

The Identification of Critical Habitats for Cetaceans in the Southern Adriatic Sea

Tim Awbery¹, Aylin Akkaya¹, Harry Clark¹, Natasa Nikpalijevic¹, Lucy Abbiss¹, Jack Clarkson¹, Joseph Hardy¹, Enorha Guimard¹, Kristian Beqiri^{2,3}, Aleksander Konomi^{2,3}, Laura Rudd¹, Melis Basmaci¹, Rigers Bakiu^{2,3} 1 Marine Mammals Research Association, Montenegro, 2 Albanian Centre for Environmental Protection and

Sustainable Development (ACEPSD), 3 Agricultural University of Tirana.



AWBERY Poster ID: #686

Introduction

The delineation of critical habitats forms an important step in the implementation of marine protected areas (MPAs) (1). Whilst MPAs have been shown to be an effective conservation strategy, they cover just 5% of the Adriatic, with no MPAs in Montenegro and a single MPA, Karaburun Sazani, in Albania (2). The Adriatic Sea has been identified as a cetacean hotspot (3), yet is under ever increasing anthropogenic threats (including illegal fishing practices, tourism and disturbance from seismic activity) which have caused population declines of up to 50% in bottlenose dolphins (Tursiops truncatus) and regional absences of common dolphins (Delphinus delphus) (4). The current study runs the first dedicated continuous cetacean research into critical habitat identification in the southern Adriatic.

Continuous land and boat surveys have been carried out in Montenegro since September 2016 in order to understand the spatial and temporal distribution of cetaceans and marine traffic as well as to record the patterns and changes in cetacean behaviour both in the presence and absence of marine traffic. Land surveys have been conducted to collect similar data on an opportunistic basis in Albania since December 2018.

Methodology

LAND SURVEYS

Theodolite stations were set for Montenegro and Albania, in 5 and 3 locations respectively (Figure 1). Vertical and horizontal angles of cetaceans and marine traffic were transferred into geographical positions using Pythagoras software.

BOAT SURVEYS

Results

Boat surveys were conducted in Montenegro following 3 routes; Bar to Utjeha, Budva to Kotor, Herceg Novi to Deep Seas (Figure 1). Survey route and dolphin sightings were recorded in Logger 2010. Photographs of each individual dolphins were taken for photo-identification - using Discovery software.



Discussion

First dedicated research revealed a year round presence of bottlenose dolphins both in Montenegro and Albania Yet, there is a concerning decline in sightings between 2016 and 2019 in Montenegro The identified critical habitats overlap with dense marine traffic areas both in Montenegro and Albania. Oil and gas exploration surveys began in Montenegro in 2018 (Figure 5) Selected critical habitats have to gain protection status as a decline in sighting rate has already been observed (Figure

MONTENEGRO

539 surveys were conducted between 05.09.2016 and 02.12.2019 during which two species were encountered, Bottlenose dolphins (Tursiops truncatus) and Striped dolphins (Stenella coeruleoalba).

- There was a significant difference in sighting probability between years with a drop from 0.49 in 2016 to 0.25 in 2019 (Table 1).
- The average sighting probability was 0.37 for the entire survey duration.
- There were no significant differences in sighting probability neither between the survey locations nor season when all the years were pooled.
- The average sighting probability of bottlenose dolphins was 33.1% for each season.

Table 1: Sighting probability by year				
	Year			
	2016	2017	2018	2019
Presence	25	71	58	37
Total	51	192	154	149
Sighting probability	0.49	0.37	0.38	0.25

Bottlenose dolphins (Tursiops truncatus)

- 302 groups in 191 sightings.
- Mean group size was **2.87 individuals**
- 72 individuals were photo-identified.
- Critical habitats identified as the entrance of Boka Kotorsko and coastal waters of Katic, Bar, Utjeha and Ulcinj (Figure 2).
- There was a considerable overlap with marine traffic and selected critical habitats



- surveys between 5.11.2016 and 34 land 26.11.2019.
- Two species were encountered; bottlenose and striped dolphins

ALBANIA

- A mixed group association of bottlenose and striped dolphins were documented
- Bottlenose dolphins were sighted in 11 groups in 8 survey days.
- Striped dolphins were sighted only once in Cape of Rodon.
- Mean group size of bottlenose dolphins was 2.81 individuals.
- Cape of Rodon coastline holds the highest sightings.
- High percentage of feeding behaviours was recorded in Cape of Rodon (63%).
- **Overlap between core areas and marine traffic** in all areas (Figure 4).





Figure 5: Core Dolphin Zones and Seismic Vessel Density

Conclusion

- It is imperative that these dedicated survey efforts continue in order to fully understand the spatial and temporal variations, behavioural patterns and the effect of threats on the small cetaceans of the South Adriatic.
- The collected baseline knowledge with identified critical habitats should contribute to MPA implementations in the South Adriatic, using cetaceans as both an indicator and flagship species.

References

(!) Hoyt, E. (2012). Marine protected areas for whales dolphins and porpoises: A world handbook for cetacean habitat conservation. Routledge

(2) MedPAN et. al. 2016. The 2016 status of Marine Protected Areas in the Mediterranean : Main findings. Brochure MedPAN & JN Environment/MAP - SPA/RAC

(3) Coll, M., Piroddi, C., Steenbeek, J., Kaschner, K., Ben Rais Lasram, F., Auguzzi, J., Voultsiadou, E. (2010). The Biodiversity of the Mediterranean Sea: Estimates, Patterns, and Threats. Plos One, 5(8), 479. doi:10.1371/journal.pone.0011842 (4) IUCN. (2012). Marine Mammals and Sea Turtles of the Mediterranean and Black Seas. Gland, Switzerland and Malaga, Spain: IUCN



info@dmad.org.tr

www.marine-mammals.org

www.sancet.org

facebook.com/DMADforNature/

2019

- 2018

