

THE KEY ROLE OF MARINE CITIZEN SCIENCE IN EARLY DETECTION AND MONITORING OF CHANGES IN MARINE BIODIVERSITY: THE CASE OF REDPROMAR IN THE CANARY ISLANDS

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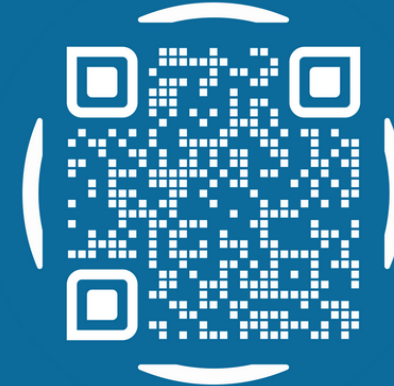
INTRODUCTION

We are witnessing global changes that threaten ocean health, leading to the progressive **degradation of the marine environment** due to pollution, overfishing, increased maritime traffic and rising ocean temperatures, among others. These **temperature increases** have caused more marine heatwaves and processes like tropicalization and meridionalization, shifting species distribution in the Canary Islands and promoting the establishment of tropical exotic species.

In this context, it is essential to promote policies based on appropriate scientific knowledge and increase the level of understanding among all stakeholders. This study proposes **Marine Citizen Science** as a promising avenue for advancing marine conservation.

METHODOLOGY

• Sightings of marine species in the Canary Islands have been compiled through the **RedPROMAR citizen science platform** (www.redpromar.org).



• The sightings have been recorded between 2012 and 2024 and have undergone a rigorous **validation process** in which all information has been verified by multiple taxonomic specialists.



Observe and take a picture
In which the organism or the event can be correctly appreciated

Record your observations
Indicating date and location

Become a Citizen Scientist
Contribute and learn about the marine biodiversity of the Canary Islands

RESULTS

- Over a period of more than a decade RedPROMAR has compiled over **60.000 sightings** of various species reported by approximately **3.800 users**, some of them corresponding to **first records** or rare species (Figure I).
- Among this dataset, trends of both **increase and decrease in the number of sightings** in the Canary Islands of certain species over the years are discernible (Figure II), with **ocean warming** identified as an important factor.

- Variations in species distribution across the islands can be observed, contingent upon the **water temperature gradient within the archipelago** (Figure III). Specifically, the eastern islands display relatively warmer temperatures in comparison to the western islands, influenced by the upwelling of the African continent.
- The **capacity to detect specific events or phenomena** associated with oceanographic and climatic variations, occasionally with significant social and/or ecological implications, has also been documented (Figure IV).

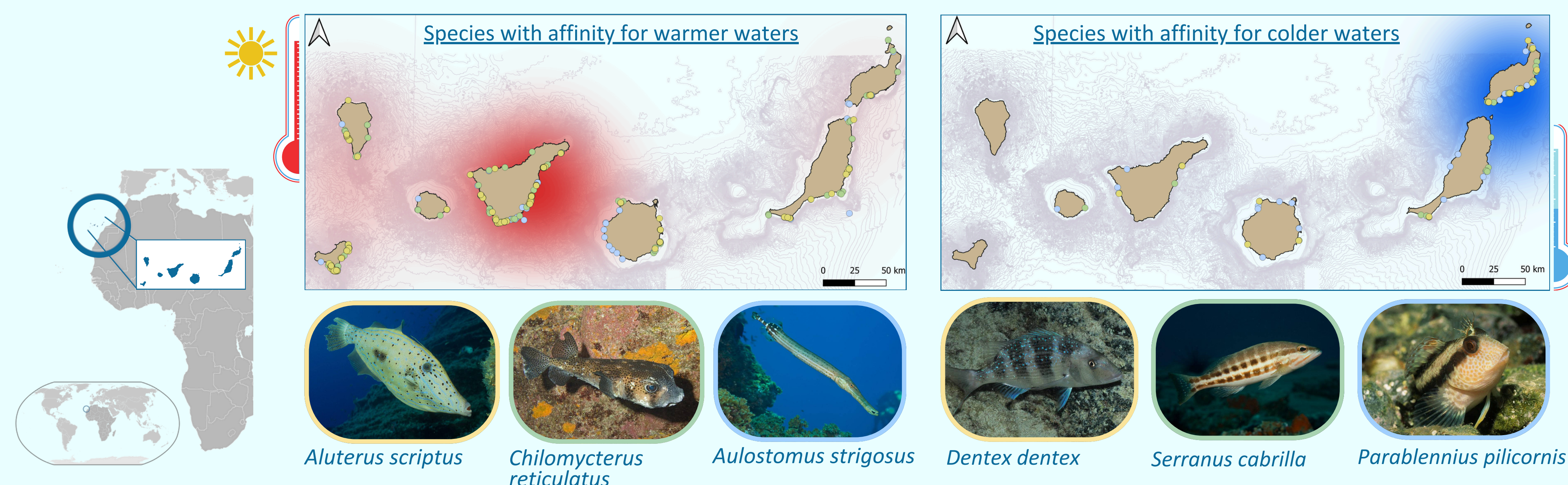
I. First records or rare sightings



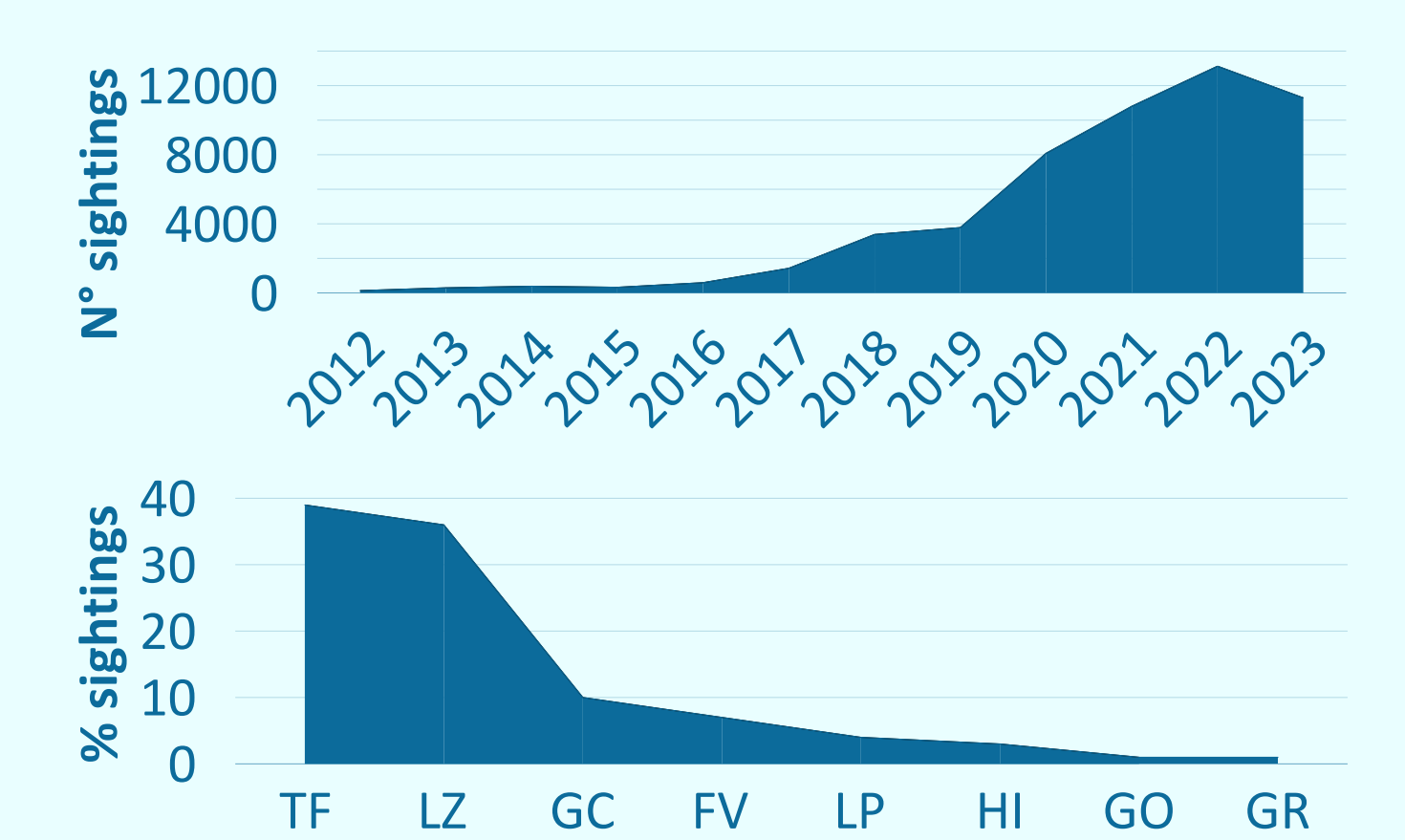
II. Increase in sightings over the years



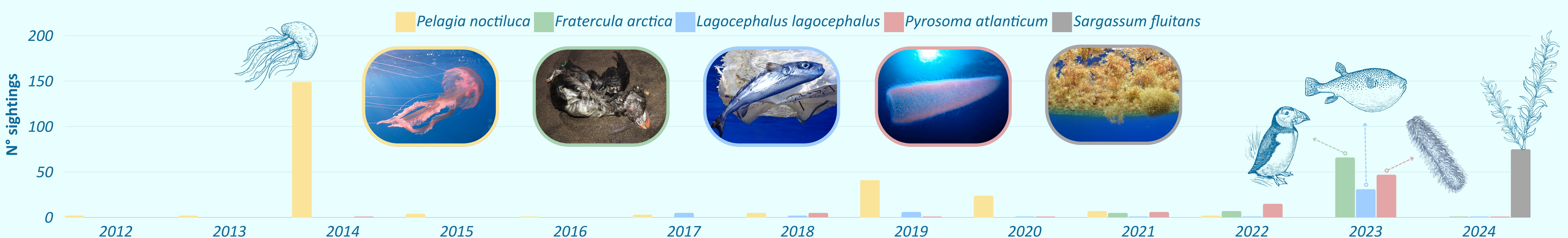
III. Trends according to the temperature gradient of the archipelago



*Historical record of sightings on the RedPROMAR platform (2012-2023)



IV. Sightings linked to occasional phenomena or mass strandings



CONCLUSIONS

- The generated data has provided information on the identification of new records, changes in trends, and specific events previously unidentified, filling information gaps and further demonstrating the significant contribution of **marine citizen science to the understanding and monitoring of marine biodiversity**.
- This information does not replace traditional scientific knowledge, but strengthens it, providing **new ways to understand the different processes occurring on our oceans**.
- At the same time it is important to acknowledge that **citizen science may be influenced** by news or social trends unrelated to the project's objectives, occasionally driving interest in certain species or groups. Nevertheless, it serves as a potent outreach tool for debunking or clarifying false information, bolstered by robust scientific backing.
- Furthermore, it promotes outreach efforts aimed at training users to detect and report relevant information, thereby enhancing their **knowledge and awareness of local marine ecosystems**.

*Authors of the photos: Rogelio Herrera, María Belén Caro and Marc Martín

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ACKNOWLEDGMENTS

