LEILA FOUDA

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EDUCATION

2021 | 2017

PhD, Biology

Queen Mary, University of London

- *Thesis*: Evolutionary Ecology of Feeding Strategies in Loggerhead Sea Turtles (*Caretta caretta*) from Movement to Conservation
- Investigating foraging ecology, movement ecology, and population dynamics of loggerhead sea turtles (*Caretta caretta*).
- Planned and coordinated multiple field seasons with lab members including equipment organisation, coordinated field assistant training, and remote fieldwork logistics.
- Coordinated and trained research assistants and colleagues in GPS and accelerometer tagging on three islands across two field seasons.
- Developed movement ecology analysis skills for GPS animal tracks and triaxial accelerometer data.
- Developed laboratory skills in stable isotope analysis (tissue and blood) and DNA extraction techniques.
- Assisted in training and development of MSc students.

2012 | 2011

MSc Conservation Science

Imperial College London

- Topics covered included: Current Issues in Conservation, Sustainable Use and Resource Exploitation, Population Surveys, Conservation Management, Priority Setting and Implementation.
- *Thesis*: Noisy Neighbours - using Automatic Identification System (AIS) and passive acoustic monitoring data to measure individual vessel source levels in critical whale habitat.

2009 | 2005

BSc (Hons), Marine Biology

University of St. Andrews

- Modules including: Biology of Marine Organisms, Animal Behaviour, Conservation Research Methods, Marine Mammals and Man, Scientific Diving.
- *Dissertation*: Echolocation clicks of cetaceans - variation due to cetacean size, social and prey preferences.

RESEARCH EXPERIENCE

Current | September 2022

Postdoctoral Associate

Yale University

- I am a part of the Center for Biodiversity and Global Change at Yale University where I work as part of the Biodiversity Movement and Global Change group.
- My work focuses on understanding the drivers and impacts of animal movement on a changing planet.
- I utilise high-resolution global animal movement data to explore space use and changes over time. I hope to identify how conservation practices and projects aid in the protection of highly mobile and migratory species.

July 2022 | January 2022

Research Associate

British Antarctic Survey

- I worked with two teams at the British Antarctic Survey. The first team is analysing acoustic recordings from South Georgia. The second team (Whales from Space) is reviewing VHR satellite images collected from the Antarctic peninsula.
- In the acoustic monitoring project, I identified underwater sound sources. The main focus is to monitor recovering populations of baleen whales in South Georgia.
- In the 'Whales From Space' project I classified features of interest and environmental conditions within each VHF image. The main focus is to examine humpback whale (*Megaptera novaeangliae*) presence and habitat use across the year.

August 2017 | March 2017

Faculty Research Assistant

Chesapeake Biological Laboratory, The University of Maryland Center for Environmental Science

- Passive acoustic monitoring study for marine mammals of Maryland in which I examined the effect of background noise levels on dolphin acoustics in particular key whistle characteristics.
- Setup, deployment, recovery, and maintenance of acoustic equipment offshore (Atlantic Ocean) and in the Chesapeake Bay.
- Whistle project development with Dr. Helen Bailey. Processed and analysed whistle structure and background noise leading to first author manuscript in Biology Letters.
- Coordinate and conduct aerial surveys for bottlenose dolphins in the Chesapeake Bay

March 2017 | September 2016

Research Assistant

The Ocean Cleanup Foundation

- Aerial observations (scanning for debris, angle measurements, classification, and photography) through paratrooper doors on C-130 Hercules aircraft for surveys over Great Pacific Garbage Patch to quantify ocean debris.
- Onsite mission preparations and demobilisation of software and equipment.
- Data cleaning, quality control, and post processing for plastic distribution over Great Pacific Garbage Patch.
- Writing of the final report and peer-reviewed publications with colleagues.

September 2016 | August 2016

Research Assistant

Centre for Marine and Renewable Energy, University College Cork

- Cliff-based surveys using theodolites to map the location of marine mammals. Involved scanning for marine mammals, theodolite tracking of marine mammals, weather observations, data entry, and analysis

April 2016 | January 2015

Research Assistant

Centre for Marine Science and Technology, Curtin University

- Developed a bioacoustics and population ecology study on Australian populations of killer whales (*Orcinus orca*).
- Coordinated and led research trips to the Bremer Canyon and Exmouth field sites. Leading the photo identification and behavioural data collection and assisting with acoustic data collection.
- Data analysis, management, and publication preparation utilising both MATLAB and Raven software.
- Designed and formatted a photo identification catalogue using FinBase.
- Supervised four year 10 students conducting analysis on our data.

November 2013 | October 2013

Research Assistant

Centre for Marine Science and Technology, Curtin University

- Analysed underwater spectrograms to identify principal soundscape features.
- Utilised noise logger deployment reports to further understand the significant features of each soundscape.
- This work fed into a broader study looking at temporal and geographical variability in underwater soundscapes.

October 2013 | September 2013

Research Assistant

Behavioural Response of Australian Humpback whales to Seismic Surveys (BRAHSS). Joint Industry Partners

- Marine mammal observer and research assistant on a multi-year project examining the effect of seismic surveys on humpback whales (*Megaptera novaeangliae*).
- This role involved consistent and careful scanning for humpback whales to facilitate small vessel focal follows.
- During seismic trials ensure mitigations on animal and vessel distances were met by continuous monitoring.
- Efficient communication to lead monitoring operator across seismic trial period.
- Proprietary programme set up, operations for scan surveys, data management.

September 2013 | April 2013

Research Assistant

Oceans Initiative - Science for the Sea

- I undertook boat-based photo-ID photography, image quality and distinctiveness scoring, data management, and matching of a Pacific white-sided dolphin (*Lagenorhynchus obliquidens*) photo identification catalogue spanning 30-years.
- Small vessel data collection for the development of a marine conservation toolkit. Including, multi-species marine mammal line transects utilising CyberTracker for data collection on encounters. Hydrophone deployment and recovery.

July 2010 | April 2010

Research Assistant

Sperm Whale Research Project, Pinniped and Cetacean Ecology - New Zealand Research Partnership. University of Canterbury

- As part of a four person team I undertook boat and land based surveying focusing on sperm whales (*Physeter macrocephalus*) in the Kaikoura Canyon.
- Boat Based: Cetacean spotting, focal follows, directional and omni-directional hydrophone deployment, acoustic tracking, blow rate sampling photo identification image capture and matching.
- Land Based: Scanning for marine mammals theodolite operation and individual focal follows, monitoring tourist vessel locations.

October 2009 | August 2009

Intern

Research Department, Pacific Whale Foundation.

- I carried out photo identification for a long-term humpback whale (*Megaptera novaeangliae*) catalogue.
- I independently conducted snorkel reef surveys to investigate frequency of reef contact by the general public and during eco-tours I ensured accurate cetacean logs were maintained during vessel encounters.

August 2008 | June 2008

Intern

Marine Research Internship Program - Society for Ecological and Coastal Research. University of Victoria Whale Lab

- Conducted boat based cetacean and avian research. Primarily focused on gray whales (*Eschrichtius robustus*) and involved: line transects surveys, focal follows, and prey sampling in areas of foraging whales.
- Data input and photo identification of fluke and dorsal images.

August 2007 | June 2007

Research Assistant

Sediment Ecology Research Group. University of St. Andrews.

- Independently conducted sediment sample collecting and processing. Assisted PhD students in the laboratory and field to process and analyse samples and input data.

SKILLS

Fieldwork Skills

Animal Tagging (Sea Turtle); Marine Mammal Observations (Boat and Land based); Aerial observations; Line-Transect Surveys and Focal Follows; Tissue Sample and Morphometry Data Collection; Sample Processing and Preservation; Cetacean Photo-ID; Hydrophone and Acoustic Recorder Operation and Deployment; Theodolite Operation and Use; Marine Prey Sampling; Data Management; Binocular use.

Laboratory Skills

DNA Extraction; PCR; Stable Isotope Sample Preparation and Processing; Mass Spectrometer set up (calibration, liner and column changes).

Software Skills

Data Analysis, Visualization, and Modelling (R, R Markdown); Movement and Spatial Analysis (R, ArcGIS, QGIS); DNA Alignment (UGENE, DNAsp); Acoustic Analysis (Raven, Pamguard, Audacity, R, MATLAB), Academic writing (MS Office, Rmarkdown, LaTeX); High Performance Computing (HPC) Cluster (Command Line, Bash, basic Linux); Fieldwork Software (CyberTracker, VADAR); Web Design (Rmarkdown, GitHub, Netlify, Wordpress); Data Management.

TEACHING EXPERIENCE

2021 | 2018

Co-Supervisor of MSc Students

- Providing guidance and support to MSc students conducting thesis research in my PhD lab.
- Teaching laboratory skills including stable isotope analysis.
- Topics: foraging ecology of sea turtles, movement dynamics of sea turtles

2020

Teaching Assistant on virtual MSc Ecology and Evolution field course

- I developed and delivered a workshop on marine mammal whistle analysis.
- Delivered a lecture on CV presentation development.
- Panal member for a discussion group on scientific opportunties in and outside of academia.

2019 | 2018

Teaching Assistant on MSc Ecology and Evolution field course

- Based in Cabo Verde over a two week period. I wrote and delivered lectures, guided small discussion groups, supervised and assisted student work and led logistical management.

2019 | 2018

Demonstrator for undergraduate modules

- Taught practical laboratory skills in the bio-sciences. Engaged and encouraged students to learn and develop new skills (e.g. pipetting, microscope use, scientific drawing).
- Marking and providing feedback on submitted work both in the lab and on submitted work.

PUBLICATIONS

In Prep

Maternal feeding ecology alters hatchling fitness in a capital breeding species.

Target - Journal of Animal Ecology

- **Leila Fouda**, Stuart R. B. Negus, Emma C. Lockley, Albert Taxonera, Kirsten Fairweather, Gail Schofield, Christophe Eizaguirre

In Prep

Genetic and environmental drivers of foraging strategy in female loggerhead sea turtles.

Target - Scientific Reports

- **Leila Fouda**, Emma C. Lockley, Silvana Roque, Juan Patino-Martinez, Thomas Reischig, Jandira Durao , Sahmorie J. K. Cameron, Christophe Eizaguirre

In Prep

Dive classification technique for sea turtles demonstrates complexity in the diving behaviour of loggerhead sea turtles (*Caretta caretta*).

Target - Methods in Ecology and Evolution

- **Leila Fouda**, Emma C. Lockley, Stuart R. B. Negus, Sahmorie J. K. Cameron, Albert Taxonera, Kirsten Fairweather, Juan Patino-Martinez, Thomas Reischig, Christophe Eizaguirre

In Prep

Novel GSM-relayed trackers reveal fine-scale movement of nesting loggerhead turtles.

Target - Methods in Ecology and Evolution

- **Leila Fouda**, Emma C. Lockley, Stuart R. B. Negus, Samual J. Shrimpton, Kirsten Fairweather, Albert Taxonera, Christophe Eizaguirre

2020

Long-term survey of sea turtles (*Caretta caretta*) reveals correlations between parasite infection, feeding ecology, reproductive success and population dynamics.

Scientific Reports

- Emma C. Lockley, **Leila Fouda**, Sandra M. Correia, Albert Taxonera, Liam N. Nash, Kirsten Fairweather, Thomas Reischig, Jandira Durao, Herculano Dinis, Silvana Monteiro Roque, Joao Pina Lomba, Leno dos Passos, Sahmorie J. K. Cameron, Victor A. Stiebens, Christophe Eizaguirre

2020

Seasonal productivity drives aggregations of killer whales and other cetaceans over submarine canyons of the Bremer Sub-Basin, south-western Australia.

Australian Mammalogy

- Chandra Salgado Kent, Phil Bouchet, Rebecca Wellard, Iain Parnum, **Leila Fouda**, Christine Erbe

2019

Cetacean sightings within the Great Pacific Garbage Patch.

Marine Biodiversity

- Susan E. Gibbs, Chandra P. Salgado Kent, Boyan Slat, Damien Morales, **Leila Fouda**, Julia Reisser

2018

Dolphins simplify their vocal calls in response to increased ambient noise.

Biology Letters

- **Leila Fouda**, Jessica E. Wingfield, Amber D. Fandel, Aran Garrod, Kristin B. Hodge, Aaron N. Rice, Helen Bailey

2018 **Validating automated click detector dolphin detection rates and investigating factors affecting performance.**
The Journal of the Acoustical Society of America
• Aran Garrod, Amber D. Fandel, Jessica E. Wingfield, **Leila Fouda**, Aaron N. Rice, Helen Bailey

2016 **Killer Whale (*Orcinus orca*) Predation on Beaked Whales (*Mesoplodon spp.*) in the Bremer Sub-Basin, Western Australia.**
PLOS ONE
• Rebecca Wellard, Keith Lightbody, **Leila Fouda**, Michelle Blewitt, David Riggs, Christine Erbe.

2015 **Vocalisations of Killer Whales (*Orcinus orca*) in the Bremer Canyon, Western Australia.**
PLOS ONE
• Rebecca Wellard, Christine Erbe, **Leila Fouda**, Michelle Blewitt.

POSTERS AND TALKS

2023 **Do protected areas drive movement choices? A research proposal in three parts.**
Movement Ecology of Animals - Gordon Research Conference
• Contributed Poster. **Leila Fouda**, Scott Yanco, Ruth Oliver, Diego Ellis-Soto, Walter Jetz

2021 **Diving behaviour and energy expenditure of loggerhead turtles (Caretta caretta) using accelerometers in a globally important nesting aggregation.**
The 7th International Bio-Logging Science Symposium
• Contributed Talk. **Leila Fouda**, Emma C. Lockley, Stuart R. B. Negus, Albert Taxonera, Kirsten Fairweather, Gail Schofield, Christophe Eizaguirre

2021 **Feeding ecology and maternal effects impact reproductive success in loggerhead sea turtles (*Caretta caretta*).**
Ecological Society of America - Annual Meeting
• Contributed Poster. **Leila Fouda**, Stuart R. B. Negus, Emma C. Lockley, Albert Taxonera, Kirsten Fairweather, Gail Schofield, Christophe Eizaguirre

2020 **Evaluating the use of marine protected areas by sea turtles in the Cabo Verde Archipelago.**
SBCS Symposium
• Contributed Talk. **Leila Fouda**, Stuart Negus, Emma C. Lockley, Adrienne Kerley, Albert Taxonera, Christophe Eizaguirre

2019 **Local feeding and its influence on reproductive investment in a highly migratory species.**
SBCS Symposium
• Contributed Poster. **Leila Fouda**, Stuart Negus, Emma C. Lockley, Albert Taxonera, Kirsten Fairweather, Christophe Eizaguirre

2019 **Fitness impact of local feeding in loggerhead sea turtles (*Caretta caretta*).**
Dynamic Earth: The Joint-DTP Conference
• Contributed Talk. **Leila Fouda**, Stuart Negus, Kirsten Fairweather, Albert Taxonera, Gail Schofield, Christophe Eizaguirre

RESEARCH GRANTS

2021 | 2017 **London NERC DTP studentships (GBP 86,768)**
PhD Studentship in the natural sciences
• London NERC Doctoral Training Partnership Funding. UKRI studentship for doctoral research which covers university tuition fees and stipend.

2014 **SeaWorld and Busch Gardens Conservation Fund (USD 25,000)**
Bremer Canyon Killer Whales - Bioacoustic and population study.
• Grant Recipient with Dr. Christine Erbe at the Centre for Marine Science and Technology.

PUBLIC ENGAGEMENT

April 2019
Ten Turtle Years - the past, present and future of sea turtle conservation
Pint of Science

- A public talk with fellow PhD student Emma Lockley about how a community-based approach to conservation has contributed to exciting scientific research and conservation decisions for endangered sea turtles, and increasing opportunities for people across the Cabo Verde archipelago.

November 2018
Meet the Scientist talk
Westcliff High School for Girls

- A talk to A Level students about studying and working in the marine sciences.

October 2018
New Study Reveals Effects of Boat Noise on Dolphins
Cheddar News

- *Project: Passive Acoustic Monitoring Of Marine Mammals*. A short interview discussing the results of my publication - "Dolphins simplify their vocal calls in response to increased ambient noise"

August 2017
Dolphin sightings on the rise in the Chesapeake Bay
WUSA9 Washington DC

- *Project: Chesapeake Bay DolphinWatch*. A short article and news segment on #OffScriptOn9 about why dolphins may be in the Chesapeake Bay a pink dolphin sighting in Louisiana.

July 2017
Dolphin Watchers Wanted: Researchers Ask For Help Tracking Sightings In The Chesapeake
DCist

- *Project: Chesapeake Bay DolphinWatch*. A short article on why the DolphinWatch public sightings database is important and how the public is helping our research.

July 2017
Researchers need your help to study dolphins in the Chesapeake Bay
ABC2 News Baltimore

- *Project: Chesapeake Bay DolphinWatch*. A short write up and news segment with Dr. Helen Bailey and Amber Fandel of the UMCES DolphinWatch project.

July 2017
Dolphin sightings in the Chesapeake Bay becoming more frequent
ABC7 Washington DC

- *Project: Chesapeake Bay DolphinWatch*. An article and short news segment on the DolphinWatch project.

September 2015
Curtin orca-strates vital killer whale research
Curtin University Media Release

- *Project: Bremer Canyon Killer Whale Research*. The media release on the Bremer Canyon killer whale acoustics paper published in PLOS ONE.

April 2015 | January 2015
On-board naturalist
Naturaliste Charters

- *Project: Bremer Canyon Killer Whale Research*. During the Bremer Canyon research trip I took on the role of on-board naturalist for passengers, giving an introductory talk and answering questions during tours.

December 2013
How to start out in marine biology?
Conservation Careers

- This article for Conservation Careers talks about life as a marine biologist, how I got started and gives advice for future marine biologists.