

Project Writing

Are you looking for writing a thesis in Marine Mammals Science?

BDRI offers a limited number of independent studies to advanced undergraduate and graduate students. We do not confer degrees but rather provide a research environment including a fully equipped and staffed laboratory, accommodation, and assistance in the field by well-motivated and trained volunteers.

The Bottlenose Dolphin Research Institute (BDRI) invites applications for dissertation/thesis projects in a dynamic, international, and competitive research environment. The main research topics of the BDRI include cetacean's ecology, ethology, ecological modelling and bioacoustics, with focus on bottlenose dolphins in different parts of the world (Mediterranean and Atlantic waters). Highly motivated bachelor and master students in the fields of zoology, marine biology, veterinary and related disciplines are invited to apply for a thesis project at the Bottlenose Dolphin Research Institute (BDRI).

To carry out a thesis with the BDRI means that you, as a part of one of our long-term research projects (that will be assigned to you) will extract your thesis work. Students will participate in an on-going, long-term research program dealing with marine mammals' research in the Arousa Firth (NW Spain). The student is involved in data collection and data analysis of the project with supervision of Bruno Díaz López (BDRI's Director and Chief Biologist) and Séverine Methion (Marine Biologist).

Below you can see a list of the thesis topics that will be offered in 2017 and 2018 at BDRI's headquarters in O Grove, Spain:

BIOACOUSTICS. These projects will include analysis of bioacoustical and behavioural data recorded from two study areas characterized by different levels of anthropogenic impact (Mediterranean Sea from 2005 to 2013 and Atlantic waters from 2014 to 2017). These projects will explore the use of social vocalizations in different geographic populations and different contexts (feeding, socializing, travelling) looking for geographic and contextual similarities in social sound use. Outcomes of these studies will provide more information on the function of specific social vocalisations and influence of the environment. Applicants should have a strong interest in bioacoustics, and previous experience in acoustic analysis techniques (preferred).

BEHAVIOUR. These projects will include analysis of behavioural data recorded from two study areas (Mediterranean Sea from 2005 to 2013 and Atlantic waters from 2014 to 2017). Outcomes of this study will provide more information on the impact of human activities on dolphins' behaviour. Applicants should have a strong interest in ethology, and previous experience in behavioural data collection techniques (preferred).

ECOLOGY. These projects will include spatial analysis and creation of models from data recorded in Sardinia, Italy (from 2005 to 2013) and Galicia, Spain (from 2014 to 2017).

Outcomes of this study will provide more information on the impact of human activities on cetaceans' distribution. The Galician firths (known as Rías) on the North western coast of Spain have been identified as an area of year-round presence of bottlenose dolphins and harbour porpoises and are thus a suitable area for exploring the location of possible special areas of conservations (SACs) under the EU Habitats Directive. Applicants should have a strong interest in GIS and/or modelling, and previous experience in GIS use (preferred).

SOCIETY and MARK-RECAPTURE. These projects will include analysis of mark-recapture data recorded from two study areas (Mediterranean Sea from 2005 to 2013 and Atlantic waters from 2014 to 2017). Outcomes of this study will provide more information about dolphins' society and the impact caused by human activities. Applicants should have a strong interest in photo-identification and social studies, and previous experience in photo-identification techniques (preferred).

Many other projects can also be developed dealing with such things as mark-recapture techniques, study of skin marks, dolphins' society, and ecological modelling. Consult with the BDRI to explore the possibilities (info@thebdri.com).

Research season and internship duration

The research season starts each year in January and ends in December. Start and end dates of internships are flexible but the position generally requires a minimum of 120 days (Masters) or 60 days (Bachelors) continuous commitment sometime between January and December. If the student intends to receive academic credit, he/she will be responsible for making all arrangements with their educational institutions.

Participation fee

The BDRI is a private and self-funded centre, hence, there is an internship fee including the supervision, training, accommodation in an apartment, and other expenses derived of your participation (use of equipment, lab work, field trips, use of research vessel). This fee covers added supervision and guidance, the paperwork associated, as well as the use of BDRI resources. Students carrying out these projects are encouraged to try for extramural or university funding to offset these costs. Students will be expected to undertake normal intern activities. Any analysis and writing will be done in your own personal time or after your stay at the lab. All independent projects will contribute to one of the ongoing research projects being carried out by the institute. This allows for simultaneous use of equipment and better supervision and guidance. Successful applicants will be responsible for their own food and transportation expenses to and from the research centre (O Grove, Galicia, Spain).

Expectations for writing a thesis at BDRI

The BDRI has an already developed methodology for data collection in the field, we collect different types of variables that will be used to answer questions regarding the studied animals and their surroundings. It is very important to understand that it is ultimately the student's responsibility for making adequate progress toward completion of his or her thesis and for

producing high quality work. Remember, the thesis project should be the result of work that is independently conducted. Our centre understands the importance of giving the participant the responsibilities and experience which give an insight and reflect the ones of a true future job in the field of marine mammal science. Hence, you will be expected to think for yourself and work hard in order to apply the theory you have learnt in university, but also to learn new things through the process of performing your work. The role of the BDRI supervisor is to guide you during your thoughts and work. Helping to shape, refine and direct you in your choices and different steps of your dissertation.

A dissertation should demonstrate the following from the student concerning the field of study:

- ✓ Awareness and understanding of important current work in the field
- ✓ Ability to plan a research activity
- ✓ Knowledge and motivation to carry out the planned research activity
- ✓ Ability to analyse the results of the research
- ✓ Ability to draw reasonable conclusions from the research
- ✓ Ability to complete a written description of the work in the form of a well-written, properly organized thesis

Elaboration of a proposal

When applying to perform your thesis with the BDRI, you will need to do some research on the subject and the study area and write us a short proposal. The BDRI has an already developed methodology for data collection in the field, we collect different types of variables that will be used to answer questions regarding the studied animals and their surroundings. Additionally, you may find other variables that could be of interest to collect for your work. In this case, you will need to clearly specify these and the method that could be applied in order to collect this data.

In general, your proposal needs to describe the data collection, what you are going to do with the data, how it will be processed and analysed and most important – the objectives of the thesis. These points must be accurate and detailed, not only for us to understand what it is that you would like to do, but also for you to accurately plan and organize the work that you want to perform. Your proposal will thereafter be reviewed and you will be informed about the possibility and adequacy of performing the specified work with us.

Study area

The study area of the Bottlenose Dolphin Research Institute is the north-western coast of the Iberian Peninsula (Galician coastal waters in north-west of Spain). More specifically the waters of Ría de Arousa (Firth of Arousa) which is a part of the Rías Baixas (The Baixas firths). This coast is characterized by high biodiversity and productive fisheries, supported by nutrient input due to an important upwelling. Twenty species of cetaceans have been recorded in Galician waters, of which the most abundant appear to be short-beaked common dolphins (*Delphinus delphis*) and, in the coastal rías, bottlenose dolphins (*Tursiops truncatus*) and harbour porpoises (*Phocoena phocoena*). Other species present in the area include Risso's dolphins (*Grampus griseus*), minke whales (*Balaenoptera acutorostrata*), killer whales (*Orcinus orca*) and long-finned pilot whale (*Globicephala melas*). The BDRI is performing the first systematic research-

vessel based coastal surveys of cetaceans along the interior waters in Galicia, hence, there is a great array of research questions to be answered regarding the studied animals and their environment.

How the research will be undertaken?

During your internship you can expect to participate in and gain experience from a variety of facets and in different BDRI long-term projects in Galicia. However, your thesis work will be using data corresponding with the BDRI's research project.

We are collecting information about ecology of free-ranging common bottlenose dolphins from both boat based and land based platforms. We are working to provide baseline data on the cetacean species present in coastal waters, their distribution, their abundance, their habitat use, their social structure, dolphin's communication and impact of human activities. This is particularly important in the interior waters of the Galician rias (firths) and in shallow coastal waters over rocky bottoms which are not accessible to larger survey boats.

From the information included bellow you will be able to define a specific subject as part of these general research projects. Boat based observations with photo-identification sampling will be complemented with land-based observations. We will be collecting both environmental (sea state, wind, swell, depth, tides, slope, etc.) and anthropogenic (marine traffic, fisheries, etc.) data. The equipment used by the BDRI for this project corresponds to: research vessel (11.5m, fully equipped for navigation), sonar, GPS, cartographic plotter, binoculars, scoping view, anemometer, secchi disc, plankton net, microscopes, thermometer, compasses, photo cameras and camcorders, clipboards and datasheets, office with computers equipped with necessary softwares (Office package, GIS, Photo-ID and Statistical softwares, etc.), bibliographical material and digital library for scientific articles, wireless access and other facilities.

The bottlenose dolphin, *Tursiops truncatus*, has a worldwide distribution from temperate to tropical seas, displaying strong behavioural and ecological plasticity that allows it to inhabit marine and estuarine ecosystems, even ranging into rivers. Under Annex II of the European Union Habitats and Species Directive (92/43/EEC), bottlenose dolphins are considered priority species for conservation in European waters. Conservation issues for cetaceans in Galician waters include interactions with fisheries, which may be a significant cause of mortality, overfishing, and oil spills. Therefore, understanding the structure of this dolphin population and its relationships with other groups/populations should be a pre-requisite to establishing appropriate management units and define future Special Areas of Conservation (SACs) as required by the EU Habitats Directive (92/43/CEE).

Applying for a project

If you are interested in undertaking an independent project, please complete the normal application form and email severine@thebdri.com with your interest and your ideas. Once accepted as an intern, we can discuss potential projects and you will be expected to produce a suitable project proposal prior to your arrival.

We look forward to your participation and a successful research experience at the BDRI and thank you for your interest.

Insurance for project student

All independent project students are required to carry accident and health insurance. The BDRI will not be liable for insuring the student or covering any medical payments, including repatriation, should an accident occur. The BDRI will not assume liability for the student other than the usual and ordinary liability around the station's property or while on our vessels. All students, volunteers and staff must sign a legally-binding waiver of insurance. This must be made clear to the student's mentor and university or institutional representatives.

Terms and conditions

The BDRI has, as part of the Galician marine mammals networking (CEMMA), a research permit delivered by the Galician Government (Xunta de Galicia), in order to approach and study marine mammals. Hence, the BDRI has developed policies to govern the use of data as a result of BDRI activities.

If you wish to write your thesis or a report with the BDRI, the final manuscript must be presented and approved by BDRI's Director in writing before presentation to the University.

A copy of the final thesis or report must be sent to the BDRI by email (pdf copy).

At the beginning of the thesis, the following statement should appear:

"This thesis has been conducted in collaboration with the Bottlenose Dolphin Research Institute BDRI that has officially authorized me to use the data to elaborate this thesis. This is an unpublished thesis and is not prepared for further distribution. The author and the BDRI give the permission to use this thesis for consultation and to copy parts of it for personal use. Every other use is subject to the copyright laws; more specifically the source must be extensively specified when using results from this thesis."

In the acknowledgment section, the following statement should appear:

"Funding for this research came from the Bottlenose Dolphin Research Institute - BDRI. This study would not have been possible without the cooperation of all the BDRI members and volunteers who gave generously of their time to help with field work. Data collection complies with the current laws of the country in which it was performed, Spain."

All data originating from the work done by students in collaboration with BDRI are entirely the property of BDRI. In case of publication of all or part of the thesis data, or in case of a presentation of the data during a scientific conference or in any other public context, authorship (including main author and co-authors) is entirely the BDRI director's decision. "Personal communication", "BDRI unpublished data", and similar ways of presenting data collected and analysed by others are acceptable only if the persons involved have approved such citations. Written authorization may be required from the BDRI advisor. All data used for the thesis are only for the thesis work and not for other purpose. It is strictly forbidden to give or share the data used for the thesis to any other person (i.e. intern, student, professor etc).

The equipment on which data and results are recorded – notebooks, tapes, computer hard-drives and other memory media – are the property of the BDRI. You cannot copy or use the data without previous written authorization.

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