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

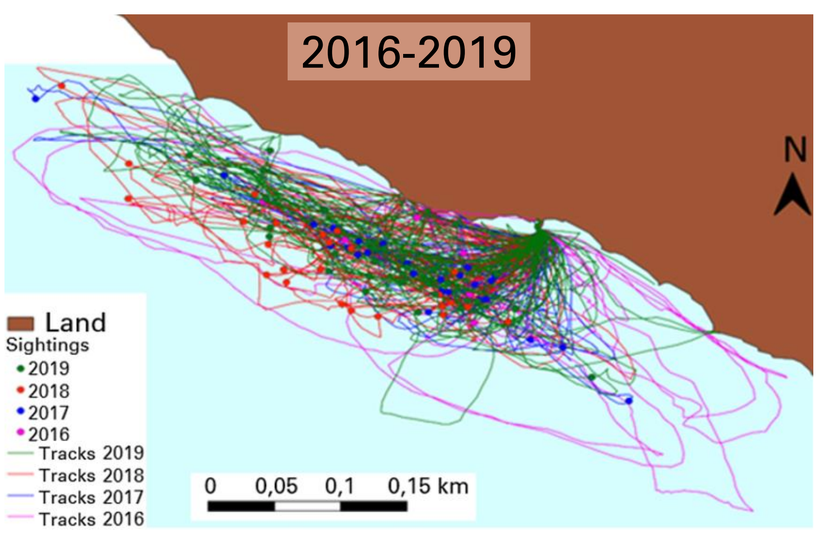
Data collected: photo-identification, geographical position (Garmin handheld GPS), group composition

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:

$$MOR = \frac{\text{n° of sighting months}}{\text{tot n° of monitoring months}} \qquad YOR = \frac{\text{n° of sighting years}}{\text{n° of monitoring years}}$$

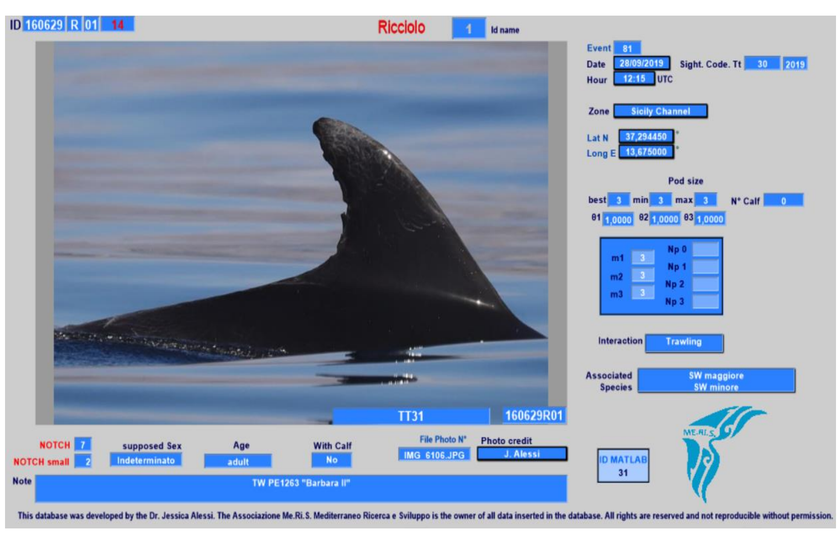
RESULTS



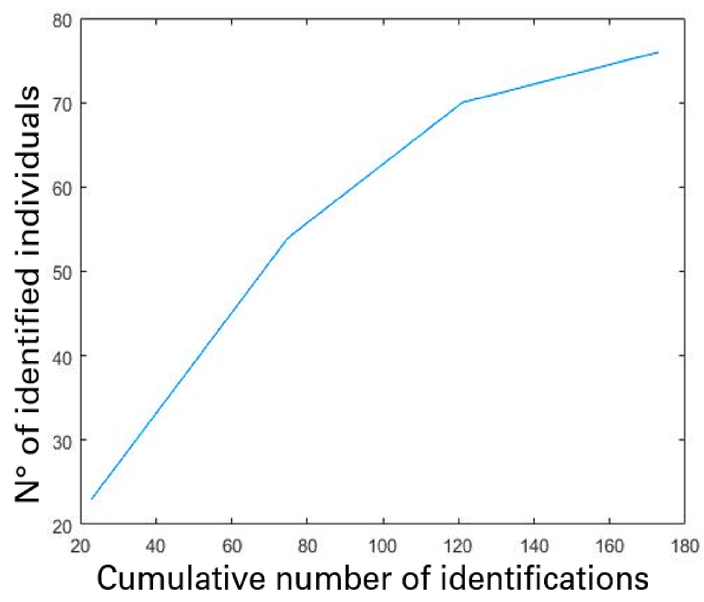
Img 1. Survey tracks and sighting points.

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**

Tab 1. Survey results.



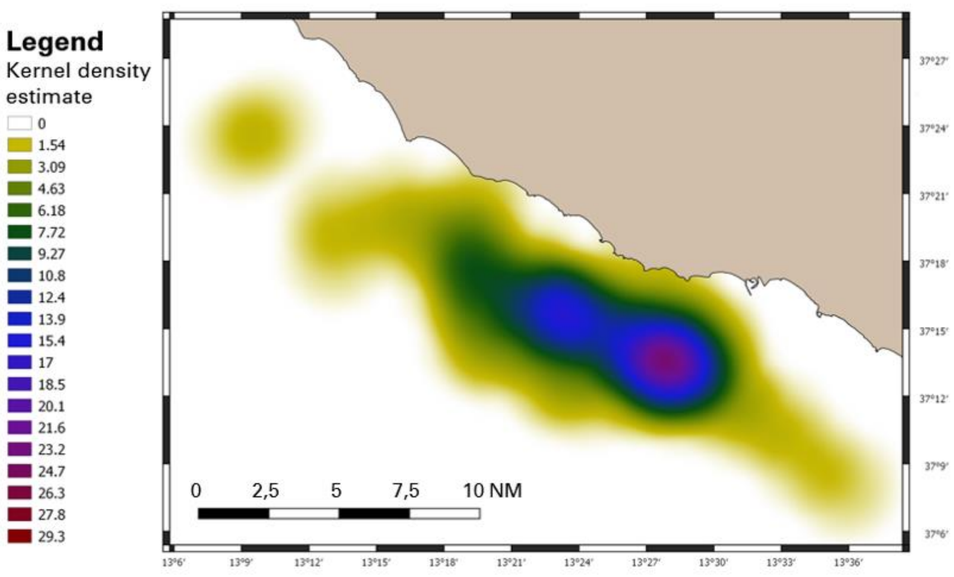
Img 2. Photo-ID catalogue, containing 659 records of 76 dolphins (sexes: 1 ♂, 26 ♀, 49 unknown). On average, 86% of the animals were identified. 65 specimens were encountered more than once (recaptures).



Img 3. Discovery curve.

Abudance estimate		SE
N°marked (Mortality)	65,24	5,1
Average θ	0,85	
Mortality rate	0,09	0,04
N tot	**77**	**6,3**

Tab 2. Abundance estimates.



Img 4. Distribution estimate. The density hotspot is located at 2,5NM from the coast (40-50m deep).

MOR	% of individuals	N° of individuals
MOR ≥ 0,5	60%	46
0,25 < MOR < 0,5	29%	22
MOR < 0,25	11%	8

Tab 3. Monthly occurrence rates allow to define individuals as being sporadic (MOR ≥ 0,5), frequent (0,25 < MOR < 0,5) or resident (MOR ≥ 0,5) in the area.

YOR	% of individuals	N° of individuals	Years of presence
1	18%	14	4
0,75	14%	11	3
0,5	33%	25	2
0,25	34%	26	1

Tab 4. Yearly occurrence rates.

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.

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