Estimating abundance and residency of a *Tursiops truncatus* (sub)population along the south-western coast of Sicily.

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**INTRODUCTION**

- *T. truncatus* is protected under the Annex II of the Habitat Directive.
- The Strait of Sicily is an area of the Mediterranean with high levels of fish productivity and marine traffic.
- Abundance and residency estimates are pivotal to the implementation of correct conservation measures.

**OBJECTIVES:**

The aim of this study is to investigate the abundance and residency of the bottlenose dolphins population in the waters off the Agrigento province (Sicily).

**MATERIALS AND METHODS**

112 surveys were conducted from a 5,5 inflatable boat using a random sampling design between 2016 and 2019

**Data collected:** photo-identification, geographical position (Garmin handheld GPS), group composition

**ANALYSIS:**

- QGis was used to map the sightings and to determine distribution through the Kernel non parametric method;
- Abundance was estimated using the SOCPROG 2.9. Open population models were applied and the best one was selected by lowest AIC;
- Residency for each dolphin was determined through monthly occurrence rate (MOR) and yearly occurrence rate (YOR), calculated as:

\[
\text{MOR} = \frac{\text{n of sighting months}}{\text{tot n of monitoring months}}
\]

\[
\text{YOR} = \frac{\text{n of sighting years}}{\text{n of monitoring years}}
\]

**RESULTS**

**Img 1.** Survey tracks and sighting points.

**Tab 1.** Survey results.

**Year** | **Sightings** | **NM** | **ER** | **Births**
--- | --- | --- | --- | ---
2016 | 7 | 621,90 | 0,01 | 4
2017 | 25 | 666,44 | 0,04 | 10
2018 | 27 | 892,48 | 0,03 | 10
2019 | 33 | 1282,39 | 0,03 | 4
**tot** | **92** | **3461,19** | 0,03 | **28**

**Img 2.** Photo-ID catalogue, containing 659 records of 76 dolphins (sexes: 1 ♀, 26 ♂, 49 unknown). On average, 86% of the animals were identified. 65 specimens were encountered more than once (recaptures).

**Tab 2.** Abundance estimates.

<table>
<thead>
<tr>
<th>Abundance estimate</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N° marked (Mortality)</td>
<td>65,24, 5,1</td>
</tr>
<tr>
<td>Average θ</td>
<td>0,85</td>
</tr>
<tr>
<td>Mortality rate</td>
<td>0,09, 0,04</td>
</tr>
<tr>
<td>N tot</td>
<td>77, 6,3</td>
</tr>
</tbody>
</table>

**Img 4.** Distribution estimate. The density hotspot is located at 2.5NM from the coast (40-50m deep).

**DISCUSSION:**

- The area is an important habitat for the *T. truncatus* species, it could also be of importance to reproduction.
- A density hotspot in distribution is located nearly in front of Porto Empedocle harbour, an area with intense marine traffic.
- From both MOR and YOR results, this community seems to be part of a larger population.