Background

The bottlenose dolphin (Tursiops truncatus) is a Mediterranean cetacean listed as ‘vulnerable’ in IUCN Red List. It is estimated that 200-300 individuals live in the project area. As a coastal species, bottlenose dolphins are the most threatened by habitat degradation and loss. The main threats come from coastal urbanisation, port construction, boat traffic, shipping, pollution by industrial and agriculture activities, overfishing and overexploitation. The Ligurian Sea and the Portofino coastal area are subject to intensive boat traffic, especially during the summer season, which significantly increases underwater noise pollution. This kind of impact represents a serious threat for cetaceans as they communicate and orient by underwater sonar-waves. Moreover, human interaction with bottlenose dolphins has to be regulated during the summer season when newborns and calves are present with adult individuals. In the marine protected area (MPA) of Portofino protection measures have not been carried out in the absence of impact assessments and monitoring.

Objectives

The main objective of the project was the improvement of the conservation status of the bottlenose dolphin in the Portofino marine protection area (MPA). To this end, an acoustic monitoring system would be set-up to detect and track
the species. A network of hydrophones, communicating with an on-shore computer centre, would be installed on the buoys of the Portofino MPA to identify and follow dolphins in real time. Human activities and underwater noise would also be recorded.

Results

The project reached almost all its foreseen objectives aimed at improving the conservation status of the bottlenose dolphin (*Tursiops truncatus*) in the Portofino MPA. The main achievement was the development of the acoustic detection and surveillance system, which is today fully in place and operational, able to detect the presence of dolphins in the target area, generate an alarm, transmit and notify it to the sailors. The system is able to detect the presence of both boats and dolphins and generate an alarm when there is the risk of collision (e.g. during the project, more than 4 000 alarms for the presence of dolphins were generated by the system). The Portofino coast guard is able to inform sailors of the risk when necessary. The positions of the dolphins can also be checked online (via internet, mobile phone app).

The acoustic detection system is innovative for the following reasons:

- It allows not only real time detection but also animal tracking;
- It is solar powered, autonomous, cable free;
- It allows continuous data recording over the 24h; and
- It is connected to a warning system to alert sailors.

Other results included the drawing up of a protocol of conduct issued by the coast guard, to advise sailors on the correct behaviour when navigating within the Portofino area. Some 1 823 boat-owners were also contacted in the project area, and warned about the risks for dolphins and 287 patrolling missions were carried out by the coast guard. For the first time the population of bottlenose dolphins in the area was reliably estimated: 15 groups of dolphins, with an average size of eight individuals.

In addition, various dissemination activities were successfully carried out. More than 20 articles were published about the project, three video news were broadcast, and a video was produced to promote the project objectives. The project organised and/or was disseminated during about 50 events including workshops, science festivals, congresses etc.

Potentially, the project is relevant to the Marine Strategy Framework Directive, which aims at achieving good environmental status of EU's marine waters by 2020, by protecting biodiversity and reconciling human activities and the safeguard of the marine environment. Unfortunately, the protocol of conduct to be followed by the sailors that navigate in the MPA of Portofino elaborated by the project and approved by the coast guard proved to be not legally binding.

Main lessons learnt were:

- Use of the application for the smartphone as the best way for alarm diffusion; this was not foreseen in the project proposal, but was implemented;
- Adjustments were (and are) needed to counterbalance the torsion of the acoustic units caused by wind (not calculated in the beginning); and
• The detection units must work in an independent way and must not be mutually related to one another.

These findings are now under consideration in another, ongoing Italian project, LIFE WHALESAFE (LIFE13 NAT/IT/001061).

Further information on the project can be found in the project's layman report and After-LIFE Conservation Plan (see "Read more" section).

Environmental issues addressed:

Themes

Habitats - Marine
Species - Mammals

Keywords

endangered species, marine ecosystem, protected area, coastal area

Target EU Legislation

• Nature protection and Biodiversity
• Directive 92/43 - Conservation of natural habitats and of wild fauna and flora - Habitats Directiv ...
• COM(2011) 244 final “Our life insurance, our natural capital: an EU biodiversity strategy to 2020 ...
• Marine environment and Coasts
• Barcelona Convention for the Protection of Marine Environment and the Coastal Region of the Medit ...
• COM(2013)133 - “Proposal for a Directive establishing a framework for maritime spatial planning a ...
• Directive 2008/56 - Framework for community action in the field of marine environmental policy (M ...

Target species

Tursiops truncatus

Natura 2000 sites

SCI IT1332674 Fondali Monte Portofino
Beneficiaries:

Coordinator: Università degli Studi di Genova
Type of organisation: University
Description: “Università degli Studi di Genova” is a public university whose main objectives are teaching and research. Two different departments will implement the project: the department of physics and the department of biology. Both have conducted well-documented research of marine environments, in particular the North Tyrrhenian and Ligurian Sea.

Partners: Softeco Sismat S.p.A., Italy Consorzio di Gestione dell'Area Marina Protetta di Portofino, Italy Direzione Marittima di Genova, Italy

Administrative data:

Project reference: LIFE09 NAT/IT/000190
Duration: 01-OCT-2010 to 30-SEP-2015
Total budget: 1,733,377.00 €
EU contribution: 1,110,885.00 €
Project location: Liguria (Italia)

Read more:

Poster: Title: "Systems for Coastal Dolphin Conservation in the Ligurian Sea" (2.49 MB) Author: Alessi J., Bianchi C.N., Bozzini G., ... [et al] Editor: ARION No of pages: 1
Poster: Title: "ARION: a tool for real time bottlenose dolphin monitoring in the Portofino MPA" (2.9 MB) Author: Alessi J., Bianchi C.N., Bozzini G., ... [et al] Year: 2014 Editor: Annual Conference of the European Cetacean Society No of pages: 1
Title: "ARION: a tool for real time bottlenose dolphin monitoring in the Portofino MPA" (2.89 MB) Author: Alessi J., Bianchi C.N., Bozzini G., ... [et al] Year: 2014 Editor: BioAcoustic Summer School (SeaBASS) No of pages: 1

Title: "ARION: a tool for real time bottlenose dolphin monitoring in the Portofino MPA" (2.81 MB) Author: Alessi J., Bianchi C.N., Bozzini G., ... [et al] Year: 2014 Editor: University of Pavia CIBRA No of pages: 1

Title: "System for coastal dolphins conservation in the Liguria Sea (ARION)" (915 KB) Author: Alessi J., Fiori C., Taiuti M., ... [et al] Year: 2011 Editor: MENKAB No of pages: 1

Title: "ARION: a tool for real time bottlenose dolphin monitoring in the Portofino MPA" (3.85 MB) Author: Alessi J., Bianchi C.N., Bozzini G., ... [et al] Year: 2014 Editor: 9th Conference on Underwater Networks & Systems No of pages: 1

Project web site
Project web site
Project's website
Project's Facebook page
Project's Twitter page

Publication: After-LIFE Conservation Plan
Title: After-LIFE Conservation Plan Year: 2015 No of pages: 17

Publication: Layman report
Title: Layman report Editor: Università di Genova No of pages: 20

Publication: Proceedings
Title: "Progetto Arion: System for coastal dolphin (Tursiops truncatus) conservation in the Ligurian Sea" (7.84 MB) Year: 2014 Editor: ARION No of pages: 157

Publication: Technical report
Title: "User Manual ARION" (7.67 MB) Author: M.Taiuti Year: 2014 Editor: ARION, Università di Genova No of pages: 100

Publication: Technical report
Title: Project's Final technical report Year: 2016 Editor: Università di Genova No of pages: 84

Slides Presentation
Title: "ARION, a LIFE+ project for coastal dolphin conservation in the Ligurian Sea: configuration, installation, calibration, first results" (2.18 MB) Author: M.Taiuti Year: 2013 Editor: ARION No of pages: 23

Slides Presentation
Title: "ARION-LIFE+09 NAT/IT/190: Systems for Coastal Dolphin Conservation in the Ligurian Sea" (954 KB) Year: 2014 Editor: MedPAN No of pages: 6

Slides Presentation
Title: "ARION: A LIFE+ project for coastal dolphin conservation in the Ligurian Sea" (2.64 MB) Author: Giorgio Bozzini Year: 2014 Editor: IMCC3, ARION No of pages: 18