

HABITAT USE, MOVEMENT AND SIGHTINGS OF MONK SEALS IN CROATIA BETWEEN 2010 AND 2012-2013

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Abstract

Sightings of Mediterranean monk seal (*Monachus monachus*) have been recorded and verified from the whole Croatia since 2000. This paper reviews some of the activities carried out *in situ* and seals sightings between 2010 and the first month of 2013. The preliminary results clearly show the importance to conduct further investigations in the Istrian region and Cres Island, to be extended as well to the entire Croatian coastline, in order to understand the actual population consistency.

Keywords: Conservation, Monitoring, North Adriatic Sea, Central Adriatic Sea

Introduction

Scattered sightings of the Critically Endangered Mediterranean monk seal (*Monachus monachus*) have been reported along the entire Croatian coastline in the last two decades. About 180 sightings were gathered and verified by the Grupa Sredozemna Medvjedica-GSM (Croatia), in collaboration with the Gruppo Foca Monaca-GFM (Italy), during the years 2000-2009. Since 2005, a considerable amount of these encounters have been recorded, with a certain frequency, along the Istrian Peninsula (North-Western Croatia). Following these encounters, the GSM and the GFM have started a series of activities in 2008 to monitor the area concerned and to organize local and national sensitization campaigns for the protection of the monk seal. Thanks to the positive effects of increased public awareness on this matter, from 2009 a more consistent record of data collection has become attainable, including a great number of images taken in the Istrian region and Cres Island areas. Apart from collecting and verifying sightings data and direct monitoring, short surveys were carried out with the intent to comprehend the species habitat availability and use of the region.

Materials and Methods

A total of 130 verified encounters were reported, directly recorded, stored and analyzed from 2010 to 2012 including the first couple of months of 2013. The data were classified into 3 categories according to the information that can be deduced from them:

- 1-Sightings with photos or videos that allow photoidentification of specimen/s;
- 2-Sightings with photos or videos that do not allow photoidentification of specimen/s;
- 3-Sightings with no photos or videos but with reliable evaluation (through direct interviews).

All the images collected came from the area of Cres Island and the Istrian Peninsula. The first category of sightings yielded the photoidentification of an adult female, following the methodology of Samaranch & González [1] and Forcada & Aguilar [2]. Although these analyses do not enable any other specimens clear detection, nevertheless they have made it possible to determine the home range extents of the aforementioned female: spreading from the Eastern Cres coast to Pula (about 130-150 km of coastline). This statement is in accordance with the data on the movement of the species [3] and habitat use [4] from other areas of the Mediterranean. In January 2011, after prior experimental pilot projects, a video-monitoring system (Vivotek IP 8332) was installed by GFM-GSM in the cave of Mala Kolombarica (southern part of the Kamenjak peninsula, Istria), allowing a continuative screening coverage of the internal beach. This is an active cave frequently used by the specimen that we were able to identify; the interior of the cave is easily accessible from the water and might not display ideal conditions for active use by seals during the summer months, due to anthropic presence in the highest tourist periods.

Even though, a large amount of collected images depicts the same specimen, a minor number of these, particularly the ones belonging to relatively more remote areas, were not clear enough to conduct any further identification. In addition, some of the overall sightings cannot be ascribed to a single individual, when taking into account the position and the time of the records. Particularly the ones coming from Southern Croatia, since distances and time

to cover them far exceeded the natural known ability of the species of about 12-40 km/day [3].

Discussion and Conclusion

This work reviews data from occasional encounters of monk seal specimens and short self funded monitoring campaigns. Thus the results cannot be considered exhaustive of the monk seal actual population status in Croatia but represent a preliminary enquiry of a more consistent reasonable reality. The sightings reflect the position of the witness and its/their behaviour rather than the seals. Apart from the direct monitoring surveys most of the data belongs from tourists or people in recreational time, meanwhile few of them come outside the holiday seasons and or human settlement areas, rarely from places with scarce human presence and occurrence. Taking a look back at the images, from 2005 onwards, it is evident that at least an adult female has been frequenting the Istrian region since then. Moreover, comparing directly the data from Southern Croatia and the Istrian-Cres ones, it is evident that they cannot be ascribed to the same specimen with the current knowledge on the species movements. From our study it appears that the country coastline might hold two different nuclei of seals from the northern and southern coast, but the information is unsubstantial to define the real numbers of individuals and the eventual specimens inter-exchange. The adult female identified in the area between Pula and Cres has shown a pattern of coastal use that reflects habitat utilization and preferences explainable as an actual home range. This behaviour is a sufficient forethought to support a more thorough study of the region in order to ascertain the presence of other specimens, breeding caves and eventual births. Further investigations and a more detailed and systematic analysis of habitat availability is required in order to have a much better understanding of the real consistency of monk seal population along the entire Croatian coastline.

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