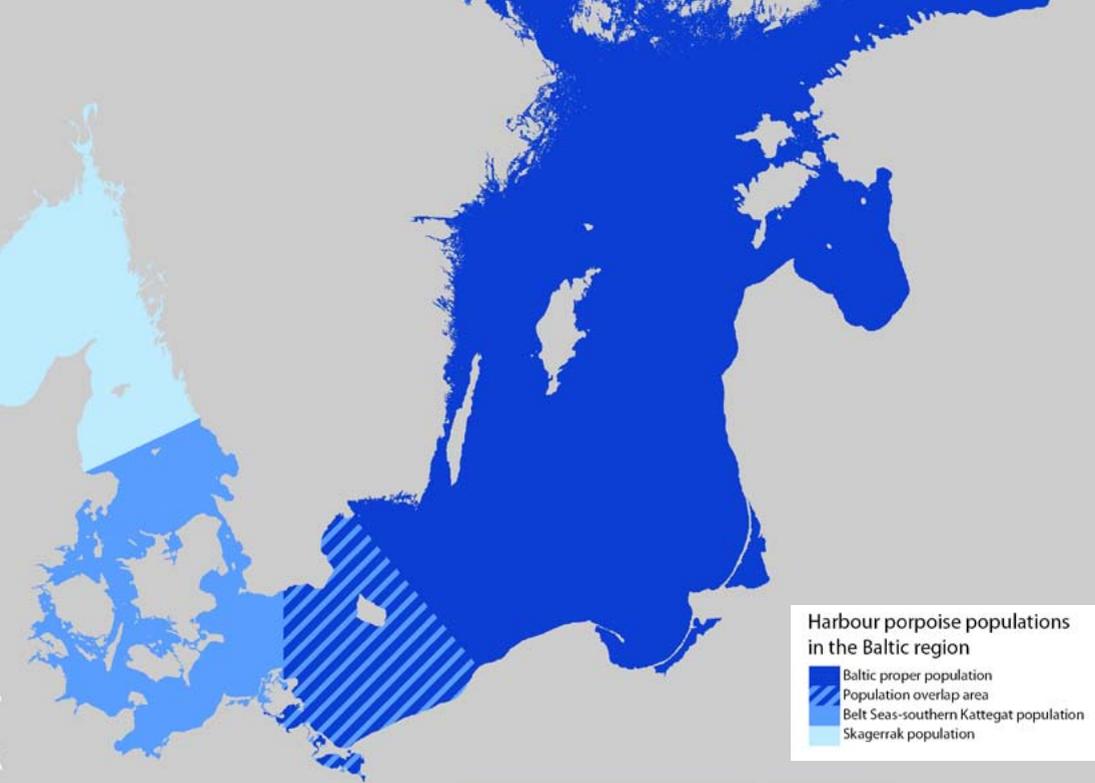


THE BALTIC SEA  
HARBOUR PORPOISE  
NEEDS PROTECTION



With funding from





## Harbour porpoise populations in the Baltic region

Today we know that there are three populations of porpoises in the Baltic Sea region. These populations are different both genetically and in the shape of the rostrum (snout or beak)<sup>1, 2</sup>. The populations must be considered as separate conservation units, each with separate management measures and protection. The populations reside in (1) the North Sea, Skagerrak and northern Kattegat, (2) the southern Kattegat and Belt Seas, and (3) the Baltic Sea proper.

The geographic locations of the population boundaries are not fixed;

for example porpoises from the Belt Sea population and the Baltic proper population seem to alternate using the same area in the German Baltic Sea area during different times of the year<sup>3</sup>. Porpoises from the Baltic proper move southwest to German and Danish waters during winter and then return northeast again during summer, while animals from the southern Kattegat and Belt Seas enter German Baltic waters and the Baltic proper during summertime, as shown by the striped area in the map above.

## Porpoise reproduction

Female porpoises give birth to one calf almost every year, which means they are pregnant and lactating simultaneously for most of their lives. Gestation is approximately 10.5 months and calves suckle for 6-9 months, although they do start eating solid food at approximately 2-5 months of age<sup>4</sup>.

In the Kattegat and Skagerrak, the mean conception date is around 25 July, and birth takes place approximately 10.5 months later with the peak in June. In the Baltic Sea reproduction takes place about one month later, with mean conception

date around 18 August<sup>5,6,7</sup> and birth in July. Studies indicate that female porpoises prefer certain areas for calving and are rather stationary when tending for their young calves<sup>8</sup>. This information and the timing of reproduction is essential when considering conservation measures, since areas where porpoises reproduce and raise their calves are especially important to protect. Based on timing of reproduction and the distribution of animals, important areas for porpoise protection can be identified.



## Porpoise prey

The relatively small body size of harbour porpoises means that they need constant access to prey. Studies suggest that porpoises need to eat between 4-9.5% of their body weight each day<sup>9, 10</sup>.

Harbour porpoises are opportunistic predators feeding mainly on small schooling fish. Prey size is often less than 30 cm, and even though porpoises are sometimes seen in large aggregations (often where prey density is high), they are believed to hunt individually. In the Baltic region, the main prey species are herring, cod and sprat, but also gobies and sandeel are common food for porpoises.

There is an apparent decline in prey species diversity from the North Sea towards the Baltic Sea, as an effect of the decrease in salinity and the resulting decrease in the total number of species<sup>11</sup>. This in turn may mean that the Baltic Sea harbour porpoises are more vulnerable to declines in the populations of their prey species than porpoises in areas where the diversity of available prey is higher.



## The SAMBAH project

SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise – is an international project funded by the EU through the LIFE-program and national sources. It involved all EU countries around the Baltic Sea, with the ultimate goal to secure the conservation of the Baltic Sea harbour porpoise.

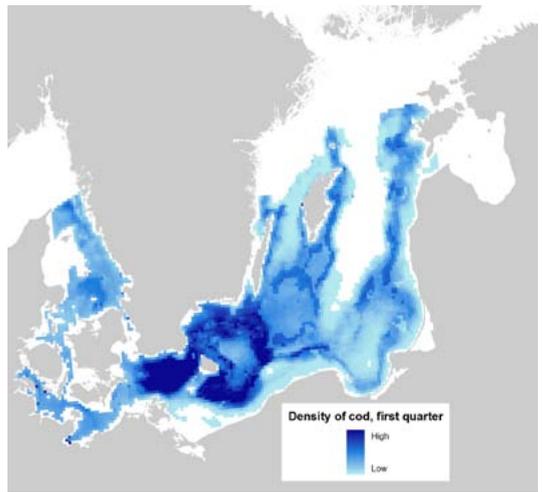
Porpoises use echolocation clicks to orientate themselves, to find food and communicate, making it possible to acoustically detect the presence of porpoises. Although it is not possible to tell the difference between two individuals (they all sound the same), SAMBAH used data from 300 porpoise click detectors deployed throughout the study area in the Baltic Sea for two years between June 2011 and May 2013 to estimate abundance and distribution of porpoises in the Baltic Sea.

The project has identified hotspots, habitat preferences and areas with higher risk of conflict with anthropogenic activities.



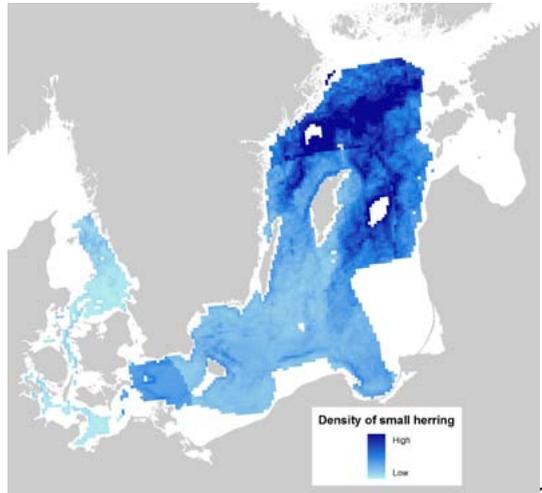
## Cod

Cod can grow to over one meter in length, however porpoises prefer to prey upon cod smaller than 30 cm. Cod spend most of their time close to the sea floor feeding on other fish and invertebrates.



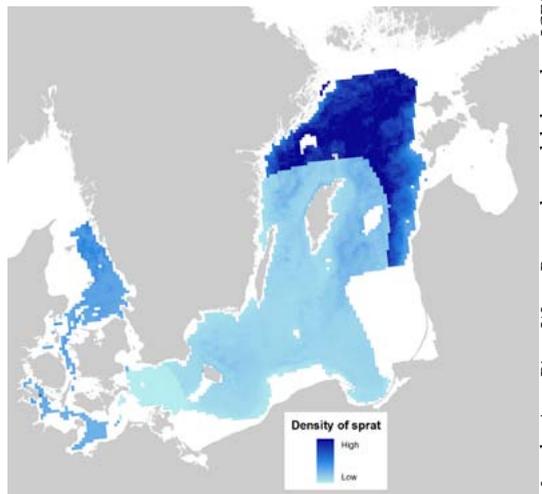
## Herring

Herring are very energy-rich and are common throughout the Baltic Sea. They live most of their lives in large schools in the water column, feeding on zooplankton.



## Sprat

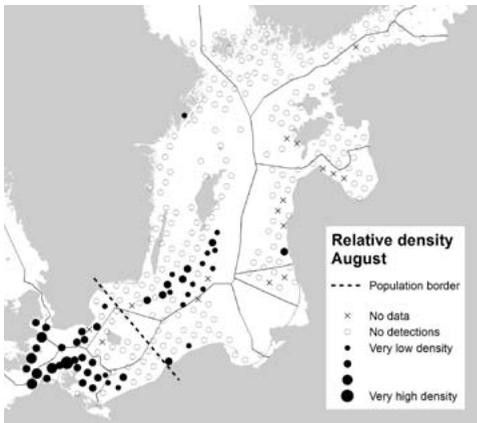
Similar to herring, sprat is a pelagic species, living in schools. They also feed on zooplankton.



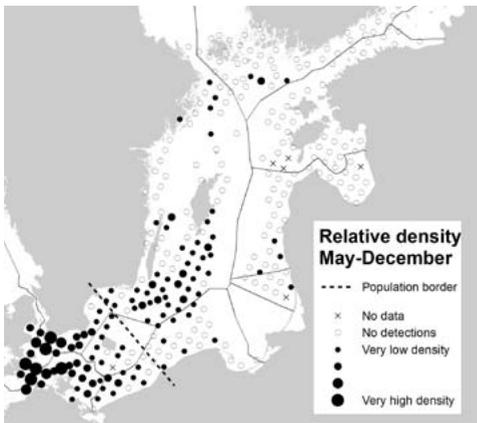
## Abundance and geographic distribution of porpoises in the Baltic Sea

The SAMBAH project has greatly improved our knowledge of the Baltic porpoise population. We now know that there is a clear seasonal pattern in the distribution of porpoises in the Baltic Sea. When calving and mating takes place in June-August, there is a clear separation between Belt Seas-southern Kattegat population and the Baltic Sea population. During this period the main part of the Baltic Sea population is gathered around the offshore banks south of Gotland. In winter, animals belonging to the Belt Seas population in the overlap area retreat to the west, while the Baltic Sea population spread throughout the Baltic proper, presumably in search of prey. There are also indications of important wintering grounds along the Polish coast and in Latvian-Lithuanian waters.

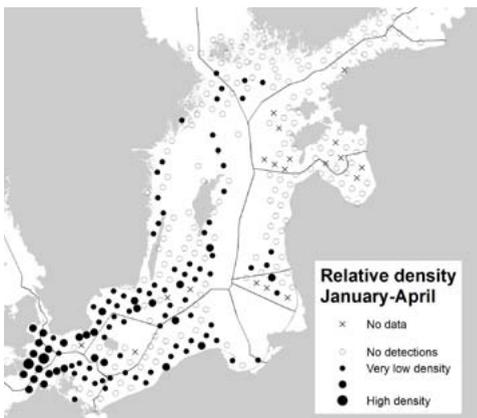
This clear separation between the “overlap area populations” in the south-western Baltic Sea and the cluster of animals around the offshore banks south of Gotland during the reproductive period is a strong evidence for the existence of a separate breeding unit of porpoises in the Baltic proper. The Baltic Sea porpoise population is now estimated to be around 450 animals according to the best science based calculation.



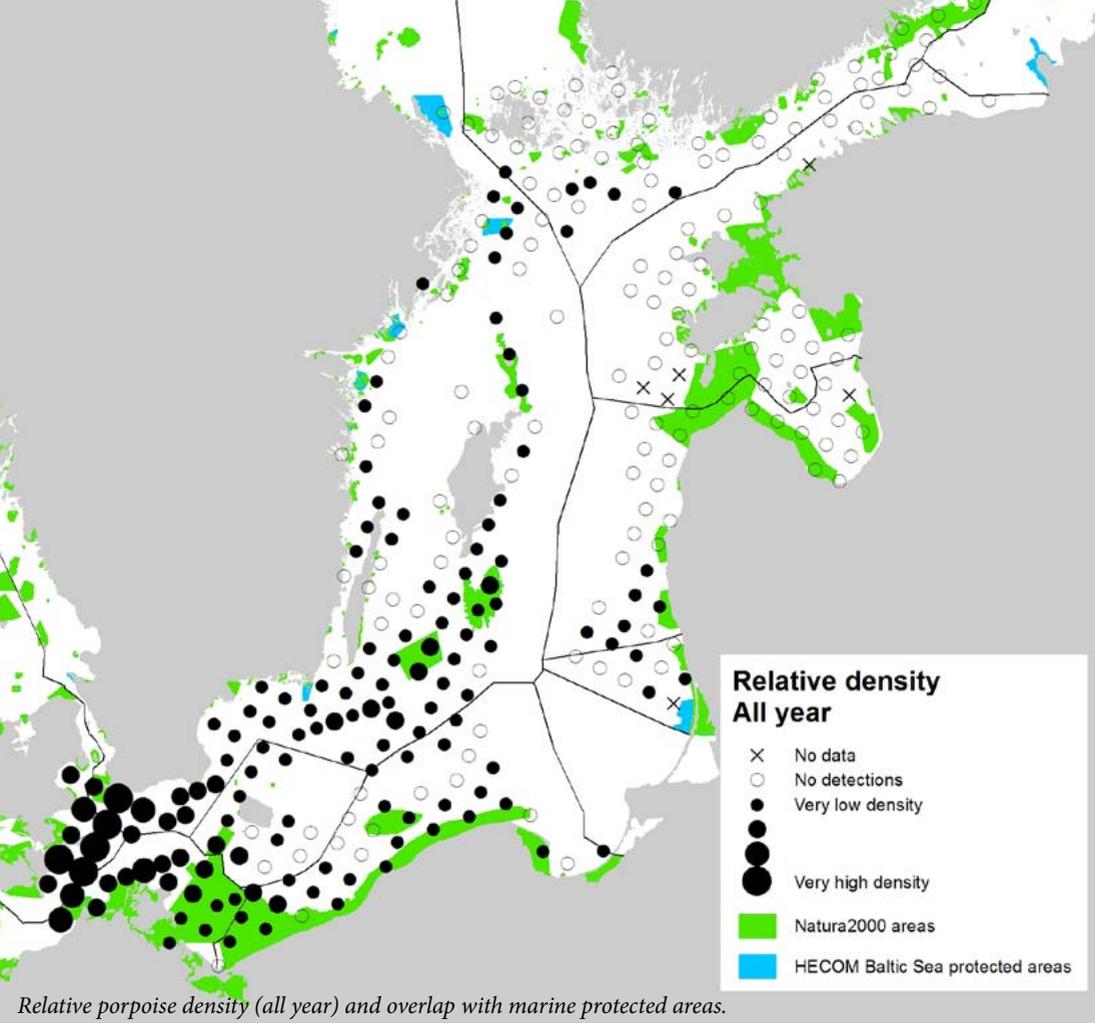
*In the Baltic, mating takes place in August and in this map the separation of the Baltic population is evident.*



*The Baltic population, i.e animals to the east of the population border line shown in the map above, is estimated to 450 animals.*



*During winter, animals are more spread out and there are indications of important wintering areas along the southern, eastern and western Baltic proper coasts.*



*Relative porpoise density (all year) and overlap with marine protected areas.*

## Porpoises and marine protected areas

Harbour porpoise presence in the Baltic proper overlap with quite a few marine protected areas. But many marine areas important for porpoises are without protection status. The results of SAMBAH allow countries to designate Natura 2000 areas for harbour porpoises in the Baltic Sea, to safeguard porpoises presence in their waters. However, designating

protected areas are not enough, unless active management measures are set up. To reduce the threats posed to porpoises, mitigation measures should include fishery restrictions, boat speed restrictions, especially for leisure crafts, and strict regulations for activities generating underwater noise, such as construction work, seismic surveys and military activities.



## Current threats to harbour porpoises

The known threats to the Baltic harbour porpoises are incidental catches (“bycatches”) in fisheries, high loads of toxic and persistent harmful substances, disturbance by underwater noise and reduced amounts of prey.

Harbour porpoises are primarily caught in gillnets with large mesh size, such as nets for cod or salmon. The impact of so called “ghost nets”, lost by the fishermen, may be considerable. The current bycatch rate in the Baltic Sea is unknown. However, as the population size is likely to be very small, even a few bycatches per year pose a significant threat to the population.

As the harbour porpoise is a top predator feeding on fatty fish, high levels of environmental contaminants are accumulated in their bodies. Toxic and persistent harmful substances are known to affect reproduction, immune system and hormonal levels. In top predators of the Baltic Sea, levels of PCB and DDT are decreasing, while levels of new hazardous sub-

stances such as flame retardants and glazing agents are increasing<sup>12, 13</sup>. The levels of the toxic glazing agent PFOS has been found to be among the highest in European marine mammals<sup>14, 15</sup>.

Harbour porpoises are totally dependent on hearing for their survival. This makes them very sensitive to underwater noise. In the sea, the average noise level has increased steadily since engine-driven ships were introduced. The Baltic Sea has some of the busiest shipping lanes in the world, and engine and cavitation noise and the use of sonar equipment are potentially harmful to porpoises. Additionally, the rapid increase in offshore constructions such as wind farms can have major impact on harbour porpoises. The noise from pile driving has been shown to decrease harbour porpoise density up to approximately 20 km from the pile-driving site<sup>16, 17</sup>. In a long-term study, the detection rate of harbour porpoises had only recovered to 11-29% of the baseline level more than ten years after construction<sup>18</sup>.

## CCB proposals for action

- Use available information on spatial and seasonal distribution of porpoises to designate protected areas in the Baltic Sea.
- Specifically ensure strict protection for the area around the offshore banks south of Gotland, where the Baltic Sea population reproduce.
- Implement strict conservation measures, such as time and space restrictions on fishing gear and restriction of noise generating activities, in porpoise high-density areas / protected areas.
- Implement effective conservation measures and develop porpoise-safe fishing gear: utilize existing mitigation methods on noise generating activities, in the Baltic proper.
- Ensure EC regulations concerning pinger-use are effective and enforced, and develop pingers not audible to seals, to be available as soon as possible.
- Introduce more effective monitoring and reporting of bycatch, not only of porpoises but of all marine mammals, sea birds and protected fish species. Continue the development and evaluation of automatic surveillance of bycatch, for example using CCTV.
- Set up a public system for simple reporting of porpoise sightings via Facebook/twitter, e.g. organized within HELCOM.
- Develop and implement a regular joint monitoring program for the status of the Baltic Sea harbour porpoise population under the MSFD.
- Work for the full implementation of the Recovery Plan for Baltic Harbour Porpoises (Jastarnia Plan) in all ASCOBANS countries and link this work to the fulfilment of the MSFD.
- Make removal of ghost nets a priority, especially in areas with high densities of porpoises, in the MSFD program of measures.
- Establish regional recommendations for reduction of underwater noise and include mitigation in MSFD program of measures.
- Work towards increasing awareness of leisure boat owners of the noise generated by such boats.
- Urge all sonar manufacturers and users to stop using frequencies below 150 kHz, and ban such frequencies if voluntary measures are insufficient.

## International protection of the Baltic Sea harbour porpoise

The Baltic Sea harbour porpoise is watched by several international directives, regulations and agreements. In the Habitats Directive (Council Directive 92/43/EEG), the European Commission has listed the species as in need of Special Areas of Conservation, and in need of strict protection. Council Directive 812/2004 concerns bycatches of dolphins and porpoises. According to this directive, it is forbidden to use salmon drift nets in the Baltic Sea, acoustic deterrence devices (“pingers”) must be used in some bottom set gillnet fisheries, and bycatch observers are obligatory in others. However all countries do not fulfil the obligations of protected areas and monitoring in the Baltic Sea, and the fisheries obliged to use pingers and observers only constitute a very small part of the total fishery.



In the Marine Strategy Framework Directive (MSFD, Directive 08/56/EC), eleven descriptors have been selected for assessment of the status of Europe’s seas and oceans. Examples of indicators that are directly relevant for harbour porpoises and their habitat are maintenance of biodiversity, non-harmful levels of pollutants, and underwater noise.

In addition to these EU directives, there are two important international agreements. The Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) has the aim of achieving and maintaining a favourable conservation status for small cetaceans in the agreement area, and has developed action plans that outline recommendations and/or actions for the three harbour porpoise populations in the Baltic region.

The Helsinki Commission (HELCOM) is an environmental regional sea convention. To assess the status of the Baltic Sea environment, HELCOM is developing biodiversity core indicators, some of which focus on marine mammals. HELCOM has also adopted a recommendation for the protection of the Baltic Sea harbour porpoise.

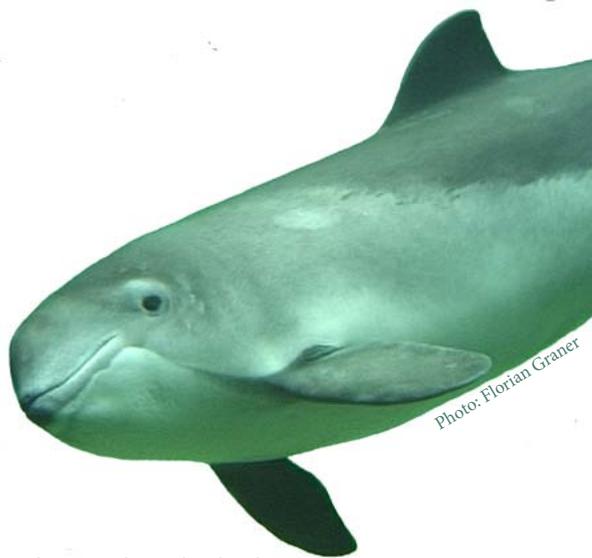


Photo: Florian Graner

## If you see a porpoise

If you see a live porpoise at sea or a dead animal washed ashore, reporting your sighting will help researchers gather more information about this species. Below you will find contact information for organisations in all countries around the Baltic Sea that collect data on porpoises, dead or alive:

Country	Organisation	Website	Email address
Sweden	Swedish Museum of Natural History	<a href="http://www.nrm.se/tumlare">www.nrm.se/tumlare</a>	<a href="mailto:tumlare@nrm.se">tumlare@nrm.se</a>
Finland	Ministry of the Environment	<a href="http://www.itameriportaali.fi/fi/pyoriainen/fi_FI/havaintolomake/">http://www.itameriportaali.fi/fi/pyoriainen/fi_FI/havaintolomake/</a>	<a href="mailto:penina.blankett@ymparisto.fi">penina.blankett@ymparisto.fi</a> <a href="mailto:olli.loisa@turkuamk.fi">olli.loisa@turkuamk.fi</a> <a href="mailto:kai.mattsson@sarkanniemi.fi">kai.mattsson@sarkanniemi.fi</a>
Estonia		<a href="http://loodus.keskkonnainfo.ee/lva/">http://loodus.keskkonnainfo.ee/lva/</a>	
Latvia	Dabas Dati, Nature Protection Agency, Latvian Museum of Natural History	live: <a href="http://www.dabasdati.lv">www.dabasdati.lv</a> dead: <a href="http://www.daba.gov.lv">www.daba.gov.lv</a> , <a href="http://www.dabasmuzejs.gov.lv">www.dabasmuzejs.gov.lv</a>	
Lithuania	State food and veterinary service, Lithuanian Marine Museum	dead: <a href="http://vmvt.lt/">http://vmvt.lt/</a> live or dead: <a href="http://www.muziejus.lt/">http://www.muziejus.lt/</a>	
Russia	Baltic Fund for Nature	<a href="http://www.bfn.org.ru">www.bfn.org.ru</a>	<a href="mailto:bfn@bfn.org.ru">bfn@bfn.org.ru</a>
Poland	Hel Marine Station, University of Gdańsk	<a href="http://www.morswin.pl">www.morswin.pl</a>	<a href="mailto:hel@ug.edu.pl">hel@ug.edu.pl</a>
Germany	German Oceanographic Museum	<a href="http://www.meeresmuseum.de/sichtungen">www.meeresmuseum.de/sichtungen</a>	<a href="mailto:sichtungen@meeresmuseum.de">sichtungen@meeresmuseum.de</a>
Denmark	Hvaler.dk	<a href="http://www.hvaler.dk">www.hvaler.dk</a>	<a href="mailto:hvaler@hvaler.dk">hvaler@hvaler.dk</a>



Photo: Florian Graner

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- <sup>18</sup>Teilmann, J. & Carstensen, J. (2012). *Environ. Res. Lett.* 7, 045101.

## About CCB

In 1990, non-governmental organizations from countries around the Baltic Sea united and established Coalition Clean Baltic (CCB) in order to cooperate in environmental issues concerning the Baltic Sea. CCB is a network for cooperation and coordination between environmental NGOs active in the Baltic Sea catchment area. CCB is politically independent and consists today of 22 member organisations.

CCB has three distinguishable functions:

- Support and coordinate the network of NGOs and being a link between the local and international level
- Support and help fund projects in CCB organizations
- Represent the CCB members in international fora such as HELCOM and BS RAC

## CCB contact information

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