

Harbor porpoise Health status and causes of death 2019

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1. Material

Altogether 21 harbor porpoises were collected during 2019 and 18 of them have been necropsied and are included in this report. The remaining three will be necropsied in 2020.

Seven porpoises were found in the Kattegat area, one from the Skagerrak, four from the Baltic and six from Öresund. Five of them were adults (one female and four males), ten were immature and three were calves.

Three of the porpoises died during spring, eight during the summer months, four during fall and three during winter (Figure 1).

Samples from all porpoises were taken for the Environmental Specimen Bank for future contaminant analysis and to the National Veterinary Institute's (SVA) biobank for future studies on pathogens (e.g. viruses, bacteria) (various tissues).

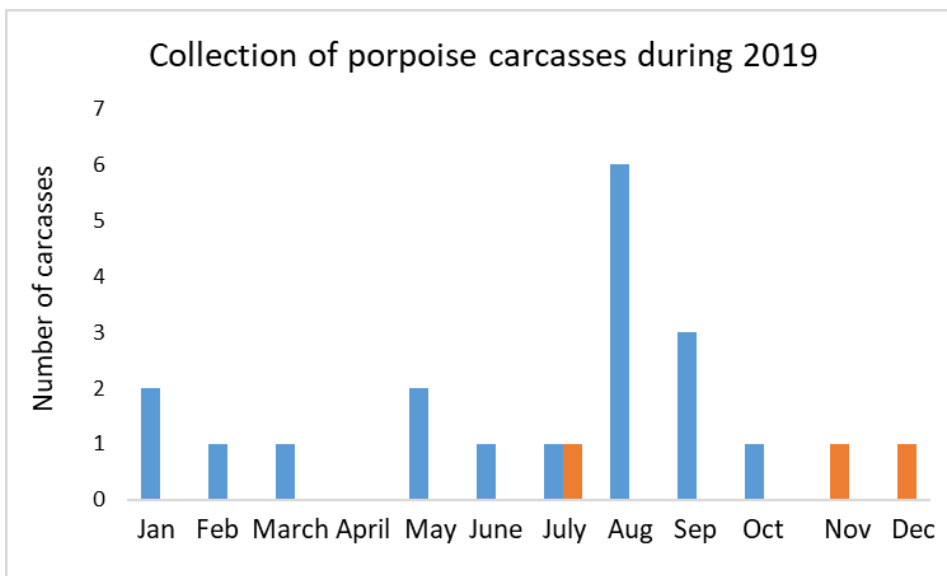


Figure 1. Number of collected porpoises for necropsy vs month. Three are not yet necropsied (in orange) and not included in this report.

2. Results

See Table 1 for detailed information on the specimens that were examined by necropsy. If the carcass were scavenged (typically by birds) or are severely decomposed, it is often not possible to determine the cause of death, nor get full set of data of weight, blubber thickness, organ weights etc.

Five porpoises died from trauma. Four of the animals were immature and the fifth was a calf. In one case, clear bite wounds on the peduncle (tail) were consistent with predation. In another, traumatic injuries were seen that could be consistent with a turbine or propeller, or possibly a large predator. In two other animals, it is possible that the injuries were caused by predation, but this could not be definitively determined. It is difficult to differentiate predation from post-mortem scavenging, but the tissue defects in these two animals were consistent with what has been described for porpoise predation by grey seals in the North Sea. Wound

margins are sharp and the animal is typically in good condition. Head, tail or flipper 'marks' (bite or claw wounds) are also almost always seen. Unfortunately, presence of these tell-tale 'marks' were obscured by scavenger damage after death. Additionally, both were found on the west coast (Skåne and Halland), where grey seals are not common. The last animal that died from trauma, an immature porpoise, was found in the water intake of a nuclear power plant. It had traumatic bruising, but there were also changes consistent with drowning. How exactly the trauma occurred is not known, although an accident is possible.

Only one adult female was necropsied in 2019, she died from pneumonia (parasitic and bacterial). She was lactating and in poor nutritional status. We also found sperm in her vagina.

One porpoise was known to have been bycaught and for another two, bycatch could not be ruled out.

It was not possible to determine cause of death for several porpoises due to the fact that they were decomposed and scavenged. One calf, a neonate, was abandoned.

Nine of the carcasses were screened for salmonella infection in the lungs and all were negative. Five specimens were screened for Brucella bacteria and none were detected in the lung by PCR. Significant bacteria isolated from the lungs included streptococci and *Erysipelothrix rhusiopathiae*, the latter of which is also zoonotic (can infect humans).

Table 1. Data and biological information on the porpoises.

NRM nr	Date	Age group	Weight kg (minimum)	Length cm	Sex	Area	Cause of death	Comments	Bakteria
A2019.05576	2019-07-14	Adult, lactating	43	155	F	Skagerrak	Pneumonia.	Subacute peritonitis, ulcerative gastritis (both acute and parasite-associated chronic), moderate biliary trematode infestation and poor nutritional condition. Poor nutritional status. Lactating.	Abundant <i>Streptococcus</i> species was cultured from the lung, along with moderate amount <i>Shewanella putrefaciens</i> . Small amount of <i>Kluyvera</i> species were cultured from the abdomen. No <i>Salmonella</i> nor <i>Brucella</i> (lung)
A2019.05581	2019-08-26	Immature	21,8	114,5	M	Kattegat	Bacterial lung infection and lungworm infestation.	Unsuitable for examination (severely decomposed)	
A2019.05582	2019-08-26	Adult	31	138	M	Kattegat	Undetermined.	Unsuitable material (severe decomposition and scavenging). Abundant growth of cocci was cultured from the lung, but there was also abundant mixed flora which means that post-mortem overgrowth cannot be ruled out.	Abundant growth of cocci was cultured from the lung, but there was also abundant mixed flora which means that post-mortem overgrowth cannot be ruled out. No <i>salmonella</i> (lung).
A2019.05586	2019-10-10	Immature	18,8	103,5	M	Kattegat	Undetermined.	Unsuitable material	No specific infection was detected. No <i>salmonella</i> or <i>Brucella</i> .
A2019.05291	2019-01-07	immature (1,3 years)	28	115,0	M	Kattegat	Trauma but also possible drowning.	Massive bleedings under the skin and blubber consistent with trauma before death. Also signs consistent with drowning in lungs. Normal body condition, no signs of diseases. Possible got stuck and drowned.	No <i>Salmonella</i> nor <i>Brucella</i> .
A2019.05294	2019-05-15	Immature	21	104,0	F	Kattegat	Trauma, possible predation.	The tissue defects are consistent with what has been described for porpoise predation by grey seals in the North Sea. The final alternative is that this animal was simply scavenged after death, but no underlying cause of death could be determined.	No <i>Salmonella</i> .
A2019.05295	2019-03-11	Immature	31	121,0	M	Kattegat	Trauma, possible predation.	The lesions are consistent with what has been reported for grey seal predation, but there are only small numbers of grey seals in this region. Other predators or anthropogenic trauma cannot be ruled out.	Small numbers of <i>Streptococcus</i> species were cultured in the lung.
A2019.05574	2019-06-11	calf	7,3	80	F	Kattegat	Abandoned.	In poor condition	
A2019.05293	2019-02-14	Immature	32	115,0	M	Öresund	Undetermined (possible bycatch). Predation or scavenging.	In normal nutritional condition, no sign of underlying disease were seen. This, coupled with edema in the lungs, is typically seen in bycaught animals. No net marks were seen, but tissue defects and scavenging precluded examination of all areas of the skin. The large skin and blubber defect and slashes may be the result of predation, but scavenging post-mortem cannot be ruled out.	<i>Salmonella</i> was not cultured from the lung.
A2019.05292	2019-01-30	Immature	-	110,0	M	Öresund	Trauma.	Injuries could be consistent with a turbine or propeller, or possible a large predator.	<i>Salmonella</i> was not cultured from the lung.
A2019.05573	2019-05-21	Immature	30	120,0	F	Öresund	Bycatch.	It also had multifocal parasitic pneumonia and mild to moderate lymphadenitis	
A2019.05578	2019-08-16	Immature	36	132,5	F	Öresund	Pneumonia.	The heavy nematode burden in airways and vessels of the lung likely predisposed to secondary bacterial infection. The enlarged spleen and mild inflammation in the brain may reflect spread of the bacterial infection beyond the lungs.	No <i>Salmonella</i> , no <i>Brucella</i> .
A2019.05580	2019-08-21	Calf	10,4	86	F	Öresund	Undetermined, probable bycatch.	Poor condition.	No <i>Salmonella</i> was cultured from the lung.
A2019.05585	2019-09-30	Adult	45	144,5	M	Öresund	Undetermined.	Chronic pyloric stomach ulceration. Heavy growth of <i>E. coli</i> and <i>Enterococcus casseliflavus</i> in heavy mixed flora were cultured from the lungs.	Heavy growth of <i>E. coli</i> and <i>Enterococcus casseliflavus</i> in heavy mixed flora were cultured from the lungs. No <i>Salmonella</i> , no <i>Brucella</i> .
A2019.05577	2019-08-06	Adult	41	140	M	The Baltic	Undetermined.	severe lungworm infection; poor body condition	
A2019.05579	2019-08-11	Calf	7,6	83,9	M	The Baltic	Undetermined.	Unsuitable for examination	No analysis performed due to decomposed
A2019.05583	2019-09-01	Immature	15,2	105	F	The Baltic	Trauma, predation.	very decomposed	No analysis performed due to decomposed
A2019.05584	2019-09-12	Adult	38	144	M	The Baltic	Undetermined.	Unsuitable for examination (severely decomposed). Heavy lungworm burden in airways and vessels; moderate biliary trematode infestation	

3. Acknowledgement:

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