



Innovative method for optimizing Side-Scan Sonar mapping: The blind band unveiled



G rard Pergent ^a, Briac Monnier ^{a,*}, Philippe Clabaut ^b, Gilles Gascon ^c,
Christine Pergent-Martini ^a, Audrey Valette-Sansevin ^a

^a Equipe Ecosyst mes Littoraux, FRES 3041 / UMR SPE 6134, Universit  de Corse, BP 52, 20250 Corte, France

^b Clabaut Consultant, 9, Impasse du Boutillier, 62240 Selles, France

^c GENAVIR, Service DEC/SEE, CS 20071, 29280 Plouzan , France

ARTICLE INFO

Article history:

Received 20 January 2017

Accepted 24 May 2017

Available online 25 May 2017

Keywords:

Mediterranean Sea

Coastal habitats

Corsica Island

Mapping

Side Scan Sonar

Underwater video

ABSTRACT

Over the past few years, the mapping of Mediterranean marine habitats has become a priority for scientists, environment managers and stakeholders, in particular in order to comply with European directives (Water Framework Directive and Marine Strategy Framework Directive) and to implement legislation to ensure their conservation. Side-scan sonar (SSS) is recognised as one of the most effective tool for underwater mapping. However, interpretation of acoustic data (sonograms) requires extensive field calibration and the ground-truthing process remains essential. Several techniques are commonly used, with sampling methods involving grabs, scuba diving observations or Remotely Operated Vehicle (ROV) underwater video recordings. All these techniques are time consuming, expensive and only provide sporadic informations. In the present study, the possibility of coupling a camera with a SSS and acquiring underwater videos in a continuous way has been tested. During the 'PosidCorse' oceanographic survey carried out along the eastern coast of Corsica, optical and acoustic data were respectively obtained using a GoPro™ camera and a Klein 3000™ SSS. Thereby, five profiles were performed between 10 and 50 m depth, corresponding to more than 20 km of data acquisition. The vertical images recorded with the camera fixed under the SSS and positioned facing downwards provided photo mosaics of very good quality corresponding to the entire sonograms's blind band. From the photo mosaics, 94% of the different bottom types and main habitats have been identified; specific structures linked to hydrodynamics conditions, anthropic and biological activities have also been observed as well as the substrate on which the *Posidonia oceanica* meadow grows. The association between acoustic data and underwater videos has proved to be a non-destructive and cost-effective method for ground-truthing in marine habitats mapping. Nevertheless, in order to optimize the results over the next surveys, certain limitations will need to be remedied.

  2017 Elsevier Ltd. All rights reserved.

* Corresponding author.

E-mail address: briac.monnier@gmail.com (B. Monnier).