



## Baltic Marine Environment Protection Commission

*Ad hoc* Seal Expert Group

Tallinn, Estonia, 10-12 October 2018

SEAL 12-2018

---

<b>Document title</b>	Report of the HELCOM Seal health team 2017
<b>Code</b>	3-1
<b>Category</b>	INF
<b>Agenda Item</b>	3 – Activities under the Seal Expert Group teams
<b>Submission date</b>	27.9.2018
<b>Submitted by</b>	Health team

---

### Background

The report summarizes findings in relation to the health status of marine mammals from the different countries in the HELCOM area.

### Action requested

The Meeting is invited to take note of the information.

## Report of the HELCOM Seal Health Team 2017

### Members of the HELCOM Seal Health Team

Country/Observer	Name	E-mail address
Team Leader		
Germany	Ursula Siebert	ursula.siebert@tiho-hannover.de
Team Members		
Denmark	Morten Tange Olsen	morten.olsen@snm.ku.dk
Denmark	Mette Sif Hansen	mesi@vet.dtu.dk
Denmark	Rune Dietz	rdi@dmu.dk
Denmark	Anders Galatius	agj@bios.au.dk
Estonia	Ivar Jussi	ivar@promare.ee
Estonia	Mart Jussi	Mart.Jussi@gmail.com
Finland	Marja Isomursu	marja.isomursu@evira.fi
Finland	Kaarina Kauhala	kaarina.kauhala@luke.fi
Germany	Kristina Lehnert	kristina.lehnert@tiho-hannover.de
Germany	Michael Dähne	Michael.daehne@meeresmuseum.de
Latvia	Valdis Pilats	valdis.pilats@daba.gov.lv
Lithuania	Ignas Kazlauskas	i.kazlauskas@muziejus.lt
Lithuania	Vaida Surviliene	vaida.surviliene@gmail.com
Poland	Iwona Pawliczka	iwona.pvp@ug.gda.pl
Russia	Mikhail Verevkin	vermiv@yandex.ru
Sweden	Sara Persson	sara.persson@nrm.se
Sweden	Karin Hårding	karin.harding@bioenv.gu.se
Sweden	Britt-Marie Bäcklin	britt-marie.backlin@nrm.se

## Work of the Seal Health Team

Since the last Seal Health Team report the main progress of the Seal Health Team was achieved in the context of the ongoing BALTHEALTH project. The number of marine mammals necropsied by educated veterinarian pathologists is still limited. No progress has been made on “health indicators” since the last meeting in Goteborg, because the further strategy of the leading country Sweden has not been communicated. But the way forward is to still evaluate the proposed indicators and add additional ones by combining all data accessible in the HELCOM area. The ITAW still proposes to lead this effort or to support Sweden in their activity.

A meeting has been held on the 24.07.2018 at the ITAW, Büsum, Germany to further develop the input of stranding networks and pathological findings to the needs of ASCOBANS, HELCOM and OSPAR.

BALTHEALTH is an EU BONUS funded project running from 2017-2020 in collaboration between 11 Danish, German, Swedish and Finnish partners. In the project, the Baltic serves as a unique model ecosystem in which top predators can provide early warnings for ecosystem health. The main focus of the project BaltHealth is therefore to investigate spatial and temporal trends in multilevel food web impacts of chemical substances, climate change, zoonotic diseases, and their interactions. The consortium, representing four BONUS countries, provides a unique synergism of extensive ecological, toxicological and veterinary expertise. The consortium has access to state of the art facilities and techniques, as well as decades of acquired samples and data, which will be used to develop novel indicators of animal health and good ecological status. Once having defined food web interactions between key ecological and commercial species, separate work packages will investigate food web dynamics of energy and hazardous substances, linkages to pathological, immune and endocrine effect biomarkers, as well as important infectious and zoonotic diseases. All data will feed into an integrated model of health effects of multiple stressors on the Baltic food web. The BaltHealth outcome will furthermore provide novel knowledge for risk assessment by Baltic stakeholders, including HELCOM, ICES, OSPAR and ASCOBANS, and will have large impact through education, public media and the participating national history museums.

The Volkswagen Foundation is supporting a cooperative project “Research in museums” from 2015-2019 to examine changes in the health of marine mammals in the North and Baltic Sea that have taken place over the past decades. In addition to the University of Veterinary Medicine Hannover, the Zoological Institute and the Zoological Museum of Hamburg University, the German Marine Museum in Stralsund, the Zoological Institute and Museum at the University of Kiel, Hildesheim University and the National History Museum in Denmark and the Swedish Museum of Natural History are involved in the project. Germany’s museums and universities and the cooperating museums in Sweden and Denmark have unique collections of skeletons as well as other samples of marine mammal species. The material has been collected over decades and allows analysing various parameters in order to record whether the health or populations of these species have changed in different areas and over long time periods. Bone and pelt material spanning several decades is investigated for e.g. pathological changes, bone mineral density, trace elements and heavy metals. Blubber samples are analysed for PCB exposure. In addition, changes in the food spectrum and search for stress markers to observe whether environmental conditions have changed over time are analysed using dental microtexture. Pathogens like virus are analysed phylogenetically and parasites categorized.

## The following lists additional information from the different countries.

### Denmark

Morten Tange Olsen, Natural History Museum of Denmark

Mette Sif Hansen, National Veterinary Institute

Charlotte Bie Tøstesen, Fisheries and Maritime Museum Esbjerg

Anders Galatius, Rune Dietz, Christian Sonne, Aarhus University

### *General information*

In Denmark, marine mammal stranding network, health monitoring and assessments are conducted by the Fisheries and Maritime Museum in Esbjerg (FIMUS), Aarhus University (AU), the National Veterinary Institute (DTU VET), the National History Museum of Denmark (NHMD) and the Danish Nature Agency.

### *Seal strandings*

In 2017 a total of 306 harbour seals (*Phoca vitulina*) were registered, of which 16 were autopsied. The results of the autopsies showed no signs of serious infectious diseases and none of the seals were tested positive for Phocine Distemper Virus. A total of nine grey seals (*Halichoerus grypus*) were registered in 2017, of which two were autopsied. Like the harbour seals none of the autopsied grey seals showed signs of serious infectious diseases. The number of autopsied grey seals was too small to draw any conclusions on the grey seal population's health status in Denmark.

### *Whale strandings*

In 2017 a total of 74 harbour porpoises (*Phocoena phocoena*) were registered, but only seven harbour porpoises were autopsied. The autopsied harbour porpoises showed no signs of serious infectious diseases and the number of autopsied harbour porpoises was too small to draw any conclusions on the harbour porpoise population's health status in Denmark. In addition to porpoises, four white-beaked dolphins (*Lagenorhynchus albirostris*) stranded along the Danish coastline. Three of them were collected and autopsied. Two minke whales (*Balaenoptera acutorostrata*) were registered by the National Contingency Plan. One of them was so decayed that only tissue samples were collected. The other one was autopsied and showed a heavy parasite load. Finally, three unidentified - due to decomposition - baleen whales and one toothed whale stranded on the west coast of Denmark.

### *Ongoing and finalised health research*

#### Blubber thickness

In 2018, the report on a 3-year project monitoring blubber thickness of Danish populations of grey seal, harbour seal and harbour porpoise was submitted to the Danish Environmental Protection Agency by Galatius and co-authors. Data from stranded, hunted, bycaught and live caught animals were included, and data from before the monitoring period were collected to investigate temporal trends. After correction for season, sex and age, data on most populations were too scarce to draw firm conclusions. In Kattegat harbour seals, where data was adequate, a decline in blubber thickness since 2011 was indicated. The collected data have been submitted to HELCOM for potential support for the core indicator Nutritional Status of Seals.

#### Harbour seal skull pathologies

In order to study the effects of environmental pollution on the health of the harbour seal population, the occurrence of *periodontitis* was investigated in 380 skulls and 141 mandibles of animals from the Wadden Sea, the Limfjord and Kattegat (Danish and Swedish part), collected 1970-2014. The skulls were examined for pathological lesions (exostosis, periodontitis and enlarged foramina) and in addition the bone mineral density (BMD) was analysed in a subsample (n=34) using CT-scans. The macroscopic examination revealed (with the exception of the Swedish part of Kattegat) a significant increase of pathological lesions over the study period of 1981-2014. The examination of BMD showed that median BMD measured at multiple sites was highest in the healthy skulls compared to skulls with one or more of the lesions; *exostosis*, *periodontitis* and/or enlarged *foramina*. A discriminant analysis allowed very high discriminatory capacity to separate healthy skulls from the skulls with pathologies, simply by the utilization of the BMD data.

#### ***Publications on marine mammal health in the HELCOM region***

Galatius, A, Kyhn, LA, van Beest, F. 2018. Spæktykkelse som indikator for tilstand hos danske havpattedyr [Blubber thickness as health indicator for Danish marine mammals]. Scientific Report from DCE – National Centre for Environment and Energy nr 269. Aarhus University, Department of Bioscience, 38pp.

Pertoldi, C., Jensen, L., Olsen Alstrup, A.K., Lajord Munk, O., Bæk Pedersen, T., Sonne, C., Dietz, R., Daugaard-Petersen, T., Kortegaard, H.E., Tange Olsen, M., Hårding, K., Hammer Jensen, T., 2017. Prevalence of skull pathologies in European harbour seals (*Phoca vitulina*) during 1981-2014. Mamm Res DOI 10.1007/s13364-017-0340-2

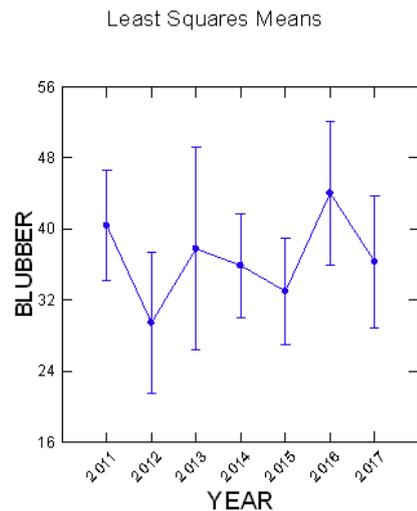
Jo WK, Grilo ML, Wohlsein P, Andersen-Ranberg E, Hansen MS, Kinze CC, Hjulsager CK, Olsen MT, Lehnert K, Prenger-Berninghoff E, Siebert U, Osterhaus A, Baumgärtner W, Jensen LF, van der Vries E (2017) Dolphin morbillivirus in a fin whale, Denmark, 2016. *Journal of Wildlife Diseases*, doi:10.7589/2016-11-246

## Finland

### Following information about grey seals from Finland was submitted by Kaarina Kauhala

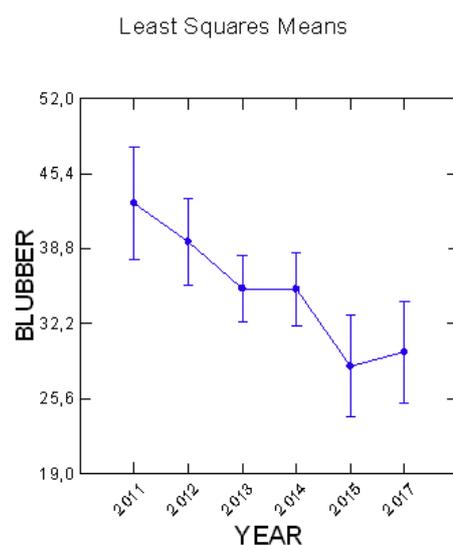
#### Subadults:

No significant yearly variation was found in the blubber thickness of hunted sub-adults in Finland from 2011 to 2017. Significant variation was found between months when year was excluded from the model. No significant variation between sexes. The weighted mean for the last six years: 35.8 mm (SE = 3.60, n = 68).



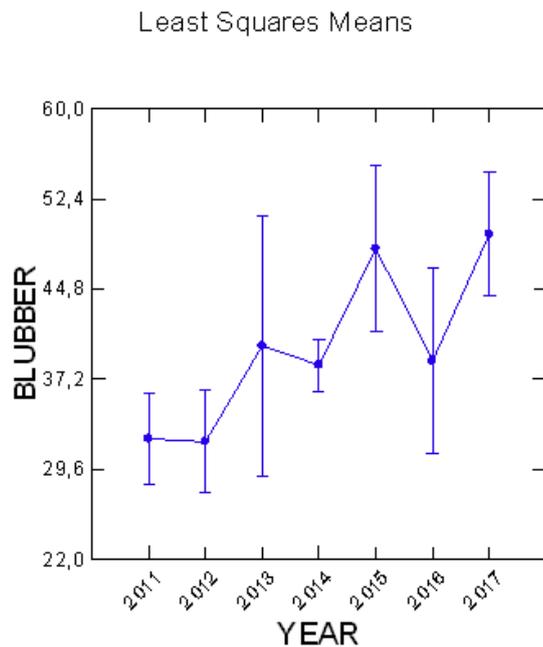
#### Pups:

I also want to show you what is happening to the pups in the Gulf of Finland. Blubber thickness of hunted pups from the Gulf of Finland (where most of our pups come from) declined from 2011 to 2017. There was no significant variation between sexes or months. The weighed mean for the last six years: 34.4 mm (SE = 1.80, n = 83).



#### Adult females from the Bothnian Bay:

On the contrary, blubber thickness of adult females from the Bothnian Bay (in Finland most adult females are hunted there) increased from 2011 to 2017. Data are only from spring. Mean for the last six years = 39.2 mm (SE = 1.81, n = 84).



Birth rate and ovulation rate from Finland, data from spring, females 7-25 years old:

Year	CA	N	Birth rate	CL	N	Ovulation rate
2012	17	23	0.74	21	22	0.95
2013	4	5	0.80	4	4	1.0
2014	49	52	0.94	46	49	0.94
2015	9	9	1.0	7	8	0.88
2016	3	4	0.75	3	4	0.75
2017	11	13	0.85	13	13	1.0
<b>MEAN</b>	<b>93</b>	<b>106</b>	<b>0.88</b>	<b>94</b>	<b>100</b>	<b>0.94</b>

## Germany

### Schleswig-Holstein

In 2017 from the coast and waters of Schleswig-Holstein 94 harbour porpoises were found dead. Of those 85 animals stranded and two were by-caught animals handed over by fishermen and seven were suspected based on pathological investigations as by-caught. Comparing to the numbers from 2016 the number of stranded harbor porpoises has dropped by 85. It is not possible to determine if that is due to a decreased number of animals using the waters of Schleswig-Holstein as monitoring data are not collected.

Since April 2017 about 1,600 PALs (Porpoise Alert Systems) have been deployed in German waters with the aim of reducing the number of by-catches. So far, no investigations are launched to verify the function of the devices and the effects on harbor porpoises.

In addition to porpoises, nine harbour seals and six grey seals were found stranded. The slightly increasing number indicates that an increasing number of seals is frequenting the waters of Schleswig-Holstein. Among the necropsied marine mammals from the waters of Schleswig-Holstein no indication for morbillivirus or Influenza-virus was found.

As part of the BONUS BaltHealth-project, samples from ringed and grey seals from Swedish and Finnish waters have been collected in cooperation with colleagues from those countries and are currently being investigated for infectious disease as well as immune, endocrine and reproductive parameters to further develop bioindicators for the HELCOM region.

### ***Publications on marine mammal health in the HELCOM region***

Andreasen H., Ross S.D., Siebert U., Andersen N.G., Ronnenberg K., Gilles A., 2017. Diet composition and food consumption rate of harbour porpoises (*Phocoena phocoena*) in the western Baltic Sea, *Marine Mammal Science*, <http://dx.doi.org/10.1111/mms.12421>

Heers T., van Neer A., Beckera A., Gross S., Anderson Hansen K., Siebert U., Abdulmawjood A., 2018. Loop-mediated isothermal amplification (LAMP) as a confirmatory and rapid DNA detection method for grey seal (*Halichoerus grypus*) predation on harbour porpoises (*Phocoena phocoena*). *Journal of Sea Research*, 140, 32-39.

Heers T., van Neer A., Becker A., Grilo M.L., Siebert U., Abdulmawjood A., 2017. Loop-mediated isothermal amplification (LAMP) assay - A rapid detection tool for identifying red fox (*Vulpes vulpes*) DNA in the carcasses of harbour porpoises (*Phocoena phocoena*), *Plos One*, 1-13

Jo W.K., Grilo M.L., Wohlsein P., Andersen-Ranberg E.U., Hansen M.S., Kinze C. C., Hjulsager C. K., Olsen M. T., Lehnert K., Prenger-Berninghoff E., Siebert U., Osterhaus A., Baumgärtner W., Jensen L. F., van der Vries E., 2017. Dolphin Morbillivirus in a Fin Whale (*Balaenoptera physalus*) in Denmark, 2016, *Journal of Wildlife Diseases* 53, 4, <http://dx.doi.org/10.7589/2016-11-246>

Morell M., Lehnert K., IJsseldijk L.L., Raverty S. A., Wohlsein P., Gröne A., André M., Siebert U., Shadwick R.E., 2017. Parasites in the inner ear of harbour porpoise: cases from the North and Baltic Seas, *Diseases of Aquatic Organisms*, Vol. 127: 57–63, <https://doi.org/10.3354/dao03178>

Rungelrath V., Wohlsein J.C., Siebert U., Stott J., Prenger-Berninghoff E., von Pawel- Rammigen U., Valentin-Weigand P., G. Baums C., Seel J. 2017. Identification of a novel host-specific IgG protease in *Streptococcus phocae* subsp. *Phocae*. *Veterinary Microbiology*, 201, 42-48

Sonne C., Andersen-Ranberg E., L. Rajala E., S. Agerholm J., Bonefeld-Jørgensen, E., Desforges J-P., Eulaers I., M. Jenssen B., Koch A., Rosing-Asvid A., Siebert U., Tryland M., Mulvad G., Härkönen T., Acquarone M., S. Nordøy E., Dietz R., Magnusson U., 2018. Seroprevalence for *Brucella* spp. in Baltic ringed seals (*Phoca hispida*) and East Greenland harp (*Pagophilus groenlandicus*) and hooded (*Cystophora cristata*) seals. *Veterinary Immunology and Immunopathology*, 198, 14-18

Waindok P., Lehnert K., Siebert U., Pawliczkac I., Strube C., 2018. Prevalence and molecular characterisation of Acanthocephala in pinnipedia of the North and Baltic Seas. *Elsevier IJP Parasites and Wildlife*, 7, 34-43

Wisniewska D M., Johnson M., Teilmann J., Siebert U., Galatius A., Dietz R., Teglberg Madsen P., 2018. High rates of vessel noise disrupt foraging in wild harbour porpoises (*Phocoena phocoena*). *The Royal Society*, <http://dx.doi.org/10.1098/rspb.2017.2314>

### Mecklenburg-Prepommeranian

For Mecklenburg-Prepommeranian no contribution has been submitted.

### **Lithuania**

There were no significant changes in management section of grey seals in Lithuania in 2018. There were 54 individuals found dead on Lithuanian coast, majority were found in June. There were no identification of sex this time, but again, it seems that majority were males. Some animals were weighted: 3 animals were above 20 kg, 25 animals were above 50 kg, 10 animals above 100 kg, 1 animal was of 250 kg, 15 animals were not weighted. Still no measures were taken to inspect animals to more detail, no dissection, sex identification and etc., probably due to lack of financial funding.

22 sightings of live grey seals and possibly 2 harbor seals were recorded in 2018. Of these sightings 14 pups were brought to the rehabilitation at Lithuanian Sea Museum and were not released so far.

The construction of the rehabilitation center for marine mammals and birds should start in spring of 2019, however the project itself was reduced significantly due to high costs of the building.

A new project testing grey seal safe/resistant gear has started on 2018 and should finish on 2020. Pontoon traps will be tested on Lithuanian coast at two areas with different sea bed.

### **Russia**

Mikhail Verevkin, reports that there is no new information on the health status of seals from Russia.

### **Poland**

In 2018 (until September 18), 246 dead seals were found stranded on the Polish coast, 5 of them with clear bycatch signs (netmarks or/and nets). Most of the animals were juveniles and pups of the year (80%) in a good nutritional state. Majority of carcasses were found in June (153 individuals) and July (54 individuals). They were mainly grey seals (235), 2 common seals and 9 unidentified seals due to the advanced degree of body decomposition. 18 individuals animals had several marks of illegal intentional human intervention (head injuries, cut of abdominal cavity).

According to the state of decomposition 20 seals were selected and collected for postmortem analysis: 16 young seals (including 14 juveniles) and 4 adults. So far, 10 animals have been dissected and sampled. Four of them had head injuries and cut abdominal cavity, and one of them had crushed head.

### **Sweden and Estonia**

For Sweden and Estonia no information was subm