SPECIES INFORMATION SHEET

Phoca hispida botnica

English name: **Baltic ringed seal**	Scientific name: ***Phoca hispida botnica***	
Taxonomical group: Class: Mammalia Order: Carnivora Family: Phocidae	Species authority: (Schreber, 1775)	
Subspecies,Variations,Synonyms: *Phoca hispida* (Schreber,1775) Subspecies *Pusa hispida hispida* Schreber, 1775 Subspecies *Pusa hispida lagodensis* Nordquist, 1899 Subspecies *Pusa hispida ochotensis* Pallas, 1811 Subspecies *Pusa hispida saimensis* Nordquist, 1899	Generation length: 15 years	
Past and current threats (Habitats Directive article 17 codes): Bycatch (F03.02.05) , Contaminant pollution (H03), Climate change (mild winters; M01)	Future threats (Habitats Directive article 17 codes): Climate change (reducing ice; M01), Bycatch (F03.02.05), Contaminant pollution (still affects reproduction; H03), Water traffic (D03)	
IUCN Criteria: **A3c**	**HELCOM Red List Category:**	**VU Vulnerable**
Global / European IUCN Red List Category LC / LC (species level)	Habitats Directive: Annex II	

Protection and Red List status in HELCOM countries:
In EU waters, this species is protected by the Habitats Directive and listed in its Annex V, subject of special conservation measures also in Russia (Red Data Book of the Russian Federation).

Protection in HELCOM countries:
Denmark: –
Estonia: The species is protected by Nature Conservation Act, all known important areas for the species are under national protection, hunting is not allowed.
Finland: The species is considered a game animal but hunting permits have not been granted since 1988. Killing seals to avoid damage (e.g. to fisheries), however, is possible. The maximum annual quota is 30 animals,but only a few animals have been killed yearly.
Germany: All hunting of seals is forbidden in Germany.
Latvia: –
Lithuania: –
Poland: The species is under strict protection in Poland. Disturbing, catching or killing are forbidden. Species is recognized as requiring active protection.
Russia: Since 1970s hunting on seals in the Russian part of the Baltic Sea is fully prohibited; Ringed seal is included into the Red Data Book of the Russian Federation.
Sweden: The species is protected under the Species Protection Act 4 §, paragraphs 2 and 4. This means that it is forbidden to disturb the species or disturb or damage its habitats. According to the Hunting Act 3§, it is forbidden to capture of kill the species unless it is allowed in other parts of the hunting legislation.

Red List status in HELCOM countries:
Denmark: –, Estonia: EN, Finland: NT, Germany: –, Latvia: –, Lithuania: –, Poland: –, Russia: 2 (declining population), Sweden: NT

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Distribution and status in the Baltic Sea region

The estimated abundance of all Baltic ringed seals is roughly at the level of 10 000. The count results of 7000 during 2013 suggest that there are about 8 750–11 700 ringed seals in the Gulf of Bothnia (Härkönen personal communication), whereas estimated numbers from the number of counted individuals in the Gulf of Finland and the Gulf of Riga were 50–100 (Mikhail Verevkin, pers. comm.) and about 1 000 –1 500, respectively (Mart Jüssi, pers. comm.). Boat surveys in 2000's and aerial censuses in the Archipelago Sea after two good ice winters 2010 and 2011, lead to an estimate of 140–300 individuals in the area (Miettinen et al. 2005, Nordström et al. 2011). It has to be remembered, however, that the estimates are based on an estimated percentage of 60–80 % of individuals seen in the counted area.

Ringed seal. Photo by Lee Cooper.

Population models (based on bounty statistics from Finland and Sweden, and data from Estonia) suggest a population size of roughly 180 000–220 000 at the beginning of the century (Hårding & Härkönen 1999). However, it should be noted that bounty statistics may contain sources of error, decreasing reliability of the estimates. Furthermore, it is not known what the carrying capacity of the Baltic Sea is today.

The Baltic Sea population is considered to be of sub-regional importance in the HELCOM area. In EU waters, this species is protected by the Habitats Directive and listed in its Annexes II and V.

The Baltic ringed seal sub-species has been classified as Vulnerable by the IUCN in 2009. While the HELCOM List of threatened and/or declining species uses HELCOM sub-regions, HELCOM Recommendation 27-28/2 identifies two management units for the Baltic ringed seals: Gulf of Bothnia on one hand and the Archipelago Sea, Gulf of Finland and Gulf of Riga ringed seals on the other hand. According to ICES WGMME Report (2005) the number of ringed seals in the Gulf of Bothnia, where the main part of the Baltic population occurs, is increasing steadily. The ringed seal population in the Bothnian Bay has been increasing at a rate of a 4.58 % per year since 1988 (Hårding & Härkönen 1999, Karlsson et al. 2009, Härkönen personal communication), which is less than half of the intrinsic capacity (10%, Karlsson et al. 2007). In Gulf of Riga and the Gulf of Finland there was no increase between 1996 and 2003 (Karlsson et al. 2007). More recently, the estimated numbers in the Gulf of Finland have decreased from 300 to less than 100 (Rustam Sagitov & Mikhail Verevkin, pers. comm.). According to the 2005 ICES report, the southern sub-population has a worse conservation status. There is no sign of recovery and there is indication of a recent decline. HELCOM *ad hoc* SEAL Expert Group has expressed its concern about the situation in the southern management unit. According to the EU's Habitats Directive Art. 17 reporting, the population and conservation status in the whole Baltic Sea is assessed as unfavourable.

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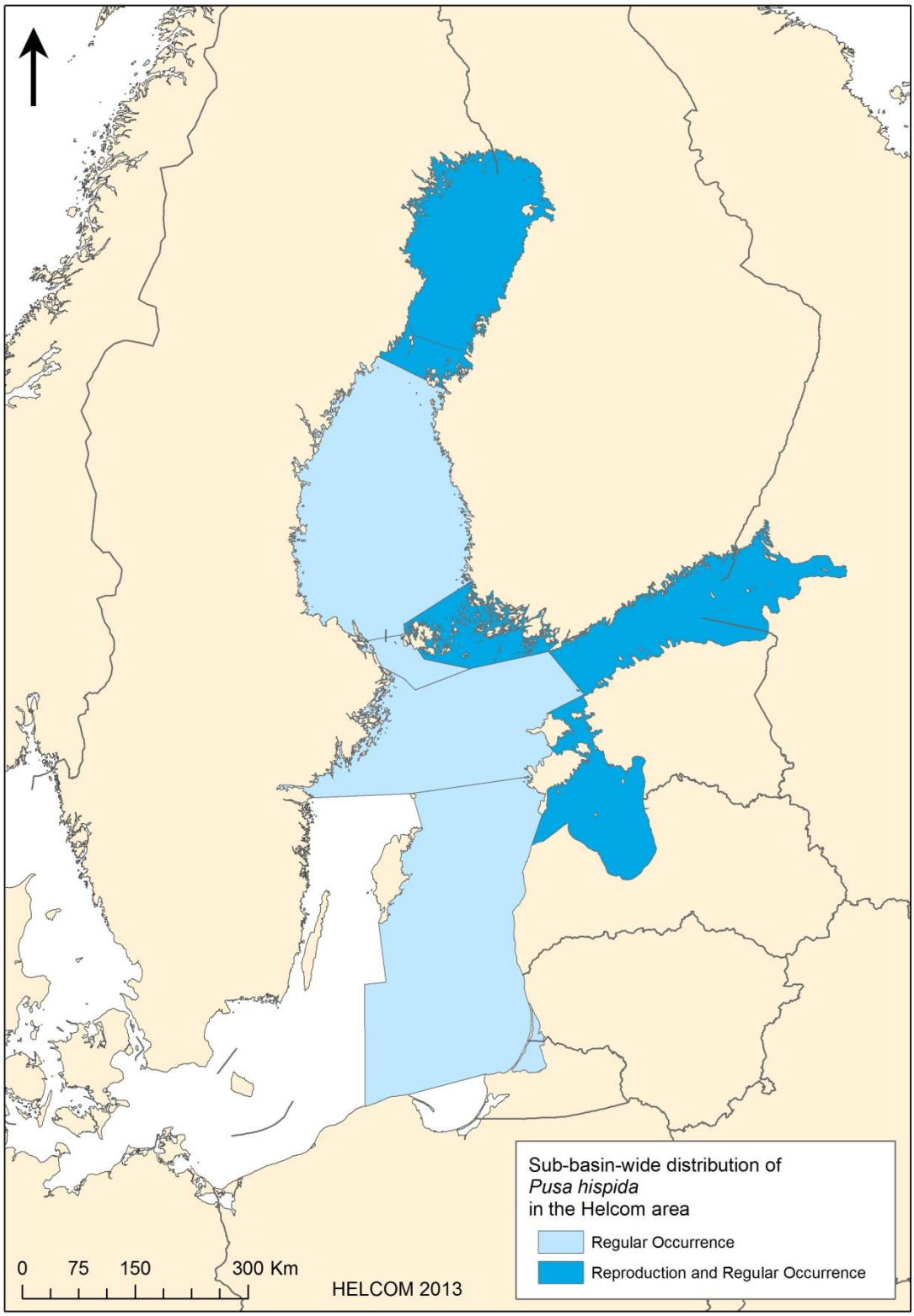
Distribution map



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Habitat and ecology

Ringed seals are mainly found in the Arctic. The Baltic sub-populations are "land-locked" and exist as geographically isolated postglacial relicts, not only in the Baltic Sea itself, but also in the lakes Ladoga (*P.h. ladogensis*) and Saimaa (*P.h. saimensis*). They grow to an average length of 1.5–1.75 meters and a mass of less than 120 kilograms, and can reach a maximum age of 48 years[1]. Females become sexually mature between 3 and 6 years after which they normally generate one pup every year. The moulting season is from mid-April to early May[2]. Ringed seals feed on a wide variety of small fish and invertebrates.

Description of major threats

The population was heavily exploited until the 1960s, after which the emerged organochlorine contamination began to cause reproductive failures. During 1970–80, the population was at its minimum: about 5000 individuals in the Baltic Sea (Hårding & Härkönen 1999).

Although ringed seal is still suggested to be affected by exposure to environmental toxins, the exposure level and the health status of the Baltic ringed seal has clearly improved during the last decades (Nyman et al. 2002, Routti 2009). The prevalence of uterine occlusions has decreased drastically, and the pregnancy rate has more than doubled since the 1980s. The last known case of uterine occlusion was a 17-year-old female in 2011. Altogether there have been five cases (= 9% of > 4-year old females) in 2000s in elderly females (15–26 years), which suggests that the occlusions are a reflection of a previous higher contaminant exposure in the older generation (in the 1990s occlusions occurred in 36% of adult females). Despite this improvement, however, it is plausible that the current pregnancy rate has not yet reached its pristine levels. It is not clear if the still lowered pregnancy rate is explained by environmental toxins. It has to be taken into consideration that the sample size is very small for calculating the pregnancy rates.

Climate change is a potential threat to the Baltic ringed seal, an arctic seal species adapted to breeding on ice. However, ringed seals have been observed to breed on islets and skerries in the Baltic Sea area in winters with poor ice. Nevertheless, pup mortality rate has been shown to be extremely high in ringed seal pups born without shelter from lairs (Lydersen & Kovacs 1998). Future scenarios of climate change will reduce the available breeding ice for Baltic ringed seals, and this feature alone will impose a severe limitation on ringed seal population growth rate (Sundqvist et al. 2012). Climate change is of particular concern for the southern distribution range (Gulf of Riga, Gulf of Finland and Archipelago Sea), where mild winters might have already significantly affected the reproductive success of these populations (ICES WGMME Report 2005, Sundqvist et al. 2012) which are adapted to ice breeding. Other threats include entanglement in fishing gear (by-catch), a wide range of disturbances and increasing shipping, such as ice breaking vessels destroying the pack ice habitat (Stenman et al. 2005).

Assessment justification

All Baltic seal populations have been recently (2010) evaluated by the International IUCN seal expert group (Kovacs et al. 2012). In the IUCN assessment, the Baltic ringed seal was classified VU on the basis of past population decline which has not ceased in parts of the area of occupancy, as well as the future loss of sea ice related to climate change. In the longer run, population size declines are unanimously expected relating to reduction of the sea ice. The majority of the Baltic ringed seals live in the Bothnian Bay where the sea ice will decline the slowest.

Even though the Baltic ringed seal would not meet a threatened category due to the actual overall population size development in the future, there is a common understanding that the decline in its

extent of occurrence may well exceed 30% over the next 45 years as the ringed seal will suffer more severely from effects of climate change in its southern distribution range. Therefore the Baltic ringed seal is categorized as VU, at least according to A3c.

Recommendations for actions to conserve the species

National seal conservation and management plans should be developed in order to ensure a proper conservation and management of all sub-populations during all life stages (ICES 2005). According to ICES WGMME Report (2005), it is important to address possible impacts on ringed seals when planning the use and exploitation of marine areas such as infrastructure development (e.g. shipping, oil transit, fixed links and wind parks). Regulations for shipping should in particular be implemented for ice breaking vessels during winter time. Further improvement of long-term monitoring and research programmes is needed. Ringed seals in the southern distribution range require more attention because current knowledge about vital population parameters is missing (ICES 2005). Further, the responsible national authorities should develop and coordinate their monitoring strategies regarding shared seal populations with neighbouring countries. HELCOM Recommendation 27-28/2 further recommends the Contracting Parties to collaborate within the HELCOM seal expert group to identify and establish a network of protected areas for important actual and potential seal habitats across the Baltic Sea area (re. the EU Habitat Directive, Annex II), and attempt to harmonise the regulations and monitoring of these conservation areas.

Common names

Denmark: ringsæl, Estonia: viiger, viigerhüljes, Finland: Itämeren norppa, Germany: Ringelrobbe, Latvia:–, Lithuania: žieduotasis ruonis, Poland: foka obrączkowana/nerpa obrączkowana, Russia: кольчатая нерпа/нерпа кольчатая, Sweden: vikare

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[1] http://marinebio.org/species.asp?id=185 and Härkönen, T (personal communication)

[2] http://marinebio.org/species.asp?id=185