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BOTTLENOSE DOLPHIN RESEARCH INSTITUTE - BDRI

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www.thebdri.com*

FIELD RESEARCH ORIENTED COURSES IN MARINE MAMMALS SCIENCE (FRC)

Participate in the research dedicated to contribute to the understanding and conservation of cetaceans, expand the public's knowledge and concern for our marine environment, and add to the knowledge base of bottlenose dolphins through the analysis of collected field data



Be part of the BDRI while playing a part in the Conservation and Research of Dolphins and their Environment.

- Live on, contribute to, learn about, travel to and explore -



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PLEASE READ THIS MATERIAL CAREFULLY BEFORE JOINING THE PROGRAM.
BRING IT WITH YOU TO THE FIELD AS IT CONTAINS IMPORTANT INFORMATION.



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1. GENERAL INFORMATION

PRINCIPAL INVESTIGATOR:

Chief Biologist and Director, Mr. Bruno Diaz Lopez.

AFFILIATION:

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FIELD COURSES SITE: Golfo Aranci, Sardinia, Italy

RENDEZVOUS POINT: Golfo Aranci, Sardinia, Italy

FIELD RESEARCH COURSES LENGTH: 10 days

MINIMUM AGE OF PARTICIPATION: 18 years of age

TUITION AND PROGRAM FEE: from 975 Euros

FINANTIAL AID: from 10% to 25%



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2. INTRODUCTION TO FRC IN MARINE MAMMALS SCIENCE

FRC provide an in-depth, hands on immersion into the field of marine mammal science and more particularly bottlenose dolphin research. These academically intensive training courses abroad are developed with varied curricular designs and varied instructional strategies in order to meet specific learning goals. This program surveys an extensive amount of knowledge, theories and ongoing investigations concerning bottlenose dolphins, their environment and related subjects.

These training courses are specifically designed for students (undergraduate and postgraduate) seriously interested in pursuing a career in marine mammal science.

Courses are participatory in nature and are designed to stimulate inquiry and active learning. The exclusive FRC learning model helps students to connect the conceptual material presented in each course to case studies, learn field research techniques, collect and analyze field data, and develops holistic and critical thinking skills.



FRC are divided in three exclusive training courses:

Intermediate Level:

- Monitoring coastal bottlenose dolphin populations (*FRC 1001*)

Advanced Level:

- Social relationships and communication in a fission-fusion society (*FRC 1002*)
- Conservation and management of bottlenose dolphin populations (*FRC 1003*)

Each course combines exclusive lectures, hands on boat based and computer exercises, assignments and tests. Students will be trained during each FRC in a wide range of areas including scientific data collection, field research concepts and methodology, computer orientation, use of statistical analysis, presentation and report of findings, and much more.

The aim of each FRC is to give the participants sufficient knowledge to apply the appropriate specialized non-invasive dolphin research techniques, analyze, give an interpretation of the results, and a final presentation. You might well leave a course with a research project to carry out in a location of your choice!

The courses are limited to six students to ensure individualised instruction, so that the courses provide an opportunity for students to interact closely with the course instructor(s), and to collaborate with other students who share the same interests.

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FRC are also addressed to groups (scientists, university students) hence it is possible to arrange with the BDRI special requirements regarding language and dates to suit the different groups’.

Research courses can be used for academic or vocational purposes, but students are solely responsible for making all arrangements for receiving relevant credit(s) as a result of completing the training course. The program is intensive and highly structured. However, if you choose to enroll in two consecutive courses, please contact the BDRI as dates can be arranged to suit your requirements. Course syllabus, course text(s), software(s) and other educational materials will be furnished by the BDRI within 10 days after the student acceptance.

The BDRI is not a tour operator or dolphin watching organisation, but a well organised team of researchers carrying out one of the longest ongoing research projects of a resident dolphin population in the Mediterranean Sea. BDRI is partner to ACCOBAMS, the UNEP's Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area.

The FRC are conducted onsite in Sardinia (Italy) by the BDRI’s director:



Mr. Bruno Díaz López. He is originally from Spain and is the founder and chief biologist of the BDRI. Bruno has studied marine mammals since 1995, in both the Atlantic Ocean and Mediterranean Sea. He has published over 40 scientific articles in international journals and conferences and has delivered a number of lectures and public talks on cetacean research and conservation around Europe. He has also performed specific bottlenose dolphin studies in Sardinia since 1999. Bruno is moreover a reviewer of the most important journals of marine biology and animal behaviour.

3. FRC DESCRIPTION

<i>FRC level</i>	<i>FRC titles</i>	<i>Course hours</i>	<i>Course code</i>
<i>INTERMEDIATE</i>	Monitoring coastal bottlenose dolphin populations	72 hours	FRC 1001
<i>ADVANCED</i>	Social relationships and communication in a fission-fusion society	72 hours	FRC 1002
	Conservation and management of bottlenose dolphin populations	72 hours	<i>FRC 1003</i>

Intermediate field research oriented course:

Monitoring coastal bottlenose dolphin populations (FRC1001)

This training course provides an in-depth, hands on immersion into the field of marine mammal science and more particularly bottlenose dolphin research. This FRC surveys an extensive amount of information, theories and ongoing investigations concerning the different methods available to characterise the status of a coastal bottlenose dolphin population. This course also contains various hands on boat based and computer exercises.



The variety of subjects approached on this course offers a broad view of applied dolphin field research whilst providing students with the tools and practical experience needed for a greater understanding of coastal bottlenose dolphin populations and their conservation, as well as deeper insight into behavioural research concepts and methodology.

Lecture topics include: Biology, Anatomy & Physiology of Bottlenose dolphins, Sighting methods (boat-based surveys, line transect surveys, land-based surveys), Mark-recapture methods, Bioacoustic methods, Behavioural sampling and records (states vs events), Conservation of bottlenose dolphins, Stranded cetaceans, BDRI's Current Research, Statistical analysis, computer orientation (use of GIS, fin-recognition software packages, sounds analysis software, and databases), guidelines for creating scientific posters and presentations.

Course Outcomes

As a result of successful completion of this course, you will be able to:

- ✓ Select and use an appropriate research method available to characterise the status of a coastal bottlenose dolphin population.
- ✓ Design a survey to monitor a coastal bottlenose dolphin population.
- ✓ Establish and follow line transect boat based surveys and explain the importance of experimental design.
- ✓ Use the photo-identification technique, and discuss the strengths and weaknesses of this method.
- ✓ Extract manually and automatically dolphin dorsal fin outlines from digital photographs, identify individuals and create a catalogue.
- ✓ Discriminate the different types of bottlenose dolphin vocalizations by visual and aural analysis of the sonograms.
- ✓ Obtain detailed views of dolphins' behavior by focal following (individual and groups).

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- ✓ Assist the rescue of stranded bottlenose dolphins and direct a group of volunteers in basic first aid procedures.
- ✓ Apply appropriate statistical techniques on biological data sets and give an interpretation of the results.
- ✓ Create a scientific poster and give a scientific oral presentation.

Advanced field research-oriented courses:

Social relationships and communication in a fission-fusion society (FRC1002)

This advanced course provides an in-depth, hands on immersion into the field and laboratory methods for behavioural ecology and communication of bottlenose dolphins. This training course aims to provide specialization in behavioural methods, focusing in particular on bottlenose dolphin social behaviour and communication, achieving an integrated approach to the understanding of the behavioural complexity of this species. This course contains two modules. The first module will introduce students to the main type of field and analytical methods concerning social relationships and communication of wild bottlenose dolphins. In the second module, course attendants will apply all methods on case studies, and perform analyses of example data. The first module contains various hands on boat based and computer exercises.



As a result of successful completion of this specialization course, attendants will gain a deeper insight into behavioural research concepts and methodology, underlying social dynamics and communication. By the end of the course, students will be able to design a simple project to assess the social organization of a bottlenose dolphin population. In addition, course attendants will get experience in using bioacoustical methods via computer practical sessions involving classification and analyses of bottlenose dolphin vocalizations.

Lecture Topics Include: Review of bottlenose dolphin field studies, Anatomy & Physiology, Life history & Reproduction, Population dynamics, Closed Mark-recapture methods, Association patterns, Hinde's framework, Bioacoustic methods, Vocal production & repertoire, Whistle acoustic features, Signature whistles, BDRI's Current Research, Statistical analysis, computer orientation (use of fin-recognition software packages, SOCPROG, Spectograms and databases).



Course Outcomes

As a result of successful completion of this course, you will be able to:

- ✓ Design a simple project to assess the social organization of a bottlenose dolphin population.
- ✓ Describe and quantify the vocal repertoire of a bottlenose dolphin population via computer practical sessions.
- ✓ Estimate population abundance using closed mark-recapture methods applied to photo-identification data.
- ✓ Explain the importance of the photo-identification technique, and discuss the strengths and weaknesses of this method.
- ✓ Establish and follow line transect boat-based surveys and explain the importance of experimental design.
- ✓ Extract manually and automatically dolphin dorsal fin outlines from digital photographs, identify individuals and create a catalogue.
- ✓ Use Hinde's framework for the study of social behaviour
- ✓ Describe the patterns of association of a coastal bottlenose dolphin population and test if bottlenose dolphins have preferred or avoided associates
- ✓ Calculate the association index, Mantel tests, matrix correlation coefficients, and the Monte Carlo permutation tests using the software SOCPROG
- ✓ Outline the whistle acoustic features of free-ranging bottlenose dolphins and determine the contour of whistles by visual analyses of the spectrogram.
- ✓ Discriminate the different types of burst pulsed sounds by visual and aural analysis of the sonograms.
- ✓ Apply appropriate statistical techniques on biological data sets and give an interpretation of the results.

Conservation and management of bottlenose dolphin populations (FRC1003)

A science-based response to the conservation problems created by interactions between human activities (fisheries, aquaculture and tourism) and dolphins depends critically on accurate knowledge of the impacts caused by the interactions. In that sense, this advanced course provides an in-depth, hands on immersion into the field and laboratory methods available to study these interactions. This field research-oriented course surveys an extensive amount of knowledge and ongoing investigations concerning marine mammals' conservation, achieving an integrated approach to address human-bottlenose dolphin conflicts and advice on mitigation.

This course contains two modules. The first module will introduce students to some of the methods available to assess the impact of human activities (fisheries, aquaculture and tourism) on bottlenose dolphin populations. In the second module, course attendants will apply all methods on case studies, and perform analyses of example data. The first module contains various hands-on boat-based and computer exercises.



As a result of successful completion of this specialization course, attendants will gain a deeper insight into the various factors influencing the incidental capture of bottlenose dolphins, and explain the importance of local, national, and international policies that aim to protect bottlenose dolphin populations. By the end of the course, students will be able to design a simple project to assess the impact of human activities on bottlenose dolphins. In addition, course attendants will get experience in using an ecosystem modeling approach to examine the impact of human activities on bottlenose dolphins and vice versa.

Lecture Topics Include: Biology and Conservation of Bottlenose dolphins, Ecological Modeling, Threats to cetaceans, Overview of methods used to quantify by-catch and damage, Aquaculture industry, Gill-net fisheries & Trawlers, Mark-recapture methods, Foraging behaviour (Predation & Depredation), Incidental captures & By-catch, Boat traffic & Acoustic disturbance, Stranded cetaceans, Anti-predator nets, Acoustic deterrent & harassment devices, BDR's Current Research, Statistical analysis (univariate and multivariate), computer orientation (use of Ecopath, sonograms and databases).

Course Outcomes

As a result of successful completion of this course, you will be able to:

- ✓ Design a simple project to assess the impact of human activities on bottlenose dolphin and analyze the steps needed to protect the population.
- ✓ Select and use an appropriate method to quantify by-catch and damage.
- ✓ Examine the impact of fisheries and aquaculture on bottlenose dolphins using an ecosystem modeling approach.
- ✓ Discuss the various factors influencing the incidental capture of bottlenose dolphins, and explain the importance of local, national, and international policies that aim to protect bottlenose dolphin populations.
- ✓ Design a simple project to address the incidental capture issue by implementing mitigation methods to reduce dolphin mortality.
- ✓ Analyze the use of acoustic deterrent devices, their impact on bottlenose dolphins, and discuss their effectiveness.
- ✓ Determine environmental and anthropogenic variables that may influence the interaction between bottlenose dolphins and human activities.

- ✓ Create a mass-balance model to characterize the role of dolphins in a coastal ecosystem conditioned by aquaculture.
- ✓ Discuss the effects of the worldwide expansion of aquaculture industry on bottlenose dolphins.
- ✓ Monitor the impact on populations using closed mark-recapture methods.
- ✓ Assist the rescue of stranded bottlenose dolphins and direct a group of volunteers during a full assessment of the animal's condition and basic first aid procedures.
- ✓ Apply appropriate statistical techniques on biological data sets and give an interpretation of the results.
- ✓ Explain the importance of the ecological-based approach, and discuss the strengths and weaknesses of this method.



4. COURSES FORMAT AND ELEMENTS

The academic program is 10 days long, and each day contains activities and assignments designed to increase understanding and application of a given topic. Each day includes some or all of the following elements:

Introduction and learning outcomes

The introduction presents an overview of the day's topic, and the learning outcomes indicate what you should be able to do by the end of the day that demonstrates your mastery of the topic.

Lectures and learning resources

The FRC lectures survey an extensive amount of information, theories and ongoing investigations concerning bottlenose dolphin research. Learning resources for each day may include to watch videos and to read from scientific articles, PowerPoint slides, etc.

Hands on activities

A hands on activity often is a practical field or laboratory assignment (i.e. use of GPS onboard to follow a linear transect, quantify vocal repertoire via computer practical sessions).



Discussion

Daily discussion is an activity based on the underlying belief that students learn from one another, hopefully ending with a constructive brainstorming on the specific topic. For discussion in these courses, the instructor may place students into small groups.

Content review quiz

Some quizzes may count toward your course grade whereas some quizzes may be for practice. There may be a quiz every three days and a final exam in Day 10.

Day off

Throughout all courses, one day a week is reserved for studying and relaxing (generally Sundays).

During program time you will find yourself following a rigorous schedule, however, one must be very flexible for changes occur all of the time! Please be aware that the schedule may vary depending on season, weather and FRC priorities. For instance, a windy day may force the staff to cancel a survey at sea and instead conduct hands on video and computer analysis.

Please try to be flexible and understand that a program dealing with wild animals at sea cannot be 100% predictable. After the first day of orientation, the program will include a minimum of 8 hours of contact field work and lectures each day. Expect to wake up between 6:00 am and 8:30 am depending on the activities scheduled and period of the year. The program is intensive and highly structured. Generally classroom lectures alternate with field sessions. If lectures are before lunch, time after lunch will be in the field and viceversa.

On the next page you can find an idea of the schedule you will be following during your participation;

Committed Conservation



Monday – 1st day	Morning (9:00 AM - 13:30 AM)	Arrival at the BDRI center, ice-breaking session. Course introduction, basic orientation and information about safety and operational objectives.
	Afternoon (16:00 AM – 18:00 AM)	Introduction and Learning outcomes, Lectures
	Evening (18:30 AM – 20:00 PM)	Hands-on exercises, video session and discussion.
2nd – 3rd – 4th – 5th day	Morning (8:00 AM - 13:00 AM)	Lectures, hands-on computer exercises / Field session at sea – hands on field exercises.
	Afternoon (16:00 AM – 18:00 AM)	Lectures, hands-on computer exercises / Field session at sea – hands on field exercises.
	Evening (18:30 AM – 20:00 PM)	Discussion, video session, content review quiz.
6th day	Morning (8:00 AM - 13:00 AM)	Introduction and Learning outcomes, Lectures
	Afternoon (16:00 AM – 18:00 AM)	Hands-on laboratory exercises, computer orientation.
	Evening (18:30 AM – 20:00 PM)	Discussion, video session, content review quiz.
7th Day		Day off
8th – 9th day	Morning (8:00 AM - 13:00 AM)	Lectures, hands-on computer exercises / Field session at sea – hands on field exercises.
	Afternoon (16:00 AM – 18:00 AM)	Lectures, hands-on computer exercises / Field session at sea – hands on field exercises.
	Evening (18:30 AM – 20:00 PM)	Discussion, video session, content review quiz.
10th Day	Morning (8:00 AM - 13:00 AM)	General review of FRC contents, Oral presentations.
	Afternoon (16:00 AM – 18:00 AM)	Final exam, Certificate of attendance for course attendants, pack-up and departure.



Evaluation and Grading Scale

FRC are rigorous and challenging, and our approach mandates that students demonstrate their knowledge of theory and practice by applying such theory and practice to actual problems. Grades will be determined by a percentage of total points earned on all course elements. As FRC exams are based on application of knowledge, rather than rote memorization, the courses are generally thought of as difficult. Do not expect grading to be similar to your university, many students are surprised by how hard the professor grades.

Grade	Percent	Points
A	90–100 %	4.0
B	80–89 %	3.0
C	70–79 %	2.0
D	60–69 %	1.0
F	below 60 %	0

FRC programs are foreign based, field orientated, and require fulltime on site participation in all program activities; therefore, BDRI does not grant incompletes.

Academic Expectations

The academic atmosphere we try to create at BDRI is that of a community of learners. Students come from a wide range of universities worldwide as well as from a variety of academic backgrounds. You will be able to challenge yourself intellectually in areas you are not familiar with and to act in a leadership role in those areas in which you have expertise.

It is strongly recommended that each student keep copies of all written papers, completed tests, assignments, lecture notes, handouts, and reading assignments for the student's own future use, and for possible discussions with faculty advisors.

BDRI can not guarantee that students will receive credit for their FRC from their home institutions. It is the responsibility of the student to arrange credit with their home school prior to FRC participation. Students intending to receive academic credit at their home institution should speak with their academic advisor about how to best proceed. Students should allow time to have their FRC program approved by their advisor and other appropriate personnel before the start of the program.

Data and Educational Materials Ownership

BDRI is the owner of all work products developed and research data collected by students while participating in an FRC program or through the use of facilities or funds provided by or through BDRI. No student may utilize these data for any purpose other than scholarly FRC works. The use of these data by students for undisclosed and unapproved personal benefit or commercial application, financially or professionally or in any other way is not permitted.



Students who have collected data during their FRC will have access to all of that specific data (and no other data) for a one year period after completion of their FRC for the explicit purposes of developing thesis or other scholarly work.

COURSE CODE	DATES	STUDENTS DISCOUNT
FRC 1001	12 th March – 21 st March	25%
	30 th April – 9 th May	10%
	4 th June – 13 th June	10%
	16 th July – 25 th July	10%
	13 th August – 22 th August	25%
	24 th September – 3 rd October	25%
FRC 1002	9 th April – 18 th April	25%
	14 th May – 23 th May	25%
	18 th June – 27 th June	10%
	30 th July – 8 th August	10%
	10 th September – 19 st September	10%
	8 th October – 17 th October	25%
FRC 1003	16 th April – 25 th April	25%
	30 th April – 9 th May	25%
	2 nd July – 11 th July	10%
	27 th August – 5 th September	10%
	22 th October – 31 st October	25%

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5. TUITION, PROGRAM FEE AND STUDENT DISCOUNT

Courses Language: English. If there are 3 or more students interested, it is possible to organise a course in either Spanish or Italian.

Tuition & Program fee: Intermediate Course: 1300 Euros / Advanced Courses 1500 Euros.

INTERMEDIATE COURSE		original price 1300 EUROS
Students (with financial aid*)	<i>Fall-Winter</i>	975 EUROS
	<i>Spring-Summer</i>	1170 EUROS
ADVANCED COURSES		original price 1500 EUROS
Students (with financial aid*)	<i>Fall-Winter</i>	1125 EUROS
	<i>Spring-Summer</i>	1350 EUROS

Students discount: As a number of are unable to meet our program and travel costs BDRI offers a discounted price, covering approximately between 10% (spring-summer season) and 25% (fall-winter season) of the tuition and program fee (i.e. Intermediate Course fee 975 in March). Please notify the BDRI if you are a student in your FRC application (students must show a valid student card on arrival to the center).

The tuition and program fee includes tuition, accommodation (see below in: Accommodation), hand on research training, lectures, certificate of attendance, educational materials and all associated field (boat-based surveys, etc) and lab costs. The program is intensive and highly structured. However, if you choose to enroll in two consecutive courses, please contact the BDRI to receive information about dates.

At BDRI students live and work with other students. Residential life provides opportunities for students to develop and demonstrate leadership, good communication, teamwork, and other group-dynamics skills. Participants will share rooms with 1-3 persons of the same gender. The apartment has a full kitchen (gas and electricity included) and a full set of cooking utensils. Team members are strongly encouraged to plan meals that the entire group of volunteers can eat and cook together. Foods of all kinds are available at your own expense at the local supermarkets within walking distance.



FRC APPLICATION

Pre-approval is necessary for registration. There is no deadline to apply. However, approved applications are accepted on a first come, first serve basis. Apply early! Positions are open until filled.

- Read through this general information carefully, decide which period interests you, and take note of any dates that may be preferred. Please download the application form at:

www.thebdri.com/resources/downloads/applicationcourses.rtf

- Afterwards please fill in and send by email the application form to info@thebdri.com, to confirm availability.

You can send the confirmation fee (20% of the total tuition and program fee) by:

- 1) previous bank transfer in Euros with additional bank expenses included to:

BANK name: POSTE ITALIANE Banco Posta
Bank address: 00144 Rome Viale Europa 175, Italy
ACCOUNT HOLDER: BRUNO DIAZ LOPEZ
ACCOUNT address: Via A. Diaz 4, GOLFO ARANCI 07020, ITALY
BIC (BANK IDENTIFICATION CODE): BPPIITRRxxx
IBAN: IT 24 J 07601 17200 000062355862

- 2) credit card with Paypal (plus 3.9% of additional Paypal expenses) from www.thebdri.com

Candidates for admission will be acknowledged by email shortly after their complete confirmation fee arrives at the BDRI. Confirmation fee are non refundable except where the project does not go ahead. Final payment will be when you arrive in the Research base (cash) or by previous bank transfer. FRC participants should sign a statement where they accept the research and working conditions taking full responsibility for the risks.

If you must cancel your participation in a FRC, please contact the BDRI as soon as possible. We have students on a wait list who are anxious to fill any openings.

6. PROGRAM OVERVIEW

Study area

Sardinia Island is a marine biologist's paradise. An ancient land with an ancient language, Sardinia is a uniquely fascinating place, forged by many centuries of culture and history, in its strategic position at the centre of the Mediterranean. The Sardinia Island is an area of outstanding natural beauty, it has diverse land and seascapes and abundant wildlife.



Along the islands 1849 kilometers of shoreline there are some of the most beautiful marine habitats. The coasts are generally high and rocky, stretching for miles with headlands and deep inlets fringed by islands and islets, long beaches with powdery sand. Sardinia's beaches are not just for jet setters and their yachts. Wild, untamed and stretching for miles: the beaches of Sardinia are vast and varied, from high craggy cliffs to gentle sweeping dunes and juniper-sheltered coves. The crystal clear sea is unsurpassed in its sparking translucence and beguiling colours, ranging from deep cobalt blues to sheer emerald greens. In addition to its pristine coastline and due to the varied topography and the warm waters, north-eastern Sardinian waters are a very productive coastal area and contain a rich diversity of marine life.



Most of the Mediterranean species of whales and dolphins (collectively known as cetaceans) have been reported from these waters. From fin whales and sperm whales to striped and common dolphins and the resident identifiable bottlenose dolphins makes the BDRI's study area one of the most interesting habitats for cetaceans in Europe.

The project is based in the beautiful heritage fishing village Golfo Aranci, on the north-eastern coast of Sardinia (Emerald Coast). The name "Golfo Aranci" means Gulf of oranges. However, in reality Golfo Aranci owes its name to a wrong interpretation of the name "*sos aranzos*" meaning "seeds of *Posidonia* seagrass stranded along the beaches". The rugged coastline and the small island of Figarolo offer a great variety of natural habitats for wildlife with animals such as mouflons, crows, Adouin's seagulls, cormorants, land turtles, etc. The crystal clear water offers a wide variety of marine fauna much appreciated by tourist, fishers and scuba divers. In addition, Golfo Aranci encompasses the most representative harbour in terms of gillnets and trawlers fishing effort on the north Sardinia. Moreover, the presence of a floating marine fin fish farm has been linked to an important change in bottlenose dolphin distribution and behavior.





People who visit Sardinia discover not only one of the most beautiful and original places in the world but also have an unforgettable holiday. Sardinia offers visitors an array of gastronomic specialities from the classic Italian pizzas & pastas to the ancient cooking traditions of the shepherds and the sea food specialities of the coast. Sardinia is rich in both handicrafts and arts, its carpets, baskets, pottery and its gold filigree jewellery are both unique and of the highest quality.

Background and purpose of the research program

Prior to 1999, there was very little known about the bottlenose dolphins of the Sardinia Island. To address this, the Italian non-profit research organisation "*Accademia del Leviatano*" in collaboration with Dr. Bruno Díaz López, a zoologist with 17 years of experience as cetacean researcher, started the "Dolphin-project" in 1999. Over the years the project grew to encompass a wider area and more diverse range of issues and in 2004 the Bottlenose Dolphin Research Institute (BDRI) was established.



Long-term monitoring of a population is perhaps not viewed as exciting science, but is absolutely essential in order to estimate population trends and understand their causative factors. BDRI members seek to contribute to the understanding and conservation of dolphins, expand the public's knowledge and concern for our marine environment, and add to the knowledge base of bottlenose dolphins through publications of collected and analysed field data.

Using study techniques that neither harm nor seriously disturb the animals, BDRI's researchers are engaged in the conduction of a long term study about the ecology and behaviour of a Mediterranean bottlenose dolphin population, as well as collecting detailed information about their environment. Because of the high degree of behavioural and social flexibility that bottlenose dolphins have demonstrated throughout their range, it is essential to understand factors effecting local dolphins, if their populations are to be managed and conserved. Information on habitat use also seems applicable to coastal management plans.

Bottlenose Dolphins are protected by European law, but in order to develop effective protection guidelines, education and research is necessary to find out much more about the dolphins, and the pressures they face. The BDRI has educational and research programmes aimed at providing extra support for scientist early in their careers, science students, local students and scientist from developing countries - from training opportunities in the field, grants, to online and field courses.

The main purpose of this program is to contribute towards a more detailed understanding of the relationships between bottlenose dolphins and human activities. To contribute to this objective during the 2012 field season we will focus on the following objectives:



- Determine abundance, mortality rate, and birth rate of dolphins within the north-eastern Sardinia
- Identify individual dolphins, describe the patterns of association of bottlenose dolphins and describe the way in which their social separation is related to the way in which dolphins respond to the food patches created by humans
- Document habitat use and a more detailed understanding of the relationships between bottlenose dolphins - fisheries (gill-nets and trawlers) and aquaculture (obtain information on incidental capture of bottlenose dolphins in human activities)
- Mapping, in Geographic Information System (GIS), of dolphin distribution and abundance and hot-spots of interaction with human's activities in order to determine special areas of protection
- Study dolphin behaviour patterns and communication
- Compare and contrast dolphins found interacting with aquaculture with those utilizing the coastal environments
- Describe the dolphin vocalizations characteristics and changes induced by marine noise pollution

Participants can expect to take part and learn a variety of facets of marine mammals' research in diverse research projects:

➤ ***Behavioural ecology of Mediterranean bottlenose dolphins:***

We collect information about distribution and behaviour of free-ranging common bottlenose dolphins from different platforms. By using different behavioural sampling methods this study is particularly focused in the interaction of dolphins with human activities as fisheries, aquaculture and marine traffic. These studies



provide values insight for the conservation of this top predator in an area characterized by high anthropogenic pressure.

➤ ***Wild bottlenose dolphins' communication:***

We obtain knowledge of how individuals within a population of common bottlenose dolphins communicate and what they are communicating. This can generate information ranging from; measures of habitat use, social relevance, geographical



variation, cultural transmission to genetic fitness that can be applied to conservation. Although many vocalizations have been described before in the literature, the sounds produced during specific behaviours linked with human activities provides additional contextual information about their potential use as communication signals.

➤ ***The bottlenose dolphin role in the coastal ecosystem:***

We work with ecosystem models where we try to address the impacts caused by the interactions between human activities and bottlenose dolphins. An ecosystem



modelling approach becomes an interesting tool to examine the impact of fisheries and aquaculture on bottlenose dolphins and vice versa. Mass-balance models are built to characterize the role of dolphins in a coastal ecosystem conditioned by human activities.

➤ ***Pelagic cetaceans off Sardinian coast:***

Data about distribution of pelagic cetaceans (fin whales, sperm whales, beaked whales, striped dolphins, common dolphins, risso's dolphins etc.) are collected from multiple platforms including shore and research vessel based platforms. The



behaviour and distribution of large cetaceans observed off Sardinia is still unknown. While some animals could be in migration between the Ligurian and Tyrrhenian Sea, others could be mainly engaged in foraging activities. To address this question the BDRI has since 2011 carried out this project.

7. ACCOMODATION AND FOOD

The research base is located in the centre of the village Golfo Aranci. Participants will stay in the BDR I apartment for internships and volunteers, which is located in the same building as the classroom/ laboratory which also is the main meeting point. The apartment and institute is very close to numerous beautiful white sand beaches (bring your snorkel and flippers!). Project staff members do not stay at the same apartment as the team of participants. Emergency home telephone numbers for staff members will be provided upon arrival.



Participants will share a room with 1-3 persons of the same gender. Bring only the necessary gear, as there will be little storage space in the room. Bedding is not provided; bring your own blanket/sleeping bag and a pillowcase. The BDR I do not provide bathroom towels, beach towel, soap, shampoo etc. The apartment has a full kitchen and a full set of cooking utensils, electricity, hot and cold water and two full bathrooms. Students will be responsible for their own food preparation, cleaning and free-time activities. Several local restaurants and pizzerias are also available in Golfo Aranci, serving pizza, pasta, fish, seafood, fast food, roast dinners and vegetarian foods. During summer and a part of the fall season there is also a weekly local food market where you can find Sardinian specialties and other fresh groceries.



The apartment has satellite television and a reliable supply of 220-volt electricity with a standard European plug. There is wireless connection in the classroom/ laboratory, but also in a café in close proximity to the institute. Recharging digital cameras, telephones and video camera batteries is not a problem. International calls can be made through the use of international phone cards in a public telephone box just outside of the institute. Smoking is NOT allowed in the apartment, research base or onboard the research boats. No drugs of any kind and abuse of alcohol will be tolerated.

The BDR I field base has a 50 square meters classroom/ laboratory with tables, aquariums, computers, microscopes and chairs for readings, discussions and lab research. All analyses, training, briefing and data entry will be conducted in this field base.



The harbour is as close as a ten minute walk, vehicles are not necessary to move around in the small village. Everything (harbour, supermarkets, restaurants, bars, post office, etc.) can be reached by foot within minutes. A small hospital with basic facilities is available in Golfo Aranci. It is situated within 5 minutes walk from the participants' apartment.

8. PROJECT STAFF

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Two or three project staff members will be present during each season. Occasionally, visiting graduate students, volunteers and researchers will also be present. The researchers are experienced with the study area, the animals, the research protocols, safety and other logistics.

Principal Investigator:



Mr. Bruno Díaz López, originally from Spain, is the founder and chief biologist of the BDRI. He has published over 40 scientific articles in international journals and conferences and has delivered a number of lectures and public talks on cetacean research and conservation around Europe. His main interests are behavioural ecology, dolphins communication and effects of human activities on bottlenose dolphins, particularly fisheries, tourism and aquaculture. Bruno has studied marine mammals since 1995, in both the Atlantic Ocean and Mediterranean Sea. He has also performed specific bottlenose dolphin studies in Sardinia since 1999. From the University of Santiago de Compostela and University of Vigo in Spain, he has worked in different research teams in Italy and Spain, teaching marine mammals' biology, animal behaviour and mentored graduate students. He has trained a number of research assistants and has supervised more than 30 students working on their thesis about cetaceans in the Mediterranean Sea and Atlantic Ocean in the years of the BDRI. Bruno is moreover a reviewer of the most important journals of marine biology (Marine biology, ICES journal of marine science, Marine mammals science, Journal of marine biology association of the UK, Current zoology, Scientia marina, etc.). He can speak English, Spanish, Italian, Portuguese, Galician and some Japanese. Since 2004 Bruno has been living in Golfo Aranci and conducts research year round in the Aranci Gulf. He is responsible for the overall goals of the project and for training and supervising field research course students, volunteers and internships.



Miss. Selma Bajraktarevic, born in Bosnia and Herzegovina and grew up in Sweden, is since 2011 a new member of the BDRI team. She obtained her MSc degree in Marine Biology through Lund University, Sweden. Selma started as an internship at the BDRI where she carried out her master thesis on communication, more specifically the acoustic communication and associated behaviour of the common bottlenose dolphins. Hence, her main interest is the study of communication and behaviour of bottlenose dolphins. After performing her degree project, she was offered to become a member of the BDRI. She speaks fluent English, Swedish, Bosnian and some German. Since 2011, Selma is living in Golfo Aranci and helps Bruno to conduct the research. She also helps to train and supervise internships and volunteers that visit the centre.



Research assistants, invited researchers and interns are vital components of the project. These young scientists' volunteer months of their lives in exchange for research experience. The project has had students from Argentina, Australia, Austria, Brazil, Bulgaria, Canada, Colombia, Czech Republic, Denmark, England, Estonia, Egypt, Finland, France, Germany, Greece, Hungary, India, Ireland, Island, Israel, Italy, Japan, Nederland, Norway, Mexico, Panama, Peru, Poland, Spain, Sweden, Scotland, Switzerland, Turkey, US and Venezuela.

9. THE RESEARCH BOATS AND FIELD RESEARCH EQUIPMENT

The Research Boats

Depending on specific daily research objectives, either our principal research boat ("*Spartana*"), our secondary motorcraft boat "*BDRI*" will be used.



The name of our main research vessel is *Spartana*, which means unaffected, natural and modest. This perfectly also describes the spirit of our research team. She is a 10 m wooden motor boat built in Genova in 1975. During 28 years she was travelling in the Ligurian Sea (Sanctuary of Cetaceans). After many adventures, she arrived to north Sardinia in 2003 to stay on the Emerald coast. *Spartana* has now 35 years later been converted into a research vessel by BDRI's researchers. At present, she has become the project's cape caution workhorse and combines her classic looks with

her modern navigation, safety and research equipment. Equipped with two 80hp Ford diesel engines, 4 beds, a kitchen, refrigerator and toilet facilities onboard.

Additionally, the vessel is equipped with VHF, compass, two way radios, mobile phone, flashlights, flares and smoke signals, navigation lights, bell, rescue dinghy, life-rings, lifejackets, fire extinguishers, first-aid kit, anchor, nautical cards, radio-stereo, water pumps and a number of other safety devices. The research vessel meets all safety and inspection standards required by Italian Government and Guard Coast. Among the research equipment found onboard, we have a fish finder, echo sounder, surface water thermometer, GPS, anemometer, Secchi disk, binocular, digital time recorders, laser night vision monocular, one computer, voice recorders, a rigid hull inflatable boat, snorkelling equipment, stationary hydrophone with a professional digital recorder, headphones, loudspeakers, photographic and video equipment both for surface and underwater.



The secondary BDRI's research boat is smaller around 5.5 meters (18 feet) long. It is a motor craft boat configured with fiberglass hulls and equipped with a gasoline powered 40hp outboard engine. The boat has a sun/rain canopy however there is no toilet onboard.

The ship is equipped with mobile phone, flashlights, flares and smoke signals, navigation lights, bell, rescue dinghy, life-rings, lifejackets, fire extinguisher, first-aid kit, anchor, oars, water pump and a number of other safety devices. The ship meets all safety and inspection standards required by Italian Government and Guard Coast. Among the research equipment found onboard, we have a fish finder, echo sounder, surface water thermometer, GPS, anemometer, binoculars, Secchi disk, digital time recorders, snorkeling equipment, stationary hydrophone with a professional mobile digital recorder, photographic equipment, video equipment both for surface and underwater.

Non-swimmers and persons uncomfortable on boats may be required to wear personal floatation devices (PFDs) provided by the researchers whenever the boat is underway. At the discretion of the project staff, all volunteers may be required to wear PFDs during boat work.

Further, the captain has the final decision onboard regarding all matters affecting safety and when to begin or end work activities. There may be times when the captain is very busy and will need to give instructions quickly and clearly. Respect and cooperation in regards to his decisions are expected from all participants.

Sea Conditions during boat field work

Sea conditions are variable. In summer water temperature may be as warm as 80°F/26°C. However, in winter and early spring, temperatures fall to as low as 50°F/10°C. Typical water visibility is about 16 meters, although 20 meters is not uncommon.

Since groups work along the north-eastern coast of Sardinia, the research boats can operate anywhere from nearshore (mainly) to over several miles offshore (occasionally). Sea states are variable, from glassy calm to small whitecaps. The group will come ashore when the wind rises to a Beaufort sea state of four (numerous white caps and choppy water). You should be prepared to be on the water from sunup to sundown, though groups are usually on the water half a day (between 4 and 6 hours). At times, if sea conditions are extremely good, a survey may last for many hours, even into the evening. Please understand that while conditions in harbour or bay may be pleasant and seem ideal for surveys, once out of harbour they may be very poor. The research chief and captain will rely on weather data to determine when to conduct surveys and when to remain in harbour.



10. SAFETY POLICY

Safety is never an absolute. The best approach is to make every effort with integrity towards an ideal safety potential. That means doing due diligence in identifying what the hazards are and weighing options to either reduce the exposure to the hazard, or to mitigate its effects. It also means planning how best to respond to incidents.

We recognize that the location of our site and the nature of our research activities may present qualitatively different risks than those found on a college campus. BDR I is committed to manage these risks in order to meet the goals of our international, field based programs.

As part of our safety strategy, we require standards for behaviour intended to maximize safety for our students, our staff, and for our centre. Therefore it is important that you clearly understand the BDR I standards before you choose to commit yourself to participation in our programs.

Our students are over the age of 18 years, they are adults and are responsible for their own decisions and the resulting consequences. We recognize that these choices include deciding whether or not to participate in our programs. We work hard to ensure that the program and centre are safe, educational, stimulating, secure, fun, and dynamic environments where staff and students successfully work together. Therefore, we hold adult students accountable for following BDR I policies, centre rules and for respecting the Operational Objectives. The decision to ignore or violate them or to endanger the safety or security of others will result in disciplinary actions.

By signing the BDR I Application form, you agree that you have read and understood, and will abide by all BDR I policies as documented in this Manual.

11. BDR I RULES AND PROTOCOLS

Additional rules and protocols are in place at the BDR I Centre. Briefing of the Centre Rules and Safety Protocols, as well as discussion of local hazards, will be an important part of orientation upon arrival to the centre.

Operational Objectives

These are the common sense agendas designed to support the BDR I functioning safely and accomplishing our work. BDR I works to empower students and requires them to manage their behavior in order to achieve the following objectives and aims:

- Safety and Security
- Research
- Academics
- Local Community Relations
- Legality
- Liability

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Disciplinary Procedures

Violations of any BDR I policies, Centre rules and protocols and Operational Objectives may result in one or more of the following disciplinary actions:

- Verbal warning
- Written warning
- Probation
- Expulsion

All staff and students are expected to understand and to actively support the standards of behaviour as presented in our written materials and in our onsite orientations. While all staff is responsible for understanding and enforcing our standards for behaviour, all formal disciplinary measures for students are at the discretion of the BDR I Director in consultation with his staff, when appropriate. Generally speaking, behavioural issues arising out of misunderstandings or that are not overly compromising to BDR I Operational Objectives will be addressed with clarification and intermediate disciplinary measures (warning/probation). However, any behaviour that significantly compromises the Operational Objectives or any violation of the BDR I policy may be cause for immediate expulsion.

BDR I reserves the right to contact professors/parents in the event of significant alcohol abuse, unsafe behaviour, or any behaviour that potentially compromises a student's ability to participate in our program. In the event that you are asked to leave the program, all responsibility on the part of the BDR I will cease. All outstanding financial obligations to BDR I remain in full effect.

Refund Policies

If you withdraw by notifying BDR I in writing, the following amounts will be refunded:

- Withdrawal prior to the first day of the program = Registration fee is non-refundable.
- Withdrawal one day after the start of the FRC = 50% refund of total program cost (registration fee is not refundable).
- Withdrawal more than one day after the start of the program, or if you are asked to leave the program = NO REFUND



BDRI Program Policies

These are in effect during all programs and at BDRI site, including on field trips. Violation of any policy will result in disciplinary action. BDRI reserves the right to interview, investigate, search for and confiscate evidence, contraband, alcohol, drugs or paraphernalia and to contact local authorities.

Alcohol Policy

No abuse of alcohol is permitted on BDRI property including any boats, common areas, student quarters, centre grounds, field trip sites or during any program activities. This policy is in force from the beginning to the end of the program including time designated as "time off."

Drug Policy

Use or possession of any drugs that are illegal, is prohibited. Illegal drugs are defined by Italian laws. BDRI has a zero tolerance illegal drug policy – violation of this policy will result in expulsion. This policy is in force from the beginning to the end of the program including time designated as "time off."

Time Off Policy

In most of our programs, time is divided into "program time" and "time off". Program time is any time that a student is on BDRI property or onboard BDRI boats or engaged in a program related activity. During such time all BDRI policies are in effect. Consideration of the Operational Objectives is always in effect.

When not on BDRI property, engaged in a BDRI program related activity, etc., there may be time that is clearly designated "Time Off", for example some Sundays. During time off, students are solely responsible for their own safety and well being. During time off, BDRI rules and policies, with the exception of the alcohol, drug policy and local law policy, are not in effect. Consideration of the Operational Objectives is always in effect.

Sign Out Policy

All students must sign themselves in and out of the centre so that they can be located in case of an emergency.

Visitor Policy

BDRI allows visitors on site during the program if it is not disruptive to the program schedule and the dynamics of the group. The days off or weekends are an opportunity for students to visit with friends and family onsite.

Make sure your friends and relatives are aware that all visits to the centre must be scheduled in advance. Those interested in visiting should contact BDRI at +39 346 081 5414 after the start of the program. Overnight housing at the centre is not available, however there may be accessible accommodations in hotels nearby.



For security reasons, no visitors are allowed on the centre property without prior consent from the centre director. This policy increases students' and staff's safety, security, and sense of privacy.

Boating Policy

BDRI students may not ride in a BDRI motor boat without a BDRI approved operator. BDRI has additional boat specific protocols including maximum occupancy, approved seating, personal flotation devices, radio protocols, rescue and first aid equipment in compliance with all local regulations.

Local Laws Policy

BDRI supports and complies with all local laws. You will be briefed on local laws and expectations soon after arriving at the centre. Any violation of a local law will result in BDRI disciplinary procedures and in addition, may subject you to local penalties such as fines, arrest or deportation.

Swimming/Diving Policy

SWIMMING/DIVING IS ALWAYS AT YOUR OWN RISK. In all programs, swimming is always optional and you may terminate a swim at any time you deem it necessary.

Sexual Harassment Policy

It is the policy of BDRI to respect the rights of participants to work and study in an environment free from any type of sexual harassment and to investigate and resolve any reported cases of sexual harassment. Each BDRI member and student is responsible for ensuring a work and learning environment free from sexual harassment. BDRI policy specifically prohibits any staff member from having a sexual relationship with a student at any time while the student is enrolled in a BDRI program.

Non-discrimination policy

BDRI prohibits all forms of harassment of others because of race, color, religion, sex, age, sexual preference, national origin, physical or mental disability, or economical status. In particular, an atmosphere of tension created by disparaging racial, ethnic, sexual, or religious remarks does not belong in the BDRI workplace or learning environment and will not be tolerated.

Information Systems Policy

The BDRI director is responsible for the development and management of these systems. In order to maintain the integrity, reliability, and performance of this centre, all students must follow the policies and procedures shown below.



General Equipment Use:

- Always check with a BDRI staff member before attaching any personal computers, laptops, printers, or other network devices to the network.
- Borrowed equipment, on and off premises, is the borrower's responsibility until returned.
- Students are expected to uphold the condition of any BDRI equipment that he/she uses. Be careful not to expose equipment to food, liquids, excessive sunlight, heat, cold, humidity, or magnetic fields.

INSURANCE

Health Insurance

Students are required to carry health insurance valid in the European Union (Italy), while enrolled in BDRI programs. Some insurance carriers do not cover “out of country” medical expenses. Therefore, you should ensure that your medical insurance policy offers coverage in Italy. Those insurance companies that do provide international coverage often do so on a reimbursable basis. Most insurance companies do not cover medical evacuation costs. You may wish to check on your travel policies or purchase some.

Moreover, participants should sign a statement where they accept the research and working conditions taking full responsibility for the risks.

In the event that you require medical attention during a program, a staff member will accompany you on the visit(s) to a medical facility. You will be liable for all these incidental expenses, including travel, meals, etc, incurred by all parties involved during these visits.

Personal property insurance

BDRI is not responsible of the personal property of students and staff. You may wish to check on your travel insurance or purchase some.

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12. HOW TO REACH THE FIELD STATION

The most direct and comfortable means to arrive on the research station in **Golfo Aranci (Sardinia, Italy)** is certainly the airplane. **Olbia-Costa Smeralda Airport** is located 20 km south-west of Golfo Aranci. Olbia airport is well connected both with the Italian and the European airports through national and international flights. From the airport you can take a city bus to Olbia railway station (Numbers 2 and 10). From the railway station you can further take a train or bus to Golfo Aranci. Information on trains at: www.trenitalia.com; information on buses at: www.arst.sardegna.it

If you prefer to take a direct taxi from Olbia airport to Golfo Aranci, remember to negotiate the price before departure (approx. 50 Euros). You can also contact the BDRI one day in advance to arrange the taxi to drive you from the airport directly to the centre (the Golfo Aranci taxi company offers our participants a price of 35 Euros instead 55 Euros for this trip). The taxi driver will be waiting for you in the airport, holding the BDRI logo.

The BDRI research field station is sited in the same road as the post office in the centre of Golfo Aranci (Via Armando Diaz 4).

For those who want to travel by airplane we suggest the following itinerary:

There are regular and low cost flights from all over Europe to the Olbia - Costa Smeralda airport (more info in www.geasar.it). Low cost flights from London, Girona, Madrid fly to Alghero airport located approx. 160 km north west of Golfo Aranci (3,5 – 4 hours by train). If you arrive to Alghero during the evening, BDRI can give you tips in locating a bed & breakfast in Alghero.

You can find more information on flights at: www.easyjet.com, www.meridiana.it, www.hlx.com, www.alitalia.it, www.iberia.com, www.ryanair.com, www.myair.com, www.alpieagles.com, www.air-one.it, www.volare-airlines.com, www.ltu.de, www.lufthansa.com.

It is possible to reach Sardinia by ferry, as an alternative to the plane. You can reach Golfo Aranci or Olbia harbour from all the most important harbours of the Italian territory (Civitavecchia-Rome, Livorno, Genova and others). For more information visit: www.traghetti.com.



13. BEFORE TO LEAVE

Passport Information

Nationals of Andorra, Argentina, Australia, Bolivia, Brazil, Brunei, Bulgaria, Canada, Chile, Costa Rica, Croatia, El Salvador, Guatemala, Honduras, Israel, Japan, Korea, Malaysia, Mexico, Monaco, Nicaragua, New Zealand, Panama, Paraguay, Romania, San Marino, the Holy See, Singapore, the United States, Uruguay, and Venezuela require a valid passport to enter Italy.

Citizens of the European Union, Switzerland, Norway, Iceland, and Liechtenstein require either an Identification Card or a valid passport.

Citizens of countries not listed above will likely require a tourist visa to enter Italy and should check with a travel or visa agency for specific visa and entry requirements. The purpose of your visit is for vacation, holiday or travel.

General Conditions of the Research Site

Weather conditions in the area are typically very mild, with warm sunny days, clear blue waters and some days of windy conditions.

FRC students from June to October can expect very sunny weather with temperatures of 23-38°C/74-100°F. The water temperature ranges from 20-27°C/68-80°F.

FRC students in between October and June can expect colder temperatures and even some rain. The wind strength is also somewhat stronger than in summer. Temperatures can range from 4-21°C/40-70°F and water temperatures range from 10-22°C/50-72°F. However, it is important to consider the humidity during the winter months, as you can tend to feel cold independently of the temperature being 10°C/50°F. Hence, bring extra warm clothing.

Physical Demands

Participants of all ages and backgrounds have participated in this project. You should be in good health, physically fit and able to walk without difficulty. At times, fieldwork will involve long days and exposure to the elements. You do not need to be able to swim. Participants who are habitually seasick in boats may find the daily work of this project quite uncomfortable. Bring along suitable anti-seasickness medication, as suggested by your physician.

Other Advice / Information

- *Local currency:* European Euro (€)
- *Language:* English, Italian, Spanish, Swedish.
- *International dialing code:* +39
- *Electricity:* 220 volts AC, 50 Hz, generally round, two-pin plugs.
- *Time zone:* +1 UTC. Along with the rest of continental Europe, the clock is one hour ahead during summer (from the end of March to the end of October).



14. WHAT DO I NEED TO BRING? – PACKING CONSIDERATIONS

PLEASE SEE THE PACKING CHECKLIST AT THE BACK OF THIS BRIEFING AND REMEMBER TO TAKE YOUR BRIEFING WITH YOU

It is important during winter, early spring and fall season to bring good wind proof rain jackets, and warm clothing. Layers are best as it is always cold on the boat when moving. Remember that even though the temperature is not very low, the humidity tends to make you feel cold, both on land and onboard the boats.

Please, always have BDRI's phone numbers on hand:

+ 39 346 081 5414 or + 39 (0)789 183 1197

Project Packing Checklist

You are encouraged to go through the list and mark off each required item right before you leave to participate in the program.

Essential Items

- This Project briefing
- Passport and/or visa (if necessary)

Required items:

Clothing/Footwear for field work

- Lightweight, quick drying, long-sleeved shirts and trousers
- Warm tops and bottoms (Fall, Winter, and early Spring)
- Rain and/or windproof jacket
- Hat or cap
- Gloves (Fall, Winter, and early Spring)
- Warm socks (Fall, Winter, and early Spring)
- Shorts (Spring and Summer)
- Comfortable sport shoes with non-marking tread

Clothing/Footwear for Leisure

- Sandals for beach
- Swimsuit
- Waterproof shoes (Winter, Fall and early Spring months)



Field Supplies

- Sunglasses (polarized lenses will help)
- Binoculars, if you have
- Sunscreen lotion with SPF 30 or higher

Personal Supplies and Bedding

- Sleeping bag / bed clothing (+blanket, winter season)
- Extra blanket or wrap (during Winter, Fall and early Spring months)
- Personal toiletries
- Beach towel
- Bath towel
- Mosquito repellent spray

Miscellaneous and optional items

- Digital watch (preferably waterproof)
- Camera, extra films
- Batteries, plenty of memory storage
- Video camera and enough tapes
- Digital camera (if you have a SRL with a minimum of 5 M and lenses from 100 to 300 mm)
- Snorkelling gear (mask, snorkel, fins) for warm seasons
- Notebook or netbook
- Basic Italian vocabulary guide/phrasebook

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15. RECOMMENDED READING

To further prepare you for the research project please download some suggested reading material from the BDRI's website (Section Publications). Note that it is not necessary to bring any of this material to Sardinia, as a copy of each will be available.

1. Díaz López B., in press. *Aquaculture systems*. In: **Handbook of Models used in Ecosystem and Environmental Management**, Sven Erik Jørgensen (Ed.), Copenhagen University, Denmark.
2. Díaz López B., 2011. Whistle characteristics in free-ranging bottlenose dolphins (*Tursiops truncatus*) in the Mediterranean Sea: influence of behaviour. **Mammalian Biology** 76: 180-189.
3. Díaz López B. & Shirai, J.A.B., 2010. Mediterranean common bottlenose dolphin's repertoire and communication use. In: **Dolphins: Anatomy, Behavior, and Threats**, (A.G. Pierce & L. Correa Eds.), Nova Science Publishers, New York. Pp 129 -148.
4. Díaz López B., 2009. The bottlenose dolphin *Tursiops truncatus* foraging around a fish farm: Effects of prey abundance on dolphins' behaviour. **Current Zoology** 55(4):243-248.
5. Díaz López B., Bunke, M. and Shirai, J.A., 2008. Marine aquaculture off Sardinia Island (Italy): ecosystem effects evaluated through a trophic mass-balance model. **Ecological Modelling** 212: 292-303.
6. Díaz López B. and Shirai, J.A., 2008. Marine aquaculture and bottlenose dolphins social structure. **Behavioural Ecology and Sociobiology** 62 (6): 887-894.
7. Díaz López, B., Shirai, J.A.B., Bilbao Prieto, A. & Méndez Fernández, P., 2008. Diving activity of a solitary wild free ranging bottlenose dolphin (*Tursiops truncatus*). **Journal Marine Biological Association of U.K** 88, Special Issue 06: 1153-1157.
8. Díaz López, B & Bernal Shirai, J.A.B., 2007. "Bottlenose dolphin (*Tursiops truncatus*) presence and incidental capture in a marine fish farm on the north-eastern coast of Sardinia (Italy)" **Journal of Marine Biological Association of U.K** 87: 113 – 117.
9. Díaz López, B. and Shirai, J.A.B., 2007. "Human activities and bottlenose dolphin's social structure". **European Research on Cetaceans 21st** (on CD-rom) (Eds, P.G.H. Evans & R. Castro), San Sebastián, Spain.
10. Underhill, K., Díaz López, B., and Shirai, J.A., 2007. "Boat traffic effects on the diving behaviour of bottlenose dolphins (*Tursiops truncatus*) in Sardinia, Italy". **European Research on Cetaceans 21st** (on CDrom). (Eds, P.G.H. Evans & R. Castro), San Sebastián, Spain.
11. Díaz López, B., 2006. "Bottlenose dolphin (*Tursiops truncatus*) Predation on a Marine Fin Fish Farm: Some Underwater Observations". **Aquatic Mammals** 32 (3): 305 – 310.
12. Díaz López, B., 2006. "Interactions between Mediterranean bottlenose dolphins (*Tursiops truncatus*) and gillnets off Sardinia". **ICES Journal of Marine Science** 63: 944-951.
13. Díaz López, B. & Bernal Shirai, J.A., 2006. "Estudio multiescalar de la influencia de la acuicultura en la presencia de delfines mulares *Tursiops truncatus* (Montagu 1821)". **CIVA**, (on CD-rom): 282 – 290.
14. Díaz López, B. & Bernal Shirai, J.A., 2006. "Diurnal & Nocturnal behaviour of bottlenose dolphin groups with emphasis on foraging activity on the north-eastern coast of Sardinia (Italy)". In: **European Research on Cetaceans 20th** (Eds, P.G.H. Evans & I. Kuklik) Gdynia, Poland.
15. Bernal Shirai, J. A., Díaz López, B., Méndez Fernández, P., Bilbao Prieto, A. & Díaz da Silva, J.I., 2006. "Analysis of diving behaviour of a solitary male bottlenose dolphin in the inshore waters of Galicia (Spain)" In: **European Research on Cetaceans 20th** (Eds, P.G.H. Evans & I. Kuklik) Gdynia, Poland.

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- Live on, contribute to, learn about, travel to and explore -



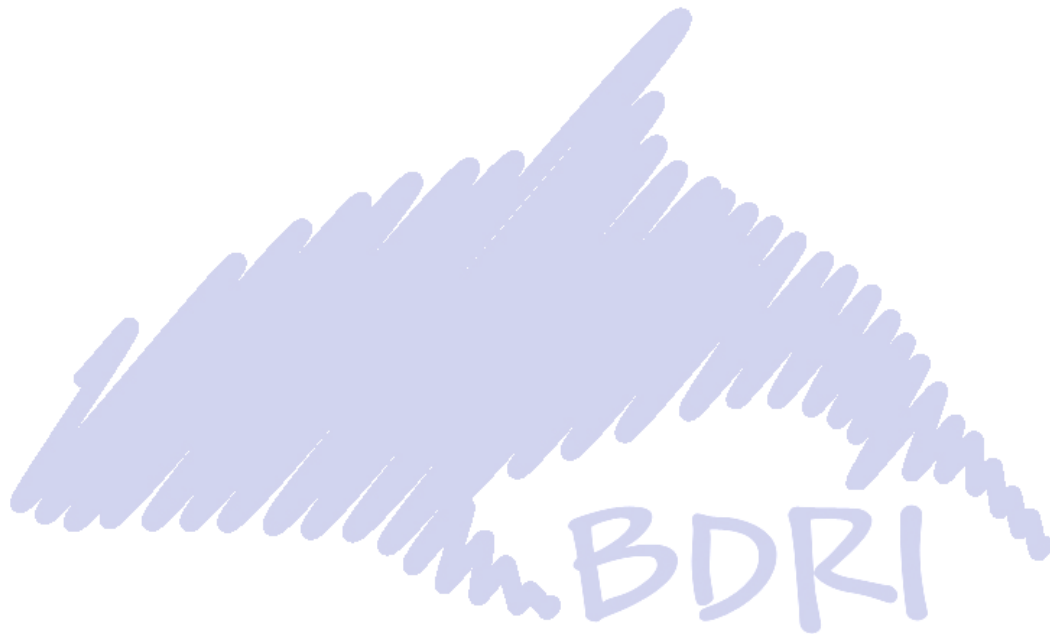
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16. Díaz López, B., Marini, L. and Polo, F. 2005. *The Impact of a fish farm on a Bottlenose dolphin population in the Mediterranean Sea*. **Thalassas** 21(1):53-58.

17. Díaz López, B., 2005. *Interactions between bottlenose dolphins with trammel nets in the Sardinia Island*. **ICES Document CM 2005 / X: 01**, 12pp.

18. Díaz López, B. 2005. *Interaction between bottlenose dolphins and fish farms: could there be an economic impact?* **ICES Document CM 2005/X:10**, 16pp.

19. Díaz López, B., Marini, L. and Polo, F., 2004. "Evolution of a bottlenose dolphins population in the North-Eastern waters of Sardinia (Italy)". In: **European Research on Cetaceans – 15** (Ed- P.G.H. Evans), pp 70-73. Cambridge, UK.



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