



# Baltic SCOPE

Towards coherence and cross-border solutions in Baltic Maritime Spatial Plans

Central Baltic Case

Topic Paper on Fisheries

Final Version June 2016

*This Topic paper is the working paper based on the joint Baltic SCOPE exercise and cannot be treated as the official opinion of the European Commission and Member States involved.*

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REPUBLIC OF ESTONIA  
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## Summary

The topic paper on fisheries in the Central Baltic case (Estonia, Latvia and Sweden) has a focus on strengthening knowledge of fisheries in partner countries in the Baltic SCOPE project from a Maritime Spatial Planning (MSP) perspective. The main part of this paper is to digest relevant spatial information of fisheries management regarding catch data, vessel monitoring and quota system, as well as to present and analyse compiled maps of national fisheries with transboundary issues in focus.

At two thematic meetings, experts in fisheries has identified differences in national data, mapping methods and policy principles. Altogether this is a challenge for the ambition to visualize fishing interests in the case area with a joint map. The agreement at the first thematic meeting was to promote a better common knowledge through descriptions of methods behind compiled national maps of fisheries, including structure and role of institutional management relating to national MSP processes.

To operationalize this agreement, four questions are answered in the topic paper:

How do you want to represent fisheries in your country's Maritime Spatial Plan?

Who is involved in representing fisheries in your country's Maritime Spatial Plan?

How would you like to present your fishing interests in other countries' Exclusive Economic Zones (EEZ)?

How would you like other countries to present their fishing interests in your country's Maritime Spatial Plan?

The answers to the questions above reveals the different phases of MSP processes in participating countries. Overall the topic paper form a basis to dig deeper into fisheries in a transboundary MSP perspective.

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The work within this project has shown the importance of sharing information of methods and views of fisheries by gathering countries around the Baltic Sea. As a concluding part of this paper and the thematic meetings, three findings are presented, for planners and policymakers to consider in future collaboration on fisheries in MSP:

Identifying important areas for national fisheries outside a country's own EEZ, on the basis of both present and historical data of activities, is essential for a spatial pan-Baltic fisheries perspective in MSP.

MSP and plan assessment should consider the spatial dynamics of fisheries, as conditions and important areas will change over time.

MSP should strive for coherence regarding input data and visualization of fisheries among

## **Introduction**

Central Baltic constitutes important fishing grounds for the Baltic Sea fisheries sector. The area also includes essential fish habitats for herring, sprat, cod and flounder. Bearing this in mind it will be necessary to take fisheries into consideration when discussing and finding spatial solutions for the needs from other sectors such as shipping and off-shore wind energy, as well as nature protection issues within the Baltic SCOPE project. Fisheries is mainly regulated and handled within the EU Common Fisheries Policy (CFP), even though the CFP provides some provisions to nationally regulate fisheries in the territorial waters.

Commercial fisheries take place in almost every fishable location in the Baltic Sea, also in border areas in the Central Baltic. The bordering exclusive economic zones of Estonia, Latvia and Sweden are one example where vessels from the different countries fish in the other countries' zones. Another important example is the Gulf of Riga (Estonian and Latvian waters) with the largest coastal catches in the Baltic Sea. With some exceptions only the national fleet fish in the territorial waters of Estonia and Latvia. Increased or new uses of the sea may potentially negatively affect the fisheries.

Considering the complexity to collect and analyze cross border information on fisheries there is a need for thematic work on fisheries within the Baltic SCOPE project.

### **Role of the topic paper**

This topic paper aims to give a general overview of fisheries based upon the two cornerstones fish resources and commercial fisheries. During the process, the topic paper has served as an introduction to discussions in the Central Baltic Case thematic workgroup on fisheries. By clarifying spatial aspects and dynamics with focus on transboundary issues, based on discussions in the thematic workgroup, there has been further progress in developing the paper.

Contributions from Estonia, Latvia and Sweden on national status and discussions regarding fisheries within the framework of national MSP consultations have been submitted by national experts. In relation to contributed material, the topic paper draws upon the thematic discussions of available and missing data in fisheries, including present main challenges and potentials to adapt and restructure data to serve as planning evidence in Maritime Spatial Planning (MSP) in the study area. Figure 1 summarizes the discussions from the thematic meetings.

The primary focus of this topic paper is commercial fisheries but it touches on recreational fisheries in some cases as it is closely linked (e.g. in cases where the same species are targeted by recreational and commercial fisheries).

Characteristics of the fisheries sector, identified within the Baltic SCOPE project	
Requirements of the sector	Fishable and healthy stocks Access to fishing grounds and ports for landing, bunkering and repairs
Current fishing activities in the Central Baltic (mainly trawl)	Herring (particularly important in the Gulf of Riga) Sprat and cod (mainly in the southern parts) Salmon Flounder
Regulations	EU:s Common Fisheries Policy Bilateral agreement with Russia (cooperation in fisheries and conservation of marine resources) National regulations
Potential conflicts	Marine conservation (Activity) Shipping (Activity (static gear) and Habitat) Energy installation phase including cables (Activity and Habitat) Between different types of fisheries Mining and Dumping (Activity and Habitat) Cultural heritage (Activity)
Potential synergies	Marine conservation for sustainable fish stocks (Habitat) Offshore Wind Farms (OWF) – installations as areas of potential fish habitats OWF as potential exclusive marine areas for fishing with static gear Shipping and fisheries strengthen development of multi-use port infrastructure

Figure 1: Characteristics of the fisheries sector, as discussed at thematic meetings. Source: Own CBC team elaboration

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## **National expert representatives in the Central Baltic Case thematic workgroup on fisheries**

In the thematic workgroup on fisheries, experts who work within the national fisheries administration/science have been representatives:

Robert Aps Estonia: University of Tartu and Estonian delegate in ICES.

Ulrika Gunnartz, Sweden: Fisheries Policy Unit at Swedish Agency for Marine and Water Management (SwAM).

Didzis Ustups Latvia: Ministry of Environmental Protection and Regional Development.

Fisheries topic coordinator within the Baltic SCOPE project and author of this topic paper is Terje Selnes, Sweden, planner at Swedish Agency for Marine and Water Management.

Two thematic meetings have taken place in the Central Baltic case; in Riga 16 – 17 December 2015 and Tallinn 9 – 10 February 2016. A stakeholder conference was held in Jūrmala 31 May – 1 June 2016. Participants at all three occasions have given valuable contributions to the process and to this topic paper.

# **Background and future challenges in fisheries**

## **Introduction**

Evidence used for displaying fisheries interests is spatial data on fishing activity, fishing harbours and essential fish habitats for species of interest to fisheries (e.g. spawning and nursery areas). In some cases recreational fisheries and aquaculture are also considered as fisheries interests.

Fishing takes place in more or less all waters. Small-scale fisheries is normally conducted in limited areas and sometimes on a stationary basis (mostly fixed net fisheries), while other forms of fisheries are more flexible in nature and are conducted over large areas (mostly trawl fisheries). Fishing locations vary between seasons, but also depend on possible changes and developments of fishing opportunities. These opportunities are related to changes in gear type, target species and potential changes of characteristics and spatial patterns of fish stock.

Commercial fisheries are one of the most important forms of exploiting marine resources with special socioeconomic and cultural importance. This segment is also the main focus of this topic paper due to the transboundary characteristics of fishing activities in neighboring countries and cross border areas.

In general, wild fish resources constitute an important ecosystem service for human well-being by providing food and cultural services such as recreation, cultural heritage and legacy of the sea. At the same time fisheries affect marine ecosystems. Overfishing cause changes in the trophic chain and the use of active gears influence vulnerable marine ecosystems on the seabed.



## **The ecosystem approach – a link between fisheries management and Maritime Spatial Planning**

The EU Common Fisheries Policy (CFP) was recently reformed to aim for sustainable fisheries through ecosystem based management. The EU directive 2014/89 also constitutes how ecosystem based approach is a main objective for the MSP process. The dual focus on ecosystem based management is an important factor for including the sector in the MSP process in a good manner. From a Baltic SCOPE perspective Latvia is applying an ecosystem services approach in the national MSP and Sweden is investigating how ecosystem services could be integrated in the national planning process.

Out of the twelve principles forming the ecosystem based approach, there are both spatial and temporal aspects regarding both the ecosystems and management. Spatial aspects of the ecosystem and management can be referred to principle 5 "Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach" and principle 6 "Ecosystem must be managed within the limits of their functioning". Here the keywords functions and structure highlight spatial aspects of the ecosystem approach. They also motivate discussions within the Baltic SCOPE project as the functional and structural aspects of fishing activities are transboundary.

Temporal aspects of the ecosystem based approach highlight the need to view changes over time as inevitable as well as potentially slow in process to show the effects (principle 8 and 9). An example of the temporal aspects is shown in a yet unpublished SwAM report on marine effects of climate change. Figure 2 shows potential changes in salinity in the three Swedish MSP-areas, divided into scenarios of "Business as usual" and a development in accordance to agreements within the Balt Sea Action Plan. The time period shows how lower salinity level occurs in a slow process over decades. From a Baltic SCOPE perspective, a lower salinity level is likely to affect the presence of different fish species and thereby spatial patterns of fishing activities in the Baltic area.

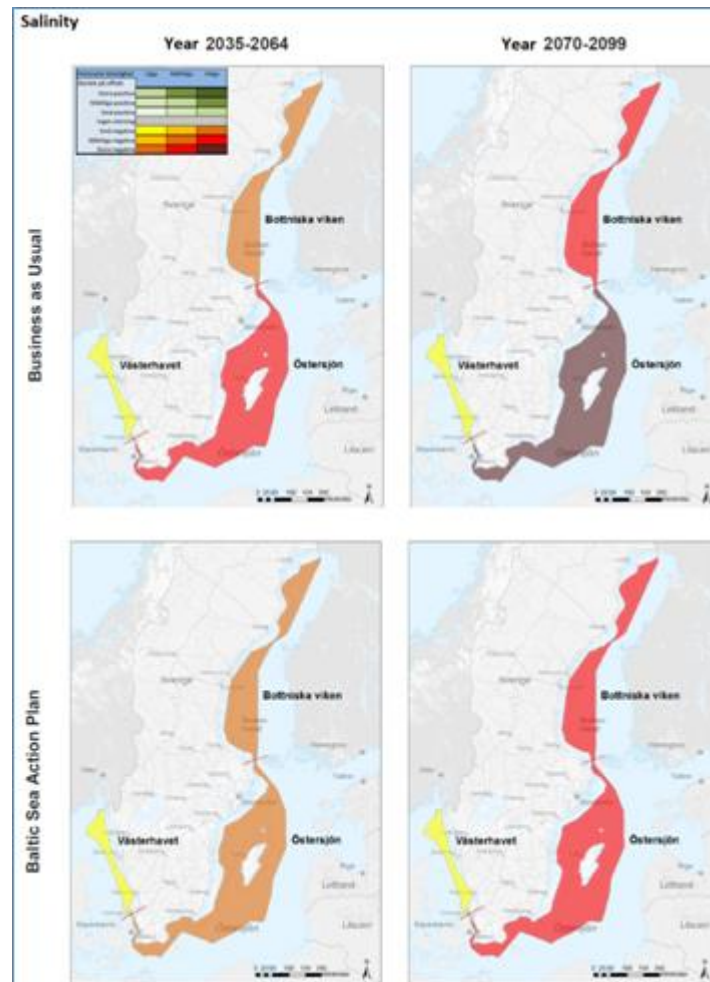


Figure 2: Potential changes in salinity from climate change. Source: SwAM 2016

Expectations of the reformed CFP are to see improvement in fish stock followed by a positive development in the fisheries sector. However, there are difficulties to predict the characteristics of future fisheries regarding type (passive/active gears) and targeted species. These difficulties are the result of lack of projections of future needs of the sector as well as lack of knowledge how current fishing methods affect the ecosystem. The unknown damage from current fishing methods is an example of the challenge of temporal aspects of an ecosystem based approach. A management challenge is also the potential effects in fisheries by climate change.

## **Spatial aspects of fisheries management**

Previous section highlights several spatial dynamics of fish habitats and fishing activities. Beside seasonal and habitat dynamics, commercial fisheries also tend to be a transboundary issue. Fish nurse, spawn and migrate between nations around the Baltic Sea, which result in transboundary fishing activities as well as management at EU level through the CFP and the quota system.

Transboundary catch areas are identified for specific species in the quota system. The share of an estimated total available catch (TAC) within one catch area is distributed among the member states by the principle of historic fishing activities in the area. This historical principle for the share of TAC creates a variation among the Baltic Sea countries regarding cross border activities within the transboundary catch area. In addition to the share of TAC, member states can transfer quotas between each other during the annual period of the quota, which then has a potential to change the transboundary aspects of national fishing activities for a specific species over the year.

Regardless of share of TAC in a catch area there are some restrictions regarding fishing activities in neighboring waters. Foreign vessels are prohibited to fish at a distance less than 12 nautical miles from the baseline of a neighboring country (but there can be agreements between countries allowing fishing in territorial waters).

The International Council for the Exploration of the Sea (ICES) gives scientific fisheries advice. A spatial framework in fisheries management is shown in Figure 3, the ICES squares map. They serve as reference areas within a larger catch area and are the basis for the ICES scientific recommendation for the annual decision of TAC in the catch area. There are many sources of spatial information regarding fisheries and the ICES squares map gives one example of transboundary aspects of the sector. However, the larger catch areas of different species, the basis of quota, often overlap.

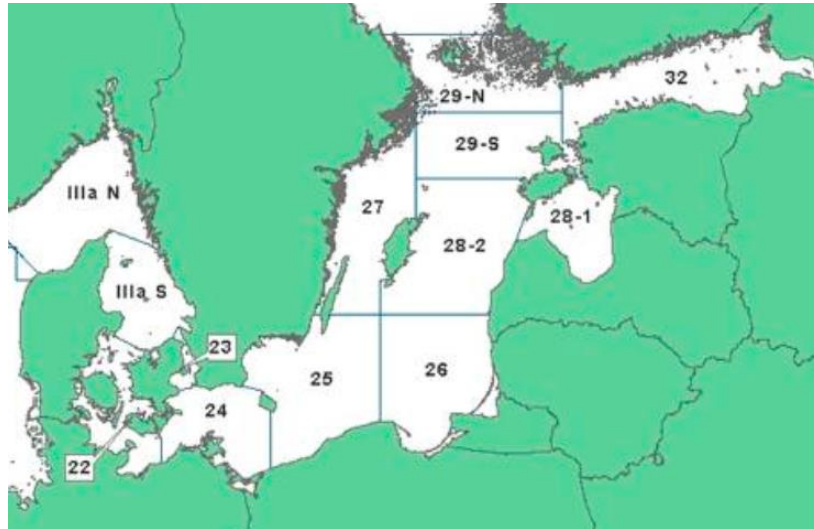


Figure 3: ICES squares in the Baltic SCOPE area. Source: <https://www.havochvatten.se/hav/fiske--fritid/yrkesfiske/statistik-och-kartor/fangstomraden---faos-och-ices-indelning-i-delomraden/fangstomrade-ostersjon.html>

The timeframe in annually negotiated fishing quotas is a challenge for the MSP. The MSP processes are supposed to identify areas of fisheries interest for a longer period than the actual spatial patterns that are the result of the quota procedure. By taking historical spatial changes for fisheries into consideration, planning relevant areas may be identified, areas of interest that not necessarily correspond with the present activities in various catch areas in the Baltic Sea.

The reformed CFP is taking these spatial patterns of quotas distribution into consideration by the implementation of regional groups for fisheries management. BALTFISH is the regional forum in the Baltic Sea where member states meet each other to discuss regulations and management of fisheries.

Based on CFP legislation and the natural dynamics of the fisheries and fish habitats, Maritime Spatial Planning is facing some challenges to incorporate spatial needs and claims of a dynamic fishing sector in a comprehensive plan for solving different interests at sea. Fishing constitutes a

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traditional activity at sea and is likely to be affected by other new or expanded uses of the sea demanding space that imply less flexibility for the fisheries. In some cases this may also result in reduced fishing possibilities as other uses of marine space or protection of areas, for e.g. fish habitats, is recommended through a MSP process.

## **Spatial aspects of the fisheries sector – regional maps as potential for improvement of planning evidence**

There are sample data on the geographical distribution of the fisheries, with the exemption of small scale fisheries (in particular vessels less than 12 meters). For small scale vessels exact fishing locations is not always reported in a detailed way, which is in accordance with EU-legislation. Small scale vessels constitute a large share of all vessels, but a small share of the total catches.

Data collection in the fisheries sector is constructed to serve national agencies and their responsibility for surveillance of the national fleet and to keep catch activities within the national share of a fishing quota. As a result of this national focus there are limitations regarding spatial distribution of national fishing activities at regional or sub-regional levels available.

However, the ICES Working Group on Spatial Fisheries Data (WGSFD) has developed regional maps of fisheries activity in the Baltic area in response to data calls from e.g. HELCOM. Based on VMS and logbook data, WGSFD present total fishing effort 2009 – 2013 in the Baltic Sea, Figure 4 shows a general view of catch intensity in the Baltic by aggregation of three gear groups.

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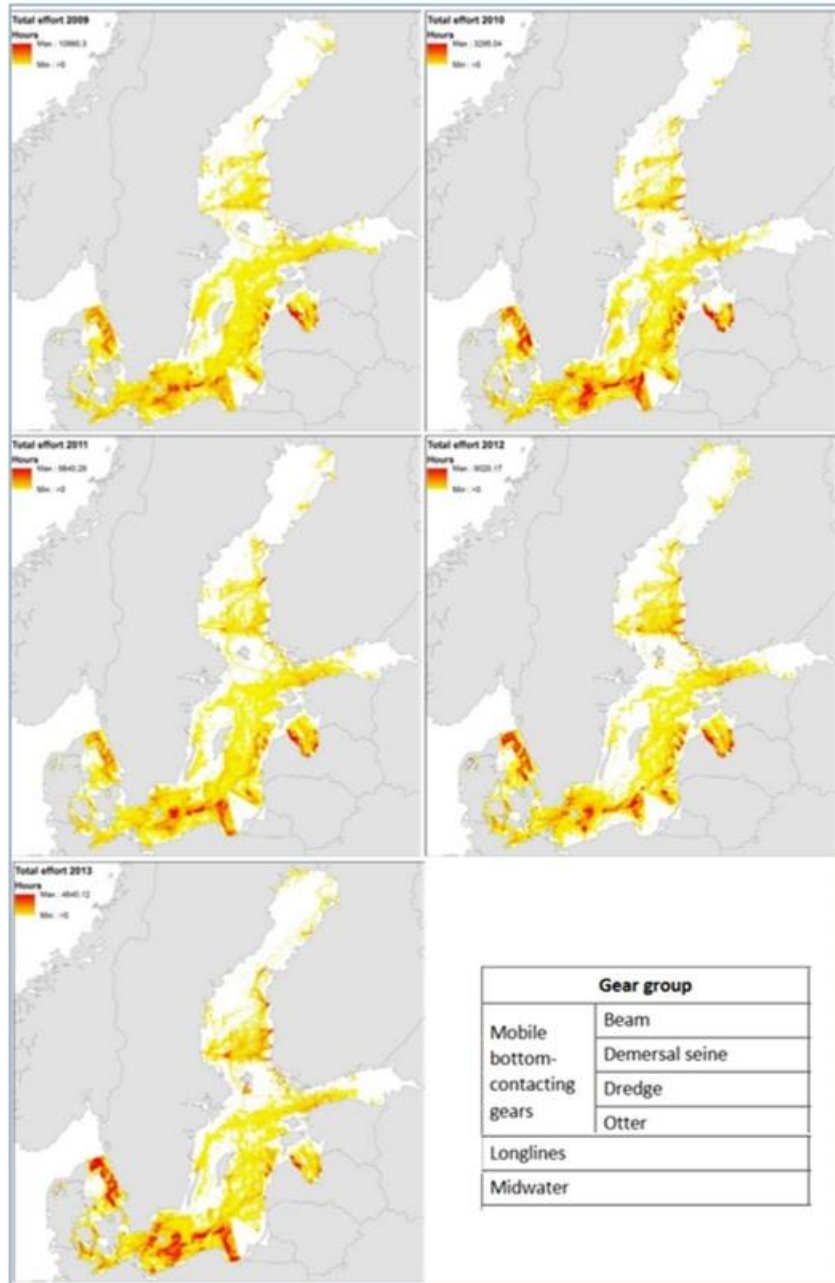


Figure 4: HELCOM total VMS effort (hours) for mobile contact bottom gear, midwater trawl and longlines 2009-2013. Source: compiled from <http://www.ices.dk/community/groups/Pages/WGSFD.aspx>

Spatially the fishing activities are concentrated to the south of the Baltic and the maps give a hint of fluctuations as 2010 and 2013 seem to be years with the greatest fishing intensity.

ICES also presents a seasonal overview of the fishing efforts in 2013 (see Figure 5). In the CBC case area fishing efforts seem to peak in the first four months of the year.

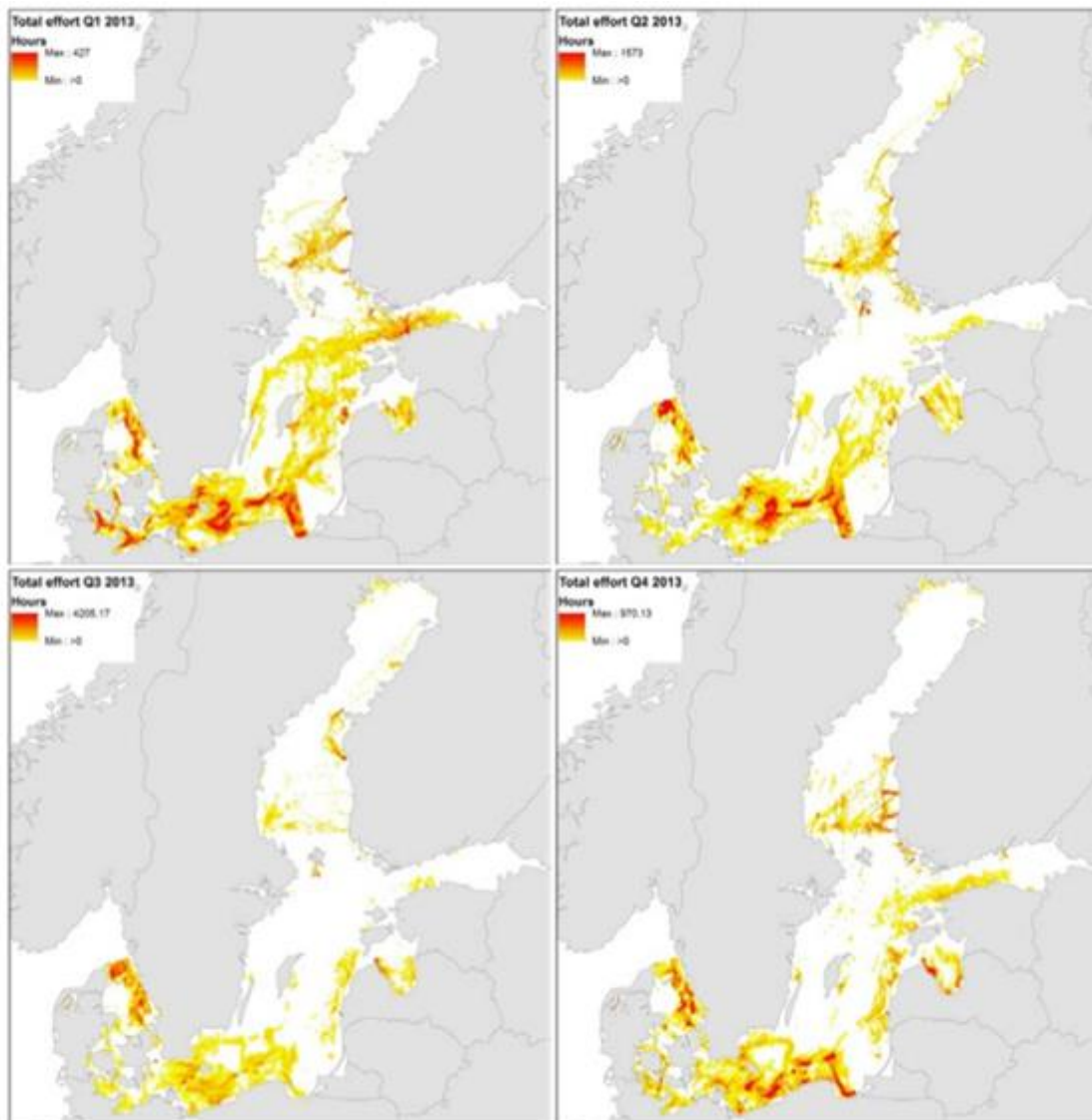


Figure 5: HELCOM total VMS effort (hours) for mobile contact bottom gear, midwater trawl and longlines seasonal variations of 2013. Source: compiled from <http://www.ices.dk/community/groups/Pages/WGSFD.aspx>



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In the data call HELCOM's request played an additional role to the OSPAR request where fishing activities were transferred into economic aspects. The WGSFD group calculated the landing value in euro. All maps are available in the reports from WGSFD through their homepage <http://www.ices.dk/community/groups/Pages/WGSFD.aspx>.

WGSFD identifies several caveats by using VMS as data source i.e. difficulties of setting a speed filter to distinguish between fishing and steaming activities among the vessels as well as the limited coverage of vessels <12 meters. However, from a transboundary perspective the VMS is estimated to cover the part of a total fishing fleet that is engaged in fishing activities in a cross border zone. The ICES WGSFD working group has data from all member states regarding total catch and landing weights for the Baltic Sea, structured in zones of 3x3 nautical miles. In accordance to ICES agreements, this material is not published to a broad public before member states give their permission. For transboundary issues in a MSP process this means that ICES spatial information does not cover national participation in shared fishing grounds, which then makes it hard to identify common vessel routes between fishing grounds and important harbors and landing places around the Baltic Sea.

Regarding the Baltic SCOPE project the data available at ICES has a potential possibility to form improved planning evidence where spatial information of the national distribution of the catches in the fisheries sector from common fishing grounds can be shown. An agreement of sharing this type of information still has to be discussed in the Baltic SCOPE project. At the moment ICES data presented in the topic paper present a broad picture of catch intensity and can be compared with areas for nursery and spawning in the Baltic (section Fish habitats).

## **Methods and representation of fisheries in the Baltic SCOPE project**

In preparation for the first meeting of the Central Baltic thematic workgroup on fisheries, Estonia, Latvia and Sweden submitted examples of maps displaying fishing activity in various ways as a basis for defining national interests for fisheries.

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The conclusion from discussions in the workgroup was a need to develop this topic paper with focus on how to handle differences between the submitted maps by clearing out the process behind the maps. A vital part is here to submit *flow charts* of how current maps or planned maps regarding national fisheries are constructed and processed, in order to ease incorporation of other countries fishing interests in a national Maritime Spatial Plan.

Additional information regarding structure and responsibilities of national agencies as well as their representation in the national MSP process is also presented in this topic paper. The intention that was agreed upon at the first thematic meeting was to answer these four questions:

- 1 How do you want to represent fisheries in your country's Maritime Spatial Plan?
- 2 Who is involved in representing fisheries in your country's Maritime Spatial Plan?
- 3 How would you like to present your fishing interests in other countries' Exclusive Economic Zones (EEZ)?

How you would like other countries to present their fishing interests in your country's Maritime Spatial Plan?

## Basic facts of commercial fishing activity

### Fishing activities in Estonia

Estonian fishing activities (Baltic Sea trawl fishery and the trap-net herring fishery in the Pärnu Bay), fish landing places, fishery harbours and ports in the Baltic Sea waters under Estonian jurisdiction are presented in Figure 6.

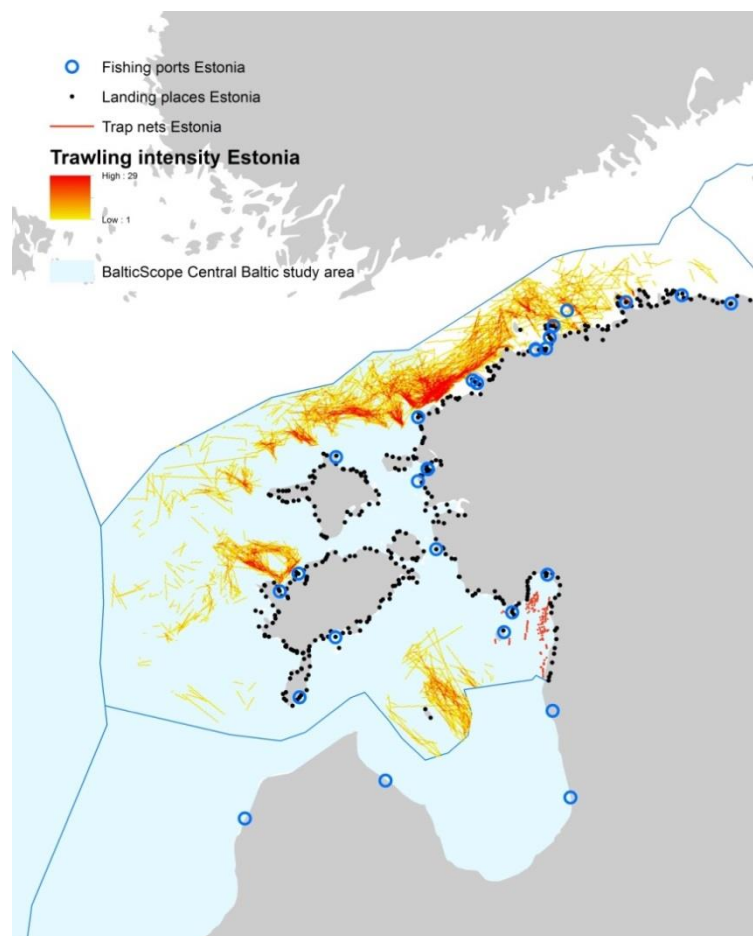


Figure 6: Estonian fishing activities (Baltic Sea trawl fisheries and the trap-net herring fisheries in the Pärnu Bay), fish landing places, fisheries harbours in the Baltic Sea waters under Estonian jurisdiction. Source: Compiled information from Estonia for the Baltic SCOPE project 2015

Important fishing areas for Estonian open sea trawl fishing are specified based on spatial analysis of Estonian Electronic Reporting System (ERS) data. Due to Estonian definition of essential fish habitats (depth <20 m), there is no demersal trawling in Estonia. Coastal fishery landing places and small-scale coastal commercial fishery trap nets positions in the Pärnu Bay are also shown. All necessary detailed data on Estonian Baltic Sea small scale coastal commercial fisheries including the 1) coastal fishing operations reporting (Electronic Fisheries Information System) and 2) catches and landings (landing places, gear, species, quantities, first sale detail and value) are readily available at the website of the Ministry of Rural Affairs. The Estonian Fisheries Information System (EFIS) managed by the Estonian Ministry of the Environment also show data from the licensed recreational fishery (gillnet, longline, salmon fishery in rivers etc.) following a logbook/diary census type programme. This data includes time period and catch information by species (only harvest).

Referring to EU regulation no. 1380/2013 (EU CFP regulation), just as all other member states, the Estonian fishing vessels registered in the EU fishing fleet register have equal access to all the Baltic Sea EU waters and resources that are managed under the CFP, with exception of the 12 nautical mile zones of member states. The role of MSP is to allocate the marine space suitable for environmentally sustainable and economically feasible fishing operations based on a CFP principle of equal access to the fishing waters. At the same time Estonia has the obligation to properly enforce these EU fishing vessels equal access rights under the EU CFP regulation in a course of actual MSP processes.

According to equal access rights and the particular fishing quota allocation conditions and agreements, Estonian trawl fishery also fish in the central and southern Baltic and land catches in the fishing ports of Latvia, Lithuania, Poland, Denmark and Sweden.

## **Fishing activities in Latvia**

Figure 7 shows Latvian pelagic trawling. The activities are concentrated to the northern parts west of Latvia. However, from a transboundary perspective Latvia and Estonia share common interest for pelagic trawling in the Riga bay when Figure 6 is compared with Figure 7.

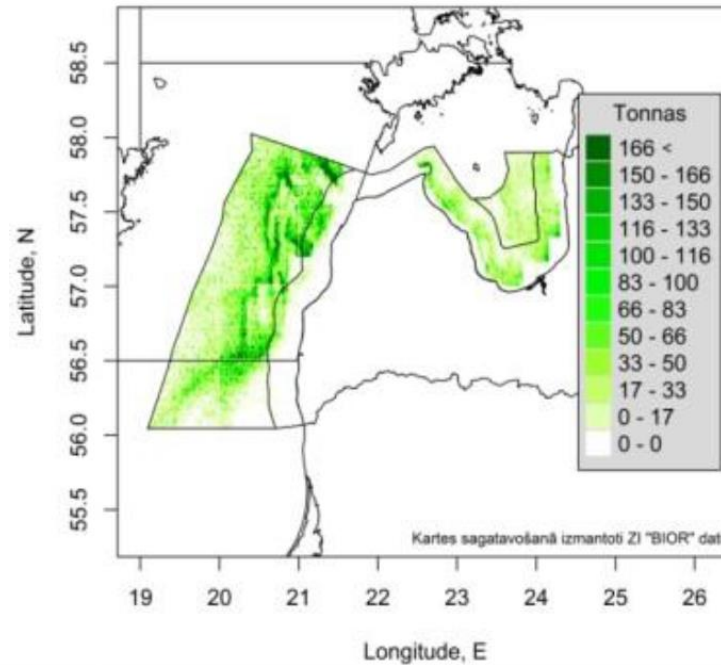


Figure 7: Latvian pelagic trawling. Source: Draft Latvian MSP, Ministry of Environmental Protection and Regional Development of Latvia, 2016

Figure 8 displays fishing activities and ports in Latvia. In 2014, there were 628 fishing vessels (including recreational fishery) in Latvia, authorized to fish in the coastal waters of the Baltic Sea and the Gulf of Riga. The major part of them is small boats (not longer than 5 m) without engine. In open Baltic Sea fishery 70 vessels (mainly trawlers) were registered in 2013. The number of this segment has been decreased during the last years because of implementation of the scrapping programme. The number of employers in fisheries due to a decrease of the fleet was reduced in last years as well (680 in 2012).

In Latvia fishermen use nine harbours where of six are small – Skulte, Mersrags, Salacgriva, Roja, Engure, Pavilosta. Ventspils, Riga and Liepaja are large harbours. 76% of the catch is landed in the large harbours. Fish unloading amounts at the Latvian harbours are significantly influenced by the average market price of fish and geographical location of the fish stock. Therefore, in the Gulf of Riga the most important for herring are three small harbours – Roja, Mersrags and Salacgriva. Ventspils is the most important harbour for sprat fishery where 59% of

sprat landings were unloaded. Liepaja is a major harbour for cod fishermen where 84% of cod landings were unloaded. Due to better market possibilities a part of the fish is unloaded in foreign ports, as a result the amounts of unloaded fish in Latvian ports decrease. The biggest amounts of unloaded fish of late years were in Nekso (Denmark), Vladislavovo (Poland) and Karlskrona (Sweden).

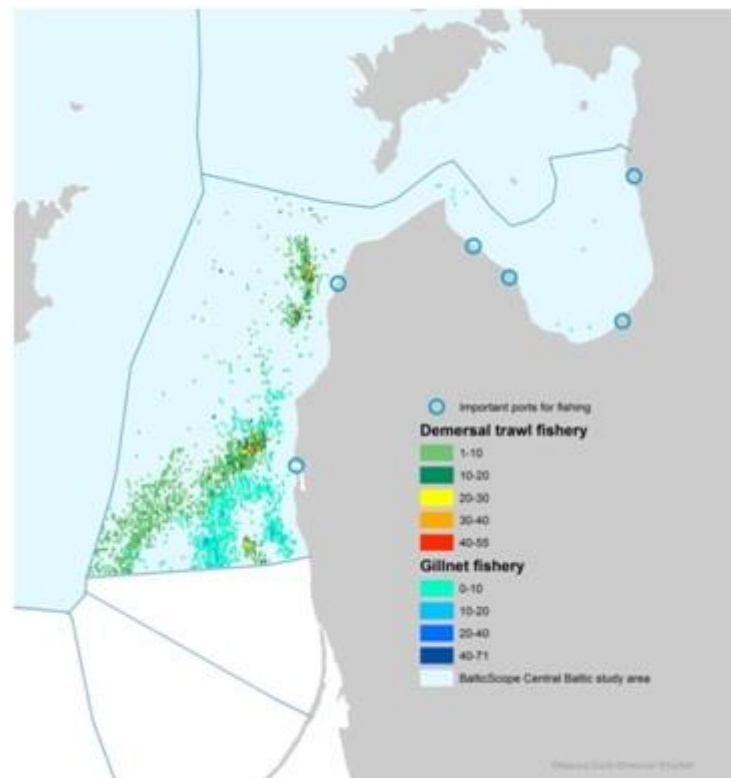


Figure 8: Latvian fishing activities in Latvian waters and Latvian main ports. Source: Compiled information from Latvia for the Baltic SCOPE project 2015

## Fishing activities in Sweden

Sweden has the longest coherent coastline in the EU and is surrounded by several sea areas in which Swedish commercial fishing takes place. Swedish fisheries are conducted more or less intensively in the Baltic, Kattegat and Skagerrak, but at times also further away in the North Sea and the Norwegian Sea. Fishing pressure varies spatially and over time. Small scale fishing takes place in limited areas and is sometimes stationary, while other fishing activities are more flexible

and conducted across large areas. Where fishing is conducted varies between seasons, but also depending on how fishing opportunities evolve.

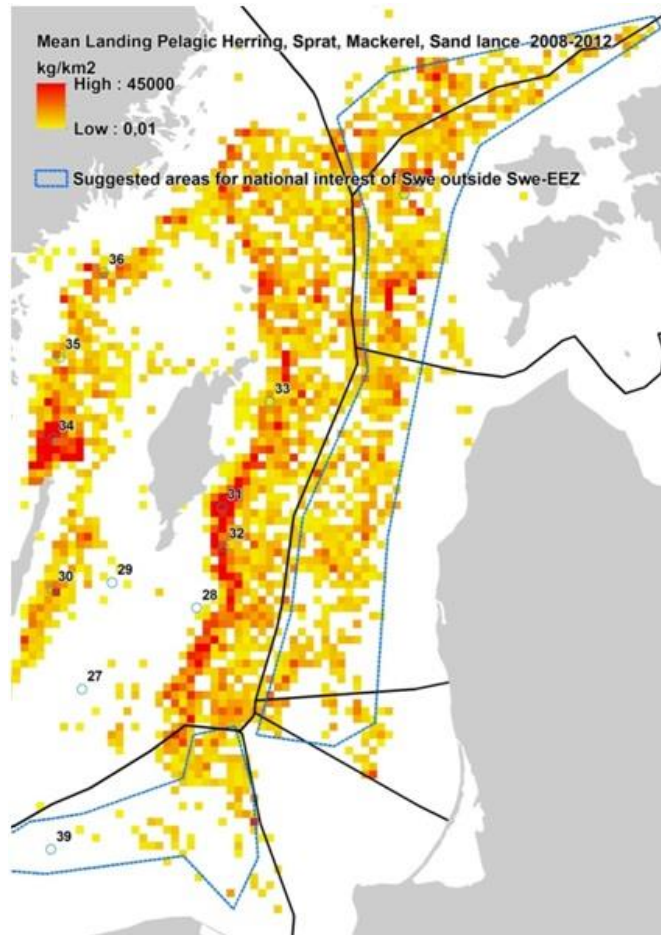


Figure 9: Concentration of Swedish pelagic catches by trawl and seine (herring, sprat, mackerel and sand lance). Quantity (kg) by landed weight, 2008 – 2012. The map also shows areas of national interest of fisheries outside the Swedish EEZ. Source: © openstreet Map, © HELCOM © SLU

In terms of catch per area, the Baltic Sea (including the Gulf of Bothnia Sound) dominates with 65 per cent of Swedish catches, followed by the North Sea, 20 per cent; and Skagerrak/Kattegat, 16 per cent. In both the Swedish territorial sea and the exclusive economic zone fishing from other EU countries' vessels occurs.

Even if the fish is landed in many places, a small number of ports stands for about 90 percent of landings in Sweden in quantity, with the main ones in the Baltic being Gävleborg (Norrundet), Kalmar (Västervik), Gotland (Ronehamn), Blekinge (Nogersund, Karlskrona), Skåne (Simrishamn, Trelleborg, Skillinge). Traditionally, significant quantities have been landed in Denmark, especially pelagic fish such as herring and sprat. In 2012 Swedish landings in Denmark represented about 40 percent of total Swedish landings. The largest pelagic catches are from an area south of Gotland between Poland and Sweden as well as an area along the west coast (see Figure 9).

## **Fish habitats**

Further work is required to develop reliable maps of essential fish habitats which discriminate spatial and temporal variability which is essential to support maritime planning. However, figure 10 and 11 give an indication of how important spawning and nursery areas are spread over the case study area, containing nursery areas within national borders as well as transboundary important area for spawning.

There are few available comprehensive maps on essential fish habitats (see Figure 10 and 11), but partial and scattered information for certain stocks/areas have been modeled such as:

Cod spawning areas: deep areas (e.g. Eastern Gotland basin, SE, EE, LT, LV (low), Bornholm basin / Arcona basin SE, DK, PL and Gdansk basin (low).

Herring spawning areas: coastal areas (spring and autumn), off shore (autumn).

Flounder: open Baltic Sea, Swedish coast.



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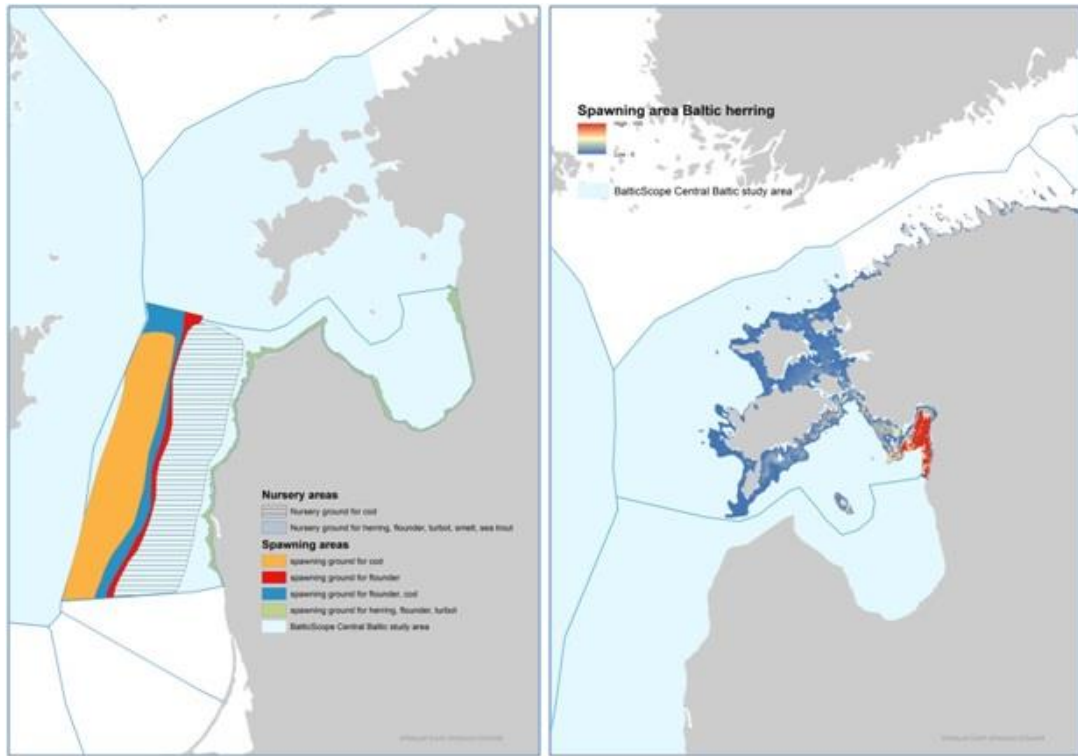


Figure 10: Latvian spawning and nursery areas and Estonian spawning areas for herring. Source: Compiled information from Latvia for the Baltic SCOPE project 2015

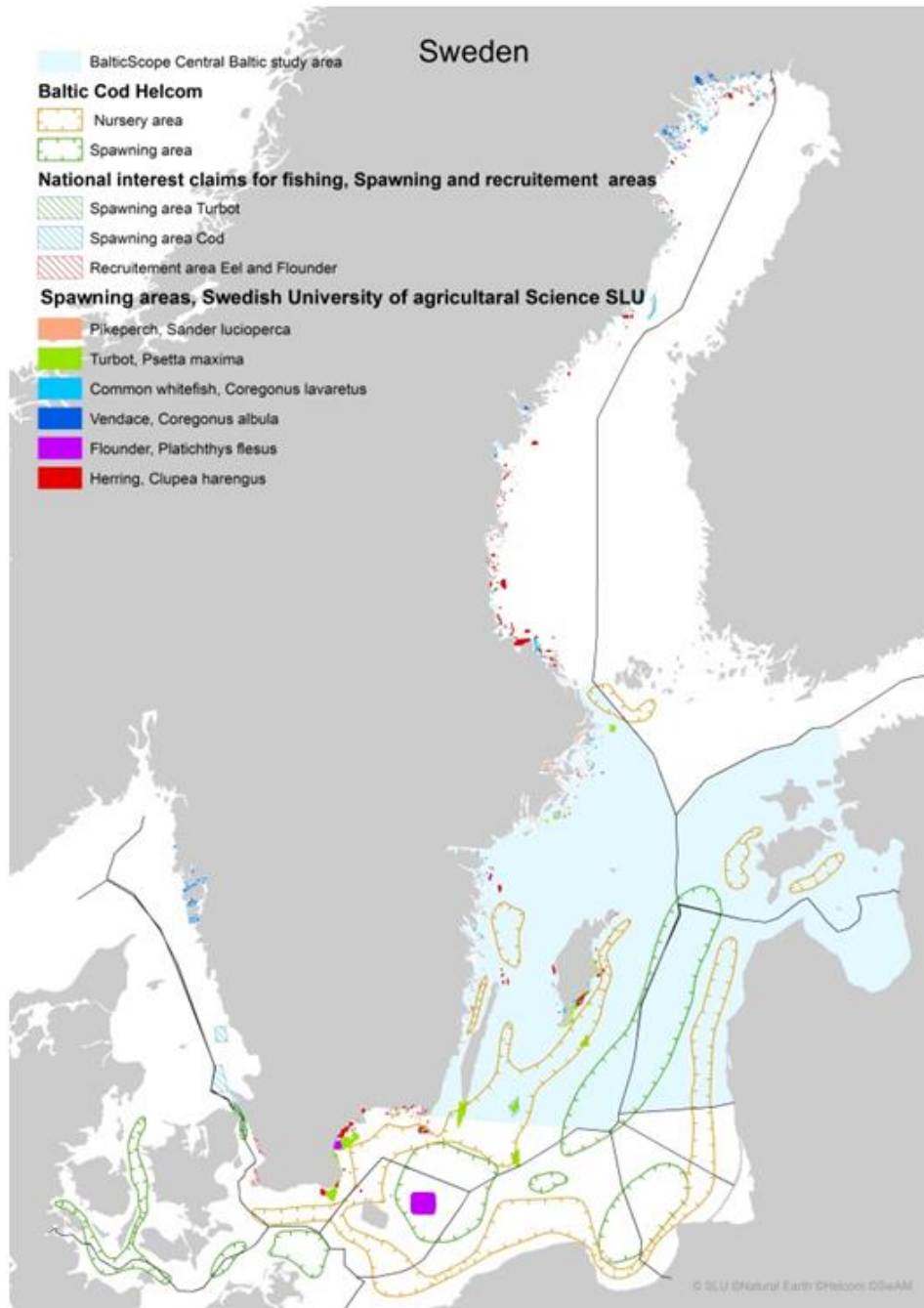


Figure 11: Important fish habitats according to Sweden. Source: Current Status report 2014 for MSP and SLU Aqua

## **Towards common solutions? Main differences between the compiled national maps**

### Introduction

Maps presented in previous section are compiled by each country and has mainly been the material since the beginning of the project. During the project there has been discussions about the differences between compiled map and if there is a need to start a process to produce joint maps within the project.

In the fisheries workgroup the discussions resulted in an agreement to provide information about the national MSP processes as well as methods to produce current maps, rather than striving for a joint map. The agreement included four questions to answer in this topic paper.

Therefore, as a concluding part of this section the main differences between national maps is listed below to clear out the different data and hopefully inspire improvements of the mapping in each country. These differences can be viewed as food for thought for future discussions about strategies to improve the material in a coherent direction.

### Different transboundary information

Sweden's map is the only one that includes national fishing activities outside its own EEZ as well as the transboundary areas of important habitats.

### Difference in period of time

The Estonian map shows no time period for the national fishing activities (see Figure 7). Latvian map with fishing activities has the longest period 2004 – 2013. Sweden's map shows a time period within the Latvian span reaching from 2008-2012.

### Difference in gear type

All countries include fisheries with passive gears but differs in their presentation. The Latvian map shows the intensity of passive gear fishing while the Estonian map only shows spatial positions of trap nets without information on the intensity. The Swedish map does not separate passive gears from trawling. Trawling activities are also presented differently in the maps. The Latvian map does not include pelagic trawling while the Estonian map does not distinguish trawling activities between demersal and pelagic fisheries. Sweden's map shows pelagic activities without distinguishing between passive and active gears, due to the overall domination of pelagic fisheries in the case area.

### Differences in landing places

The Latvian map has selected some ports as "important ports for fishing" while the Estonian map includes all ports without any distinction of the number of landings. Sweden only describes important ports in the text.

### Difference in species presented in fish habitats

Sweden presents habitats of nursery and spawning for several species regardless of area or national border. The Latvian map also includes several species in the habitat map while Estonia focuses on herring and the spawning area, due to the Estonian definition of all water areas with a maximum of 20 meters depth as important for nursery of all species.

# **How do you want to represent fisheries in your country's Maritime Spatial Plan?**

## **Estonia**

Fishing areas of national interest

The accounting for Estonian commercial fishing is used as the official source of information to present and protect the fishing rights and interests in a course of national and the transboundary MSP processes.

According to the Estonian Fishing Act a person who is registered in the commercial register as an operator and whose area of activity entered in the commercial register is fishing, may fish or collect aquatic plants by commercial fishing gear on the basis of a fishing authorization on internal water bodies, on transboundary water bodies, at sea, in the EEZ of the Republic of Estonia, or outside the waters under the jurisdiction of the Republic of Estonia.

Commercial fishing rights are granted by a fishing authorisation, which may be either the fishing authorization of a fishing vessel or a fisherman's fishing authorization.

A commercial fishing authorization is issued within the limits of the total annual allowable catch, number of fishing days, amount of fishing gear, fishing efforts or fishing capacity of vessels or number of fishing vessels (hereinafter fishing opportunities) for a specified time limit but for not longer than one calendar year.

Referring to the Estonian Fishing Act a person who fishes or collects aquatic plants on the basis of a commercial fishing authorization is obliged to submit catch, collection, transshipment or landing information or other information relating to these works. The accounting for fishing data is used as the official source of information to present and protect the fishing rights and interests in a course of national and the transboundary MSP processes.

Estonian sea areas of fishery related national importance / interests are factually documented based on 1) Electronic Reporting System (ERS) – electronic transmission of fishing data visualization for the Baltic Sea trawl fishery (including the fishing in EEZ of other countries and the landing in foreign fishing harbors), 2) Fisheries Information System (KIS) data visualization for small scale coastal commercial fishery, and 3) Estonian Fisheries Information System (EFIS) – collects data from the licensed recreational fishery.

Visualization of the Electronic Reporting System (ERS) electronic transmission of fishing data for the Baltic Sea trawl fishery is performed with resolution 1X1 km. Fisheries Information System (KIS) data for small scale coastal commercial fishery are visualized based on the Estonian standard small statistical rectangles and the data for licensed recreational fishery can be visualized by the ICES rectangles as required by the recreational catch reporting legal acts.

The quality and relevance of the data/factual approach based visualisations of fishing areas of national importance/interests is periodically discussed at the multi-level national stakeholder meetings initiated by the Estonian Ministry of Finance.

#### Current process of mapping fisheries for upcoming Maritime Spatial Planning

The data based mapping of the Estonian fisheries to be used in Maritime Spatial Planning processes is based on Electronic Reporting System (ERS), Fisheries Information System (KIS) and Estonian Fisheries Information System (EFIS) official data, collected according the CFP and the national legal acts requirements. ArcGIS software suite is used to create the GIS geo-databases and to enable the spatial modelling as required.

Stakeholder involvement is seen as the important element of the Estonian fisheries mapping. ESTMSP geoportal application under development is based on distributed GIS technology as an advanced platform in support of participatory processes.

ESTMSP geoportal serves as the “participatory GIS” platform using argumentation maps as an object based model for geographically referenced discussions that support the deliberative

aspects in spatial decision-making. Argumentation map methodology defines argumentation elements and geographic reference objects as independent entities distinguishing between reference objects which are part of the map and reference objects which are created by users, e.g. to mark a point location or highlight an area.

ESTMSP geoportal supports all standard tools for maps, such as: map navigation, scaling, and measurement. It provides the tools for displaying, hiding, and setting transparency of the map layers as well as for search, identification and spatial query.

Access to GIS map layers and the current maps production

ESTMSP geoportal is based on a concept of collaborative (participatory) process with objectives: (1) to capture the knowledge for later use (identifying and mapping spatial resources and competing human uses), (2) to communicate the knowledge captured so it is easy to understand for other stakeholders, (sense-making, communication), and (3) to connect different social groups in the construction of new localized social arrangements while the negotiation of differences between different groups is fundamental to the construction of GIS technology based solutions.

First, the ESTMSP geoportal is used to view and overlay the map layers according to the spatial problem to be solved and in collaboration with the stakeholders concerned. As soon as the suitable map layers overlay composition is reached, the “real” map layer is produced using the ArcGIS software relevant module. Based on this methodology it is possible to quickly produce e.g. the fishing areas of national importance / interests place and time based map layers to be used in the real MSP processes. To avoid misuse of the system the ESTMSP geoportal access is password protected.

## **Latvia**

### Introduction

MSP project development began on January 1, 2015, when the Ministry of Environmental Protection and Regional Development (hereinafter – VARAM) outsourced the consortium led by the foundation "Baltic Environmental Forum Latvia" (hereinafter – BEF). Fisheries experts from Institute of Food Safety, Animal Health and Environment "BIOR" (see Figure 12) were involved in

Marine Spatial Planning to represent fisheries interests and rights in national MSP and Environmental Report. The time period from 2004 to 2013 was included in the plan to cover a spatial and temporal distribution of the data. For the description data from BIOR scientific surveys, international surveys, commercial fishery logbooks and literature were used to describe fish abundance, main fishing, spawning and nursery grounds. In the national MSP only data from Latvian EEZ were included. The detailed description of fisheries interests is presented in the Environmental Report that was presented for interested parties.

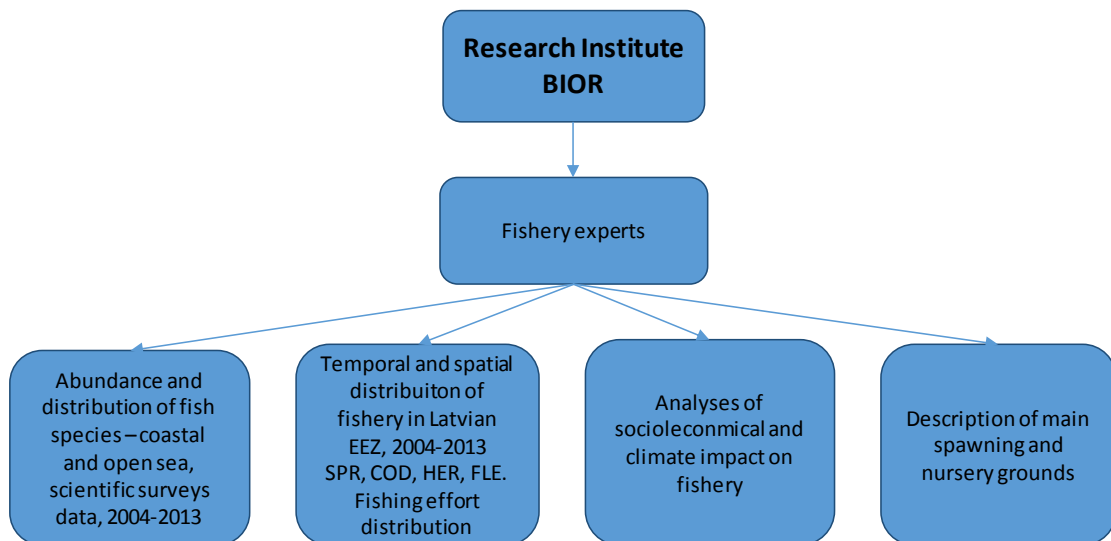


Figure 12: Fishery data used in Latvian national Maritime Spatial Planning. Source: Compiled information from Latvia for the Baltic SCOPE project 2015

#### Areas of national interest

National interests' areas for fisheries were appointed using available information from Institute of Food Safety, Animal Health and Environment BIOR, ICES public databases (DATRAS) and available scientific literature. The main focus was on most commercially important fish species (sprat, herring, cod and flounder), aquaculture and biodiversity of fish communities. In national MSP important fishing ports were defined based on landings. The most important fishing grounds were calculated using landings and efforts from national logbooks from 2004 to 2013. Important areas of spawning and recruitment were defined using available literature sources and survey



data from research institute BIOR. It was recognised as a difficult task due to lack of scientific knowledge and resulted in a small number of spawning and nursery areas.

#### Process of mapping fisheries for Maritime Spatial Planning

Maps regarding national interest of fishing activities will contain data from Latvian EEZ:

- 1 Main fishing grounds by species (sprat, herring, cod, flounder) – annual maps 2004 – 2013 and a summary map for the whole period.
- 2 Main fishing grounds by fishing gear (pelagic trawls, demersal trawls, demersal gillnets) – annual maps 2004 – 2013 and a summary map for the whole period.
- 3 Distribution of main commercial fish species (sprat, herring, cod, flounder) – annual maps 2004 – 2013 and a summary map for the whole period.
- 4 Landings in the coastal fishery (herring, other fish species, invasive round goby) – annual maps 2004 – 2013 and a summary map for the whole period.
- 5 Areas for aquaculture.
- 6 Spawning grounds for main commercial fish species.
- 7 Nursery grounds for main commercial fish species.

Several traffic light plots were produced to describe biodiversity in the open part and coastal zone of Latvian EEZ.

## **Sweden**

#### Areas of national interest

Swedish defined areas of national interest are a central planning tool to secure the development in different sectors (see Figure 13). In the current MSP process the national interests' areas from different sectors are for the first time compiled and spatially analyzed in a comprehensive way.

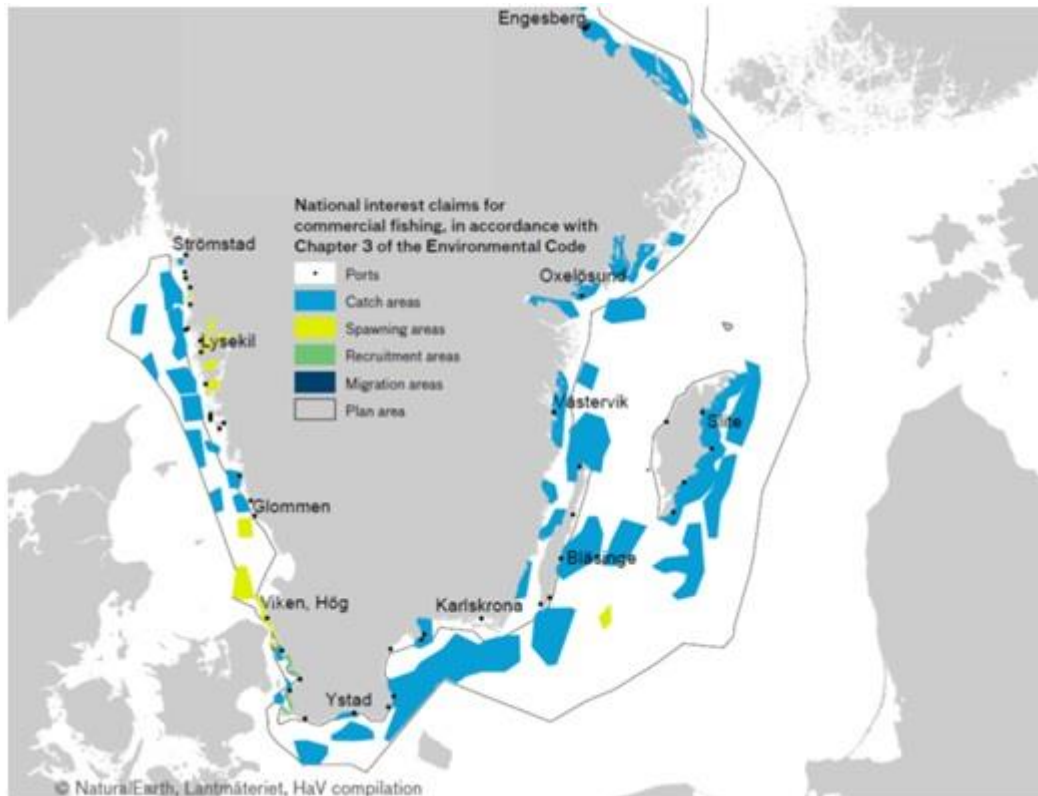


Figure 13: Swedish national interest areas for fisheries. Source: national MSP Current Status Report 2014

National interest areas for fisheries were appointed in accordance with national environmental legislation and were last updated in 2006. These areas are focused on economic aspects regarding catch areas for certain species as well as commercial fishing ports. Due to huge spatial variability regarding fishing activities and catch numbers, the definition of ports of national interest for fisheries separated the coast into three areas to secure a regional distribution. Important ports are defined upon the calculation to represent a minimum of 10 % of the total landings in each of the three coast areas. Important areas of spawning, recruitment and migration are recognized as a difficult task due to lack of scientific knowledge and resulted in a small number of spawning and nursery areas.

Current process of mapping fisheries for Maritime Spatial Planning

Swedish Agency for Marine and Water Management (SwAM) has recently started a process of defining the data call for the Swedish University of Agricultural Science (SLU). An updated map regarding fisheries will help the national MSP process by distinguishing the interest of the sector.

Regarding the Baltic Scope project, SwAM initially asked for presented results by the end of March which SLU viewed as a too optimistic deadline for delivery of qualitative maps for MSP. Therefore, in this topic paper, Sweden will present the criteria of the upcoming maps that are yet to be produced for the national MSP process.

Key motives behind the new data call and upcoming mapping is to improve the ability to make spatial projections of future fisheries by strengthening knowledge regarding historic fishery activities and the spatial dynamics that has occurred in the past. In accordance to an ecosystem based approach, SwAM wants to distinguish areas of interest for different fisheries e.g. small-scale, large scale and also defined after a certain type of fishing gear. The new information will play a vital role in defining new and updated areas of national interest which is an ongoing discussing at the fishery unit at SwAM.

In detail, maps regarding Swedish interests of fishing activities will contain:

- A. Catch activities in different areas over a long period of time (total amount as well as separated into different segment of the fisheries).
- B. Economic value of catch per segment (presented in numbers and percentages). The ambition is to present this in seasonal variations and different time periods).
- C. Dynamics in evaluation of specific fishing grounds over time.
- D. Important steaming routes for access to ports and landing places.

Regarding fish habitats the data call will show important areas based on the sustainability of species of economic interest for the fishing sector. With this approach habitat areas will improve the representation of different stages of the life span of species compared to present definitions of spawning and nursery areas of national interest.

Description of the present map in the topic paper – flowchart

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The maps submitted in this topic paper combines layers of landing weights of pelagic fisheries with a presentation of roughly sketched areas of potential national interests outside the Swedish EEZ. These areas are one of the outcomes from the fisheries thematic meetings in the national MSP process.

The data on landing weights are derived from SLU Aqua and presents the spatial concentration of catches in kilograms based on landed weight. Data is collected from logbook (electronically or manually, reported by the fishermen) where set-positions are reported with an accuracy of 925 x 1850 meter. Based upon set-positions the grid is 5x5 km in a raster format. The choice of grid is the result of a compromise between the expected accuracy, representative variation of reported position and the ability to create clear spatial patterns of activity. In relation to normal trawling speed the vessel can potentially move up to a distance of 18 km which could motivate a grid of 20X20. However, the choice of to narrow grid system is strengthened by the quality in logbook positions as well as the possibility to identify specific hot spots within areas of intensive fishing by distinguishing distribution of set positions into different grids.

The method of set-positions as a base is preferable for active gears while the passive gear in the maps is characterized by lack of reported positions. Standards of logbook reports also lead to an overestimated value for a certain grid when the logbook reports a middle position of the passive gear and not the full length of it. This is amplified by the fact that fishing standards with passive gear almost constantly fish in the same area.

## **Who is involved in representing fisheries in your country's Maritime Spatial Plan?**

### **Estonia**

According to Directive 2014/89/EU establishing a framework for Maritime Spatial Planning “The management of marine areas is complex and involves different levels of authorities, economic operators and other stakeholders. In order to promote sustainable development in an effective manner, it is essential that stakeholders, authorities and the public are consulted at an appropriate stage in the preparation of maritime spatial plans”.

Estonian Ministry of Finance is the authority / planner responsible for spatial planning in general and for the Maritime Spatial Planning (MSP) in particular. Accordingly, the MSP related stakeholder participatory processes are initiated and steered by Estonian Ministry of Finance.

Estonian Ministry of Rural Affairs, as the authority responsible for sustainable use of fishery resources and for management of the Baltic Sea trawl fishing and the small scale coastal commercial fishing, is actively involved into the MSP related processes. The Ministry of Rural Affairs is also representing the potential interests of Estonian fish farmers in the MSP processes.

Estonian Ministry of the Environment, Fishery Resources Department is also actively involved into the MSP processes representing the responsibility for the status of fish resources in general and for the management of recreational fishing in Estonia in particular. Estonian Environmental Board is also actively involved as the authority issuing the recreational fishing cards.

Estonian Baltic Sea commercial trawl fishing interests and rights are represented by the Estonian Fishermen's Association and the related fish processors interests are represented by Estonian Association of Fishery.

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The interests / rights of the small scale commercial coastal fisheries are represented by the association “Liivi lahe kalanduskogu”.

Estonian recreational fishers are represented by the Estonian Recreational Fishing Association.

The Estonian fish farmer’s interests are represented by Estonian Fish Farmers Association.

Estonian Fund for Nature is actively participating in discussions on issue of Essential Fish Habitats and the fishing related environmental topics.

## **Latvia**

Throughout the MSP and Environmental Report development processes, active public participation was ensured. Interested parties (Fisheries Department of Ministry of Agriculture, Ministry of Environmental Protection and Regional Development, State Environmental Bureau, Nature Conservation Agency) have been informed about the current situation assessment and identified fisheries and environmental problems. Industry representatives and other stakeholders are also involved in evaluation of alternative sea use scenarios and in defining the conditions of marine space use during several regional meetings.

Public consultation of the draft Environmental Report was organized simultaneously with public consultation on MSP. During the time period from December 18, 2015 until January 31, 2016, everyone could get acquainted with the Environmental Report and MSP materials at the internet site [www.jurasplanojums.net](http://www.jurasplanojums.net). MSP Environmental Report was sent for consultation with the responsible authorities and the target groups of neighboring countries (Lithuania, Estonia and Sweden) as well. The Maritime Spatial Plan and the Environmental Report was updated and clarified according to the results of the public consultation.

## **Sweden**

The planning phase of Maritime Spatial Planning in Sweden has started in the autumn 2015. The start of the process was a series of thematic meetings in order to get more detailed information for planning, in addition to the current status report (2014). The thematic meetings are divided into six different themes where fisheries is one of them. Approximately five meetings for each topic have been held by SwAM and the findings from the meetings have been compiled into thematic reports.

The aim of the thematic work on fisheries was to clarify the spatial implications of fishing activities and fish habitats in the maritime spatial planning to provide a better understanding of the interest of fisheries and to identify the need for new data for the creation of solid planning evidence for the MSP process.

The thematic work was initially carried out to government agencies responsible for managing key interests of fisheries in the marine area. As a government agency, SwAM plays a dual role here as different units of the agency are responsible for the MSP process and the national interest of fisheries. Representatives from SwAM's fishery units participated in the thematic meetings together with representatives from the County Administrative Boards and the Swedish Board of Agriculture.

SwAM applied a similar method at all thematic meetings. The thematic groups studied the whole Swedish coastline based on GIS layers with information of areas of national interest for different sectors. Certain areas of overlapping interests were discussed from a thematic perspective and classified as *conflict*, *competing* or *co-existing* status.

The representation at the fisheries thematic meetings was restricted to fisheries management representatives. The thematic process was finalized with a stakeholder meeting in Stockholm 6th April 2016 where representatives from the fishing industry were invited to discuss the findings in all six themes.

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Non-governmental organizations (NGOs) have been invited to several occasions in the preparatory process of MSP and to comment on the draft versions of *Current Status Report 2014* and the draft of *Proposal for the direction and scope of Marine Spatial Planning in Sweden* (2015). In addition to their participation in the stakeholder meeting in April, it is SwAM's intention to take more active measures to involve a broader fishing sector when the first drafts of the three Maritime Spatial Plans are presented. Potential actors from the commercial fishing sector contain one central organization which is a collaboration of different producer organizations which are mainly structured geographically.



# **How would you like to present your fishing interests in other countries' EEZ?**

## **Estonia**

The accounting for fishing data is used as the official source of information to present and protect the fishing rights and interests in a course of national and the transboundary MSP processes.

Access to fisheries is normally authorized through a fishing license. In the waters up to 12 nautical miles from baselines under their sovereignty or jurisdiction, member states are authorized to restrict fishing to fishing vessels that traditionally fish in those waters from ports on the adjacent coast.

Estonian national Electronic Reporting System (ERS) data based map layers presenting the trawling tracks (time, coordinates), corresponding catch composition by species (kg) and landing in the other EU countries fishing harbors (in tons) can be regarded as Estonian planning evidence to present fisheries interests of Estonia in Baltic Sea EEZ areas of the other EU countries.

Estonian fisheries interest is based on an understanding that fishing activities as such are regulated by CFP and the national Fishing Acts and the role of MSP is to allocate the marine space suitable for environmentally sustainable and economically feasible fishing operations based on a CFP principle of equal access to the fishing waters. That means non-restricted access to the equal access fishing grounds and the designated fishing harbors.

## **Latvia**

The commercial fisheries logbook data from sprat, herring, cod and flounder outside of Latvian EEZ is available from Research Institute BIOR. Latvian fisheries interests in other countries EEZ could be presented by landings by fish species (herring, sprat, cod, flounder) and by effort (pelagic trawlers, demersal trawlers and demersal gillnets).

## **Sweden**

The compiled map from Sweden (see Figure 9) shows Swedish fishing activities in other countries' EEZ. This will be updated by the current process described in section *Current process of mapping fisheries for Maritime Spatial Planning*. In this process there is a similar ambition to map Swedish fisheries interest beyond the Swedish EEZ. To fulfill the criteria A – D presented in section *Current process of mapping fisheries for Maritime Spatial Planning*, the economic aspects of catch value highlight the need to map fishing activities outside Swedish EEZ where especially Swedish fishing activities in Norwegian waters is crucial for the Swedish fisheries sector.

## **How would you like other countries to present their fishing interests in your country's Maritime Spatial Plan?**

### **Estonia**

The other EU countries national Electronic Reporting System (ERS) data based map layers presenting the trawling tracks (time, coordinates), corresponding catch composition by species (kg) and landing in Estonian fishing harbors (in tons) can be regarded as the EU other country planning evidence to present fisheries interests of that country in Estonian EEZ.

### **Latvia**

The data format to present other countries' fishing interest in Latvian MSP will preferably follow the national process where a sample representing 70% of the landings is selected within the time period 2004 – 2013. In the current status of national MSP data from four main fish species catches (sprat, herring, cod and flounder) and fishing fleets (demersal trawlers, pelagic trawlers, demersal gillnetters) from other countries could be included to identify the main fishing grounds.

### **Sweden**

Based on the current process of updating maps of the Swedish fisheries sector, SwAM views the criteria presented in section *Current process of mapping fisheries for Maritime Spatial Planning* as the ideal structure also for neighboring countries to contribute their fisheries interest in the Swedish MSP. The criteria includes spatial aspects of fishing methods, economics and logistic needs in the sector and aim to put a flexible strategic perspective for the future, based on historic patterns of Swedish fisheries. A coherent approach from all countries around the Baltic in representing their fisheries interests would help the MSP processes in all countries to identify important common fishing grounds and ports for different segments. It would also improve the

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ability to sustain and develop fisheries in the Baltic Sea for a future fleet regardless of national distribution.

## Findings

Based on the workgroup process and the workshops held within the Central Baltic case, this topic paper presents the following findings:

- 1** Identifying important areas for national fisheries outside a country's own EEZ, on the basis of both present and historical data of activities, is essential for a spatial pan-Baltic fisheries perspective in MSP.
- 2** MSP and plan assessments should consider the spatial dynamics of fisheries, as conditions and important areas will change over time.
- 3** MSP should strive for coherence regarding input data and visualization of fisheries among countries around the Baltic Sea.

Planners and policymakers should consider these findings in future collaboration on fisheries in MSP.