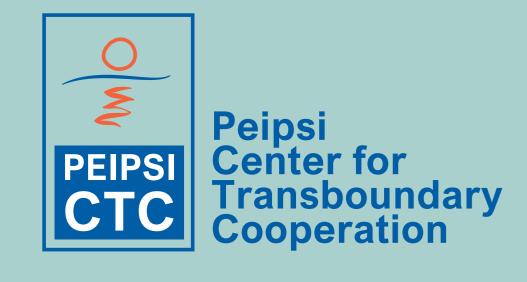
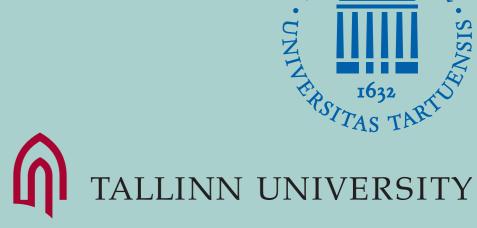
THE METHODOLOGY FOR MAPPING AND VALUATION OF SUPPLY OF MARINE ECOSYSTEM SERVICES BALTIC SEA CASE STUDY



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INTRODUCTION AND OBJECTIVE

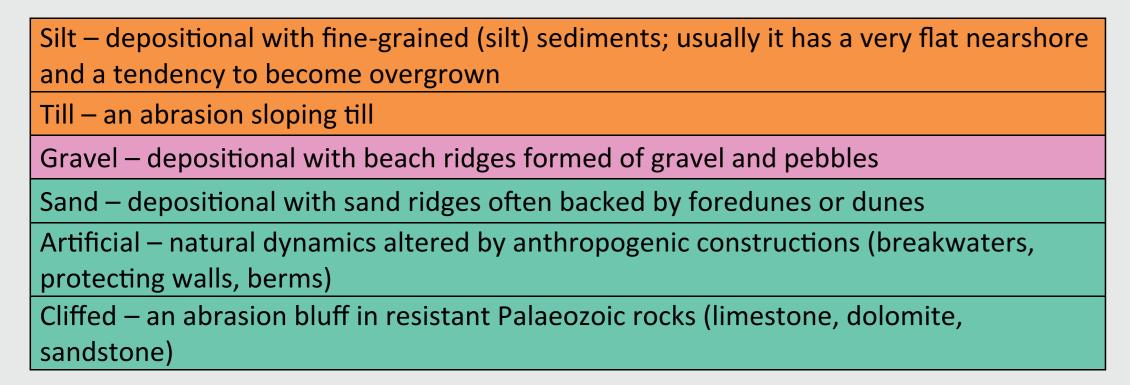
- The poster presents result of the project 'Development of methodology for assessment and mapping of ecosystem services of marine and inland waters' the express methodology for mapping and valuation of marine ecosystem services.
- Ecosystem services in this project are defined as the direct and indirect contributions of ecosystems to human well-being or so called 'final ecosystem services'.
- The overall concept of methodology for mapping and valuation supply of marine ecosystem services follows the research published by Burkhard, et al (2012).
- The methodology is based on matrix that presents the expert opinions in relation to relative supply scale for mapping and valuation of marine ecosystem services.

MATERIALS

- Marine ecosystem elements are: coastal zone, coastal sea (from shoreline to 20 isobath, both benthal and pelagial), and high sea (bental) and high sea (pelagial).
- The capacity of marine ecosystem to supply services are strongly linked to ecological status of waterbody and type of the shore.
- Ecological status is defined according to EU Water Framework Directive (2000/60/EU). The WFD classification scheme for water quality includes five status classes:

High Good Moderate Poor Bad

• The following shore types (Tõnisson, et al, 2013) have been used for mapping and valuation of ecosystem services of coastal zone:



 Colours in the previous table indicate sensitivity of shore to pollution (Tõnisson, et al, 2013):

Very sensitive to pollutionMedium or large sensitivityLow sensitivity to pollution

- The classification of ecosystem services is based on the Common International Classification of Ecosystem Services (CICES) developed by the European Environment Agency. According to this classification ecosystem services are divided into three sections: provisioning, regulating and cultural services.
- The list of marine ecosystem services is compiled on the basis of CICES V4.3 (January 2013) ecosystem services list.
- The relative ecosystem services supply scale have values between 0-4:

4	3	2	1	0
Very significant	Significant	Moderate	Insignificant	No
supply	supply	supply	supply	supply

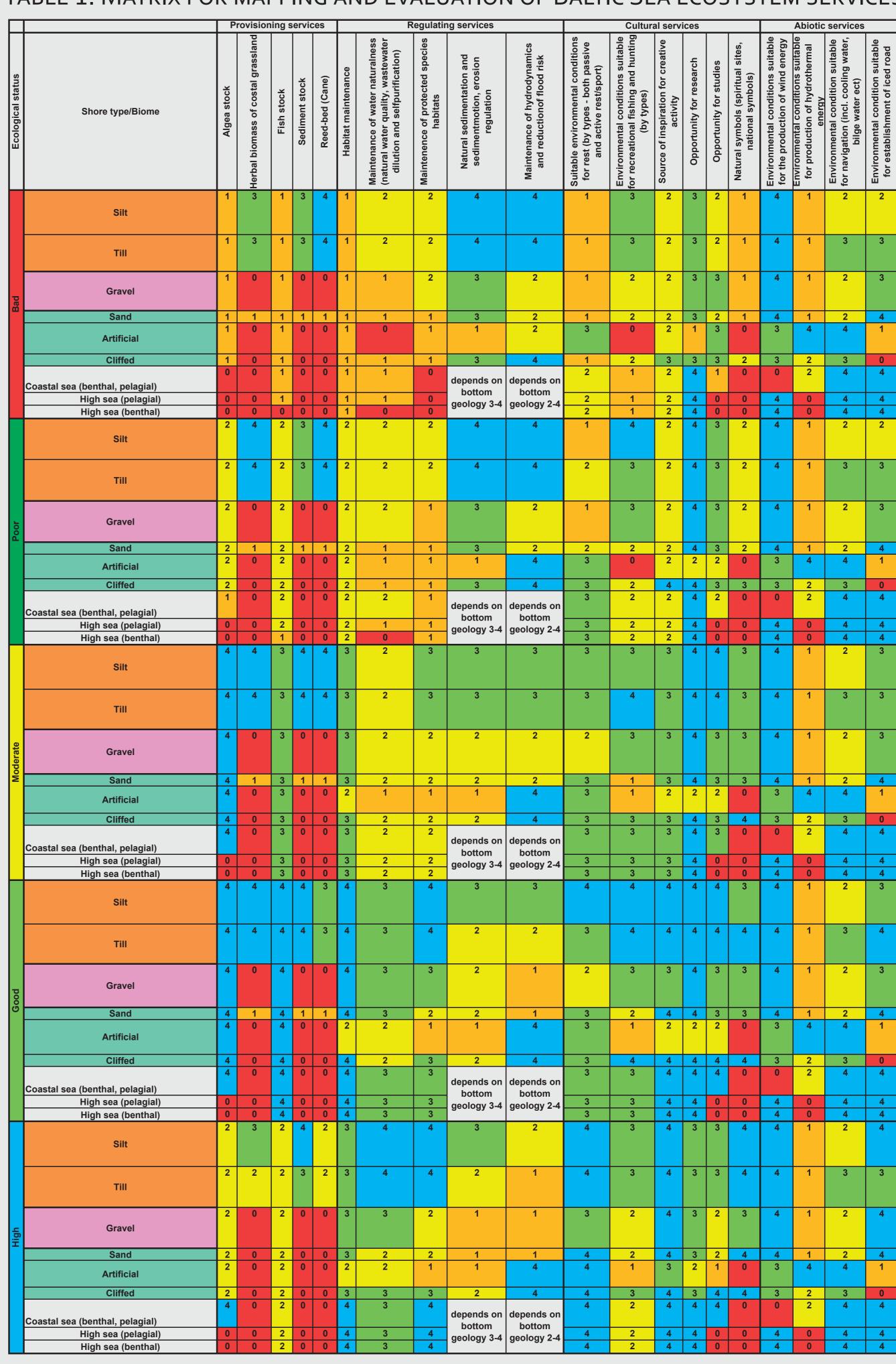
VERIFICATION OF THE MATRIX

- Pärnu, Haapsalu and Tallinn Bay of Baltic Sea were used to verify expert estimates of ecosystem services supply.
- The focus group interview method was used to verify expert estimates. 7-8 people were invited to each interview: local municipality representative, representative of tourism sector, scientists, local residents and college students. The assessed regions were presented in approximately 10 minute presentation. Then participants had time for assessment of ecosystem services.
- Estimates of focus group on Pärnu bay differed from the matrix-based opinion to 5%. Slightly bigger difference (14-16%) appeared on Tallinn bay case. This may be due to a very strong human impact use and large proportion of artificial shore.

METHODOLOGY – MATRIX FOR DETERMINATION AND VALUATION MARINE ECOSYSTEM SERVICES

On the field of matrix, presented in the table 1, there are numbers from 0 to 4 that indicate relative value of ecosystem services supply of coastal zone, coastal sea and high sea of Baltic Sea.

TABLE 1. MATRIX FOR MAPPING AND EVALUATION OF BALTIC SEA ECOSYSTEM SERVICES



CONCLUSION

- Based on marine ecosystem services mapping and valuation matrix (table 1) it is possible to assess to what extent different Baltic Sea areas could provide ecosystem services.
- This matrix does not allow to assess natural sedimentation, sediment motion, erosion regulation, maintenance of hydrodynamics and reduction of flood risk in costal sea and high sea. For that assessment information about geology of sea bottom would be required.
- The matrix (table 1) gives the primary, qualitative assessment on marine ecosystem services supply. For more accurate, quantitative assessment, values of ecosystem services the relevant indicators are needed. In assessment of marine ecosystem services supply it is important to keep in mind that every water body is unique.

REFERENCES

Burkhard, B., Kroll, F., Nedkov, S., Müller, F. (2012) Mapping ecosystem service supply, demand and budgets. Ecological Indicators 21, p.17—29

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