

GERMANY
PROGRESS REPORT ON CETACEAN RESEARCH,
May 2009 to April 2010 with statistical data for the calendar year 2009

compiled by

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1. Species and Stocks Studied

Common name	Scientific name	Area/stock	Items referred to
Harbour porpoise	<i>Phocoena phocoena</i>	Baltic	2., 4.2, 4.3, 4.4, 5., 7.1, 8., 9.
Harbour porpoise	<i>Phocoena phocoena</i>	North Sea	2., 4.2, 4.3, 4.4, 5., 7., 8., 9.
Various species		worldwide	9.

2. Sightings data

Map of opportunistic sightings along the coast of Lower Saxony are available from <http://www.nationalpark-wattenmeer.niedersachsen.de/servlets/download?C=43557725&L=20>

2.1 Field work

In 2009, 21 days of aerial surveys to determine the abundance and distribution of harbour porpoises (*Phocoena phocoena*) in German waters were conducted by the Research and Technology Centre, Büsum. From the beginning of June to the beginning of July the entire German EEZ of the North Sea was covered once. Surveys were also conducted in the area of the offshore wind turbine test field “alpha ventus” from April to September 2009 and in the area of Borkum Reef from March to May 2009. No surveys were conducted in the Baltic Sea.

Findings from previous years, such as high densities around Sylt Outer Reef and high densities in the southern part of the German Bight, were confirmed.

Visual ship borne surveys, as well as acoustic surveys with towed hydrophones were carried out in March and April 2009 in the area of the offshore wind turbine testfield “alpha ventus”.

Previous studies demonstrated the usefulness of static acoustic monitoring of harbour porpoise in the German Baltic Sea. The DMM (Deutsches Meeresmuseum) in Stralsund continued this work in 2008 with 12 recording positions in the German EEZ. This project is part of the Natura 2000 monitoring scheme for Special Protected Areas (SPAs) in cooperation with the Research and Technology Centre Büsum (FTZ).

Furthermore, the DMM is involved in a study of the harbour porpoise population in the central Baltic using stationary acoustic methods. Harbour porpoise in the central Baltic have declined to the extent that common methods to estimate stock size such as line transect methods can no longer be used. Estimation of stock size has to rely on new methods currently being developed. In an EU – cofunded study ‘SAMBAH’ (Static Acoustic Monitoring of Baltic Harbour porpoise) eight countries bordering the Baltic are planning to utilize 300 passive acoustic monitoring devices over two years to record the occurrence of harbour porpoise in various parts of the Baltic. The expected results of the study are density estimates, information on the spatial and seasonal distribution of harbour porpoise and identification of important habitat in the Baltic proper.

Under water detonations to remove WWII ammunition in Kiel Bight (Baltic) were started by the German Navy Research Institute in 2007. These detonations could potentially harm marine mammals. NGOs, FTZ and DMM in cooperation with naval authorities started trials of testing mitigation measures to reduce harm to marine mammals to a minimum.

In the course of the project ‘Sailors on the Lookout for Harbour Porpoises’, by the Society for the Conservation of Marine Mammals (GSM), over 5500 incidental sightings of harbour porpoises were collected during the years 2003-2008. Relative densities were calculated using an effort correction method by Cooke (1984 & 2006). Seasonal and regional trends in

porpoise density were of special interest as well as sightings with juveniles. The most interesting outcome of this study was a significant negative trend in porpoise density from (north-) west to (south-) east via the areas 'Great Belt', 'Little Belt', 'Kiel Bight' and 'Mecklenburg Bight'. The findings of this thesis supplement results of various abundance studies on harbour porpoises in the Baltic and highlight the need for immediate conservation measures.

A number of surveys have been conducted for environmental impact assessments preceding potential wind farm construction sites.

2.2 Analyses/development of techniques

To further test and calibrate static acoustic measuring gear the AMPOD project at the DMM was completed by 2009. T-PODs were calibrated in a test tank to estimate absolute threshold levels. T-PODS are currently being replaced by C-PODS (Cetacean PODS) since 2008 so that the tank calibration method has to be modified. Additionally, the project focused on field trials in areas with a wide range of porpoise densities, where a number of T-PODs are being deployed in the close vicinity in order to compare results obtained at different threshold levels, settings and densities. The aim was, to explore methods for data analysis in order to be able to compare results from different areas with differently set T-PODs or T-PODs with different threshold levels.

A new methodology to estimate the abundance of marine mammals and sea birds is currently under development at the DMM. They included two innovations: Firstly, photographic methods require development and/or refinement in order to detect harbour porpoise-like shapes automatically on aerial photographs. If this turns out to be successful, as a second step unmanned aerial vehicles (UAVs) or so-called drones can be used for surveys in small areas like wind farm construction sites or for surveys using opportunistic platforms.

The results of a study on the auditory tolerance of harbour porpoises to impulsive sounds from seismic airguns reveal that this species shows a higher auditory sensitivity than species

tested so far – bottlenose dolphins (*Tursiops truncatus*) and belugas (*Delphinapterus leucas*). A temporary threshold shift was documented after an exposure to a single impulse at a received sound pressure level of 200 dB re 1µPa p-p or a sound energy of 164 dB re 1µPa²s respectively. The results have been published at the Journal of the Acoustical Society of America (Lucke et al., 2009).

3. Marking data

3.1 Field Work

3. 1.1 + 2 NATURAL AND ARTIFICIAL MARKING DATA

No marking using artificial marks was conducted. As a result, no photographs of whales of one of the IWC management area/stocks are currently held which can be utilized in photo ID studies.

3. 1. 3 TELEMETRY DATA

4. Tissue/biological samples collected

4.1 Biopsy samples

No biopsy samples were collected

4.2 Samples from by-catches

Species	Area/stock	2009: total no. of individuals	Archived	Tissue Types(s)	Contact person
Harbour porpoise	Baltic Sea Schleswig-Holstein	4	4	all organs, central nervous system, skeletal system	U. Siebert
Harbour porpoise	North Sea Schleswig-Holstein	0	0		
Harbour	Baltic Sea	5	5	All organs, central	H. Benke

porpoise	Meckl.-Prepom.			nervous system, skelettal system	
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4.3 Samples from stranded animals

Species	Area/stock	2009: total no. of individuals	Archived	Tissue Type(s)	Contact person
Harbour porpoise	North Sea Schleswig-Holstein	145	145	Different tissues for histopathology, toxicology, genetics	U. Siebert
Harbour porpoise	Lower Saxony	38	38	Lung, liver, different tissues	M. Stede, M. Ramdohr
	Baltic Sea Schleswig-Holstein	110	110	Different tissues for histopathology, toxicology, genetics	U. Siebert
	Baltic Sea Meckl.-Prepomerania	47	12	Skeleton, various tissues	H. Benke
Sowerby's Beaked whale	North Schleswig-Holstein	1	1	Different tissues for toxicology, genetics, skeleton	U. Siebert

4.4 Analyses carried out

The development and testing of effective mitigation methods for sound induced impacts on marine mammals is the topic of an ongoing study at the FTZ Westküste which is funded by the European Union and the State of Schleswig-Holstein. A first version of an air-bubble curtain has been tested for its sound absorption in Kerteminde harbour (Denmark) during construction work to replace the harbour wall. Attenuation of the ramming impulse noise due to the air-bubble curtain was observed up to 19 dB. While the harbour porpoises which are housed within the harbour in a semi-natural pool at a nearby research facility initially showed clear avoidance reactions to the sound emissions of the construction work, they returned to

their normal behaviour after installation and use of the air-bubble curtain. The next step is the development and testing of a system that can be deployed for the purpose of founding a monopole of a wind turbine during pile driving. This new and inexpensive system is designed to be installed and removed quickly thereby increasing the acceptance for using such mitigation methods by the offshore industry.

As part of the national monitoring funded by the State Ministry of Agriculture, Environment, and Rural Affairs of Schleswig - Holstein cetaceans stranded or by-caught were systematically investigated. These investigations include necropsies, histology, immunohistology, microbiology, serology, parasitology, virology, age determination and more.

The ribosomale DNS of different lung nematodes of harbour porpoise were analyzed and sequences from different regions were compared.

5. Pollution studies

Samples for analyses of PFOs were taken and are currently under investigation

6. Statistics for large cetaceans

6.1 Corrections to earlier years

No corrections to earlier years have been made

6.2 Direct catches

Germany was not engaged in any whaling activity neither commercial nor aboriginal or under scientific permits

6.3.1 Anthropogenic mortality of large whales for the calendar year 2009

No anthropogenic mortality of large cetaceans was observed in 2009

6.3.2 Observed or reported ship strikes of large whales

No ship strikes of large whales were being reported in 2009

6.3.3 Fishery by-catch of large whales

No large whales has been taken as by-catch in fisheries

7. Statistics for small cetaceans in 2009

7.1 Corrections to earlier years

No corrections to earlier years have been made

7.2 Direct catches of small cetaceans for the calendar year 2009

No small cetaceans were taken in a directed fishery in Germany.

7.3 Fishery by-catch of small cetaceans in 2009

		Incidental Mortality			
Species	Area/stock	Reported	Estim. total	Source	Live capture
Harbour porpoise	North Sea	0	unknown		none
Harbour porpoise	Baltic Sea Schleswig- Holstein	4	unknown	gill net	none
Harbour porpoise	Baltic Sea Mecklenburg- Prepomerania	4	unknown	Fish pods	none

8. Strandings in 2009

The most recent list of ‘stranded harbour porpoises’ in Lower Saxony is available from <http://www.nationalpark-wattenmeer.niedersachsen.de/servlets/download?C=47239171&L=20>

Species	Total	North Sea Lower Saxony	North Sea Schl.-Holstein	Baltic Schl.- Holstein	Baltic Mec.-Prepomm.
Harbour porpoise	358	56	145	110	47
Sowerby’s beaked whale	1	1			

9. Other studies and analyses

As a part of a project funded by the ministry of defence, new data for the German marine mammal data base (e.g. containing sightings, strandings, worldwide maps of occurrence and characteristics of species) were integrated. The data collection for the data base is focussed on European waters.

A pilot study about the classification of marine mammal signatures with methods of speech recognition (e.g. Hidden Markov Models) was conducted. The study will be continued for the next two years, funded by the ministry of defence.

To reduce the risk for marine mammals during explosions (disposal of old ammunition in the Baltic, further experiments on the effect of an air bubble curtain for the attenuation of shock waves were conducted.

Species	Area/stock	Type of investigation	Contact address ^{*)}
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Various species	world wide	Creation of a management orientated data base	S. Ludwig M. Knoll I. Nissen, T. Kerby
Various species	Antarctic	Distribution, Abundance and habitat use	H. Herr, L. Lehnert, K.H. Kock, U. Siebert
Cuvier's beaked whale, various species	Mediterranean, North Atlantic	Passive acoustic monitoring (T-PODs), development of detection software	S. Ludwig
Harbour porpoise	Baltic Sea	Potential impacts of explosions, risk mitigation due to bubble curtains	E. Schmidtke S. Ludwig
Various species	World wide with emphasis on North Sea, Baltic, North Atlantic, Mediterranean	Creation and extension of a management orientated data base	S. Ludwig M. Knoll J. Nissen
Various species	worldwide	Classification of marine mammal signatures	S. Ludwig M. Knoll J. Nissen R. Kreimeyer
Harbour porpoise	Baltic Sea	Stock structure, genetics	R. Tiedemann
Harbour porpoise	Belts, Baltic Sea	Stock discrimination	H. Benke
Harbour porpoise	Belt Sea, Baltic Sea	Reproduction, age structure, health status	H. Benke, U. Siebert,
Harbour porpoise	North Sea/Baltic	Pathology, life history, toxicology, stock identity, habitat use, telemetry, Impact of sounds, nutrition	U. Siebert
Harbour porpoise, other small cetaceans	North Sea/Baltic	Distribution and abundance, aerial surveys	H. Herr, A. Gilles, V. Peschko
Harbour porpoise,	North Sea/Baltic	Anthropogenic impacts	H. Herr, U. Siebert,

other small cetaceans			K. Lucke, H. Seibel
Harbour porpoise	North Sea/Baltic	Habitat use, distribution and abundance, nutrition	A. Gilles
Harbour porpoise	North Sea/Baltic	Impact of sounds	K. Lucke, J. Sundermeyer
Harbour porpoise	Baltic Sea, Kiel Bight	Impacts of underwater explosions, testing, mitigation measures	K. Lucke, M.Dähne, K. Krügel, J. Sundermeyer
Harbour porpoise	North Sea, test field Alpha Ventus	Testing the standard routine for EIAs	A. Gilles, K. Lucke, U. Siebert, K. Krügel, A. Brandecker, S. Müller, V. Peschko
Harbour porpoise	North Sea, Baltic Sea	Acoustic surveys, porpoise detectors (PODs)	U. Verfass, A. Gallus, K. Lucke, M. Dähne
Harbour porpoise	North Sea, Baltic Sea	Development of bubble curtain	K. Lucke, M. Dähne, M. Jacobsen, J.H. Weyhardt, U. Siebert
Harbour Porpoise	Lower Saxony	Abundance, distribution, aerial surveys	Nationalpark Niedersächsisches Wattenmeer, FTZ Büsum
Harbour porpoise	Baltic (Pommeranian Bay)	Acoustic surveys, porpoise detectors (PODs)	A. Gallus, M. Dähne
Harbour porpoise	Baltic	Standardisation and methodology of static acoustic monitoring	U. Verfass, M. Dähne
Harbour porpoise	Baltic	Use of aerial photography with drones for abundance estimates	M. Dähne, G. Grenzdörffer
Harbour porpoise	Baltic	Creation of a management – orientated data base	A. Ruser H. Giewat U. Siebert

Harbour porpoise	North Sea	Acoustic surveys, porpoise detectors (PODs)	U. Siebert, K. Lucke, J. Sundermeyer M. Dähne
Harbour porpoise	Baltic, North Sea	Telemetry	U. Siebert, K. Lucke
Harbour porpoise	North Sea/Baltic	Pathology, Immunology, Virology, Ear pathology	H. Seibel, U. Siebert,
Harbour porpoise	North Sea/Baltic	Life History	I. Hasselmeier K. Lehnert
Harbour porpoise	North Sea/Baltic	Pollutants, Immunology, Endocrinology	K. Das, U. Siebert, K. Lehnert, H. Seibel
Harbour porpoise	North Sea/Baltic	Parasitology	K. Lehnert
Harbour porpoise	North Sea/Baltic	Incidental sightings, data bases	U. Siebert M. Rademaker S. Mueller
Harbour porpoise	North Sea/Baltic	Primary cell culture, Pollutants,	V. Hellwig
Harbour porpoise	North Sea, Baltic	Feeding ecology	A. Gilles, U. Siebert
Common dolphin	North Atlantic	Skin morphology and modelling	V. Pavlov, U. Rist, U. Siebert
Harbour porpoise	North Sea, Denmark	Distribution and abundance	W. Piper
Harbour porpoise	Europe	Assessment of impact of offshore wind farm noise	W. Piper
Bottlenose dolphin, short-finned pilot whale, Atlantic spotted dolphin, rough-toothed dolphin	La Gomera	Abundance, distribution, behaviour, Photo-ID on individual whales, online survey on collisions of sailing boats and cetaceans (in collaboration with noonsite.com)	F. Ritter
Toothed whales: Delphinus, Phocoena,	worldwide	Morphology, development, evolution	S. Huggenberger

Physeter, Pontoporia, Stenella, Tursiops			
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*) contact addresses see section 12

History of Whaling

Studies on the history of whaling were continued under the auspices of the 'Deutsches Schiffahrtsmuseum' and associated researchers and groups and dealt primarily with historic whaling in northern Europe.

10. Literature cited

None

11. Publications

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