



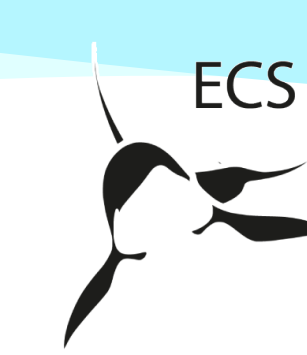
Residency patterns and site fidelity of Risso's dolphins (*Grampus griseus*) in the central Catalan coast (Northwest Mediterranean Sea)

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INTRODUCTION

Risso's dolphins are regularly seen off the central Catalan coast (NW Mediterranean Sea) in areas of underwater canyons, where photo-ID data suggest certain degree of residency for some individuals.

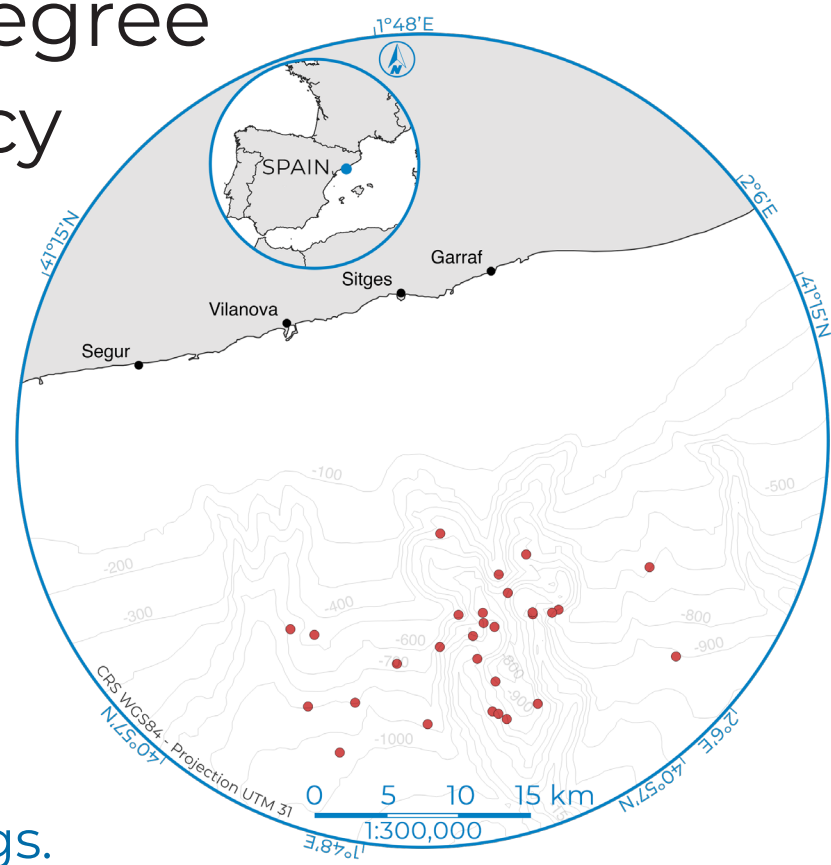


Figure 1. Map of the study area, and Risso's dolphin's sightings.

AIM

Understand the residency patterns of Risso's dolphins in the central Catalan coast.

METHODS - Selection of photos (2 criteria)

QUALITY (5 criteria)^[1,2]

Punctuation 1 to 3 for 5 criteria to assess the quality of each picture based on a final score of 8 to 24 points. Three main categories were obtained:

Excellent: 8-12
Medium: 13-16
Poor: > 16



contrast x 1.5

angle x 2



Sharpness x 2

size x 1.5

obstacles x 1

MARKING (4 grades)^[3,4]

1. min 3 highly visible marks
2. min 1 distinctive mark
3. small notches, few scars
4. No visible notching or scarring



Grade 1

Grade 2



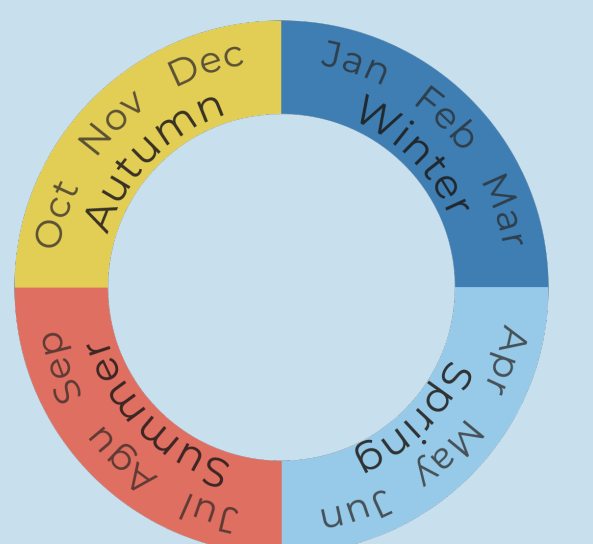
Grade 3

Grade 4

Selected photos of adult individuals with medium or excellent quality + grade 1 or 2.

METHODS - Residency pattern analysis

Sightings were allocated to a year season depending on the month at which they occurred.



Three indices to assess the residency of Risso's dolphins:^[5]

Seasonal residency rate

$$\frac{\text{number of seasons an individual was sighted}}{\text{total number of seasons}}$$

Monthly residency rate

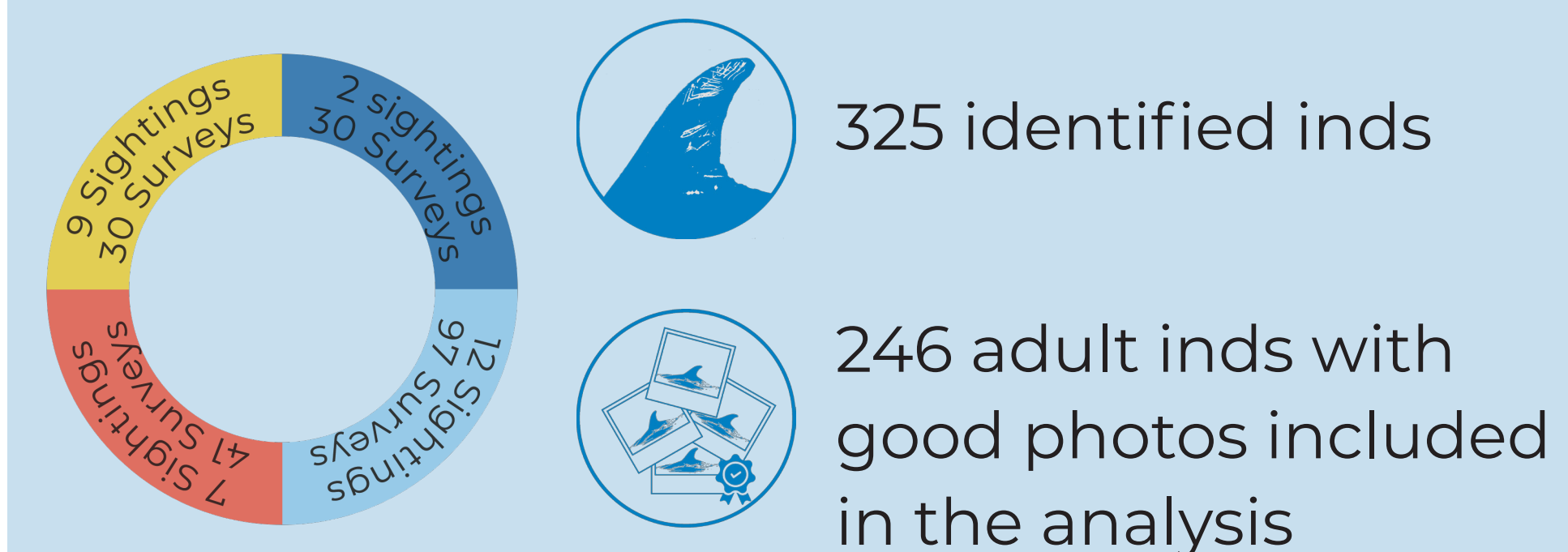
$$\frac{\text{number of months an individual was sighted}}{\text{total number of months}}$$

Side fidelity rate

$$\frac{\text{number of resightings}}{\text{number of surveys from 1st sighting to last recapture}}$$

Agglomerative Hierarchical Cluster Analysis used to assess the degree of residency^[5].

RESULTS - Descriptive results



325 identified inds

246 adult inds with good photos included in the analysis

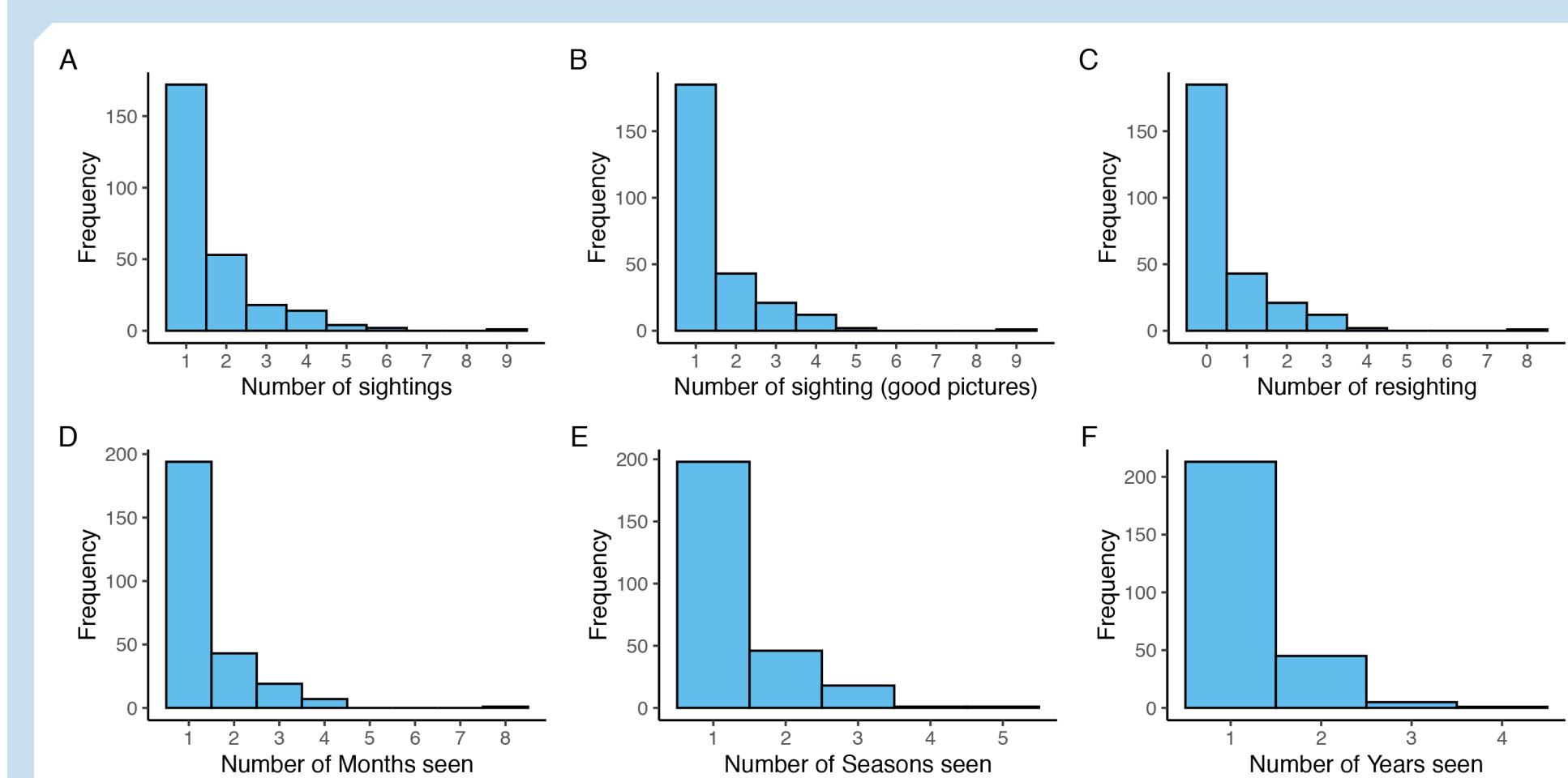


Figure 2. Number of Risso's dolphins seen per number of sightings (A), number of sightings, only taking into account pictures with enough quality and within grades 1 and 2 (B), number of resightings (C), number of months (D), number of seasons (E) and number of years (F).

RESULTS - Residency pattern analysis

Agglomerative Hierarchical Cluster Analysis found 3 clusters based on side fidelity, seasonal and monthly residency rates.

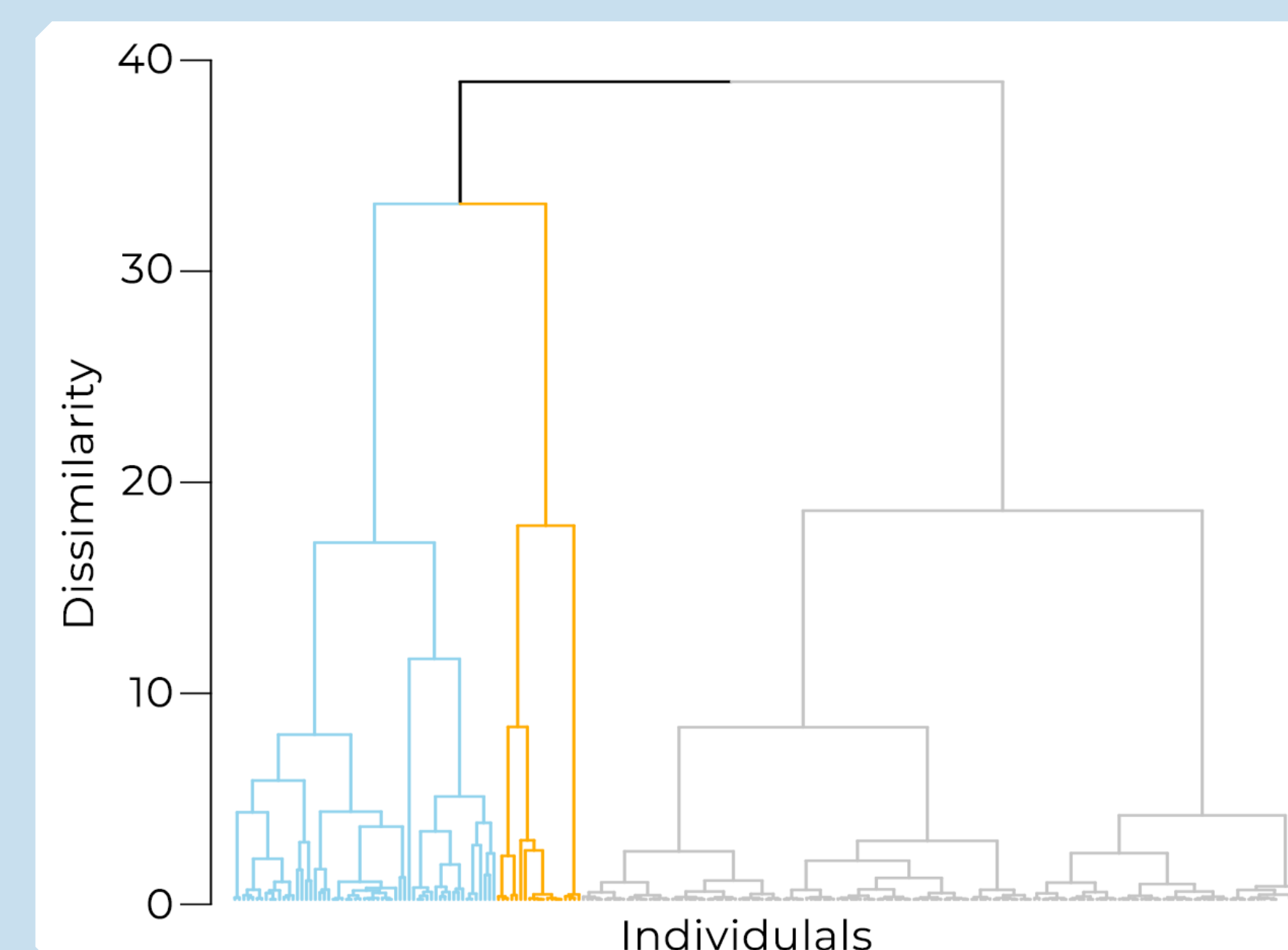


Figure 3. Dendrogram showing the three distinctive clusters found in the population. Cluster 1 (blue) comprised by 59 individuals, Cluster 2 (yellow) by 19 individuals and Cluster 3 (grey) by 168 individuals.

Table 1. Min, max, mean values, and standard deviation (SD) of the side fidelity, seasonal, monthly residency rates estimated for the individuals of included in the AHCA analysis

	Monthly residency rates				Seasonal residency rates				Site fidelity rates			
	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD
Cluster 1	0.029	0.114	0.038	0.014	0.03	0.152	0.071	0.02	0.01	0.2	0.046	0.041
Cluster 2	0.014	0.043	0.023	0.009	0.03	0.065	0.045	0.016	0.222	0.667	0.357	0.169
Cluster 3	0.143	0.143	0.143	0	0.03	0.03	0	0	0	0	0	0

DISCUSSION

- PhotoID proved to be a **good tool** to identify Risso's dolphin individuals in the central Catalan coast.
- Risso's dolphins in the central Catalan coast showed **lower site fidelity and residency indices** compared to other areas in the Mediterranean Sea^[5].
- Some individuals show high site fidelity and residency indices, suggesting **differential use** of the central Catalan coast for different individuals.

FUTURE WORK

- Preliminary photoID results with pictures taken in 2022 show a **high resighting percentage** and should be considered in further analyses.
- Comparisons with Risso's dolphin catalogues from other area would provide key information on **connectivity** and **movement patterns** within the Mediterranean sea.

REFERENCES

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