of macroalgae cultivation and harvesting in the BSR:



2.1: Pan-Baltic map depicting potential of macroalgal cultivation and harvesting



2.2: Manual on the efficient production methods of macroalgae farming in the Baltic Sea region



2.3a: Report on ecological impacts of macroalgae cultivation in the Baltic Sea region

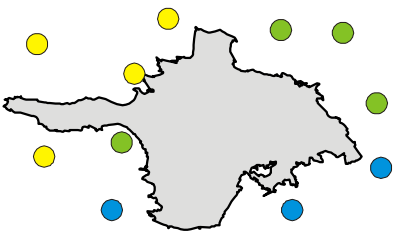


2.3b: Guidelines for undertaking Environmental Impact Assessments for macroalgae

Spatial modelling

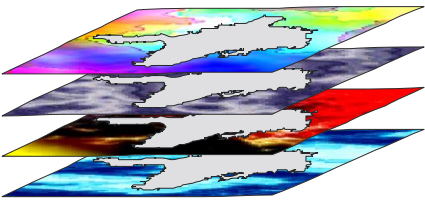
Response variable:

e.g., point data of species



Predictor variables:

GIS-layers of environmental data

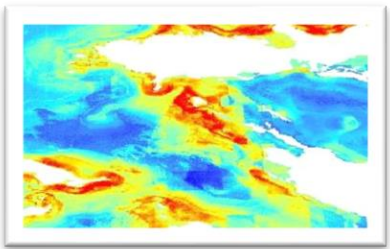


Machine learning
combined with statistics



Prediction:

suitable farming areas



Model assessment:

- importance of predictors
- relationships between predictors and response
- model validation

ODSS – Operational Decision Support System, in action

Human activities - current use

Name	Average	Area (km2)	Percent (%)	Count
Pipelines				10
Fishing effort all gear types 2013	3.86	69.56	34.89	7
AIS Shipping Density (2016)	5.07	199.43	100	78

Baltic Blue Growth GRASS

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Physical features

Name	Average	Area (km2)	Percent (%)	Classes
Sediments				Mud,Hard bottom complex,Sand
Summer chlorophyll (mg m-3)	2.92			
Salinity (psu)				7.5 - 11 psu
Simplified wave model (m2 s-2)	4113.23			
Temperature (°C)	18.19			
Baltic Sea Ice		190.33	95.47	

Nutrient removal, mussel and algal growth (model)

Name	Average	Area (km2)
N Removal by mussels (Mytilus, g/m rope @ 2 years)	0	199.42
P Removal by mussels (Mytilus, g/m rope @ 2 years)	0	199.42
Mussel growth (kg/m rope @ 2 years)	1.47	199.42
Fucus growth (daily growth rate in %)	0.62	199.42
Ulva growth (daily growth rate in %)	11.38	199.42
Areal N removal estimate by alga (Fucus)	54.05	199.42
Areal P removal estimate by alga (Fucus)	10.81	199.42
Areal N removal estimate by alga (Ulva)	278.03	199.42
Areal P removal estimate by alga (Ulva)	42.69	199.42

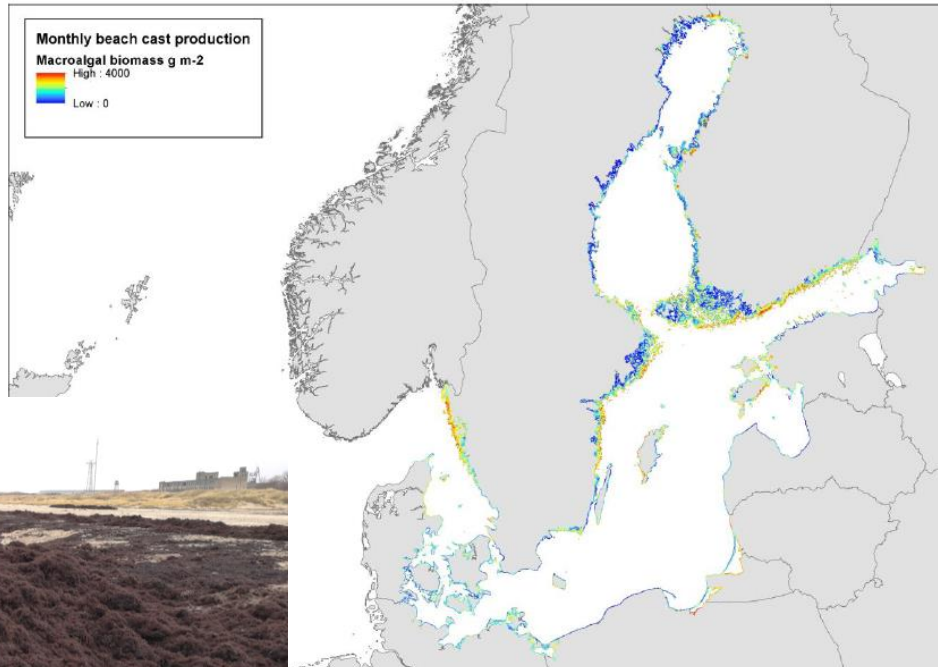
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Beach-wrack production potential across the Baltic Sea up to 4 kg/m²/month



Beach-wrack landed ashore – Latvia 2020. Photo credits: Kurzeme Region



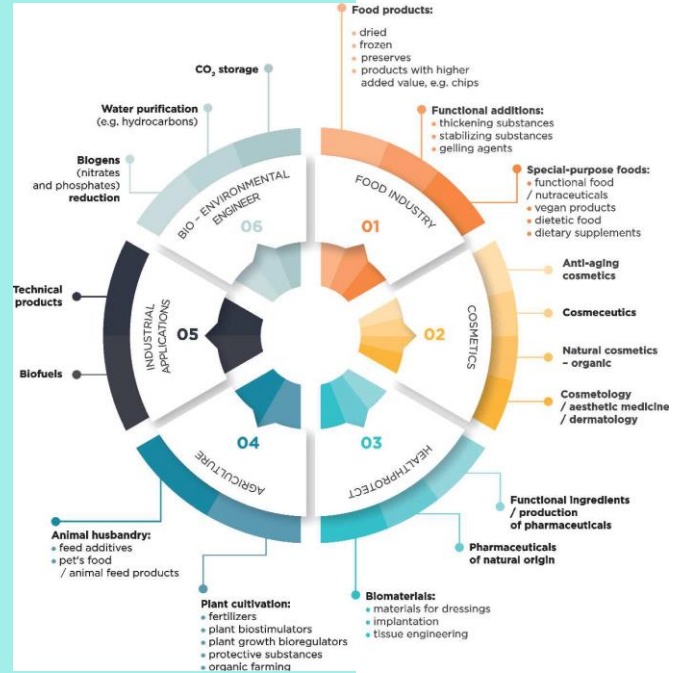
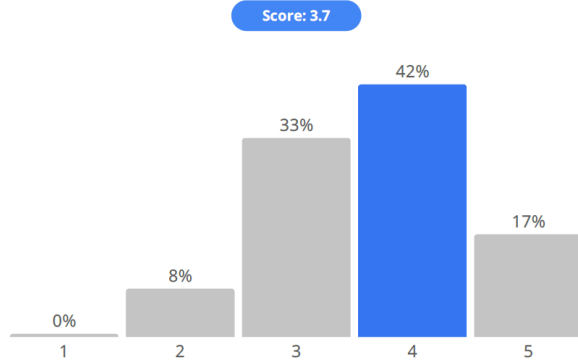
Seagrass/seaweed Benefits

Current and potential use of macroalgae products, elaborated by J. Krupska / NMFRI

Survey (6/16)

0 1 2

NEW! How do you rate collecting beach-wrack as a promising activity to reach "Good Environmental Status"?



GRASS legacy

- Project development
- Match-making
- Lobbying
- Data monitoring

A poster for the "MACROALGAE WG kick-off" event. The text includes "SAVE THE DATE", "15. June at 14.00-16.00 CET online", and "For info contact Efthalia Arvaniti, ea@submariner-network.eu". It features a background image of seaweed and a small inset image titled "Better off Blue". Logos for Submariner Network, Seaweed Europe, Interreg Baltic Sea Region, and the European Union are at the bottom.

SAVE THE DATE

MACROALGAE WG kick-off

15. June at 14.00-16.00 CET online

For info contact Efthalia Arvaniti, ea@submariner-network.eu

Better off Blue
Issue #1
14-17 May - Baltic
Macroalgae Conference

SUBMARINER NETWORK
SEAWEED EUROPE
interreg Baltic Sea Region
GRASS
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

Survey (1/7)

0 2 8

What do you envisage the scope of the working group to include? Please select from the following list.

- | | |
|---|------|
| 1. Marine macroalgae cultivation | 4.46 |
| 2. Land-based macroalgae cultivation | 2.18 |
| 3. Wild harvesting | 1.89 |
| 4. Beach-cast/beach-wrack (with CONTRA) | 1.75 |
| 5. Seagrass | 0.68 |



Any other news & events?



Danish GRASS/Fucosan webinar in week 33 - TBD



Next MG meeting on second half of August



GRASS



EUROPEAN UNION

EUROPEAN
REGIONAL
DEVELOPMENT
FUND



Now to you!
Interested to join?
What unique can you bring?

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Norway
Sweden



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submariner-network-for-blue-growth-eeig

southern Baltic Sea

Poland

Efthalia Arvaniti, PhD
ea@submariner-network.eu

Russia

—barrier island

Lithuania