

Agenda Item 6.2

Project Funding through ASCOBANS

Prioritization of Project Proposals and
Other Activities

Document 6.2.a

**Project Proposals Received for
Future Funding**

Action Requested

- Review proposals
- Take note of the results of the rating undertaken in advance of the meeting, to be presented by the Secretariat at AC21
- Provide advice to Institutional Session for overall priority rating of internal and external projects and activities

Submitted by

Secretariat



NOTE:
DELEGATES ARE KINDLY REMINDED
TO BRING THEIR OWN COPIES OF DOCUMENTS TO THE MEETING

Project Proposals Received for Future Funding

1. Following a call for project proposals issued to ASCOBANS Parties and partner organizations in May 2014, the attached funding applications were received by the Secretariat.
2. In line with the wishes of the Advisory Committee, the Secretariat compiled all proposals received by the deadline (15 July) into this document and made them available to Parties and Partners for their consideration and rating. For the rating, an [online survey](#) has been created in the ASCOBANS Advisory Committee Workspace. The guidelines specify that only projects with a direct benefit for the conservation objectives of the Agreement can be supported. Projects covering more than one ASCOBANS Party should be favoured.
3. As in past years, each country or observer organization represented on the 21st Advisory Committee Meeting should only fill in the questionnaire once. Therefore, please consult within your delegation and then assign one user to communicate your overall ranking to us. Also, please note that you should not evaluate any proposals that were submitted by an organization you are affiliated with.
4. All valid responses will be analysed in advance of the AC21 Meeting and the Secretariat will present the resulting ranking to the meeting.
5. A tabular overview of the ten proposals received, in order of submission, can be found below. The detailed proposals and CVs of researchers, if provided, are attached in the annexes to this document.

No.	Title	Applicant	Funding Requested
1	Did you know? All about the harbour porpoise. An education kit for a species in danger.	Annika Winter / Whale and Dolphin Conservation, WDC	6,800 EUR
2	Number, distribution, habitat use and health status of harbour porpoises (<i>Phocoena phocoena</i>) in the Elbe and Weser rivers/ Impacts of anthropogenic noise	Prof. Dr. Ursula Siebert & Denise Wenger / Institute for Terrestrial and Aquatic Wildlife Research (ITAW), University of Veterinary Medicine Hannover	14,820 EUR
3	Baltic Sea Harbour porpoise foraging habitats (BALHAB)	Julia Carlström / AquaBiota Water Research	14,938 EUR
4	Developing and testing pingers inaudible to seals	Finn Larsen / National Institute of Aquatic Resources, Technical University of Denmark	15,626 EUR
5	Harbour porpoise and fisheries – a misalliance or a stable relationship?	Bo Håkonsson / The Danish Society for Nature Conservation Mette Blaesbjaerg / WWF Denmark	15,000 EUR
6	Underwater Noise Mapping of the English Channel and the North Sea	Yanis Souami / SINAY SAS	9,420 EUR (plus VAT)

No.	Title	Applicant	Funding Requested
7	'Save our Whales' educational roadshow	Eligius Everaarts / Stichting SOS Dolfijn	15,000 EUR
8	Current status of North Sea harbour porpoises: assessing temporal changes in reproductive parameters	Dr. Sinéad Murphy / Institute of Zoology, Zoological Society of London	14,830 EUR
9	The presence and distribution of harbour porpoises (and other marine mammals) in the Thames Estuary and adjacent waters; a research and outreach project	Anna Moscrop / Marine Conservation Research International	15,000 EUR
10	Public perceptions about cetaceans in Europe and implications for implementation of conservation measures	Dr Cristina Pita / Centre for Environmental and Marine Studies (CESAM) & Department of Biology, University of Aveiro Prof. Graham J. Pierce & Fiona Read, Oceanlab, University of Aberdeen	15,000 EUR

Title Did you know? All about the harbour porpoise. An education kit for a species in danger.	Justification: Conservation and Management Plan CEPA – Res.7.2	Project ID: 2014-01
Implementing Agency / Applicant		
The project implementing agency is Whale and Dolphin Conservation, WDC. Annika Winter Education Manager Implersstrasse 55 81371 Munich E: Annika.winter@whales.org		
Collaborating Agencies / Other Sponsors		
WDC will develop a range of educational resources aimed at children and young people to raise awareness about the harbour porpoise. WDC will collaborate with ASCOBANS Secretariat to ensure that the content of these materials is in line with ASCOBANS requirements and fulfils the CEPA plan. The technical and design side of this project will be supported by an e-learning designer and developer.		
Background / Problem		
<p>Harbour porpoises inhabit waters of the Baltic and North Seas. Yet, the majority of people, even those living within close proximity to the shore, do not realise that this small, elusive cetacean is an integral part of Europe's marine environment. At the same time, ever-increasing human activities lead to disturbance-related threats and habitat degradation, limiting space where harbour porpoises can safely and successfully feed, breed, travel and rest.</p> <p>Concern remains about the status of the harbour porpoise in the ASCOBANS region, and existing threats in the region such as bycatch, underwater noise and pollution remain high or are increasing. Therefore, WDC would like to re-submit this proposal as a key method for raising awareness amongst the public about the problems and the need for harbour porpoise protection.</p> <p>The need to support conservation efforts by increasing public awareness of small cetaceans in the region has already been highlighted by ASCOBANS in its conservation plans and resolutions. The Agreement's Communication, Education and Public Awareness (CEPA) Plan explicitly recommends a development of accessible information on the biology and ecology of small cetaceans in the ASCOBANS area, as well as materials relating to threats and conservation.</p> <p>In order to raise the profile of small cetaceans and the threats they face, and furthermore educate a selected target group, this project aims to develop educational tools which will</p>		

focus on harbour porpoises, their environment, threats, ways to protect them as well as promoting conservation efforts already undertaken by ASCOBANS and its Parties. These educational resources will be made available to ASCOBANS Parties to help them fulfil their commitment to the objectives of the Agreement's Communication, Education and Public Awareness (CEPA) Plan, the implementation of which has been referred to in the ASCOBANS Resolution 7.2, Annex 1, Activity 31.

These new resources will target school-age children in all Parties of the Agreement. Educating children is known to have an additional beneficial impact in influencing and changing attitudes towards conservation and environment among adults. Using the harbour porpoise as an emblematic species, these resources will inform teachers, children and potentially a wider audience on the importance of and threats to the species, and motivate people to take supportive action.

Our resources will include an XL size educational poster (A2) for display in schools, for use by Youth groups and individual children (with 4 black and white photocopyable activity worksheets on the reverse side) (see an example of a similar poster attached), and an interactive map and games. They will complement and add value to resources which are already in place particularly on the ASCOBANS kid's zone website, the development of which WDC has assisted the Secretariat with, and will continue to do so.

WDC has taken into consideration the cost factor and the function of these resources in the implementation of the targets set out in the CEPA plan and moved away from costly booklets and brochures. Instead, these new materials will be inexpensive to produce or download and easy to distribute. They will be practical and easy to use by teachers. The content of these materials will be agreed with ASCOBANS and relevant to Parties. Downloadable versions of each resource will be hosted on the ASCOBANS website. All materials will be initially available in English and German. WDC will create additional electronic versions, at no additional cost, once translations have been provided by ASCOBANS.

Objectives

The project's overall aim is to raise the profile of harbour porpoises and to protect from further decline due to anthropogenic threats and safeguard their survival into the future. Educating the public is vital in order to raise awareness about the plight of cetaceans, and to achieve broad community support for conservation-related issues. This in turn guides decision-makers to implement more effective measures to protect cetaceans as the natural treasure we all share.

1. Increase awareness of harbour porpoises through dissemination of educational resources to promote the marine heritage of ASCOBANS' Parties.
 - a. To develop engaging materials which will increase young people's knowledge and understanding of marine environments and small cetaceans.
 - b. To inform and engage children in how they can protect marine environments by encouraging them to take part in environmental projects at schools and practical conservation (e.g. litter disposal and beach cleans) in their countries.
 - c. Using fun and interactive online content, motivate children to take an interest and engage their parents, teachers and friends in conservation activities.

2. Support ASCOBANS' commitment to fulfil recommendations set out in the Agreement's conservation plans and highlight issues concerning the conservation of harbour porpoises.
 - d. To provide educational resources to ASCOBANS to help the Parties; governments deliver the educational programme which underpins the Agreement's conservation efforts.
 - e. Assist ASCOBANS Parties in promoting harbour porpoise conservation and enable the governments to implement the CEPA plan.

Relevance to ASCOBANS

The educational resources will reflect conservation issues affecting harbour porpoises which have been addressed by:

1. Recovery Plan for Baltic Harbour Porpoises (Jastarnia Plan)
2. Conservation Plan for Harbour Porpoises (*Phocoena phocoena* L.) in the North Sea
3. Conservation Plan for the Harbour Porpoise Population in the Western Baltic, the Belt Sea and the Kattegat

This important requirement to raise public awareness has also been highlighted in all three of the above ASCOBANS plans.

This project directly supports the ASCOBANS CEPA Plan 2010 - 2012 Section 2. Objectives and Recommended Action. The recommendations directly address the following points outlined in this plan:

- 1.1 Website development, to include more species information and games for children
- 4.3 Develop the website (...) to include educational material, where fact sheets, materials used in schools and species guides are recommended.

Furthermore, Resolution No.2 "Activities of the ASCOBANS Advisory Committee And Work Plan (MOP 7 2012)" lists the following activity:

Goal 31. Implement CEPA to raise awareness of issues related to cetacean conservation in the Agreement Area, with a particular focus on outreach to relevant stakeholders, and where possible in collaboration with partner organisations.

Activities

The project will include the following activities:

1. Concept development – materials will be age-appropriate with high visual impact. They will reflect a concept of learning through play and enquiry. All materials will fulfil the criteria of the UNESCO Education for Sustainable Development. All resources will be designed to primarily engage children in schools and other learning environments. Children will also be encouraged to share them in and outside school,

and involve their peers and parents in environmental-themed games and online activities (hosted on ASCOBANS kid's zone website, as well as WDC's and others partners' sites also). Paper materials will provide ideas for creative activities that children and or / teachers can carry out. **(1-2 months)**

2. Content development – will be based on a solid educational concept and WDC's expertise in education. Content will be developed by WDC's Team then agreed with and approved by the ASCOBANS Secretariat to ensure they are in accordance with the objectives of the Agreement. **(4-5 months)**
3. Design and production – once the content has been developed, WDC's Education Team will develop a detailed design specification. WDC design staff will undertake the creative aspect of the project. Online resources will be developed with an e-learning designer. **(6 - 8 months)**
4. Dissemination of resources – Physical resources, developed in English and German, will be shared with the ASCOBANS Secretariat to be offered to focal points, who will be responsible for the further translation and printing of these materials. WDC will input the translated text into the templates so no additional design costs will be incurred by the governments. Online resources will be added to the ASCOBANS and WDC kid's zone website and promoted by ASCOBANS and WDC. **(ongoing starting once the resources have been completed)**

Outputs

The educational pack will help promote the need to protect Europe's marine environment and its small cetaceans, and implement the CEPA Plan by the Parties. This fulfils both the education and conservation objectives of the Agreement.

Paper-based and electronic resources will promote different teaching mechanisms and learning experience, and appeal to children of different ages and interests.

The following will be produced through this project:

1. Large, double-sided educational poster for display and photocopiable **activity sheets on the reverse**:
 - featuring the ecology and biology of the harbour porpoises
 - introducing other small cetaceans inhabiting the Agreement area
 - including colourful images and detailed, age-appropriate information
 - with photocopiable, interactive ideas for educational activities which will be printed on the back of the poster
 - including interdisciplinary worksheets that can be used during science, geography, numeracy, literacy and other lessons
 - available as a pdf to be used as a printed resource in all languages for download from the ASCOBANS kid's zone website, as well as WDC's and others to increase outreach. Target age: 8-12 years
2. An interactive educational **online animated map and games**:

- showing where harbour porpoises can be found and threats they face in these areas
- showing where they are protected by law and where they are not
- what can to be done to help (games will be designed in such a way as to allow users to check how much they know about threats and to learn more via instructional feedback).
- available on the new children's area of the ASCOBANS website (Teaching materials and Games section) and hosted on other partner websites / governmental education platforms to increase potential audience, where possible
- Target age: 8-12

However, we are able to produce one or other element of the pack should funding only be available for either paper-based or electronic materials.

Work Plan and Timetable

Activity	Start date	End date
Develop concept and content development	October 2014	March 2015
Produce design specification	March 2015	April 2015
Design and produce materials	Poster :April 2015 Online resources: April 2015	May 2015 Dec 2015
Distribute materials	Summer 2015	ongoing

Project Personnel

In 2007, WDC Germany's educational expertise was recognised and WDC's Dolphin Diploma project won an award from the UNESCO Decade for Education and Sustainable Development.

Annika Winter, Education manager
WDC, Implersstr.55, München
Annika.winter@whales.org

Role: development of concept and content, coordination of the project.

Annika Winter – approved teacher and former leader of the international WDC education programme - is now responsible for the development of educational material in German (latest "Die Wale, das Meer und das Klima. Aktionen und Ideen für Kindergarten und Grundschule" 2013). She also creates and coordinates conservation activities for children like awards (e.g. the dolphin diploma) as well as offline and web related activities for kids. She is author of the multilingual educational manual "All about dolphins" produced by UNEP/CMS and TUI – 2007.

Jess Feghali-Brown, UK Youth Engagement Officer
WDC, Brookfield House, 38 St Paul Street, Chippenham, UK
jess.feghali-brown@whales.org

Role: development of poster design/activities alongside Education Manager; English translation; manage development of online resource.

WDC's Youth Engagement Officer in the UK was involved in the production and dissemination of the Dolphin Diploma during 2007/8. She has previously worked with designers and developers to create online animations and games for WDC's website, as well as a variety of educational resources used by schools. She has also provided input, help and advice into the recent development of ASCOBANS' kid's zone website.

Budget Estimates

Budget item	Requested from ASCOBANS	Requested/secured from other sources	Total in Euros
Design and production (electronic version) of the poster (includes inputting translated text into resource templates)	3000		3000
Development of an interactive animated map and a game	3800	1470 (in-kind support from e-learning designer)	5270
Total in Euros	6800	1470	8270

For more information please contact the ASCOBANS Secretariat at ascobans@ascobans.org.

**FORMAT FOR PROJECT PROPOSALS
FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE**

Title Number, distribution, habitat use and health status of harbour porpoises (<i>Phocoena phocoena</i>) in the Elbe and Weser rivers/ Impacts of anthropogenic noise	Justification: NSP CMP	Project ID: 2014-02
Implementing Agency / Applicant	<p>Prof. Dr. Ursula Siebert Institute for Terrestrial and Aquatic Wildlife Research Foundation, (ITAW) University of Veterinary Medicine Hannover, Foundation Werftstr. 6 25761 Büsum Phone: + 49 511 8568158 Ursula.Siebert@tiho-hannover.de</p> <p>Denise Wenger, Dipl.-Biol. PhD student University of Veterinary Medicine Hannover, Foundation Phone: + 49 89 74160412; + 49 176-22208271 Denise.Wenger@tiho-hannover.de</p>	
Collaborating Agencies / Other Sponsors	<p>Federal Agency for Nature Conservation (BfN) BfN Field Office Island of Vilm/Rügen 18581 Putbus/</p> <p>Hamburg State Institute for Hygiene and Environment Dr. Zander-Schmidt, Dr. A. Himmelreich Marckmannstraße 129a 20539 Hamburg</p> <p>Waterways and Shipping Administration (WSA) Hamburg Moorweidenstraße 14 20148 Hamburg and Bremerhaven/Blexen Am Deich 21b 26954 Nordenham</p> <p>DW-ShipConsult GmbH Lise-Meitner-Str. 1-7 24223 Schwentinental</p> <p>Hamburg Agency for Urban Development and the Environment (bsu Hamburg)</p>	

	<p>Dr. Klaus Janke klaus.janke@bsu.hamburg.de Neuenfelder Straße 19 21109 Hamburg</p> <p>County Administration Wesermarsch Poggenburger Str. 15 26919 Brake</p> <p>Biocenter Grindel Dr. Veit Hennig University of Hamburg Martin-Luther-King-Platz 3 20146 Hamburg</p> <p>University of Liege Dr. Krishna Das F.R.S. - FNRS Research Associate Laboratory for Oceanology - MARE Research Center Allée de la Chimie 17 , B6C, Institut de Chimie 4000, Liege (Sart-Tilman), Belgium Tel: +32 4 366 3321 Email: krishna.das@ulg.ac.be</p>
<p>Background / Problem</p>	<p>Harbour porpoises frequenting Weser and Elbe rivers Harbour porpoises foraging in Hamburg harbor Serial of dead animals</p> <p>After many decades of apparent absence, harbour porpoises have been increasingly entering the German Jade, Weser, and Elbe rivers every springtime. A sightings scheme introduced by the Society for Dolphin Conservation (GRD) in 2007 has shown the regular occurrence of harbour porpoises in the estuaries and lower courses of the Weser (Wenger & Koschinski 2012) and Elbe rivers up to the cities of Bremen and Hamburg during the months from March through June. The spatial-temporal pattern of the sightings corresponds to the pattern of the occurrence of anadromous fish species, especially smelt (<i>Osmerus eperlanus</i>) and twaite shad (<i>Alosa fallax</i>), swimming from the North Sea to their spawning grounds in the rivers.</p> <p>Based on the data analysis harbour porpoises must be considered as part of the biocenosis of these rivers. Especially in Hamburg harbour, they have been observed hunting prey in particularly large groups with as many as 10 individuals over weeks. Nowadays, the harbour porpoises in these rivers no longer represent vagrant individuals as previously stated.</p> <p>In 2013, 26 dead animals were found along the shore of the Elbe</p>

	<p>river from the area of Hamburg harbour to the city of Wedel.</p> <p>Possible threats</p> <p>Harbour porpoises in the high-traffic waterways of Weser and Elbe are exposed to a high number of anthropogenic activities including ship traffic, recreational activities, chemical and noise pollution. Especially fast watercraft may pose a threat. Some cases of evidence suggest ship strikes as cause of death.</p> <p>These human activities are of potential threat to harbour porpoises causing impairment of the health status and death (Review by Siebert et al. 2012).</p> <p>Intensive shipping traffic and underwater noise levels</p> <p>Also, the intensive shipping traffic with high underwater noise levels especially in Hamburg harbour may affect the harbour porpoises' health and acoustic system. Ambient sound pressure levels of the port environment and rivers are unknown. Harbour porpoises use their acoustic capability to navigate in their underwater environment and to locate and identify suitable prey which makes them highly susceptible to effects of sound (Ketten et al. 2000, Verfuß et al. 2005). The effects can range from mild disturbance to auditory impairment, hearing loss and even death (Richardson et al. 1995, Southall et al. 2007). Therefore passive measurements of sound pressure level are highly recommended (Merchant et al. 2013; Sousa-Lima et al. 2013).</p> <p>Pollutants</p> <p>The rivers were severely polluted in the last century due to industrialization. Fish species and numbers declined severely. Today the water quality has improved thanks to the EU Water Framework directive and fish species have returned, although the ecology of the river beds has dramatically changed (Thiel et al. 2003). But pollutants such as heavy metals or pesticides (e.g. persistent organic pollutants, POPs) are still present in river sediments. Environmentally dangerous substances like cadmium, mercury and organic substances such as lindane, dioxin, pentachlorobenzene, DDT, alpha-HCH and HCB are still found in the sediments of the Elbe river.</p> <p>(http://www.fgg-elbe.de/dokumente/messprogramme.html).</p> <p>These pollutants may also pose a threat to the harbour porpoises' health. Container ship traffic, tide water currents, excavating for river bed deepening and other anthropogenic activities swirl up these pollutants which dissolve and attach to suspensions in the water, while feeding harbour porpoises may possibly ingest these substances not only along with their prey but also with small particles in the water and therefore may be highly contaminated.</p> <p>Harbour porpoises are top predators and heavy metals as well as</p>
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	<p>persistent organic pollutants (POPs) are bio-accumulated in their tissues (Bruhn et al. 1999, Siebert et al. 1999, Thron et al. 2004,). Harbour porpoises from higher polluted waters showed lymphoid depletion in the thymus and spleen and increase of connective tissue in the thyroid (Beineke et al. 2007, Das et al. 2007). Those contaminant-induced lesions are contributing to disease susceptibility in harbour porpoises from the North and Baltic Seas (Jepson et al. 1999, Siebert et al. 1999, Pierce et al. 2007).</p> <p>The abundance of the harbour porpoise in the lower courses of the rivers is a new phenomenon.</p> <p>The Hamburg harbour as a foraging area represents a very special situation and an acoustic environment harbour porpoises normally avoid.</p> <p>Systematic research is needed in this small area where harbour porpoises can be observed at close range and the effects of anthropogenic impacts can be studied.</p> <p>The special situation in Hamburg harbour allows new research for example about the impacts of anthropogenic noise, studies on individual recognition with photo-ID, behaviour, group composition and more could be performed.</p> <p>Necropsies of animals found dead are required to obtain information about the causes of death, health status, effects of underwater noise, contamination burdens, age structure, reproduction status and population genetics.</p>
<p>Objectives</p>	<p><u>The objectives of this study are as follows:</u></p> <p>A. Determination of numbers of animals frequenting the rivers, their foraging sites, age and group structures and performance of behavioural studies</p> <p>B. Measurements of ambient sound pressure levels of the port environment and examination of the impact on harbour porpoises (special part of necropsies)</p> <p>C. Necropsies: Determination of cause of death, health status, diseases, pollutant levels, stomach content, genetics</p> <p>D. Determination of prey species, quantities and importance</p> <p>E. Public awareness</p> <p>In detail the following issues are of interest and will be investigated:</p>

ASCOBANS Project Proposal Format 2014

	<ol style="list-style-type: none"> 1. Estimate of total numbers of harbour porpoises frequenting the Elbe and Weser 2. Identification of habitat preferences and areas of higher risk of conflicts with anthropogenic activities 3. Assessment of the age structure and reproduction status of harbour porpoises observed and found dead in the Elbe and Weser 4. Measurement of background noise in the Hamburg harbour 5. Examinations of the effects on the acoustic system of the harbor porpoises 6. Genetic analyses to identify the relatedness among each other and with other harbour porpoises in the North Sea. 7. Studies on feeding ecology (observations, stomach content). Determining the importance of spawning areas in the rivers and of anadromous fish shoals to the harbour porpoise groups. 8. Health assessment, determination of cause of death and the level of chemical pollutants 9. Identification of adequate conservation and management measures 10. Increasing awareness about Germany's only resident whale 11. Creating and organising a special public 'Harbour Porpoise River Whale Watching Day' via the media to involve and encourage the public to look out for harbour porpoises in the rivers especially to get a snapshot and estimate of the total numbers
Relevance to ASCOBANS	<p>The study will contribute to implementing and promoting</p> <p>1. the ASCOBANS Conservation Plan for harbour porpoises in the North Sea concerning</p> <ul style="list-style-type: none"> ➤ general developments with respect to other issues at stake ➤ the distribution and causes of changes in the ASCOBANS area ➤ reasons for migrating routes ➤ new information on the impacts of environmental noise, the extent of negative effects of sound and vessels ➤ new information on pollution ➤ and other emerging issues posing a potential threat to cetaceans like ship strikes <p>2. ASCOBANS and the ASCOBANS Conservation and Management Plan, among others in the following issues:</p> <ul style="list-style-type: none"> ➤ surveys and research ➤ identifying threats and causes of death ➤ education and awareness raising ➤ reviewing new information on harbour porpoise distribution, population structures, and needs, and obtaining baseline data for further recommendations to relevant authorities

	<p>➤ contribute to management plans and the European habitat directive</p> <p>The project will support the conservation objectives of ASCOBANS by</p> <p>➤ identifying the southernmost distribution area and frequented limnic habitats of harbour porpoises (habitat preferences) in Germany</p> <p>➤ giving information about seasonal movements (migration) at least of special stocks or subgroups, and their group composition</p> <p>➤ providing information on population structures through genetic tests</p> <p>➤ locating areas of special importance, documenting food composition</p> <p>➤ providing information about habitat requirements, special areas of feeding and their importance to the subgroups</p> <p>➤ identifying threats</p> <p>➤ performing research on the effects of man-made noise</p> <p>➤ helping to raise awareness by providing new information to the general public for further support of conservation agreements and measures</p> <p>➤ supporting any efforts to prevent the introduction of polluting substances which are a potential threat to the health of the animals (as required also under the EU Water Framework Directive)</p> <p>➤ providing guidelines for conservation measures and management according to the Habitat Directive, suggesting measures like temporary speed limits, temporary restrictions for the construction or ramming work during the time periods when porpoises are known to occur in the rivers</p>
Activities	<p>A. Systematic data sampling in regard to the abundance and occurrence (seasonal and spatial distribution) of harbour porpoises in the rivers using different methods:</p> <p>1. Visual: collecting sighting data during daylight hours (recording date, time, position, group composition, behaviour)</p> <p>➤ Continuation of existing opportunistic sighting scheme</p> <p>➤ Line transect surveys/ boat surveys</p> <p>➤ Additional boat surveys covering the Elbe from Wedel (Elbe-km 640) to Hamburg harbour and Harburg, channels and small port basins.</p> <p>➤ Trying to perform photo-ID to obtain individual recognition and contribute to a better estimate of numbers by using the mark(sight) and resight method.</p> <p>➤ Observations to be made by students from the lighthouse in Wittenbergen from the end of January to mid-June to get more information about the migration movements at the beginning and</p>

	<p>end of the ‘harbor porpoise season’</p> <ul style="list-style-type: none"> ➤ Observations with binoculars to be made by volunteers/students/or ferry staff from the ferries ➤ Additional special boat trips along the specific sites where the harbour porpoises are regularly seen to study their behavior and group composition. <p>2. Acoustic Monitoring</p> <p>2.1. Stationary: Installation of 12 CPODs (Continuous Porpoise Detectors, Chelonia) at different sites in the Elbe (8) and Weser (4) rivers. These acoustic click detectors are hydrophones with fully automated logger units, manufactured by Chelonia Limited, London. The CPODs will provide additional data concerning the presence of porpoises and some of their behaviour correlated with acoustic signals, like feeding or communication, whose click trains can be distinguished by experts. For data analyses the newest version of the C-POD.exe PC software will be used which is available to users free of charge. Detailed information about CPODs can be found at www.chelonia.co.uk.</p> <p>2.2. Measurement of environmental noise: To record background noise, sound pressure levels and frequencies of ambient noise, emitted by port facilities and ships, an AMARecorder (Autonomous Multi-Channel Acoustic Recorder) will be installed in Hamburg harbour.</p> <p>B. Postmortem examinations</p> <p>Harbour porpoise carcasses in the area of the river Elbe and Weser will be collected. Depending on their state of preservation further investigations will be conducted. This includes age determination, reproduction status and necropsies (Lockyer & Kinze 2003, Siebert et al. 2001).</p> <p>Special focus will be given to injuries caused by boat strikes and underwater noise.</p> <p>Microbiological, parasitological and serological studies will take place according to methods described by Müller et al. 2000, Lehnert et al. 2005 and Siebert et al. 2009).</p> <p>POPs and heavy metals will be analyzed in different tissues of the animals (Thron et al. 2004, Das et al. 2006, van Vijver et al. 2004).</p> <p>Genetic analyses are planned regarding relatedness, population genetics and other questions (Wiemann et al. 2010).</p> <p>C. Analyses of temporal and spatial patterns of predator and prey; Identifying harbour porpoises’ main prey species in the rivers</p> <ol style="list-style-type: none"> 1. Underlying causes governing harbour porpoise distribution in the rivers are explored by reviewing available information on
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	<p>possible prey. Analyses of available fish data of the last five years for different fish species (including smelt (<i>Osmerus eperlanus</i>) and twaite shad (<i>Allosa fallax</i>)) will be made. Is there a correlation between the spatial-temporal distribution of these fish species and abundance of the harbor porpoises in the estuaries and lower river courses? Such data could be obtained from different sources.</p> <ol style="list-style-type: none"> 2. Additional new data will be taken by fish samplings at locations along the Elbe river) in cooperation with the department of fisheries, University of Hamburg, and fishermen and/or other institutes. 3. Research and analysis of historical data about harbour porpoise abundance in the Elbe and Weser rivers. 4. Examination of the stomach contents of harbour porpoises/ fatty acid analyses. <p>Stomach content analyses Stranded dead found animals: Esophagus and stomach will be removed to be examined for prey contents. Findings of otoliths (commonly known as "earstones": hard calcium carbonate structures in the inner ear of all vertebrates, used as gravity, balance, movement, and directional indicators) in the stomachs of harbour porpoises can help to determine the consumed fish species as different fish species have otoliths of different shapes and sizes (Gilles 2009). Fatty acid analysis could give more information about their diet over the last months providing mid-term dietary information on relative importance of prey species on a potentially larger spatial scale (O.E. Jansen 2013).</p>
Outputs	<p>Expected outputs of the project:</p> <ul style="list-style-type: none"> ➤ Information on habitat use and health status of harbour porpoises in the rivers Elbe and Weser. ➤ Identification of areas of high conflict between habitat use and anthropogenic activities. ➤ Establishment of a monitoring program of this species protected under the Habitat Directive ➤ Suggestions for management measures in the areas of both rivers ➤ Reports and working papers for ASCOBANS ➤ Presentation of results at meetings such as ASCOBANS, ECS, SMM, IWC ➤ Posters and brochures for interested museums and the general public ➤ Publication of the results in international peer-reviewed journals.

ASCOBANS Project Proposal Format 2014

Work Plan and Timetable	<p>The duration of the project is planned for one year, 2015.</p> <p>See Annex 1</p>
Project Personnel	<p>Denise Wenger, Ph.D. student at University of Veterinary Medicine Hannover, Foundation, will be involved in all parts of the project which is her dissertation. She will especially conduct and coordinate the field work (CPODs, sightings, countings, noise loggers, observation of behavior).</p> <p>Background noise studies will be conducted by DW Ship Consult.</p> <p>Health assessment and further investigations will be under the responsibility of Prof. Dr. Ursula Siebert and partners.</p> <p>Necropsies will be done by Hamburg State Institute for Hygiene and Environment and Institute for Terrestrial and Aquatic Wildlife, Research Foundation, Büsum.</p> <p>Pollutants will be analyzed by Dr. Krishna Das.</p> <p>All parts of the project are performed in cooperation with Hamburg Agency for Urban Development and the Environment and the County Administration Wesermarsch.</p> <p>The projects will involve students from the University of Hamburg and University of Veterinary Medicine Hannover.</p>
Budget Estimates	<p>See Annex 2</p> <p>For total budget estimates please see annex 2</p> <p>Partial funding would also be very appreciated according to three main research fields.</p> <ol style="list-style-type: none"> 1. Field research on distribution and behaviour 2. Necropsies, biochemical tests and genetics 3. Measurement of the impacts of intensive anthropogenic noise
References/CVs	See Annex 3

For more information please contact the ASCOBANS Secretariat at
ascobans@ascobans.org.

Annex 1

Work and Time Plan

Year	2015											
Month	01	02	03	04	05	06	07	08	09	10	11	12
Opp. sighting scheme												
Installation of 12 CPODs in Weser and Elbe rivers												
Line transect and additional boat surveys												
Installation of AMAR recorder												
Land-based observations												
Photo-ID studies												
Fish samplings												
Examination of carcasses												
Laboratory analyses												
Data analyses												
Reports/Publication/Congresses												

Year	2016											
Month	01	02	03	04	05	06	07	08	09	10	11	12
Publications												

Annex 2

**Research on harbour porpoises in Elbe and Weser river
foraging in Hamburg harbour**

Budget estimates for 2015

Part 1

**Field research on harbour porpoise distribution and behaviour
and public awareness:**

Expenses for personnel	1800,- €
Fuel for boat trips/ mooring site	1270,- €
Posters	600,-€
Printing brochures	500,- €
Travel costs	800,- €
Total	4970,- €

Part 2

Necropsies, biochemical tests and genetics:

Expenses for personnel	1.600,- €
Pathological, biochemical and genetic analyses	2.350,- €
Presentation of results	600,- €
Travel costs	400,- €
Total	4.950,- €

Part 3

3. Measurements of the impacts of intense anthropogenic noise/research on bioacoustics:

Expenses for personnel	1.000,- €
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Sound analyses	2.400,- €
Insurance for recorder	400,- €
Presentation/Poster	600,- €
Travel costs	500,- €
Total	4.900,- €

Project costs in total for 2015:

Total	14.820,- €
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Equipment and other costs

Some parts of the equipment (e.g. CPODs, AMAREcorder) will be made available for use by governmental authorities, e.g. by the Federal Agency for Nature Conservation (BfN); other parts of the equipment (e.g. camera, boat) and other costs will be covered by own funds of the Hamburg University; University of Veterinary Medicine Hannover, Foundation; Hamburg State Institute for Hygiene and Environment and GRD. It is in any case ensured that the activities listed in the budget could be realized with the requested funding.

Annex 3

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CURRICULUM VITAE

Professor Dr. Ursula Siebert

EDUCATIONAL QUALIFICATIONS

1986-1992	Study of Veterinary Medicine at the Justus-Liebig-Universität Giessen, Germany, at the Ecole Vétérinaire de Nantes, France (funded by the DAAD and EU-Erasmus-Program)
1992-1995	Doctoral thesis at the Free University of Brussels, Belgium (funded by the European Science Foundation) and at the Justus-Liebig-Universität Giessen, Germany,
1992-1996	Training in 1.) Veterinary Pathology 2.) Wild Animal Medicine 3.) Aquaculture
2007	Habilitation in Zoology at the Christian-Albrechts- University of Kiel
Practical courses	Texas Marine Mammal Stranding Network, Galveston at the Institute for Pathology at University of Montreal, Canada, Beluga Pathology University of Delft Image Processing Ultrasound: Dolphinarium, Paris, France, Dolphinarium Brugge, Belgium IFREMER Nantes and Rennes for Aquaculture
2011	Habilitation approved by the University of Veterinary Medicine Hannover, Foundation
2012	Diplomate of European College of Zoological Medicine (Wildlife Populations Health)

CURRENT EMPLOYMENT

since July 2011	Director of the Institute for Terrestrial and Aquatic Wildlife Research (ITAW) of the University of Veterinary Medicine Hannover, Foundation, Germany
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PREVIOUS EMPLOYMENT

May 1996-June 2011	Leader of the section "Ecology of marine mammals and birds" at the Forschungs- und Technologiezentrum Westküste (FTZ), Büsum, University of Kiel, Germany
1997-2004	Veterinarian incharge for Fjord-and Belt Center porpoises and seals
1992-1994	Research associate at the Institute of Veterinary Pathology at the Justus-Liebig-Universität Giessen, Germany, in the research project „Investigations on the abundance, health status and migration of small cetacean population in German waters“, funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
1994-1996	Research associate at the Institute for Veterinary Pathology at the Justus-Liebig-Universität Giessen, Germany, in the research project „Investigation on small cetaceans as basis of a monitoring“, funded by the German Federal Ministry for Research and Technology

MEMBERSHIPS

1. Board member of the European Cetacean Society (ECS) 1994-1998
2. International Expert Panel for Offshore-Windmeelparks in Denmark (IAPEME) 2000-2006
3. Pollution 2000+ Steering Group of the Internationalen Walfangkommission (IWC) 2000-2006
4. Nationale Contactperson for the European Cetacean Society (ECS)
5. Member of the Trilateral Seal Expert Group of the Common Wadden Sea Secretariat (TSEG)
6. Member of ICES Working Group on Marine Mammals (ICES)
7. European Association of Zoo and Wildlife Veterinarians (EAZWV)
8. European Association for Aquatic Mammals (EAAM)
9. Society for Marine Mammalogy (SMM)
10. Advisory Committee of the Nature Commissioner of Schleswig-Holsteins
11. Nationalpark Curatoriums Dithmarschen
12. Advisory Committee for the Federal Research Agency for Fishery

13. Steering Group for Research on Marine mammals of the Dolphinarium Harderwijk („des Alpes“), Holland
14. Member of the Reviewing Panel for the Portugese Research Ministry
15. Member of the Advisory Board of the FNRS, Belgium
16. Chair of the Scientific Board of the Seal Station Friedrichskoog, Germany

REFEREE FOR THE FOLLOWING JOURNALS (EXAMPLES)

Marine Biology (Associated Editor)
Journal of Wildlife Diseases (Associated Editor)
Archive of Environmental Contamination and Toxicology
Environmental Science and Technology
Marine Pollution Bulletin
Latin American Journal of Aquatic Mammals
Science of the Total Environment
Aquatic Mammals
Marine Biology Research
Journal of Applied Ecology
European Science Foundation
Marine Mammal Research and Conservation
NAMMCO Scientific Publications
Mammalia
European Journal of Wildlife Research
Marine Mammal Science
Comparative Biochemistry and Physiology
Veterinary Pathology
Journal of Veterinary Research

SUPERVISION OF PHD STUDENTS (EXTRACTIONS):

Anita Gilles, 2008, "Characterisation of harbour porpoise (*Phocoena phocoena*) habitat in German waters" (principal supervisor)

Klaus Lucke, 2009, "Auditory studies on marine mammals"

Henrike Seibel, 2009, "Influence of Distemper virus infection on the expression of virus specific surface receptors and different cytokines in phocine lymphocytes"

Kristina Lehnert, 2009, "Occurrence, pathological potential and molecular characterisation of parasites from harbour porpoises (*Phocoena phocoena*) and harbour seals"

Helena Herr, 2009, "Occurrence of harbour porpoises (*Phocoena phocoena*) in the North and Baltic Sea: potential conflicts with shipping and fishery activities"

Lutz Ahrens, 2010, "Polyfluoroalkyl Compounds in the Marine Environment – Investigations on their Distribution in Surface Water and Temporal Trends in Harbor Seals (*Phoca vitulina*)"

Sabine Götze (to be finalized autumn 2013) Analyses of the interactions of cetaceans with fisheries in Galicia and distant waters fleets (Ph.D.-study)

Denise Risch (to be finalized autumn 2013) A multispecies approach for studying acoustic behaviour and ecology with reference to anthropogenic noise in a marine sanctuary (Ph.D.-study)

Michael Dähne, 2014. „Use of acoustic methods for the protection of harbour porpoise (*Phocoena phocoena*) in German Waters (Ph.D.-study)

International PhD-Defenses

Krishna Das: „Trace metal contamination and detoxication processes in marine mammals from European coasts“, University Liege, Belgium (2002).

Georg Engelhard: „Southern elephant seal population declines: the human onshore disturbance hypothesis“, University Gronningen, The Netherlands (2002).

Maja Kirksgaard: „Effects of longterm dietary exposure to organohalogen contaminants on vitamin and hormone status in the Greenland sledge dog (*Canis familiaris*)“, University Odense, Denmark (2010).

Thea Østergaard Bechshøft: A temporal study of industrial pollution and climate change biomarkers in Greenland polar bears (*Ursus maritimus*), University Aarhus, Denmark (2011).

Maria Morell: „Ultrastructural analysis of Odontocete cochlea“, Laboratori d'Aplicacions Bioacústiques Universitat Politècnica de Catalunya, Spain (2012)

Sarah Habran: "Kinetics of trace elements and stable isotopes during lactation and post-weaning fast in Phocids" University Liege, Belgien, (2012)

Okka Jansen: „Fishing for Food: Feeding ecology of harbour porpoises *Phocoena phocoena* and white-beaked dolphins *Lagenorhynchus albirostris* in Dutch waters“, University Wageningen, The Netherlands, (2013).

Sabrina Trocini: „Conservation of the endangered loggerhead turtle (*Caretta caretta*): health assessment and hatching success of Western Australian populations“, Murdoch, University, Australia (2013).

SCIENTIFIC AWARDS

Alexander von Humboldt Price, Fund of Scientific Research (FNRS), Belgium 2013/2014

Poster prize

22st CONFERENCE OF THE EUROPEAN CETACEAN SOCIETY, 2008 Poster
 "Influences of methyl-, phenyl-, ethylmercury and mercurychlorid on lymphocyte proliferation and cytokine expression in harbour seals" Kakuschke, A., Valentine-Thon, E., Fonfara, S., Kramer, K., **Siebert, U.**, Prange, A.

Poster prize

22st CONFERENCE OF THE EUROPEAN CETACEAN SOCIETY, 2008
 "North Sea vs Baltic sea- comparison of immune system parameters in harbour seals" Kramer, K., Fonfara, S., Kakuschke, A., **Siebert, U.**, Dietz, R., Prange, A.

Best Poster

International Council of the Exploration of the Sea (ICES)
 "From Seals to cells: Protein biomarkers to reveal effects of persistent pollutants on primary hepatocytes of *Phoca vitulina*" Vera Korff Co-authors: Annika Behr, Antonia Wargel, Kristinia Lehnert, **Ursula Siebert**, Veronika Hellwig. 2010 Nantes, France.

Best Poster

International Council of the Exploration of the Sea (ICES)
 "Isolation of primary liver cell cultures of harbour seals (*Phoca vitulina*) for identification of novel biomarkers of pollutant influence" Veronika Hellwig Co-authors: Antonia Wargel, Annika Behr, and Ursula Siebert. 2007 Helsinki, Finland.

Selected Publications (Peer-Reviewed)

Ahrens L., **Siebert U.** and Ebinghaus R. 2009. Total body burden and tissue distribution of polyfluorinated compounds in Harbor Seals (*Phoca vitulina*) from the German Bight. *Marine Pollution Bulletin* 58, 520-525.

Ahrens L., **Siebert U.** and Ebinghaus R. 2009. Temporal trends of polyfluoroalkyl compounds in harbor seals (*Phoca vitulina*) from the German Bight, 1999-2008. *Chemosphere* 76, 151-158.

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Akineden Ö., Hassan A.A., Alber J., El-Sayed A., Estoepangestie A.T.S., Lämmler C., Weiss R. and **Siebert U.** 2005. Phenotypic and genotypic properties of *Streptococcus equi* subsp. *zooepidemicus* isolated from harbor seals (*Phoca vitulina*) from the German North Sea during the phocine distemper outbreak in 2002. *Veterinary Microbiology* 110, 147-152.

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Alber J., El-Sayed A., Lämmle C., Hassan A.A., Vossen A. and **Siebert U.** 2004. Determination of species-specific sequences of superoxide dismutase A encoding gene *sodA* and chaperonin 60 encoding gene *cpn60* for identification and phylogenetic analysis of *Streptococcus phocae*. *Veterinary Microbiology* 101, 117-122.

Becher P., König M., Müller G., **Siebert U.** and Thiel H.J. 2002. Characterization of sealpox virus, a separate member of the Parapoxviruses. *Archive Virology* 147, 1133-1140.

Begeman L., St. Leger J.A., Blyde D.J., Jauniaux T.P., Lair S., Lovewell G., Raverty S., Seibel H., **Siebert U.**, Staggs S.L., Martelli P. and Keesler, R.I. 2013. Intestinal volvulus in cetaceans. *Veterinary Pathology* 50, 590-96.

Behr A., Wargel A., **Siebert U.** and Hellwig V. 2008. Analysis of polychlorinated biphenyl (PCB)-induced modification of protein expression in primary hepatocytes from harbour seals. *Organohalogen Compounds* 70, 1079-1082.

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Birkun Jr. A., Kuiken T., Krivokhizhin S., Haines D.M., Osterhaus A.D.M.E., van de Bildt M.W.G., Joiris C.R. and **Siebert U.** 1999. Epizootic of morbilliviral disease in common dolphins (*Delphinus delphis ponticus*) from the Black Sea. *Veterinary Record* 144, 85-92.

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- Das K., **Siebert U.**, Gillet A., Dupont A., Di-Poi, C., Fonfara S., Mazzucchelli G., de Pauw E., de Pauw-Gillet M-C. 2008. Mercury immune toxicity in harbour seals: links to in vitro toxicity. *Environmental Health* 7: 52.
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Waterman B., **Siebert U.**, Schulte-Oehlmann U. and Oehlmann J. 2003. Endokrine Effekte durch Tributylzinn (TBT). In: Lozan, J. L., Rachor, E., Reise, K., Sündermann, J. and H. v. Westernhagen, H. (Eds). Warnsignale aus Nordsee & Wattenmeer. Eine aktuelle Umweltbilanz. Deutsche Bibliothek – CIP, 239-247.

CURRICULUM VITAE

Denise Wenger

Academic qualification

1991 Degree in Biology, Ludwig-Maximilians-University, Munich
(Diploma, 1.1 first class degree)

Professional positions

1994 - to present Society for Dolphin Conservation (GRD), Munich. Member of the Board of Directors; Project manager, main projects in Germany and Peru; Investigator/Research coordinator for Harbour porpoise project North Sea and adjacent rivers. Media spokeswomen; Chief editor of GRD's magazine

1993-1994 European Animal Aid; International project coordinator, Media spokeswoman

1991-1993 Bavarian Environment Agency (LfU); Editor "Red List" of endangered species

1987-1991 Max Planck Institute Andechs/Seewiesen; Scientific assistant

Publications in peer-reviewed journals

Denise Wenger & Sven Koschinski (2012): Harbour porpoises (*Phocoena phocoena*) Linnaeus, 1758) entering the Weser river after decades of absence, *Marine Biology Research*, 8:8, 737-745.

Denise Wenger, Herbert Biebach, and John R. Krebs (1991): Free-Running Circadian Rhythm of a Learned Feeding Pattern in Starlings, *Naturwissenschaften* 78, 87-89.

Conference presentations

Denise Wenger: The return of *Phocoena phocoena* to North Germany's Rivers – A case study from the Weser River (2007-2009), 24th Conference of the European Cetacean Society – Marine mammal populations: Challenges for conservation in the next decade, 22nd-24th March 2010, Stralsund, Germany

Denise Wenger & Biebach Herbert: How starlings exploit a spatio-temporally distributed artificial food source, Third International Conference of Behavioural Ecology and Foraging Behavior, Uppsala, August 22-26, 1990.

Popular scientific publications

About 90 articles concerning dolphin and whale conservation issues or project reports in different German magazines and GRD's magazine.

**FORMAT FOR PROJECT PROPOSALS
FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE**

Title Baltic Sea Harbour porpoise foraging habitats (BALHAB)	Justification: Res.7.2 JP	Project ID: 2014-03
Implementing Agency / Applicant	<p style="color: red;">Indicate the organization/institution or individual making the proposal, which would be responsible for the implementation of the project, if approved. Full contact details of the responsible individual should be provided.</p> <p>AquaBiota Water Research Löjtnantsgatan 25 SE-115 50 Stockholm Sweden Switchboard: +46 8 522 302 40</p> <p>Contact person: Julia Carlström julia.carlstrom@aquabiota.se Direct: +46 8 522 302 46, mobile: +46 70 224 45 17</p>	
Collaborating Agencies / Other Sponsors	<p style="color: red;">Indicate possible other organizations/institutions or individuals collaborating with the implementing agency in the conduct of the project.</p> <p>Aarhus University, Department of Bioscience – Marine Mammal Research, Aarhus University, Roskilde, Denmark</p>	
Background / Problem	<p style="color: red;">Briefly describe issues/problems to be addressed by the project. Please indicate whether the proposed project is a new activity and its possible linkages with already ongoing/planned initiatives.</p> <p>BALHAB is a new activity based on the largest ever collected passive acoustic monitoring dataset of any animal. We propose to use the data collected within the SAMBAH project to identify important porpoise foraging habitats within the Baltic (SAMBAH: Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise, www.sambah.org)</p> <p>In SAMBAH, the abundance of the Baltic Sea harbour porpoise will be estimated and seasonal density maps will be produced by spatial modelling. This information is crucial for identification of high density areas. However from a conservation perspective, especially for the designation of protected areas, information on habitat use is equally significant. Examples of important habitat use are mating, calving and foraging.</p> <p>Harbour porpoises echolocate almost constantly and when they approach a prey the echolocation click rate increases dramatically into what is called a buzz. Occurrences of buzzes therefore signify that foraging attempts have taken place. Foraging buzzes are identifiable in CPOD data as porpoise click trains with very high repetition rate (Pirodda et al. 2014). Other studies have found that occurrence of buzzes varies temporally and spatially</p>	

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	<p>(Carlstrøm 2005), which is a good indication that buzzes can be used to signify important foraging habitats for harbour porpoises. Here we have the opportunity to test this on a very large and well balanced data set and compare the results with the output of the spatial models that will be developed by SAMBAH.</p> <p>The SAMBAH dataset has been collected by deploying a grid of 304 CPODs across the Baltic Sea during 2 years and there is therefore a very large amount of data available for examining whether buzzes may be used to designate foraging habitats.</p> <p>In BALHAB, the temporal distribution of foraging buzzes will be investigated and seasonal maps of their frequency of occurrence will be produced through spatial modelling, which will be based on the same environmental layers as in SAMBAH project.</p> <p>Together with the SAMBAH results on density and abundance, the output from the proposed project may serve as a thorough basis for designation and evaluation of protected areas and other conservation measures for harbour porpoises in the Baltic Sea.</p>
Objectives	<p>Briefly specify the project objective as the overall intended achievement. This part should include one or two main objectives, possibly supplemented by more specific objectives, which could provide more structure to the design of the project. Objectives are intended goals and should be clearly distinguished from outputs and activities.</p> <p>The overall aim of the project is to provide information on harbour porpoise habitat use across the entire Baltic Proper, to serve as a thorough basis for the designation and evaluation of protected areas for the Baltic Sea harbour porpoise. This will be done by achieving the following goals:</p> <ol style="list-style-type: none"> 1. Examine whether porpoise feeding buzzes can be used to identify foraging habitats by comparing occurrence of buzzes at a number of the different sampling stations (304 stations). 2. Investigate the temporal distribution of harbour porpoise foraging buzzes in the SAMBAH data. 3. Produce seasonal maps of the frequency of occurrence of foraging buzzes within the SAMBAH project area to propose foraging habitats especially important for porpoises.
Relevance to ASCOBANS	<p>Only projects directly relevant to the conservation objectives of ASCOBANS will be supported. Briefly explain the pertinence of the project for the attainment of ASCOBANS goals and justify by explaining how the project helps to address the relevant Activities in the Agreement's Triennium Work Plan. Include references to other decisions or documents/instruments produced within the Agreement, such as the Agreement's Conservation and Management Plan, Resolutions or actions recommended by the Advisory Committee as appropriate.</p> <p>The proposed project is directly relevant to the following ASCOBANS conservation objectives and recommendations:</p> <p>Conservation Actions in the ASCOBANS [Triennium] [Quadrennium] Work</p>

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	<p>Plan 2013–20[15][16]:</p> <p>6. Review new information on cetacean population size, distribution, structure and causes of any changes in the ASCOBANS area and make appropriate recommendations to Parties and other relevant authorities.</p> <p>Objectives of the ASCOBANS Recovery Plan for Baltic Harbour Porpoises – Jastarnia Plan:</p> <p>2. improve knowledge in key subject areas as quickly as possible; and</p> <p>3. develop more refined (quantitative) recovery targets as new information becomes available on population status, bycatch and other threats.</p> <p>Recommendations of the ASCOBANS Recovery Plan for Baltic Harbour Porpoises – Jastarnia Plan:</p> <p>6. Develop and apply new techniques (e.g. acoustic monitoring) for assessing trends in abundance</p> <p>The project will support the achievement of these objectives and recommendations by:</p> <ul style="list-style-type: none"> • Providing fine-scale analyses of harbour porpoise echolocation behaviour and activity in the Baltic. • Providing a method for evaluating habitat use in terms of foraging. The method can afterwards be used in all areas, not only the Baltic. • Collaborating with the BIAS and SAMBAH projects, providing information on harbour porpoises and the potential impact of underwater noise on foraging that can be promoted through the BIAS and SAMBAH dissemination actions
Activities	<p>Briefly describe the work or the tasks to be performed. As the main element of the project's design, this section should outline the methodologies to be employed, personnel and equipment needs, location and expected duration of individual actions. Actions should be clearly related to the outputs described below.</p> <p>Task 1 (AU): Detection and extraction of feeding buzzes</p> <p>This task involves developing a buzz-detection algorithm to detect and extract porpoise feeding buzzes from the SAMBAH data. The task will be carried out by specialists at AU, using software and algorithms provided by the C-POD manufacturer Chelonia, and developed for MatLab. According to the time plan this will take place from Jan-March 2015.</p> <p>Task 2 (AU): Analyses of temporal occurrence of feeding buzzes</p> <p>This task involves analysing the occurrence of harbour porpoise feeding buzzes at different temporal scales, looking at both seasonal and diurnal variation in occurrence of foraging events. This task will be carried out by AU during March-May 2015.</p> <p>Task 3 (AB): Seasonal predictions of frequency of feeding buzzes</p> <p>This task involves using spatial modelling to make seasonal predictions on the spatial distribution of the frequency of occurrence of feeding buzzes,</p>

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	<p>and will be carried out by AB during Aug-Sept 2015.</p> <p>Task 4 (AU+AB): Interpretation of results and draft manuscript</p> <p>This task involves writing a manuscript on the methods and results of the study, to be submitted to a peer-reviewed journal. The writing will be done by AB and AU in collaboration during Oct-Dec 2015.</p>																								
Outputs	<p>Indicate the specific products or services (e.g. reports, publications) produced by the activities to achieve the project objectives, including scientific, conservation and management and educational outputs.</p> <p>We will deliver a manuscript presenting the efforts and results of this study. The manuscript will be submitted to a peer-reviewed journal. The developed script for detection of harbour porpoise buzzes (MatLab) can be provided as open source and made downloadable.</p>																								
Work Plan and Timetable	<p>As a general rule, small-scale projects funded by ASCOBANS should be completed within one year, and their expected duration should not exceed 2-3 years. Indicate proposed beginning and end dates.</p> <p>The work plan sets out the timetable for carrying out project activities and the delivery of outputs. The timetable should include start and end dates for each activity and indicate who is responsible for its implementation. The information is best presented as a table.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Activity</th> <th>Start</th> <th>End</th> <th>Responsible</th> </tr> </thead> <tbody> <tr> <td>Extraction and identification of harbour porpoise feeding buzzes</td> <td>1. Jan</td> <td>1. Apr</td> <td>AU</td> </tr> <tr> <td>Analyses of temporal occurrence of harbour porpoise feeding buzzes</td> <td>1. Mar</td> <td>1. Jun</td> <td>AU</td> </tr> <tr> <td>Spatial modelling of the frequency of occurrence of harbour porpoise buzzes/month</td> <td>1. Apr</td> <td>1. Jul</td> <td>AB</td> </tr> <tr> <td>Seasonal predictions of the frequency of occurrence of harbour porpoise feeding buzzes</td> <td>1. Aug</td> <td>1. Oct</td> <td>AB</td> </tr> <tr> <td>Interpretation of results and draft manuscript</td> <td>1. Oct</td> <td>1. Dec</td> <td>AU & AB</td> </tr> </tbody> </table> </div> <p>The responsible institute is presented in brackets. AU = Aarhus University and AB = AquaBiota.</p>	Activity	Start	End	Responsible	Extraction and identification of harbour porpoise feeding buzzes	1. Jan	1. Apr	AU	Analyses of temporal occurrence of harbour porpoise feeding buzzes	1. Mar	1. Jun	AU	Spatial modelling of the frequency of occurrence of harbour porpoise buzzes/month	1. Apr	1. Jul	AB	Seasonal predictions of the frequency of occurrence of harbour porpoise feeding buzzes	1. Aug	1. Oct	AB	Interpretation of results and draft manuscript	1. Oct	1. Dec	AU & AB
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Project Personnel	<p>Name, position, affiliation, contact details, role within the project and a brief profile should be given for at least the most prominent members of the project team. Succinct CV can be attached to the project proposal.</p> <p>Julia Carlström, Ph.D., Researcher, AquaBiota Water Research, Löjtnantsgatan 25, SE-115 50 Stockholm, Sweden julia.carlstrom@aquabiota.se Direct: +46 8 522 302 46, mobile: +46 70 22 44 517 <u>Role within the project:</u> Project leader Extraction and identification of harbour porpoise foraging buzzes. Analyses of temporal occurrence of harbour porpoise foraging buzzes.</p>																								

	<p>Spatial modelling of the frequency of occurrence of harbour porpoise foraging buzzes on a monthly basis.</p> <p>Production of seasonal predictions of the frequency of occurrence of harbour porpoise foraging buzzes.</p> <p>Interpretation of results and reporting.</p> <p><u>Brief profile:</u> Julia has been working with harbour porpoise research and conservation since 1994. Her interests concern conservation issues in general and acoustics and bycatches in particular. In addition to PhD studies and research, she has also worked at national marine managing authorities and has a wide experience in project management.</p> <p>Ida Carlén, AquaBiota Water Research, Löjtnantsgatan 25, SE-115 50 Stockholm, Sweden ida.carlen@aquabiota.se Direct: +46 8 522 302 43 , mobile: +46 70 313 30 67</p> <p><u>Role within the project:</u></p> <p>Spatial modelling of the frequency of occurrence of harbour porpoise foraging buzzes on a monthly basis (<u>Responsible</u>).</p> <p>Production of seasonal predictions of the frequency of occurrence of harbour porpoise foraging buzzes (<u>Responsible</u>).</p> <p>Interpretation of results and reporting.</p> <p><u>Brief profile:</u> Ida has been working with marine mammal research since 2002 and has been involved in the SAMBAH project since its first conception in 2007. Since 2012 she is also a PhD student at Stockholm university, focusing on the ecology, habitat use and spatial distribution of harbour porpoises in the Baltic Sea.</p> <p>Line Anker Kyhn, Ph.D., Scientist, Aarhus University, Department of Bioscience – Marine Mammal Research, Frederiksborgvej 399, 4000 Roskilde, Denmark. lky@dmu.dk Direct: +45 871 58826</p> <p><u>Role within the project:</u></p> <p>Develop methodology for extraction of feeding buzzes (<u>Responsible</u>).</p> <p>Extraction and identification of harbour porpoise foraging buzzes (<u>Responsible</u>).</p> <p>Analyses of temporal occurrence of harbour porpoise foraging buzzes (<u>Responsible</u>).</p> <p>Interpretation of results and reporting (<u>Responsible</u>).</p> <p><u>Brief profile:</u> Line has worked with bioacoustics and passive acoustic monitoring (PAM) since 2005. Line has worked in refining the PAM technique for harbour porpoises and developed a detection function for PAM data turning PAM data into density estimates for harbour porpoises. Line has worked with bioacoustics of porpoises and dolphins during her Ph.D.</p> <p>Jakob Tougaard, Ph.D., Senior Scientist, Aarhus University, Department of Bioscience – Marine Mammal Research, Frederiksborgvej 399, 4000</p>
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ASCOBANS Project Proposal Format

	<p>Roskilde, Denmark. jat@dmu.dk Direct: +45 871 58706, mobile: +45 40984585 <u>Role within the project:</u> Develop methodology for extraction of feeding buzzes. Extraction and identification of harbour porpoise foraging buzzes. Analyses of temporal occurrence of harbour porpoise foraging buzzes. Interpretation of results and reporting. <u>Brief profile:</u> Jakob has worked with bioacoustics of harbour porpoises for the last 20 years and at the forefront of analysis of passive acoustic monitoring data from porpoises for the last 10 years. He has particular interest and expertise in the effects of anthropogenic noise on marine mammals.</p>																																
Budget Estimates	<p style="color: red;">Every project proposal must include a detailed project budget. A breakdown of the expected costs of the project should be prepared. Purchase of non-expendable equipment through ASCOBANS funding is accepted only exceptionally, and the equipment will remain the property of UNEP/ASCOBANS, which will decide at the closure of the project on its disposal or retention.</p> <p style="color: red;">The budget should include not only the funds requested of ASCOBANS, but also possible other financial resources made available by other sponsors or collaborating agencies. The budget should be presented in a tabular format and, where applicable, should clearly indicate the expected source of the various amounts budgeted.</p> <p>The budget below details the costs of the analyses and reporting of the proposed project. The data are made available from the SAMBAH project, with an overall budget of 4,244,000 EUR.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th></th><th style="text-align: center;">AU</th><th style="text-align: center;">AquaBiota</th><th style="text-align: center;">Euro</th></tr> </thead> <tbody> <tr> <td>Data analysis and spatial modelling, hours</td><td style="text-align: center;">80</td><td style="text-align: center;">80</td><td style="text-align: right;">12,065</td></tr> <tr> <td>Interpretation and manuscript drafting, hours</td><td style="text-align: center;">30</td><td style="text-align: center;">10</td><td style="text-align: right;">2,873</td></tr> <tr> <td>Participant meetings will take place at other meetings and over Skype</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td></td></tr> <tr> <td>Au financing, Line A. Kyhn, Hours</td><td style="text-align: center;">90</td><td></td><td style="text-align: right;">6,435</td></tr> <tr> <td>PhD financing, Ida Carlén, Hours</td><td style="text-align: center;">90</td><td></td><td style="text-align: right;">7,137</td></tr> <tr> <td>Total budget</td><td></td><td></td><td style="text-align: right;">28,510</td></tr> <tr> <td>Total applied sum from ASCOBANS</td><td></td><td></td><td style="text-align: right;">14,938</td></tr> </tbody> </table>		AU	AquaBiota	Euro	Data analysis and spatial modelling, hours	80	80	12,065	Interpretation and manuscript drafting, hours	30	10	2,873	Participant meetings will take place at other meetings and over Skype	0	0		Au financing, Line A. Kyhn, Hours	90		6,435	PhD financing, Ida Carlén, Hours	90		7,137	Total budget			28,510	Total applied sum from ASCOBANS			14,938
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References:

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- Carlström, J. 2005. Diel variation in echolocation behaviour of wild harbour porpoises. *Mar Mamm Sci* 21:1-12.

CURRICULUM VITAE

Ida Carlén

Year of birth: 1976

Present position: Project manager

Education: M.Sc in Biology at Stockholm University, 2002



Profile

I have worked as a project manager at AquaBiota for eight years, specializing in marine mammal biology and species distribution modelling. I am one of three project managers for the international LIFE-funded project SAMBAH, which has given me extensive experience in international cooperation and in managing large projects. In April 2012 I also started my PhD at the Zoological Department at Stockholm University, where I focus on spatial distribution and conservation of marine mammals in the Baltic Region. GIS is an integral part of most of my research related work.

Contact information

Ida.carlen@aquabiota.se

08-522 302 43

070-313 30 67

Professional experience

AquaBiota Water Research	2006 - present	Project manager, Ph.D candidate and marine biologist specialising in marine mammal biology and conservation.
Swedish Society for Nature Conservation	2005 - 2006	Information officer in a project educating members in guiding the public in urban nature.
Swedish Museum of Natural History	2002-2005	Senior assistant at the division for contaminant research, responsible for the reporting of porpoise sightings and working with tissue samples of seal in the Environmental Specimen Bank.

Diplomas and certifications

Master of Science	2002	Major in biology including marine biology.
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Relevant post-education courses

Advanced Biostatistics	2013	A 7.5 hp course at Stockholm University, focusing on statistical modelling in R.
Project management/ Academic House	2012	A three-day course for all AquaBiota employees in project management.

Conflict management/ Academic House	2012	A half-day course in prevention, identification and management of conflicts.
Course in R/ Gothenburg University	2012	A one-week PhD course in using R for statistical analyses and modelling.
EU project coordinator/ Vuxenutbildning Mölndal	2011	A Swedish Higher Vocational Education and Training Programme of 45 points (equal to 45 weeks) designed to give the knowledge and training required to plan and manage EU-funded projects in public and private bodies.
Geographical Information Systems/ Stockholm University	2006	10-week university course in GIS, introducing both ArcGIS and IDRISI.

Computer skills, programs etc

ArcGIS	I have six years of experience in working with this commonly used GIS program from ESRI, performing a wide array of tasks including projections, converting between different file formats and performing spatial calculations.
R	R is an open source statistical tool which I have been using for the last year, especially in species distribution modelling.
InDesign	InDesign is a layout program that is very useful and that I have used quite regularly during the last 7-8 years, for example for making printing material in project dissemination activities.
Illustrator	I have basic knowledge in using Illustrator for making simple illustrations.

Language skills

Swedish	Native language
English	Fluent. In 1995-1996 I spent one year at an American community college, and today I use English extensively in my work. I speak, write and read effortlessly in most contexts.

Selected projects at AquaBiota

Constituent	Year	Assignment/Project	Task/Role
Kolmården Wildlife Park	2010 – present	SAMBAH administration	Since 2010 I have had the role of chief administrator for SAMBAH together with Julia Carlström. SAMBAH is an international LIFE-funded project with 15 partners and subcontractors in eight countries around the Baltic Sea. I have a major role in project coordination as well as in technical and financial reporting and project accounting.
Swedish Agency for Marine and	2010 – present	MARMONI administration	AquaBiota is the national coordinator of the MARMONI project, and I have been involved in project accounting and financial reporting to the

Constituent	Year	Assignment/Project	Task/Role
Water Management			coordinating beneficiary.
Swedish Agency for Marine and Water Management	2011 – present	SAMBAH habitat modelling	Currently we have collected environmental GIS layers and are preparing to carry out the habitat modelling which will generate some of the most important results of the SAMBAH project. The modelling will be carried out in summer/fall of 2014.
Kolmården Wildlife Park	2012	RUMBAH	In 2012, together with Russian colleagues, I wrote an application for funding from the Swedish Institute to expand SAMBAH into Russian Baltic waters of the Kallinigrad enclave. This application was approved and RUMBAH was granted funding to carry out fieldwork in 2013.
FOI – Swedish Defence Research Agency	2012	BIAS initial administration	During September-October 2012, AquaBiota had a short contract to assist FOI in the initial administrative issues of starting up the BIAS project.
FOI – Swedish Defence Research Agency	2011 – 2012	PoMM – Protection of Marine Mammals	AquaBiota assisted FOI in identifying and collecting data on marine mammal presence and geographical distribution from several countries around the Baltic Sea.
FOI – Swedish Defence Research Agency	2011	BIAS LIFE+ Proposal	In 2011 and during the first half of 2012, AquaBiota had an important part in writing the BIAS proposal to LIFE+ dealing with descriptor 11 underwater noise in the Marine Strategy Framework Directive.
Kolmården Wildlife Park	2008 – 2009	SAMBAH LIFE+ proposal	Myself and Julia Carlström were an essential part of writing the SAMBAH proposal to LIFE+ together with project coordinator Mats Amundin at Kolmården Wildlife Park. The proposal was accepted and granted LIFE+ funding in October 2009.
Formas	2007-2012	StrandEko	A Formas funded project where me and Martin Iseaus created a model to describe the presence and abundance of wrack deposits on the beaches of Gräsö in the Bothnian Sea. Paper in prep.
SKB	2007	Spatial modelling of marine organisms in Forsmark and Oskarshamn	In 2007, AquaBiota was commissioned to carry out spatial modelling of marine organisms around the nuclear plants in Forsmark and Oskarshamn, as part of the investigations for nuclear waste storage.
Vindval	2007	Vindval fisk	Spatial modelling of fish species at two offshore banks on the Swedish west coast (Fladen and Lilla Middelgrund).

Constituent	Year	Assignment/Project	Task/Role
Stockholm County Administrative Board	2006	Svenska Högarna	The spatial modelling of marine organisms around the islands of Svenska Högarna in the northern part of the Baltic Proper was my first project at AquaBiota, and also my first GIS and spatial modelling task. Results were used as a basis for marine spatial planning and for creating a management plan for the protected area.

Miscellaneous/invited speaker/invited expert

Constituent	Year	Description
ASCOBANS Jastarnia Group	2014	Invited expert at the annual Jastarnia Group meeting in Bonn, Germany. The Jastarnia Group deals with the conservation of the Baltic Sea harbour porpoise.
Stockholm University	2013	Invited lecturer at the course Applied Marine Conservation Ecology
Swedish Agency for Marine and Water Management	2012	Invited to participate in a meeting on marine mammal indicators for the implementation of the Marine Strategy Framework Directive in Sweden.
Stockholm University	2012	Invited lecturer at the course Applied Marine Conservation Ecology

Relevant publications

Scientific publications

Eva Stensland, Ida Carlén, Anna Särnblad, Anders Bignert & Per Berggren, 2006. *Abundance, Distribution and Behavioural Ecology of Indo-Pacific Bottlenose and Humpback Dolphins off the South Coast of Zanzibar*. Marine Mammal Science, 22:3 (667-682).

Ida Carlén, 2002. Ecological investigation of Indo-Pacific humpback dolphins in Menai Bay, Zanzibar, Tanzania. Masters thesis, Zoology department, Stockholm University.

Conference talks and posters

Carlén, I. and Carlström, J. 2014. Spatial distribution of harbour porpoise habitat in the Baltic Sea. Poster presented at the 28th Annual Conference of the European Cetacean Society, Liège, Belgium, April 2014.

Carlström, J., Amundin, M., Thomas, L., Tougaard, J., Teilmann, J., Koblitz, J., Tregenza, N., Carlén, I., Kyhn, L., Wennerberg, D., Loisa, O., Pawliczka, I., Ikauniece, A., Jüssi, I., Šaškov, A. 2013. SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise. Poster presentation at the 27th Annual Conference of the European Cetacean Society, Setubal, Portugal, April 2013

Ida Carlén, Len Thomas and Julia Carlström, 2012. Investigating Harbour Porpoise Group Size in the Baltic Region. Oral talk presented at the 26th Annual Conference of the European Society for Cetaceans, Galway, Ireland, March 2012.

Carlström, J., Amundin, M., Thomas, L., Tougaard, J., Teilmann, J., Koblitz, J., Tregenza, N., Carlén, I., Kyhn, L., Wennerberg, D., Loisa, O., Pawliczka, I., Ikauniece, A., Jüssi, I., Visakavičius, E. 2012. SAMBAH – Static Acoustic

Monitoring of the Baltic Sea Harbour Porpoise. Poster presentation at the 26th Annual Conference of the European Society for Cetaceans, Galway, Ireland, March 2012.

Ida Carlén and Martin Isaeus, 2011. Modelling Wrack Deposits. Oral talk presented at the GeoHab Conference in Helsinki, Finland, May 2011.

Ida Carlén, Len Thomas and Julia Carlström, 2011. Modelling Porpoise Group Size in the Baltic Sea. Oral talk presented at the 19th Biennial Conference on the Biology of Marine Mammals in Tampa, Florida, USA, Nov-Dec 2012

Carlström, J., Amundin, M., Thomas, L., Tougaard, J., Teilmann, J., Tregenza, N., Carlén, I., Kyhn, L., Wennerberg, D., Loisa, O., Pawliczka, I., Ikauniece, A., Jüssi, I., Visakavičius, E. 2011. SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise. Poster presentation at the 19th Biennial Conference on the Biology of Marine Mammals in Tampa, Florida, USA.

Mats Amundin, Ida Carlén, Julia Carlström, Jonas Teilmann, Len Thomas and Jakob Tougaard, 2009. SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise. Poster presented at the 1st International Workshop on Density Estimation of Marine Mammals Using Passive Acoustics in Pavia, Italy, September 2009.

Ida Carlén, Anders Bignert and Eva Stensland, 2007. Efficiency of weighting for irregular survey effort. Poster presented at the European Cetacean Society Conference in Donostia San Sebastian, Spain in April 2007.

Ulrika Westerberg, Ida Carlén, Meike Scheidat & Ursula Siebert, 2006. *Baltic Sea Porpoise Database – Sharing Data Across Borders*. Poster presented at the European Cetacean Society Conference in Gdynia, Poland, April 2006.

Ida Carlén & Per Berggren, 2003. *Ecological investigation of Indo-Pacific humpback dolphins in Menai Bay, Zanzibar, Tanzania*. Poster at the Biennial Conference on the Biology of Marine Mammals in Greensboro, North Carolina, USA, December 2003.

Reports etc

Carlén, I., Carlström, J. & Nikolopoulos, A. 2012. Marine mammal data for PoMM in SE, FI, EE, LV and PL. AquaBiota Notes 2012:2. 34pp.

Carlén, I. & Carlström, J. 2011. Sources of marine mammal data for PoMM in SE, FI, EE, LV, LT and PL. AquaBiota Notes 2011:4. 18pp.

Bergström, U., Bergström, L., Carlén, I., & Isæus M. 2011. GIS-baserade metoder för att kartlägga fiskars livsmiljöer i grunda havsområden, Naturvårdsverket Rapport 6385. 74 sid.

Carlström, J., Florén, K., Isaeus, M., Nikolopoulos, A., Carlén, I., Hallberg, O., Gezelius, L., Siljeholm, E., Edlund, J., Notini, S., Hammersland, J., Lindblad, C., Wiberg, P. & Årnfelt, E. 2010. Modellering av Östergötlands marina habitat och naturvärden. Länsstyrelsen Östergötland, rapport 2010:9.

Carlström, J., I. Carlén, & Isæus M. 2009: Ecosystem approach to marine spatial planning – Polish marine areas and the Natura2000 network., AquaBiota Report 2009:02, ISBN: 978-91-85975-04-4, ISSN: 1654-7225.

Isæus M., A. Nikolopoulos, & I. Carlén, 2008: Wave exposure calculations for the Polish coast., AquaBiota Report 2008:03, ISBN 978-91-85975-02-0, ISSN 1654-7225.

Carlén I. , A. Nikolopoulos & M. Isæus, 2007: Spatial modelling of marine organisms in Forsmark and Oskarshamn, Including calculation of physical predictor variables. Stockholm, Swedish Nuclear Fuel and Waste Management Co, SKB R-07-50, ISSN 1402-3091

Martin Isaeus, Ida Carlén, Cecilia Wibjörn & Sara Hallén, 2007. Svenska Högarna, marinbiologisk kartläggning och naturvärdesbedömning. Länsstyrelsen i Stockholms län, rapport 2007:01.

CURRICULUM VITAE

Julia Carlström

Year of birth: 1970

Present position: Researcher

Education:

PhD in Zoology/Ecology at Stockholm University, 2003

PhLic in Zoology/Ecology at Stockholm University, 2001

MSc in Marine Biology at Gothenburg University, 1997



Profile

- Management of research and development
- Ecology, conservation and acoustics of marine mammals
- Bridging the gap between environmental management and scientific expertise
- Scientific literature reviews, writing and editing
- Spatial modelling of marine organisms and habitats
- Statistical analyses and GIS applications

Contact information

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Professional experience

AquaBiota Water Research	2008-present	2014-present: Researcher, 2010-2014: Deputy Managing Director, 2008-2010: Researcher
Swedish Environmental Protection Agency, Department of Natural Resources	2007-2008	Handling officer
Manpower	2006-2007	Consultant/handling officer at the Swedish Environmental Protection Agency
National Board of Fisheries, Department of Research and Development	2003-2005	Scientist
Stockholm University, Department of Zoology	1996-2003	1998-2003: PhD student, 1996-1997: Swedish principal investigator and project co-administrator

Swedish Environmental
Protection Agency, Department
of Natural Resources

1995

Principal investigator and project co-manager

Selected field experiences

Survey of Western Irish waters
and the Rockall Trough (SIAR)/
University College Cork, Ireland

2000

Shipboard cetacean observer on the western
Irish waters and the Rockall Trough/ 0.5 months

Behaviour of Amazon river
dolphins (*Inia geoffrensis*)/
Organizacion para la
Conservacion de Mamiferos
Acuaticos en Sudamerica
(Yaqu pacha), Ecuador

1999

Volunteer field assistant in Cuyabeno Wildlife
Reserve, Ecuador/ 1 month

Diving behaviour and individual
movements of harbour porpoises
using satellite telemetry and
time-depth recorders/ Grand
Manan Whale and Seabird
Research Station, Canada

1997, 1998

Boat- and land-based volunteer field assistant in
the Bay of Fundy, Canada/ 2 months

Diving behaviour and individual
movements of harbour porpoises
using satellite telemetry and
time-depth recorders/ Institute
of Marine Research, Norway

1997

Boat- and land-based volunteer field assistant in
Sognefjord, Norway/ 1 month

Norwegian Independent Line
Transect Survey (NILS)/ Institute
of Marine Research, Norway

1997

Shipboard cetacean observer on the northern
Norwegian Sea/ 1.5 months

Individual movements of harbour
porpoises at the Swedish west
coast using satellite telemetry/
Stockholm University, Sweden

1996, 1997

Boat- and land-based field assistant in the
Skagerrak Sea, Sweden/ 5 months

Small Cetacean Abundance
Survey (SCANS)/ Sea Mammal
Research Unit, UK

1995

Shipboard cetacean observer on the northern
North Sea/ 1 month

Freshwater crocodile (*Crocodylus
johnstoni*) project, Queensland
turtle research project, and Great
Barrier Reef program/
Queensland National Parks and
Wildlife Service, Australia

1992

Volunteer field assistant and snorkelling guide at
River Lynd, Mon Repos Beach and the Great
Barrier Reef, Queensland/ 3 months

Diplomas and certifications

Driving license

1998

Driving license for private car, Swedish class B

Scuba diving licence: PADI Open Water Diver, PADI Advanced Open Water Diver, PADI Rescue Diver	1990, 1990, 1992	150 hrs+ diving
Coastal Yachtmaster Diploma	1993	Certificate to skipper a vessel more than 4*12 m

Theses

Carlström, J. 2003. Bycatch, conservation and echolocation of harbour porpoises. Ph D thesis, Department of Zoology, Stockholm University, Sweden. ISBN 91-7265-700-6.

Carlström, J. 2001. Bycatches of harbour porpoises in the Baltic region: effects on populations and potential solutions. Ph Lic thesis, Department of Zoology, Stockholm University, Sweden.

Carlström, J. 1999. Diving behaviour in birds, pinnipeds and cetaceans; Ecological conclusions based on data obtained by animal-carried data loggers and transmitters. Introductory paper 1999:4, Department of Zoology, Stockholm University, Sweden. 33pp.

Carlström, J. 1997. Bycatch of harbour porpoise (*Phocoena phocoena*) in a Swedish gill-net fishery monitored by independent observers. M. Sc. thesis 1997:7, Department of Zoology, Stockholm University, Sweden. 20pp.

Relevant post-education courses

Project management/ Academic House	2012	Practical planning, management and leadership of projects/ 3 days
Conflict management/ The Swedish Association of Professional Scientists, Academic House	2012	Prevention, identification and management of conflicts/ 2 days
Basic course for managing directors/ Executive People	2011	Legislation, marketing plan and budget, and responsibilities and roles of managing director and board/ 2 days
Administration of LIFE+ projects/ LIFE Unit, European Commission	2010	Financial and technical administration of LIFE+ projects, important aspects and common errors / 1 day

Participation in working groups etc

Swedish reference group for MSFD Descriptor 11 (underwater noise)	2011-2012	Member
Swedish Society for the Marine Environment (S-MAR)	2000-2004	Board member
European Cetacean Society (ECS)	2001-2003	Swedish student representative
Bostadsrättsföreningen Stengodset 10 (co-operative housing society)	2000-2003	Chair

Baltic Discussion Group of the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS)	1998-2001	Member
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Computer skills, programs etc

GIS and spatial modelling: ArcGIS incl. Spatial Analyst (ESRI), Grasp, R, Quantum GIS (open source), MapInfo	Comprehensive theoretical and intermediate practical knowledge from six years working experience with various GIS programmes and extensions, performing a wide range of tasks including projections, converting between different file formats and performing spatial calculations
Statistical analyses: Statistica, R	Thorough knowledge of statistical principles and their applications on biological data
FreeMind	Intermediate knowledge of the open source mind-mapping programme FreeMind applied as a project management tool

Language skills

Swedish	Native language
English	Fluent
Spanish	Intermediate

Selected projects at AquaBiota Water Research

Constituent	Year	Assignment/Project	Role/Task
Kolmården Wildlife Park, Sweden	2010-2015	SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise/ Administration	Chief-administrator and scientific coordinator together with Ida Carlén/ Carry out international project administration and management of acoustic field surveys of the Baltic Sea harbour porpoise and supplementary studies for C-POD detection range determination, participate in the development of abundance estimation methodologies
Swedish Authority for Marine and Water Management (SwAM)	2010-2015	SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise/ Habitat modelling	Senior scientist/ Participate in the development of spatial modelling methodology of harbour porpoise group size and density, including identification of appropriate environmental layers and their spatial and temporal resolution
Swedish Defence Research Agency	2012-2016	BIAS – Baltic Sea Information on the Acoustic Soundscape	Acting as an advisory in the project scientific work and socioeconomic analysis, participating in meetings and workshops.
Norwegian Institute for Water Research (NIVA)	2010-2013	MESMA – Monitoring and Evaluation of Spatially Managed Areas	Case study leader/ Coordinate the Baltic Sea case study, participate in the development of a management tool for monitoring and evaluation of marine spatial planning and management, apply the

Constituent	Year	Assignment/Project	Role/Task
			tool on the HELCOM Baltic Sea Action Plan and the marine management of Östergötland County, participate in a Marxan analyses and carry out uncertainty analyses
Swedish Defense Research Agency (FOI)	2012	BIAS – Baltic Sea Information on the Acoustic Soundscape/ Initial administration	Scientist/ Assist in technical aspects of initial project management
Swedish Defense Research Agency (FOI)	2011-2012	PoMM – Protection of Marine Mammals	Principal investigator / Collated information on occurrence, density and distribution of marine mammals in Swedish, Finnish, Estonian, Latvian, Lithuanian and Polish waters, wrote parts of the report
Swedish Defense Research Agency (FOI)	2011-2012	BIAS – Baltic Sea Information on the Acoustic Soundscape/ LIFE+ proposal	Scientist/ Participated in the design of the project and the project consortium, wrote technical and background parts of the application, assisted in the administration
Swedish Environmental Protection Agency (SEPA) and Swedish Authority for Marine and Water Management (SwAM)	2010-2011	Marine mammals and underwater noise – mitigation recommendations for selected marine activities	Principal investigator/ Developed national recommendations for mitigation of disturbance of marine mammals by underwater noise based on literature review of generation of underwater noise, effects of underwater noise on marine mammals, and relevant national and international rules and regulations
Swedish Environmental Protection Agency (SEPA) in cooperation with Östergötland County Administrative Board	2009-2010	MMÖG – Marine modelling of Östergötland County	Principal investigator/ Coordinated and administrated the project , planned budget and field work logistics, carried out field survey of benthic species and habitats by drop video camera, participated in spatial modelling and development of methodology for identification and delineation of areas with high natural values, edited the report
Swedish Environmental Protection Agency (SEPA)	2009	Survey of Swedish offshore banks	Project leader/ Coordinated field surveys of benthic communities, fish and seabirds in the Swedish Baltic, Kattegat and Skagerrak Seas, assisted in budget planning, edited an interim report
Kolmården Wildlife Park, Sweden	2008-2009	SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise/ LIFE+ proposal	Scientist/ Participated in the design of the project and the project consortium, wrote background and technical parts the application, assisted in budget planning

Selected projects at the Swedish Environmental Protection Agency (SEPA), Department of Natural Resources

Year	Assignment/Project	Task
2007-2008	National action plan for harbour porpoises (<i>Phocoena phocoena</i>) 2008-2013	Compiled current scientific knowledge and wrote the action in cooperation with SEPA the National Board of Fisheries
2007	National grants for protection and restoration of freshwaters	Evaluated the Swedish County Administrative Boards applications for governmental grants and previously carried out projects for protection and restoration of freshwaters
2006-2007	National evaluation of freshwater protection	Carried out a national evaluation of regulations and management plans for nature reserves containing freshwater areas
2006	National action plans for aquatic species	Reviewed action plan proposals for aquatic species
2006	Governmental commission on threats, critical habitats and survey methods for harbour porpoises in Swedish waters	Compiled data and wrote a report on the current status of threats, critical habitats and survey methods for harbour porpoises in Swedish waters
2006	National environmental quality objective Flourishing Lakes and Streams	Participated in the continued development of a database on nationally important freshwaters

Selected projects at the National Board of Fisheries (NBF), Department of Research and Management

Year	Assignment/Project	Role/Task
2004-2005	National environmental quality objective Flourishing Lakes and Streams	NBF representative in the national working group for the environmental quality objective/ Developed criteria for freshwaters of national importance and in need of restoration, as well as specifications for a database on those waters
2003-2004	Reintroduction of noble crayfish (<i>Astacus astacus</i>) in Swedish waters	Principal investigator/ Evaluated effects of environmental parameters on the reintroduction of noble crayfish (<i>Astacus astacus</i>) in Swedish waters
2004	Development of horizontal echosounding	Research assistant/ Investigated horizontal echo-sounding in combination with uw footage as an alternative methodology to fish sampling by gillnets
1995	Pilot project on bycatch rates of harbour porpoises in the Swedish Skagerrak Sea	Project manager/ Carried out the statistical and logistic planning, engaged professional fishermen, engaged and trained field assistants, performed statistical analyses of bycatch and effort data, carried out technical and financial reporting. Field site: Skagerrak and Kattegat Seas, Sweden

Year	Assignment/Project	Role/Task
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Selected projects at Stockholm University, Department of Zoology

Constituent	Year	Assignment/Project	Role/Task
EC/ Common Fisheries Policy	2001	MISNET – Mitigation of small cetacean by-catch; evaluation of acoustic alarms	Project manager/ Wrote large parts of the research proposal, planned and organised field work logistics, engaged and trained field assistants, applied for permits, collected data on harbour porpoise occurrence with acoustic loggers and electronic theodolite, performed statistical analyses of visual and acoustic data, carried out technical and financial reporting. Field site: Isle of Mull, Inner Hebrides, Scotland, UK
National Board of Fisheries and WWF	1997-1998	Field experiment using acoustic alarms (pingers) to reduce harbour porpoise by-catch in bottom-set gillnets	Project manager/ Wrote large parts of the research proposal, planned and organised field work logistics, engaged professional fishermen, engaged and trained field assistants, performed statistical analyses of bycatch and effort data, carried out technical and financial reporting. Field site: Skagerrak Sea, Sweden.
EC/ FAIR, Swedish Environmental Protection Agency and the National Board of Fisheries	1996-1997	BY-CARE – Assessment and reduction of the bycatch of small cetaceans	National project manager for case study on by-catch rates of harbour porpoises in the Swedish Skagerrak and Kattegat Seas/ Wrote parts of the research proposal, planned and organised field work logistics, engaged professional fishermen, engaged and trained field assistants, performed statistical analyses of bycatch and effort data, carried out technical and financial reporting.

Selected field experiences

Survey of Western Irish waters and the Rockall Trough (SIAR)/ University College Cork, Ireland	2000	Shipboard cetacean observer on the western Irish waters and the Rockall Trough/ 0.5 months
Behaviour of Amazon river dolphins (<i>Inia geoffrensis</i>)/ Organizacion para la Conservacion de Mamiferos Acuaticos en Sudamerica (Yaqu pacha), Ecuador	1999	Volunteer field assistant in Cuyabeno Wildlife Reserve, Ecuador/ 1 month
Diving behaviour and individual movements of harbour porpoises using satellite telemetry and time-depth recorders/ Grand Manan Whale and Seabird Research Station, Canada	1997, 1998	Boat- and land-based volunteer field assistant in the Bay of Fundy, Canada/ 2 months
Diving behaviour and individual movements of harbour porpoises using satellite telemetry and	1997	Boat- and land-based volunteer field assistant in Sognefjord, Norway/ 1 month

Constituent	Year	Assignment/Project	Role/Task
time-depth recorders/ Institute of Marine Research, Norway			
Norwegian Independent Line Transect Survey (NILS)/ Institute of Marine Research, Norway	1997		Shipboard cetacean observer on the northern Norwegian Sea/ 1.5 months
Individual movements of harbour porpoises at the Swedish west coast using satellite telemetry/ Stockholm University, Sweden	1996, 1997		Boat- and land-based field assistant in the Skagerrak Sea, Sweden/ 5 months
Small Cetacean Abundance Survey (SCANS)/ Sea Mammal Research Unit, UK	1995		Shipboard cetacean observer on the northern North Sea/ 1 month
Freshwater crocodile (<i>Crocodylus johnstoni</i>) project, Queensland turtle research project, and Great Barrier Reef program/ Queensland National Parks and Wildlife Service, Australia	1992		Volunteer field assistant and snorkelling guide at River Lynd, Mon Repos Beach and the Great Barrier Reef, Queensland/ 3 months

Invited speaker

Constituent	Year	Title
Mini symposium in conjunction with dissertation by Josefin Starkhammar, Lund University, Lund, Sweden	2011	Methodologies for determination of the detection range of a harbour porpoise click detector
Open workshop on the SAMBAH project, 24th annual conference by the European Cetacean Society, Stralsund, Germany	2010	Spatial modelling of marine mammals

Relevant publications

Scientific publications

Stelzenmüller, V., Breen, P., Thomsen, F., Badalamenti, F., Borja, A., Buhl-Mortensen, L., **Carlström, J.**, D'Anna, G., Dankers, N., Degraer, S., Dujin, M., Fiorentino, F., Galparsoro, I., Gristina, M., Johnson, K., Jones, P.J., Katsanevakis, S., Knittweis, L., Kyriazi, R., Pipitone, C., Piwowarczyk, J., Rabaut, M., Sorensen, T., van Dalen, J., Vassilopoulou, V., Vega, T., Vincx, M., Vöge, S., Weber, A., Wijkmark, N., Jak, R., Qiu W and ter Hofstede, R. 2013. Monitoring and evaluation of spatially managed areas: A generic framework for implementation of ecosystem based marine management and its application. Marine Policy <http://dx.doi.org/10.1016/j.marpol.2012.04.012>

Carlström, J., Berggren, P. and Tregenza, N. 2009. Spatial and temporal impact of pingers on harbour porpoises. Canadian Journal of Fisheries and Aquatic Sciences 66(1):72–82.

Kondolf, M., Boulton, A., O'Daniel, S., Poole, G., Rahel, F., Stanley, E., Wohl, E., Bång, Å., **Carlström, J.**, Cristoni, C., Huber, H., Koljonen, S., Louhi, P. and Nakamura, K. 2006. Process-based ecological river restoration: visualizing three-dimensional connectivity and dynamic vectors to recover lost linkages. Ecology and Society 11(2): 5. [online] URL: <http://www.ecologyandsociety.org/vol11/iss2/art5/>

Carlström, J. 2005. Diel variation in echolocation behaviour of wild harbour porpoises. Marine Mammal Science 21:1-12.

Carlström, J., Berggren, P., Dinnézt, F and Börjesson, P. 2002. A field test of the effectiveness of acoustic alarms to reduce by-catch of harbour porpoise (*Phocoena phocoena*). ICES Journal of Marine Science 59: 816-824.

Berggren, P., Wade, P.R., **Carlström, J.** and Read, A. 2002. Potential limits to anthropogenic mortality for harbour porpoises in the Baltic region. Biological Conservation 103: 313-322.

Carlström, J., Denking, J., Feddersen, P. and N. Øien. 1997. Record of a new northern range of Sowerby's beaked whale (*Mesoplodon bidens*). Polar Biology 17 5: 459-461

Scientific reports

Carlström, J. (subm). Marina däggdjur och undervattensbuller – rekommendationer för att minska påverkan från vissa verksamheter. Rapport inskickad till Havs- och vattenmyndigheten för publicering. (In Swedish with English summary)

Carlén, I., **Carlström, J.** and Nikolopoulos, A. 2012. Marine mammal data for PoMM in SE, FI, EE, LV and PL. AquaBiota Notes 2012:2. 34pp.

Enhus, C., **Carlström, J.**, Didrikas, T., Näslund, J., Lillehammer, L. & Norderhaug K.M. 2012: Strategisk konsekvensutredning av förnybar energiproduktion i Norges havsområden - Delutredning 3: Bottensamhällen, fisk och marina däggdjur. AquaBiota Report 2012:01. (In Swedish)

Carlén, I. and **Carlström, J.** 2011. Sources of marine mammal data for PoMM in SE, FI, EE, LV, LT and PL. AquaBiota Notes 2011:4. 18pp.

Carlström, J., Florén, K., Isæus, M., Nikolopoulos, A., Carlén, I., Hallberg, O., Gezelius, L., Siljeholm, E., Edlund, J., Notini, S., Hammersland, J., Lindblad, C., Wiberg, P. och Årnfelt, E. 2010. Modellering av Östergötlands marina habitat och naturvärden. Länsstyrelsen Östergötland, rapport 2010:9. (In Swedish with English summary)

Naturvårdsverket 2009. Text contributions: Blomqvist, M., Carlén, I., Elhammer, A., Engdahl, A., Hallberg, O., Isæus, M., Nikolopoulos, A., Wiberg, P., Wikström, S. Eds: Lindblad, C., **Carlström, J.** Naturtyper på havets botten baserat på art- och habitat modellering. Naturvårdsverket rapport 5987. 157pp. (In Swedish with English summary)

Carlström, J., I. Carlén, & Isæus M. 2009: Ecosystem approach to marine spatial planning – Polish marine areas and the Natura2000 network., AquaBiota Report 2009:02, ISBN: 978-91-85975-04-4, ISSN: 1654-7225.

Carlström, J., Rappe, C. and Königson, S. 2008. Åtgärdsprogram för tumlare 2008-2013 (*Phocoena phocoena*). Naturvårdsverket rapport 5846. 63pp. (In Swedish with English summary)

Referee judged conference presentations

Carlström, J., Thomas, L., Amundin, M., Teilmann, J., Koblitz, J., Tregenza, N., Carlén, I., Kyhn, L., Svegaard, S., Wennerberg, D., Koza, R., Kosecka, M., Pawliczka, I., Tiberi Ljungqvist, C., Brundiers, K., Mikkelsen, L., Tougaard, J., Galatius, A., Loisa, O., Jüssi, I., Benke, H. 2014. Large-scale static acoustic survey of a low-density population –

estimating the abundance of the Baltic Sea harbour porpoise. Oral presentation at the 28th Annual Conference of the European Society for Cetaceans, Liège, Belgium.

Carlén, I., **Carlström, J.** 2014. Expected distribution of harbour porpoise in the Baltic Sea. Poster presentation at the 28th Annual Conference of the European Society for Cetaceans, Liège, Belgium.

Buhl-Mortensen, L., Galparsoro, I., Vega Fernandez, T., Johnson, K., **Carlström, J.**, D'Anna, G., Pipitone, C., Piwowarczyk, J., Rabaut, M., Schipper, C., K. Sørensen, T., Vanaverbeke, J., Vassilopoulou, V., van Hoof, L., Pecceu, E., Hostens, K. 2013. Experiences from applying a generic framework for the monitoring and evaluation of spatially managed areas in nine case studies in EU sea basins. Oral presentation at ICES Annual Science Conference, Reykjavík, Iceland.

Carlström, J., Thomas, L., Amundin, M., Teilmann, J., Koblitz, J., Tregenza, N., Carlén, I., Kyhn, L., Svegaard, S., Wennerberg, D., Koza, R., Kosecka, M., Pawliczka, I., Tiberi Ljungqvist, C., Mikkelsen, L., Tougaard, J., Galatius, A., Loisa, O., Jüssi, I., Benke, H. 2013. Large-scale static acoustic survey of a low-density population – estimating the abundance of the Baltic Sea harbour porpoise. Oral presentation at the 20th Biennial Conference on the Biology of Marine Mammals, Dunedin, New Zealand.

Carlström, J., Amundin, M., Thomas, L., Tougaard, J., Teilmann, J., Koblitz, J., Tregenza, N., Carlén, I., Kyhn, L., Wennerberg, D., Loisa, O., Pawliczka, I., Ikauniece, A., Jüssi, I., Šaškov, A. 2013. SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise. Poster presentation at the 27th Annual Conference of the European Society for Cetaceans, Setúbal, Portugal.

Enhus, C., **Carlström, J.**, Didrikas, T., Näslund, J. 2012. Application of a spatial approach in a strategic environmental impact assessment of Norwegian offshore wind-power construction on fish, marine mammals and benthic communities. Poster presentation at ICES CM 2012/O.

Carlström, J., Amundin, M., Thomas, L., Tougaard, J., Teilmann, J., Koblitz, J., Tregenza, N., Carlén, I., Kyhn, L., Wennerberg, D., Loisa, O., Pawliczka, I., Ikauniece, A., Jüssi, I., Visakavičius, E. 2012. SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise. Poster presentation at the 26th Annual Conference of the European Society for Cetaceans, Galway, Ireland.

Carlén, I., Thomas, L., **Carlström, J.**, 2012. Investigating Harbour Porpoise Group Size in the Baltic Region. Oral Presentation at the 26th Annual Conference of the European Cetacean Society Conference in Galway, Ireland.

Carlström, J., Amundin, M., Thomas, L., Tougaard, J., Teilmann, J., Tregenza, N., Carlén, I., Kyhn, L., Wennerberg, D., Loisa, O., Pawliczka, I., Ikauniece, A., Jüssi, I., Visakavičius, E. 2011. SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise. Poster presentation at the 19th Biennial Conference on the Biology of Marine Mammals, Tampa, Florida, USA.

Carlén, I., Thomas, L., **Carlström, J.**, 2011. Modelling Porpoise Group Size in the Baltic Sea. Oral Presentation at the Biennial Conference on the Biology of Marine Mammals, Tampa, Florida, USA.

Amundin, M., Carlén, I., **Carlström, J.**, Teilmann, J., Thomas, L. and Tougaard, J. 2009. SAMBAH – Static acoustic monitoring of the Baltic Sea harbour porpoise. Oral presentation at the 1st International Workshop on Density Estimation of Marine Mammals Using Passive Acoustics, Pavia, Italy.

Carlström, J. 2003. Diel variation in echolocation behaviour of wild harbour porpoises. Poster presentation at the 15th Biennial Conference on the Biology of Marine Mammals, Greensboro, NC, USA.

Carlström, J., Berggren, P. and Tregenza, N. 2001. Pingers and porpoises: taking deterrence too far? Oral presentation at the 14th Biennial Conference on the Biology of Marine Mammals, Vancouver, BC, Canada.

Börjesson, P. and **Carlström, J.** 1999. Are there age or sex related differences in capture location of harbour porpoises? Poster presentation at the 13th Biennial Conference on the Biology of Marine Mammals, Maui, HI, USA.

Carlström, J., Berggren, P., Dinnézt, F. and Börjesson, P. 1999. Pingers and displacement of porpoises. Oral presentation at the 13th Biennial Conference on the Biology of Marine Mammals, Maui, HI, USA.

Carlström, J. and Berggren, P. 1998. By-catch removal rate of harbour porpoises in the Swedish Skagerrak Sea. Oral presentation at the World Marine Mammal Science Conference, Monaco.

Carlström, J., Berggren, P. and Dinnézt, F. 1999. A field test of acoustic alarms to reduce harbour porpoise by-catch. Oral presentation at the 13th Annual Conference of the European Society for Cetaceans, Valencia, Spain.

Carlström, J. and P. Berggren. 1995. Bycatch rates of harbour porpoises (*Phocoena phocoena*) in Swedish bottom gillnet fisheries, obtained from independent observers. Poster presentation at the 11th Biennial Conference on the Biology of Marine Mammals, Orlando, FL, USA.

PERSONAL HISTORY

Date of birth: 1st of March 1976 in Denmark.
Materiel status: I live my boyfriend and we have a 1 year old son .

SKILLS / EXPERIENCE

- Demonstrated ability to conduct and carry through scientific projects from idea to published article
- Demonstrated ability to manage scientific projects and to cooperate.
- Demonstrated ability to endure and work under harsh conditions.
- Detailed knowledge of acoustics and sound production of toothed whales.

EDUCATION

Academic degrees: **Ph.D.** December, 2010. Aarhus Graduate School of Science, Aarhus University.
Title: *Passive acoustic monitoring of toothed whales with implications for mitigation, management and biology*.
Cand. scient. (biology), University of Copenhagen, 2006. Title: *Detection of harbour porpoises using T-PODs*.

EMPLOYMENT RECORD

2011 - Scientist, Institute of BioScience, Aarhus University.
2007 - 2010 Ph.D. student, NERI, Aarhus University. PhD Project entitled "*Passive acoustic monitoring of toothed whales with implications for mitigation, management and biology*".
2009 Research assistant, NERI, Aarhus University at Zackenberg Ecological Research Operations (ZERO). Leave from PhD.
2006 - 2007 Research assistant, NERI, Aarhus University with various responsibilities. Acoustic surveys for porpoises, participation in the Galathea3 expedition to make sound recordings of marine mammals, work at Zackenberg in the ZERO programme (more below).

OTHER ACTIVITIES

Referee for e.g. PLOS One, Journal of Acoustical Society of America, Marine Pollution Bulletin, Conservation Biology, Marine Mammal Science.

- Field assistant at ZERO BioBasis Programme, Northeast Greenland. Responsible for: Data sampling including: plant phenology, collection and species identification of arthropods, censuses of mammals and birds, fishing, database management, data analysis and reports. Assistance to various visiting researchers with data collection. (summers of 2002, 2003, 2005 & 2007, autumn 2009).
- Field assistant on acoustic yacht based expedition from Denmark to Greenland to record sounds of deep diving whales with Professor Bertel Møhl, Aarhus University (July-August 2006).
- Employed in a Master of Science position in the project "Atlas of Danish Mammals", at the Natural History Museum of Denmark. responsibilities: Species identification of mammals, educating volunteers, educating the public, database management (Fulltime August 2001-May 2002).
- Student job as teacher and information worker at the Natural History Museum of Denmark, Copenhagen. Teaching of school classes, guidance and information for visitors, creative and practical help with exhibitions, development of teaching material (August 2001 – October 2006).

PROJECTS

I am in the beginning of my career with only few, but successful projects behind me.
2012: PI in "Sound propagation around a seismic survey vessel in the Arctic" (2012-2014): Budget 5.839.480 DKK.
Ph.D: Sound recordings of two cetacean species during Galathea3. (2 Peer-reviewed articles)
Sound recordings of two cetacean species at the Falkland Island (1 peer-reviewed article)
Sound recordings of three porpoise population in Canada and Denmark (1 peer-reviewed article)
Master thesis: One peer-reviewed article

PUBLICATIONS

Peer reviewed articles

Kyhn, LA., Sveegaard, S. and Tougaard, J. (In press). Underwater noise emissions from a drillship in the Arctic. Mar Pol Bul.

Kyhn, LA., Tougaard, J.; Beedholm, K.; Jensen, F.H., Ashe, E.; Williams, R; Madsen, P.T.(2013) Clicking in a Killer Whale Habitat: Narrow-Band, High-Frequency Biosonar Clicks of Harbour Porpoise (*Phocoena phocoena*) and Dall's Porpoise (*Phocoenoides dalli*). / I: P L o S One, Vol. 8(5): e63763.

- Mikkelsen, L.; Len, T. Bert, L.; **Kyhn, L.A.**; Sveegaard, S.; Galatius, A.; Teilmann, J.; Tougaard, J. (2013) Detection range of C-PODs determined from deployments around pound nets with trapped harbour porpoises. Poster session presented at Biennial Conference on the Biology of Marine Mammal, Dunedin, New Zealand.
- Sveegaard, S., Teilmann, J.; **Kyhn, L.A.**; Galatius, A., Dietz, R. (2013) Integrating genetics, morphology, acoustics and satellite telemetry in population management of harbour porpoises (*Phocoena phocoena*). 20th Biennial Conference on The Biology of Marine Mammals, Dunedin, New Zealand.
- Moles, A.T.; Peco, B.; Wallis, I.R.; Foley, W.J.; Poore, A.G.B.; Seabloom, E.W.; Vesk, P.A.; Bisigato, A.J.; Cella-Pizarro, L.; Clark, C.J.; Cohen, P.S.; Cornwell, W.K.; Edwards, W.; Ejrnæs, R.; Gonzales-Ojeda, T.; Graae, B.J.; Hay, G.; Lumbwe, F.C.; Magaña-Rodríguez, B.; Moore, B.D.; Peri, P.L.; Poulsen, J.R.; Stegen, J.C.; Veldtman, R.; von Zeipel, H.; Andrew, N.R.; Boulter, S.L.; Borer, E.T.; Cornelissen, Joep; Farji-Brener, A.G.; Degabriel, J.L.; Jurado, E.; **Kyhn, L.A.**; Low, B.; Mulder, C.P.H.; Reardon-Smith, K.; Rodríguez-Velázquez, J.; De Fortier, A.; Zheng, Z.; Blendinger, P.G.; Enquist, B.J.; Facelli, J.M.; Knight, T.; Majer, J.D.; Martínez-Ramos, M.; Mcquillan, P.; Hui, F.K.C. (2013) Correlations between physical and chemical defences in plants : Tradeoffs, syndromes, or just many different ways to skin a herbivorous cat? *New Phytologist*, Vol. 198(1): 252-263.
- Kyhn L.A.**, Tougaard J., Thomas L., Duve L.R., Stenback J., Amundin M. and Teilmann J. (2012). From echolocation clicks to animal density—Acoustic sampling of harbor porpoises with static dataloggers. *Journal of the Acoustical Society of America* 131(1): 550-560
- Moles, A., Wallis, I., Foley, W., Warton, D., Stegen, J., Bisigato, A., Cella-Pizarro, L., Clark, C., Cohen, P., Cornwell, W., Edwards, W., Ejrnæs, R., Gonzales-Ojeda, T., Graae, B., Hay, G., Lumbwe, F., Moore, B., Peri, P., Poulsen, J., Veldtman, R., von Zeipel, H., Andrew, N., Boulter, S., Borer, E., Campón, F., Coll, M., Farji-Brener, A., De Gabriel, J., Jurado, E., **Kyhn, L.**, Low, B., Mulder, C., Reardon-Smith, K., Rodríguez-Velázquez, J., Seabloom, E., Vesk, P., van Cauter, A., Waldram, M., Zheng, Z., Blendinger, P., Enquist, B., Facelli, J., Knight, T., Majer, J., Martínez-Ramos, M., Mcquillan, P. & Prior, L. (2011) Putting plant resistance traits on the map: A test of the idea that plants are better defended at lower latitudes. *New Phytologist*. 191(3): 777-788.
- Kyhn, L. A.**, Tougaard, J. & Sveegaard, S. (2011). Underwater noise from the drillship Stena Forth in Disko West, Baffin Bay, Greenland National Environmental Research Institute, Aarhus University. 30 s. (NERI Technical Report; 838).
- Kyhn, L. A.**, Jensen, F. H., Beedholm, K., Tougaard, J., Hansen, M. & Madsen, P. T. 2010. Echolocation in sympatric Peale's dolphins (*Lagenorhynchus australis*) and Commerson's dolphins (*Cephalorhynchus commersonii*) producing narrow-band high-frequency clicks. *Journal of Experimental Biology*. 213:1940-1949.
- Tougaard, J. & **Kyhn, L. A.** (2010). Echolocation sounds of Hourglass Dolphins (*Lagenorhynchus cruciger*) are similar to the Narrow Band High-Frequency Echolocation Sounds of the dolphin genus *Cephalorhynchus*. *Marine Mammal Science*. 26(1):239-245.
- Kyhn, L. A.**, Tougaard, J., Jensen, F. H., Wahlberg, M., Stone, G., Yoshinaga, A., Beedholm, K. & Madsen, P. T. (2009). Feeding at a high pitch: Source parameters of narrow band, high-frequency clicks from echolocating off-shore hourglassdolphins and coastal Hector's dolphins. *Journal of Acoustical Society of America*. 125(3):1783–1791.
- Shapiro, A. D., Tougaard, J., Jørgensen, P. B., **Kyhn, L. A.**, Balle, J. D., Bernardez, C., Fjälling, A., Karlsen, J. D. & Wahlberg, M. (2009) Transmission loss patterns from acoustic harassment and deterrent devices do not always follow geometrical spreading predictions. *Marine Mammal Science*. 25(1):53-67
- Kyhn, L. A.**, Tougaard, J., Teilmann, J., Wahlberg, M., Jørgensen, P. B. & Bech, N. I. (2008). Harbour porpoise (*Phocoena phocoena*) static acoustic monitoring: laboratory detection thresholds of T-PODs are reflected in field sensitivity. *Journal of Marine Biological Association of the United Kingdom*. 88(6): 1085-1091.
- Schmidt, N. M., Berg, T. B., Forchhammer, M. C., Hendrichsen, D. K., **Kyhn, L. A.**, Meltøfte, H. & Høye, T. T. (2008). Vertebrate predator-prey interactions in a seasonal environment. *Advances in Ecological Research*. 40, p. 345-370.

OTHER PUBLISHED MATERIAL

- Kyhn, L. A.**, Tougaard, J., Len, T., Duve, L., Steinback, J., Amundin, M., Desportes, G. & Teilmann, J. (2011). A PAM datalogger detection function obtained by visual observations may be used to assess porpoise density acoustically. 19th Biennial Conference on the Biology of Marine Mammals. Talk. Tampa, USA Nov. 27 - dec. 02, 2011.
- Kyhn, L. A.**, Tougaard, J., Len, T., Duve, L. R., Steinback, J., Amundin, M., Desportes, G. & Teilmann, J. (2011). A TPOD detection function obtained by visual observations may be used to assess porpoise density acoustically. Talk. European Cetacean Society Conference. Mar. 21 - mar. 23 2011. Cadiz, Spanien
- Tougaard, J., **Kyhn, L. A.**, Amundin, M., Wennerberg, D. & Bordin, C. (2011). Harbour porpoises are deterred by simulated pile driving noise. Talk. European Cetacean Society Conference. Mar. 21 - mar. 23 2011. Cadiz, Spanien
- Boertmann, D., Sveegaard, S. & **Kyhn, L. A.** (2011) Recordings of noise from seismic survey in Melville Bay, August 2011. Notat Nr. 20-3703.
- Carlström, J., Amundin, M., Thomas, L., Tougaard, J., Teilmann, J., Tregenza, N., Carlen, I., **Kyhn, L. A.**, Wennerberg, D., Loisa, O., Pawliczka, I., Ikauniece, A., Jüssi, I. & Visakavicius, E. (2011). SAMBAH – Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise. 19th Biennial Conference on the Biology of Marine Mammals. Talk. Tampa, USA Nov. 27 - dec. 02, 2011.

- Boertmann, D., **Kyhn**, L. A. & Simon, M. (2011). Slutbemærkning til Cairns ansøgning om 3D-seismik i Pitu-blokken 2011. Nr. 20-3703, aug 03, 2011.
- Kyhn**, L. A. & Boertmann, D. (2011). Cairn's ansøgning om "site-surveys" i blokkene Eqqua og Napariaq. Notat Nr. 20-3082.
- Kyhn**, L. A., Boertmann, D., Tougaard, J., Johansen, K. L. & Mosbech, A. (2011). Guidelines to environmental mitigation assessment of seismic activities in Greenland waters: 3rd revised edition. 61 pp.
- Kyhn**, L. A. (2011). Dataloggere skader ikke trawl. Dansk Fiskeritidende 18(43).
- Kyhn**, L. A. (2011) Sambah projektet beder trawlfiskerne i Østersøen om hjælp: Sambah projektet skal lave den første optælling af marsvin i hele Østersøen og er netop blevet skudt i gang. Dansk Fiskeritidende 18(42).
- Kyhn**, L. A., Boertmann, D. & Simon, M. (2011). Proposal for the study of marine sound exposure levels in Baffin Bay 2011. Notat Nr. 20-3703
- Kyhn**, L. A. & Boertmann, D. (2011). Marine Mammal Impact Assessment in Relation to the proposed NEG11 Seismic Survey in North East Greenland. Notat nr. 20-3703
- Kyhn**, L.A. (2011) Forskningens Døgn, Roskilde, Denmark.
- Kyhn**, L. A., Tougaard, J. & Madsen, P. T. (2010). Acoustic crypsis in small cetaceans: Narrow band high frequency clicks to avoid killer whale predation? European Cetacean Society Conference. Mar. 22 - mar. 24 2011, STalsund, Germany.
- Kyhn**, L. A. (2010). Passive acoustic monitoring of toothed whales with implications for mitigation, management and biology. Ph.D. thesis National Environmental Research Institute, Aarhus University. 166 pp.
- Born, E., Boertmann, D., Heide-Jørgensen, M., Dietz, R., Witting, L., **Kyhn**, L. A., Fosette, S., Riget, F. F., Laidre, K. & Ugarte, F. (2010). Walrus studies in Northeast Greenland In *Zackenberg Ecological Research Operations, 15th annual report, 2009*. Jensen, L. & Rasch, M. (red.). National Environmental Research Institute, Aarhus University s. 116-117.
- Hansen, J., Hansen, L. H., Boesgaard, K., Albert, K., Svendsen, S. H., Hansen, S. H., Michelsen, A., **Kyhn**, L. A., Christoffersen, K. S. & Schmidt, N. M. (2010) Zackenberg Basic: The BioBasis programme In *Zackenberg Ecological Research Operations*. Jensen, L. M. & Rasch, M. (red.). National Environmental Research Institute, Aarhus University s. 46-81.
- Kyhn**, L.A. (2010) Forskningens Døgn, Roskilde, Denmark.
- Boertmann, D., **Kyhn**, L. A. & Witting, L. (2009). Brief field report: Walrus survey in NE Greenland, Aug. 2009. Notat Nr. 20-3007.
- Tougaard, J. & **Kyhn**, L. A. (2009). F02 High-frequency narrow band signals from hourglass dolphins and Peale's dolphin support close phylogenetic affinity with the dolphin genus *Cephalorhynchus*. Animal Sonar Symposium. Sep 14-18. 2009, Kyoto, Japan.
- Kyhn**, L. A. (2009). Klimaforskning: Forskningens Døgn 2009.
- Christiansen, C. T., Nielsen, T. P., Nielsen, N. H., Hendriksen, P. & **Kyhn**, L. A. (2009). Marsvins (*Phocoena phocoena*) brug af Roskilde Fjord. *Flora og Fauna*. 115(2-3):39-44.
- Kyhn**, L. A., Tougaard, J., Madsen, P. T., Wilson, M., Miller, L., Rasmussen, M., Wahlberg, M. & Eriksen, N. (2008). Lyd i Oceanerne: Galathea3. In *Galathea 3 2006-2007*. Nannested Jørgensen, L. (red.). Danmark : Thaning & Appel s. 147-151. 5s.
- Kyhn**, L. A. (2008). Monitoring dolphins with their own sounds: Public talk given at Falkland Conservation Society meeting
- Kyhn**, L. A. (2008). Passive acoustic monitoring of dolphins and porpoises: Talk given for Department of Fisheries , Falkland Islands.
- Kyhn**, L. A., Tougaard, J., Amundin, M., Stenbach, J., Teilmann, J. & Wennerberg, D. (2008) Validating passive acoustic monitoring data loggers by visual observations. *Acoustical Society of America. Journal*. 5, s. 3208.
- Kyhn**, L. A. & Tamstorf, M. P. (2008) *Vegetation in Zackenberg Ecological Research Operations*. 10. 1 udg. Copenhagen, Danish Polar Center, Ministry of Science, Technology and Innovation
- Tougaard, J. & **Kyhn**, L. A. (2007) Forskningens Døgn: Galathea 3 - Kom og hør hvalerne og andre lyde fra den tavse verden under havets overflade. DMU Nyt (Online). 11(5).
- Rasmussen, M. H., Tougaard, J., Eriksen, N., Miller, L. A., Teilmann, J., **Kyhn**, L. A. & Wahlberg, M. (2007). Sound recordings and sightings of cetaceans during the Danish round the world "Galathea3" expedition.
- Kyhn**, L. A. & Tougaard, J. (2006) Linking T-POD calibrations to field performance Workshop "Passive acoustic monitoring" at the 20th Annual Conference of the European Cetacean Society, apr. 02 2006. GDynia, Polen.

Kyhn, L. A., Tougaard, J., Wahlberg, M., Teilmann, J., Boel Jørgensen, P. & Ildsted Bech, N. (2006). Linking T-POD performance in the field to laboratory calibrations and deployment depth. *Proceedings of the Workshop Static Acoustic Monitoring of Cetaceans Held at the 20th Annual Meeting of the European Cetacean Society, Gdynia, Poland, 2 April 2006*. Leeney, R. & Tregenza, N. (red.). 46. European Cetacean Society p. 34-37. 4 pp.

Kyhn, L. A. (2006). Mammals in Klitgaard, A. B. (red.), Rasch, M. (red.) & Caning, K. (red.) (2006) *Zackenberg Ecological Research Operations, 11th Annual Report 2005*. Klitgaard, A. B., Rasch, M. & Caning, K. (red.). Danish Polar Center p. 68-74.

Moles, A., **Kyhn, L. A.**, (red.) (2006) The World Herbivory Project - Zackenberg sites. In Klitgaard, A. B. (red.), Rasch, M. (red.) & Caning, K. *Zackenberg Ecological Research Operations, 11th Annual Report 2005*. Klitgaard, A. B., Rasch, M. & Caning, K. (red.). Danish Polar Center 94 p.

Kyhn, L.A., Tougaard, J., Wahlberg, M., Teilmann, J., Jørgensen, P. and N.I. Bech. (2005). Linking T-Pod performance in the field to laboratory calibrations. 16th biennial conference on the Biology of Marine Mammals, San Diego, USA, 2005.

Award for best pre-doctorial poster presentation.

Kyhn, L. A. (2005). Polarrævens fødesøgningsstrategi: - eller kunsten at lære at fange en polarræv. *Grønland*. 2-3

Kyhn, L. A. & Berg, T. (2004) Feeding Strategy and Searching Behaviour of the Arctic Fox (*Alopex lagopus*): A preliminary study *Zackenberg Ecological Research Operations*. Rasch, M. & Caning, K. (red.). 9. 1 udg. Copenhagen : Danish Polar Center, Ministry of Science, Technology and Innovation

Europass Curriculum Vitae



Personal information

First name(s) / Surname(s)	Jakob Tougaard	
Telephone(s)	(0045) 8715 8706	(0045) 4098 4585 (mobile)
Fax(es)	(0045) 8715 5015	
E-mail	jat@dmu.dk	
Nationality	Danish	
Date of birth	18-08-1967	
Gender	Male	

Occupational field

Senior scientist marine mammals

Work experiences

Dates	2002 to date
Occupation or position held	Senior Scientist, Aarhus University, Department of Bioscience
Main activities and responsibilities	<ul style="list-style-type: none"> • Responsible for research and independent advice regarding underwater noise and effects on marine ecosystems. • Involved as PI and otherwise in numerous projects on effects of offshore wind farms, seismic surveys and other anthropogenic impacts on marine mammals • Key adviser on underwater noise to Greenland Bureau of Minerals and Petroleum, Danish Nature Agency, Danish Energy Agency and the Danish Navy. • Independent adviser on marine mammals and underwater noise to power companies, wind energy developers and others. • Key participant in EU-LIFE project SAMBAH (acoustic monitoring of harbour porpoises in the Baltic Sea) • Danish PI in EU-LIFE application BIAS (underwater noise monitoring in the HELCOM area in relation to the marine strategy framework directive) • List of publications includes scientific papers, technical reports, policy papers and books and comprises more than 100 references.
Name and address of employer	Orbicon
Dates	2002
Occupation or position held	Biological consultant
Main activities and responsibilities	<ul style="list-style-type: none"> • Project manager on a number of studies related to impact of offshore wind energy on marine mammals. • Consultant on other issues regarding marine mammals
Name and address of employer	Centre for Sound Communication, University of Southern Denmark
Dates	1996-2001

Occupation or position held	Post Doc																																								
Main activities and responsibilities	<ul style="list-style-type: none">• Independent research on basic auditory physiology of harbour porpoises and seals• Independent research on the effects of noise on auditory systems• participation in projects related to mitigation of bycatch of marine mammals• Teaching on undergraduate and graduate level courses in animal physiology, ethology, bioacoustics and zoology.																																								
Education and training																																									
Dates	1987 – 1992																																								
Title of qualification awarded	Master of Science (Biology) (MSc)																																								
Principal subjects/occupational skills covered	<ul style="list-style-type: none">• Animal Physiology• Sensory ecology• Neuroethology• Population Ecology																																								
Name and type of organisation providing education and training	Aarhus University																																								
Dates	1992 – 1996																																								
Title of qualification awarded	Ph.D. (Bioacoustics)																																								
Principal subjects/occupational skills covered	<ul style="list-style-type: none">• Acoustics• Neurobiology• Sensory physiology• Data acquisition and signal analysis																																								
Name and type of organisation providing education and training	Aarhus University and Duke University, North Carolina.																																								
Other language(s)	English, German																																								
Self-assessment	<table><tr><th colspan="4">Understanding</th><th colspan="4">Speaking</th><th colspan="2">Writing</th></tr><tr><th colspan="2">Listening</th><th colspan="2">Reading</th><th colspan="2">Spoken interaction</th><th colspan="2">Spoken production</th><th colspan="2"></th></tr><tr><td>C2</td><td>Proficient user</td><td>C2</td><td>Proficient user</td><td>C1</td><td>Proficient user</td><td>C1</td><td>Proficient user</td><td>C2</td><td>Proficient user</td></tr><tr><td>B1</td><td>Independent user</td><td>B2</td><td>Independent user</td><td>B1</td><td>Independent user</td><td>B1</td><td>Independent user</td><td>A2</td><td>Basic user</td></tr></table>	Understanding				Speaking				Writing		Listening		Reading		Spoken interaction		Spoken production				C2	Proficient user	C2	Proficient user	C1	Proficient user	C1	Proficient user	C2	Proficient user	B1	Independent user	B2	Independent user	B1	Independent user	B1	Independent user	A2	Basic user
Understanding				Speaking				Writing																																	
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B1	Independent user	B2	Independent user	B1	Independent user	B1	Independent user	A2	Basic user																																
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English																																									
German																																									

(*) Common European Framework of Reference for Languages

(*) Common European Framework of Reference for Languages

Selected publications

Jakob Tougaard's list of publications includes scientific papers, conference proceedings and technical reports and comprises more than 100 references. A selection of publications in English is given below:

- Kyhn, LA, Tougaard, J, Thomas, L, Duve, LR, Stenback, J, Amundin, M, Desportes, G & Teilmann, J 2012, 'From echolocation clicks to animal density – acoustic sampling of harbour porpoises with static dataloggers', *Acoustical Society of America. Journal*, vol 131, nr. 1, s. 550-560.
- Kyhn, LA, Boertmann, D, Tougaard, J, Johansen, KL & Mosbech, A 2011, *Guidelines to environmental impact assessment of seismic activities in Greenland waters: 3rd edition, Dec. 2011.*
- Dudzinski, K, Brown, RJ, Lammers, M, Lucke, K, Mann, D, Simard, P, Wall, C, Rasmussen, M, Magnúsdóttir, E, Tougaard, J & Eriksen, N 2011, 'Trouble-shooting deployment and recovery options for various stationary passive acoustic monitoring devices in both shallow- and deep-water applications', *Acoustical Society of America. Journal*, vol 129, nr. 1, s. 436-448.
- Scheidat, M, Tougaard, J, Brasseur, S, Carstensen, J, van Polanen Petel, T, Teilmann, J & Reijnders, P 2011, 'Harbour porpoises (*Phocoena phocoena*) and wind farms: a case study in the Dutch North Sea', *Environmental Research Letters*, vol 6, nr. 2, s. 025102.
- Sveegaard, S, Teilmann, J, Tougaard, J, Berggren, P, Mouritsen, K & Gillespie, D 2011, 'Acoustic surveys confirm the high-density areas of harbour porpoises found by satellite tracking', *I C E S Journal of Marine Science*, vol 68, nr. 5, s. 929-936.
- Sveegaard, S, Teilmann, J, Tougaard, J, Dietz, R, Mouritsen, KN, Desportes, G & Siebert, U 2011, 'High-density areas for harbor porpoises (*Phocoena phocoena*) identified by satellite tracking', *Marine Mammal Science*, vol 27, nr. 1, s. 230-246.
- Tougaard, J, Mortensen, LO & Teilmann, J 2011, 'Ambient noise and marine mammals: lessons from pilot studies of ship noise monitoring in the danish waters', *Proceedings of the Institute of Acoustics*, 71-73.
- Kyhn, LA, Tougaard, J & Sveegaard, S 2011, *Underwater noise from the drillship Stena Forth in Disko West, Baffin Bay, Greenland*, NERI Technical Report, nr. 838, National Environmental Research Institute, Aarhus University.
- Nabe-Nielsen, J, Tougaard, J, Teilmann, J & Sveegaard, S 2011, *Effects of wind farms on harbour porpoise behaviour and population dynamics*, Scientific Report from DCE - Danish Centre for Environment and Energy, nr. 1, Aarhus University, DCE - Danish Centre for Environment and Energy.
- Tougaard, J & Wisz, M 2010, 'General models of the spatial distribution of porpoises require representative data and parsimony: Comment on Skov & Thomsen (2008)', *Marine Ecology - Progress Series*, vol 399, s. 295-297.
- Murphy, S (red.), Brasseur, S, Brensing, K, Clarke, M, Duck, C, Geelhoed, S, Haelters, J, Hall, A, Härkönen, T, Hasselmeier, I, Jauniaux, T, Jepson, P, Jüssi, M, Lens, SL, Lesage, V, Loneragan, M, Nilssen, KT, Pierce, G, Pinn, E, Prieto da Silva, RCDAB, Santos, RS, Notarbartolo di Sciara, G, Silva, M, Sipilä, T, Tougaard, J, Uranga, RC, Waring, G & Werner, S 2010, *Report of the Working Group on Marine Mammal Ecology (WGMME), 12-15 April 2010, Horta, The Azores*, ICES CM, nr. 2010/ACOM:24, International Council for the Exploration of the Sea.
- Shapiro, AD, Tougaard, J, Jørgensen, PB, Kyhn, LA, Balle, JD, Bernardez, C, Fjälling, A, Karlsen, JD & Wahlberg, M 2009, 'Transmission loss patterns from acoustic harassment and deterrent devices do not always follow geometrical spreading predictions', *Marine Mammal Science*, vol 25, nr. 1, s. 53-67.
- Tougaard, J, Carstensen, J, Teilmann, J, Skov, H & Rasmussen, P 2009, 'Pile driving zone of responsiveness extends beyond 20 km for harbor porpoises (*Phocoena phocoena* (L.)) (L)', *Acoustical Society of America. Journal*, vol 126, nr. 1, s. 11-14.
- Tougaard, J, Henriksen, OD & Miller, LA 2009, 'Underwater noise from three types of offshore wind turbines: estimation of impact zones for harbor porpoises and harbor seal', *Acoustical Society of America. Journal*, vol 125, nr. 6, s. 3766-3773.
- Tougaard, J, Madsen, PT & Wahlberg, M 2008, 'Underwater noise from construction and operation of offshore wind farms', *Bioacoustics*, vol 17, nr. 1-3, s. 143-146.

**FORMAT FOR PROJECT PROPOSALS
FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE**

Title Developing and testing pingers inaudible to seals	Justification: NSP JP	Project ID: 2014-04
Implementing Agency / Applicant	Senior Scientist Finn Larsen National Institute of Aquatic Resources Technical University of Denmark Charlottenlund Castle 2920 Charlottenlund DENMARK Phone: +45 35 88 34 96 Fax: +45 35 88 33 33 email: fl@aqua.dtu.dk	
Collaborating Agencies / Other Sponsors	Swedish University of Agriculture Science. GD Natur, Denmark. Kolmården Animal Park, Sweden.	
Background / Problem	<p>Pingers have proven to be efficient in decreasing bycatch of harbour porpoise in gillnets (Trippel <i>et al.</i>, 1999; Larsen <i>et al.</i>, 2002; Larsen & Eigaard, 2014). Therefore, all ASCOBANS Action plans and the European Council Regulation 812/2004, recommend pingers to be used in gillnet fisheries as a mitigation method to reduce bycatch (ASCOBANS, 2009a, b; ASCOBANS, 2012; EC, 2004). However, a negative effect of pingers can be that they function as a “dinner bell” to some seal species, <i>i.e.</i> they attract seals to gillnets and thereby increase an already existing seal/fishery conflict. The conflict includes damage to fish and fishing gear as well as bycatch of seals. In the ASCOBANS area grey, harbour and ringed seals are present. The dominating species in the Baltic area, the area most subjected to seal/fisheries interactions, are grey seals. Underwater, grey seals can hear sounds at frequencies from 1 kHz up to 60 kHz, however, above 60 kHz, the sensitivity is poor, and different frequencies cannot be discriminated (Richardson <i>et al.</i>, 1995). The pingers presently available on the market emit sounds with frequencies ranging from 10 kHz to 160 kHz depending on the type of pinger. Earlier studies in the Baltic Sea have also shown that grey seals can learn to localize fishing gear by acoustic deterrents meant to harass seals (Königson, 2007). In the same area, it was also shown that seal damages on fish caught in nets equipped with pingers emitting 20 to 160 kHz signals did increase (Stridh, 2008). Harbour porpoises have high hearing acuity in a wide frequency range up to 140 kHz (Kastelein <i>et al.</i>, 2010), which is well above grey seals’ hearing capacity. It is therefore possible to develop a pinger above the hearing threshold of seals that might still have the same effect in reducing bycatch of porpoises as the pingers available today.</p> <p>The present project proposal covers the first stage, <i>i.e.</i> developing and testing a pinger, which is inaudible to grey seals. The second stage, <i>i.e.</i> testing if such a pinger can also reduce bycatch of harbour</p>	

porpoises, is not included in this proposal. However, experiments with captive harbour porpoises have shown that they are deterred by both 70 and 120 kHz signals (Kastelein *et al.*, 2008), so we are confident that a high-frequency pinger will work as intended. Funding for this second stage will be sought if the results of the first stage are positive.

References:

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ASCOBANS. 2009b. Conservation plan for Harbour Porpoise (*Phocoena Phocoena* L.) in the North Sea. http://ascobans.org/pdf/ASCOBANS_NorthSeaPlan_MOP6.pdf

ASCOBANS. 2012. Conservation Plan for the Harbour Porpoise Population in the Western Baltic, the Belt Sea and the Kattegat. http://www.ascobans.org/sites/default/files/document/HarbourPorpoise_Conse rvationPlan_WesternBaltic_MOP7_2012.pdf

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ICES. 2010. Report of the Workshop to Evaluate Aspects of EC Regulation 812/2004 (WKREV812), 28–30 September 2010, Copenhagen, Denmark. *ICES CM 2010/ACOM*, 57.

Butler, J.R.A., Middlemas, S.J., Graham, I.M. & Harris, R.N. 2011. Perceptions and costs of seal impacts on Atlantic salmon fisheries in the Moray Firth, Scotland: Implications for the adaptive co-management of seal-fishery conflict. *Marine Policy* 35(3):317–323.

Kastelein, R., Hoek, L., de Jong, C. & Wensveen, P.J. 2010. The effect of signal duration on the underwater detection thresholds of a harbor porpoise (*Phocoena phocoena*) for single frequency-modulated tonal signals between 0.25 and 60 kHz. *Journal of Acoustic Society of America*, 128:3211–3222.

Kastelein, R., Verboom, W.C., Jennings, N., de Haan, D. & van der Heul, S. 2008. The influence of 70 and 120 kHz tonal signals on the behavior of harbour porpoises (*Phocoena phocoena*) in a floating pen. *Marine Environmental Research* 66:319–326.

Königson, S. 2007. Seal behaviour around fishing gear and its impact on Swedish fisheries. *Licentiat thesis. Department of Marine Ecology, Gothenburg University*.

Königson, S. 2011. Seal and Fisheries; A study of the conflict and some possible solutions. *PhD. thesis, Department of Marine Ecology, University of Gothenburg*.

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Larsen, F., Vinther, M. & Krog, C. 2002. Use of pingers in the Danish North Sea wreck net fishery. *Paper SC/54/SM32 presented to IWC Scientific Committee, April-May 2002 (unpublished)* 8pp.

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	<p>Trippel, E., Strong, M., Terhune, J. & Conway, J. 1999. Mitigation of harbour porpoise (<i>Phocoena phocoena</i>) by-catch in the gillnet fishery in the lower Bay of Fundy. <i>Canadian Journal of Fisheries and Aquatic Science</i>, 56:113-123.</p> <p>Richardson, W., Greene, Jr, C., Malme, C. & Thomson, D. 1995. Marine mammals and noise. Academic Press.</p> <p>Stridh, H. 2008. Can Grey seals (<i>Halichoerus grypus</i>) learn to use acoustic deterrents to locate fishing gear? <i>Master thesis at Stockholm University</i>.</p>
Objectives	<p>There is a need for an alternative pinger not audible to seals in all the areas mentioned above, not only to introduce a mitigation measure without negative side effects but also to reduce the seal bycatch and damage to fish and fishing gear by seals that is occurring in fisheries today.</p> <p>The main objective of the present study is thus to develop a pinger not audible to seals as a first step towards using such a pinger to reduce the bycatch of harbour porpoises without attracting seals.</p> <p>More specifically the objective is to develop a pinger, which has negligible energy in frequencies below around 60 kHz and ascertain that this is indeed inaudible to seals.</p>
Relevance to ASCOBANS	<p>The recovery plan for Baltic Harbour Porpoise recommends as a prioritized mitigation method that pingers not audible to seals should be developed. The Conservation Plan for Harbour Porpoise in the North Sea also recommends development of alternative pingers. We believe that the present study is consistent with the prioritized mitigation measures set out in the ASCOBANS Conservation Plans for Harbour Porpoises.</p>
Activities	<p>Task 1 includes behavioural studies of captive grey seals' reactions to high-frequency pinger signals. We will use a programmable signal generator and a suitable transducer to emit signals with different frequency content into the seals' pool. The study will be designed as a blind, controlled experiment with a person activating the signal generator and another person observing the behavioural reactions of the seals. The person activating the signal generator will choose randomly when the signal generator is activated while the observer is blind to the choice. The control group will consist of silent periods, and the whole experiment will be recorded on video to be able to revisit the experiment <i>post-facto</i>. This will be done at the Fisheries and Maritime Museum in Esbjerg, Denmark, where there at the moment are 2 grey seals. This task will be carried out by Mats Amundin, Sara Königson, Geneviève Desportes and Finn Larsen, and will be finalised in November 2014.</p> <p>Task 2 uses the results from Task 1 to design and manufacture a proto type high-frequency pinger (HF-pinger) for use in behavioural experiments with seals. The design will be carried out by Mats Amundin in cooperation with Aquatec Ltd. (UK) and the manufacturing of the proto type will be done by Aquatec Ltd. When the first proto type HF-pinger is ready, it will undergo a number of measurements at Kolmården Animal Park, Sweden, to determine if it performs as specified. This stage of the project will be carried out by Mats Amundin and will be finalised in late January 2015.</p> <p>Task 3 includes a short preliminary test of the first proto type HF-pinger to determine if it appears to be inaudible to seals. This will be done at the Fisheries and Maritime Museum in Esbjerg, Denmark. The test will include exposing the two grey seals to the HF-pinger and an</p>

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	<p>AQUAmark100 pinger and observe the seals' reactions. It will be carried out by Finn Larsen and Geneviève Desportes and finalised in late February 2015. If the results are positive, a second identical HF-pinger will be manufactured and we will continue with Task 4. If the seals react to the HF-pinger, a new proto type with a higher frequency range will be manufactured and tested.</p> <p>Task 4 includes a more rigorous test of whether the proto type HF-pinger is inaudible to grey seals. This will include a formalised behavioural study of the reactions of the two grey seals to both the HF-pinger and a standard AQUAmark100 pinger. The study will be designed as a blind, controlled experiment with a person activating the pingers and another person observing the behavioural reactions of the seals. The pinger activator chooses randomly when the pingers are activated and the observer is blind to the choice. The control group will consist of silent periods, and the whole experiment will be recorded on video to be able to revisit the experiment <i>post-facto</i>. This task will be carried out by Mats Amundin, Sara Königson, Geneviève Desportes and Finn Larsen, and will be conducted in March 2015.</p>		
Outputs	<p>The outputs of Task 1 will include a short report on the results of the behavioural studies of how the grey seals react to the high-frequency signals. These results will form the basis for Task 2.</p> <p>The outputs of Task 2 will include a documentation of the HF-pinger design agreed upon and the results of the performance measurements in the form of a short report. It will also include the first actual proto type HF-pinger manufactured.</p> <p>The outputs of Task 3 will include a report of the results of the preliminary test of exposing seals to the HF-pinger as well as the second proto type HF-pinger.</p> <p>The outputs of Task 4 will include a short report on the results of the behavioural studies of how the grey seals react to the HF-pingers.</p> <p>The results of the four tasks will be included in the final project report to ASCOBANS.</p> <p>The results of the project will be presented to relevant scientific committees and working groups including the ASCOBANS Jastarnia Group, the ASCOBANS North Sea Group, the ICES WGBYC and the IWC Scientific Committee.</p> <p>The results will also be published in a suitable peer-reviewed journal.</p>		
Work Plan and Timetable	Period	Activity	Responsible person
	November 2014	Testing high-frequency signals on grey seals at the Fisheries and Maritime Museum in Esbjerg, Denmark.	Sara Königson
	December 2014	Designing and manufacturing the first proto type HF-pinger.	Mats Amundin
	January 2015	Performance measurements conducted at Kolmården Animal Park, Sweden.	Mats Amundin
	February 2015	Preliminary tests of the first proto type HF-pinger at the Fisheries and Maritime Museum in Esbjerg,	Finn Larsen

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		Denmark.	
	March 2015	Formalised behavioural study of the reactions of grey seals to the proto type HF-pinger.	Geneviève Desportes
	April 2015	Present preliminary results to the ASCOBANS Jastarnia Group.	Finn Larsen
	Summer 2015	Present preliminary results to the ASCOBANS North Sea Group and the IWC Scientific Committee.	Geneviève Desportes and Finn Larsen
	Summer 2015	Submit draft publication to peer-review journal.	Finn Larsen
	August 2015	Submit final report to ASCOBANS	Finn Larsen
Project Personnel	<p>Sara Königson, PhD, Research Scientist Institute of Coastal Research Swedish University of Agriculture Science P.O. Box 4 S - 453 21 Lysekil Sweden email: sara.konigson@slu.se Telephone: +46 (0) 18-67 10 00 Skype: sarakonigson</p> <p>Geneviève Desportes, PhD GD Natur Stejlestræde 9, Bregør Denmark Co-ordinator of ASCOBANS North Sea Conservation Plan email: genevieve@gdnatur.dk</p> <p>Mats Amundin, PhD Research Director Kolmården Animal Park Guest prof. Linköping University Koordinator SAMBAH (www.sambah.org) email: Mats.Amundin@kolmarden.com Phone: +46 (0) 10 708 7547</p>		
Budget Estimates	<p>Total budget: 27,647 EUR</p> <p>Total sum sought from ASCOBANS: 15,626 EUR</p> <p>Please see attached budget for details.</p>		

For more information please contact the ASCOBANS Secretariat at
ascobans@ascobans.org.

Grey seal response to high-frequency pingers

	ASCOBANS	Existing	Unit	Price	Financing					SUM
	Amount	Amount			ASCOBANS	SLU	DTU Aqua	GD Natur	Kolmården	
Field work - Sara	20	30	hours	67 EUR	1,340	2,010				3,350 EUR
Field work - Finn	30	30	hours	55 EUR	1,650		1,650			3,300 EUR
Field work - Mats	40	20	hours	55 EUR	2,200				1,100	3,300 EUR
Field work - Genevieve	40	10	hours	55 EUR	2,200			550		2,750 EUR
Subsistence - field work	20	6	days	134 EUR	2,680		804			3,484 EUR
Travel - field work	4	2	trips	150 EUR	600		300			900 EUR
Camera systems		2	systems	604 EUR	0		1,208			1,208 EUR
Signal generator		1		1,475 EUR	0				1,475	1,475 EUR
Transducer		1		800 EUR	0				800	800 EUR
HF pinger development cost	2			1,000 EUR	2,000					2,000 EUR
Sum	130	90	hours							
Indirect costs (40 % of salary)					2,956	804	660	220	440	5,080 EUR
TOTAL					15,626	2,814	4,622	770	3,815	27,647 EUR

**FORMAT FOR PROJECT PROPOSALS
FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE**

Title: Harbour porpoise and fisheries – a misalliance or a stable relationship?	Justification: CP WBBK	Project ID: 2014-05
Implementing Agency / Applicant	The Danish Society for Nature Conservation. Responsible: M.Sc. Bo Håkonsson. Phone: +45 22275157, Mail boh@dn.dk WWF Denmark. Responsible: M. Sc. Mette Blaesbjaerg. Phone: +45 26294410. Mail: m.blaesbjaerg@wwf.dk	
Collaborating Agencies / Other Sponsors	The following persons will contribute to the project with their knowledge and contacts: Ph.D. Jonas Theilmann, University of Aarhus Ph.D. Signe Sveegaard, University of Aarhus M.Sc. Jacob Tougaard, University of Aarhus M.Sc. Finn Larsen, AQUA, Danish Technical University (DTU) Ph.D. Lotte Kindt-Larsen, DTU AQUA M.Sc. Maj Munk and M.Sc. Michael Borch Grell, Nature Agency, Ministry for the Environment M.Sc. Magnus Wahlberg, Fiord and Belt Center, University of Southern Denmark. M.Sc. Anja Boye Gadegaard, Ministry for Food, Agriculture and Fisheries.	
Background / Problem	<p>Since the adoption of the Habitats Directive in 1992, the protection of the harbour porpoise in the North Sea, the Skagerrak, the Kattegat and the Baltic has been discussed in a number of committees and conferences. Several international plans have been adopted, especially by ASCOBANS – eg. the Jastarnia plan, the plan for harbour porpoise in the North Sea, the plan for the harbour porpoise in the “gap” area. Moreover the EU Commission has specified the need for protection of the porpoise and the ways to achieve it in Regulation 812 from 2004, and in the communications to member states in 2009 and 2011. However, the national implementation in Denmark of the Directive and the mentioned plans still lacks far behind both the wording and the intentions in the mentioned plans.</p> <p>Both DSNC and WWF Denmark feel, that although some gaps in our total knowledge of the harbour porpoise still exist, there is now sufficient knowledge to elaborate a national long-term plan for the conservation of the porpoise and for a porpoise-free future fishery.</p> <p>Such a plan has not been developed before.</p>	

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Objectives	<p>This project will provide a comprehensive scientific national base for:</p> <p>1) elaborating a new activity plan for the protection of the porpoise in the Kattegat, the Belt Sea and Western Baltic (WBBK)</p> <p>and 2) a proposal for “porpoise-free” fishing activities in the WBBK area.</p> <p>The final report will:</p> <p>Compile and update existing knowledge on the state-of-the-art of Danish WBBK-porpoise population size, distribution, feeding behaviour, mating and threats.</p> <p>Present both the numbers and the development of bycatch of porpoise in the Danish fisheries through the last 20-25 years, including an assessment of the bycatch in semi-professional and leisure fisheries.</p> <p>Assess the effect of the employment of “pingers” on the behaviour of harbour porpoise.</p> <p>Compile the experience from Denmark and neighbouring countries on whatever experiments have been undertaken with “porpoise-free” fishing gear and fishing behaviour.</p> <p>If feasible, together with the fishing sector formulate a proposal for alternative fishing gear and/or fishing regulation to avoid porpoise bycatch.</p>
Relevance to ASCOBANS	<p>The project will follow up on the ASCOBANS conservation plan for the WBBK area from 2012, and will constitute a – new – pressure from the Danish green (blue) NGO’s on both the Nature Conservation and the Fisheries authorities to give high priority to the ASCOBANS conservation plan.</p> <p>Moreover, the report – issued in both Danish and English – will form the basis for a public campaign through primarily the DSNC and WWF in order to raise the interest of the general public in the harbour porpoise issue.</p>
Activities	<p>The project will be carried out both as a desk-top part, compiling all relevant published information, and an interview-part, based on interviews with fishermen (professional, part-time, leisure), fishery technologists, national experts and scientists, and managers.</p> <p>Project coordinator and main author will be marine biologist Peter Blanner, M. Sc., from PBConsult, and fisheries biologist Carsten Krog from Krogconsult together with fisheries biologist Lotte Kindt-Larsen, Ph.D., from DTU Aqua, who will undertake the interviews with the fishermen and will deliver the fisheries part of the report.</p> <p>If feasible, the project will come up with proposals for alternative porpoise-free fishing gear, and will propose a national plan for the designation, the construction and the initial experiments for any promising new ideas to avoid bycatch.</p>

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Outputs	<p>The project will result in a report in Danish and in English, comprising two phases:</p> <p>Phase 1: Presentation of existing knowledge and management of the porpoise in Danish waters, of the development in porpoise bycatch, of the change in fishing practise and fishing intensity over the last 20-25 years, and of the current threats to the porpoise population.</p> <p>Proposal for a revision of the Danish harbour porpoise action plan from 2005, including proposal for best practice in porpoise-free fishing.</p> <p>Phase 2: Assessment of the potential for designing porpoise-free fishing gear and/or fishing practises in Danish waters, and, if feasible, proposal for a plan to design, construct and test any new gear.</p>
Work Plan and Timetable	<p>The project will be initiated when the total financing is in place, and the final report will be issued not later than 1 year after the project start.</p> <p>Phase 1 is planned to be finished after 6 months, phase 2 after another 3 months, and the final reporting and editing again after 3 months.</p> <p>The project partners DSNC and WWF Denmark will be overall responsible for the project progress: Economy and time table.</p> <p>PBConsult will be responsible for the project progress, for meeting the objectives, and for delivery of the outputs.</p>
Project Personnel	<p>The project progress will be monitored by a group, consisting of:</p> <p>DSNC, by Bo Håkonsson WWF, by Mette Blaesbjaerg DTU AQUA, by Lotte Kindt-Larsen/Finn Larsen Aarhus University, by Jonas Theilmann/Signe Sveegaard. PBConsult KrogConsult.</p> <p>The monitoring group without the consultants will make the final acceptance of the report.</p> <p>Personnel profiles:</p> <p><u>Bo Håkonsson</u>: Scientific staff member at the DSNC since 1997, working with the protection and management of marine (and terrestrial) mammals as an NGO. Before that 3 years at the Ministry for the Environment.</p> <p><u>Mette Blaesbjaerg</u>: Scientific staff member at WWF Denmark</p>

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	<p>since 2010. Fisheries biologist and assistant researcher at DTU AQUA from 2007-10.</p> <p><u>Peter Blanner</u>: Marine biologist since 1977. 24 years with The County of North Jutland, working with environmental protection, Integrated Coastal Zone Management and Planning, fisheries management. 6 years with WWF Denmark working with the Common Fisheries Policy, ASCOBANS, National Parks – both terrestrial and marine. 3 years senior consultant with the Southern Funen Archipelago National Park. Private consultant since 2012.</p> <p><u>Carsten Krog</u>. Fisheries biologist. 20 years as consultant with The Danish Fishermen's Union. Private consultant last 8 years.</p>
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Budget Estimates	Budget estimate:	
	Project coordination, compiling nat. and internat. data, Interviews managers, experts	16.000 €
	Interviews, fishermen	8.670
	Assessment total bycatch	2.700
	Assessment environmental stress	2.700
	Internat. Coordination WWF and DN	5.400
	Investigation of potential for new gear/practices	18.670
	Reporting, translation	13.000
	Travels, meetings, purchase of data	2.700
	Lay-out, printing of report, distribution	4.000
	<u>VAT</u>	<u>18.260</u>
	<u>Total</u>	<u>92.100 €</u>
	Planned financing:	
	ASCOBANS	15.000 €
	NORDEA Bank	26.700
	Open Air Council	33.100
	<u>Nature Agency, Min. for the Environment</u>	<u>16.700</u>
	<u>Total</u>	<u>92.100</u>

For more information please contact the ASCOBANS Secretariat at
ascobans@ascobans.org.

**FORMAT FOR PROJECT PROPOSALS
FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE**

Title Underwater Noise Mapping of the English Channel and the North Sea.	Justification: Resolutions 5.4, 6.2 and 7.2	Project ID: 2014-06
Implementing Agency / Applicant	SINAY SAS, 117, cours Caffarelli, 14000 Caen, FRANCE Contact person: Yanis Souami tél: +33 (0)2 50 01 15 50 mobile : +33 (0)6 48 39 17 21 contact@sinay.fr	
Collaborating Agencies / Other Sponsors	MarSensing Lda. Centro Empresarial Gambelas Campus de Gambelas Pavilhão A-5, Sala 5.1 PT-8005-139 Faro Portugal contact@marsensing.com BioConsult SH GmbH & Co.KG Schobüller Str. 36 25813 Husum, Germany Tel: +49 (0) 48 41 – 66 32 9-0 Fax: +49 (0) 48 41 – 66 32 9-19 Mail: info@bioconsult-sh.de	
Background / Problem	Both continuous and impulsive noise are pointed as a major source of impact for cetaceans. The ASCOBANS area is subject to heaviest maritime traffic levels in European waters and among the heaviest in the world. Further, offshore industrial projects are rapidly developing in the North Sea and the Channel (Marine Renewable Energies, Oil and Gas exploration etc.). Such human activities widely overlap with habitats of endangered cetacean species such as harbour porpoises and no tools currently exist to monitor underwater noise levels on a large scale and across national boundaries. The present project deals with such issues, proposing a modelling approach to support conservation policy with respect to underwater noise impacts in the ASCOBANS area.	
Objectives	The main objectives of the project are to provide a tool able to assess anthropogenic underwater noise levels in the Channel and the North Sea; and to support the management of acoustic impacts on cetaceans in such areas. Particularly, the project aims at:	

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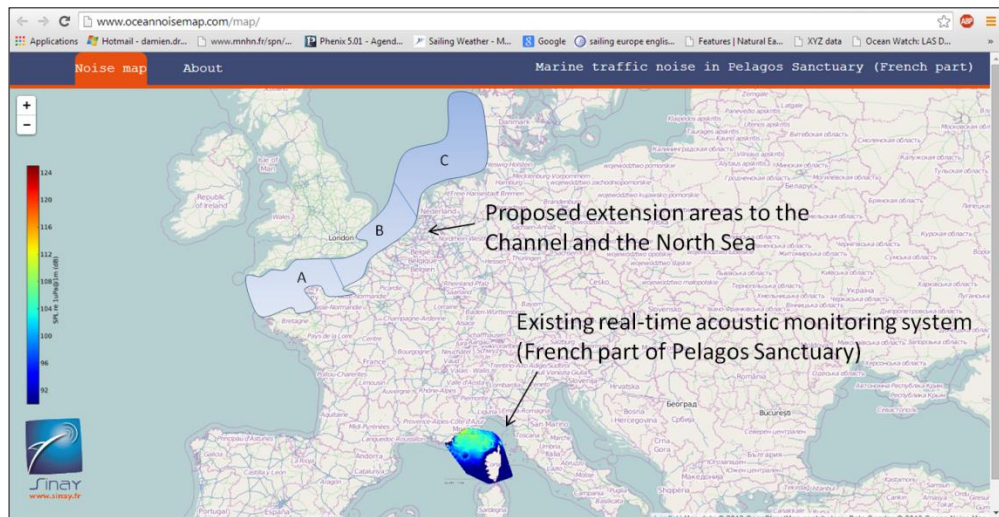
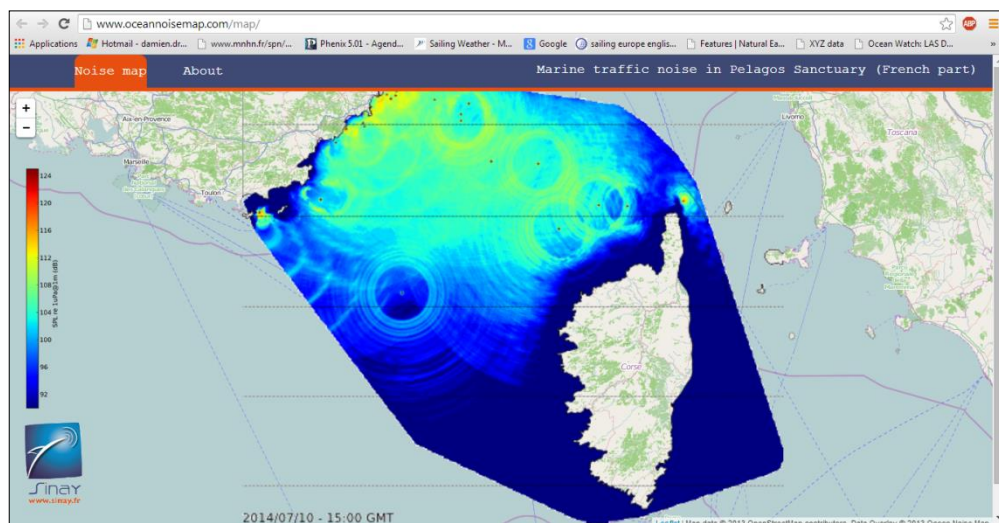
	<ul style="list-style-type: none"> - Producing cartographies of shipping noise (e.g. figure 1, page 5) - Simulating the propagation of impulsive noise (e.g., pile driving, underwater explosions etc.) - Simulating near-real acoustic scenarios to predict the impact of noise in different conditions - Proposing a protocol for long term acoustic monitoring in the area - Proposing measures and recommendations, including site-specific conservation measures, through the cartographic products of the project
Relevance to ASCOBANS	<ol style="list-style-type: none"> 1. The impact of underwater noise on cetaceans is an issue addressed by ASCOBANS since several years (e.g. Resolution 5.4, Resolution 6.2 and Resolution 7.2). In particular, paragraph 3-a of the Resolution 7.2 (2012) states that “the Meeting of the Parties decides that the Advisory Committee and the Secretariat should focus a substantial part of the available resources on two priority issues: by-catch and disturbance by noise” (7th Meeting of the Parties to ASCOBANS, Brighton, UK, 22-24 October 2012). According to the same Resolution, a Work Plan is established where underwater noise and its adverse effects to cetaceans are included in the Conservation Actions that need to be carried out. 2. Guidelines to address the impact of noise, developed by the joint working group ASCOBANS-ACCOBAMS, are available though several aspects need to be further studied and improved 3. Our project can help to understand at a large scale the extent of the impacts caused by: <ol style="list-style-type: none"> a. Shipping noise b. Offshore industrial development (MREs, Oil and Gas etc.) 4. Particularly, by gathering new information, expected results apply to Conservation Actions 3 and 4 of the ASCOBANS Work Plan (Annex 1, ASCOBANS Resolution 7.2)
Activities	<p>Globally, the project is based on the use of acoustic models for producing cartographies of noise conditions in the Channel and the North Sea. Noisy areas will be identified and hence an assessment of the potential impacts on cetaceans will be carried out.</p> <p>Particularly, the following actions will be performed (in brackets a rough estimation of the duration of each task):</p> <ul style="list-style-type: none"> - Validating the study area and period in collaboration with the ASCOBANS secretariat (1 week) - Preparing the AIS data for shipping noise (access to historical and real-time AIS data is already available) (2 days) - Building an inventory of impulsive noise sources in the study area (1 week) - Building a database of acoustic parameters of inventoried noise sources (2 weeks) - Setting the modelling software (2 days) - Implementing the real-time acoustic model and displaying the noise maps on www.oceannoise.com (1 week, achievement of output 1, see below). - Analysing historical data over the selected period and area (3 weeks,

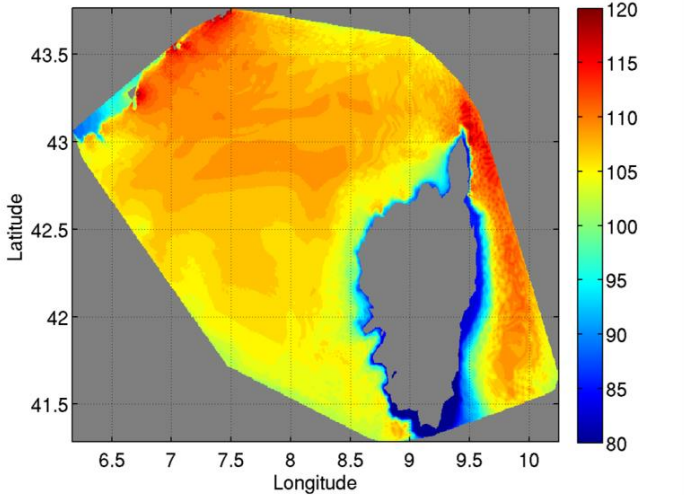
	<p>production of parts of output 2, achievement of output 3, see below)</p> <ul style="list-style-type: none"> - Simulating near-real acoustic scenarios (2 weeks, production of parts of output 2, see below) - Assessing cetacean sensitivity on the area (2 weeks) - Producing cartographies of the potentially impacted zones (3 weeks, achievement of output 2, see below) <p>Equipment (all is already available):</p> <ul style="list-style-type: none"> - Underwater Noise Modelling Software - Computing server - Web server <p>Methodology: (following page)</p> <pre> graph TD A[Noise source parameters: AIS data emission spectra etc.] --> D[Noise propagation model] B[Environmental variables: bathymetry temperature salinity etc.] --> D D --> C[Simulation of acoustic scenarios] C --> E[quantifying acoustic effects (Acoustic cartography)] C --> F[Qualify and quantify cetacean sensitivity] G[Obtaining information on cetacean distribution] --> F E --> H[Impact assessment] F --> H H --> I[Cartography of potentially impacted zones] I --> J(()) </pre> <p>As this is a desk study, all the activities will be performed at our offices (Caen, France; Husum, Germany; Faro, Portugal)</p>
Outputs	<p>The expected outputs will be:</p> <ol style="list-style-type: none"> 1. www.oceannoisemap.com extended to the Channel and the North

Sea

2. Cartographic products provided in ESRI format (CRS: WGS84)
3. Video clip of shipping noise over a selected period (see output Pelagos project, SINAY 2013)
4. 1 project report
5. At least 1 publication in a scientific journal
6. At least 1 presentation to international Conference/Workshop

Examples of outputs obtained for a similar project carried out by SINAY and University of Pavia in 2013 follow hereafter:



	 <p>Noise levels exceeded 5% of the study period (July 1st – September 30th 2012) Levels are dB re 1µPa (SPL)</p> <p>Figure 1. Top panel: www.oceannoisemap.com displaying noise from shipping in real time (screenshot taken at 15:00, 2014-07-10). Middle panel: proposed extension to the Channel and the North Sea. Bottom panel: acoustic analysis over a 3 month period (period = July-August-September 2012).</p>
<p>Work Plan and Timetable</p>	<p>The project lasts 6 months. At the end of the 6th month the final version of <u>outputs 1 to 4</u> are delivered to the ASCOBANS secretariat. Outputs 5 and 6 will be prepared at the end of the project.</p> <p>The work Plan is shown in figure 2 (page 8)</p>
<p>Project Personnel</p>	<ul style="list-style-type: none"> • Project manager, Alessio Maglio (alessio.maglio@sinay.fr) : <p>Marine ecologist, he developed strong skills in marine megafauna's ecology (marine mammals, seabirds, sea turtles, and large pelagic fish species). He actively participated in several wide-scale research and monitoring programs: Aerial and sea surveys in the Bay of Biscay, the Channel and the Mediterranean carried out for the French Ministry of the Environment, the Pelagos Sanctuary and the ICCAT Commission. He coordinated the project on Acoustic Cartography in the Pelagos Sanctuary (2013), and collaborated with the ACCOBAMS Secretariat for carrying on the work of Joint ASCOBANS-ACCOBAMS Noise Working Group in 2013. Member of the European Cetacean Society since 2010. For the present project he is responsible for setting out the tasks and carrying on the work plan, he is data analyst for marine traffic density and GIS analyst for acoustic impact mapping.</p> <ul style="list-style-type: none"> • Acoustician, Medjber Bouzidi <p>He carried out his PhD project on acoustic detection of marine mammals at the Laboratory of Underwater Acoustics (ISEN) in Brest, Brittany. Responsible for the Research & Development program of the SINAY Company. Member of the European Cetacean Society since 2012. He is acoustic data analyst, responsible for the acoustic modelling, and web developer.</p>

	<ul style="list-style-type: none"> • Acoustician, Cristiano Soares (csoares@marsensing.com) <p>He holds a PhD in acoustic signal analysis obtained at the Algarve University. Specialist of sound propagation modelling in underwater conditions. He worked on several projects on underwater noise level assessments of marine traffic and tidal stream systems. For the present project he is responsible for the acoustic modelling analysis.</p> <ul style="list-style-type: none"> • Director, Georg Nehls (g.nehls@bioconsult-sh.de): <p>Georg looks back on 25 years of environmental research in the marine environment. He has obtained his PhD in studying eider ducks and mussel populations and in the following years conducted a variety of studies on various species groups and applied and fundamental questions. Over the last years Georg Nehls has specialised into assessment and mitigation of underwater noise and directed several studies to analyse underwater noise impacts and to develop appropriate mitigation concepts. As director of BioConsult SH Georg Nehls supervises annually more than 100 projects in the field of offshore wind farming, with main emphasis on birds and marine mammals. For the present project he acts as expert of the impact of noise on marine mammals in the North Sea.</p> <ul style="list-style-type: none"> • Informatic engineer, Friedrich Zabel <p>He has developed Underwater Acoustic Recorders like the SR1. He participated in several research programs in underwater acoustics. For this project, he works on acoustic modelling and web development.</p> <ul style="list-style-type: none"> • Director, Yanis Souami (contact@sinay.fr): <p>Engineer, he founded SINAY Company in 2008 in order to provide environmental services and to develop technologies aimed at protecting and conserving marine mammals.</p>
Budget Estimates	The budget is detailed in figure 3 (page 9)

ASCOBANS Project Proposal Format

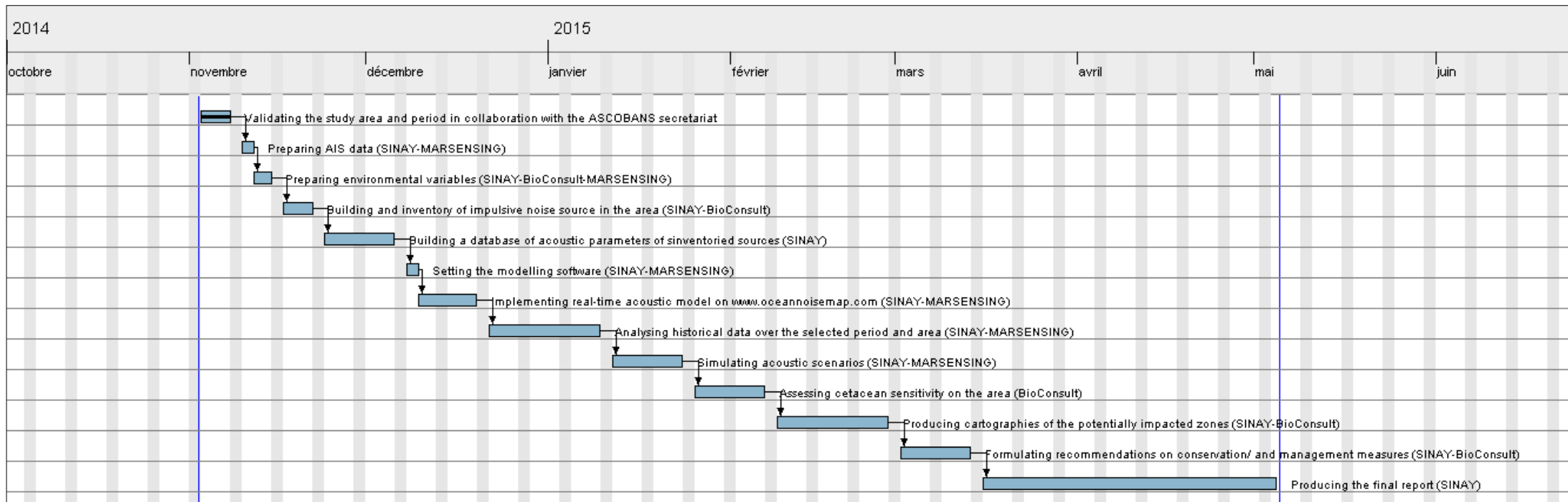


Figure 2. Work Plan and Timetable

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Underwater Noise Mapping in the Channel and the North Sea					
No.	Activities	Quantity	Unit	Cost per Unit (EUR)	Total cost (EUR)
0	Preparatory tasks				
	Project kickoff meeting with ASCOBANS				
	Preparatory meeting with partners				
	Downloading treating and stocking AIS data				
	Downloading treating and stocking environmental variables				
	TOTAL : Preparatory tasks				0.00 €
1	Operational phase (Zone B only, French, UK, Belgian and Dutch waters)				
	Setting the modelling software	2	day	250.00 €	500.00 €
	Building an inventory of impulsive noise sources in the study area	4	day	250.00 €	1,000.00 €
	Building a database of acoustic parameters of inventoried noise sources	3	day	250.00 €	750.00 €
	Implementing the acoustic model and displaying the noise maps on www.oceannoisemap.com	3	day	250.00 €	750.00 €
	Analysing historical data over the selected period and area	3	day	250.00 €	750.00 €
	Simulating near-real acoustic scenarios	8	day	250.00 €	2,000.00 €
	Computing acoustic statistics	2	day	250.00 €	500.00 €
	Assessing cetacean sensitivity on the area	3	day	250.00 €	750.00 €
	Computing cartographies of the potentially impacted zones (GIS)	2	day	250.00 €	500.00 €
	Consulting with experts	3	day	640.00 €	1,920.00 €
	TOTAL : Operational phase (Zone B only, French, UK, Belgian and Dutch waters)				9,420.00 €
2	Final phase				
	Computing the videoclip of shipping noise				
	Final meeting with the ASCOBANS Secretariat				
	Spreading of results (ECS, ESOMM etc.)				
	TOTAL : Final phase				0.00 €
Funds requested to ASCOBANS (VAT not included) :					9,420.00 €
No.	OPTIONS				
3	Option Zone A (Middle-Western Channel)				
	Expanding the modeled area	1	lump sum	4,500.00 €	4,500.00 €
4	Option Zone C (German and Danish waters)				
	Expanding the modeled area	1	lump sum	4,500.00 €	4,500.00 €
<i>Funds needed for zone B + 1 additional zone (A or C) VAT not included :</i>					13,920.00 €
<i>Funds needed for all the zones (A+B+C) VAT not included :</i>					18,420.00 €
<p>This project is part of the reasearch program in underwater acoustics carried out and co-funded by SINAY. The present table presents the budget requested to ASCOBANS for financing the base-project (9 420 €, Zone B). For Zone A and C, additional funds are requested to the industrial sector.</p>					

Figure 3. Budget

**PROJECT PROPOSAL STICHTING SOS DOLFIJN
FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE**

'Save our Whales' educational roadshow	Justification: NSP	Project ID: 2014-07
Implementing Agency / Applicant	<p>Stichting SOS Dolfijn Postbus 293 3840 AG Harderwijk The Netherlands www.sosdolfijn.nl (English pages not yet available)</p> <p>Contact: Eligius Everaarts eligius.everaarts@sosdolfijn.nl tel: + 31 (0)6 53997853</p> <p>SOS Dolfijn is a Dutch NGO for the protection and conservation of small cetaceans in the southern North Sea. The mission is</p> <ul style="list-style-type: none"> - to rescue and rehabilitate small cetaceans, - to conduct and support scientific research, and - to educate and raise public awareness about small cetaceans in the North Sea, the marine ecosystem they live in and the threats they face. <p>The organization depends on a broad network of dedicated volunteers and an engaged community which supports in the organizational work and tasks. The harbour porpoise, the most common species in Dutch waters, is the organization's flagship species.</p>	
Collaborating Agencies / Other Sponsors	<p>SOS Dolfijn is the single institution for the initial implementation of the project. For realising the project, further grants are being applied for at two Dutch private funds. Also community sponsors are mobilised to help realising the project. During the operational part of the educational roadshow over the coming years, SOS Dolfijn will cooperate closely with schools and volunteers as well as other NGO's that focus on marine life conservation.</p>	
Background / Problem	<p>North sea marine life is under pressure by many anthropogenic influences. Knowledge about existing problems is not always translated from science to society. To protect small cetaceans it is</p>	

	<p>important that people know and care about them and are aware of the problems they face. The majority of the Dutch are unaware their own seas are inhabited with small cetacean species and are often ignorant about the vulnerable character of the marine environment. Raising awareness among the public thus can serve as an important tool for achieving conservation of small cetaceans in the North Sea.</p> <p>SOS Dolfijn represents a rescue organisation and advisory body for small cetaceans stranded alive on the Dutch coast and in surrounding countries. The condition of the (marine) environment and its many anthropogenic threats however, encourage not only to continue to invest in rehabilitation work, but also to intensify education, research and awareness projects. The rescue and rehabilitation activities prove to offer a great platform to gain knowledge and to inform people.</p> <p>Over the past years, SOS Dolfijn has developed several educational projects with an output to schools and events. These activities and experiences should contribute to the development of a more extensive program. With the present project, SOS Dolfijn wants to professionalize the educational program and significantly increase the efficiency and output of educational efforts: A project that is appealing to its target group, didactically responsible and successful in its objectives.</p>
Objectives	<p>Main objective: To raise public awareness of small cetacean species in the North Sea, the threats they face and the importance of cetacean conservation.</p> <p>More specific objectives:</p> <p>Participants of the roadshow exposition 'Save our Whales'</p> <ul style="list-style-type: none"> - become aware of the variety of small cetaceans occurring in the North Sea - gain general knowledge on the anatomy and ecology of small cetaceans - have an understanding of the concept of marine food chains and the role of cetaceans - are aware of the main anthropogenic threats small cetaceans in the North Sea face and why these pose a threat to the marine ecosystem and small cetaceans. - gain knowledge on what they can do themselves to contribute to the conservation of small cetaceans in the North Sea. - gain general knowledge on how to rescue and provide care to an entangled or beached whale
Relevance to ASCOBANS	<p>The project is highly relevant to the conservation objectives of ASCOBANS. Awareness-raising is a key activity in the protection of small cetacean species occurring in the North Sea. Only when people know, they care. Raising awareness will</p> <ul style="list-style-type: none"> - gain support for the aims of the Agreement - increase public engagement and action in the implementation of the Agreement and the drawn conservation action plan.
Activities	<p>The project consists of 3 stages:</p> <p>Development and design</p>

	<p>Construction and production</p> <p>Operation</p> <p>The present funding application with budget should facilitate development and production of the educational roadshow. The program could then operate over the years to come.</p> <p>For the design of tools and exposition, SOS Dolfijn works together with dedicated professionals and volunteers. Information about the partners can of course be given if requested.</p> <p>Focus during the developmental phase is on a didactically responsible approach. The main target group of the project are children aged between 4 and 12 years. The secondary target group are parents, caregivers, teachers at primary schools and visitors of events.</p> <p>The exposition materials and props will be designed for the target group to learn in an interactive, appealing and effective way. It consists of informative visuals, fun activities, beautiful skeletons/replica and personal stories of the SOS Dolfijn crew.</p> <p>Different components of the educational roadshow are:</p> <ul style="list-style-type: none"> - A rescue ambulances customized for the exposition. The ambulance will be equipped with a dolphin-transport box, jump seats, medical equipment and other materials that are used for rescue and care during transport. The inside interior of the ambulance will visualize and illustrate the story of rescue and rehabilitation. - First aid box and equipment. This component of the exposition focuses on rescue, animal care and rehabilitation of small cetaceans. A crew-member will tell and illustrate the process of rescuing, animal care and rehabilitation. After which the target group can help rescue and conduct first aid on a beached dummy resembling a Harbour Porpoise. - Whale activity box. This component is about meeting and getting to know the small cetaceans occurring in the North Sea. The box consist of informative illustrations, interactive props, and playful activities. - Conservation activity box. This component of the exposition focuses on the main anthropogenic threats small cetaceans in the North Sea face. With informative visuals the main threats are presented and children can experience the meaning of these threats by doing playful activities. - A movie corner, with interactive learning games and short movies. - The SOS Dolfijn crew, with their comprehensive knowledge and experience, are the heart of the exposition. They are the SOS Dolfijn ambassadors and get the people energized. The crew can tell great educational stories, answer all the questions, invite and encourage the target group to participate in the activities and challenge them to ask questions and come up with conservation activities and - solutions.
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	Volunteers and SOS Dolfijn rescue workers will be specializing in managing the project and participating in educational activities.																	
Outputs	The physical output of this project is the realization of the roadshow exposition ‘Save our Whales’, consisting of the educational tools as explained above under ‘activities’. Subsequently, the roadshow exposition is used as a tool to educate and raise awareness among children and adults in the Netherlands and possibly neighboring countries (especially Belgium, Germany). To have an effective reach with the ‘Save our Whales’ roadshow, SOS Dolfijn will visit target group hotspots. Two main hotspots SOS Dolfijn wants to focus on are primary schools and events. The aim is to be involved in at least 12 school projects annually and visit educational events on a regular base.																	
Work Plan and Timetable	<table><tr><td>Period</td><td>Phase</td><td>Implementation responsibility</td></tr><tr><td>01-07-14 until 31-12-14</td><td>Project fundraising</td><td>Marjon Lambooij, Eligius Everaarts</td></tr><tr><td>01-11-14 until 01-02-15</td><td>Development & Design</td><td>Babette Alfons, Eligius Everaarts</td></tr><tr><td>01-02-15 until 01-05-15</td><td>Production</td><td>Babette Alfons, Eligius Everaarts</td></tr><tr><td>01-05-15 and beyond</td><td>Operation</td><td>Babette Alfons, Jolanda Meerbeek</td></tr></table>			Period	Phase	Implementation responsibility	01-07-14 until 31-12-14	Project fundraising	Marjon Lambooij, Eligius Everaarts	01-11-14 until 01-02-15	Development & Design	Babette Alfons, Eligius Everaarts	01-02-15 until 01-05-15	Production	Babette Alfons, Eligius Everaarts	01-05-15 and beyond	Operation	Babette Alfons, Jolanda Meerbeek
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Project Personnel	<p>Eligius Everaarts Director, MSc. Marine Biology eligius.everaarts@sosdolfijn.nl tel: + 31 (0)6 53997853 Project supervisor</p> <p>Babette Alfons Conservation officer MSc. Biology; sustainably and biodiversity babette.alfons@sosdolfijn.nl Project Coordinator</p> <p>Jolanda Meerbeek Head of rehabilitation jolanda.meerbeek@sosdolfijn.nl tel: + 31 (0)6 25081341 Operational advisor</p> <p>Marjon Lambooij</p>																	

	<p>Relations and funding</p> <p>Marjon.lambooi@sosdolfijn.nl</p> <p>tel: + 31 (0)6 50511890</p> <p>Project funding</p> <p>CV's on request</p>																																				
Budget Estimates	<p>Estimated overall costs to realize the 'save our whales' educational roadshow is €43.000</p> <table border="1"> <thead> <tr> <th></th><th>Estimated costs €</th></tr> </thead> <tbody> <tr> <td>Concept development and design (specialist partners)</td><td>6.000</td></tr> <tr> <td>Personnel costs (SOS Dolfijn personnel during developmental and production phase)</td><td>3.000</td></tr> <tr> <td>Construction of exposition lay-out, materials, ambulance customizing</td><td>10.000</td></tr> <tr> <td>Rescue crew educational equipment</td><td>1.000</td></tr> <tr> <td>Harbour porpoise interactive replica, dummy</td><td>4.500</td></tr> <tr> <td>First aid box, developing costs and content</td><td>2.000</td></tr> <tr> <td>Whale activity box, developing costs and content</td><td>7.000</td></tr> <tr> <td>Conservation activity box, developing costs and content</td><td>7.000</td></tr> <tr> <td>Informative movie corner</td><td>2.500</td></tr> <tr> <td></td><td></td></tr> <tr> <td>TOTAL ESTIMATED COSTS</td><td>43.000</td></tr> </tbody> </table> <p>Funding:</p> <p>SOS Dolfijn will contribute a total of €7.500 from own resources. The remaining amount will be submitted for funding of which a total of €15.000 is applied for at ASCOBANS.</p> <table border="1"> <thead> <tr> <th>Funding agencies</th><th>Estimated funding in €</th></tr> </thead> <tbody> <tr> <td>SOS Dolfijn</td><td>7.500</td></tr> <tr> <td>ASCOBANS</td><td>15.000</td></tr> <tr> <td>Other funding</td><td>15.000</td></tr> <tr> <td>Community sponsors</td><td>5.500</td></tr> <tr> <td>TOTAL ESTIMATED FUNDING</td><td>43.000</td></tr> </tbody> </table>		Estimated costs €	Concept development and design (specialist partners)	6.000	Personnel costs (SOS Dolfijn personnel during developmental and production phase)	3.000	Construction of exposition lay-out, materials, ambulance customizing	10.000	Rescue crew educational equipment	1.000	Harbour porpoise interactive replica, dummy	4.500	First aid box, developing costs and content	2.000	Whale activity box, developing costs and content	7.000	Conservation activity box, developing costs and content	7.000	Informative movie corner	2.500			TOTAL ESTIMATED COSTS	43.000	Funding agencies	Estimated funding in €	SOS Dolfijn	7.500	ASCOBANS	15.000	Other funding	15.000	Community sponsors	5.500	TOTAL ESTIMATED FUNDING	43.000
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ASCOBANS Project Proposal

FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE

Title Current status of North Sea harbour porpoises: assessing temporal changes in reproductive parameters	Justification: CMP Res. 7.2 NSP	Project ID: 2014-08
Implementing Agency / Applicant	Institute of Zoology Zoological Society of London Regent's Park London NW1 4RY UK	
Collaborating Agencies / Other Sponsors	Institute for Terrestrial and Aquatic Wildlife Research (ITAW) University of Veterinary Medicine Hannover, Foundation Bischofsholer Damm 15, 30173 Hannover Werftstr. 6, 25761 Büsum, Germany Department of Bioscience, Aarhus University Frederiksborgvej 399, DK-4000 Roskilde, Denmark Faculty of Veterinary Medicine, Utrecht University Yalelaan 1, 3584 CL Utrecht (room O.170), The Netherlands Oceanlab, University of Aberdeen, Main Street, Newburgh, Aberdeenshire, AB41 6AA, UK SRUC Veterinary Services, Drummondhill, Inverness Scotland IV2 4JZ, UK	
Background / Problem	Harbour porpoises in the North Sea are exposed to a wide variety of anthropogenic activities, such as fishing, contaminant discharge, oil and gas exploration, shipping, and construction of wind farms and other offshore structures. The population level effects of these activities, which can lead to incidental capture, ill health, serious injury/death (non bycatch), prey depletion, acute and chronic stress from harassment and disturbance, are not established. The SCANS projects produced an abundance estimate for this region for the year 1994, of 227,918 porpoises (ICES WGMME 2014), and there was no evidence that total harbour porpoise abundance in the North Sea changed between then and a follow up survey undertaken in 2005 (Hammond <i>et al.</i> 2013). However, the status of harbour porpoises in 1994 is unknown; including whether the abundance estimate is reflective of a depleted population or a population close to carrying capacity. Marked difference in summer distribution were noted between both SCANS surveys with higher densities shifting from the northwest of the North Sea in 1994 to the southwest of the	

ASCOBANS Project Proposal

	<p>North Sea in 2005, and the higher densities observed around coastal Denmark in 1994 dissipating. This pattern of distribution has continued in more recent years based on stranding data and smaller-scale sighting studies (Hammond <i>et al.</i> 2013; and references therein). The causes of this large-scale shift in distribution are unknown, but have resulted in this local population being exposed to a higher number of anthropogenic activities in the southern North Sea, compared to more northern waters. In addition to this, there is a lack of consistent assessments of the impacts of anthropogenic activities on harbour porpoises in the North Sea. For example, in 2010 OSPAR was unable to assess the North Sea harbour porpoise bycatch EcoQO as there was no reliable information on by-catch numbers in the North Sea due to a lack of monitoring programmes in most gillnet fisheries (OSPAR 2010).</p> <p>It is important to determine life history parameters in marine mammals in order to assess changes in the dynamics of exploited populations as a result of directed fisheries or incidental bycatch (Eberhardt and Siniff 1977, Murphy <i>et al.</i> 2009). This is particularly the case for populations for which there is a lack of baseline information on the original population size prior to anthropogenic pressures. Cetacean populations are regulated through density-dependent changes in reproduction and survival, and it has been proposed that food resources are the main causative agent in the expression of density dependence (Fowler 1984, Fowler 1987, Lockyer 1990), resulting in an increase in population growth rates at low densities and a decrease in growth rates at high densities (Hohn <i>et al.</i> 2007, Murphy <i>et al.</i> 2009). Previous studies on marine mammals reported that the three biological parameters most often observed to change with population density are age at sexual maturity, birth rate and juvenile survival (Fowler 1984). However, as certain anthropogenic activities, such as discharges of contaminants, can interfere with the normal regulatory mechanisms of density dependent processes through affecting reproductive capabilities, populations of marine mammals may not necessarily recover from exploitation in a predictable way (Murphy <i>et al.</i> 2010).</p> <p>There are no basin-wide estimates of reproductive parameters for harbour porpoises in the North Sea, and thus currently the status of harbour porpoises in this region is unknown. Some preliminary data on reproductive parameters are available for harbour porpoise in the North Sea, though estimates were (primarily) limited to individual member states jurisdictions, samples sizes were often small, and/or individuals of poor health status were used to estimate reproductive parameters. More recent estimates are available for UK waters. Learmonth <i>et al.</i> (2014) reported a pregnancy rate of 30-40% for all Scottish waters (1992-2005), though as the sample analysed included stranded animals that died from infectious and non-infectious diseases, this may have underestimated the pregnancy rate. Murphy <i>et al.</i> (in prep) assessed reproductive rates in a control</p>
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	<p>group of animals that died of trauma (including bycatch, boat/ship strikes, and bottlenose dolphin interactions) and obtained a low pregnancy rate of 50% for all UK waters (1990-2012), and a high ASM of 4.92 years (SE=0.02, n=112) compared to populations off Iceland and in the North-west Atlantic where previous studies have shown that most females reproduced annually (Read and Hohn 1995, Ólafsdóttir <i>et al.</i> 2003). This, in combination with results from the SCANS surveys, could suggest that porpoises in the North Sea are close to carrying capacity and thus have a lower per capita reproductive output. However, Murphy <i>et al.</i> (in prep) also reported a high prevalence of reproductive failure in harbour porpoises that died of both infectious disease and trauma. In addition to cases of dystocia, stillbirth and foetal death, 50% of females that were not reproductively active at the time of death (resting mature females, i.e. not pregnant or lactating), and which were previously gravid, did not offload (during gestation and early lactation) their high contaminant burdens due to either foetal or new-born mortality. Pierce <i>et al.</i> (2008) previously reported that concentrations of polychlorinated biphenyls (PCBs) in 74% of stranded female harbour porpoises in the southern North Sea (2001-2003) were above the threshold at which effects on reproduction could be expected.</p> <p>In order to further assess the impacts of anthropogenic activities, the current project will, for the first time, collate data and samples from stranding and bycatch programs run throughout the North Sea in order to produce basin-wide estimates of reproductive parameters for harbour porpoises inhabiting this region. Historical and recently collected samples will be used, collected between the 1980s and 2014, in order to assess for evidence of temporal changes in reproductive parameters. This work will provide further insight into the demographics of harbour porpoises in this region, and produce estimates of reproductive parameters that are necessary for effective conservation management.</p> <p>References</p> <p>Eberhardt, L. L. and Siniff, D. B. 1977. Population dynamics and marine mammal management policies. <i>Journal of Fish Research Bd. Canada</i> 34:183-190.</p> <p>Fowler, C. W. 1984. Density dependence in cetacean populations. In: Perrin, W. F., Brownell, R. L., Jr, and DeMaster, D. P. (eds.); <i>Reproduction in Whales, Dolphins and Porpoises</i>. International Whaling Commission, Cambridge, 373-379.</p> <p>Fowler, C. W. 1987. A review of density dependence in populations of large mammals. In: Genoways, H. (editor); <i>Current Mammalogy</i>. Plenum Press, New York, 401-441.</p> <p>Hammond, P., Macleod, K., Berggren, P., Borchers, D., Burt, M., Cañadas, A., Desportes, G., Donovan, G., Gilles, A., Gillespie, D., Gordon, J., Hiby, L., Kuklik, I., Leaper, R., Lehnert, K., Leopold, M., Lovell, P., Øien, N., Paxton, C., Ridoux, V., Rogan, E., Samarra, F., Scheidat, M., Sequeira, M., Siebert, U., Skov,</p>
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	<p>H., Swift, R., Tasker, M., Teilmann, J., Van Canneyt, O. and Vázquez, J. 2013. Cetacean abundance and distribution in European Atlantic shelf waters to inform conservation and management. <i>Biological Conservation</i> 164:107-122.</p> <p>Hohn, A. A., Ewing, R. Y. and Zaias, J. 2007. Reproduction in relation to conservation and commercial exploitation. In: Miller, D., L. (editor); <i>Reproductive biology and phylogeny of cetacea</i>. Volume 7 of series: <i>Reproductive biology and phylogeny</i>. Science Publishers, Enfield, 371-389.</p> <p>ICES WGMME. 2014. Report of the Working Group on Marine Mammal Ecology (WGMME), 10-13 March 2014, Woods Hole, Massachusetts, USA.</p> <p>Learmonth, J. A., Murphy, S., Luque, P. L., Reid, R. J., Patterson, I. A. P., Brownlow, A., Ross, H. M., Barley, J. P., Begoña Santos, M. and Pierce, G. J. 2014. Life history of harbor porpoises (<i>Phocoena phocoena</i>) in Scottish (UK) waters. <i>Marine Mammal Science</i>:n/a-n/a.</p> <p>Lockyer, C. H. 1990. The importance of biological parameters in population assessments with special reference to fin whales from the N.E. Atlantic. <i>North Atlantic Studies</i> 2:22-31.</p> <p>Murphy S et al. in prep. Evidence of reproductive failure in UK harbour porpoises <i>Phocoena Phocoena</i>: associated with exposure to legacy pollutants?</p> <p>Murphy, S., Pierce, G. J., Law, R. J., Bersuder, P., Jepson, P. D., Learmonth, J. A., Addink, M., Dabin, W., Santos, M. B., Deaville, R., Zegers, B. N., Mets, A., Rogan, E., Ridoux, V., Reid, R. J., Smeenk, C., Jauniaux, T., López, A., Farré, J. M. A., González, A. F., Guerra, A., García-Hartmann, M., Lockyer, C. and Boon, J. P. 2010. Assessing the effect of persistent organic pollutants on reproductive activity in common dolphins and harbour porpoises. NAFO/ICES/NAMMCO symposium "The Role of Marine Mammals in the Ecosystem in the 21st Century". <i>Journal of Northwest Atlantic Fishery Science</i> 42:153-173.</p> <p>Murphy, S., Winship, A., Dabin, W., Jepson, P. D., Deaville, R., Reid, R. J., Spurrier, C., Rogan, E., López, A., González, A. F., Read, F. L., Addink, M., Silva, M., Ridoux, V., Learmonth, J. A., Pierce, G. J. and Northridge, S. P. 2009. Importance of biological parameters in assessing the status of <i>Delphinus delphis</i>. <i>Mar Ecol Prog Ser</i> 388:273-291.</p> <p>Ólafsdóttir, D., Víkingsson, G. A., Halldórsson, S. D. and Sigurjónsson, J. 2003. Growth and reproduction in harbour porpoises (<i>Phocoena phocoena</i>) in Icelandic waters In: Haug, T., Desportes, G., Víkingsson, G. A., and Witting, L. (eds.); <i>Harbour porpoises in the North Atlantic</i>. Nammco Scientific Publications Volume 5. The North Atlantic Marine Mammal Commission, Tromsø, 195-210</p> <p>OSPAR. 2010. Quality Status Report 2010. OSPAR Commission, London. 176pp.</p> <p>Pierce, G. J., Santos, M. B., Murphy, S., Learmonth, J. A., Zuur, A. F., Rogan, E., Bustamante, P., Caurant, F., Lahaye, V., Ridoux, V., Zegers, B. N., Mets, A., Addink, M., Smeenk, C., Jauniaux, T., Law, R. J., Dabin, W., López, A., Alonso Farré, J.</p>
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	<p>M., González, A. F., Guerra, A., García-Hartmann, M., Reid, R. J., Moffat, C. F., Lockyer, C. and Boon, J. P. 2008. Bioaccumulation of persistent organic pollutants in female common dolphins (<i>Delphinus delphis</i>) and harbour porpoises (<i>Phocoena phocoena</i>) from western European seas: Geographical trends, causal factors and effects on reproduction and mortality. <i>Environmental Pollution</i> 153:401-415.</p> <p>Read, A. J. and Hohn, A. A. 1995. Life in the fast lane: the life history of harbour porpoises from the Gulf of Maine. <i>Marine Mammal Science</i> 11:423-440.</p>
Objectives	<p>The objectives of this study are to:</p> <ol style="list-style-type: none"> (1) produce basin-wide estimates of reproductive parameters (pregnancy rate and average age at sexual maturity) for harbour porpoises inhabiting the North Sea, and (2) assess for evidence of temporal changes in those parameters that may have resulted from anthropogenic activities. <p>This is the first study that will collate and analyse data and samples collected by various stranding and bycatch programmes in the UK, Denmark, Germany, and the Netherlands. Estimates of reproductive parameters will be produced using all available data, and separately for animals that died as a result of trauma (bycatch, boat/ship strike, and bottlenose dolphin interactions). Primarily as the reproductive parameters of latter group may be more reflective of the wider population, as the stranded porpoise sample may have biases.</p> <p>Results from this work will be made available to other projects such as those producing bycatch limits (using models incorporating data on reproductive parameters) for the North Sea harbour porpoise management unit(s), and will also provide context to assessments of the common OSPAR harbour porpoise abundance indicator for the Marine Strategy Framework Directive.</p>
Relevance to ASCOBANS	<p>The research undertaken by this study has important implications for conservation of harbour porpoises in the ASCOBANS area.</p> <p>This project will contribute to:</p> <p>- ASCOBANS Conservation and Management Plan</p> <ol style="list-style-type: none"> 1. 2. Surveys and Research 3. Use of by-catches and strandings

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	<p>- ASCOBANS Triennium Work Plan 2013-2015</p> <p>2. Review new information on pollution [...] and its effects on small cetaceans which occur in the ASCOBANS area and, on the basis of this review, provide recommendations to Parties and other relevant authorities</p> <p>5. Review new information on cetacean population size, distribution, structure, and causes of mortality in the ASCOBANS area and based on implications for conservation to make appropriate recommendations to Parties and other relevant authorities</p> <p>- ASCOBANS Conservation Plan for Harbour Porpoises in the North Sea</p> <p>Action 10. Investigation of the health [...] of harbour porpoises in the region. To collect fundamental information the question of human activities (other than bycatch) including contaminants</p>
Activities	<p>Preliminary work including laboratory analysis will be undertaken by all project partners in the UK, Denmark, Germany, and the Netherlands. This includes collation of (historical and recent) biological data from necropsied female harbour porpoises (including information on length, pregnancy and lactation status), assessment of ovarian material for determination of sexual maturity status (i.e. presence of corpora scars) and age determination of individuals through sectioning teeth samples, and counting growth layer groups in stained tooth sections using a binocular microscope. Teeth samples from both the UK and the Netherlands will be aged at the Institute of Zoology in London, whereas teeth samples from Danish and German porpoises will be aged by project partners at Aarhus University, Denmark and the University of Veterinary Medicine Hannover, Germany, respectively. Details on the cause of death will also be used within the study.</p> <p>Dr Sinéad Murphy, the lead investigator, will collate and check all data from partner organisations, and undertake the statistical analysis and lead authorship on the final report. Statistical analysis will entail estimation of Age and Length at Sexual Maturity (ASM and LSM) and pregnancy rate for the North Sea harbour porpoise management unit(s), and assess for evidence of temporal variations in those parameters. For example, a generalised linear model approach will be used to estimate the mean difference in the ASM between decades, along with their confidence intervals.</p>

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Outputs	<p>Expected outputs from the project include:</p> <ul style="list-style-type: none"> - Information for the effective conservation management of harbour porpoises in the North Sea - Reproductive parameters in the North Sea harbour porpoise management unit(s), and temporal variation in those parameters - Production of a final report - Production of a scientific paper on "Current status of the North Sea harbour porpoise: temporal variation in reproductive parameters".
Work Plan and Timetable	<p>This project will be undertaken from 1st December 2014 to 31st August 2015.</p> <p>The work plan is attached to this proposal.</p>
Project Personnel	<p>Dr Sinéad Murphy, Marie Curie Research Fellow Institute of Zoology Zoological Society of London Regent's Park London NW1 4RY, UK Tel: +44 (0)20 7449 6332 Fax: +44 (0)20 7483 2237 Email: Sinead.Murphy@ioz.ac.uk</p> <p>Role within project: Principal Investigator. Collation of biological data on English female North Sea harbour porpoises. Analysis of reproductive and dental samples. Statistical analysis and lead report writer.</p> <p>A succinct CV is attached to this proposal.</p> <p>Dr Paul Jepson and Rob Deaville, UK Cetacean Strandings Investigation Programme Institute of Zoology Zoological Society of London Regent's Park London NW1 4RY UK Email: paul.jepson@ioz.ac.uk Email: rob.deaville@ioz.ac.uk</p>

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	<p>www.ukstrandings.org</p> <p>Role within project: Co-investigator: provision of data and samples from the UK Cetacean Strandings Investigation Programme.</p> <p>Prof Dr Ursula Siebert Director of Institute Diplomate of European College of Zoological Medicine (Wildlife Populations Health) Institute for Terrestrial and Aquatic Wildlife Research (ITAW) University of Veterinary Medicine Hannover, Foundation Bischofsholer Damm 15, 30173 Hannover Werftstr. 6, 25761 Büsum Germany Tel: 0511-856 8158 Fax: 0511-856 8181 Email: Ursula.Siebert@tiho-hannover.de</p> <p>Role within project: Co-investigator: overseeing German deliverables. Collation of biological data on German female North Sea harbour porpoises. Analysis of reproductive and dental samples.</p> <p>A succinct CV is attached to this proposal.</p> <p>Dr Anders Galatius Department of Bioscience, Aarhus University Frederiksborgvej 399, DK-4000 Roskilde, Denmark Tel: +45 87158694 Mobile: +45 28710372 Email: agj@dmu.dk http://person.au.dk/en/agj@dmu.dk</p> <p>Role within project: co-investigator: overseeing Danish deliverables. Collation of biological data on Danish female North Sea harbour porpoises. Analysis of reproductive and dental samples.</p> <p>A succinct CV is attached to this proposal.</p> <p>Prof. Dr., Andrea Gröne Department of Pathobiology, Faculty of Veterinary Medicine, Utrecht University Yalelaan 1, 3485 CL Utrecht, The Netherlands Email: a.grone@uu.nl</p>
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	<p>Role within project: Co-investigator: overseeing Dutch deliverables.</p> <p>Lineke Begeman, Department of Pathology Faculty of Veterinary Medicine, Utrecht University Yalelaan 1, 3584 CL Utrecht (room O.170) Tele: +31 30 253 53 12 Email: l.begeman@uu.nl</p> <p>Role within project: Co-investigator: provision of data and samples from the Dutch stranding programme.</p> <p>Lonneke IJsseldijk Department of Pathology Faculty of Veterinary Medicine, Utrecht University Yalelaan 1, 3584 CL Utrecht (room O.170) Tel: +31 6 244 556 98 or +3130 253 5312 Email: l.l.ijsseldijk@uu.nl</p> <p>Role within project: Co-investigator: collating data on Dutch female harbour porpoises and analysis of Dutch reproductive material.</p> <p>A succinct CV is attached to this proposal</p> <p>Fiona Read Oceanlab, University of Aberdeen, Main Street, Newburgh, Aberdeenshire, AB41 6AA, UK Email: fiona.louise.read@gmail.com</p> <p>Role within project: Co-investigator: analysis of Scottish dental and reproductive material.</p> <p>Professor Graham Pierce Oceanlab, University of Aberdeen, Main Street, Newburgh, Aberdeenshire, AB41 6AA, UK Email: g.j.pierce@abdn.ac.uk</p> <p>Role within project: Co-investigator: provision of life history data on Scottish porpoises.</p> <p>Dr Andrew Brownlow and Nick Davison Scottish Marine Animal Stranding Scheme</p>
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	<p>SRUC Veterinary Services Drummondhill Inverness Scotland IV2 4JZ Email: andrew.brownlow@gmail.com Email: Nick.Davison@sac.co.uk</p> <p>Role within project: Provision of data and samples from the UK Cetacean Strandings Investigation Programme.</p>
Budget Estimates	The budget for the project is attached to this proposal

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Work plan

Activity	Period
Preparatory work & reproductive laboratory analysis:	1 st December 2014 – 30 th June 2015
Ageing – decalcifying, sectioning, staining and reading dental material.	1 st December 2014 – 30 th June 2015
Statistical analysis and report writing	1 st July 2015 – 31 st August 2015
Submission of final report	1 st September 2015
Provision of results/report to other projects/MSFD assessments	October 2015
Submission of paper to peer review journal	Spring 2016

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Budget for the period 1st December 2014 – 31st August 2015

Costs are agreed contracting rates between institutes and all costings include overheads, employers national insurance etc.

<i>Preparatory work & reproductive laboratory analysis:</i> Collation and production of a database of (historical and recent) biological data from necropsied female harbour porpoises and assessment of ovarian material for determination of sexual maturity status			
	Number of days	Daily rate	Total/euros
Institute of Zoology, UK	1	350 euros	350
University of Aberdeen, UK	1	350 euros	350
Aarhus University, Denmark	3	350 euros	1050
University of Veterinary Medicine Hannover, Germany	3	350 euros	1050
Utrecht University, the Netherlands	3	350 euros	1050
Total	11		3850
<i>Ageing costs – decalcifying, sectioning, staining and reading dental material. Sample rate includes other indirect costs.</i>			
Porpoises sampled in	Number of teeth	Rate/sample	Total/euros
UK	30	40 euros	1200
Denmark	50	40 euros	2000
Germany	50	40 euros	2000
The Netherlands	50	40 euros	2000
Total	180		7200
<i>Statistical analysis and report writing</i>			
	Number of days	Daily rate	Total/euros
Institute of Zoology, UK	6	350	2100
University of Aberdeen, UK	1	350	350
Aarhus University, Denmark	1	350	350
University of Veterinary Medicine	1	350	350

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Hannover, Germany			
Utrecht University, the Netherlands	1	350	350
Total	10		3500
Courier costs			200
Funding bank transfer costs			80
TOTAL COSTS			14830

Curriculum Vitae - Short

Sinéad Murphy

Academic qualifications

- 2004: PhD in Zoology, University College Cork, Ireland. PhD thesis: "The biology and ecology of the common dolphin *Delphinus delphis* in the North-east Atlantic"
- 1999: BSc Degree in Zoology, University College Cork, Ireland (2.1 Hons)

Professional positions held

- May 2011- to present: Marie Curie International Outgoing Postdoctoral Fellow, Massey University
- 2010: International Visiting Research Fellow, Massey University, NZ. "Life history of the New Zealand common dolphin"
- 2005- 2011: Postdoctoral Research Fellow, SMRU, University of St Andrews, UK
- Principal investigator. "Effects of contaminants on reproduction in small cetaceans: Phase II". Funded by ASCOBANS
 - Principal investigator. "Effects of contaminants on reproduction in small cetaceans: Phase I". Funded by ASCOBANS
 - Lead author - "Marine mammal Strategic Environmental Assessments (SEA) for offshore oil & gas licensing and wind leasing". Funded by UK DECC
 - Co-investigator "Cetacean stock assessment in relation to exploration and production industry sound". JIP contract 07-02
 - Research Fellow - "Monitoring impact and mitigation of marine mammal bycatch". UK DEFRA contract MF0736
 - Research Fellow – EC-funded 6th Framework project "NEphrops and CEtacean Species Selection Information and TechnologY". EC NECESSITY contract 501605
- 2000 - 2004: Research assistant, University College Cork, Ireland
- Research assistant - EC-funded 6th Framework project "NEphrops and CEtacean Species Selection Information and TechnologY". EC NECESSITY contract 501605.
 - Research assistant EC-funded 5^h Framework project "BIOaccumulation of persistent organic pollutants in small CETaceans in European waters: transport pathways and impact on reproduction". EC BIOCET contract EVK3-2000-00027.
 - Coordinator of responses to strandings and leading necropsy conductor "Irish marine mammal stranding project". Partially funded by EC BIOCET contract and the Irish National Parks and Wildlife Service

Professional activities:

- 2013-present: Co-Chair of the Joint ACCOBAMS/ASCOBANS Working Group on the Marine Strategy Framework Directive (MSFD)
- 2013: Member of ICES Review Group on Harp and Hooded Seals
- 2012–present: Member of ASCOBANS North Sea Study Group overseeing the implementation of the ASCOBANS North Sea conservation plan for harbour porpoises
- 2012-present: Member of the ASCOBANS Bycatch Working Group
- 2012-present: Member of the Joint ACCOBAMS/ASCOBANS Working Group on the Marine Strategy Framework Directive (MSFD)
- 2011–present: Member of the Marie Curie Fellowship Association
- 2011 – onwards: Honorary Research Fellow, University College London, UK
- 2010 – onwards: Honorary Research Fellow, University of St Andrews, UK
- 2009: UK delegate of International Whaling Commission Scientific Committee
- 2009-2011: Chair of the International council for exploration of the Seas (ICES) Working Group on Marine Mammal Ecology (WGMME)
- 2009-2010: Member of ICES Advice Drafting Groups
- 2007: Invited expert to ASCOBANS/HELCOM small cetacean population structure workshop

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2005-onwards: UK appointed member of ICES WGMME

MEASURES OF ESTEEM

- 2013: Awarded a Grade B in the New Zealand Performance-Based Research Fund
- 2011: Awarded an ICES Service award
- 2010: International Visiting Research Fellow, Massey University
- 2007-present Selected as a reviewer by 17 peer-reviewed journals

Scholarships, grants and awards:

- 2011: Co-principal Investigator on a UK Natural Environmental Research Council (NERC) Stable Isotope Mass Spectrometry Facility funded pilot study "Assessment the effects of nutritional stress on reproduction and development in cetaceans"
- 2011: Awarded an Institute of Natural Sciences, Massey University minor CAPEX equipment grant, \$13,057.00 NZD
- 2010: Awarded a three-year ERA funded Marie Curie International Outgoing Fellowship in collaboration with the Institute of Zoology, London and Massey University, New Zealand
- 2010: Massey University International Visitor's Research Fund
- 2010: Principal Investigator of both Phase I and Phase II of "Effects of contaminants on reproduction in small cetaceans", which were selected as a priority conservation projects by the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS)
- 2008: Principal Investigator of "Effects of contaminants on reproduction in small cetaceans, Phase I", which were selected as a priority conservation projects by ASCOBANS
- 2007: Co-investigator on a Joint Industry Program (JIP) funded project "Cetacean stock assessment in relation to exploration and production industry sound (JIP 07-02)", with colleagues from SMRU and SMRU Ltd.
- 2001: British Council travel grant
- 2000: Forbairt International Collaboration Program travel grant, awarded 2000.
- 1999: Séan Moylan Scholarship

Selected research outputs

Peer-reviewed journal articles

- Jordan, F. F., **Murphy, S.**, Martinez, E., Amiot, C., van Helden, A., and K. A. Stockin. in review. Criteria for assessing cranial maturity in the common dolphin, *Delphinus* sp. from New Zealand waters. *Marine Mammal Science*.
- Murphy, S.**, Perrott, M., McVee, J., Read, F., and Stockin, K. A. in press. Deposition of growth layer groups in dentine tissue of captive common dolphins *Delphinus delphis*. NAMMCO Scientific Publication Volume 10: Age estimation of marine mammals with a focus on monodontids. doi: <http://dx.doi.org/10.7557/3.3017>
- Learmonth, J.A., **Murphy, S.**, Luque, P.L., Reid, R.J., Patterson, I.A.P., Ross, H.M., Barley, J., Santos, M. B., and G. J. Pierce. 2014. Life history and population structure of harbor porpoises (*Phocoena phocoena*) in Scottish (UK) waters: long-term variation and comparison with other populations. *Marine Mammal Science*.
- Murphy, S.**, Pinn, E., and Jepson, P. 2013. The short-beaked common dolphin (*Delphinus delphis*) in the North-eastern Atlantic: distribution, ecology, management and conservation status. *Oceanography and Marine Biology: An Annual Review* 51: 193-280
- Jepson, P.D., Deaville, R., Acevedo-Whitehouse, K., Barnett, J., Brownlow, A., Brownell Jr., R.L., Colloff, A., Clare, F.C., Davison, N., Law, R.J., Loveridge, J., Macgregor, S.K., Morris, S., **Murphy, S.**, Penrose, R., Perkins, M., Pinn, E., Seibel, H., Siebert, U., Sierra, E., Simpson, V., Tasker, M.L., Tregenza, N., Cunningham, A.A., and Fernández, A. 2013. What caused the UK's largest common dolphin (*Delphinus delphis*) mass stranding event? *PLoS One* 8:e60953.
- Murphy, S.**, Spradlin, T., Mackey, B., McVee, J., Androukaki, E., Tounta, E., Karamanlidis, A. A.,

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- Dendrinou, P., Joseph, E., Lockyer, C., and J. Matthiopoulos. in press. Age determination, growth and age-related mortality of Mediterranean monk seals (*Monachus monachus*). Endangered Species Research.
- Murphy, S.**, Deaville, R., Monies, R. J., Davison, N., and P. D. Jepson. 2011. True hermaphroditism: First evidence of an ovotestis in a cetacean species. *Journal of Comparative Pathology* 144: 195-199
- Murphy, S.**, Pierce, G.J., Law, R.J., Bersuder, P., Jepson, P.D., Learmonth, J.A., Addink, M., Dabin, W., Santos, M.B., Deaville, R., Zegers, B.N., Mets, A., Rogan, E., Ridoux, V., Reid, R.J., Smeenk, C., Jauniaux, T., López, A., Farré, J.M.A., González, A.F., Guerra, A., García-Hartmann, M., Lockyer, C., and J.P. Boon. 2010. Assessing the effect of persistent organic pollutants on reproductive activity in small cetaceans in the eastern North Atlantic. NAFO/ICES/NAMMCO symposium "The Role of Marine Mammals in the Ecosystem in the 21st Century". *Journal of Northwest Atlantic Fishery Science* 42: 153-173
- Murphy, S.**, Winship, A., Dabin, W., Jepson, P.D., Deaville, R., Reid, R.J., Spurrier, C., Rogan, E., López, A., González, A., Read, F., Addink, M., Silva, M., Ridoux, V., Learmonth, J.A., Pierce, G.J., and S.P. Northridge. 2009. The importance of biological parameters in assessing the current status of the short-beaked common dolphin *Delphinus delphis* in the eastern North Atlantic. *Marine Ecology Progress Series* 388: 273-291
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- ICES WGMME 2011. Report of the Working Group on Marine Mammal Ecology. 21-24 February,

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- Mirimin, L., Viricel, A., Amaral, A.R., **Murphy, S.**, Ridoux, V., and E. Rogan. 2007. Stock structure in the common dolphin *Delphinus delphis* in the Northeast Atlantic: analysis of genetic material. NECESSITY Contract 501605 Per. Act. Rep. No 2 – Annex 8.1.a. 13pp/
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- Pierce, G.J., Santos, M.B., Learmonth, J.A., Smeenk, C., Addink, M., García Hartmann, M., Boon, J.P., Zegers, B., Mets, A., Ridoux, V., Caurant, F., Bustamante, P., Lahaye, V., Guerra, A., González, A., López, A., Alonso, J.M., Rogan, E., **Murphy, S.**, Van Canneyt, O., Dabin, W., Spitz, J., Doemus, G., and L Meynier. 2004. Bioaccumulation of persistent organic pollutants in small cetaceans in European waters: transport pathways and impact on reproduction. Final Report to the European Commission's Directorate General for Research on Project EVK3-2000-00027.
- Rogan, E., **Murphy, S.**, Learmonth, J.A., González, A., and W. Dabin. 2004. Age Determination in Small Cetaceans from the NE Atlantic. BIOCET workpackage 4 - final report. Project Reference: EVK3-2000-00027. 34 pp.

Selected conference presentations

- Read, F.L., Learmonth, J.A., Santos, M.B., Thomsen, I., González, A.F., López, A., Ferreira, M., **Murphy, S.**, Brownlow, A., and G.J. Pierce. 2013. Harbour porpoise life history, diet and fisheries interactions in two regions of the Northeast Atlantic: Scotland (UK) and the north-west Iberian Peninsula, 28th Annual Conference of the European Cetacean Society, 5-9th April 2014, Liège, Belgium [ORAL].
- Murphy, S.**, Perrott, M., McVee, J., Roe, W., & K.A. Stockin. Investigating the deposition of growth layer groups in dentine tissue of captive common dolphins *Delphinus* sp. SMM-NAMMCO Workshop on Age Estimation in Marine Mammals. 17th Biennial Conference on the Biology of Marine Mammals, Tampa, Florida, US, 26-27 November 2011 [ORAL]
- Murphy, S.**, Pierce, G.J., Law, R. J., Santos, M.B., Learmonth, J.A., Addink, M., Dabin, W., Rogan, E., Jepson, P.D., Deaville, R., Zuur, A.F., Bustamante, P., Caurant, F., Lahaye, V., Ridoux, V., Zegers, B.N., Mets, A., Smeenk, C., Jauniaux, T., López, A., Alonso Farré, J.M., González, A.F., Guerra, A., García-Hartmann, M., Northridge S. P., Reid, R.J., Lockyer, C., and J.P. Boon. 2008. Assessing the effect of contaminants on reproductive success in small cetaceans in the eastern North Atlantic. NAFO/ICES/NAMMCO symposium "The role of marine mammals in the Ecosystem", 29 September - 1 October 2008, Dartmouth, Canada [ORAL]
- Murphy, S.** 2008. Marine Mammals in UK waters. UK Department for Business, Enterprise and Regulatory Reform, UK Offshore Energy Sea Assessment Workshop, Bristol, 3rd – 4th September, 2008 [ORAL]
- Murphy S.**, Northridge, S. P., Morizur, Y., Mirimin, L., Viricel, A., Jepson, P. D., Deaville, R., Reid, R. J., Rogan, E., Silva, M., Ferreira, M., López, A., Pierce, G. J., Ridoux, V., and W. Dabin. 2007. Conservation status of the common dolphin *Delphinus delphis* in the Northeast Atlantic and implications for future management plans. 17th Biennial Conference on the Biology of Marine Mammals, 29th November - 3rd December, Cape Town, South Africa [ORAL]
- Murphy, S.** 2007. Common dolphins in the North-east Atlantic. Joint ASCOBANS/HELCOM Workshop on Small cetacean population structure in the ASCOBANS Area, 8– 9th October, Bonn, Germany [INVITED SPEAKER].
- Murphy, S.** 2007. Small cetaceans and bycatch. Presentation to the Scottish Executive Environment and Rural Affairs Department (SEERAD), May 2007, Sea Mammal Research Unit, St Andrews [ORAL]
- Murphy S.**, Northridge, S.P., Jepson, P.D., Deaville, R., and R.J. Reid. 2006. Are common dolphins in the North-east Atlantic close to their carrying capacity? 20th Conference of the European Cetacean Society, 2-7th April, Gdynia, Poland, pp 33 [ORAL]
- Murphy, S.**, Rogan, E., Collet, A., and M. Addink. 2004. Assessing the mating system of the short-beaked common dolphin *Delphinus delphis* in the North-east Atlantic using samples obtained from post mortem examinations. 18th Annual Conference of the European Cetacean Society. Kolmården, Sweden. pp 13-14 [ORAL]

CV short
Professor Dr. Ursula Siebert

EDUCATIONAL QUALIFICATIONS

1986-1992	Study of Veterinary Medicine at the Justus-Liebig-Universität Giessen, Germany, at the Ecole Vétérinaire de Nantes, France (funded by the DAAD and EU-Erasmus-Program)
1992-1995	Doctoral thesis at the Free University of Brussels, Belgium (funded by the European Science Foundation) and at the Justus-Liebig-Universität Giessen, Germany,
1992-1996	Training in 1.) Veterinary Pathology 2.) Wild Animal Medicine 3.) Aquaculture
2007	Habilitation in Zoology at the Christian-Albrechts-University of Kiel
Practical courses	Texas Marine Mammal Stranding Network, Galveston at the Institute for Pathology at University of Montreal, Canada, Beluga Pathology University of Delft Image Processing Ultrasound: Dolphinarium, Paris, France, Dolphinarium Brugge, Belgium IFREMER Nantes and Rennes for Aquaculture
2011	Habilitation approved by the University of Veterinary Medicine Hannover, Foundation
2012	Diplomate of European College of Zoological Medicine (Wildlife Populations Health)

CURRENT EMPLOYMENT

since July 2011	Director of the Institute for Terrestrial and Aquatic Wildlife Research (ITAW) of the University of Veterinary Medicine Hannover, Foundation, Germany
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PREVIOUS EMPLOYMENT

May 1996-June 2011	Leader of the section "Ecology of marine mammals and birds" at the Forschungs- und Technologiezentrum Westküste (FTZ), Büsum, University of Kiel, Germany
1997-2004	Veterinarian in charge for Fjord-and Belt Center porpoises and seals

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1992-1994	Research associate at the Institute of Veterinary Pathology at the Justus-Liebig-Universität Giessen, Germany, in the research project „Investigations on the abundance, health status and migration of small cetacean population in German waters“, funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
1994-1996	Research associate at the Institute for Veterinary Pathology at the Justus-Liebig-Universität Giessen, Germany, in the research project „Investigation on small cetaceans as basis of a monitoring“, funded by the German Federal Ministry for Research and Technology

MEMBERSHIPS

1. Board member of the European Cetacean Society (ECS) 1994-1998
2. International Expert Panel for Offshore-Windmeelparks in Denmark (IAPEME) 2000-2006
3. Pollution 2000+ Steering Group of the Internationalen Walfangkommission (IWC) 2000-2006
4. Nationale Contactperson for the European Cetacean Society (ECS)
5. Member of the Trilateral Seal Expert Group of the Common Wadden Sea Secretariat (TSEG)
6. Member of ICES Working Group on Marine Mammals (ICES)
7. European Association of Zoo and Wildlife Veterinarians (EAZWV)
8. European Association for Aquatic Mammals (EAAM)
9. Society for Marine Mammology (SMM)
10. Advisory Committee of the Nature Commissioner of Schleswig-Holsteins
11. Nationalpark Curatoriums Dithmarschen
12. Advisory Committee for the Federal Research Agency for Fishery
13. Steering Group for Research on Marine mammals of the Dolphinarium Harderwijk („des Alpes“), Holland
14. Member of the Reviewing Panel for the Portugese Research Ministry
15. Member of the Advisory Board of the FNRS, Belgium

SCIENTIFIC AWARDS

Alexander von Humboldt Price, Fund for Scientific Research (FNRS), Belgium 2013/2014

Selected Publications (Peer-Reviewed)

Ahrens L., **Siebert U.** and Ebinghaus R. 2009. Total body burden and tissue distribution of polyfluorinated compounds in Harbor Seals (*Phoca vitulina*) from the German Bight. *Marine Pollution Bulletin* 58, 520-525.

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- Ahrens L., **Siebert U.** and Ebinghaus R. 2009. Temporal trends of polyfluoroalkyl compounds in harbor seals (*Phoca vitulina*) from the German Bight, 1999-2008. *Chemosphere* 76, 151-158.
- Akamatsu T., Rune D., Miller L.A., Naito Y., **Siebert U.**, Teilmann J., Tougaard J., Wang D. and Wang K. 2007. Comparison of echolocation behaviour between coastal oceanic and riverine porpoises. *Deep Sea Research II* 54, 290-297.
- Akineden Ö., Hassan A.A., Alber J., El-Sayed A., Estoepongastie A.T.S., Lämmle C., Weiss R. and **Siebert U.** 2005. Phenotypic and genotypic properties of *Streptococcus equi* subsp. *zooepidemicus* isolated from harbor seals (*Phoca vitulina*) from the German North Sea during the phocine distemper outbreak in 2002. *Veterinary Microbiology* 110, 147-152.
- Akineden, Ö., Alber, J., Lämmle, C., Weiss, R., **Siebert, U.**, Foster, G., Tougaard, S., Brasseur, S.M.J.M. and Reijnders, P.J.H. 2007. Relatedness of *Streptococcus equi* subsp. *zooepidemicus* strains isolated from harbour seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*) of various origins of the North Sea during 1988 to 2005. *Veterinary Microbiology* 121, 158-162.
- Alber J., El-Sayed A., Lämmle C., Hassan A.A., Vossen A. and **Siebert U.** 2004. Determination of species-specific sequences of superoxide dismutase A encoding gene *sodA* and chaperonin 60 encoding gene *cpn60* for identification and phylogenetic analysis of *Streptococcus phocae*. *Veterinary Microbiology* 101, 117-122.
- Becher P., König M., Müller G., **Siebert U.** and Thiel H.J. 2002. Characterization of sealpox virus, a separate member of the Parapoxviruses. *Archiv Virology* 147, 1133-1140.
- Begeman L., St. Leger J.A., Blyde D.J., Jauniaux T.P., Lair S., Lovewell G., Raverty S., Seibel H., **Siebert U.**, Staggs S.L., Martelli P. and Keesler, R.I. 2013. Intestinal volvulus in cetaceans. *Veterinary Pathology* 50, 590-96.
- Behr A., Wargel A., **Siebert U.** and Hellwig V. 2008. Analysis of polychlorinated biphenyl (PCB)-induced modification of protein expression in primary hepatocytes from harbour seals. *Organohalogen Compounds* 70, 1079-1082.
- Beineke A., **Siebert U.**, Wünschmann A., Stott J.L., Prengel I., Kremmer E. and Baumgärtner W. 2001. Immunohistochemical investigations of the cross reactivity of selected cell markers from various species for characterization of lymphatic tissues in the harbour porpoise (*Phocoena phocoena*). *Journal of Comparative Pathology* 125, 311-317.
- Beineke A., **Siebert U.**, Van Elk N. and Baumgärtner W. 2004. Development of a lymphocyte-transformation-assay for peripheral blood lymphocytes of the harbour porpoise (*Phocoena phocoena*) and detection of cytokines using the reverse-transcription-polymerase-chain-reaction. *Journal of Immunology and Immuno-pathology* 98, 59-68.
- Beineke A., **Siebert U.**, MacLachlan M., Bruhn R., Thron K., Failing K., Müller G. and Baumgärtner W. 2005. Investigations of the potential influence of environmental contaminants on the thymus and spleen of harbor porpoises (*Phocoena phocoena*). *Environmental Science and Technology* 39, 3933-3938.
- Beineke A., **Siebert U.**, Müller G. and Baumgärtner W. 2007. Increased blood interleukin-10 mRNA levels in diseased free-ranging harbor porpoises (*Phocoena phocoena*). *Veterinary Immunology and Immunopathology* 115, 100-106.
- Beineke A., **Siebert U.**, Stott G., Müller G. and Baumgärtner W. 2007. Phenotypical characterization of changes in thymus and spleen associated with lymphoid depletion in free ranging harbor porpoises (*Phocoena phocoena*). *Veterinary Immunology and Immunopathology* 117, 254-265.
- Beineke A., **Siebert U.** and Baumgärtner W. 2010. Immunology of whales and dolphins. *Veterinary Immunology and Immunopathology*. DOI 10.1016/j.vetimm.2009.06.019, 133. 81-94.
- Benke H., **Siebert U.**, Lick R., Bandomir-Krischak B. and Weiss R. 1998. The current status of harbour porpoises (*Phocoena phocoena*) in German waters. *Archiv of Fisheries and Marine Research* 46 (2), 97-123.
- Birkun Jr. A., Kuiken T., Krivokhizhin S., Haines D.M., Osterhaus A.D.M.E., van de Bildt M.W.G., Joiris C.R. and **Siebert U.** 1999. Epizootic of morbilliviral disease in common dolphins (*Delphinus delphis ponticus*) from the Black Sea. *Veterinary Record* 144, 85-92.

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- Dähne M., Gilles A., Lucke K., Peschko V., Adler S., Krügel K., Sundermeyer J. and **Siebert U.** 2013. Effects of pile-driving on harbour porpoises (*Phocoena phocoena*) at the first offshore wind farm in Germany. *Environmental Research Letters* 8, 2.
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- Das K., Holsbeek L., Browning J., **Siebert U.**, Birkun A. and Bouquegneau J.M. 2004. Trace metal and stable isotope measurements (δ^{13} and δ^{15} N) in small cetaceans from the Black Sea. *Environmental Pollution* 131, 197-204.
- Das K., **Siebert U.**, Fontaine M., Jauniaux T., Holsbeek L. and Bouquegneau J.M. 2004. Ecological and pathological factors related to trace metal concentrations in harbour porpoises (*Phocoena phocoena*) from the North Sea and adjacent areas. *Marine Ecology Progress Series* 281, 283-295.
- Das K., Vossen A., Tolley K., Vikingsson G., Thron K., Müller G., Baumgärtner W. and **Siebert U.** 2006. Interfollicular fibrosis on the thyroid glands of the harbour porpoise (*Phocoena phocoena*): An endocrine disruption? *Archives of Environmental Contamination and Toxicology* 51, 720-729 doi:10.1007/s00244-005-0098-4.
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- Fonfara S., **Siebert U.**, Prange A. and Colijn F. 2007 The impact of stress on cytokine and haptoglobin mRNA expression in blood samples from harbour porpoises (*Phocoena phocoena*). *Journal of the Marine Biological Association of the United Kingdom* 87, 305-311.
- Fonfara S., **Siebert U.** and Prange A. 2007 Cytokines and acute phase proteins as markers for infection in harbor porpoises. *Marine Mammal Science* 23(4), 931-942.
- Fontaine M.C., Tolley K.A., **Siebert U.**, Gobert S., Lepoint G., Bouquegneau J.M. and Das K. 2007. Ecological variation of harbour porpoises (*Phocoena phocoena*) from Scandinavian waters inferred from trace elements and stable isotopes. *BMC Ecology*, 1, doi: 10.1186/1472-6785-7-1.
- Fontaine M.C., Baird S.J.E., Piry S., Ray N., Duke S., Birkun A.Jr., Bloch D., Ferreira M., Sequeira M., Jauniaux T., Llavona A., Øien N.I., Öztürk B., Öztürk A.A., Ridoux V., Rogan E., **Siebert U.**, Vikingsson G.A., Bouquegneau J.M. and Michaux J.R. 2007. Rise of oceanographic barriers in continuous populations of a cetacean: the harbour porpoise in old world waters. *BMC Biology* 5 (30), 1-16, doi:10.1186/1741-7007-5-30.

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Gallus A., Dähne M., Verfuß U., Bräger S., Adler S. **Siebert U.** and Benke, H. 2012. Use of static passive acoustic monitoring to assess the status of the 'Critically Endangered' Baltic harbour porpoise in German waters. *Endangered Species Research* 18, 265–278.

Gallus A., Dähne M., Verfuß U., Bräger S., Adler S., **Siebert U.** and Benke H. Assessing the status of the Critically Endangered Baltic harbour porpoise in German waters using static passive acoustic monitoring *ESR SPECIAL: Beyond Marine Mammal Habitat Modeling: Applications For Ecology And Conservation*.

Gilles A., Scheidat M. and **Siebert U.** 2009. Seasonal distribution of harbour porpoises and possible interference of offshore wind farms in the German North Sea. *Marine Ecology Progress Series* 383, 295-307

Gilles A., Adler S., Kaschner K., Scheidat M., **Siebert U.** 2011. Modelling harbour porpoise seasonal density as a function of the German Bight environment. *Endangered Species Research* 14(2), 157-168.

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Scheidat M., Gilles A. and **Siebert U.** 2006. Evaluating the distribution and density of harbour porpoises (*Phocoena phocoena*) in selected areas in German waters. In: Von Nordheim H., Boedeker D. and Krause J.C. (Eds). Progress in Marine Conservation in Europe. Springer-Verlag Berlin Heidelberg, 189-208.

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Curriculum Vitae

Anders Galatius, MSc, PhD, born August 5th 1973
Phone: +45 28710372 Email: agj@dmu.dk

Employment

- 2011-** Researcher at Department of Bioscience, Aarhus University
- Monitoring of and research on marine mammals in Denmark
- 2010-2011** Postdoctoral researcher at National Environmental Research Institute, Aarhus University
- Monitoring and research of contaminants in marine mammals in Denmark and Greenland
- 2009-2010** External lecturer at University of Copenhagen
- Courses: Graduate: Zoological Morphology. Undergraduate: Organismal Diversity, Comparative Anatomy, Vertebrate Fauna of Denmark
- 2005-2009** PhD fellow at Institute of Biology, University of Copenhagen (see education)
- 2005** Research Assistant (statistician) at the Breast Cancer Clinic, Hørsholm Hospital, Hørsholm, Denmark
- Medical research statistician
- 2004-2005** Teaching Assistant at University of Copenhagen
- Courses: Organismal Diversity; Zoological Morphology
- 2001-2003** Assistant at project 'Focus on Cetaceans in Denmark'
- Observations and survey of harbour porpoises from vessels.
- Dissections of cetaceans
- Public outreach

Education

- 2009:** PhD from University of Copenhagen, thesis entitled: '*Paedomorphosis in phocoenids (porpoises): perspectives for reproduction and evolution within and between species*'
- 2002:** MSc from University of Copenhagen, thesis entitled: '*Growth and skeletal development in the harbour porpoise*'
- 1996:** BSc from University of Copenhagen

Representative and Board positions

- 2011-** Chair of the Seal Expert Group of the Helsinki Commission (HELCOM)
- 2011-** Member of the Trilateral Seal Expert Group of the Wadden Sea under the Wadden Sea Secretariat
- 2007-2012** Chair of the Danish Marine Mammal Society
- 2004-2007** Board member / Webmaster of the Danish Marine Mammal Society
- 2007-2013** Board member / Webmaster of the Danish Natural History Society
- 2003-** National Contact Person of Denmark in the European Cetacean Society
- 1999-2000** Student representative at the board of the Institute of Molecular Biology, University of Copenhagen (1999-2000)

Peer Reviewing

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Reviewer for the following international journals:

The Biological Journal of the Linnean Society, Lutra, Journal of Morphology, Journal of the Marine Biological Association of the United Kingdom, Science of the Total Environment, , Journal of Vertebrate Paleontology, Mammalian Biology, Canadian Journal of Zoology, Marine Mammal Science, South American Journal of Aquatic Mammals, Fisheries Research, Marine Mammal Science, Environmental Science and Technology.

Awards

1st prize for best postgraduate student oral presentation at the 20th conference of the European Cetacean Society, April 2nd-7th 2006, Gdynia, Poland

The Schibbye Prize 2004. Awarded by the Danish Natural History Society to young researchers of natural history in Denmark for outstanding original research. Awarded to a zoologist every third year.

International peer-reviewed articles

Frandsen, MS, Fort, J, Rig  t, FF., **Galatius, A.**, Mosbech, A (in press) Composition of chick meals from one of the main little auk (*Alle alle*) breeding colonies in Northwest Greenland. Polar Biology.

Haarder, S., Kania, PW, **Galatius, A.**, Buchmann, K. (in press) Increased *Contracaecum osculatum* infection of Baltic cod (*Gadus morhua* L.) livers associated with increasing grey seal (*Halichoerus gryphus* L.) populations. Journal of Wildlife Diseases.

Galatius, A., Bossi, R., Sonne, C., Rig  t, F.F., Kinze, C.C., Lockyer, C., Teilmann, J., Dietz, R. (2013) PFAS profiles in three North Sea top predators: metabolic differences among species? Environmental Science and Pollution Research: 20: 8013-8020.

Frandsen, M.S. and **Galatius, A.** (2013) Sexual dimorphism in Dall's porpoise and harbor porpoise skulls. Mammalian Biology: 78: 153-156.

Galatius, A., Jansen, O.E. and Kinze, C.C. (2013) Parameters of growth and reproduction of white-beaked dolphins (*Lagenorhynchus albirostris*) from the North Sea. Marine Mammal Science: 29: 348-355.

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Dietz, R., Rig  t, F.F., **Galatius, A.**, Sonne, C., Teilmann and J. Bossi, R. (2012) Spatial trends of perfluorochemicals in harbour seals (*Phoca vitulina*) from Danish waters. Science of the Total Environment: **414**: 732-737.

Galatius, A., Kinze, C.C. and Teilmann, J. (2012) Population structure of harbour porpoises in the greater Baltic region: Evidence of separation based on geometric morphometric comparisons. Journal of the Marine Biological Association of the United Kingdom: 29:388-355.

Galatius, A. and Gol'din, P.E. (2011) Geographic variation of skeletal ontogeny and skull shape in the harbour porpoise (*Phocoena phocoena*). Canadian Journal of Zoology, **89**: 869-879.

Galatius, A., Dietz, R., Rig  t, F.F., Sonne, C., Kinze, C.C., Lockyer, C. and Bossi, R. (2011) Temporal and life history related trends of perfluorochemicals in harbor porpoises from the Danish North Sea. Marine Pollution Bulletin, **62**: 1476-1483.

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- Galatius, A.** (2010) Paedomorphosis in two small toothed whales (Odontoceti): how and why? *Biological Journal of the Linnean Society*, **99**: 278-295.
- Galatius, A.**, Sonne, C., Kinze, C. C., Dietz, R. and Jensen, J.-E. B. (2009) Occurrence of vertebral osteophytosis in a museum sample of white-beaked dolphins (*Lagenorhynchus albirostris*) from Danish waters. *Journal of Wildlife Diseases*, **45**: 19-28.
- Galatius, A.** (2006) Directional bilateral asymmetry of the appendicular skeleton of the white-beaked dolphin (*Lagenorhynchus albirostris*). *Aquatic Mammals*, **32**: 232-235.
- Galatius, A.**, Andersen, M.E.R., Haugan, B., Langhoff, H.E. and Jespersen, Å. (2006). Timing of epiphyseal development in the flipper skeleton of the harbour porpoise (*Phocoena phocoena*) as an indicator of paedomorphosis. *Acta Zoologica*, **87**: 77-82.
- Galatius, A.** (2005) Directional bilateral asymmetry of the appendicular skeleton of the harbor porpoise (*Phocoena phocoena*). *Marine Mammal Science*, **21**: 401-410.
- Galatius, A.** (2005) Sexually dimorphic proportions of the harbour porpoise (*Phocoena phocoena*) skeleton. *Journal of Anatomy*, **206**: 141-154
- Galatius, A.** and Kinze, C.C. (2003) Ankylosis patterns in the post-cranial skeleton and hyoid bones of the harbour porpoise (*Phocoena phocoena*) in the Baltic and North Sea. *Canadian Journal of Zoology*, **81**: 1851-1861.
- Levermann, N., **Galatius, A.**, Ehlme, G., Rysgaard, S. and Born, E.W. (2003). Feeding behaviour of free-ranging walrus with notes on apparent dextrality of flipper use. *BMC Ecology*, **3**:9.

Curriculum Vitae

Lonneke L. Ijsseldijk

Nationality: Dutch

Address: Alexander Numankade 63

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Date of Birth: 12 November 1991

Marital Status: Unmarried

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Resume

Work:

July 2013 – present - **Faculty Veterinary Medicine, Department Pathobiology, Utrecht University**

- Research and teaching assistant harbour porpoise necropsy team; fulltime

Education

2009 – 2013 Bachelor at Van Hall Larenstein, course: Intergrated Coastal Zone Management

2012 – 2013 Minor Marine Living Resources at Wageningen University

2004-2009 Havo Bergen Scholengemeenschap (BSG) Degree in: Nature and Health Electives: mathematic B, geographic and music

February – July 2013 - **BSc Thesis at IMARES and the Royal Netherlands Institute of Sea Research**

- Topic: Tidal influence on the occurrence of the Harbour Porpoise (*Phocoena phocoena*) in the Marsdiep area, The Netherlands

(Volunteer) Work experience

August 2012 – January 2013 **Internship at MURDOCH university, in Hawaii and Western Australia**

- Research on the effect of tourism on the spinner dolphin on The Big Island of Hawaii, USA

May 2011 – May 2013 **Photo identification Manager of Irish Coastal Bottlenose dolphin Catalogue**

2010 - Present **European Cetacean Society conference**

- Member and visitor in Germany (2010); Spain (2011); Ireland (2012), Portugal (2013) & Belgium (2014)

2008 – 2013 **Faculty of Veterinary Medicine Utrecht University**

- Helping with necropsies on harbour porpoises and dolphin species

Feb – July 2011 **Internship at the Irish Whale and Dolphin Group (IWDG)** Internship with Galway-mayo Institute of Technology and IWDG, regarding strandings and fieldwork

Summer of 2010 **Morigenos in Lucija, Slovenia**

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- Observation and identification of bottlenose dolphins in Slovenian waters

Summer of 2009 **Centre for Dolphin Studies, Plettenbergbay, South-Africa**

- Observation and identification of whales and dolphins

Presentations:

J. Camalich, E. Svensson, L.L. IJsseldijk, S. Brasseur, R. Witbaard & S. Schouten (2014) Bulk and amino acid stable isotope analysis of fin whale baleens. European Cetacean Society conference, Belgium; poster

L.L. IJsseldijk, C.J. Camphuysen, J. Nauw & G. Aarts (2014) Tidal influence on the occurrence of the harbour porpoises (*Phocoena phocoena*) in the Marsdiep area, The Netherlands. European Cetacean Society conference, Belgium; short talk

L.L. IJsseldijk, S. Berrow, J. O'Brien, P. Whooley & C. Ryan (2012) Inshore bottlenose dolphins (*Tursiops truncatus*) in Ireland use the entire Irish coastline. European Cetacean Society conference, Ireland; poster

N. van de Velde, B. Devleesschauwer, S. Decraeye, L. Begeman, L.L. IJsseldijk, S. Hiemstra, A. Brownlow, N. Davinson, J. IJzer, M. Leopold, T. Jauniaux, U. Siebert & P. Dorny (2014) Is a terrestrial cat-parasite really reaching marine mammals? European Cetacean Society conference, Belgium; poster

**FORMAT FOR PROJECT PROPOSALS
FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE**

Title <i>The presence and distribution of harbour porpoises (and other marine mammals) in the Thames Estuary and adjacent waters; a research and outreach project.</i>	Justification: CMP NSP	Project ID: 2014-09
Implementing Agency / Applicant	<p>Indicate the organization/institution or individual making the proposal, which would be responsible for the implementation of the project, if approved. Full contact details of the responsible individual should be provided.</p> <p>Marine Conservation Research International Song of the Whale research team Anna Moscrop Tel: +44 (0)1376 573 071 Email: amoscrop@mcr-team.org Address: 17a High Street, Kelvedon, Essex, CO5 9AG, UK</p>	
Collaborating Agencies / Other Sponsors	<p>Indicate possible other organizations/institutions or individuals collaborating with the implementing agency in the conduct of the project.</p> <p>Key project partner:- Zoological Society for London (ZSL) UK & Europe Conservation Programme. Essex Wildlife Trust is also involved with planning of the project. As we are still in early stages of planning, the involvement of other organisations is still to be formally confirmed, including the Kent Wildlife Trust, Greater London Authority and local inshore fisheries and conservation authorities.</p>	
Background / Problem	<p>Briefly describe issues/problems to be addressed by the project. Please indicate whether the proposed project is a new activity and its possible linkages with already ongoing/planned initiatives.</p> <p>The Thames Estuary is the UK's busiest industrial waterway, leading from London into the North Sea. It is used by a number of stakeholders for activities including shipping, commercial and recreational fishing, dredging, renewable energy generation (offshore wind farms), tourism, recreational watercraft and public transport.</p> <p>In 1950, the river was declared biologically dead, but the tidal Thames of today is a good example of a recovering ecosystem which is of great ecological importance not only to London, Kent and Essex, but also to the Thames tributaries and marine ecosystems of the North Sea. As such, the riparian Boroughs of</p>	

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	<p>London include the river as a “Site of Metropolitan Importance for Nature Conservation”.</p> <p>Historical records suggest that harbour porpoise were once a common sight in central London, but the current status of the harbour porpoise is unknown in this large and important UK estuary; it is not known how many harbour porpoises visit these waters or whether they are resident or common visitors to the Thames Estuary. Over the last 20 years, there appears to have been a significant shift in harbour porpoise distribution within the North Sea, from the north to the south (Hammond et al., 2013). Although this shift was first detected some years ago, it is not clear whether there is a corresponding ingress into the adjacent English Channel. Systematic surveys of the Thames Estuary and adjacent waters at different times of year will help to elucidate whether animals are using the estuary regularly and whether this is a potential corridor.</p> <p>Harbour porpoises are known to exist in the Thames estuary from opportunistic public sightings submitted to ZSL and they are listed for protection under UK and EU legislation, therefore they should be considered when conducting potentially disturbing activities in or near the Thames Estuary. Threatened throughout their range by fisheries bycatch, disturbance and boat strikes, oil, chemical and plastic pollution, dredging, noise pollution and habitat degradation, new data are useful to inform effective conservation measures to protect the species.</p> <p>MCR International and ZSL have prioritised the collection of harbour porpoise data in the Thames Estuary as the development of the area continues at a fast rate. For example, in 2014 the construction of the UK’s largest deep-sea container port, London Gateway, was completed on the Essex coastline, which will greatly increase shipping traffic in the region. It is therefore critical to see if this, and/ or any other developments, will impact the harbour porpoise population in the Thames Estuary by gathering baseline ecological data and completing regular harbour porpoise surveys thereafter.</p> <p>This project will be the first dedicated survey for harbour porpoises in the Greater Thames Estuary. It will be conducted in collaboration with ZSL, who has been collecting opportunistic public sightings of marine mammals in the Thames Estuary since 2004 (www.zsl.org/inthethames), as well as conducting dedicated surveys for grey and harbour Seal in the Greater Thames Estuary since 2011.</p>
Objectives ¹	Briefly specify the project objective as the overall intended achievement. This part should include one or two main

¹ Hammond, P.S., Macleod, K., Berggren, P., Borchers, D.L., Burt, L., Cañadas, A., Desportes, G., Donovan, G.P., Gilles, A., Gillespie, D., Gordon, J., Hiby, L., Kuklik, I., Leaper, R., Lehnert, K., Leopold, M., Lovell, P., Øien, N., Paxton, C.G.M., Ridoux, V., Rogan E., Samarra, F., Scheidat, M., Sequiera, M., Siebert, U., Skov, H., Swift, R., Tasker, M.L., Teilmann, J., Van Canneyt, O. and Vázquez, J.A., (2013) Cetacean abundance and distribution in European Atlantic shelf waters to inform conservation and management. *Biological Conservation* 164:107-122.

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	<p>objectives, possibly supplemented by more specific objectives, which could provide more structure to the design of the project. Objectives are intended goals and should be clearly distinguished from outputs and activities.</p> <p>Project Aim: The harbour porpoise population in the Thames Estuary is secured.</p> <p>Objective 1: Harbour porpoise presence and distribution is understood in the Thames Estuary.</p> <p>Objective 2: The Thames harbour porpoise population is appropriately considered in development proposals, management measures and conservation legislation.</p> <p>Objective 3: More people are made aware that marine mammals live in the Thames Estuary and are inspired to support better environmental stewardship.</p> <p>Objective 4: Baseline data is gathered to help to quantify man-made pressures from floating marine litter, fishing activities and anthropogenic noise in the estuary and adjacent waters.</p>
<p>Relevance ASCOBANS</p>	<p>to</p> <p>Only projects directly relevant to the conservation objectives of ASCOBANS will be supported. Briefly explain the pertinence of the project for the attainment of ASCOBANS goals and justify by explaining how the project helps to address the relevant Activities in the Agreement's Triennium Work Plan. Include references to other decisions or documents/instruments produced within the Agreement, such as the Agreement's Conservation and Management Plan, Resolutions or actions recommended by the Advisory Committee as appropriate.</p> <p>The project, to investigate the presence and distribution of harbour porpoises within the Thames Estuary and adjacent waters in the SE North Sea, is pertinent in terms of assessing the status and seasonal presence / movements of harbour porpoises in these coastal waters – as specified under point 2 of the Annex of the Agreement (Surveys and Research) and Action 7 of the Conservation Plan for harbour porpoises. The project will aid the implementation of the Conservation plan for Harbour porpoises in the North Sea (Action point 8 of the Triennium Work Plan), as well as providing new data to inform Conservation Actions within the Work Plan relating to marine debris and disturbance and the effects on small cetaceans.</p> <p>In addition, Action 7 of the Conservation Plan for Harbour porpoises in the North Sea calls for monitoring trends in distribution and abundance of harbour porpoises in the region; this projects aims to provide new data for a previously little studied coastal areas in the SE North Sea.</p> <p>Thus, this survey will contribute to the overall knowledge of the species in the North Sea, while collecting ancillary data on some of the key impacts to harbour porpoises in the marine environment such as marine debris and anthropogenic noise. In</p>

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	<p>addition, the project aims to improve public awareness of harbour porpoises in the region and UK generally, thereby supporting point 5 (Information and Education) of the Annex of the Agreement; through public outreach and information sharing (regionally and nationally), and targeted educational activities in schools within the Greater London area, as well as providing training in field work for participants during the surveys. In addition, the project will demonstrate close cooperation between various different stakeholders working in partnership to improve knowledge and conservation of harbour porpoises within the waters of an ASCOBANS party.</p>
Activities	<p>Briefly describe the work or the tasks to be performed. As the main element of the project's design, this section should outline the methodologies to be employed, personnel and equipment needs, location and expected duration of individual actions. Actions should be clearly related to the outputs described below.</p> <p>The research vessel Song of the Whale (owned by MCR International) would be used to conduct the visual and passive acoustic surveys, with a team of 10 people. The Thames Estuary and adjacent waters is the survey area for two one week long systematic vessel surveys, one during winter months and one in summer months, collecting data on the presence of harbour porpoises and other marine mammals. The surveys will be conducted during daylight hours, with observers stationed on a raised platform, giving an eye height of approximately 5.5 metres above sea level, in sea conditions up to sea state 4 scanning ahead and aside of the vessel for harbour porpoises and other marine mammals using their naked eye, with 7x 50 binoculars used for species confirmation. A third observer will collect data on floating marine debris within 200 metres of the vessel, as well as data on the presence of fishing vessels/gear. Throughout the survey a towed hydrophone array will be deployed to detect harbour porpoises acoustically. The array has two broadband hydrophones within it, to allow calculation of bearings to each animal detected using the software program Pamguard. Data on the sightings, as well as environmental and effort information will be documented. Throughout the survey, point samples of calibrated noise recordings (using a calibrated hydrophone) will be collected to allow absolute ambient noise measurements to be made.</p> <p>The survey vessel and all equipment will be provided by MCR Int. for the duration of both surveys; up to 10 personnel will be on board including the MCR team (captain, engineer, 2 MCR scientists) and 6 visiting researchers, interns and volunteers. Training of the visiting scientists, interns and volunteers on visual and acoustic survey techniques for harbour porpoises will occur throughout the surveys.</p> <p>In addition to the field work component of the project, activities aimed at providing opportunities for education, outreach and publicity will include²:</p>

² Note – separate budget and funding is being sought specifically for the education and outreach activities associated with the project. Training (the participants/intern scheme) and press and social media will be conducted as part of the field work,

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	<ul style="list-style-type: none"> • Virtual classrooms: live web link and /or archived educational 'lesson' from the boat during the survey aimed at school and university students • Training volunteers: staff and team members from partner groups and student volunteers/participants will be involved in the field work, providing opportunities for training in vessel based field work, and visual and acoustic field work techniques. • A Level study days: ZSL holds 20 Edexcel Study Days for A-level students and groups of up to 90 students attend; This project provides an opportunity to include information on the harbour porpoise survey in the presentations • Open day(s): the vessel will be berthed in London e.g. St Katharine Docks and open to the public and specific interest groups. • Local Events: Stand and activities related to Thames harbour porpoises at the Thames Festival – September 2014 / September 2015 and other appropriate fora. • Online: Inclusion of the results of the Thames porpoise survey on ZSL's interactive marine mammal map (www.zsl.org/inthethames). Since its launch in August 2013, 6,500 people have visited the site, 54% of which were from London. • Press and social media, will include press releases for print and broadcast media and blogs, Facebook and Twitter posts through MCR, ZSL and partners websites. <p>Post survey, analysis will be conducted of the acoustic recordings. The visual and acoustic data will be examined and relative abundance estimates (if possible absolute abundance and density estimates) will be calculated for each survey, as well as distribution maps. Heat maps depicting the density of marine floating debris and intensity of ambient noise will also be plotted. Survey reports for each survey will be provided to funders and publicised through local media, and social media channels. A final report will be provided, and if appropriate, a peer reviewed publication in an appropriate scientific journal will also result from the project.</p>
Outputs	<p>Indicate the specific products or services (e.g. reports, publications) produced by the activities to achieve the project objectives, including scientific, conservation and management and educational outputs.</p> <p>Outputs (relating to the project objectives) will include:-</p>

under the budget outlined in this proposal

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	<p>Objective 1: Harbour porpoise abundance and distribution is understood in the Thames Estuary.</p> <p>Objective 2: The Thames harbour porpoise population is appropriately considered in development proposals, management measures and conservation legislation.</p> <ul style="list-style-type: none"> • Cruise report upon completion of each vessel survey (summer & winter) • A final report upon completion of post process data analysis. This will be sent to the Port of London Authority, Natural England, Marine Management Organisation and shared with Green Space Information for Greater London (GiGL) to ensure the data is available for all future planning applications, management measures and conservation legislation. <p>Objective 3: Through outreach and educational activities, more people are made aware that marine mammals live in the Thames Estuary and are inspired to have better environmental stewardship</p> <ul style="list-style-type: none"> • The project will offer unique outreach, educational and advocacy opportunities including: practical, theoretical and vessel field work training for participants from partner and supporting organisations; print and broadcast media and online articles, blogs and social media on porpoise conservation issues. In addition, unique outreach and educational aspects of the project will also lead on from the vessel surveys (see details in Activities, above) including open days (such as talks and activities at the Thames Festival in London and as part of the ZSL EdExcel schools lecture series) and work with schools through visits of to the research vessel and virtual classroom 'lessons' from the team on board the vessel during the field work. 								
<p>Work Plan and Timetable</p>	<p>As a general rule, small-scale projects funded by ASCOBANS should be completed within one year, and their expected duration should not exceed 2-3 years. Indicate proposed beginning and end dates.</p> <p>The work plan sets out the timetable for carrying out project activities and the delivery of outputs. The timetable should include start and end dates for each activity and indicate who is responsible for its implementation. The information is best presented as a table.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 20px;"> <thead> <tr> <th style="text-align: left;"><i>Activity</i></th><th style="text-align: left;"><i>Description</i></th><th style="text-align: left;"><i>Time for activity</i></th><th style="text-align: left;"><i>Date for activity</i></th></tr> </thead> <tbody> <tr> <td>Survey and project planning</td><td>Planning, preparation and coordination of</td><td>10 days</td><td>Ongoing from summer</td></tr> </tbody> </table>	<i>Activity</i>	<i>Description</i>	<i>Time for activity</i>	<i>Date for activity</i>	Survey and project planning	Planning, preparation and coordination of	10 days	Ongoing from summer
<i>Activity</i>	<i>Description</i>	<i>Time for activity</i>	<i>Date for activity</i>						
Survey and project planning	Planning, preparation and coordination of	10 days	Ongoing from summer						

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		vessel survey and project		2014
	Winter vessel survey for harbour porpoises	Daylight survey of the Greater Thames estuary and adjacent waters	7 days	Between November 2014 – January 2015
	Summer vessel survey for harbour porpoises	Daylight survey of the Greater Thames estuary and adjacent waters	7 days	Between May - July 2015
	Cruise report (MCR Int)	4 weeks following completion of each vessel survey	2 days per report	
	Data analysis and write-up. Final report	Analysis of survey data, write up of results for funders, and work towards a peer-reviewed publication.	16 days	Following surveys, to be completed by September 2015
	Training scheme	Training of volunteers and interns during the surveys.	14 days of field work	During the surveys
Project Personnel	<p>Name, position, affiliation, contact details, role within the project and a brief profile should be given for at least the most prominent members of the project team. Succinct CV can be attached to the project proposal.</p> <p>Lead organisation: Marine Conservation Research International:</p> <p>MCR's Song of the Whale team has undertaken research on harbour porpoises in various locations during the past 20 years, and developed acoustic techniques for surveys which are now employed by researchers worldwide. The team focuses on studies of threatened marine mammals and informing measures to better protect them. Previous studies have included the first dedicated vessel surveys for porpoises in the Baltic Sea, off NW Africa, in the Northern Aegean (Mediterranean Sea), the Dogger Bank, North Sea, in winter, and the English Channel. The team also have expertise and experience in the conservation and study of a range of other threatened species and their habitats – including sperm whales, monk seals, basking sharks, blue whales, beaked whales and north Atlantic right whales. See www.MarineConservationResearch.org</p>			

	<p>Project Manager: Anna Moscrop amoscrop@mcr-team.org Director of Marine Conservation Research International, Profile: Anna is a Director of MCR Int. and project manager for the MCR SOTW team. She has over 20 years of experience in the field of marine mammal research and conservation, having worked for International Fund for Animal Welfare team as a marine mammal scientist with the Song of the Whale team for 15 years, and prior to this, as a scientific /conservation consultant for organisations including Greenpeace, WDCCS and several UK universities. She has a background and expertise in a range of cetacean conservation issues, including noise pollution and marine habitat degradation. Anna is experienced in planning and overseeing multi-faceted, international field projects, as well as the preparation of reports, reviews, scientific papers and information leaflets, organising and attending outreach and advocacy activities and events, and presenting at meetings and conferences.</p> <p>MCR Scientists: Dr Oliver Boisseau oboisseau@mcr-team.org Profile: Senior Research Scientist. Oliver has over 15 years of field experience working on marine mammal research projects. His work has involved developing and promoting non-invasive research techniques include measuring anthropogenic noise, quantifying and tracking marine mammal vocalisations, improving survey and monitoring techniques, photogrammetry and video-range tracking. Many of these techniques were used in his PhD study investigating dolphin population structure and vocal behaviour. Oliver has written a number of reports related to marine mammal distribution and population structure. He has presented papers to the International Whaling Committee (IWC), and published in international journals including the Journal of the Marine Biological Association of the UK, Journal of the Acoustical Society of America and the Journal of Cetacean Research and Management.</p> <p>Anna Cucknell acucknell@mcr-team.org Profile: Research Scientist. Anna has 10 years' experience of marine mammal research and her MSc thesis assessed whale call occurrence along the mid-Atlantic in comparison to environmental, physical and anthropogenic parameters. Anna has since conducted research on a variety of boat-based platforms around the UK, Mediterranean and Northern Atlantic over the last 10 years which utilised Photo ID, passive acoustic, satellite tag, D-tag, biopsy, radio tracking and video range tracking techniques. She has co-authored reports on each of these surveys, has published papers in peer-reviewed journals and has presented numerous papers on the subject at international conferences.</p> <p>Operations Director and Song of the Whale Captain: Richard McLanaghan rmclanaghan@mcr-team.org: Profile: Richard is a Director of MCR Int. and Director of</p>
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	<p>operations for the team and research vessel. He has a background in electronics and computer programming. He has been running R/V Song of the Whale since 1992 and oversaw the design and build of the current research vessel. Richard joined IFAW in 1992. He has many years of experience of running projects, organisational budgeting and field operations.</p> <p>Partner organisation and staff</p> <p>Zoological Society of London: ZSL is an international scientific, conservation and educational charity whose mission is to promote and achieve the worldwide conservation of animals and their habitats. ZSL's mission is realised through ground breaking science, active conservation projects in more than 50 countries and two Zoos, ZSL London Zoo and ZSL Whipsnade Zoo. The UK & Europe Conservation Programme at ZSL has been working on marine mammal conservation in the Thames Estuary since 2004. In recent years, ZSL have focused on gathering important ecological data on the Thames harbour seal population, using annual population counts and telemetry research, to better inform conservation and management of this species. In 2013 ZSL set up the Greater Thames Seal Working Group, which developed the Greater Thames Seal Action Plan and the Thames Marine Mammal Code of Conduct. ZSL has also been running a Thames marine mammal sighting survey (TMMSS) since June 2004, to better understand the distribution of marine mammals in the Thames Estuary using public sightings (www.zsl.org/inthethames).</p> <p>ZSL Scientists:-Rayner Piper Rayner.Piper@zsl.org</p> <p>Profile: ZSL & Europe Programme Manager. Rayner delivers conservation for marine and freshwater organisms and their habitats across UK and Europe by the provision of scientific evidence, delivering on-the-ground projects, influencing policy and increasing conservation capacity by working with project partners and engaging citizen scientists. He is a fish ecologist with over 15 years' experience and has worked in both the public and private sector in determining anthropogenic impacts upon fish and shellfish. He has considerable experience of running and managing large and complex projects at the local, regional and national scale and has first-hand experience of assessing the impact of noise from many large and varied marine developments. Rayner is also an experienced field scientist; having been involved with seal tagging programmes, marine mammal observation and conservation.</p> <p>Joanna Barker Joanna.Barker@zsl.org:</p> <p>Profile: ZSL UK & Europe Coordinator. Joanna has excellent practical, analytical and management skills developed through her role at ZSL and an MSc in Marine Environmental Management. Her experience working with members of the public and coordinating citizen science programmes has been developed through managing ZSL's Thames Marine Mammal</p>
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	<p>Sightings Project (TMMSP) and coordinating ZSL's Eel Citizen Science Programme. In 2013, she re-launched the TMMSP by designing an interactive map to show public sightings in real-time and promoted this through a press release, which reached over 72 million people. She also has experience working with a number of marine stakeholders, through managing the Thames Seal Programme, setting up the Greater Thames Seal Working Group for better stakeholder collaboration and developing the Greater Thames Seal Action Plan. She has a thorough grounding in geospatial analysis, working with telemetry data and completing statistical analyses on R Statistics. She has recently established ZSL's work on angel shark conservation in the Canary Islands and set up a partnership with the Universidad de Las Palmas de Gran Canaria to safeguard the future of this Critically Endangered species.</p> <p><i>CV's for all personnel listed above are available upon request.</i></p>																												
Budget Estimates	<p>Every project proposal must include a detailed project budget. A breakdown of the expected costs of the project should be prepared. Purchase of non-expendable equipment through ASCOBANS funding is accepted only exceptionally, and the equipment will remain the property of UNEP/ASCOBANS, which will decide at the closure of the project on its disposal or retention.</p> <p>The budget should include not only the funds requested of ASCOBANS, but also possible other financial resources made available by other sponsors or collaborating agencies. The budget should be presented in a tabular format and, where applicable, should clearly indicate the expected source of the various amounts budgeted.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Item</th><th style="text-align: left;">Cost</th><th style="text-align: left;">Quantity</th><th style="text-align: left;">Total Cost</th></tr> </thead> <tbody> <tr> <td colspan="4"><i>MCR Int costs:</i></td></tr> <tr> <td>7 day dedicated boat survey: including survey staff, vessel running costs, survey equipment, subsistence and fuel</td><td>€16,223.18 euros)</td><td>2 (one in winter and one in summer)</td><td>€32,446.35</td></tr> <tr> <td>10 days data analysis: including staff time for analysis, report write up and preparing a publication</td><td>€13,677.59</td><td>2</td><td>€27,355.17</td></tr> <tr> <td>Onboard costs for participants</td><td>€1023.29</td><td>2</td><td>€2046.58</td></tr> <tr> <td>Berthing costs in London (1 night)</td><td>€179.39</td><td>2</td><td>€358.78</td></tr> <tr> <td>MCR-SOTW team costs</td><td></td><td></td><td>€62,206.89</td></tr> </tbody> </table>	Item	Cost	Quantity	Total Cost	<i>MCR Int costs:</i>				7 day dedicated boat survey: including survey staff, vessel running costs, survey equipment, subsistence and fuel	€16,223.18 euros)	2 (one in winter and one in summer)	€32,446.35	10 days data analysis: including staff time for analysis, report write up and preparing a publication	€13,677.59	2	€27,355.17	Onboard costs for participants	€1023.29	2	€2046.58	Berthing costs in London (1 night)	€179.39	2	€358.78	MCR-SOTW team costs			€62,206.89
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	ZSL staff participation in 2 surveys, outreach and promotion of the project			€4925.05
	Over all costs for Field work/surveys			€67,131.94
	<p>We are requesting a grant from ASCOBANS for €15,000 to support the field work/data collection, data analysis and write up for one of the vessel surveys, and student/visiting scientists participants scheme during the field work.</p> <p>MCR International have €15,000 Euros committed for the project which will cover the majority of the vessel costs for the other survey</p> <p>MCR Int. plan to, or have already approached a number of other organisations for contributions towards the costs of this project, including The Biffa award, The Robert Clutterbuck Charitable Trust, WWF UK, IFAW, Sea Changers, and several corporate sponsors in the London area.</p> <p>We are also in the process of applying for support for the education and outreach components of the project from a number of environmental education and community foundations and charitable trusts including The Ford Britain Trust, The Ernest Cook Trust, The John Spedan Lewis Trust and others.</p>			

For more information please contact the ASCOBANS Secretariat at ascobans@ascobans.org.

ASCOBANS Project Proposal

FOR THE CONSIDERATION OF THE ASCOBANS ADVISORY COMMITTEE

Title Public perceptions about cetaceans in Europe and implications for implementation of conservation measures	Justification: Res.7.2	Project ID: 2014-10
Implementing Agency / Applicant	<p>Dr Cristina Pita, Research Fellow University of Aveiro Centre for Environmental and Marine Studies (CESAM) & Department of Biology, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal</p> <p>Tel: +351 91 903 43 96 Email: c.pita@ua.pt</p> <p>Prof. Graham J. Pierce and Fiona Read Oceanlab University of Aberdeen Main Street Newburgh AB41 6AA UK</p> <p>Tel. +44 1224 272459 Email: g.j.pierce@abdn.ac.uk; fionaread@abdn.ac.uk</p>	
Collaborating Agencies / Other Sponsors	<p>Begoña Santos Instituto Español de Oceanografía Centro Oceanográfico de Vigo Subida a Radio Faro, 50 36390 Vigo España</p> <p>Tel: +34 986 462 291 Email: m.b.santos@vi.ieo.es</p>	
Background / Problem	<p>Natural resource governance is expected to respond effectively and in a timely way to environmental change (Song et al., 2013). However, the complex, dynamic and multi-scale interactions between humans and the environment make governance of the</p>	

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	<p>marine environment and its resources challenging (Pauly et al., 2002); indeed the governance of the marine environment can be described as a “wicked problem” (Jentoft and Chuenpagdee, 2009).</p> <p>Most marine conservation measures generate some form of controversy and this will be exacerbated in the future since there are renewed pressures to increase conservation measures (e.g. building on the existing network of MPAs, the recent call by the United Nations Convention on Biological Diversity for at least 10% of marine and coastal zones to be conserved as official MPAs by 2020, the Marine Strategy Framework Directive, etc). Also, the marine environment is going through a new and unprecedented phase of planning and maritime development, through the Integrated Maritime Policy and Marine Spatial Planning (which are expected to be integrated within a forthcoming EU Directive). All these measures have the potential to dramatically change the nature of coastal areas and strongly impact on traditional economic activities (e.g. fishing industry).</p> <p>The management tools and measures put in place to protect and conserve cetacean populations need support from the general public and from resource-users in order to be successful.</p> <p>It is increasingly argued in the scientific literature that to effectively address environmental challenges it is imperative to have an informed public (Zia, 2013). A knowledgeable engaged public presses for policy change, drives social and political acceptability of the changes, and is more willing to accept the implementation of mitigation measures and environmental policies (Potts et al., 2011; Zia, 2013). Public opinion can also be a driver for stakeholder willingness to embrace conservation measures, as seen from the success of various fishery certification / ecolabelling schemes. This has prompted increasing recognition of the need to engage society and deliver behaviour changes as part of the solution to marine conservation issues (Schultz, 2011; Vincent, 2011).</p> <p>Connecting society with the sea presents a significant challenge for delivery of marine conservation goals and requires an understanding of social values, attitudes and knowledge (McKinley and Fletcher, 2012). To date, relatively little research has investigated public perceptions of the marine environment (e.g. Jefferson et al., 2014; Hinds et al., 2002; Potts et al., 2011; Spruill, 1997), and even less specifically focuses on cetaceans. Scott and Parsons (2005) and Howard and Parsons (2006) surveyed the public in Scotland and found a high level of awareness and acceptance of cetacean conservation measures; however it cannot be assumed that such views are prevalent across the whole ASCOBANS area. A survey of ecotourists in New Zealand found a low level of scientific knowledge, such that they “were not likely to understand most of the philosophical, educational, economic or ecological values of wildlife” (Amante-Helwig, 1996).</p>
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	<p>Knowledge of public views about conservation, cetaceans, and the main threats to cetaceans, will contribute to identify knowledge gaps and priorities for improving the engagement of society with cetacean conservation. It will also contribute to increase the scientific knowledge on public perceptions about cetaceans.</p> <p>The opinions of the ‘person in the street’, i.e. the general public, are difficult to include in the decision-making process (Potts et al., 2011). Yet, crucially, public viewpoints on the oceans will play an important (if yet undetermined) role in supporting reforms – such as the implementation of conservation and protection measures – that will have important social and economic consequences (Potts et al., 2011), e.g. to the fishing industry. Understanding the perspective of the public will be critical for how the policy process unfolds (Potts et al., 2011; Zia, 2013).</p> <p>Currently, there is a lack of assessment of the level of basic knowledge amongst the general public concerning the sea and conservation, and this is probably true even for “charismatic” species such as cetaceans. These issues highlight the importance and timeliness of the current study since improved information about public perception will assist in targeting educational and awareness strategies.</p> <p>Research on stakeholders’ perceptions, values and “images” examines the underlying motivations that may influence their preferences, choices and actions. “Images”, as well as values, are mental constructs (i.e. mental representations of an issue) which are slow-changing and deeply ingrained within people (Rokeach, 1973; Homer and Kahle, 1988). Values and “images” play an important role in resource governance since they affect the way problems and solutions are conceived, as well as how stakeholders interact with each other. The images stakeholders hold on a topic, influence both resource-managers and resource-users, by providing the visions/rationale for the governing elements (such as regulations and incentives) and influencing the behaviour of those being governed (e.g. the way fishers will react to an MPA).</p> <p>The proposed project will contribute to the advancement of knowledge on the issues of public opinion about conservation and cetaceans by providing evidence of the social values, perceptions and knowledge the European public has about these topics. This subject is of major interest for environmental regulators, as the public’s view will contribute to secure and improve the conservation of cetaceans. The information obtained will also inform society at large, and thus contribute to the UN-CBD Aichi biodiversity Target 1 which calls for increasing people’s awareness of the values of biodiversity.</p> <p>The project will offer high-priority and policy-relevant research with the specific objectives of investigating the European public’s views about cetaceans in relation to species present and their</p>
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	<p>current status, their ecological role, and human activities which impact on cetacean populations, including important threats such as fishery by-catch, climate change, pollution, underwater noise, ship strikes, offshore energy development, and so on.</p> <p>This work will deliver strategically important science, provide information on the societal value that is placed on cetaceans and their conservation and provide advice to policy-makers on ways to best communicate conservation strategies. The results will contribute to improve the dialogue between environmental regulators, policy-makers and other stakeholders. It will also serve to tailor measures to promote ocean literacy in the particular issue of cetacean conservation and assist in targeting educational and awareness strategies.</p>
Objectives	<p>The objectives of this study are to:</p> <ol style="list-style-type: none"> 1. Review public perceptions of cetaceans and their conservation, 2. Undertake a survey to collect information about the European public perceptions about cetaceans in southern and northern countries with European Atlantic coasts, 3. Analyse and model European public perceptions about cetaceans, 4. Provide information to the public and marine stakeholders about public perceptions of cetaceans and cetacean conservation, 5. Deliver advice to policy-makers about communicating the importance of conservation measures. <p>This is the first study that will collate and analyse data on the general public perception about cetaceans from several regions along the Atlantic coasts of Europe. Results from this work will be made available to other projects related to cetacean conservation and ocean literacy, policy-makers, NGOs.</p>
Relevance to ASCOBANS	<p>The research undertaken by this study has important implications for ocean literacy and conservation of cetaceans in ASCOBANS area.</p> <p>In particular, this project will contribute to:</p> <ol style="list-style-type: none"> (1) scientific knowledge of public perceptions about cetaceans and cetacean and hence insights into the best ways to communicate the value of conservation measures and improve their implementation success, (2) Societal awareness of cetacean conservation issues, through dissemination of project results.
Activities	<p>Work is divided into four major activities:</p> <p><i>Task 1: Review of public perceptions of cetaceans and conservation</i></p>

	<p>A systematic “rapid review” of the literature, following Pita et al. (2011) will be employed to collect information on public perceptions about cetaceans and their conservation, at the global level, but with particular focus on the European Atlantic coasts. A rapid review is the chosen methodology due to time and financial constraints. Rapid reviews are increasingly being undertaken; they are systematic reviews limited in scope to enable the work to be undertaken robustly but in a shorter period (Ganann et al., 2010; Watt et al., 2008). The review will be included in the final report.</p> <p><i>Task 2: Survey to collect information about the European public perceptions about cetaceans</i></p> <p>A survey will be carried out to investigate the perceptions, values and “images” the European public holds on cetaceans, the main threats they face and conservation measures. The set of questions to be asked will be developed based on the review outcomes and will be subject to consultation with ASCOBANS. A sample of 2000 interviews will be taken across Europe (500 each in the UK, Spain, Portugal, and one other northern country, likely France, taking advantage of ongoing scientific collaborations). The sample will be randomly stratified according to age, sex, and region. The survey will be carried out by a market research company, which will be contracted to carry out this survey (costing is based on recent quotes). Using a market research company is the only method that will return reliable results quickly. Experience from previous projects show that these companies can carry out the survey to a large proportion of the population in a short time frame (one month or less). The data collected as part of Objective 2 will be analyzed in Objective 3.</p> <p><i>Task 3: Analyse and model European public perceptions about cetaceans</i></p> <p>The data collected on images will be analysed using thematic data analysis, following the guidelines created by Braun and Clarke (2006). The analysis consists of (1) all responses being transcribed and coded, followed by (2) generating image categories, and (3) collection of categories (representing major areas of collective “images”) are organized into image themes. This information will provide detailed information views. Logistic and ordered logistic regression models will be fitted in order to identify which individual characteristics influence people’s views. The information produced will contribute to better understand public’s level of basic knowledge about cetaceans and their conservation, as well identifying differences in perceptions (or not) based on demographic characteristics (e.g. age, gender). Objective 3 will use data collected in Objective 2.</p> <p><i>Task 4: Dissemination</i></p>
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	<p>In addition to the report to ASCOBANS, which will advise on the implications of results for conservation implementation and policy, project results will be written up as a scientific paper and presented to relevant other relevant conservation, scientific and marine management bodies and forums (e.g. ICES WGMME, European Cetacean Society). The project will also disseminate results to marine stakeholders and the general public via press releases, websites and social media.</p> <p>Dr. Pita, the lead investigator, will carry out the systematic review, as well as undertake the statistical analysis of the survey data, and lead authorship on the final report and peer-reviewed paper to be submitted for publication. All other participants will collaborate in all the activities.</p>
Outputs	<p>Expected outputs from the project include:</p> <ul style="list-style-type: none"> - New knowledge on public perceptions of cetaceans and their conservation, advice to environmental managers and policy-makers about how to tailor educational / scientific communications about cetacean conservation and improve implementation success for policy measures; dissemination of results to stakeholders and the public - Production of a final report - Production of a scientific paper on "Public perception of cetaceans and implications for policy and conservation" to be submitted for publication on a peer-reviewed journal, as well as presentation of results at relevant conferences and meetings - Press releases to inform the general public, as well as delivery via website and social media
Work Plan and Timetable	<p>Start date: January 2015 End date: December 2015</p> <p><u>Research Plan:</u></p> <p>The work plan given below aims to achieve all the objectives of the proposed project in a 12 month period:</p> <p>Months 1-4: Perform a literature review on public perceptions of the cetaceans and their conservation. Select a market research company to carry out the survey to the public. Prepare questionnaire for the public survey. Market company to conduct survey.</p> <p>Months 5-7: Completion of literature review. Preliminary analysis of survey results.</p> <p>Months 8-12: Model public views. Write paper combining review and public views. Write final report, issues press releases and web/social media content.</p>

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Project Personnel	<p>Dr Cristina Pita, Research Fellow University of Aveiro Centre for Environmental and Marine Studies (CESAM) & Department of Biology, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal</p> <p>Tel: +351 91 903 43 96 Email: c.pita@ua.pt</p> <p>Dr. Pita will participate in the systematic review, contribute to develop the survey, undertake the statistical analysis of the survey data, and lead authorship on the final report and peer-reviewed paper to be submitted for publication. She will supervise the assistant based in Portugal who will help with all the above tasks.</p> <p>Dr. Pita has wide experience and has a relevant research record on issues of governance and conservation in the marine environment (namely MPAs), as well as in governance models, frameworks and approaches that aim at achieving resilient social and ecological systems in the marine environment. She is familiar with conservation issues, methodological approaches (qualitative and quantitative research methods) employed in the social sciences, surveys (questionnaire design, conducting questionnaire-based interviews, data management) and econometric analyses of survey data, and conducting systematic “rapid reviews”. Recently, Dr. Pita has been collaborating with the EU-funded KnowSeas project analysing the data on public perceptions of Europe’s Seas, based on a survey of 7000 people from 7 European countries. This research will act as a springboard to investigate public perceptions about cetaceans.</p> <p>Prof. Graham J. Pierce and Fiona Read Oceanlab, University of Aberdeen, Main Street, Newburgh AB41 6AA, UK</p> <p>Tel. +44 1224 272459 Email: g.j.pierce@abdn.ac.uk and fionaread@abdn.ac.uk</p> <p>Prof Pierce will be responsible for project management and will also contribute to the review, data analysis and writing up of project results. He has worked in marine mammal and fisheries research linked to conservation issues for almost 30 years.</p> <p>Ms Read will provide advice to the project on policy issues relevant to cetaceans as well as participating in the review and writing up of results and public dissemination. She has worked in</p>
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	<p>marine mammal research and conservation for over 10 years.</p> <p>Dr M. Begoña Santos Instituto Español de Oceanografía, Centro Oceanográfico de Vigo, Subida a Radio Faro 50, 36390 Vigo, España</p> <p>Tel: +34 986 462 291 Email: m.b.santos@vi.ieo.es</p> <p>Dr Santos will advise on policy issues, especially in relation to the MSFD, facilitate the survey work in Spain and contribute to the initial review and final writing up. She has worked in marine mammal and fisheries research for over 20 years.</p>
Budget Estimates	<p>The estimated budget includes money to hire an assistant for Dr Pita in Portugal and pay for some of Ms Read's time. All contribution of time by Prof Pierce, Dr Pita and Dr Santos represents an in-kind contribution to the work.</p> <p><u>Costs</u></p> <p>Survey: €6000 (Contract for survey company to carry out the public survey of 4 x 500 people)</p> <p>Salary contribution: Portugal: €4500 (employ graduate researcher for 6 months) UK: €3500 (contribution of approx. 1 month of Ms Read's time)</p> <p>Travel: €500 contribution to attendance at 1 relevant conference or meeting</p> <p>Dissemination: €500 contribution to costs of translation of surveys and preparation of press releases, web and social media outputs</p> <p>Total costs: €15000</p>

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For more information please contact the ASCOBANS Secretariat at
ascobans@ascobans.org.

Curriculum Vitae – Cristina B. Pita

EDUCATION BSc Marine Biology (First honours degree, 1998, University of the Algarve, Portugal), MSc Marine and Coastal Studies (2003, University of the Algarve, Portugal), PhD Social and Environmental Sustainability (2010, University of Aberdeen, UK).

POSITION **Catedra do Mar Research Fellow**, Centre for Environmental and Marine Studies (CESAM) & Departamento de Biologia, University of Aveiro, 3810-193 Aveiro, Portugal. E-mail: c.pita@ua.pt

Honorary member of staff, Institute of Biological and Environmental Sciences, University of Aberdeen, Tillydrone Avenue, Aberdeen AB24 2TZ, UK. E-mail: c.pita@abdn.ac.uk

Research profile: My research focuses mostly on interdisciplinary approaches to coastal governance, including: the human dimensions (social, economic, cultural and institutional aspects) of fisheries and Marine Protected Areas (MPAs); alternative approaches to management; governance models, frameworks and approaches aimed at achieving resilient social and ecological marine systems. My work combines quantitative and qualitative methods and I have >10years experience in surveys (design, interviews and data analysis), and analysis of socio-economic and behavioural economics data. I was a co-applicant in *project entitled “The contribution of Marine Protected Areas to protecting highly mobile species in English waters”* (Funded by the Department for Environment, Food and Rural Affairs (DEFRA), UK; 2012) and the project *“Economic Value of the Moray Firth Bottlenose Dolphins”* (Funded by the Moray Firth Partnership, UK; 2008-2009). I have also participated in several projects (EU and national), have been involved in carrying research, and have published, on several issues related to marine governance, stakeholders’ attitudes and perceptions to management tools, as well as conducting systematic reviews on the human dimensions of MPAs. My research focuses on the UK, Portugal, Spain and the Mediterranean.

Teaching and training: In have been involved in teaching, at MSc and PhD levels. At the MSc level I have been the guest lecture, in several MSc programs, for the following subjects ““Marine Protected Areas”, “Social and Environmental effects of Aquaculture”, “Socio and Political aspects of Fisheries”, “Socio-economic aspects of aquaculture in Europe. At the PhD level I was the guest lecturer on the topic “Interview Survey course”, for the EcoSummer (Ecosystem approach to sustainable management of the marine environment and its living resources) Marie Curie Training Programme for PhDs. I have co-supervised 6 postgraduate research students (2 PhDs, 4 MSc).

Selected recent grants

- *TBTI partnership “To Big To Ignore: Global Partnership for the Future of Small-Scale Fisheries”*. Funded by: Partnership Grants, Social Sciences and Humanities Research Council of Canada. 2012-2018, Partner. \$5.000.000 CAD.
- *Parasite Risk Assessment with Integrated Tools in EU fish production value chains (PARASITE)*. 2013-2016, Partner. CEC. €210k.
- *Aquaculture, Fisheries & Aquatic Resource Management TN (AQUA-TNET3)*. Funded by: European Thematic Network, European Commission Lifelong Learning Programme. 2012-2014, Partner. €24.4K.
- *“The contribution of Marine Protected Areas to protecting highly mobile species in English waters”*. Funded by: Department for Environment, Food and Rural Affairs (DEFRA), UK. 2012, Joint co-applicant and grant-holder. £36K.
- *Vocational AQUALABS*. Funded by: European Union, Lifelong Learning Programme, EAC-EA. 2009-2011, Partner. €44.8K.
- *“Economic Value of the Moray Firth Bottlenose Dolphins”*. Funded by: Moray Firth Partnership. 2008-2009, Joint co-applicant and grant-holder. £17K.

Selected recent publications

- Pita, C.**, Katara, I. (*in press*). Conflicts in Marine Protected Areas: The case of leatherback turtles. In: Redpath, S. et al. (Eds). Conservation Conflicts. Cambridge University Press Ecological Reviews.
- Leite, L., Castro, J.J., **Pita, C.** (*in press*). Review of participatory fishery management strategies in Europe. *Marine Policy*
- Pita, C.**; Silva, A.; Prellezo, R.; Rocha, J.; Andres, M.; Uriarte, M. 2014. Socioeconomics and management. Pp: 335-366. K. Ganas (Ed.). Biology and ecology of sardines and anchovies. CRC Press, Taylor & Francis Group, Hampshire, USA.

- Rodhouse, P., Pierce, G., Nichols, O., Sauer, W., Arkhipkin, A., Laptikhovsky, V., Lipinski, M., Ramos, J., Gras, M., Kidokoro, H., Sadayasu, K., Pereira, J., Lefkaditou, E., **Pita, C.**, Gasalla, M., Haimovici, M., Sakai, M., Downey, N. 2014. Environmental effects on cephalopods population dynamics: Implications for management of fisheries. *Advances in Marine Biology* 67: 99-234.
- Goetz, S., Read, F.L., Santos, M.B., Pita, C. & **Pierce, G.J.**, 2014. Cetacean–fishery interactions in Galicia (NW Spain): results and management implications of a face-to-face interview survey of local fishers. *ICES Journal of Marine Science* 71, 604-617.
- Rangel, M.; **Pita, C.**; Gonçalves, J.; Oliveira, F.; Costa, C.; Erzini, K. 2014. Developing self-guided scuba dive routes in the Algarve (Portugal) and analysing visitors' perceptions. *Marine Policy* 45: 194-203
- Pita, C.**; Theodossiou, I.; Pierce, G. J. 2013. The perceptions of Scottish inshore fishers about marine protected areas. *Marine Policy* 37: 254-263.
- Veiga, P.; **Pita, C.**; Leite, L.; Ribeiro, J.; Ditton, R.; Gonçalves, J.; Erzini, K. 2013. From a traditionally open access fishery to modern restrictions: Portuguese anglers' perceptions about newly implemented recreational fishing regulations. *Marine Policy* 40: 53-63.
- Pita, C.**; Chuenpagdee, R.; Pierce, G. 2012. Participatory issues in fisheries governance in Europe. *Management of Environmental Quality: An International Journal* 23 (4): 347-361.
- Pierce, G., **Pita, C.**, Santos, B., Seixas, S. 2012. Sustainability of fisheries. Pp. 325-367. In Gonçalves, F., Pereira, R., Leal Filho, W., Azeiteiro, U. (Eds). Contribution towards sustainability. Series on Environmental Education, Communication and sustainability. Peter Lang.
- Pita, C.**; Pierce, G. J.; Theodossiou, I.; Macpherson, K. 2011. An overview of commercial fishers' attitudes towards marine protected areas. *Hydrobiologia* 670: 289-306.
- Potts, T.; O'Higgins, T.; Mee, L.; **Pita, C.** 2011. Public perceptions of Europe's Seas: A policy brief. EU FP7 KNOWSEAS Project. ISBN 0-9529089-3-X.
- Rangel, M.; **Pita, C.**; Gonçalves, J.; Leite, L.; Costa, C.; Erzini, K. 2011. Ecotourism snorkelling at Marinha Beach (Algarve). *Journal of Coastal Research* 61: 274-281.
- Pita, C.**; Pierce, G.; Theodossiou, I. 2010. Stakeholders' participation in the fisheries management decision-making process: Fishers' perceptions of participation. *Marine Policy* 34: 1093-1102.

Curriculum Vitae – Graham John Pierce

EDUCATION BSc Zoology (1st Class, London, 1981), MSc Ecology (Aberdeen, 1981), PhD (Aberdeen, 1985)
Professor, Oceanlab, University of Aberdeen, Main Street, Newburgh, Aberdeenshire AB41
POSITION 6AA, , UK. Tel: 44 (0)1224 272459. E-mail: g.j.pierce@abdn.ac.uk
Visiting Chair in Marine Studies, CESAM & Departamento de Biologia, University of Aveiro, 3810-193 Aveiro, Portugal

Research profile: My current research concerns aspects of marine biology, ecology, conservation and fisheries, particularly in relation to cetaceans and cephalopods; also assessment, management and governance options for sustainable resource use. I have co-ordinated five European research projects, including a project (BIOCET) on contaminant bioaccumulation in marine mammals. I have published around 225 papers in peer-reviewed journals and presented or contributed to over 300 conference talks and posters. During 2007-2010, I was Marie Curie Professor at the Instituto Español de Oceanografía (IEO) in Vigo, Spain.

External duties

- Chair, *SCICOM Steering Group on Ecosystem Processes and Dynamics*, International Council for the Exploration of the Sea (2012-2015) and member of ICES Science Committee (SCICOM, 2012-2015)
- Member and co-chair elect of the ICES Working Group on Marine Mammal Ecology; member and former chair (1998- 2001, 2007-2010) of the *International Council for the Exploration of the Sea's Working Group on Cephalopod Fisheries and Life History*.
- *Cephalopod International Advisory Council* (Council member 2006-2009, President, 2009-2012)
- Editorial Boards of *Marine Biology* and *JMATE*.
- Trustee, Sea Watch Foundation

Teaching and training: In Aberdeen I teach ecology, marine biology, fisheries and applied statistics. I supervise or co-supervise 12 postgraduate research students. Over 40 of my previous research students have now graduated. I co-ordinated two Marie Curie early stage training networks and co-organised the University of Aberdeen's MSc in *Marine & Fisheries Science* for 12 years.

Selected recent grants

- *Understanding harbour porpoise (Phocoena Phocoena)-fishery interactions in the north-west Iberian Peninsula*. ASCOBANS, 2010-2011, 10,000 euros. Joint Grant-holder with Fiona Read.
- *Life history studies on cetaceans*. Scottish Agricultural College, 2013-14, £5k. Joint Grant-holder with Fiona Read.
- *Can Essential Habitat Modelling For The Lesser Octopus Eledone cirrhosa Help Identify Key Areas For Risso's Dolphin Grampus griseus In Scottish Waters?* Scottish Natural Heritage, 2012, £2.4k.
- *Cephalopod indicators for the MSFD*. Defra, 2013-2014, £61k
- *Parasite Risk Assessment with Integrated Tools in EU fish production value chains (PARASITE)*. 2013-2016, Partner. CEC. €210k.

Selected recent publications

- Dolman, S.J., Hodgkins, N.K., MacLeod, C.D., **Pierce, G.J.** & Weir, C.R., In Press. Harbour porpoises (*Phocoena phocoena*) and minke whales (*Balaenoptera acutorostrata*) observed during land-based surveys in The Minch, north-west Scotland. *Journal of the Marine Biological Association of the United Kingdom*.
- Fernández, R., **Pierce, G.J.**, MacLeod, C.D., Brownlow, A., Reid, R.J., Rogan, E., Addink, M., Deaville, R., Jepson, P.D. & Santos, M.B., In Press. Strandings of northern bottlenose whales, *Hyperoodon ampullatus*, in the north-east Atlantic: seasonality and diet. *Journal of the Marine Biological Association of the United Kingdom*.
- Goetz, S., Read, F.L., Ferreira, F., Martínez Portela, J., Santos, M.B., Vingada, J.V., Siebert, U., Marçalo, A., Santos, J., Araújo, H., Monteiro, S., Caldas, M., Riera, M. & **Pierce, G.J.**, In Press. Cetacean occurrence, habitat preferences and potential for cetacean-fishery interactions in Iberian Atlantic waters: results from cooperative research involving local stakeholders. *Aquatic Conservation: Marine and Freshwater Ecosystems*.
- Learmonth, J.A., Murphy, S., Luque, P.L., Reid, R.J., Patterson, I.A.P., Brownlow, A., Ross, H.M., Barley, J., Santos, M.B. & **Pierce, G.J.**, In Press. Life history of harbor porpoises (*Phocoena phocoena*) in Scottish (UK) waters. *Marine Mammal Science*.
- MacLeod, C.D., MacLeod, R., Learmonth, J.A., Cresswell, W. & **Pierce, G.J.**, In Press. Predicting population level risk effects of predation from the responses of individuals. *Ecology*.

- Santos, M.B., Saavedra, C. & **Pierce, G.J.**, In Press. Quantifying the predation on sardine and hake by cetaceans in the Atlantic waters of the Iberian Peninsula. *Deep-Sea Research II*.
- Goetz, S., Read, F.L., Santos, M.B., Pita, C. & **Pierce, G.J.**, 2014. Cetacean–fishery interactions in Galicia (NW Spain): results and management implications of a face-to-face interview survey of local fishers. *ICES Journal of Marine Science* **71**, 604-617.
- Lambert, E., **Pierce, G.J.**, Hall, K., Brereton, T., Dunn, T.E., Wall, D., Jepson, P.D., Deaville, R. & MacLeod, C.D., 2014. Cetacean range and climate in the eastern North Atlantic: future predictions and implications for conservation. *Global Change Biology* **20**, 1782-1793.
- MacLeod, C.D., Santos, M.B., Burns, F., Brownlow, A. & **Pierce, G.J.**, 2014. Can habitat modelling for the octopus *Eledone cirrhosa* help identify key areas for Risso's dolphin in Scottish waters? *Hydrobiologia* **725**, 125-136.
- Méndez-Fernandez, P., Webster, L., Chouvelon, T., Bustamante, P., Ferreira, M., González, A.F., López, A., Moffat, C.F., **Pierce, G.J.**, Read, F.L., Russell, M., Santos, M.B., Spitz, J., Vingada, J.V. & Caurant, F., 2014. An assessment of contaminant concentrations in toothed whale species of the NW Iberian Peninsula: Part I. Persistent organic pollutants. *Science of the Total Environment* **484**, 196-205.
- Méndez-Fernandez, P., Webster, L., Chouvelon, T., Bustamante, P., Ferreira, M., González, A.F., López, A., Moffat, C.F., **Pierce, G.J.**, Read, F.L., Russell, M., Santos, M.B., Spitz, J., Vingada, J.V. & Caurant, F., 2014. An assessment of contaminant concentrations in toothed whale species of the NW Iberian Peninsula: Part II. Trace element concentrations. *Science of the Total Environment* **484**, 206-217.
- Santos, M.B., Monteiro, S.S., Vingada, J.V., Ferreira, M., López, A., Cedeira, J.A.M., Reid, R.J., Brownlow, A. & **Pierce, G.J.**, 2014. Patterns and trends in diet of long-finned pilot whales (*Globicephala melas*) based on the analysis of stomachs contents of animals stranded on Northeast Atlantic coasts. *Marine Mammal Science* **30**, 1-19.
- Fernández, R., MacLeod, C.D., **Pierce, G.J.**, Covelo, P., López, A., Torres-Palenzuela, J., Valavanis, V. & Santos, M.B., 2013. Inter-specific and seasonal comparison of the niches occupied by small cetaceans off north-west Iberia. *Continental Shelf Research* **64**, 88-98.
- Luque, P.L., **Pierce, G.J.**, Learmonth, J.A., Ieno, E., Santos, M.B., López, A., Reid, R.J., Rogan, E., Boon, J. & Lockyer, C.H., 2013. Are mineralization anomalies in common dolphin teeth associated with life history events and/or anthropogenic pollutants? *Journal of Zoology* **291**, 194-204.
- Méndez-Fernandez P., **Pierce, G.J.**, Bustamante, P., Chouvelon, T., Ferreira, M., González, A.F., López, A., Read, F.L., Santos, M.B., Spitz, J., Vingada, J.V. & Caurant, F., 2013. Ecological niche segregation among five toothed whale species off the NW Iberian Peninsula using ecological tracers as multi-approach. *Marine Biology* **160**, 2825-2840.
- Santos, M.B., German, I., Correia, D., Read, F.L., Martinez Cedeira, J., Caldas, M., López, A., Velasco, F. & **Pierce, G.J.**, 2013. Long-term variation in common dolphin diet in relation to prey abundance. *Marine Ecology Progress Series* **481**: 249–268.
- Weir, C.R. & **Pierce, G.J.**, 2013. A review of the human activities impacting cetaceans in the eastern tropical Atlantic. *Mammal Review* **43**, 258-274.
- Lassalle, G., Gascuel, D., Le Loc'h, F., Lobry, J., **Pierce, G.J.**, Ridoux, V., Santos, M.B., Spitz, J. & Niquil, N., 2012. An ecosystem approach for the assessment of fisheries impacts on marine top predators: the Bay of Biscay case study. *ICES Journal of Marine Science* **69**, 925-938.
- Meissner, A.M., Macleod, C.D., Richard, P., Ridoux, V. & **Pierce, G.J.**, 2012. Feeding ecology of striped dolphins, *Stenella coeruleoalba*, in the north-western Mediterranean Sea based on stable isotope analyses. *Journal of the Marine Biological Association of the United Kingdom* **92**, 1677-1688.
- Méndez-Fernandez P., Bustamante, P., Bode, A., Chouvelon, T., Ferreira, M., López, A., **Pierce, G.J.**, Santos, M.B., Spitz, J., Vingada, J.V. & Caurant, F., 2012. Foraging ecology of five toothed whale species in the Northwest Iberian Peninsula, inferred using carbon and nitrogen isotope ratios. *Journal of Experimental Marine Biology and Ecology* **413**, 150-158.
- Weir, C.R., MacLeod, C.D. & **Pierce, G.J.**, 2012. Habitat preferences and evidence for niche partitioning amongst cetaceans in the waters between Gabon and Angola, eastern tropical Atlantic. *Journal of the Marine Biological Association of the United Kingdom* **92**, 1735-1750.

FIONA LOUISE READ

Oceanlab, University of Aberdeen, Main Street, Newburgh, AB41 6AA, United Kingdom
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Date of Birth: 06th February 1979
Languages: English and Spanish

Nationality: British

EDUCATION:

- 2008 – 2014 University of Vigo, Spain
Ph.D. Understanding Marine Mammal and Fisheries Interactions in the North-West Iberian Peninsula (Northwest Spain and Portugal)
Submission date: Summer 2014.
- 2001 – 2002 University of Aberdeen, United Kingdom
M.Res. Marine and Fisheries Science: Sustainable Management of Living Marine Resources
Thesis: Seasonal and Annual Variation in the Diet of Seals in Orkney, N.E. Scotland.
- 1997 – 2000 University of Portsmouth, United Kingdom
B.Sc. Honours Marine Biology (grade 2.1)
Thesis: Behaviour of Guppies (*Poecilia reticulata*) when Exposed to Sex Pheromones

EMPLOYMENT HISTORY:

Instituto de Investigaciones Marinas, Vigo, Spain and Instituto Español de Oceanografía, Centro Oceanográfico de Vigo, Spain

PhD (Doctoral) candidate

April 2007 - Present

Understanding Marine Mammal and Fisheries Interactions in the North-West Iberian Peninsula (NWIP).

Objectives and duties:

- Conduct over 400 interviews with fishery stakeholders covering general fisheries, damage to catch and gear by marine mammals and the associated economic losses and incidental by-catch rates in Galicia.
- Building and maintaining strong working relationships between NGOs, fisheries stakeholders and research institutes.
- Train our Portuguese collaborators on how to conduct successful interviews with fisheries stakeholders.
- Provide valuable new life history data by producing life-history tables, and estimated fisheries mortality for common dolphins, striped dolphins, bottlenose dolphins and harbour porpoises in the NWIP.
- Recommend mitigation measures to prevent by-catch. Including support from the fishing industry to minimise adverse effects on the fisheries and maximise participation from fishermen.
- Provide recommendations on issues related to the conservation of cetaceans and the management of fisheries in the NWIP.
- Disseminate results in international, national and local conferences workshops and meetings, publications and reports in both English and Spanish.

Whale and Dolphin Conservation (formerly Whale and Dolphin Conservation Society)

Scottish Policy Officer (17.5 hrs a week)

April 2013 – Present

Duties include:

- Responding to key public consultations including Marine Protected Areas (MPA), marine spatial planning and marine renewables.
- Provide advice on marine mammal–fisheries interactions in the Northeast Atlantic.
- Assist in the development of internal policy, including through the North Atlantic and Critical Habitats and MPA policy work plans.
- Provide specialist knowledge on cetaceans in relevant legislation, marine planning and MPA processes to external audiences including scientists, parliamentarians, civil servants, the media, other stakeholders and conservation groups.
- Preparing detailed written briefings, consultation responses and other papers as necessary for use with audiences including media, stakeholders, government and parliamentarians.

Duties included:

- Provide a strategic overview of marine vertebrates in Welsh waters.
- Advise policy staff on casework and operational management issues relating to marine vertebrates and marine spatial planning and marine renewables.
- Advise on MPAs and Special Areas of Conservations (SACs) as required by EU law.
- Provide advice for the relevant marine vertebrate sections of the European Union Marine Strategy Framework Directive (MSFD).
- Represent CCW at the Inter Agency Marine Mammal Working Group (IAMMWG) meeting and review and comment on documents produced by the working groups on a Welsh and UK level e.g. Article 17, Marine Mammal Management Units and the Joint Cetacean Protocol.

University of Aberdeen, Aberdeen, U.K.

March 2011– January 2014

Research Technician (Ad-hoc for specific grants)

- Analysis of life history samples from Scottish cetacean strandings, including mass stranding events (September 2012 – present)

Grant from Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) (March 2011-April 2012).

- Quantify life history parameters (age structure, age and length at sexual and asymptotic maturity, pregnancy rate, etc.) in harbour porpoises for the NWIP.
- Estimate total and fisheries mortality rate for porpoises in the NWIP.
- Provide recommendations on conservation of porpoises along the north-west Iberian Peninsula
- Provided recommendations on issues related to the conservation of cetaceans and the management of fisheries in Galician waters.
- Built and maintained relationships between NGOs, fisheries stakeholders and research institutes.

RELEVANT PUBLICATIONS

Goetz, S., **Read, F.L.**, Santos, M.B., Pita, C. and Pierce, G.J. *Cetacean-fishery Interactions in Galicia (NW Spain): Results and Management Implications of a Face-to-Face Interview Survey of Local Fishers*. ICES Journal of Marine Science; DOI:10.1093/icesjms/fst149.

Goetz, S., **Read, F.L.**, Santos, M.B., Portela, J., Vingada, J.V., Siebert, U. and Pierce, G.J. *Cetacean Occurrence and Habitat Preferences in Iberian Atlantic Waters: Results From a Cooperative Research Between Local Stakeholders*. Submitted to Aquatic Conservation: Marine and Freshwater Ecosystems.

Read, F.L., Santos, M.B., González, A.F., López, A., Ferreira, M., Vingada, J. and Pierce, G.J. *Understanding Harbour Porpoise (Phocoena phocoena) and Fishery Interactions in the North-west Iberian Peninsula*. ASCOBANS Final Report. Project reference: SSFA/ASCOBANS/2010/4, 40 pp., 2012.

OVER 30 PRESENTATIONS IN INTERNATIONAL CONFERENCES INCLUDING

Read, F.L., Santos, M.B., González, A.F., Goetz, S., López, A., Ferreira, M. and Pierce, G.J. *An Interdisciplinary Approach To Studying Harbour Porpoise-Fisheries Interactions In The North-West Iberian Peninsula*. 27th European Cetacean Society Conference, Setúbal, Portugal. April 2013.

Read, F.L., González, A.F., Ferreira, M., López, A., Vingada, J., Santos, M.B. and Pierce, G.J. *By-Catch Mortality and Conservation of the Iberian Harbour Porpoise Population*. 19th Biennial Conference on the Biology of Marine Mammals, Tampa, USA. December 2011.

RELEVANT SUCCESSFUL FUNDING APPLICATIONS

Understanding Harbour Porpoise (*Phocoena phocoena*) and Fishery Interactions in the North-West Iberian Peninsula Funding from the *Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Sea* (ASCOBANS) (10,000 Euros) (with Professor Graham J. Pierce). March 2011-March 2012.

Marie Curie EU-funded project ECOSUMMER (ECOsystème approach to SUsustainable Management of the Marine Environment and its Living Resources, MEST-CT-2005-020501). April 2007 – December 2009.

Curriculum Vitae

Maria Begoña Santos Vázquez

Investigadora Titular OPIS, Instituto Español de Oceanografía, Centro Oceanográfico de Vigo, P.O. Box 1552, 36200, Vigo, Spain

- **PhD (Feeding ecology of harbour porpoises, common and bottlenose dolphins and sperm whales in the Northeast Atlantic)** Part-time registration, University of Aberdeen, Scotland, 1994-1998. Supervisors: Professor. P.R. Boyle, Dr. G.J. Pierce, Dr. P. Thompson and Dr. A. Guerra Sierra.
- **BSc (Zoology)** University of Santiago de Compostela, La Coruña, 1987-1992. Qualifications: 14 Matriculas de Honor (10/10), 5 Sobresalientes (9/10), 4 Notables (8/10) and 1 Aprobado (5/10).

Memberships of Professional Bodies, external groups and networks

- Member (alternate) of the International Council for the Exploration of the Sea (ICES) Science Committee (SCICOM) since 2009
- Chair of the ICES Study Group on Scientific Cooperation (SCSGSC) since 2009
- Member of the ICES Steering Committee on Sustainable Use of the Ecosystems since 2009
- Member of the following ICES Working Groups: Marine Mammal Ecology (2005 onwards), Cephalopod Fisheries and Life History (2003 onwards), on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy (since 2004, dissolved in 2007), Widely Distributed Stocks (since 2007), Sardine and Anchovy (since 2009) and on the Acoustic and Egg surveys for Sardine and Anchovy in ICES areas VIII and IX (since 2006), Ecosystem Assessment of Western European Shelf Seas (since 2010).
- Founding member of the Spanish Cetacean Society (1999 -)
- Member of the European Cetacean Society, Society for Marine Mammalogy and Coordinadora para o Estudio dos Mamíferos Mariños (Galicia, Spain)
- Member of the British Ecological Society and the Marie Curie Fellowship Association

Publications - 85 articles in SCI journals and nine book chapters on topics related to the assessment, management and biology of pelagic fish stocks, sustainable fisheries, discards, biology and ecology of marine mammals, and interactions of these organisms with fisheries and also on the biology and fishery of cephalopods

1. Fernández, R., Pierce, G.J., MacLeod, C.D., Brownlow, A., Reid, R.J., Rogan, E., Addink, M., Deaville, R., Jepson, P.D. & **Santos, M.B.**, In Press. Strandings of northern bottlenose whales, *Hyperoodon ampullatus*, in the north-east Atlantic: seasonality and diet. *Journal of the Marine Biological Association of the United Kingdom*.
2. Goetz, S., Read, F.L., Ferreira, F., Martínez Portela, J., **Santos, M.B.**, Vingada, J.V., Siebert, U., Marçalo, A., Santos, J., Araújo, H., Monteiro, S., Caldas, M., Riera, M. & Pierce, G.J., In Press. Cetacean occurrence, habitat preferences and potential for cetacean-fishery interactions in Iberian Atlantic waters: results from cooperative research involving local stakeholders. *Aquatic Conservation: Marine and Freshwater Ecosystems*.
3. Learmonth, J.A., Murphy, S., Luque, P.L., Reid, R.J., Patterson, I.A.P., Brownlow, A., Ross, H.M., Barley, J., **Santos, M.B.** & Pierce, G.J., In Press. Life history of harbor porpoises (*Phocoena phocoena*) in Scottish (UK) waters. *Marine Mammal Science*.
4. **Santos, M.B.**, Saavedra, C. & Pierce, G.J., In Press. Quantifying the predation on sardine and hake by cetaceans in the Atlantic waters of the Iberian Peninsula. *Deep-Sea Research II*.
5. Goetz, S., Read, F.L., **Santos, M.B.**, Pita, C. & Pierce, G.J., 2014. Cetacean-fishery interactions in Galicia (NW Spain): results and management implications of a face-to-face interview survey of local fishers. *ICES Journal of Marine Science* 71, 604-617.
6. MacLeod, C.D., **Santos, M.B.**, Burns, F., Brownlow, A. & Pierce, G.J., 2014. Can habitat modelling for the octopus *Eledone cirrhosa* help identify key areas for Risso's dolphin in Scottish waters? *Hydrobiologia* 725, 125-136.

7. Méndez-Fernandez, P., Webster, L., Chouvelon, T., Bustamante, P., Ferreira, M., González, A.F., López, A., Moffat, C.F., Pierce, G.J., Read, F.L., Russell, M., **Santos, M.B.**, Spitz, J., Vingada, J.V. & Caurant, F., 2014. An assessment of contaminant concentrations in toothed whale species of the NW Iberian Peninsula: Part I. Persistent organic pollutants. *Science of the Total Environment* 484, 196-205.
8. Méndez-Fernandez, P., Webster, L., Chouvelon, T., Bustamante, P., Ferreira, M., González, A.F., López, A., Moffat, C.F., Pierce, G.J., Read, F.L., Russell, M., **Santos, M.B.**, Spitz, J., Vingada, J.V. & Caurant, F., 2014. An assessment of contaminant concentrations in toothed whale species of the NW Iberian Peninsula: Part II. Trace element concentrations. *Science of the Total Environment* 484, 206-217.
9. **Santos, M.B.**, Monteiro, S.S., Vingada, J.V., Ferreira, M., López, A., Cedeira, J.A.M., Reid, R.J., Brownlow, A. & Pierce, G.J., 2014. Patterns and trends in diet of long-finned pilot whales (*Globicephala melas*) based on the analysis of stomachs contents of animals stranded on Northeast Atlantic coasts. *Marine Mammal Science* 30, 1-19.
10. Fernández, R., MacLeod, C.D., Pierce, G.J., Covelo, P., López, A., Torres-Palenzuela, J., Valavanis, V. & **Santos, M.B.**, 2013. Inter-specific and seasonal comparison of the niches occupied by small cetaceans off north-west Iberia. *Continental Shelf Research* 64, 88-98.
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Conference presentations: I have presented or contributed to 130 conference talks and posters, including invited talks at the SafeSea Project Conference on “Bycatch of cetaceans. Present Scenarios and Mitigation Measures” (Viana do Castelo, Portugal, January 2010) and at the PICES/ICES workshop on “Integrating marine mammal population and rates of prey consumption in models and forecast of climate change – ecosystem change in the North Pacific and North Atlantic Oceans” at the Annual Conference of the North Pacific Marine Science Organisation (PICES) 2009 (Jeju, South Korea, November 2009).

Projects - Current and recent projects include:

- *Forage Fish Interactions (FACTS)*, CEC Framework 7, Project No 244966, 2010-2012. Partner.
- *Climate Change and Migratory species: Indicator Species and Protocols for Data Collection*. British Trust for Ornithology/DEFRA, 2007-08. Member of University of Aberdeen team.
- *Mamíferos marinos y ecosistema (MME-II)*. Internal Project IEO, 2009-11, Partner.
- Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA), UK Department for Environment, Food and Rural Affairs, UK Department for Trade and Industry; Irish Department of the Environment, Heritage and Local Government, Irish Bord Iascaigh Mhara, IEO, AZTI, SGPM, 2006-08, Partner and responsible for analyses on abundance estimates for pilot whales in the whole surveyed area.
- *Estudio del ecosistema pelágico, la distribución de las especies y sus relaciones con el medio ambiente (ECOPEL)*. Internal Project IEO, 2006-08. I was the lead researcher.