

INSIGHTS FROM NECROPSY EXAMINATIONS OF HARBOUR PORPOISES IN SWEDEN



Photo: SVA

Aleksija Neimanis¹, Jasmine Stavenow¹ and Anna Roos²

¹National Veterinary Institute, Sweden (SVA)

²Swedish Museum of Natural History (NRM)

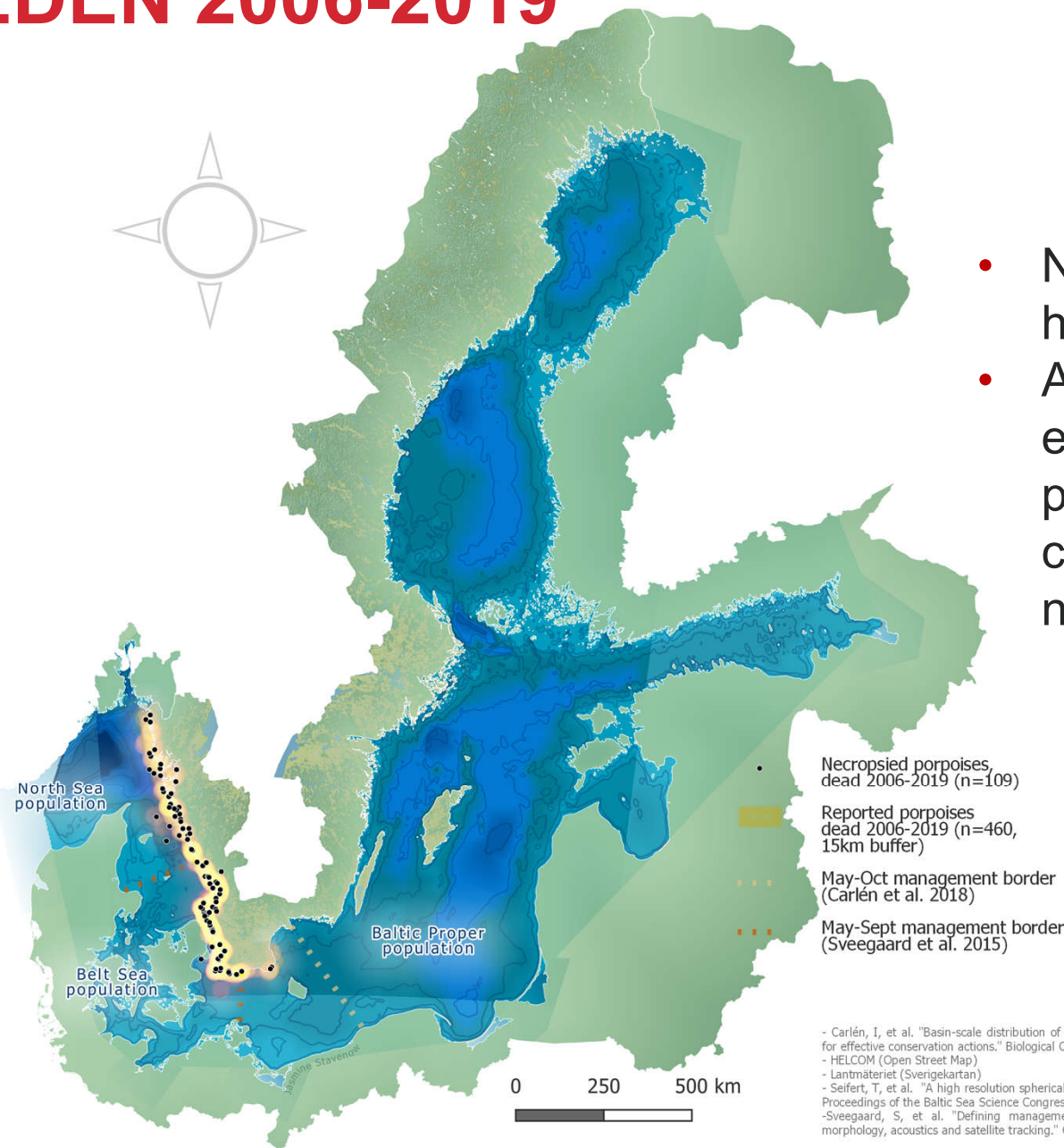
BACKGROUND



Photo: SVA

- Harbour porpoises serve as excellent sentinels of the marine environment (coastal habitat, top predators, relatively short life span compared with other marine mammals to follow trends)
- Collaboration between SVA and NRM since 2008 to examine health, biology and cause of death of harbour porpoises in Sweden
- All porpoises are examined by a team of at least one biologist and one veterinary pathologist
- Collaboration started slowly with only a handful of animals but has recently gained momentum
- Swedish Agency of Marine and Water Management (SwAM) has provided funding for examination of 15 porpoises/year and to compile our necropsy findings
- We compiled results from 109 porpoises (98 stranded, 11 bycaught) that died from 2006-2019 and provide preliminary results with a focus on causes of death here

LOCATIONS OF HARBOUR PORPOISES REPORTED DEAD AND THOSE EXAMINED IN SWEDEN 2006-2019



- NRM collects reports of dead harbour porpoises in Sweden
- Animals deemed suitable for examination, including all porpoises from the Baltic coast, are brought in for necropsy examination at SVA

LOCATION, AGE CLASS AND SEX OF ANIMALS EXAMINED



CETACEAN SPECIMEN RECORD NUMBER _____

SPECIES _____ FROZEN ☐ NOT FROZEN ☐

FINDING DATE _____ SEX _____

NECROPSY DATE _____ LENGTH _____

AGE GROUP _____ WEIGHT _____

CAUSE OF DEATH _____

LOCATION _____

TOOTH ERUPTION _____ TOOTH WEAR _____

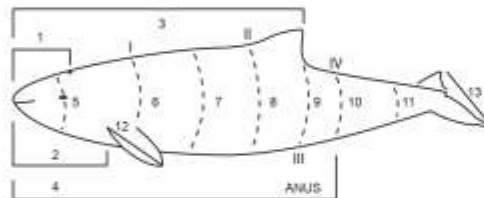
BLUBBER THICKNESS mm

I - DOR	II - DOR	III - DOR	IV - DOR
I - LAT	II - LAT	III - LAT	IV - LAT
I - VEN	II - VEN	III - VEN	IV - VEN

LEFT SIDE cm

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

MEASUREMENTS STRAIGHT LINE & AXIAL



REPRODUCTIVE TISSUES

GONAD DIMENSIONS L x W x D

UTERINE DIAM.

TESTIS WL

LEFT	RIGHT

LACTATING

PREGNANT

YES	NO

COMMENTS

FOETUS LENGTH

FOETUS WEIGHT

FOETUS SEX

C. ALBICANTIA

C. LUTEA

MAMMARY GLAND COLOUR

SPERM IN EPIDIDYMUS

SPERM IN TESTIS

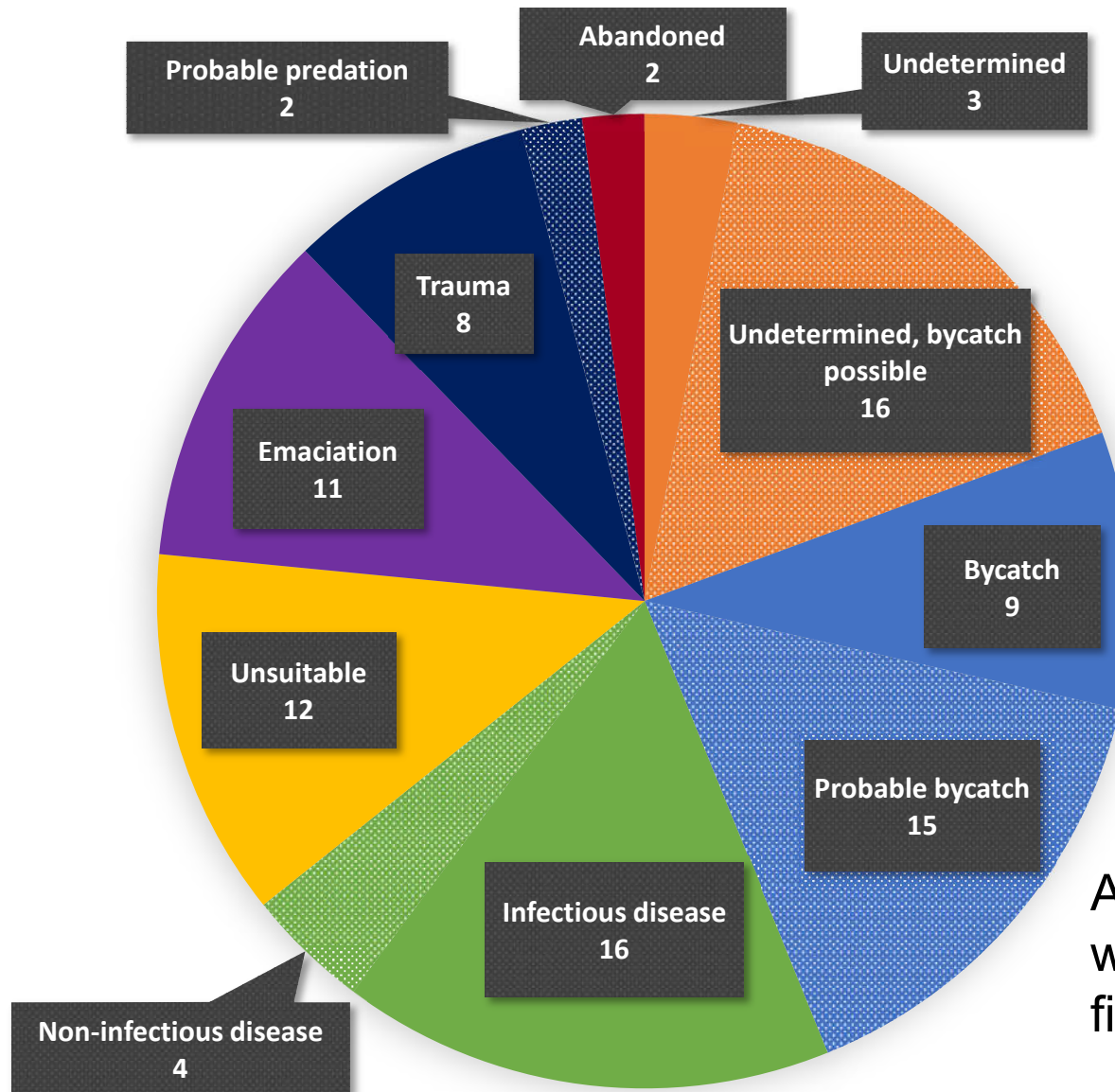
SPERM IN CERVIX

LIFE HISTORY AND OTHER ANALYSES

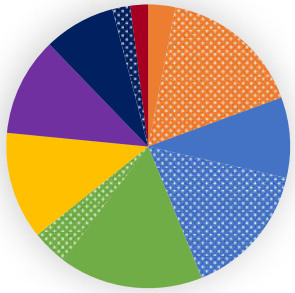
- Samples and data collected for further analysis of morphometrics, reproduction, diet, genetics and nutritional condition
- Aging all porpoises is a priority
- Samples saved in SVA's biobank and NRM's environmental specimen bank for future studies

CAUSE OF DEATH

Stranded animals (n= 98)



An additional 11 porpoises were submitted directly by fishermen as bycatch

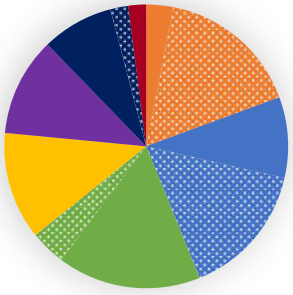


BYCATCH



Photo: SVA

- Bycatch: clear line marks
- Probable: no line marks, good nutritional condition, froth in airways, other causes of death ruled out
- 25% of stranded sample (comparable with other geographical regions)
- Possible bycatch not included (likely underestimated bycatch)



DISEASE

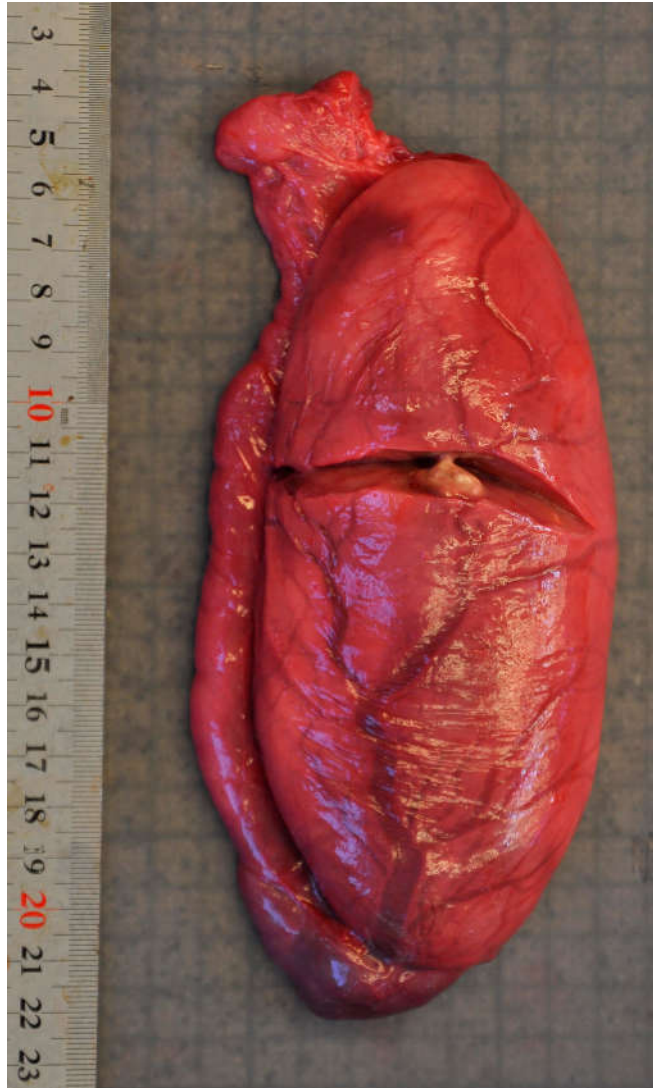
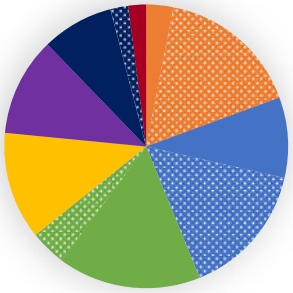


Photo: SVA

- Bacterial and parasitic pneumonia most common, one fungal pneumonia
- Although not the cause of death, first documentation of *Brucella* sp. infection in Sweden:
 - infection in the testis of a mature male, reproductive implications?
- No evidence of morbillivirus
- Non-infectious disease: primarily peri-parturient



TRAUMA



Photo: SVA

- Two cases with wounds consistent with predation
 - Characteristic wounds, young porpoise, good nutritional condition
- two additional cases of possible predation
- eDNA from wounds to try and identify predator species and a retrospective study using photographs is planned

ANIMALS EXAMINED FROM SOUTHERN SWEDEN



- Four of the six porpoises examined from southern Sweden stranded in August and September 2019
- Although they were severely decomposed, the eastern-most calf had lesions consistent with predation

SUMMARY

- Indication of causes death in Swedish waters
- 1/4 of stranded animals were diagnosed as bycatch/probable bycatch
- Disease is also a common cause of death (20%)
 - How does mortality from infections relate to contaminant levels? Other stressors?
 - Changing patterns of disease often reflects environmental change
- *Brucella* infection may have implications for reproduction
- Predation requires further investigation
- Examination of both stranded and bycaught animals help us to better understand porpoise health and threats they face and examination of more animals are needed for a robust data set to monitor health of porpoises in our waters



Photo: Anna Roos

ACKNOWLEDGEMENTS



Photo: Anna Roos

- Henrik Dahlgren, Annika Strömberg, Jessica Åsbrink and Julia Carlström (NRM)
- Erik Ågren, Emil Wikström (SVA)
- Svante Lysén and Gothenburg Natural History Museum
- Kristin Johansson and Jan-Åke Hillarp

- Funding provided by

**Swedish Agency
for Marine and
Water Management**