

DEVELOPMENT

The Baltic Maritime Heritage - spatial atlas -

EUROPEAN UNION

BalticRIM report - GoA 2.5

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1. Introduction

The importance of protecting and sustaining the maritime cultural heritage in the Baltic Sea Region

Maritime cultural heritage have not been properly protected in many Baltic countries so far. The reason are numerous but among them the most important can be named as following:

- a) Protection efforts are done at national level therefore protection standards and ambitions differ whereas maritime cultural heritage belongs to the common heritage of all Baltic nations.
- b) There is lack of commonly agreed definition of maritime cultural heritage that can guide the protective efforts whereas the actual composition of this category is very diverse. This pose an intellectual difficulty for the users of the sea space that might not be aware of negative impacts of their activities on maritime cultural heritage. The practical adverse result is reduction of maritime cultural heritage to underwater cultural heritage –mainly wrecks– and by that many other historical objects are neglected.
- c) Information on maritime cultural heritage is scarce and in many cases not easy to be obtained. It requires costly research efforts that are done by few specialised public agencies with limited budgets.
- d) International law that provides bases for protection of maritime cultural heritage is insufficient in particular in the exclusive economic zone (EEZ) and areas beyond national jurisdiction. Moreover the enforcement of the existing law poses many challenges and in majority of cases is based on a good will of users of the sea space and their voluntary compliance to the existing rules.

Therefore protection of maritime cultural heritage would require co-operation of many sea stakeholders including various public authorities, MGOs and private sector. The starting point should be in education and information efforts in order to raise awareness of the aforesaid stakeholders on the importance of maritime cultural heritage and the threats created for its preservation due to intensification of the commercial usage of the sea areas. This atlas is a part of such information strategy.

According to the Blue Growth strategy that has been recently put forward by the European Commission, oceans hold the key to the future for the European Union and many nations around the world. According to the OECD in 2010, the blue economy yielded global products and services worth 1.5 trillion or 2.5% of world gross value added, providing 31 million jobs. According to EU estimates Blue Economy established sectors provided employment for 4 million people in EU with an average salary €26,400 per annum, and contributed to the EU economy with gross added value of €180 billion. New methods of reaping the benefits of the sea has been emerging and the current ones are undergoing profound transformations. New

sectors such as off-shore renewable energy generation¹, extraction of polymetallic nodules, bio-tech or CO2 storage have just started to appear at the sea. All these creates threats for the preservation of the maritime cultural heritage. But by the same there is the chance for the maritime cultural heritage. It can be a part of the sustainable blue growth efforts and blue growth can intensify the search and monitoring of the maritime cultural heritage.

One of the remedies to alleviate risks related to intensified usage of the sea space is maritime spatial planning (MSP) introduced by EU in a form of MSP Directive in 2014. MSP should be also seen as a chance for protection of maritime cultural heritage.

The focus of this report is to explore this chance and to make it true by creating a common language and discussion platform between maritime spatial planners and officers responsible for protection of maritime cultural heritage in the Baltic Sea Region (BSR) countries. The atlas will not solve all the mentioned at the beginning problems related to preservation of the Baltic maritime cultural heritage, but at least it hopefully will open and prompt the maritime spatial planners towards the need of more careful approach on maritime cultural heritage. Having this ambition in mind the atlas is prepared in line with the needs of the maritime spatial planners making use of the planning vocabulary, dwelling on MSP documents and putting visual language to the forefront.

The atlas is intended as a summary of BalticRIM Work Package 2 findings (GoA 2.1, 2.2, 2.3 and 2.4) creating the bridge between the historical knowledge and spatial planning. It was projected to show the pan-Baltic potential of maritime cultural heritage, highlight the most valuable areas, analyse the main threads and propose zoning solutions.

The report was also inspired with the Rutilus project 100-report and national MSP planning documentations.

In the following, the term "Maritime Cultural Heritage" (MCH) is used connecting the so far explored Underwater Cultural Heritage to the coastal zones with their historical aspects. The term MCH reflects the linkage between MSP and integrated coastal zone management as well as regional land planning.

It is planned to update the report by the end of the projects with the finding of BalticRIM case-studies and updated maps.

¹For instance employment in EU wind energy increased by 14% in one year (2016-17) (EC 2019, 3)

2. Maritime Spatial Planning and Maritime Cultural Heritage – so far experience in brief

2.1. MSP definitions, historical shot, MSP practice in the Baltic Sea Region (BSR)

Maritime Spatial Planning (MSP) was initiated at EU-level as a practical planning task at the beginning of the current century with the Baltic Sea region (BSR) as a forerunner. The starting point of the introduction of the MSP idea to the BSR was the 5th HELCOM-VASAB Ministerial Conference in Wismar in 2001. In the Wismar Declaration the Ministers responsible for spatial planning and development in the countries of the BSR urged the HELCOM-VASAB MSP Working Group² to put in its future work emphasis on projects extending spatial planning also to the off-shore side. The main reason that prompted VASAB to promote MSP was a fear of acceleration of spatial conflicts over the use of maritime space resulting from increased intensity of its exploitation and increasing new sea space uses (e.g. off-shore wind, aquaculture for environment protection etc.). Following this plea, the pilot MSP plans were elaborated in the BSR (in projects like BaltSeaPlan and Plancoast), and at the same time MSP methodology was advanced in the *PartiSEApate* project. The *East West Window*³ project served to inform Russia about MSP. The first binding maritime spatial plan in Europe was elaborated in Mecklenburg-Vorpommern. The plan entered into force in 2005. Thus, one can notice that the first decade of the current century in the BSR was devoted to define MSP and accumulate experience on that.

According to a very popular definition by IOC-UNESCO⁴ 'maritime spatial planning is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process'. VASAB, on the other hand, argues that the spatial planning of sea areas should be treated as a legally defined hierarchical process of finding a compromise between competing needs regarding the use of maritime space (the surface of the sea, waters and the sea bottom) in accordance with values and objectives of a given community – and those values and objectives can be found in international and state priorities and agreements. The planning defined in such a fashion shapes and monitors spatial development of sea areas with the application of proper instruments (for example, visions and strategies of

² The joint Baltic Sea MSP Working Group, established by HELCOM and VASAB, is a forum for

intergovernmental discussions on MSP. The Working Group hosts dialogues on recent and future developments in the field of MSP in the Baltic Sea Region.

³ EastWest Windiow (2007-2008) was an TACIS Project for the BSR which assisted VASAB in implementation of the tasks of the Sixths VASAB Ministerial Conference of 2005. The main aim of the East West Window project was to accelerate the Baltic Sea Region (BSR) development through better connecting of the existing potentials within the Region.

⁴ Eehler, Charles, and Fanny Douvere. Marine Spatial Planning: a step-by-step approach toward ecosystembased management. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides no. 53, iCaM Dossier no. 6. Paris: UNESCO. 2009 (English).

spatial plans). Both definitions seem complementary since the first one describes the role of the MSP whereas the second one puts focus on the MSP process.

Currently, the most frequently used is the EU definition of spatial planning of sea areas derived from the EU MSP Directive⁵ which establishes the framework: according to it, "spatial planning of sea areas refers to a process through which appropriate organs of member states analyse and organise human activity in sea areas in order to achieve ecological, economic and social objectives". This definition is very general and imprecise (spatial aspect is missing there) but underlines the legal rights of the member states to conduct MSP.

In Europe, the 23 coastal Member States are obliged under the MSP Directive to develop a

national maritime spatial plan before 31 March 2021, with a minimum review period of 10 years. The MSP Directive was adopted in 2014 and establishes a framework for MSP, 'aimed at promoting the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources.'

Across Europe, Member States are currently, however, in different phases of the MSP process, with plans either in preparation, adopted or in review, see Fig. 1.

Fig. 1: Overview of the current status of MSP in the Baltic Sea Region with differentiation between existing plans and planning areas. Source: EU MSP Platform (<u>https://www.msp-platform.eu/seabasins/baltic-sea-0</u>)



⁵ Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning

2.2. MSP & MCH current practise in BSR

Maritime cultural heritage was taken into consideration from the very beginning of MSP development in the BSR. However, there were strong differences how it was done in practice. The first complex approach for the EEZ was proposed in Poland. In the Pilot Maritime Spatial Plan for the Western Part of the Gulf of Gdańsk specific prohibitions and requirements were formulated with regard to the protection of MCH for each sea sub-area. Also in the pilot maritime spatial plan for the Southern Middle Bank the following requirement was proposed: "On requirement of the maritime administration, routes of linear infrastructure, location of mining, research or production activities may be changed in order to protect objects of cultural heritage against damage caused by installation, construction or mining works, or during monitoring, repairs and dismounting in the future." This proposal can be considered as the first practical attempt to protect MCH in the EEZ where direct legal and applicable instruments for the sea areas under limited national jurisdiction are absent.

The idea tested in the Middle Bank pilot plan was based on the assumption that MCH can be protected in EEZ from damages, even caused by activities being under legal supervision of the coastal state. This was the first time in the BSR that the idea, investments must be preceded by an inventory of MCH in the area for which a mining license or permission for constructing and use of artificial islands, structures or installations is issued, was spelled out during the planning process. A solution was that if such objects are found during construction, installation, monitoring, maintenance or repair works, appropriate organs of maritime administration shall be informed, and location of the investment shall be changed to protect the MCH against damage.

Also in other pilot plans MCH was taken into consideration. In Latvian, Lithuanian and Finnish (Kymenlaakso) there are some references to ship wrecks, whereas in the Hiiumaa and Saaremaa plans the maritime cultural heritage has been mentioned explicitly. Also in the Bothnia Plan pilot underwater cultural heritage has been mapped and addressed. Only in German plans for the EEZ and the federal state of Mecklenburg-Vorpommern (first binding plans in the BSR), MCH was omitted. However, one can conclude that from the very begging at least some BSR countries raised the issue of protection of MCH under MSP.

In June 2013 under the PartiSEApate project the workshop "Maritime Spatial Planning as Tool for Underwater Cultural Heritage Management in the Baltic Sea" was organised in Riga. The main goal was to initiate pan-Baltic multi-sectoral stakeholder discussion on maritime spatial planning establishment as management tool for underwater cultural heritage. This was the first pan-Baltic meeting between people responsible for UCH protection and maritime spatial planning community. The meeting allowed the identification of common points (synergies) and challenges and also key conflicts between UCH and other sea uses. The main finding was that in principle zoning should not be used as a key tool for the protection of all MCH under MSP. Zoning or designation of MCH protection areas could be applicable just in some cases,

for example, to protect prehistoric landscapes and sandbanks with a magnitude of wrecks. Instead, methods or strict rules have to be developed, how to consider MCH, when issuing permits for new and MCH impacting activities in the sea.

The following conclusions were formulated by the workshop:

- 1. MCH sector was not considered and involved in MSP development projects up to now at equal extent compared to other sea use sectors.
- 2. MCH sector has to be involved and considered in MSP development at pan- Baltic scale taking into account the different legal situations and natural conditions in BSR region.
- 3. MCH sector in BSR has already cooperation platform at pan- Baltic level working group on UCH established under CBSS. In future cooperation between CBSS WG on UCH and VASAB working on MSP issues at pan-Baltic level is recommended.
- 4. MCH protection goals conflict almost with all sectors. At the same time the cooperation and synergies with other sectors are possible. However, a system for information exchange between the MCH sector and other sectors has to be developed and MSP could be used as a tool for such cooperation.
- 5. Spatial solutions (such as zoning / sites designation) to present MCH interests in MSP have to be more discussed within the sector and with planners at pan-Baltic level.
- 6. There is no information about all existing MCH assets under the water, since they are not all discovered and scientific research on potential impact from newly developing sectors in the sea, like offshore wind parks and particular infrastructure, aquaculture, pipelines etc. is missing or not sufficient. Therefore the precautionary principle has to be taken into account.

Currently, MSP is rapidly progressing in the BSR. In Mecklenburg-Vorpommern maritime spatial plan of the second generation was adopted in 2016. In this plan UCH has been considered but not directly regulated. Also the revision of the German Baltic EEZ maritime spatial plan has been started. Officially adopted spatial plans do exist also in Estonia, Finland (both regional level), Latvia and Lithuania (both national level). In the Latvian plan, cultural monuments are identified although they are not regulated under MSP directly (sectoral law applies).

One of the key objectives of the Lithuanian plan is to protect, restore and rationally use resources of nature and recreation, values of natural and cultural heritage.

Also Poland in Sweden have almost finished their national maritime spatial plans that are subject to intergovernmental coordination. In both countries MCH was comprehensively assessed in the stock taking reports both in terms of its existence and possible spatial conflicts (Swedish: Maritime Spatial Planning —Current Status 2014 and Polish: Study of Conditions of Spatial Development of Polish Sea Areas). This knowledge has informed the planning solutions. For instance, in the Polish plan the rules on protection of MCH were introduced

promoting in-situ protection and the places were designated to store MCH objects that cannot be protected in-situ. In the Polish plan MCH is treated as a full-scale sea use, although in many cases regulated by specific legal regulations outside MSP - but which should be taken into consideration when elaborating MSP solutions.

Estonia presented its draft national maritime spatial plan in 2019. In this plan MCH was mapped and analysed and planning priorities guidelines and requirements have been formulated with regard to UCH. Among others, the Estonian draft plan stipulates that in areas of cultural monuments (the object together with the protected zone), anchorage, trawling, deepening and dumping of solid material is prohibited. Other activities (e.g. fishing, diving) are allowed only if they do not damage the cultural heritage. The main objective of the protection of underwater monuments in Estonia is to ensure their preservation at their initial location. National planning in Denmark and Finland is on the early stage to allow its evaluation with regard to UCH approach. The progress in the BSR MSP is depicted in the figure 1.

2.3. Some challenges related to the integration of MCH in MSP

Based on the current MSP processes in the BSR, some first lessons-learned can be derived:

- In the EEZ, MCH has to be taken into account, but the first real consideration takes place in the framework of the sub-soil investigations (for example, for corridors, routes for cables, etc.) only which is quite late.
- It would be better if, as with gravel quarrying, it had previously regulated how to handle finds in order not to have to carry out investigations, gather data and seek individual solutions for every single real project planning.

What should be changed regarding current practices?

- Include MCH aspects from the very beginning; provide priority areas or reserved areas and describe these areas as text (not only as topic-specific annex),
- Use on-going processes to finalise national / regional MSPs and negotiate directly with the authorities,
- Share cross-border views and foster exchange of information,
- Use ecosystem-based-approaches to use synergies between nature protection, MCH and tourism.
- Certain areas are identified from the outset as "areas of interest" for which certain requirements are made in order to have control specifications at hand. For the planner is therefore important to know where which MCH lies. In some countries, MSP authorities do not know these locations and cannot work accordingly with these data
- A transnational database, e.g. for DE-DK or DE-PL would be very helpful to coordinate protection and integration of MCH into plans.

It is therefore crucial that BalticRIM can give impetus to make specifications for the planning in the sea before real project planning.

2.4. MSP needs towards sectoral knowledge – the BalticRIM data portal

One of the tasks of the project (within GoA 2.3) is to develop a visualization tool transferring the sectoral (cultural heritage) knowledge into spatial language, which can be used by maritime spatial planners – so called BalticRIM Data Portal. It would allow users to view data published by national data providers through OGC open geospatial standards – WMS and WFS, that are related not only to underwater cultural heritage but also to coastal and nearby areas with high cultural significance.

The present stage of the online service provides various possibilities for the users. It consist of 2 sections: the first one refers on specific case studies at national level, while the second one is related to Pan-Baltic datasets that exceed the borders of a country and affect more than two, such as the Hansa Routes. So far, most of the data that are available online are displayed only for illustration reasons, do not come from official providers and might miss accuracy or metadata.

Considering future development, identification, collection and management of the necessary datasets is one of the foremost priorities to be taken into account in order to populate the service with meaningful and accurate content.



3. Let's dive into Maritime Cultural Heritage in the Baltic Sea Region

3.1. Types of Baltic MCH

The BalticRIM project is a reaction of the Baltic maritime culture world to the rapid growth of the human activities on the sea areas, often on cumulating and unpredictable dimensions. One of the main goals of the project is to make maritime spatial planners aware of the importance of the Baltic Sea for cultural heritage, to develop cultural heritage information and to disseminate knowledge so that maritime heritage can be properly taken into account in the planning process. Within this chapter we tried to capture the picture of the most important and characteristic Baltic cultural assets, based on projects finding as well as earlier projects and on-going national MSP processes.

The Baltic maritime cultural heritage is still to a great extend undiscovered regarding underwater component. The main problems is limited accessibility and lack of systematic archaeological research of marine areas probably mainly due to the financial resources. According to the Rutilius Report (2006) there are some 15,500 registered underwater sites of cultural heritage value in the Baltic Sea, nevertheless it is estimated that the real number only of the UCH sites in the Baltic Sea is close to 100,000 (Fig. 2). In 2006, almost 9,000 of these sites have been designated as national monuments. The BalticRIM project shows the rise of registered sites up to 1000.





Fig. 2: Map of registered underwater cultural sites located in Danish, German, Swedish, Aland, Finnish, Polish and Lithuanian waters. Sites in Estonia, Russia and Latvia are inserted very approximately. Source: Rutilis Report 2006.

Fig. 3. An overview of the approximate locations for the "100" most valuable underwater cultural heritage sites in the Baltic Sea region.

Within the Rutilus project⁶ an initial categorisation of the cultural objects had been performed and the '100' most valuable underwater cultural heritage sites in the Baltic Sea region had been described (fig 3). The following categories constitute the described "100":

- Wrecks 71 of the selected sites;
- Submerged settlements 9;
- Harbours 8;
- Bridge -1;
- Naval battle areas 3;
- Fishing structure 1
- Defence structures 7.



Within the BalticRIM project the analyses of national registers has been performed with regards to the categories used (see status report 2.1). The registers' analyses, together with the experts' views, show some commonalities among countries with regards to categorisation. The countries use some common MCH types or categories, for example:

- Wreck (Denmark, Estonia, Finland, Lithuania and Russia: Museum of World Ocean in Kaliningrad and Leningrad region)
- Burial site (Denmark, Estonia, Finland, S-H Germany, Lithuania, Poland and Kaliningrad in Russia; Museum of World Ocean)
- Stone or wooden structure/foundation (Estonia, Finland, S-H Germany, Lithuania and Kaliningrad in Russia; Museum of World Ocean)
- Fortification (Denmark, Estonia, Finland, S-H Germany, Poland and Russia: Museum of World Ocean in Kaliningrad and Leningrad region)

Other types may also be in common, such as those related to WW I and II remains.

As discussed within the project activity 2.1., from the wide array of subcategories assigned under these general themes, it became quickly obvious that it is not possible to devise or suggest any overarching BalticRIM categories for maritime or underwater ancient remains, as it would be impossible to agree on the terminology concerning any other categories or subcategories except one: the wreck. A standardised site categorisation that includes all partner countries would require alterations made to the national types and listings of MCH. That would require a large-scale national co-operation between various sectors (cultural heritage administration in different levels, academic research, experts etc.) to reach a wide consensus which is not possible within the scope of one project. Moreover - the MSP process might not require such coherence.

⁶ <u>https://baltic-heritage.eu/working-groups/underwater-cultural-heritage/rutilus-project-and-100-list/</u>

It has been recommended, however, (see status report GoA2.2) to develop simple categories, not violating any national register system and helping the initial description and categorisation of data.

The recommended categories contain:

- 1. Wreck (shipwreck or a plane wreck);
- 2. Remains of settlement;
- 3. Remains of hydro-technical structures;
- 4. Other.

This division is not violating any national system as it only defines the original function of the given object. For example, a shipwreck may constitute remains of a sailing vessel, a secondary used element of a barrier, a hydro-technical construction or a burial place. The function of the object in the deposition phase does not interfere with its basic form.

Therefore, due to the described encountered obstacles influencing the MCH data categorisation, the further analysis is based on reports that individual countries have prepared as part of planning processes, as they indicate which categories are the most important or most represented in a given country.

3.1.1 Wrecks

Wrecks constitute so far the most numerous category of the underwater cultural heritage, which does not means that the most valuable. There is a great variety in the wrecks' origin, influencing their value. Still for the purposes of the spatial planning the most important is the knowledge of the location and potential protections needs. The origin of Baltic wrecks is deeply connected with the trading flows experiencing the Baltic Sea from the VIII century, e.g. the Vikings, the Hanseatic League, the Dutch sailors then the internal Baltic wars for hegemony of various nations. Their distribution reflects different periods in the history of the Region.

The importance of wrecks is also reflected in the Rutilus '100' list, highlighting 71 objects. Looking at the "100" list we can see the earliest wreck site, probably the remains of a cargo ship, dates to the Viking period (Haithabu III) located in the German federal state of Schleswig–Holstein. The medieval wreck sites are represented by findings in Denmark, Germany, Finland, Latvia and Sweden and are exclusively reckoned to be cargo vessels. There are 10 wreck sites dating back to the 16th century., including merchant as well as the first

naval ships, located in Finish, German, Swedish, Danish, Polish and Lithuanian waters. In total, four merchantmen, four naval/military ships and two unknown wrecks are represented.

Six wreck sites belonging to the 17th century are on the '100'-list. Of these, at least three are the remains of naval ships; a probable Polish man-of-war located in Lithuanian waters; Kronan, the Swedish flag ship, lost in the battle of Oland in 1676; and what was probably a small Danish frigate, built in the 17th c. but lost during the course of the Great Northern War (1700–1721), in waters outside MEcklemburg-Vorpommern.





Looking at the spatial distribution of the Baltic wrecks we can use the information and visualisations prepared by during the national planning processes.

Finland



Fig 4. "Wreck nests", major wrecks, and wrecks with a protected by law area.

In Finland, according to the MSP planning evidence (Suomen Merellisen Kulttuuriperinnön Tilannekuvaus) there is estimated about 1640 wrecks with known or unknown background according to the Finish National Board of Antiquities, of which about 690 have been evaluated as protected objects. About 63% of it have historical value. Most shipwrecks are found in areas of major importance to shipping in Southern and Western Finland (from medieval times mostly), like busy shipping lanes, trade routes and harbors or at the historical sea battlefields- see Fig. 3 and 4. One of the factor that increased the exchange between northern Baltic ports was the establishment of the St. Petersburg city in 1703. This inevitably reflected in the number of wrecks in the Finish sea waters - several very well-preserved wrecks come from that period. Another reason why the number of know wrecks is higher in southern Finland is the current research situation - in northern Finland, much less marine inventory has been made.

Source: Suomen Merellisen Kulttuuriperinnön Tilannekuvaus, pp.77 and 79

Latvia



Sweden



In Sweden, according to the MSP planning evidence (Marine Spatial Planning — Current Status 2014), the shipwrecks constitute the majority of the recognized cultural heritage resources. The Swedish National Heritage Board of Archaeological Sites and Monuments maintain a database of 1.8 million registered ancient remains, where approximately 20,000 are maritime objects. There are about 3,400 vessel remains with cultural historic value registered which are precisely localised. The majority of these are located within the Baltic Sea and the Oresund, from Kullen to the border between Stockholm and Uppsala counties.

Fig. 6. Map of known vessels remains on Swedish waters Source: Marine Spatial Planning — Current Status 2014, pp. 46

Estonia



In Estonia, according to the first draft of the Estonian MSP, wrecks make up the largest part of the material cultural heritage in the marine area. There are 380 wrecks in the territorial sea of Estonia, of which 41 are cultural monuments. Interest towards Estonian underwater cultural heritage is increasing, diving clubs receive visitors from Finland, Latvia, Russia and Germany.

Fig. 7. Cultural monuments Source: Estonian Maritime Spatial Plan, 2019, Draft Plan, pp.59

Poland



Source: Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich, 2019 In Poland, according to the MSP planning evidence Uwarunkowań (Analiza Zagospodarowania Przestrzennego Polskich Obszarów Morskich, 2019), there are 59 wrecks of historical value identified so far and 35 wrecks which still require inventory works to examin their historical value. There are also 3 wrecks from the II WW, protected as graveyards. Most of the recognized wrecks are located in the eastern part of the Polish Sea Areas due to the activity of the National Maritime Museum located in Gdańsk. The high intensity of wrecks is visible in the Gulf of Gdańsk where the trade routes were intensively used in the past.

Lithuania



In Lituania, according to BalticRIM research, at the moment there are some of 10 wrecks registered at the national register of cultural heritage. Wrecks W-22 and W-23 are registered on the official National Heritage List.

MCH areas are also marked in the Lithuanian MSP as a potential MCH site (purple cycle).

The Figure 9 presents the information of Maritime Safety Administration on wrecks and other potentially important maritime heritage assets.

The Baltic view

Figure 10 presents the overall Baltic picture of historical wrecks distribution, using the methods implied in the Finnish report on MCH (2019) highlights the areas of the highest density of wrecks having historical value.



Fig.10. the density of the wrecks of historical value, based on national heritage registers, available as for September 2019;

Source: BalticRIM, prepared by Joanna Pardus, Łukasz Szydłowski, Maritime Institute in Gdańsk

The highest density can be observed in the Danish straights which are the natural gates to the Baltic Sea and where the biggest shipping traffic was experienced as well as in the areas close to the historical ports and archipelagos.

3.1.2 The submerged settlements

The geology of the Baltic Sea suggests that in the Baltic bottom can be found some preserved archaeological sites from the beginning of the Holocene. Discoveries initiated in the last century of preserved mesolithic sites carried out in Denmark, Germany and Sweden give hope to similar findings in Polish waters (Pomian, 2018).

Nine such of sites have been included in the Rutilus "100" list, together spanning over more than 4000 years. The oldest of which has been dated to between 8000-6500 BC and located at Gåbense, Denmark. Another site that has been put on the list is the Tybrind Vig site - one of the most famous, where finds include the earliest Northern European textiles ever found and some dug outs, including beautifully carved paddles.

In the Polish maritime areas first attempts to locate the preserved palaeozoic landscapes were made in 2007 within the MACHU project. A small fragment of the southern slope of Słupsk Bank has been chosen the survey as the research showed that it remained a land until 8200 years bp, when was flooded by the Littoral Sea. The survey resulted in the reconstruction of the palaeozoic image, with the outline of a small freshwater basin which shore was overgrown with pine and birch forest. The discovered relics of the forest and information about current shape of terrain can be treated as indicators of the areas where the



Fig. 11. Pine trunk rooted in sediments of an ice-marginal lake (Uścinowicz 2014)

remains of the settlement from the Old Stone Age may be found.

Currently, within the BaltiRIM project an research is being conducted at the inner Puck Bay, to outline the range and value of the foreseen palaeo-landscape there. Results will be highlighted in report 3.3.

Also on Lithuanian waters there are areas of well-preserved remains of relict forest, constituting of trees and peat found at the depth of 24.5 to 29 meters. The dating shows the age of 11410–10170 cal. BP (9640–8220 cal. BC) and 9150-8520 cal. BP (7200–6570 cal. BC), which means that this underwater landscape existed before the transgression of Ancylus Lake stage of the Baltic Sea (BalticRIM WP 3).

The Baltic View

The analyses of the potential changes of the Baltic Sea coastline through the ages can help to understand which parts of the coastal waters are potentially reach in paleo-remainings (settlements, landscapes or woods).



Fig.12. Changes of the Baltic coastline, based on Szymon Uścinowicz, Chapter 7 The Baltic Sea continental shelf, in: *Continental Shelves of the World: Their Evolution During the Last Glacio-Eustatic Cycle*, Geological Society, London, Memoirs, 41, 69-89, 2014,



Fig 13. The area with the probability of finding traces of the Stone Age Source: BalticRIM, prepared by Joanna Pardus, Łukasz Szydłowski, Maritime Institute in Gdańsk

The area in which the probability of finding traces of the Stone Age is greatest is Southern Baltic area including coastal waters of Germany, Denmark, southern Sweden, Poland, Lithuania, partly Riga Bay and Southern Middle Bank (Fig 13). Another type of the submerged settlements are the remainings of harbours. The Baltic Sea region in the Early Middle Ages formed the zone of contact between the Scandinavian kingdoms, the Frankish Empire, and the Baltic and Slavic tribal areas. These trading centres began to appear in the southern Baltic from the early 8th century and some of them grew in importance considerably in the 9th and 10th century. As a result of economic and technological developments as well as changes to the natural environment some of the sites were abandoned or relocated in the course of the 10th century, while others evolved into medieval towns⁷.



Fig. 14 Remainings of Groß Strömkendorf harbour

Fig. 15 Remainings of Puck harbour

At the Rutilus "100" list, the selected harbours are located in Poland, Mecklemburg– Vorpommern, Estonia, Denmark and on the Aland Islands. Common to most of the harbour sites is that they are complex structures consisting not only of the harbour structures but also wrecks, and also defensive structures such as sea barriers. They represent the medieval harbours as well as the 17th, 18th and the 19th centuries very important historical/ archaeological records of early shipping routes between Sweden and Finland, and the trading system of the Hanseatic League respectively.



⁷ <u>http://www.spp-haefen.de/en/projects/ostseekueste/</u>

3.1.3 Other – lighthouses and naval battle areas



Fig. 15. Baltic lighthouses featured in the exhibition Baltic Lights, plus those found today with a range of over 24 nautical miles.

Source: http://www.nmm.pl/balticlights/Historic&Modern.html

During the exhibition *Baltic Lights*, prepared by the Working Group for Coastal Culture and Maritime Heritage, the 12 posters has been shown to raise awareness and promote the

preservation of lighthouses under threat in the Baltic area. As presented there, the earliest Baltic lights were simple fires placed along the coastlines to warn and guide sailors.

Some of the earliest recorded beacons are illustrated by Olaus Magnus on his map of the "Nordic Countries" 1539.

Larger and more permanent structures continued to be built in the 17th and 18th centuries.





When it comes to the naval battle areas, in the Rutilus '100' three of them are represented – all of them related to the wars between Russia and Sweden in the 18th century. One was so called Battle of Grengam, at the Fliso road-stead on the Aland islands in 1720. Another one is the battle of Svensksund (Russo-Swedish war 1788-1790) in Finland - one of the largest naval battles ever fought in the history of the Baltic Sea, with an involvement of no less than 500 ships.



3.2. Main threads to MCH

The identification of synergic and conflicting uses with MCH is of high importance when planning in areas including such resources. The thorough recognition of such phenomena within the MSP process may ensure that conflicts and threats are avoided and MCH potential is correctly protected and sustained for present and future generations.

It have to stated clearly, that every site of cultural value should be analysed at adequate scale, taking into consideration local conditions and treads. Of course such systematic analyses are not possible at the pan-Baltic scale, still it is useful to have a more wide overview of problems when deciding on the planning solutions.

According to the existing literature, practical experience and the discussions held within the BalticRIM project, the maritime activities affecting or damaging the underwater cultural heritage objects are mainly those having negative impact on the bottom or near bottom areas. As the maritime spatial planning regulates human activities, the environmental treads, like changes in salinity, pH, currents, changes in biota and other climate change factors, will not be analysed here.

The human activities affecting the underwater cultural objects are mainly:

- All types of construction reaching the seabed (drilling platforms, energy production, touristic constructions, bridges, ports enlargements)
- Installations (pipelines, cables, etc.) laid at the bottom or immersed
- Certain fishing techniques (e.g., bottom-trawling, near-bottom trawling)
- Military and defence exercises and activities
- Bottom surface extraction (sand and other surface mined minerals)
- Coastal protection
- Intense tourism (boating, looting, careless anchoring, careless scuba diving, etc.);

The table below shows the initial MSP conflicts table prepared during the national MSP process in Poland, based on the discussions with experts and stakeholders.

	ene	energy			Mineral extraction			fishery			Linear infr.		ports		tourism			National defence			Coastal protect ion			Dep area	oosit as
SECTOR	wave	neaung systems*	wind	aggregates	O&G exploration	O&G exploitation	passive	bottom	pelagic	cables	pipelines	shipping	constructions	dregging	Bathing places	Water sports	diving	Trainng areas	tory MW	lotnictwo	trwałe	nietrwałe	mariculture	Dregging	Dumped amunition
UCH																									

Tab. 1. Matrix based on Polish conflicts analyses for MSP, 2015

A key problem is that the existing procedures are not protecting UCH from damage, especially if UCH is not put on the navigation maps. Existing law do not protect UCH in the EEZ to the necessary extent. The UNESCO Convention on the Protection of the Underwater Cultural Heritage has not been signed by all BSR countries.8 There are many evidences of problems with the preservation of UCH, which are still in the good condition. Incidental damage can be caused by anchorage or bottom trawling even without noticing it. But also during the more carefully prepared investment processes UCH is under severe risks since its protection might delay investment processes resulting into high, unexpected additional expenses of the private developer. Moreover UCH is under risk of tourism since wrack diving has become very popular and its monitoring is still unsatisfactory. To recognize the most emerging problems resulting from human activities development, the recent sectoral scenarios analyses and HELCOM cumulative impacts assessments could be used.

⁸ Currently it has been ratified only by Lithuania out of 9 BSR coastal states

<u>Threads connected with shipping sector developments, based on the BalticLINes project</u> findings



Fig. 15. Main spatial trends associated with shipping developments in 2030/2050 Source: Baltic LINes report 2018

The figure 15 show the spatially relevant developments foreseen in the shipping sector in the nearest 30 years. The main trends recognised are:

- An increase in annual shipping turn caused by the rise in ships' capacity and size there will be more bigger ships heading towards the main Baltic ports resulting in the need of more space for manoeuvring and anchoring in port areas and on the open sea due to the wind energy developments;
- Short Sea shipping intensification resulting in the increase in the shipping between the regional ports;
- Strong growth of larger and specialised ports the offshore developments of main eastern Baltic ports are planned ;

- Growing offshore service resulting in the increase or creation of the new shipping patterns between the small regional ports and offshore constructions (during building and servicing)
- Autonomous shipping resulting in the need of separate shipping routes and more space in the ports areas

The foreseen shipping sector development in general should not affect the MCH assets as the main shipping patterns should not change and the most intense areas are regulated by IMO measures. The main negative effects could be experienced in the areas of offshore ports developments, where the in situ protection of the historical wrecks or historical ports' remaining can be a problem. Ports developments can also negatively influence the historical maritime landscape of the surroundings, especially in small gulfs and archipelagos, where new port's constructions and new anchoring places may interfere with the exposition of cultural assets (lighthouses, old granaries, etc.).

<u>Threads connected with shipping sector developments, based in the Baltic INTEGRID projects</u> <u>findings</u>



Figure 16. Map of existing and potential offshore wind farms and Inter-connection projects in the Baltic Sea by 2050. Source: Baltic InteGrid | Image: MIG

Figure 17. The Baltic Offshore Grid (BOG 2050) concept. Source: Baltic InteGrid / Image: MIG

The figures 16 and 17 show the developments foreseen in the electric linear infrastructure in the nearest 30 years. The main trend recognised is the strong increase in the cable laying, due to the offshore wind energy production increase almost in all the countries and planned international energy connectors. One of the solutions proposed to minimize the bottom impacts of such developments is to connect the groups of wind farms with on-land grids with one corridor, still one have to be aware that such solution can not be applied everywhere due to the technical problems. The worst scenario is to connect every single wind farm individually, which may cause strong disturbance of huge bottom areas in the coastal zones.

Threads connected with fishing sector developments

The bottom and subsurface trawling are mainly preformed in the southern Baltic areas, with the biggest intensity in the Polish EEZ areas. This type of fishing has been recognized as one of the main treads especially to the underwater cultural heritage sites which are covered with sand in the Southern Baltic Sea. Archaeologists very often note the damaged parts of wrecks spread across the area which was trawled. Looking at the activity map (fig. 17.) one can see that the biggest danger could be foreseen in the southern part of our sea.





Threads connected with new constructions

Main pressure will be experienced from the planned offshore wind farms developments in almost all countries sea areas. Lot of such constructions are foreseen in the territorial/coastal areas (except Poland). In Poland also an intensification of oil and gas prospecting and exploitation is foreseen, resulting in the new constructions and bottom disturbance.

Also – in smaller scale – the touristic developments like new piers, bridges, marinas can enter into conflict with maritime cultural heritage.



Threads connected with dredging and surface mineral extractions activities



3.3. Potential synergies/multi-use

The chapter is based on the results of the MUSES project.

UCH was considered as a sector that might stimulate multi-use of the sea. Multi-use (MU) is not the same as co-location or co-existence. The popular definition of MU describes this phenomenon as different users operating side by side, sharing the same resource" The MU occurrence requires the intentional creation of additional costs and benefits from joint exploitation of the same resource (e.g. vessel, construction, biodiversity etc.) that trigger intentional decisions and interactions. Thus a specific MU characteristic is its focus on more efficient use of resources or creation of additional economic benefits (including positive externalities) by use combination.

The benefits related to MU based on MCH are obvious. MCH is a tourist attraction, UCH protection enhance environmental protection. The main driver for this MU is tourism and its diversification and development (sophistication of tourists). Some limitations reducing the popularity of this combination are due to the random location of MCH objects not always coinciding with ecologically valuable areas. Existing drivers are also related to regional policies and funding opportunities for the development of sustainable tourism and use of protected areas. However, funding for MCH are limited in many countries/sea basins.

Under the MUSES projects, stakeholders were asked to evaluate the future potential of various sea use combinations (MUs). The biggest expectations are formulated by stakeholders towards offshore wind and aquaculture as well as underwater cultural Heritage, tourism and environmental protection. The latter MU exists or has development potential (with one use already in place) in 13 and 15 countries respectively (Table 2). It was prioritised by stakeholders in four EU sea basins, so in all of them with exception of the North Sea basin. This can be explained at least partially by physical characteristics of these sea basins and its policy specificities in terms of blue growth. In the North Sea underwater cultural heritage is not regarded as a development driver (i.e. the following sectors take a lead in blue economy: commercial fisheries, oil and gas production, shipping and maritime transport, tourism and offshore renewable energy development).

But there is a notable difference between these two combinations. The MU based on UCH is already existing, i.e. it is well-established whereas the MU related to off-shore wind is only planned or regarded as promising.

Table 2 Potential of multi-use related to MCH in four EU sea basins

	ATLA	ANTIC				MEDITERRANEAN SEA								BLACK	SEA	BALTIC SEA								
MU related to UCH analysed in the MUSES project	UK	RI	PT	ES	FR	ES	FR	IT	SI	HR	GR	MT	СҮ	RO	BG	FI	EE	LV	LT	PL	SE	DK	DE	
UCH & Tourism & Environmen tal Protection ***			E	E												E					E			

* In case of FR (Med) OW devices were tested

** In case of EE this MU involves only Tourism & Environmental Protection

*** In case of BG and RO this MU involves only UCH & Tourism

LEGEND:

- Existing (ongoing indicated with E letter) including pilot/test trials in the real environment, past and ongoing ones blue
- Potential with at least one of the use already in place orange
- Potential with none of the use already in place yellow.
- MUs were evaluated during desk research but were not suggested by stakeholders.

Drivers for MU employing to MCH are related to a willingness of co-operation between various stakeholders, such as diving clubs and authorities responsible for protection and conservation of UCH. A detailed list of drivers is presented in Table 3. These drivers seem universal so they are important for all sea basins in which MCH is located in ecologically valuable areas.

 Table 3. Drivers for multi-use: Maritime Cultural Heritage and Tourism and Environmental protection

Existing
Legislation, policy, strategy in place – promoting, indicating the MU
BSR/FI: The regional planning process that had set as one of its goals to develop recreational and touristic use of
Kymenlaakso sea areas
Funding opportunities in place
EU funding for tourism and env. prot. – separated, so alignment of funding could be proposal to the Action Plan (WP4)
Economic and social factors
Demand for alternative tourism activities
Perceived
Legislation, policy, strategy in place – promoting, indicating the MU
UNESCO Convention on the Protection of the Underwater Cultural Heritage – could be driver if it would address explicitly
any MU involving UCH – this is in fact a proposal to the Action Plan (WP4)
Funding opportunities in place
Economic and social factors
National Heritage Board gets information about state of UCH from diving clubs - This is happening in some countries and
should be explored if this can be a driver for expansion of such activity in other countries.

For this combination the barriers are related mainly to economic factors. This is a niche type of tourism, therefore offering limited profits and the skills important for its development are scarce. In the Black sea only a limited area exists for the development of this type of tourism. Surprisingly, almost no legal barriers and no administrative barriers have been detected, despite the fact that environmental protection is often viewed as an obstacle to be overcome

for development. The strong opinions of fishermen also seem to be an important perceived barrier with regards to those who might have problems on how to organize a new type of economic business. After overcoming these problems, one can focus on the development of the drivers for this MU. Another important barrier highlighted in several sea basins refer to the lack of research informing decision-makers and authorities on the potential benefits (environmental and socio-economic) of combining these sectors into an MU.

The above barriers seem universal so they are important for all sea basins in which tourism and fisheries are performed in ecologically valuable areas and there are also some sea basin specific barriers (Black Sea, Eastern Atlantic, Mediterranean). A detailed list of barriers is presented in Table 3 below.

Tuble 5. Du	inters for marcinese. Fishenes and Fourish and Environmental protection
	<u>Barriers related to policies, strategies, regulations</u> Bulgaria (BS): Long-lasting problems with regulation of local estates (ownership of private property); lack of initiative of local government to solve this problem
	Barriers related to administrative procedures
	Barriers related to research gaps/ technology/technics Lack of knowledge about possibilities and benefits of MU (EA) Lack of economic models for environmental accounting of natural capital generated by protected areas.
	Barriers related to economic aspects MU capacity: it is a niche tourism and cannot become a mass tourism attraction MU capacity from environmental protection sector perspective (mass tourism may have negative impact on environment) Economic benefits from MU are limited by weather conditions and fishery regulation (fishing ban periods) Limited area for development of tourism (BS) Limited expertise (soft skills) of fishers Other uses may have negative impact on environment on which this MU is dependant
	Barriers reflecting stakeholders' perception or expert (MUSES partner) judgement/assessment Concurrence from other tourism sectors, and also between regions in MED Mentality of fishers, lack of ideas for organized economic business (Portugal, EA, also MED)

Table 3. Barriers for multi-use: Fisheries and Tourism and Environmental protection

3.4. From dots to areas - BalticRIM cultural "hot spots" – Baltic MCH priority areas

MCH is still not ready to be included in MSP in the other form than either general (precautionary) rules or guidelines or dots with regard to identified MCH. countries just map the UCH they know that they have. Only Finland and Sweden did some valorisation of their sea space with regard to UCH. But they made a map showing the number of historical wrecks per 100km2. This valorisation is based on quantity, not quality of MCH. In addition. only wrecks without other types of UCH were counted. The main problem is the lack of relevant information, including missing information on quality of MCH. In each country quality is assessed in different way and the project showed no clear perspective for a joint BSR common denominator with this regard. Thus BSR priority areas for MCH cannot be identified since different countries have different priorities with regard to MCH. The only feasible solution would be putting on one map all national MCH priority areas when they are identified in particular country in order to inform their MSP process and also countries However, this should not be interpreted as abandoning an idea of more around. comprehensive (area based) approach to UCH in MSP. The MCH relevant zone should be mapped under national MSP processes but rather for influencing other uses purpose than reserving space for MCH as a priority function. It seems that within MCH the following zones can be named:

- 1. Zones carefully researched in which probably key MCH has been already identified and mapped by UCH does not play a leading role.
- 2. Zones carefully researched in which probably key MCH has been already identified and mapped and MCH can activate multi-use of the sea. (MCH has important economic potential).
- 3. Zones, which have not been carefully researched with regard to MCH but MCH can appear there not intensively.
- 4. Zones which have not been carefully researched with regard to MCH but MCH is expected to appear there (busy ancient trade routes, changes of the coast, battlefields etc.) Here the focus should be on the UCH that is not so intensively represented in the BSR, e.g. paleo-remainings.

Those zones should not be used as a decision zones in the MSP but rather they should prompt different treatment of UCH in the planning process.

Under zone type 1 the planning solutions can be very clear and identification of how UCH (different its types) should be used or protected against other uses. The uses should be located in the sea taking into consideration the information on UCH.

Under zone type 2 the uses that can form multi-use combination with UCH should be examined and if they are feasible then located and encouraged.

Under the zone type 3 MSP can formulate some precautionary general rules protecting UCH and encouraging mapping UCH before undertaking activities that might harm UCH.

Under the zone type 4 detailed rules should be prescribed with regard to activities that might harm UCH that has not been identified yet. In the part of the plan that is informative for potential investors. The UCH potential of a given area should be clearly highlighted.

4. Main messages and challenges towards maritime spatial planning

Key problem is scale how to protect UCH in such plans like Polish (scale 1:200000) or Swedish. Following regulation is lack of necessary legal instruments to protect UCH in EEZ. Therefore, MSP is expected to do more that it can in practice. But key role for MSP is to identify the UCH regarding problems and relate them to the MSP planning solutions. People associated with UCH should feel encouraged to take part in the MSP process.

Messages



- **Coastal waters** the 'kingdom' of Maritime Cultural Heritage adequate respect should be given to those aspects while planning human activities, create planning security.
- Sandy bottoms of southern Baltic can hide interesting history ensure proper preinvestment archaeological surveys.
- **Bays and archipelagos** remember to sustain the untouched exposition of maritime landscape, create the exposition protections zones! Be aware of turbulent history
- Joint efforts cooperate in potential transnational areas of common conditions and common problems:

CHALLENGES:

- Undiscovered heritage Lack of knowledge, the marine waters are not sufficiently surveyed with regards to the archaeological objects huge problem with white gaps.
- The intensity of wrecks how to sustain them?
- The MCH and ports developments.
- Transnational cultural areas.
- Transnational cultural routes?
- Underwater museums.
- Need of regional/transnational cooperation? Cross-border archaeological sites
- Awareness-raising among MSP authorities regarding MCH sites.
- Easy accessible and exchangeable data bases of MCH sites for stronger collaboration between MSP authorities, also related to trans-boundary planning.
- General and automatic consideration of MCH sites in national maritime spatial plans.
- Using knowledge from neighbouring countries for locating MUs.

PLANNING PRINCIPLES

- Definition what is MCH as a key prerequisite for protecting MCH via MSP.
- In situ protection if possible.
- Due to the scale of MCH one should strive towards flexible protection therefore rather rules than zones for MCH. Zones make sense only in case of large archaeological sites. But rules should be enforceable. This is a challenge.
- Information matters Identification not only MCH objects but also potential areas of their possible existence.
- Preparedness' i.e. spatial measures necessary since MCH can appear any time and place and not everywhere it can be protected in situ. So under MSP there is a need for adequate solutions i.e. how to change planning activities due to sudden discovery of

MCH, how to secure that MCH search precede investment processes or what to do if MCH cannot be protected in situ (e.g. fairways, port areas).

- Pay attention under MSP to the Multi-Use issue as a potential sector encouraging multi-use at sea.
- Use scientific knowledge and knowledge from neighbouring countries in order to detect areas with high probability of the MU appearance (e.g. battle fields or stone-age settlements.



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