

PhD opportunity: Current and historical threats to dolphins in the Atlantic and the Mediterranean, starting October 2019, as part of the Marie Skłodowska-Curie Innovative Training Network "SEACHANGES: Thresholds in Human Exploitation of Marine Vertebrates" (ESR 11)

Deadline: 30 June 2019

Location and PhD registration: the successful candidate will be based at Instituto de Investigaciones Marinas (Institute of Marine Research) in Vigo, Spain, and will register for a PhD in the University of Vigo.

PhD supervisors: **Graham Pierce** (Instituto de Investigaciones Marinas), Francisco Rocha (University of Vigo). Additional supervisors will be appointed from within the network.

Project background: Historical abundance trends in small cetaceans are poorly understood, with baselines for current conservation efforts in Europe being based on relatively recent abundance estimates from sighting surveys. Common dolphins, *Delphinus delphis*, are currently the most abundant cetacean in European Atlantic waters but this species has declined substantially in the Mediterranean. Differences in the history of fishery exploitation may help account for these differences, with overfishing believed to have caused depletion of common dolphin prey in the Mediterranean. However, the evidence underlying this view is largely anecdotal and limited to the modern era, and the ecologically similar striped dolphin *Stenella coeruleoalba* may have expanded its range. There is a need to improve understanding of the ecological processes and anthropogenic impacts that have led to these changes in species status, to provide a sound basis for conservation measures.

Project description: This project aims to improve understanding of long-term population trends in common and striped dolphins and the underlying drivers, in the Atlantic (Iberian coast) and Mediterranean. The project will offer opportunities to carry out research involving a combination of the following topics, with details to be agreed between the successful candidate and the supervisor team:

(a) Photogrammetry, sampling and DNA analysis of breath microbiome to provide indices of individual health status and condition that can be used to infer contemporary population status (in collaboration with CIMA Foundation and University of Copenhagen);

(b) Analysis of historical and archaeological records to construct timelines of fishery activity and dolphin population status (in collaboration with the Groningen Institute of Archaeology, zooarchaeology unit);

(c) Reconstruction of contemporary dolphin trophic interactions and investigation of impacts of fishing by analysing stomach contents and stable isotopes (SI) in stranded and bycaught animals, and extension of results on diet through lifetimes by SI analysis of growth rings in dolphin teeth and into deeper time using SI in museum and archaeological specimens (in collaboration with Instituto Español de Oceanografía and various strandings networks);

(d) Assessment of contemporary and historical dolphin-fisheries interactions using ecosystem models.

This project offers secondments (totalling up to 30% of the project period) with University of Copenhagen (DK, microbiome DNA analysis), University of Groningen (NL, analysis of historical and archaeological records) and CIMA Research Foundation (IT, breath microbiome sampling)

and photogrammetry) as well as collaboration with Instituto Español de Oceanografía (ES, cetacean diet, stable isotope analysis), Dolphin Biology and Conservation (IT, past and current threats to dolphins in the Mediterranean). Collaborating strandings monitoring networks will provide access to samples and data as well as logistic support and several strandings monitoring networks (including TUDAV (Turkey), NWRES (Libya), and TDP (Tunisia)).

Additional training: the successful candidate will have access to doctoral courses at the university of Vigo as well as network training events and courses offered by other network partners.

Host institutions: *The Institute of Marine Research, Consejo Superior de Investigaciones Científicas (IIM-CSIC)* undertakes research on oceanography, global change, fisheries ecology, stock assessment, biodiversity, reproductive ecology, aquaculture, larval rearing, microbial ecology, marine pollution and conservation of marine endangered species. It runs long-term projects on ecology of coastal and shelf ecosystems, studying organisms from phytoplankton to cetaceans, and the environmental (natural and anthropogenic) factors affecting their abundance, distribution and dynamics. **CSIC** is the largest public research institution in Spain and the third largest in Europe, hosting over 4000 doctoral and post-doctoral researchers across 138 institutes. Its mission is to foster, coordinate, develop and promote scientific and technological research, of a multidisciplinary nature, in order to contribute to advancing knowledge and economic, social and cultural development, as well as to train staff and advise public and private entities on this matter. *The University of Vigo* offers a wide range of degree programmes at BSc, masters and PhD levels, the latter including its international Do*Mar programme in marine science, technology and management. Excellent research infrastructure included fully equipped laboratories at the Marine Science Station of Toralla (ECIMAT) and the Marine Sciences Faculty.

Funding: The PhD will be funded for 3 years, starting in October 2019, through the SeaChanges innovative training network. As an early stage researcher, the successful candidate will receive a 36-month employment contract based on a monthly allowance of around €3100 (gross, before deductions) plus €600 mobility allowance and, when applicable, a family allowance of €500 per month. The receiving institution receives an additional €1800 per month towards associated research, training and networking costs.

Entry requirements: applicants must hold a first degree and a master's degree in relevant subjects (for example, marine biology, archaeological science, environmental science, etc.), and should not have a PhD. According to the **eligibility criteria** (relating to residency and research experience) for Early Stage researcher positions within Marie Skłodowska-Curie Actions:

- Applicants must **not** have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation (in this case, Spain) for more than 12 months in the three years immediately before the date on which the PhD contract starts.
- Applicants should be within the first four years (full-time equivalent) of the start of their research careers, measured from the date they obtained the degree formally entitling them to begin a doctorate. *University of Vigo requires PhD students to have a master's degree so the clock starts when the master's degree is awarded. Periods of employment in non-research jobs and periods of unemployment do not count towards the four years. Periods spent doing part-time research count according to the % of time spent doing research. Thus, 2 years doing research with a 50% time contract counts as 1-year full-time equivalent. If in doubt, please contact us (e-mail addresses below).*

Relevant experience: some experience in one or more of the following subject areas would be advantageous: analysis of fish remains from marine predator diets and/or archaeological sites; stable isotope analysis; statistical modelling; ecological modelling; systematic literature review. The work will demand good language skills (for example for reading historical documents).

Application procedure: applicants should send their CV (no more than 4 pages) and a letter of motivation (no more than 2 pages) to Graham Pierce g.j.pierce@iim.csic.es, copied to Francisco Rocha frocha@uvigo.es.

Information on other PhD opportunities in the SEACHANGES network, see:

<https://sites.google.com/york.ac.uk/seachanges/network>.