

# Curriculum Vitae – Claire Lacey, BSc.(Hons), MSc, C.Env, MCIEEM, MRSB, AFHEA.

<b>Surname:</b>	Lacey	<b>Email:</b>	clacey2@hawaii.edu
<b>First name(s):</b>	Claire	<b>ORCID:</b>	0000-0003-0541-8193
<b>Nationality:</b>	British	<b>Twitter:</b>	@_clacey
<b>Academic Training/ Education:</b>	1998 - 2002	University of St Andrews	<b>BSc (Hons): Marine and Environmental Biology:</b> <b>Thesis title:</b> Can acoustic analysis be used to study group structure in sperm whales?
	2012 - 2015	University of Edinburgh (Distance Learning)	<b>MSc: Biodiversity, Wildlife and Ecosystem Health</b> <b>Thesis title:</b> Current Status of the Resident Bottlenose Dolphin Population in the Sado Estuary.
	2015- To date	University of St Andrews	<b>PhD candidate:</b> Factors affecting the distribution and abundance of cetaceans in European waters.
<b>Current Appointment:</b>	- Visiting Research Colleague, Marine Mammal Research Program, Hawaii Institute of Marine Biology, University of Hawaii at Manoa Feb 2021 - to date		
<b>Previous Appointments:</b>	<ul style="list-style-type: none"> <li>• Post Doctoral Research Associate – ECOSTAR project - SMRU 2020-2021</li> <li>• Sea Mammal Research Unit – Project Coordinator – Distribution of Small Cetaceans in the Atlantic Project (SCANS III) 2012 - 2020</li> <li>• Freelance marine mammal consultancy work 2013 - 2020</li> <li>• Associate Lecturer with the Open University 2018 - 2020</li> <li>• Scottish Windfarm Bird Steering Group – Data and Research Coordinator (Part time contract, in conjunction with those listed above) 2013 - 2017</li> <li>• Research Scientist, SMRU Consulting, St Andrews 2009 - 2012</li> <li>• Research Assistant, Sea Mammal Research Unit, St Andrews 2009</li> <li>• Program Assistant, Song of the Whale Research Team, International Fund for Animal Welfare 2002 – 2009</li> <li>• Marine Mammal Surveyor – SCANS-II Survey 2005</li> <li>• Field Assistant, University of St Andrews, Sea Mammal Research Unit 2001</li> </ul>		
<b>Membership of Professional Institutions:</b>	<ul style="list-style-type: none"> <li>• Associate Fellow of Advance HE, UK 2020</li> <li>• Member of the Royal Society of Biology, UK 2019</li> <li>• Member of the British Ecological Society Scottish Policy Group 2018 - 2020</li> <li>• Elected as Vice-Convenor of CIEEM Marine and Coastal Special Interest Group 2016</li> <li>• Elected to CIEEM Marine and Coastal Special Interest Group 2014</li> <li>• Convenor of CIEEM Scottish Section Committee 2014 - 2019</li> <li>• Chartered Environmentalist Status achieved 2013</li> <li>• Elected to CIEEM Scottish Section Committee 2011</li> <li>• Full member of CIEEM (Chartered Institute for Ecology and Environmental Management) 2010</li> </ul>		
<b>Summary of Professional Experience</b>	<p>Over 18 years extensive experience working on marine mammals in both the research and commercial arenas. Experience includes the development of practical, analytical and project management skills required to lead field based research programs and commercial contracts. Specialist areas include Distance Sampling, Population Viability Analysis (PVA), the use of passive acoustic techniques to monitor marine mammals as well as the implementation of a variety of different survey methodologies.</p> <p>I also have a keen interest in the fields of Higher Education Teaching, Science Communication and Public Outreach. Experience includes working as an Associate Lecturer for the Open University on four different modules in the schools of Mathematics, and Environmental and Earth Sciences; Teaching Assistant for statistics and software package “R” to undergraduate biology students, running small group tutorials for undergraduate Sustainable Development students, all at the University of St Andrews. Winner of the “best newcomer” public engagement award and University of St Andrews XX factor competition (2019), member of the StAndEngaged Public Engagement Portfolio programme and regular participant in outreach activities.</p> <p>Specifically:</p> <ul style="list-style-type: none"> <li>• <b>Distance Sampling and ecological surveys:</b> Extensive experience in leading and conducting ecological surveys for a range of taxa including bird and mammal species, including survey design, implementation and analysis of data collected.</li> <li>• <b>Data Management:</b> Highly experienced in manipulating and maintaining large and complex datasets including those collected for acoustic and visual survey data and photo ID databases</li> </ul>		

	<ul style="list-style-type: none"> <li>• <b>Environmental Consultancy:</b> Thorough grounding in all aspects of marine fauna focussed consultancy work, including the production of ES chapters for EIA, technical reports, impact assessments, baseline characterisation and guidance documents.</li> <li>• <b>Development and application of novel technologies:</b> Published work on the development of photogrammetric techniques to remotely measure body size in both cetaceans and basking sharks using non-invasive techniques.</li> <li>• <b>Science communication and public outreach:</b> Registered STEM Ambassador, activities include Academics Go Wild at Edinburgh Zoo, Explorathon, XX Factor, Skype-a-Scientist, Letters to a Pre-Scientist, and Science Discovery Day.</li> <li>• <b>Teaching at Higher Education Level:</b> Experienced, Undergraduate-level tutor for statistics, R and Sustainable Development. Associate Lecturer with the Open University.</li> </ul>
<b>Geographic Experience:</b>	
<b>Europe</b>	UK, Ireland, Iceland, Faroe Islands, France, Spain, Italy, Portugal, Denmark, Germany, Turkey, Greece, Azores, Canaries, Madeira.
<b>Global</b>	US, Canada, Caribbean, Hong Kong, Morocco, Mauritania, Libya, Gabon, Sierra Leone, Brazil, Cape Verde Islands, Falkland Islands, South Georgia, South Sandwich Islands

**Specific Experience:**

<b>Estimating animal populations</b>	<a href="#">Return to Summary</a>
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I have over 17 years' experience conducting ecological surveys covering a wide variety of taxa, habitats and survey protocols. I am very used to working in difficult and challenging environments and in small teams.

- I currently work with the University of St Andrews, Sea Mammal Research Unit, co-ordinating the SCANS-III project (<https://synergy.st-andrews.ac.uk/scans3/>). The SCANS surveys are multi-million-pound, large-scale marine mammal surveys of European waters involving a range of stakeholders from 10 different countries. My role covers aspects of project design, meetings with stakeholders, organisation of logistics and funding applications as well as the survey work itself (I was cruise leader on one of the survey vessels) which was conducted in 2016 and the analysis (both distance sampling and habitat modelling / production of density surfaces) which is currently being undertaken. The analysis of these data will also form the bulk of my PhD.
- Extensive project and survey management experience both in organising and Coordinating the SCANS-III project and working as cruise leader; responsible for submitting funding applications, coordinating steering groups, organising surveys, observers and survey vessels; co-ordinating acoustic and visual marine mammal data collection and seabird data collection; ensuring the correct adherence to survey protocols and overall responsibility for data.
- I have conducted over 45,000 nautical miles of survey for marine mammals throughout the Atlantic, using both visual and acoustic methodologies. This has covered a wide range of species including both national and international waters.
- I have been cruise leader / science lead for surveys for a variety of organisations, including SCANS-III, Marine Conservation Research, NERC and SMRU Consulting.
- I am very experienced at all aspects of this fieldwork, including survey design and planning, designing protocols and putting together observer teams, vessel set up – both visual and acoustic data collection, running and participating in surveys, data analysis and reporting.
- “holiday cover” throughout summer 2019 for the bottlenose dolphin photo-ID project, conducted at SMRU. This involved organising and implementing the weekly field trips during periods when the usual project staff were on other fieldwork / holiday, as well as taking the photographs and initial processing of the images.
- Secondment as Principal Scientist for Marine Conservation Research International on their “100 degrees of latitude” project in spring 2018, surveying cetaceans and collecting eDNA and sampling ocean plastics between Brazil and Portugal.
- Team leader for marine mammal survey on the NERC (UK Government research council) vessel RRS Discovery conducting surveys between the UK and Canada during June 2017
- Six weeks of marine mammal surveys around South Georgia and the South Sandwich Islands for British Antarctic Survey.
- 18 months of marine mammal and seabird surveys whilst working at SMRU Consulting collecting baseline data for a windfarm off the coast of Scotland.
- 3 months fieldwork conducting Photo-Identification surveys for grey seals for SMRU

The data analysis side is just as important as the fieldwork side, and I have worked hard to ensure I have appropriate analytical skills to analyse the data collected during the type of fieldwork routinely conduct.

- I am currently finishing my PhD thesis at SMRU, analysing the data from the SCANS-III surveys using generalised additive models. This work also includes modelling the data collected on our surveys with those from surveys collected by colleagues (e.g. the ObSERVE surveys) and comparisons with previous SCANS surveys.
- I have attended all three of the Distance Sampling workshops help by the Centre for Research into Ecological and Environmental Management (CREEM). This has provided me with a thorough understanding of the principles of survey design and analysis to compliment my previous knowledge. I am currently undertaking a modelling contract investigating long-term beaked whale distribution in the North Atlantic for Hartley Anderson Associates in addition to the SCANS-III modelling.
- My MSc thesis involved the calculation of population estimates, survival rates and conducting a population viability analysis (PVA) for a small population of resident dolphins in Portugal, by analysing data from a long-running photo-ID project. I am consequently experienced with these methodologies, as well as the specialised software packages used to carry them out.

#### Associated Publications:

- Lewis, T., Boisseau, O., Danbolt, M., Gillespie, D., Lacey, C., Leaper, R., Matthews, J., McLanaghan, R., Moscrop, A. (2018). Abundance estimates for sperm whales in the Mediterranean Sea from acoustic line-transect surveys. *Journal Cetacean Research and Management* 18. 103-117.
- Hammond, P.S., Lacey, C., Gilles, A., Viquerat, S., Börjesson, P., Herr, H., Macleod, K., Ridoux, V., Santos, M.B., Scheidat, M., Teilmann, J., Vingada, J., Øien, N. 2017. Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. SCANS-III project report. 40pp.
- Boisseau, O., Lacey, C., Lewis, T., Moscrop, A., Danbolt, M., McLanaghan, R. (2010). Encounter rates of cetaceans in the Mediterranean Sea and contiguous Atlantic area. *J. Mar. Biol. Ass. U.K.*, 90: Special Issue 08, 351583 - 1588
- Boisseau, O., Lacey, C., Lewis, T., Thorne, T., Moscrop, A., Gillespie, D. and Aguilar Soto, N. (2009). Mid-Atlantic surveys for beaked whales: The potential for acoustic prediction of critical habitats. *Poster presented to the 23<sup>rd</sup> Annual Conference of the European Cetacean Society*, Istanbul. Turkey
- Boisseau, O., Matthews, J., Gillespie, D., Lacey, C., Moscrop, A. and Ouamari, N.E., 2007. A visual and acoustic survey for harbour porpoises off North-West Africa: further evidence of a discrete population. *African Journal of Marine Science*, 29(3), pp.403-410.
- T. Lewis, D. Gillespie, C. Lacey, J. Matthews, M. Danbolt, R. Leaper, R. McLanaghan and A. Moscrop. (2007). Sperm whale abundance estimates from acoustic surveys of the Ionian Sea and Straits of Sicily in 2003. *J. Mar. Biol. Ass. U.K.*, 87:1, 353-358
- Lewis, T., Gillespie, D., Lacey, C., Matthews, J., Danbolt, M., Leaper, R., Moscrop, A. and McLanaghan, R. (2006). Sperm whale abundance estimates from Acoustic surveys of the Ionian Sea and Straits of Sicily in 2003. *Poster presented to the 20<sup>th</sup> Meeting of the European Cetacean Society*. Gdynia, Poland; 02-07 April 2006
- Gillespie, D., Berggren, P., Brown, S., Kuklik, I., Lacey, C., Lewis, T., Matthews, J., McLanaghan, R., Moscrop, A. and Tregenza, N. (2005) The relative abundance of harbour porpoises *Phocoena phocoena* from acoustic and visual surveys in Baltic waters during 2001 and 2002. *Journal of Cetacean Research and Management*. 7:(1).51-57
- Lacey, C; Gordon, J. (2003). Can acoustic analysis be used to study group structure in sperm whales? *Poster presented to the 17th Meeting of the European Cetacean Society*, Las Palmas, Gran Canaria.

#### Data Analysis and Management

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Conducting surveys inevitably results in the accumulation of very large datasets, and I have become very proficient at managing these accurately and effectively.

As part of my current role as coordinator for the SCANS-III project, I am responsible for curating the data from 4 large scale cetacean surveys. This includes data from over 30 different survey platforms and incorporates both acoustic and visual data.

Whilst at SMRU Consulting (2009 – to 2012) I was responsible for the maintenance of data collected during a wide range of fieldwork. I had responsibility for cleansing, maintaining and analysing data contained therein.

Whilst working with the Song of the Whale Research Team (2002 – 2009), I was responsible for maintaining the survey database containing all data collected during each field season. This comprised visual sightings data, acoustic data, recordings of observer effort, GPS locations and environmental data.

In addition to the survey database, I was also responsible for the maintenance of the archive of photographic material collected during field work and built up of over 5000 images and species-specific photo identification catalogues.

I am very interested in ways to improve the accessibility of biological data and have been part of the steering group of the Scottish Biodiversity Information Forum (SBIF) since 2013. This initiative has been reviewing the dataflow pathway for biological data in Scotland and will shortly be publishing its review. This has given me a good understanding of many of the data management (and metadata management) issues which are commonly encountered.

I am proficient with GIS software, R, Microsoft Access and Excel for interrogating large datasets.

#### Associated Publications:

- Southall, E., Sims, D., Metcalfe, J., Doyle, J., Fanshawe, S., Lacey, C., Shrimpton, J., Solandt, J-L, Speedie, C. (2005). Spatial distribution patterns of basking sharks on the European shelf: Preliminary comparison of satellite-tag geolocation, survey and public sightings data. *Journal of the Marine Biological Association of the United Kingdom*, 85(5), 1083-1088.

#### Environmental Consultancy

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**Freelance consultancy work 2013-to date / Research Scientist: SMRU Consulting. June 2009 – Dec 2012.** As one of a small team of scientists employed at SMRU Consulting, I worked on a wide variety of different commercial projects for a range of clients, including renewable energy, Oil and Gas, Defence and Statutory Nature Conservation Bodies. After SMRU Consulting, I have also conducted freelance work for other environmental consultancies, including Royal Haskoning DHV and Natural Power Consulting. Projects included impact assessments for a large offshore windfarm site and baseline reporting for a tidal site.

Specific projects include:

- Author of ES components for offshore wind development sites in both Scotland and England. Components include baseline review, data analysis and impact assessment.
- Passive Acoustic investigation of the potential for barrier effects of harbour porpoises within the Great Belt, forming part of the Fehmarnbelt Fixed Link EIA;
- Fieldwork coordinator and cruise leader for combined seabird and marine mammal surveys conducted at a Scottish wind development site:
- Use of static acoustic equipment (C-PODS) to monitor cetacean activity for a variety of energy developments including nuclear power stations and renewable energy devices. Contributions included project management, array design, commissioning and specification of moorings, field work and data analysis.
  - Initial set-up of a PAM array, and training of PAM Operators to provide mitigation for Chinese white dolphins, Hong Kong, as part of mitigation strategy during near-shore construction operations.
- Conducting baseline surveys and related reporting for a gas pipeline in Gamba, Gabon;
- Quality assurance service for marine mammal aerial survey images;
- Author of Natural England Commissioned Report suggesting conservation and recovery programmes for a specified list of marine species;
- Significant contribution to production of *Scottish Natural Heritage Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland. Volume 2: Cetaceans and Basking Sharks*, and *Volume 3: Seals*.
- Extensive literature reviews for sites and developments ranging from renewable energy in the north of Scotland to harbour developments in Sierra Leone
- Work as a JNCC Marine Mammal Observer for Weidlinger Associates
  - Considerable experience using PAMGuard and C-POD software for both data collection and analysis.

#### Associated Publications:

- Sinclair, R., Lacey, C., Tyler-Walters, H., Tilin, H.M., Sparling, C. 2019. Developing FeAST for Mobile Marine Species. *Scottish Natural Heritage Commissioned Report*. In press.
- Hiscock, K., Bayley, D., Pade, N., Lacey, C., Cox, E., Enever, R. (2013). Prioritizing action for recovery and conservation of marine species: a case study based on species of conservation importance around England. *Aquatic Conserv. Mar. Fresw. Ecosyst.* **23**(1) 88-110.

**Novel Techniques**[Return to Summary](#)

I have a proven track record establishing novel research solutions to impact assessment questions. Not only is this demonstrated during my current PhD work, but during my time at IFAW, I worked extensively on adapting the use of established video-tracking and photogrammetric techniques to allow the estimation of body length in basking sharks. During the work on the Fehmarnbelt Fixed Link EIA, I, along with a colleague, utilised a novel technique of adapting conventional hydrophone arrays to track fine scale movements of harbour porpoises around underwater marine structure.

**Associated Publications:**

- Lacey, C; Leaper, R; Moscrop, A; Gillespie, D; McLanaghan, R; Brown, S (2010). Photo-grammetric measurements of swimming speed and body length of basking sharks observed around the Hebrides, Scotland. J.Mar.Biol.Ass UK. 90: (2): 361 – 366.
- Lacey, C., Gillespie, D., Quick, N. (2012). Introducing PAMLA: Using passive acoustic techniques to study fine scale behaviour of odontocetes. Poster presented to EIMR (Environmental Interactions of Marine Renewable Energy Technologies) International Conference – Orkney. Winner of Poster Competition.

**Science Communication**[Return to Summary](#)

I am passionate about science communication and have taken as many opportunities as possible to improve my skills in this area. I believe I have good written and oral communication skills and I am used to communicating with a wide variety of different audiences.

- Presented at academic conferences and at Industry days which both involve communicating with peers and colleagues,
- Registered STEM Ambassador, taking part in careers sessions and science activities in schools.
- Member of the skype-a-scientist initiative which pairs scientists with a classroom for a 1-hour skype session, and the Letters to a Pre-Scientist initiative, which connects low-income students with scientists via a pen-pal programme to promote science careers.
- Provided written work for a variety of audiences: I am currently working on my PhD thesis, have authored and co-authored scientific papers and posters and produced consultancy reports for both specialists and non-specialists when working in the environmental consultancy sector.
- I have completed the “Public Engagement Passport” certificate awarded by the Public Engagement Office at the University of St Andrews. This involves a combination of training courses, and delivering public engagement activities at schools, prisons and other locations such as Edinburgh Zoo and Dundee Science Museum.
- Winner of the 2018 XX Factor Live competition, in which female researchers are given three minutes to present their research to an audience of school-aged children, who then vote for their favourite.
- During my most recent fieldwork to South Georgia and the South Sandwich Islands, I had an arrangement with three primary schools in Fife, so they could submit questions about the work I was doing, life on a research ship, penguins and other wildlife, and I would send back answers to their questions, videos and photos from the field. These will be followed up with classroom visits once I get back to the UK. I’ve so far had in-excess of 250 questions submitted. To go along with the school liaison, I have also set up a blog, the link for which is [adventuresinwhalecounting.blog](http://adventuresinwhalecounting.blog).
- Organised multiple conferences, seminars, lectures and networking events through my work as Convenor for the Chartered Institute for Ecology and Environmental Management (Scottish Section).

**Higher Education Teaching**[Return to Summary](#)

I have over 15 years of experience working in a training / teaching capacity with interns, students, research assistants, members of the public and volunteers in a variety of different roles. This has given me an appreciation of how adults learn in different environments and how different techniques can be successful in different circumstances. My experience includes:

- Associate Lecturer – Open University – 3 modules within the STEM school. These are: Managing Environmental Change, Terrestrial Ecosystems and Evaluating Contemporary Science. This work involves marking, tutoring and leading fieldcourses for a group of 20 students for each module. The teaching is primarily online via email and synchronous tutorials, although there is also some contact time, via the field-course.
- Post-graduate Tutor – Introduction to University Teaching. MSc level module. The University of St Andrews runs two MSc level modules designed for staff and post-graduates, covering diverse aspects of Higher Education pedagogy. Having completed both of these modules during academic year 18-19, I am now the post-graduate tutor helping with the delivery on the first of these modules.
- Workshop leader – Academic Skills Project, School of Biology, University of St Andrews: Prepared and delivered two different workshops for the Biology ASP, one in AY2016-17, one in AY2017-18.

Recent CPD and other relevant certification	<a href="#">Return to Summary</a>
<b>Taught Masters module:</b> Introduction to University Teaching: Curriculum Design	May 2019
<b>Taught Masters module:</b> Introduction to University Teaching: Supporting Student Learning	December 2019
<b>Certification:</b> Personal survival techniques (sea survival) (STCW Table A – VI/I-I) (Renewal)	April 2017
<b>Course:</b> Statistical Models for Wildlife Population Assessment and Conservation (NERC course)	January 2017
<b>Certification:</b> SNH Bat roost licence	April 2016
<b>Course:</b> Experimental design and analysis of variance using R (CAPOD)	March 2015
<b>Course:</b> Advanced Pamguard Course (Analysis)	January 2014
<b>Course:</b> Introduction to Density Estimation through Passive Acoustic Monitoring Centre for Research into Ecological and Environmental Modelling (CREEM)	August 2012
<b>Course:</b> Introductory Distance Sampling Workshop Centre for Research into Ecological and Environmental Modelling (CREEM)	August 2011
<b>Course:</b> Advanced Distance Sampling Workshop Centre for Research into Ecological and Environmental Modelling (CREEM)	September 2011
<b>Course:</b> Advanced Environmental Impact Assessment – Environmental Academy	April 2011
<b>Course:</b> Introduction to Environmental Impact Assessment - Environmental Academy	January 2011
<b>Course:</b> Statistical modelling Workshop Centre for Research into Ecological and Environmental Modelling (CREEM)	January 2011
<b>Course:</b> PAMGuard course	August 2009
<b>Certification:</b> JNCC MMO certificate	July 2009