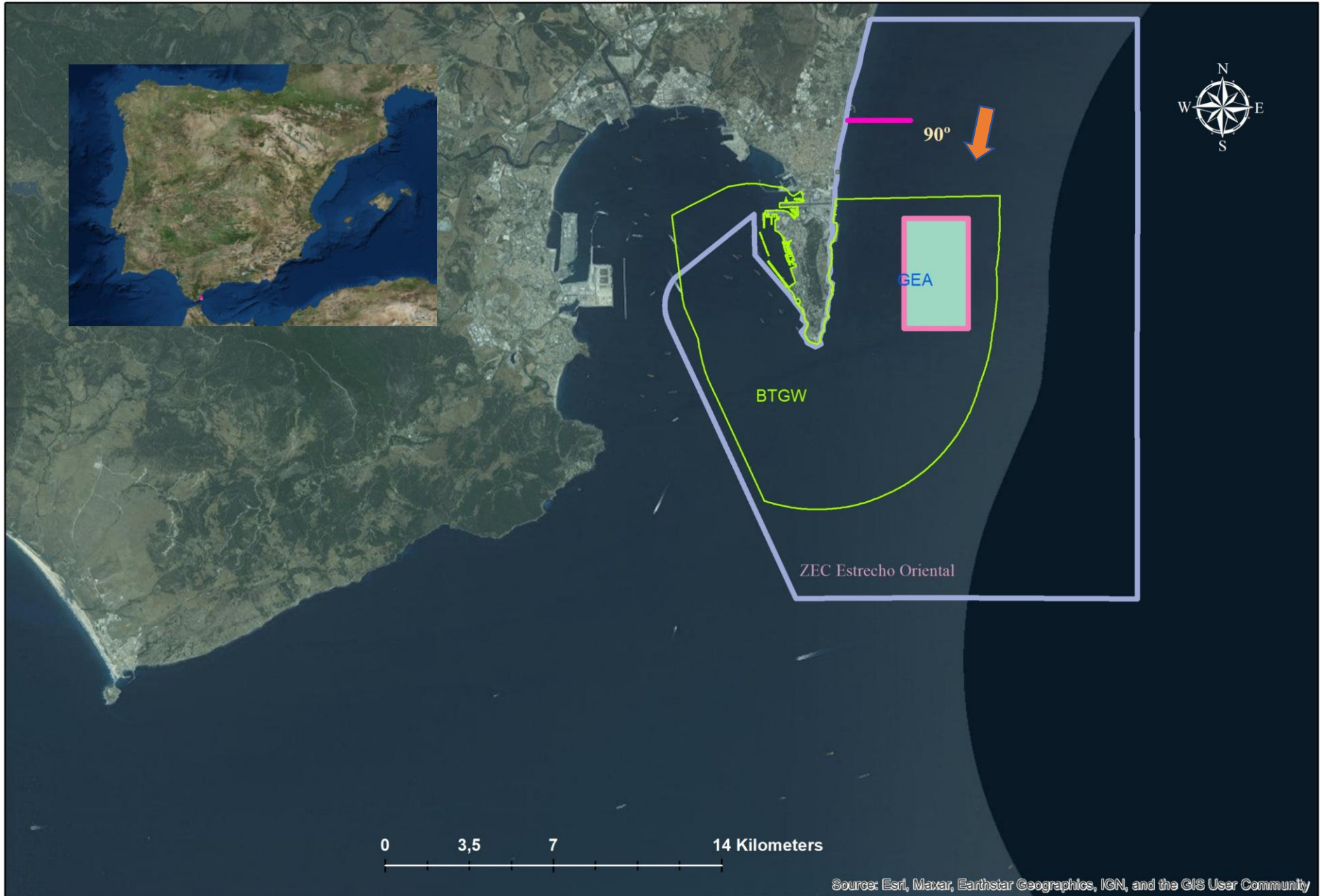






CIUDADANÍA  
+  
CIENCIA  
+  
BALLENAS





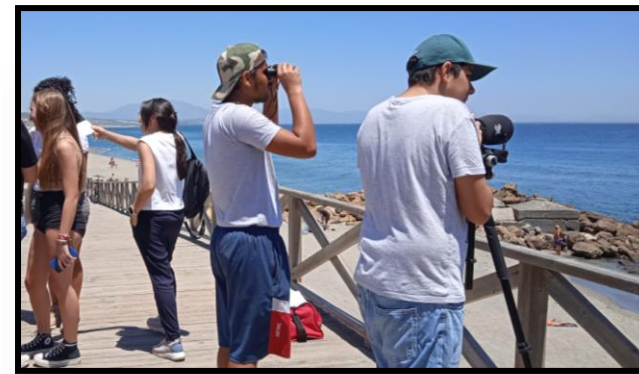
Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community



**ECOLocaliza**



Hola!! Hoy he visto pasar un rocuál (solo he visto uno) por la zona de la Balona sobre las 17.30 😊😊😊



Aprender y disfrutar  
Observar ballenas y otros animales marinos en libertad  
Satisfacer la necesidad actual de preservar la naturaleza que nos queda  
Formar parte de un proyecto científico



LOCALES  
O LARGO PLAZO

VISITANTES  
O CORTO PLAZO

FORMACIÓN



# ¿Qué vamos a estudiar?



Rorcual común - *Balaenoptera physalus*



 **MISTICETOS**



**ODONTOCETOS**



**ECOLocalIZA**

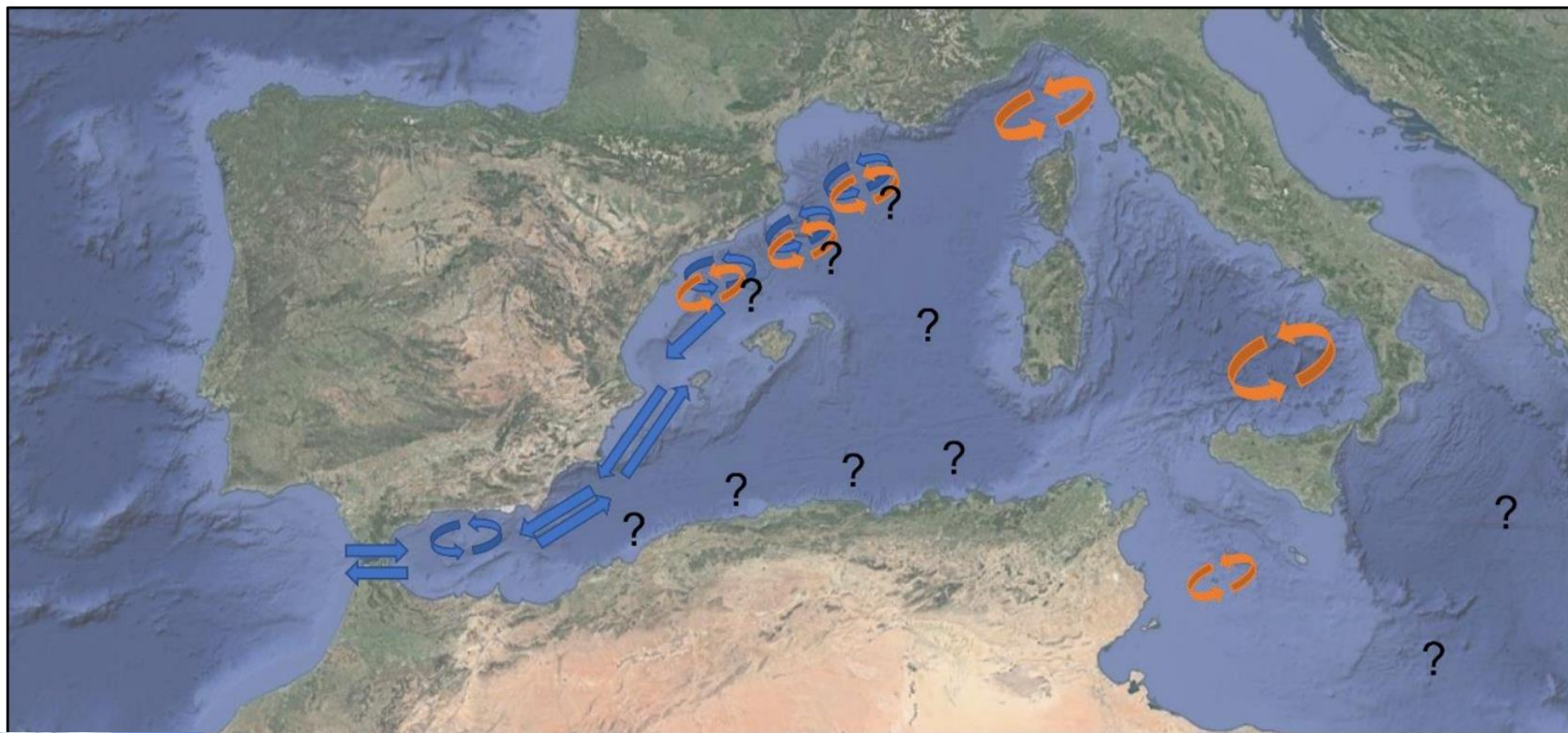


**ECOLocaliza**



**ECOLocaliza**





Los patrones de migración del rorcual común en el Mediterráneo. La población mediterránea está de color naranja mientras que la atlántica está representada de color azul. Los interrogantes, son debidos a mancas de conocimiento.

Proyecto Rorcual y Biodiversidad en la costa catalana. Asociación EDMAKTUB. Contribución a la mejora del conocimiento del rorcual común en las costas de Cataluña. Beatriu Tort y Eduard Degollada.

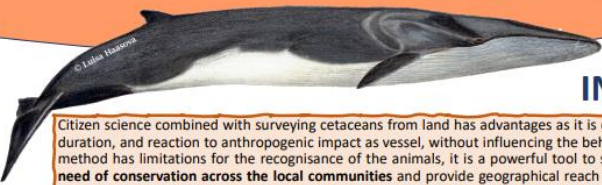




# COMBINING CITIZEN SCIENCE AND LAND-BASED SURVEYS AS A TOOL FOR RESEARCH CETACEANS AND SUSTAINABLE USE OF THE MARINE RESOURCES IN A SPECIAL AREA OF CONSERVATION

Martín-Moreno, E.<sup>1,5</sup>, Espada-Ruiz, R.<sup>1,2,5</sup>, Olaya-Ponzzone, L.<sup>2,3</sup>, Patón, D.<sup>4</sup>, García-Gómez, J.C.<sup>2,3</sup>

<sup>1</sup> Ecologicaliza, Cetaceans, Environmental Education & Research, La Línea de la Concepción, Spain <sup>2</sup> Laboratory of Marine Biology, Department of Zoology, University of Seville, Spain <sup>3</sup> Biological Research Area, Seville Aquarium, Seville, Spain <sup>4</sup> Faculty of Sciences, Ecology Area, University of Extremadura, Spain <sup>5</sup> MMIRC, Marine mammals, information, research and conservation, Gibraltar, UK



## INTRODUCTION

Citizen science combined with surveying cetaceans from land has advantages as it is cheap and allows to record sightings, duration, and reaction to anthropogenic impact as vessel, without influencing the behaviour of the animals. Although, this method has limitations for the recognisance of the animals, it is a powerful tool to spread the knowledge in view of the need of conservation across the local communities and provide geographical reach needed to address spatial ecological questions at relevant scales to species migration patterns (Dickinson et al., 2010)<sup>1</sup>. The project PRCEO has been carried out since 2021 with the aim of studying the migration of fin whales and other species of cetaceans.



Figure 1. Study area, ZEC Estrecho Oriental.

## RESULTS

Number of sightings per species 2021-2022

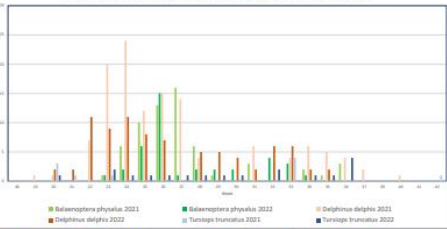


Figure 2. Sightings of the detected species during the study period.

Hours of effort per year (May-November)

2021	591:08:13
2022	522:13:44

Table 1. Efforts in hours.

Number of whales 2021-2022

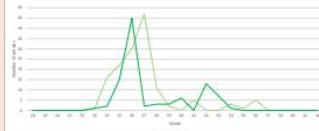


Figure 4. Number of fin whales individuals per week.



Figure 3. Photos taken from land.

## METHODS

A land-based fix station was located in **La Línea de la Concepción (Cádiz)** to monitor a Special area of Conservation (ZEC Estrecho Oriental). Fig 1. Morning and afternoons shifts were covered by teams formed by a minimum of 1 scientist observer and 1 volunteer citizen trained previously and supervised by the scientist. Fin whales crossing an imaginary line of 90° between land and the Gibraltar eastern anchorage were counted.

## CONCLUSIONS

Citizen science combined with land-based monitoring are powerful tools to study cetacean populations, not only for the great scientific information or for expanding knowledge and creating awareness but also for the sustainable use of the marine resources. The project PRCEO highlights the value of the natural biodiversity detected in ZEC Estrecho Oriental and the threats that marine mammals face in the area.



**Acknowledgements:** Thanks to the team of volunteers for the efforts and specifically to Luisa Haasova, Mari Carmen Benitez Sody and Esther Guerrero Serrano. Without them this Project would not be possible. To the Citizens by Planet and Ecolowidlife for their support to spread the knowledge. To the Department of beaches of La Línea and Centro de participación activa "La Atunera" for their trust.



Espada, R.  
Rocioespada80@gmail.com



# Advances in the knowledge of the Mediterranean-Atlantic migration of the fin whale (*Balaenoptera physalus*) in the Iberian Mediterranean corridor. Data collection, migration periods and swimming speeds

Rocio Espada Ruiz<sup>1,2</sup>, Blanca Feliu-Tena<sup>3</sup>, Beatriu Tort Castro<sup>4</sup>, Estefanía Martín Moreno<sup>2</sup>, Liliana Olaya-Ponzzone<sup>1,5</sup>, Daniel Patón<sup>6</sup>, Eduardo J. Belda<sup>3</sup>, Iris Anfruns<sup>7</sup>, Alejandro Onrubia<sup>8</sup>, Eduard Degollada<sup>4</sup>, José Carlos García-Gómez<sup>1,3</sup>

- (1) Laboratory of Marine Biology, University of Seville.
- (2) Ecologicaliza.
- (3) Research Institute for Integrated Management of Coastal Areas. Universitat Politècnica de Valencia.
- (4) Asociación Edmaktub, Barcelona
- (5) Área de Investigación Biológica I+D+i Del Acuario de Sevilla.
- (6) Ecology Unit, Faculty of Sciences, University of Extremadura.
- (7) Turmares Tarifa.
- (8) Fundación Migres.

## Methods

During the year 2022 different entities developed campaigns for the study of fin whales in the SW Mediterranean Sea. IGIC-Universitat Politècnica de Valencia, Laboratory of Marine Biology (University of Seville)- Ecologicaliza and Migres Foundation, deployed three land-stations located along the south-eastern coast of Spain (Fig. 1). Photo ID can be used to study habitat use and movements of highly migratory cetaceans (Alessi et al., 2014) and this information was collected by EDMAKTUB and IGIC-UPV vessel in Valencia, Ecologicaliza in La Línea de la Concepción and the Whale Watching company, Turmares in Tarifa.

Fin whales migrate between the Mediterranean Sea and the Atlantic sea through the Strait of Gibraltar (Raga and Pantoja, 2004). Their migrations towards the Atlantic sea take place close to the Spanish coast in the strait of Gibraltar (Gauffier et al., 2018) but also in other parts of the Mediterranean sea, passing through areas outside the Mediterranean cetacean migration corridor and the Alborán corridor (IMMA) being exposed to maritime traffic, noise and harassment from sport boats.



Figure 1. Study area

## Results

Area	Valencia			Strait of Gibraltar					
	Cabo rocaul-IGIC	UPV	Edmaktub	Ecologicaliza-LBM-US	Migres-Turmares	CR-Land	CS	Boat	
Land-boat	291:20:00	0	119:30:00	41:52:11	PRCEO-Land	CS	Boat	Migres-Land	Turm-Boat
Effort (h)	291:20:00	0	119:30:00	41:52:11	488:19:00	0	44	1236:30:00	742:31:00
Sightings	17	21	11	8	42	28	3	74	35
Individuals	18	38	21	21	80	67	12	138	64

Table 1: Efforts, sightings and numbers of whales for all entities involved from 11<sup>th</sup> of June to the 30<sup>th</sup> of July 2022

Three matchings of photo ID were obtained between Valencia and the Strait of Gibraltar (Fig.2). The coastal distance between the three stations was calculated, therefore the speed of the whales between the stations. Whales speed's signification was analysed through the non-parametric Wilcoxon median test resulting non-significant. Several lapses of days were assumed between the number of individuals of the different stations to prove that the swimming speed coincided with the averaged through the Photo-ID matching times (Fig.3).

## Discussion

Taking in consideration that photo-ID matchings were limited due to the difference in photographed sides of the whales between entities, the uniformity of protocol and the collaboration of entities along the coast of Spain can provide very important information in the fin whales migration routes and their timing of arrivals to the Strait of Gibraltar which could contribute to the management and conservation of this species in human impacted environments and heavy maritime traffic routes.

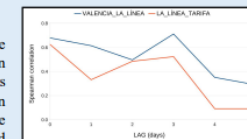


Figure 3. Correlation analysis between departures and arrivals at different points with different day lapses.



Figure 2. Matchings Valencia – Strait of Gibraltar

**Acknowledgements:** Thanks to Fundación biodiversidad, MITECO and all the volunteers that make possible this work, specially M Carmen Benitez and Esther Guerrero.



Matching 1



Matching 2



Matching 3

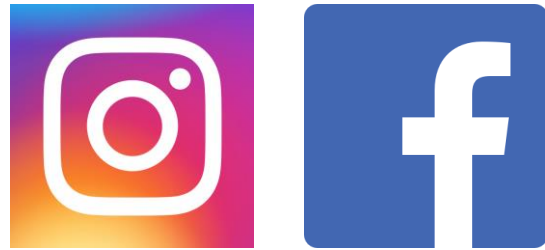


Figure 2. Matchings Valencia – Strait of Gibraltar



**KEEP THE  
WHALES**  
*In La Linea*

Más información:  
[info@ecolocaliza.com](mailto:info@ecolocaliza.com)



«Mucha gente pequeña, en lugares  
pequeños, haciendo cosas pequeñas, pueden  
cambiar el mundo» (Eduardo Galeano)

