



Multi-method Assessment for Resilient Ecosystem Services and human-nature system integration

Project and its results in a nutshell



Multi-method Assessment for Resilient Ecosystem Services and human-nature system integration (MARES)

Deliverable 4.6:

Popular publication compiling project results

Coordinator: Maurizio Sajeve

Partners: Pellervo Economic Research PTT, Estonian Marine Institute / University of
Tartu, GEOMAR Helmholtz Centre for Ocean Research Kiel, e2 Research

<https://sisu.ut.ee/mares/about-mares>



BONUS MARES has been funded from BONUS (Art. 185),
funded by the EU

Content

Preface.....	4
Highlights of the project.....	9
1. About BONUS MARES Project.....	10
2. Systematic literature review	11
3. MARES Geospatial Toolkit	13
Get to know our Scientists	15
Policy Briefs.....	18
Highlights from our Newsletters.....	20

PREFACE

What is missing for sustainable development?

According to some authors, humans are a very sensitive species, originally very vulnerable to the conditions of the natural environment. This is also why the development of human intellect has successfully produced intelligent engineering and generated easier lifestyles. The rise of scientific rationality has historically led to an increase of the level of general education and very specialised skills.

Since ever humans have searched for the truth of things, under various forms. However, on the matter of knowledge, the ancient story of Socrates seeking for a wise man looks very actual. Socrates tries to find someone wiser than himself among politicians, poets, and craftsmen. Politicians claimed to own wisdom without having knowledge. Poets touched people's hearts by beautiful words without knowing what these really meant. Craftsmen claimed great knowledge in very specific yet very narrow fields. Socrates cannot find a wiser man than he is – as they think to know whereas they know nothing. As he tells, the wise man neither knows nor thinks that he knows.

Sadly, the strong focus on knowledge specialisation and rational intelligence (the craftsman abilities), has however led humans to lose their natural instinct and capability to live according to the natural world and its laws, which are perhaps seen as a threat or challenge, leading for instance to the paradigm of economic growth typical of the Anthropocene. **Rationality has perhaps replaced the listening of the nature.** Yet, nature remains the ultimate bottom line for a healthy and prosperous present and future society.

The desire for knowledge is one of the greatest desires and virtues of continued understanding, especially for the scientist, but also for all humans. However, the belief to know, whereas we do not, may lead us to forget that humans are part of higher natural complexity of which we probably can understand just very little. The politician may believe to own wisdom and to rely on the craftsman (science) to solve all present and future problems, however the knowledge about all interactions may remain just a hope. In the same way, it seems populations often need to believe that a politician or scientist has got all the wisdom, while this is very unlikely to happen. This can be a huge risk: those who believe to know may suddenly understand they did not only when it is too late.

Socrates' wisdom means learning and recognising what we do not know, and that what

we know might not be enough. The absence of complete knowledge and the existence of high uncertainty is not a reason for interpreting it according to each individual's desires or interests. Yet, it is a reason to act more carefully.

Currently, both wisdom and virtue are missing.

For Aristotle, political and practical wisdom, phronesis or prudence, describe the goal of politics as the common goal of happiness or wellbeing (eudaimonia) for society. Happiness meant living according to reason and virtue. Moral virtues, considered to include predominant courage, temperance, justice, self-discipline, moderation, gentleness, modesty, humility, generosity, friendliness, truthfulness, humour and honesty characterise the political man. However, these should also be complemented by the "intellectual virtue" of practical wisdom.

In this understanding, not every choice is politically acceptable, when practical wisdom (the right means) or moral virtue (the right mark) are missing. The reference to wisdom and the moral virtue of meeting primarily human basic needs limits and informs the 'political purpose'. Therefore, wisdom means, based on knowledge, being able to interconnect, listen to nature and to what we humans really need for our lives, regardless of societal or individual choices that would pretend to be perfectly rational, yet often driving away from the 'truth' we search for.

It might happen that we understand only in times of a crisis, when we are already in trouble, what really matters. During corona times, we can notice how environmental conditions have suddenly improved when economic activities have slowed down. At the same time, we have noticed which of these economic activities really mattered for people's lives. Probably small or medium activities, sources of basic income and guaranteeing basic needs and jobs, on which negotiation is not possible. Lockdown measures, especially when not adequately and scientifically justified, and preventing populations from achieving their basic needs, have led to security imbalances.

Food security, health, security, education and human rights come first. And in turn the conditions that allow these to be produced: clean air, sun, freedom, positive right, peace and absence of stress, and healthy food.

The combination of wisdom and moral virtue practically mean that, even when policy should be informed by scientific evidence (intellectual virtue of practical wisdom), science

cannot replace policy (moral virtue). However, in the same way, non-accounted and individual interest-driven choices cannot revert or replace the evidence of the common good. The acknowledgment of evidence does not constitute any obligation to act differently in terms of individual choices for oneself.

BONUS MARES builds knowledge and wisdom for human-nature systems' integration.

Upon these basis, the BONUS MARES project promotes an idea of **governance for sustainability, through holistic and systemic understanding of the interactions between nature and human beings**. A vision of economics as household management can provide for the intellectual virtue of wisdom that integrates ecosystems, the functions they produce and the needs they contribute to meet. The sharing of this integrated knowledge and emerging evidence promotes the practical wisdom that can address choices under incomplete, dynamic and uncertain information, in contraposition with the conception of Homo economicus where rational economic agents possess complete knowledge for efficient action.

In order to deal with high and often unknown complexity of interconnected systems, BONUS MARES follows a bottom-up approach, thereby building wisdom and virtue upon the precautionary principle rather than on the often unrealistic and anthropocentric conceptions of perfect economic rationality. **BONUS MARES has performed a systematic literature analysis** on the existing knowledge about three natural habitats in the Baltic sea, i.e. mussel reefs, seagrass beds and macroalgae, on the benefits these provide to human life, and on the methods applied for their appreciation. While specialised economic knowledge about the methods for valuating these benefits exists for specific human purposes, BONUS MARES research has demonstrated that these values are not linked to the natural capital that produce them. In this way, natural capital (often a complex interaction of different ecosystems) could easily get quickly depleted (and the benefits lost), because it is not appreciated as being the source that produces the benefits.

In order to fill this gap, **BONUS MARES has initiated participatory processes** among economic and ecological disciplines to combine the methods of different disciplines, with the aim to build the missing links. The contribution of BONUS MARES, by the integrated meta-evaluation of scientific knowledge and its representation and use in **the MARES Geospatial Toolkit**, allows user-friendly consultation and interactive participation, in

order to build both trans-disciplinary knowledge and wisdom, and in turn inform virtuous decision making processes, both individual and collective, for the sake of sustainable development and the goals of Agenda 2030.

Not all interactions within and between ecosystems are known, and establishing the links is not always easy, nor it is easy to understand their role for human health and most important needs. **This is why integrated approaches to science are needed.** However, many aspects remain unknown or uncertain.

The virtue of wisdom of the precautionary principle would suggest that, as we all know that we do not know everything, acting on the border of systems' limits to realise the maximum efficiency is unnecessary, let alone exceeding them.

Maurizio Sajevo

Coordinator of the BONUS MARES -project

HIGHLIGHTS OF THE PROJECT

1. About BONUS MARES Project
2. Systematic Literature Review
3. MARES Geospatial Toolkit

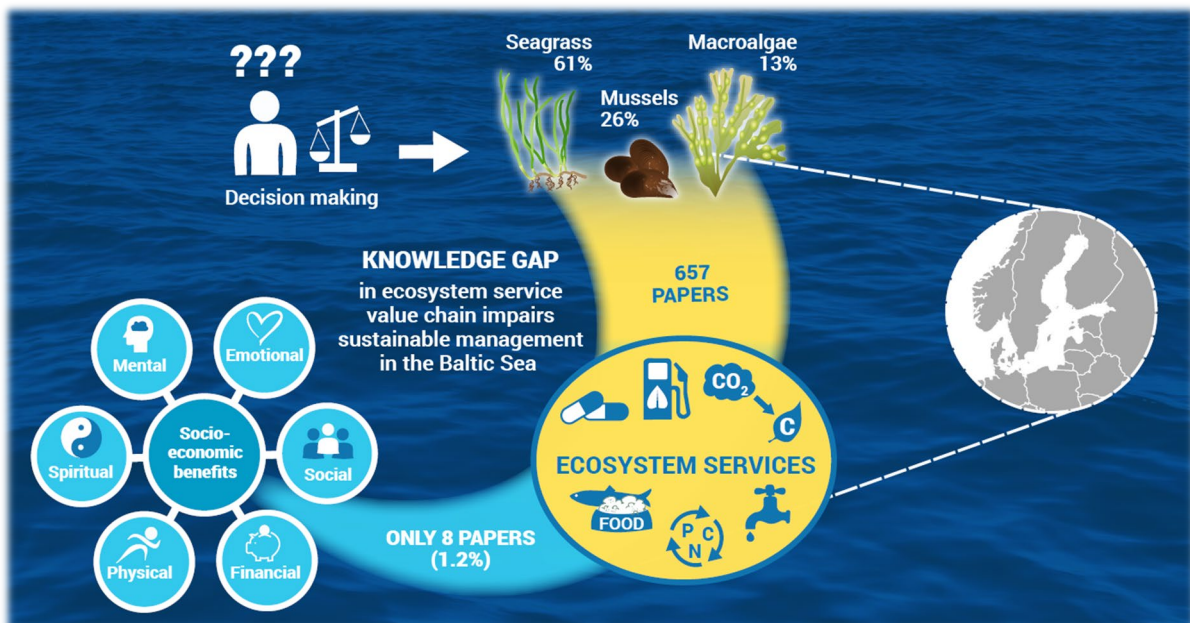
1. About BONUS MARES Project

- Sustainable management of the marine environment requires better understanding on the socio-economic benefits that ecosystems provide.
- Improved understanding is also needed on the interactions between environmental change and the capability of ecosystems in providing ecosystem services.
- MARES responded to the challenge by reviewing studies on ecosystem services and their valuation methods. A big step was the development of an open access GeoSpatial tool which brings this information available for decision making.
- Research was conducted in 2018-2020
- Research Partners:
 - Pellervo Economic Research PTT, Finland
 - Estonian Marine Institute / University of Tartu, Estonia
 - GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
 - e2 Research, Finland

2. Systematic literature review

The ecosystem service evaluation study summarized scientific knowledge from over 1,000 researchers extracted from 657 publications.

This revealed a knowledge gap in ecosystem service research.



Systematic Literature Review

- European Marine Biology Symposium 2019

The systematic literature review is captured in a poster presented in the EMBS in 2019.



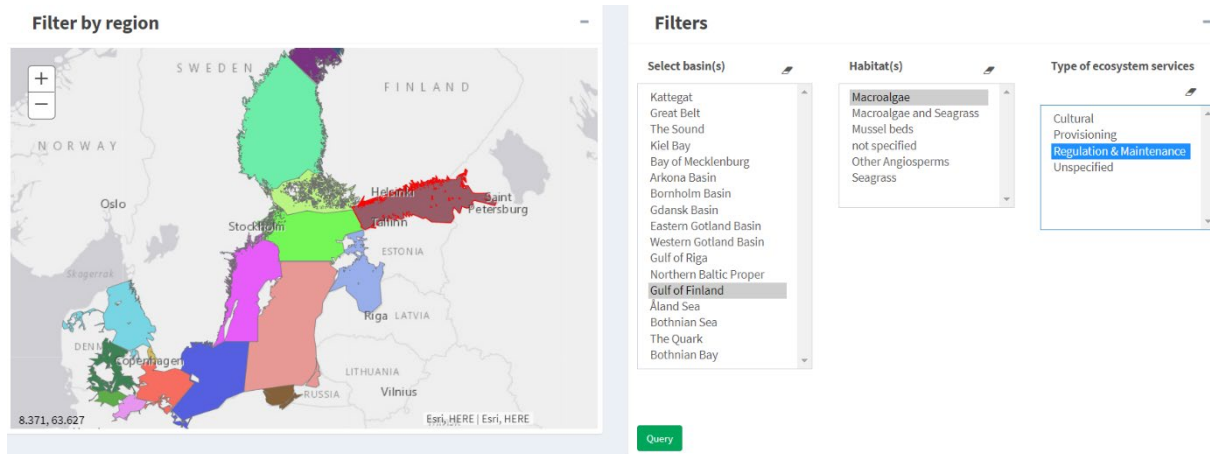
MARES project and the results of the meta-analysis were presented in a poster session at the 54th European Marine Biology Symposium held in 25-29 August in Dublin. Poster prepared by Anneliis Peterson and Melanie Heckwolf concluded that based on the extensive systematic literature review, there are huge knowledge gaps in quantification and mapping of ecosystem services in the Baltic Sea. More information is also needed on the applicability of monetary and non-monetary valuation methods.

(In photo: Anneliis Peterson, Jonne Kotta and Helen Orav-Kotta)

Access:

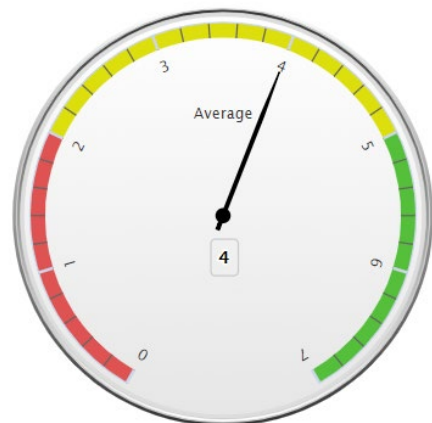
https://sisu.ut.ee/sites/default/files/mares/files/embs54_maresposter_final_002.pdf

3. MARES Geospatial Toolkit



Natural Scoring System 

The Geospatial toolkit **facilitates**
exploration of the review
results with varying illustrations of the
current level of knowledge.



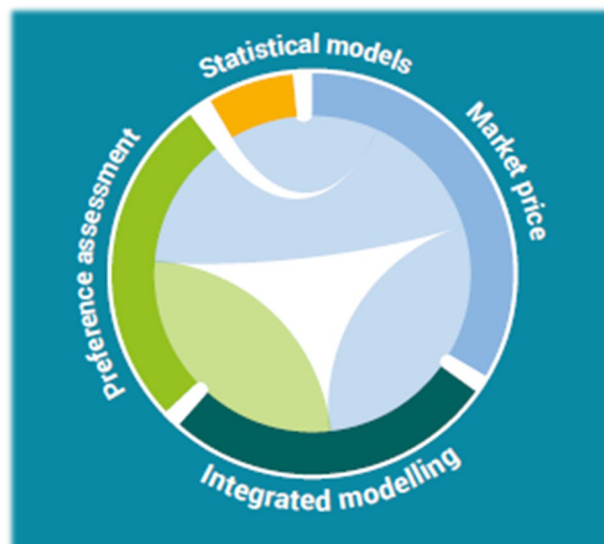
Access:

<http://www.sea.ee/esq/review/main>

MARES Geospatial Toolkit

- The Participatory Interface

The toolkit facilitates **adding your information** on ecosystem services and their valuation methods and **exploring the current status of knowledge** on methods for ecosystem services' valuation based on the Eco-GAME matrix.



Access:

<http://www.sea.ee/esq/participatory/tool>

GET TO KNOW OUR SCIENTISTS

Maurizio Sajeva, PTT

I am an Economist and Doctor in Sustainability and Governance. In the BONUS MARES project, I am the Coordinator and working in particular on the meta-evaluation of ecosystem services' evaluation methods as well as on its representation in the geoportal, in cooperation with UTARTU.



Thorsten Reusch, GEOMAR

I am a marine ecologist and evolutionary biologist working as full professor at GEOMAR. Together with colleagues, I am coordinating the Work Package 2 of the BONUS MARES project dealing with a review of ecosystem services.



Jonne Kotta, EMI

I am a Field Marine Biologist and in the BONUS MARES project, I develop the overall concept of valuation of ecosystems and disseminate the novel knowledge using sophisticated but easy-to-use online tools.



Melanie Heckwolf, GEOMAR

I am a Postdoc in the Marine Evolutionary Ecology group at GEOMAR. Within the BONUS MARES project, I am part of the team that conducts a literature review on the current knowledge on ecosystem services in the Baltic Sea.



Anneliis Peterson, EMI

I am a Junior Research Fellow in marine biology at EMI. In BONUS MARES, I am involved in the Work Package 2 that deals with a meta-analysis of ecosystem services.



Paula Horne, PTT

I am an Economist and Research Director at PTT. In BONUS MARES, I work on the valuation of ecosystem services, learning a lot from the collaboration with our colleagues of natural sciences.



Marjo Maidell, PTT

I am a Forest Economist at PTT. My contribution to BONUS MARES is through reporting, organization of workshops and development and testing of the GeoPortal.



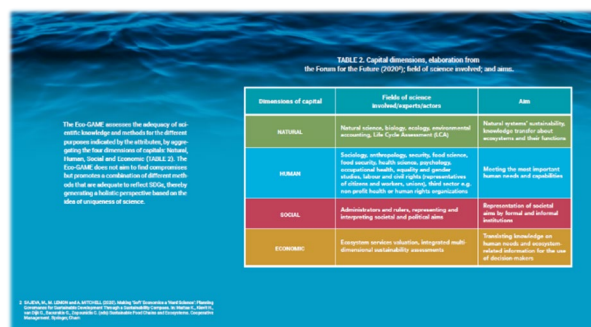
POLICY BRIEFS

1. Ecosystem services and their socio-economic benefits to humans
2. Playing an Eco-GAME to assess the quality of scientific knowledge for evidence-based decision making
3. Transferring knowledge on ecosystems and their benefits in the Baltic Sea region

Policy Brief 1 Ecosystem services and their socio-economic benefits to humans – improving understanding for sustainable management of the Baltic Sea. **Access:** https://sisu.ut.ee/sites/default/files/mares/files/bonus_mares_-_policy_brief_1_en.pdf



Policy Brief 2 Playing an Eco-GAME to assess the quality of scientific knowledge for evidence-based decision making. **Access:** https://sisu.ut.ee/sites/default/files/mares/files/bonus_mares_-_policy_brief_2_en.pdf



Policy Brief 3 Transferring knowledge on ecosystems and their benefits in the Baltic Sea region. **Access:** https://sisu.ut.ee/sites/default/files/mares/files/bonus_mares_-_policy_brief_3_eng_01.pdf



HIGHLIGHTS FROM OUR NEWSLETTERS

Newsletter 1: Baltic Sea is our blue home: We need to know, enjoy and preserve it. **Access:**

https://sisu.ut.ee/sites/default/files/mares/files/mares-newsletter-1_2019.pdf



Newsletter 2: A Tale of Two Ecos: An adventure between economists and ecologists **Access:**

https://sisu.ut.ee/sites/default/files/mares/files/mares_newsletter2_6.pdf



Newsletter 3: Dilemma of the decision-makers and how to translate science into policy **Access:**

https://sisu.ut.ee/sites/default/files/mares/files/mares_newsletter3_6.pdf



Multi-method Assessment for Resilient Ecosystem Services and
human-nature system integration



BONUS MARES has been funded from BONUS (Art. 185),
funded by the EU

