

Training course for soundscape modelling

Final Version of 30/12/2020
Deliverable Number D.5.2.3



Project Acronym	SOUNDSCAPE
Project ID Number	10043643
Project Title	Soundscapes in the north Adriatic Sea and their impact on marine biological resources
Priority Axis	3
Specific Objective	3.2
Work Package Number	5
Work Package Title	Soundscape modelling and planning impact mitigation measures and scenarios
Activity Number	5.2
Activity Title	Soundscape modelling for the Northern Adriatic Sea
Partner in Charge	CNR
Partners Involved	Quiet Ocean
Authors	Fantina Madricardo (CNR-ISMAR), Thomas Folegot (QOcean)
Status	Final
Distribution	Public
Citation	Madricardo F., Forlegot T. Training course for soundscape modelling, WP5, 6 pp, 2020

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Abstract

The processing protocols for all expected results are agreed, defined and described in detail. All processing protocols will be implemented on the commonly agreed platform and delivered to all involved partners.

1. Introduction

The main objective of the project is to create a cross-border technical, scientific and institutional cooperation to face together the challenge of assessing the impact of underwater environmental noise on the marine fauna and in general on the Northern Adriatic Sea ecosystem. At this stage, in fact, there are no extensive data on underwater noise in the area and the knowledge on noise pollution and its impact on biodiversity is very limited. Therefore, according to the project work plan, the network of the underwater noise monitoring stations will be set up in the Northern Adriatic Sea (Activity 3.2).

The continuous underwater noise produced by anthropogenic activities such as marine traffic (both commercial and recreational) and hydrocarbon exploitation will be monitored. The monitoring results will be used to fill the knowledge gap about underwater noise levels in the Northern Adriatic Sea but also to support setting up and validating the soundscape model (Activity 5.2).

1.1 Technical workshop for modelling

To achieve objectives of the project mentioned earlier, two technical workshops were set up for the partnership in order to give an introduction to the soundscape model (Activity 5.2).

To this end CNR together with QuietOceans organized the **two workshops online** held by Thomas Folegot with the following agenda:

1. Underwater sound propagation
2. Noise mapping
3. Calibration of noise maps
4. Use of noise maps for regional management
5. Use of noise maps to assess the effect of sound
6. Demonstration of Quonops Online Services.

The workshops were held in the morning and in the afternoon of the 3rd of December 2020 (about 2 hours each).

The Training Course highlighted the usefulness of the modelling that entails the following advantages:

1. Enhances the local measurement by providing a basin-scale description over the full area of interest;
2. Allows to understand the geographical structure of the noise;

3. Allows to isolate the several types and origin of noise;
4. Allows to track, understand and interpret substantial changes in the soundscape that may be caused by modifications of the nature of the maritime activities, new routes, deserted routes, etc.;
5. Allows spatial planning actions or the implementation of maritime regulation;
6. Allows to establish representative trends in considering a relevant area instead of a single point.

The workshop was attended by 18 participants from all partners involved in underwater noise measurements. The full participants list is shown on the Table of participants (Table 1).

Table 1 – List of participants

Partner/Organization name	Name	Family Name
CNR-ISMAR	Fantina	Madricardo
CNR-ISMAR	Michol	Ghezzo
CNR-ISMAR	Giulio	Farella
CNR-ISMAR	Antonio	Petrizzo
CNR-ISMAR	Mauro	Bastianini
CNR-ISMAR	Andrea	Barbanti
CNR-IRBIM	Iole	Leonorì
CNR-IRBIM	Ilaria	Biagiotti
CNR-IRBIM	Ilaria	Costantini
CNR-IRBIM	Michele	Centurelli
ARPAFVG	Antonio	Codarin
BWI	Raffaella	Falkner
BWI	Marta	Picciulin
BWI	Marko	Radulovic
Cetacea	Davide	Sabbatini
Quiet Oceans	Thomas	Folegot
IOF	Hrvoje	Mihanović
IOF	Stipe	Muslim
IOF	Predrag	Vukadin

The workshop was evaluated as very successful by all the participants and it was judged that the level of knowledge for understanding the functioning of the underwater propagation model and the platform Quonops was obtained.

After the meeting CNR uploaded the slides of the workshop in Basecamp (Figure 1), together with the recording of workshop (Figures 2 and 3).

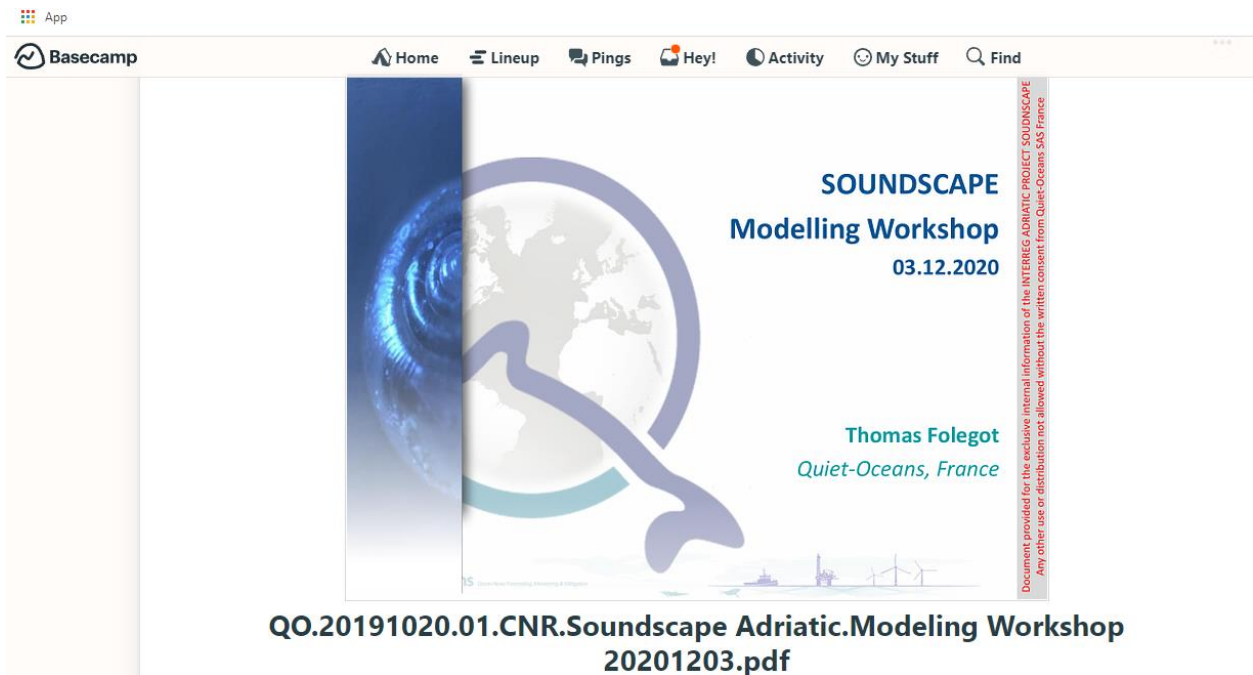


Figure 1. Screenshot of the workshops slides uploaded in Basecamp

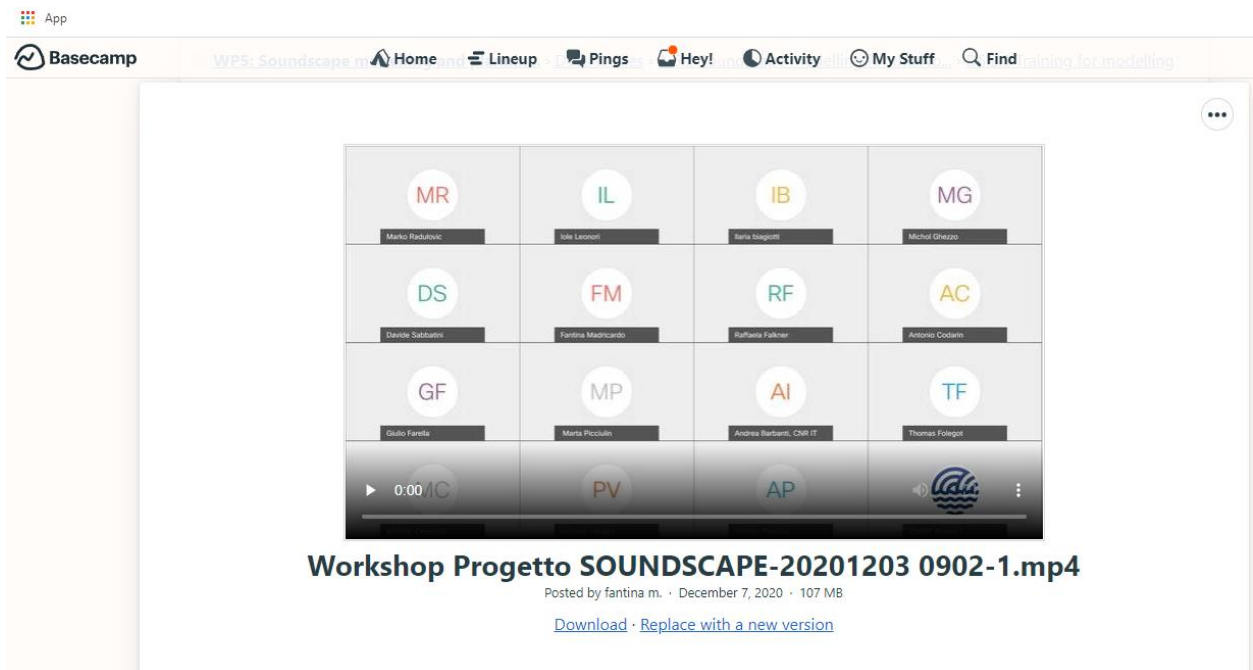


Figure 2. Screenshot of the first workshop recording uploaded in Basecamp

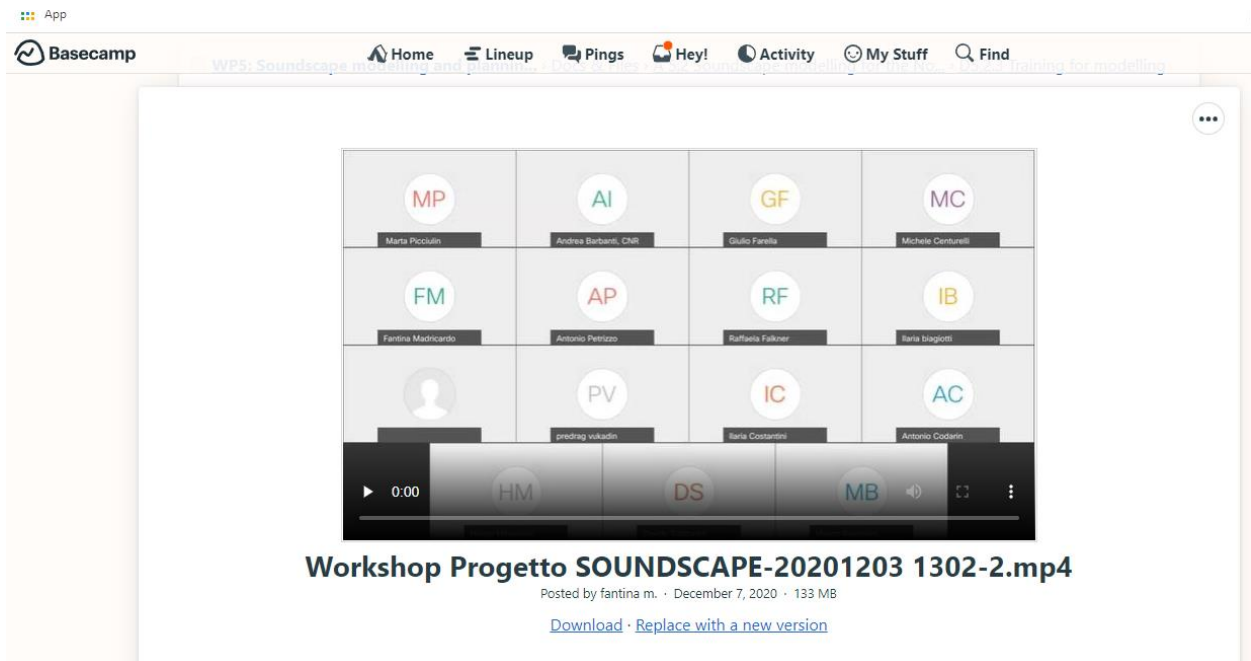


Figure 3. Screenshot of the second workshop recording uploaded in Basecamp

2 References

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Brandon L. Southall, James J. Finneran, Colleen Reichmuth, Paul E. Nachtigall, Darlene R. Ketten, Ann E. Bowles, William T. Ellison, Douglas P. Nowacek, and Peter L. Tyack (2009). *Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects, Aquatic Mammals*, Vol. 45, Iss. 2

NMFS (2018). 2018 Revision to Technical Guidance for Assessing Effects of Anthropogenic Sound on Marine Mammal Hearing, NOAA Technical Memorandum NMFS-OPR-59