

# Project Update: August 2017

We recently presented a poster for our Rufford Project in Behaviour 2017, in the attached.



## BOTTLENOSE DOLPHINS (*TURSIOPS TRUNCATUS*) IN THE TURKISH LEVANTINE SEA: ENCOUNTER RATES, DISTRIBUTION AND RESIDENCY PATTERNS

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Rufford

### INTRODUCTION

Once widely distributed, the Mediterranean subpopulation of bottlenose dolphins is now assumed to be less than 10,000 individuals and is currently classified as 'vulnerable' (VU) under A2cde categories, due to a range of anthropogenic activities<sup>1</sup>.

The current study conducted the first multiyear dedicated surveys in the north-western Levantine Sea. It employed a photo-identification technique and collected data of bottlenose dolphin sightings between 2015 and 2016.

#### Project aim

The project aimed to identify the seasonal encounter rates, as well as to clarify the distribution and residency patterns of bottlenose dolphins within the North-Western Levantine Sea.



Figure 1. Bottlenose dolphin in Antalya (Schaub 2007).

### METHODS



Figure 2. Study area (this area followed in 2017-2016).

#### Data analysis

- Density:** The kernel density function of ArcGIS was employed to map the aggregation of dolphin sightings
- Encounter rates:** Overall and seasonal encounter rates were computed and calculated per km as  $n$  (total number of sightings) and  $L$  (total number of km travelled)
- Residency pattern:** Residency pattern analyses were carried out to assess tendency of individuals remaining in or returning to study area. Monthly and seasonal residency rates were calculated in addition to overall residency rate, using hierarchical cluster analysis

### RESULTS

- Total survey time (land and boat): 132 days (631 hours)
- Boat surveys conducted between 1<sup>st</sup> March 2015 and 30<sup>th</sup> July 2016
- Total combined transect length covered 1433 km
- Boat surveys conducted: 32 days (213 hours), covering 1643 km
- During boat surveys, 25 focal groups of bottlenose dolphins were encountered on 17 of 32 days
- 65 % of TT sightings took place between 0 and 200 m isobaths and no sightings were recorded beyond 500 m isobath (Figure 3)

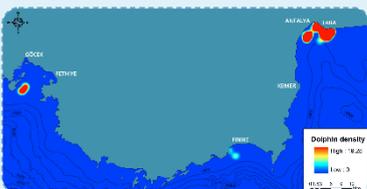


Figure 3. Density of bottlenose dolphins encountered during boat surveys within the north-western Levantine Sea.

- Overall encounter rate: average of 3.3 groups (25 individuals) per 100 km
- Highest encounter rate in spring with 11.6 groups (100 individuals) per 100 km
- Total catalogued individuals: 51 (Table 1) Antalya and Finike Bay: 45 individuals Fethiye Bay: 6 individuals
- TT was sighted in up to seven months and 2 seasons in consecutive years
- While seasonal, visitor and transient dolphins were reported, no year-round residency was documented (Table 2, Figure 4)
- Group 1 = seasonal residents (14 individuals)
- Group 2 = transients (27 individuals)
- Group 3 = visitors (4 individuals)

Table 1. Residency pattern of catalogued individuals in the north-western Levantine Sea (lighter shades = one day encounter, darker shades = more than one day encounter; 0 = individual ID, 00000 = unidentified individual)



Table 2. Mean monthly, seasonal and overall residency indices of bottlenose groups, as determined by hierarchical cluster analysis

Groups	Monthly	Seasonal	Overall Residency
Group 1	0.79 (0.33)	0.49 (0.15)	0.54 (0.16)
Group 2	0.3 (0.03)	0.26 (0.07)	0.04 (0.04)
Group 3	0.15 (0.15)	0.20 (0.07)	0.01 (0.11)

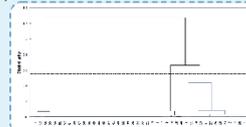


Figure 4. Frequency of sightings across months for the three groups of the investigated Levantine Sea study area.

### DISCUSSION

Results of first multiyear study in north-western Levantine Sea:

- Uneven spatial distribution of bottlenose dolphins
- High seasonal encounter rates in **SPRING**
- Preference of coastal zones like in other areas of the Mediterranean Sea?
- High number of seasonal and transient dolphins
- Possibility that home range is larger than study area
- Possibility that area might be important calving and/or nursery ground
- Bottlenose dolphins in the region are considered to be under **anthropogenic stressors** (Figure 5)
- Study results should be investigated by future studies with annual and higher survey effort



Figure 5. Breach of a bottlenose dolphin with a vertical eye.

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