



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

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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 activities¹.

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 (Gansen, 2017).

METHODS



Study area

Figure 2. Survey tracks that were followed in 2015-2016.

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)
- Surveys conducted between 1st March 2015 and 30th 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 bottlenose dolphin sightings took place between 0 and 200 m isobaths and no sightings were recorded beyond 500 m isobath (Figure 3)

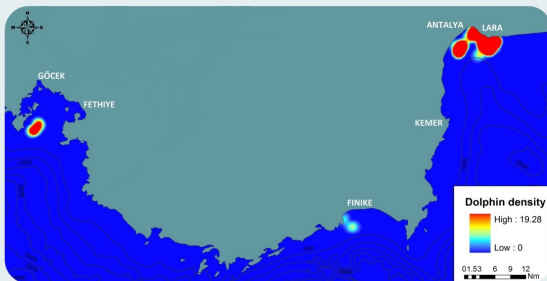


Figure 3. Density of bottlenose dolphins encountered during boat surveys within the north-western Levantine Sea.

- 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
- Bottlenose dolphins were 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 51 catalogued individuals in the north-western Levantine Sea (lighter shade = one day encounter; darker shade = two days encounter; ID = individual ID, TOTAL = photographed number individuals).

ID	2015												2016												TOTAL
	MAR	APR	MAY	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JUL								
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Table 2. Mean monthly, seasonally and overall residency indices of the dolphin groups, as determined by agglomerative hierarchical cluster.

Groups	Monthly	Seasonal	Overall Residency
Group 1	0.29 (± 0.12)	0.49 (± 0.15)	0.14 (± 0.08)
Group 2	0.1 (± 0.02)	0.20 (± 0)	0.01 (± 0.04)
Group 3	0.16 (± 0.14)	0.20 (± 0)	0.48 (± 0.11)

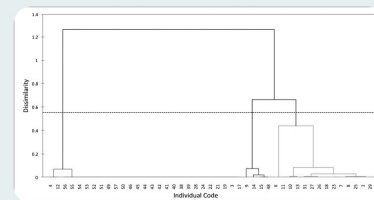


Figure 4. Clusters of residency patterns according to the dendrogram of the agglomerative hierarchical clustering analysis.

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 Sea²
- High number of seasonal and transient bottlenose dolphins
- Possibility that home range is larger than study area
- Possibility that area might be an 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. Example of a bottlenose dolphin with a starvation sign.

DISCUSSION

BEHAVIOUR2017
30th July – 04th August

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References

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