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Background

Work to produce Baltic Sea wide maps of ecosystem components, i.e. maps of benthic species and habitats, as well as maps of fish, seabirds and marine mammals, is currently being carried out under a HELCOM coordinated and an EU co-financed TAPAS project. The maps will be used in the Baltic Sea Impact Index (BSII). In the BSII, the effects of various human pressures on the ecosystem will be evaluated and it will form a part of the second HELCOM holistic assessment on the Baltic Sea ecosystem health (HOLAS II). Regarding marine mammals, the aim is to produce maps for grey seal, harbour seal, ringed seal and harbour porpoise.

In the following, the state of the art of the marine mammal maps is presented, including the data and the methods used for their production. The maps have been / are being produced in communication with the seal experts.

Action requested

The Meeting is invited to review the maps for marine mammals produced under the TAPAS project.

Maps of marine mammals

Harbour seal

For harbour seal, two different maps have been produced: a map of harbour seal abundance across the Baltic Sea, and a map of harbour seal haul-outs.

The harbour seal abundance map (number of seals) is an interpolation based on seal count data points collated in the BALSAM project (Figure 1). Counts are reported per HELCOM sub-basin and per country. Interpolation was made using the count values (average of 2011-2014), that were set to the center of each country's part of HELCOM sub-basin (e.g. Danish part of Kattegat). Swedish Western Gotland Basin value was moved from sub-basin center to Kalmar Sound where harbor seal haul-outs exist, to avoid extending the harbor seal distribution northwards. Zero values were added to the eastern distribution limit using expert consultation.

The harbour seal haul-out map presents the number of harbour seal haul-out sites within 10km x 10km grid cells (Figure 1).The map highlights areas with high densities of harbour seal haul-out sites. The point data on haul-outs was converted into 10km x 10km grid cells, assigning the count of points within the cell as the cell value (variation from 0 to 26 sites).

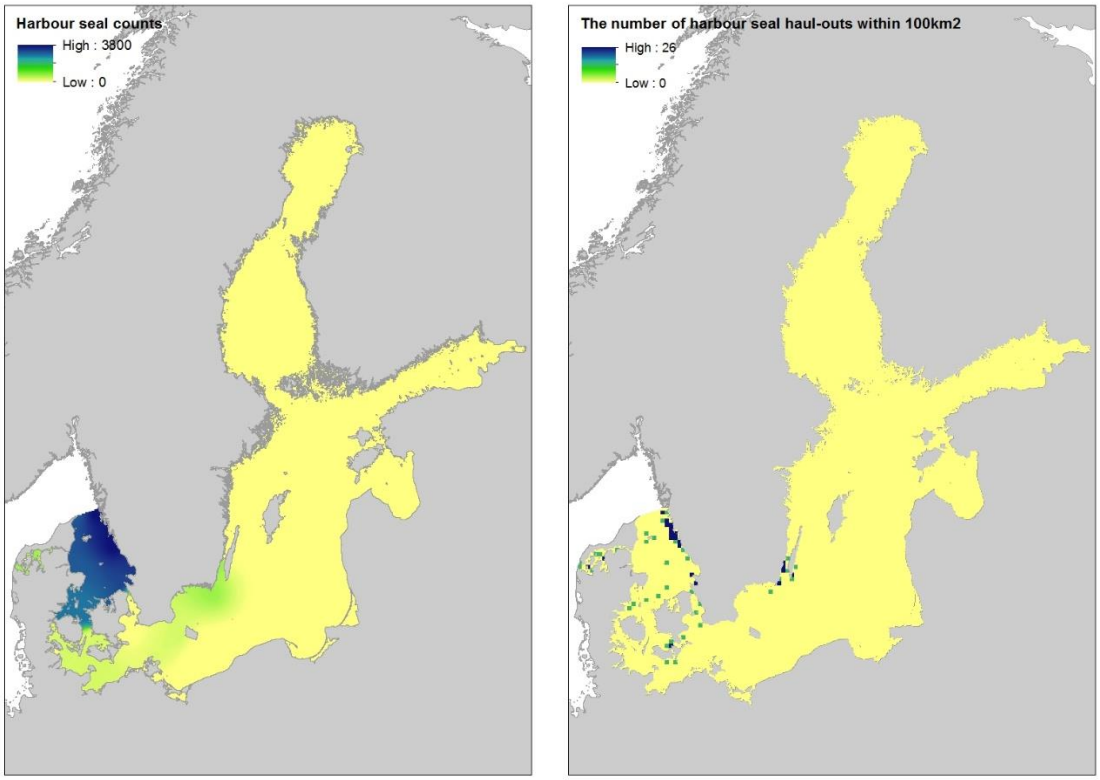

Figure 1. Maps representing harbour seal abundance (left) and the "density" of harbour seal haul-out sites (right).

Grey seal

For grey seal, the aim is to create maps of grey seal abundance and of grey seal haul-out sites.

For the grey seal abundance map, there is ongoing effort to collate data on counts per haul-out site (2011-2015). This data would allow the production of more correct abundance maps of grey seals, rather than using seal counts per HELCOM subdivision. Currently, the data is reported per HELCOM subdivision and per country (Figure 2).

The grey seal haul-out map presents the number of grey seal haul-out sites within 10km x 10km grid cells (Figure 2). The map highlights areas with high densities of grey seal haul-out sites. The point data was converted into 10km x 10km grid cells assigning the count of points within the cell as the cell value (variation from 0 to 24).

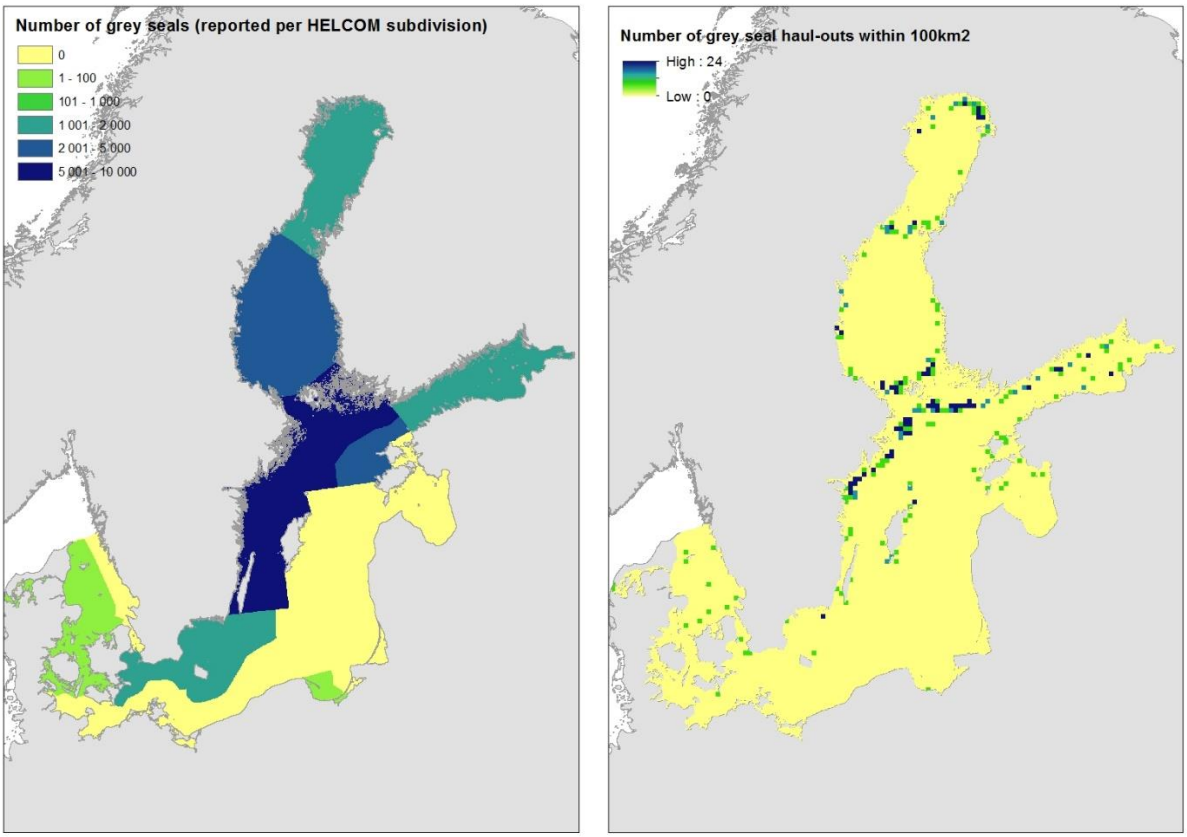

Figure 2. Maps presenting grey seal abundance per HELCOM sub-division (left) and the “density” of grey seal haul-outs (right).

Ringed seal

For ringed seals, there is currently no data available for the production of abundance maps. Therefore a general distribution map based on HELCOM subdivisions will be used in the Baltic Sea Impact Index (Figure 3).

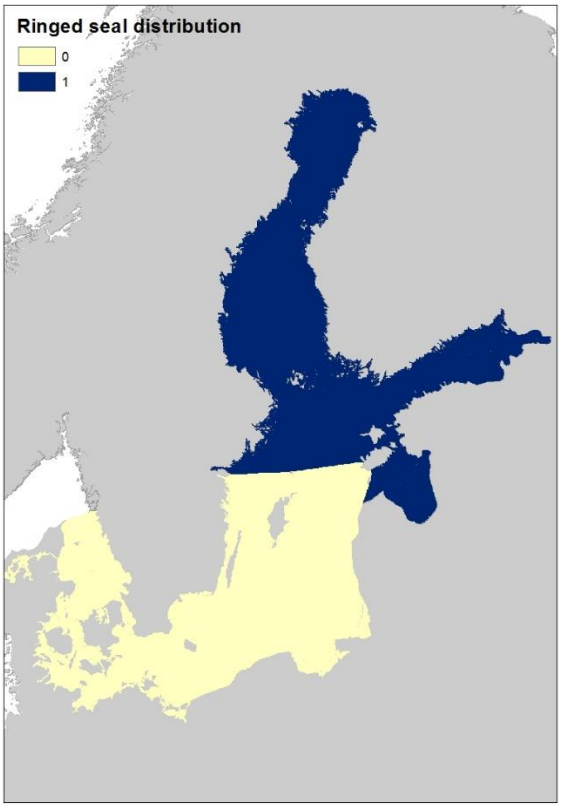

Figure 3. Distribution of ringed seals, delineation based on HELCOM subdivisions.

Harbour porpoise

Regarding abundance maps on harbour porpoise, requests have been made to use the 'probability of detection' -maps produced in the SAMBAH project. The data will be available for use in the BSII and in HOLAS II, but the timetable for receiving the data is still open.