A PRELIMINARY STUDY OF CETACEAN PRESENCE AND ABUNDANCE IN THE ARCHIPELAGO OF THE KORNATI NATIONAL PARK (CROATIA)

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INTRODUCTION

In previous decades the Adriatic Sea was known to be frequented by various species of cetaceans, in particular the bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*) and recently striped dolphin (*Stenella coeruleoalba*). However, at present the bottlenose dolphin appears to be the only species sighted regularly in the area. Little is known about the occurrence and distribution of bottlenose dolphins in the Central Adriatic Sea, with data available only from a long-term study (1987 - present) in the Kvarneric (northern Adriatic Sea).
Therefore the aims of this study are to understand the occurrence and distribution of bottlenose dolphins in the area of Kornati National Park, to assess if photo-identified animals from the Kvarneric are extending their home range to areas of the Central Adriatic Sea and to outline suitable conservation measures for bottlenose dolphins frequenting this area, based on scientific knowledge and the comparison with the data from northern Adriatic Sea population segment.

During the summer of 2002, a feasibility study was started in order to identify the best area for conducting a long term study within the chosen area. Since the study area is in a central position of the Adriatic Sea, the Kornati Dolphin Project intended also to verify the possible presence of two other species of odontocetes, the common dolphin and the striped dolphin.

Data collected will provide information on: habitat use (critical habitats), population structure and association, reproductive and survival rates and possible impact of certain human activities on the sea and their sustainability. The KDP will verify what role this specific geographic area can play for such species and the potential benefits that the National Park carried to the cetaceans and vice versa.

THE STUDY AREA

Figure 1. ADP study range (red) and KDP study range (blue)

The study area includes the Kornati National Park and its neighbouring zones (Fig. 1). This archipelago consists of about 140 islands and islets which are scattered over an area of some 300 km². The external limit of the park waters towards the open sea extends on one nautical mile. The islands form four series running strictly parallel with Dinaric range (North-West/South-East). They are named after the largest island in the group, Kornat, which provides a sort of backbone to the whole archipelago. The archipelago is long 25 km and on its widest point it is large 13 km. The extension of the monitored area (territory of the Park and its neighbouring zones) is about 580 km².

MATERIALS AND METHODS

Between July and August 2002, a total of 17 daily surveys were conducted from a sailing boat.
The extension of the monitored area was about 580 km².

Standard research procedures included the collection of:

- navigation data,
- environmental data,
- photo-identification data,
- behavioural data.

PRELIMINARY RESULTS

Considering only surveys carried out in good conditions (Fig. 2), a total of 17 surveys were conducted between July and August 2002, collecting data on a daily basis from a sailing boat. Bottlenose dolphins were observed 6 times during the study period, for a total of 528,56 km surveyed. All these sightings were outside the borders of the National Park. The sighting frequency of 0.011 sightings/km in the study area was lower than the frequency of 0.016 sightings/km recorded in the Kvarneric during the same year. From the photo-identification data collected in Kornati National Park 14 dolphins have been classified (Fig. 3).However a comparison with the 160-catalogued dolphins of the Kvarneric area did not show any match.

Days' observation	Covered Km	Sightings' number	Number of photo-id dolphins	Sighting frequency	Mean encounter rate
17	528,56	6	14	0.011 sight./km	0.027 dolph./km

Figure 2. Results

Figure 3. Dolphins photo-id

CONCLUSIONS AND FUTURE STEPS

Realizing the small sample size of classified individuals in the study area, one of the future objectives of this study will be the verification whether some of the bottlenose dolphins frequenting the Kornati area are among those occurring in the Northern Adriatic Sea, or if they form a separate segment of the population in the Adriatic Sea. The identification of home range is fundamental information required for future cetacean management in the Adriatic Sea.
From the next year we would like to start interviewing fishermen working around the National Park. Since in the Murter Sea there are two fish farm cages, we will also verify if bottlenose dolphins present in the area exploit these structures to feed, as it has already been described in other parts of the Mediterranean Sea.
We also would like to set some sort of sightings network involving fishermen and tourists, in order to gather additional information about the position and movements of cetaceans in the study area.
Acoustic sampling of dolphins' vocalizations will start as soon as possible, in order to correlate sounds produced to different activities. Particularly we will focus on the importance of clicks in the social behaviour.
Since all sightings were done outside the National Park territory, we will verify whether the intense Summer nautical traffic, in the canal inside the Park, negatively affect the bottlenose dolphins movements.
All information collected on distribution and relative density of cetaceans will be integrated in a GIS database, in order to verify the existence in the area of particular geological structures which could favour special conditions for the prey's abundance.

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