A METHOD FOR ASSESSING ANCHORING PRESSURE

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Abstract

A new method for assessing anchoring pressure is proposed. It is based upon an automatic high frequency digital photography (AP-AP system). The autonomous equipment is working from sunset to sunrise.

Keywords: Posidonia, North-Western Mediterranean, Monitoring, Mapping, Marine parks

Introduction

Leisure boating is an activity in the increase in the Mediterranean. Anchoring of boats on e.g. *Posidonia ocenica* meadows and the coralligenous assemblages is a source of bottom degradation and an issue of growing concern [1, 2]. Up until now, leisure boat frequentation, anchoring and carrying capacity were tackled on the basis of inaccurate data, e.g. a few aerial photographs and boat counts. Within the framework of the research program 'Liteau III FHUVEL', the anchoring pressure issue was addressed through automatic high frequency digital photography (AP-AP System: Anchoring Pressure by Automatic Photography).

Material and methods

The method was successfully implemented in Sormiou and Frioul-Crine Coves, two sites of the recently established 'Parc national des Calanques' (Calanques National Park, Marseille-Cassis, Provence, France), during respectively 19 months and 7 months.

The camera was installed in a waterproof shelter, 200 m and 60 m respectively, above the sea level, depending on the site and programmed to take a picture every 10 min from sunrise to sunset (Figure 1).

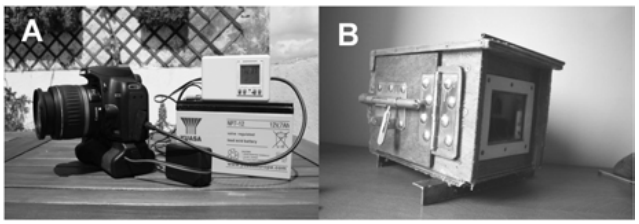

Fig. 1. AP-AP system: A - Camera with electronic dispositive; B - protective case.

The battery and memory card of the camera ensured an autonomy of 15 to 21 days. Photos, which were taken at an oblique angle, were transformed to a vertical format (Figure 2), in order to match the maps, using a set of 150 GPS marks. Spatial data analysis was performed under GIS Arc View 10.2®. The exact anchoring location of every boat, every day, every 10-min, was manually geo-referenced.

Photo analysis makes it possible to assess the pressure location within the site, the time of arrival, the departure and the anchoring duration, the day of the week (weekday vs weekend), the month, the boat category (e.g. sailing boat, motor boat) and the weather.

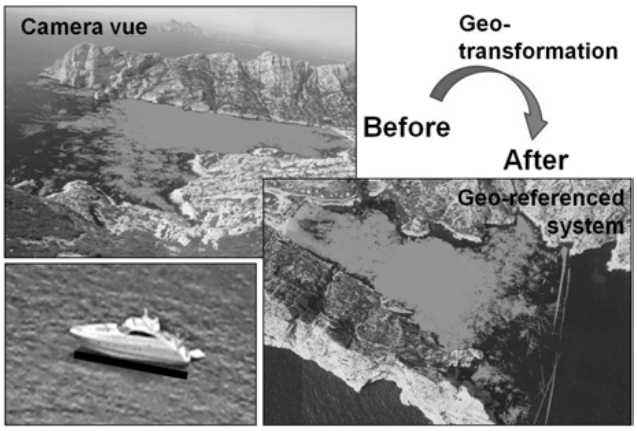

Fig. 2. Geo-transformation of identified anchored boats from the camera vue to a georeferenced system. The gray area is the enveloppe area of the position of boats every 10 min, over the study period. In the vignette, the black line plotted from the prow to the stern of the boat allows to get the size and the orientation of the boat.

References

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