

# FROM SMALL CETACEANS TO THE GREAT WHALES OF THE EAST

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## ABSTRACT

Scientific knowledge holds the most important warrior on the species protection. Yet, research effort is scarce in the Eastern Mediterranean while human food print increases in a pressure more than ever. ***Our project is the first dedicated seasonal survey effort in the area, targeting both coastal and deep-diving cetaceans with a goal to fill the knowledge gaps and determine the “critical habitats” and “major threats” for effective conservation strategies to be developed.*** Cetaceans were encountered in 39 days (146 sightings) of 49 days of survey effort. While encounter rates reached up to 2.8 and 0.5 groups/100km for dolphins and sperm whales, respectively, Fethiye Canyon hold the highest concentration. ***Current project underlines the importance of local research effort in an understudied environment that holds not only unrecognized cetacean habitats but also wide range of human pressure.***

## INTRODUCTION

Cetacean knowledge, from the species abundance to genetic variability is uneven in the Mediterranean Sea, with most of the data having been collected from the western and central basin (1,2,3,4). ***The regional extent of most studies hampers an accurate basin-wide interpretation of the species distribution and population status for highly mobile cetacean species*** (5). The available information within the Eastern Mediterranean is derived from opportunistic sightings, stranding events and single survey efforts (6,7,8,9,10). The current study aimed to examine the spatial and temporal distribution of cetaceans during systematically designed boat surveys in the north-western Levantine Sea. ***The data represents the first results of seasonal survey efforts, providing a baseline for future research and supporting the development of conservation and management strategies within the Eastern Mediterranean Sea.***

## METHODOLOGY

- Seasonal survey effort through acoustic and visual survey protocols
- 644 km track line, covering 23.438 km<sup>2</sup>

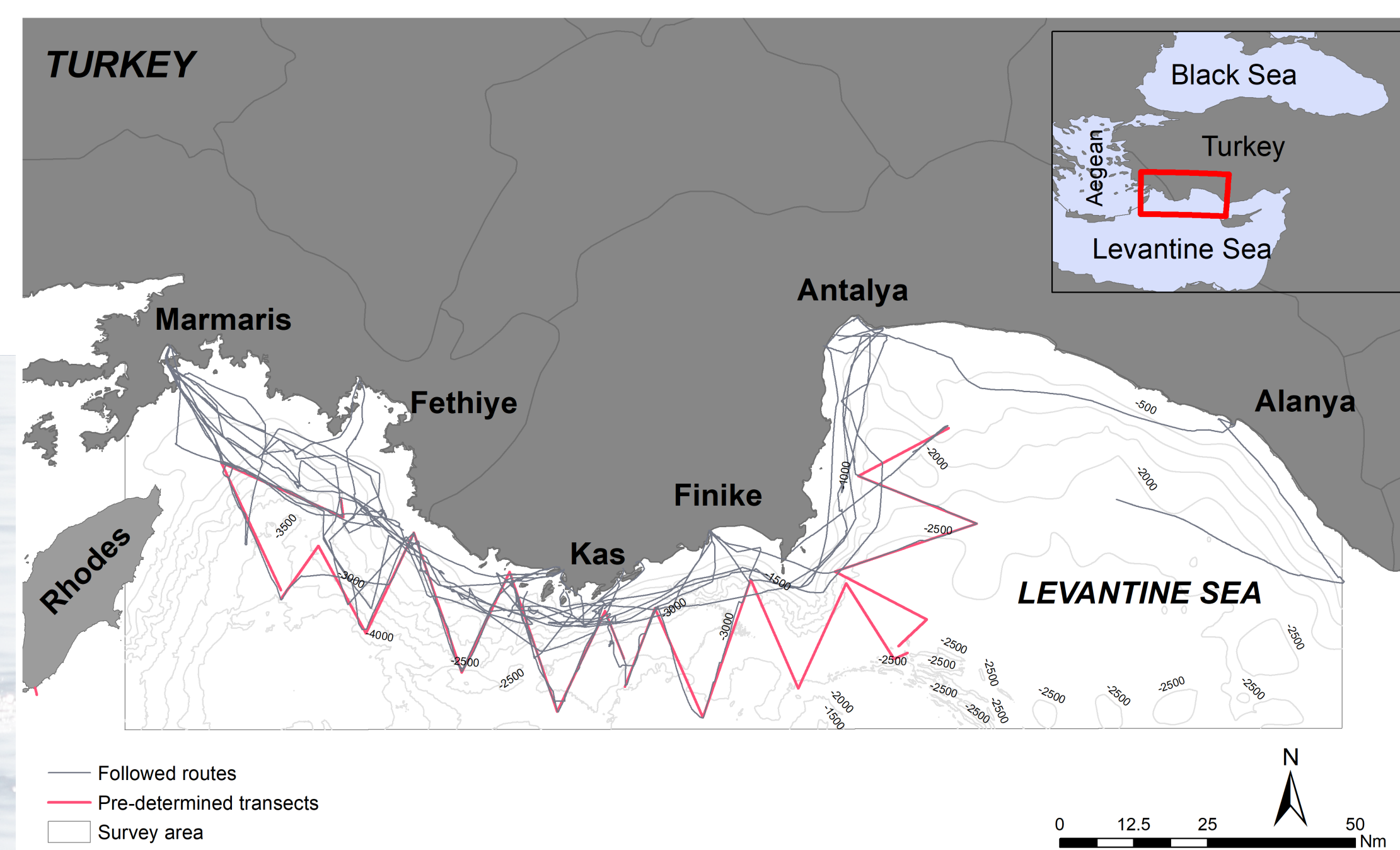
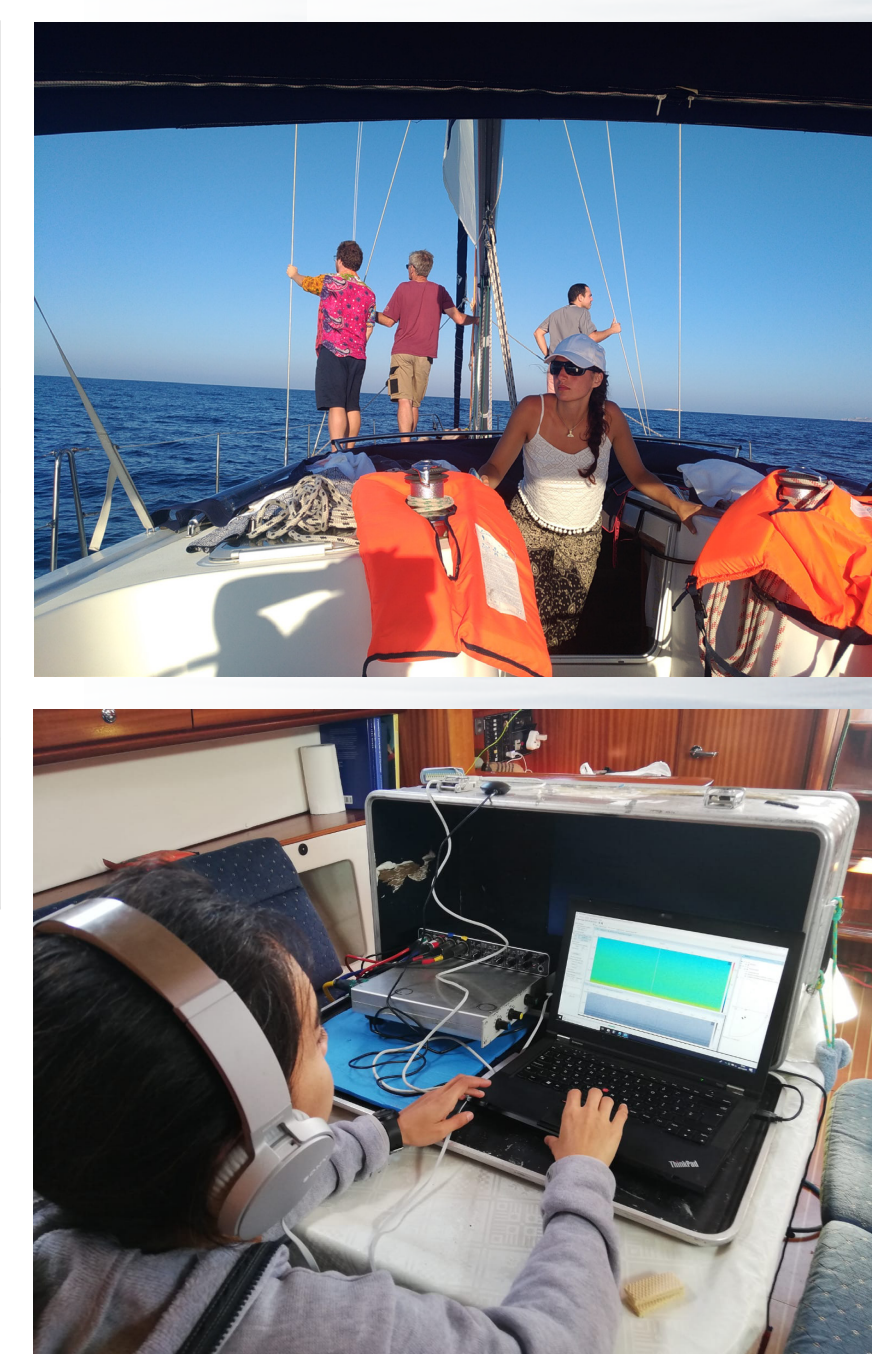


Figure 1. Pre-determined transects and followed routes within the survey area.



Pictures: Visual and Acoustic Survey Effort



## RESULTS

- **4384.76 km in 49 days** (697:20 min) were covered between 14.04.2018 and 26.07.2019.
- Cetaceans were sighted on **146 encounters** on **34 different days**
- Delphinidae species had the highest recoding with year-round presence (bottlenose dolphins and common dolphins were visually confirmed)
- Encounter rates were **2.78 groups per 100 km** for delphinids and **0.55 groups per 100 km** for sperm whales.
- **84.2%** of the encounters were detected acoustically
- Sperm whales were detected in **23 occasions** every season, except winter.
- A single beaked whale was detected in summer.
- Post-acoustic analysis yet has to be carried out!

Table 1. Survey effort and sighting numbers for each season

Season	Survey Effort in Days (Hours)	Sighting Number (Encounter no.)
Spring	20 (321)	15 (53)
Summer	15 (242)	11 (63)
Autumn	9 (51)	3 (6)
Winter	5 (82)	5 (24)
Total	49 (697)	34 (146)

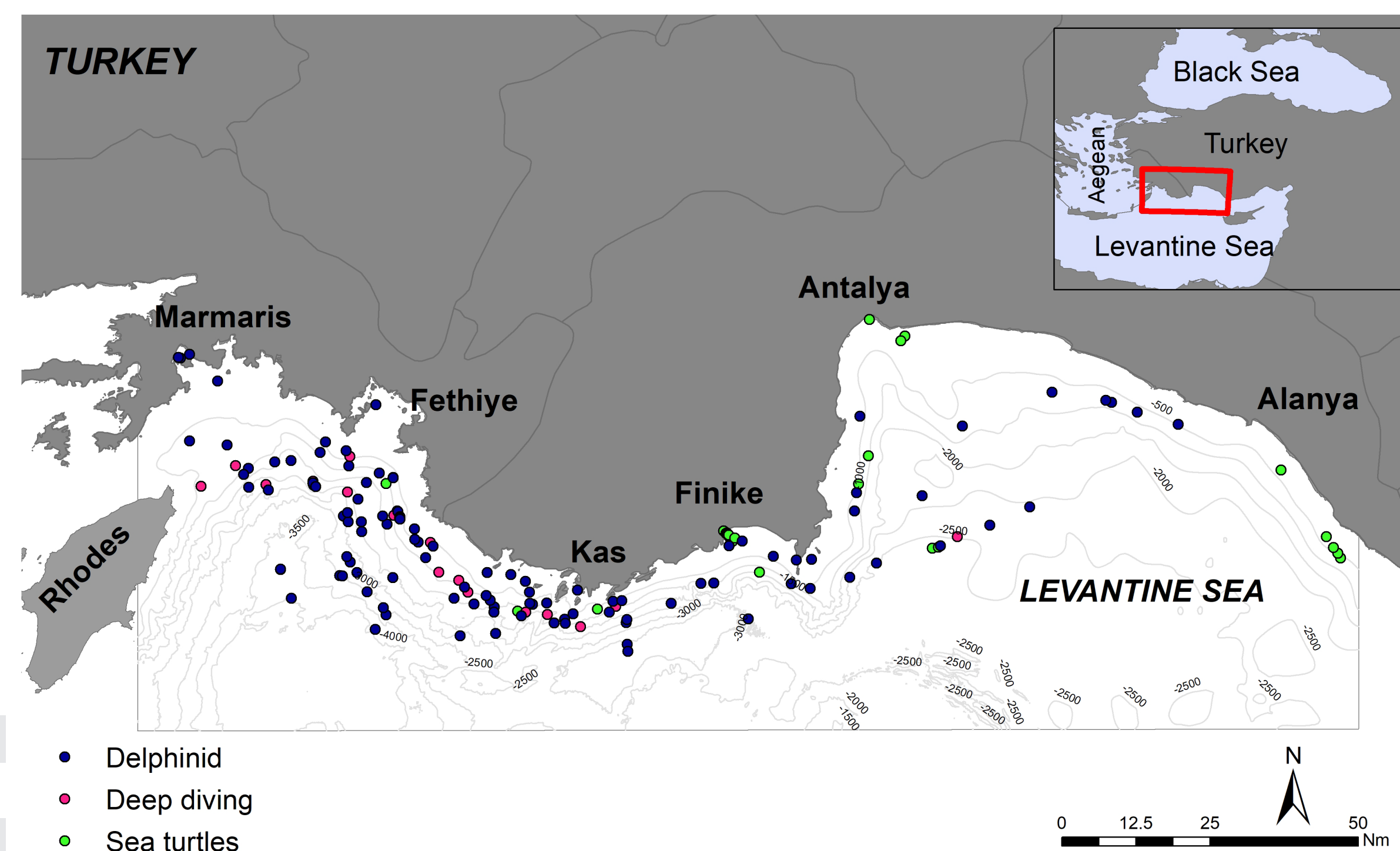


Figure 2. Species distribution in the survey area

## DISCUSSION

- Delphinidae species were sighted throughout the year, sperm whale sighting showed a considerable increase in summer.
- Reported encounter rates were comparably higher than any previously reported results.
- The year-round presence of threatened species with relatively high encounter rates and presence of calves, has underlined the importance of the north-western Levantine Sea for Delphinidae species and sperm whales.
- There is a need of consisting surveys, specifically in colder seasons for an accurate conclusion on the seasonal variations of the species.
- ***With ever increasing human impacts, including the recent rise in oil and gas exploration and the navy exercises on the fragile system of the Eastern Mediterranean, the under-studied declining populations of cetaceans should be at the forefront of research and conservation strategies.***

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