

The key role of marine citizen science in early detection and monitoring of exotic species: The case of RedPROMAR in the Canary Islands

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INTRODUCTION

The current state of the oceans and their biodiversity is a matter of global concern. Species introduction is considered one of the main threats, capable of generating significant ecological, economic, and social impact. In this context, data collection on the presence and distribution of these species is crucial for their management. Marine citizen science emerges as a promising global tool, capable of expanding the spatio-temporal scale of exotic species records. This study evaluates the contribution of citizen science through the Marine Environment Observers Network in the Canary Islands (RedPROMAR) as an early detection and monitoring system for exotic species in the archipelago.

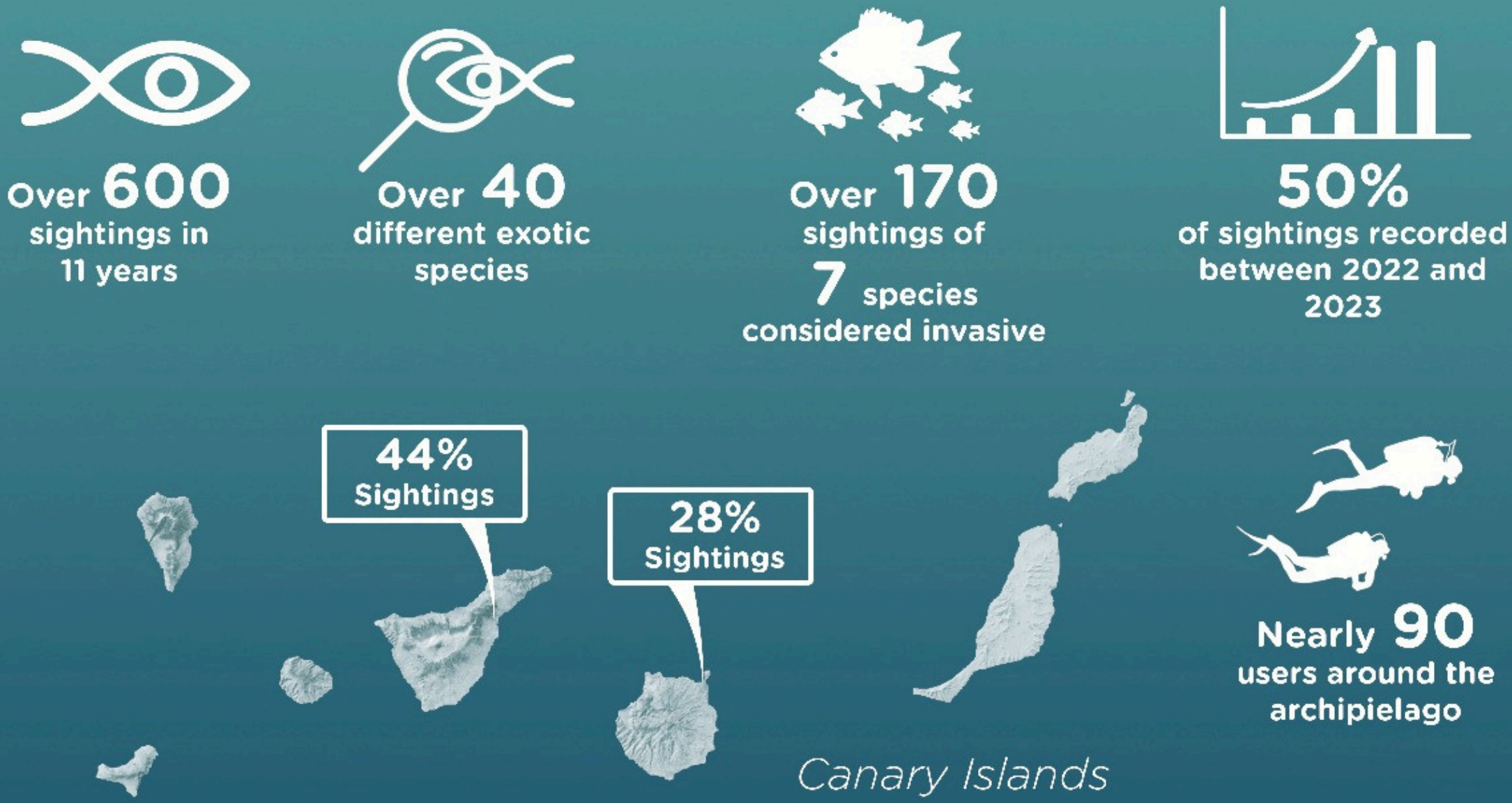
METHODOLOGY



Sightings of exotic marine species in the Canary Islands have been compiled through the RedPROMAR citizen science platform (www.redpromar.org) and its project "Monitoring Introduced Species in the Canary Islands" (QR code).

The sightings have been recorded between April 2012 and April 2024, and include at least one in situ photograph or video, as well as the correct date and location of the record. Furthermore, all sightings have undergone a rigorous validation process in which all information has been verified by multiple taxonomic specialists.

RESULTS



Sightings of exotic species reported in RedPROMAR: trends, distribution, and groups

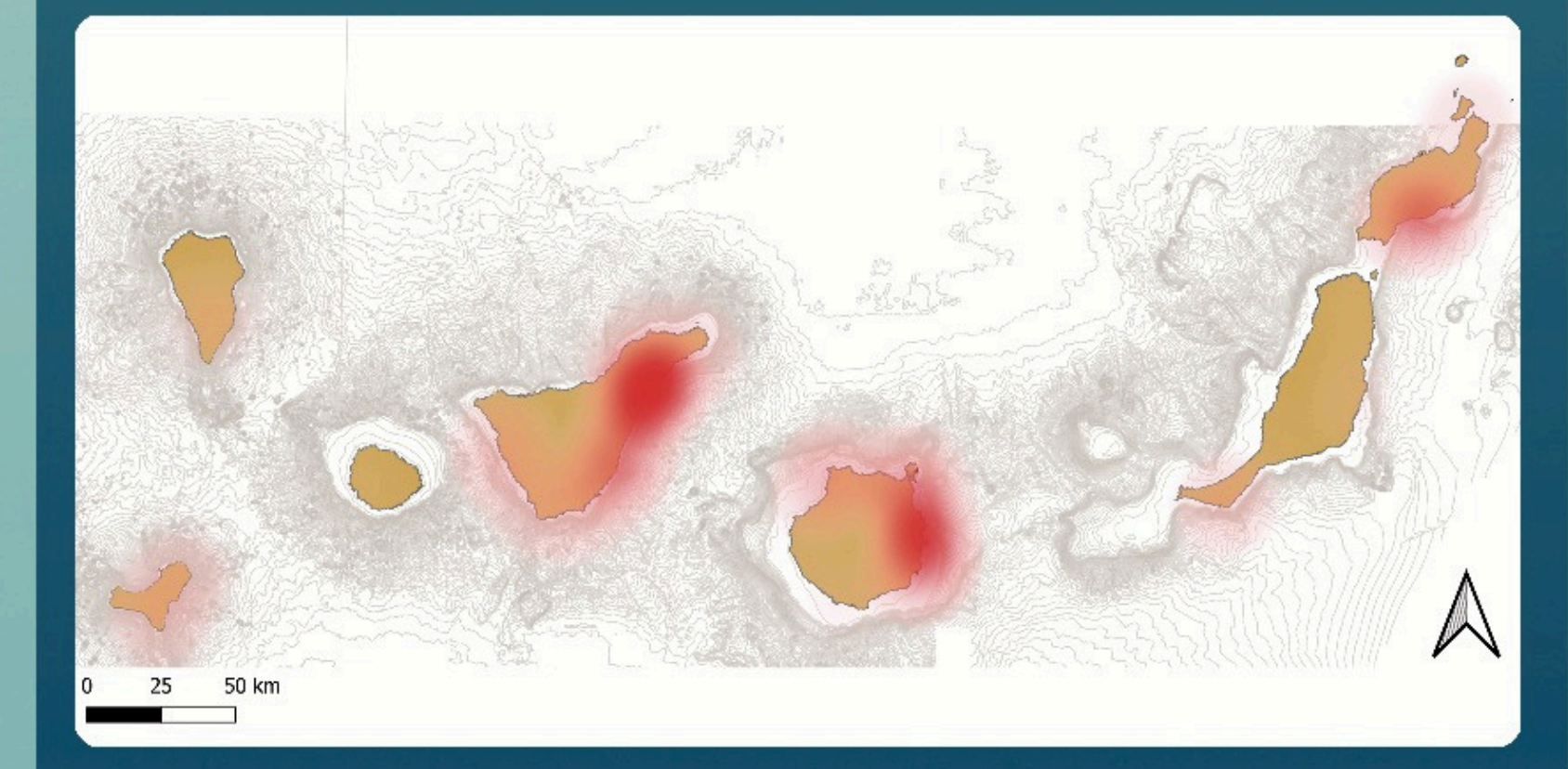
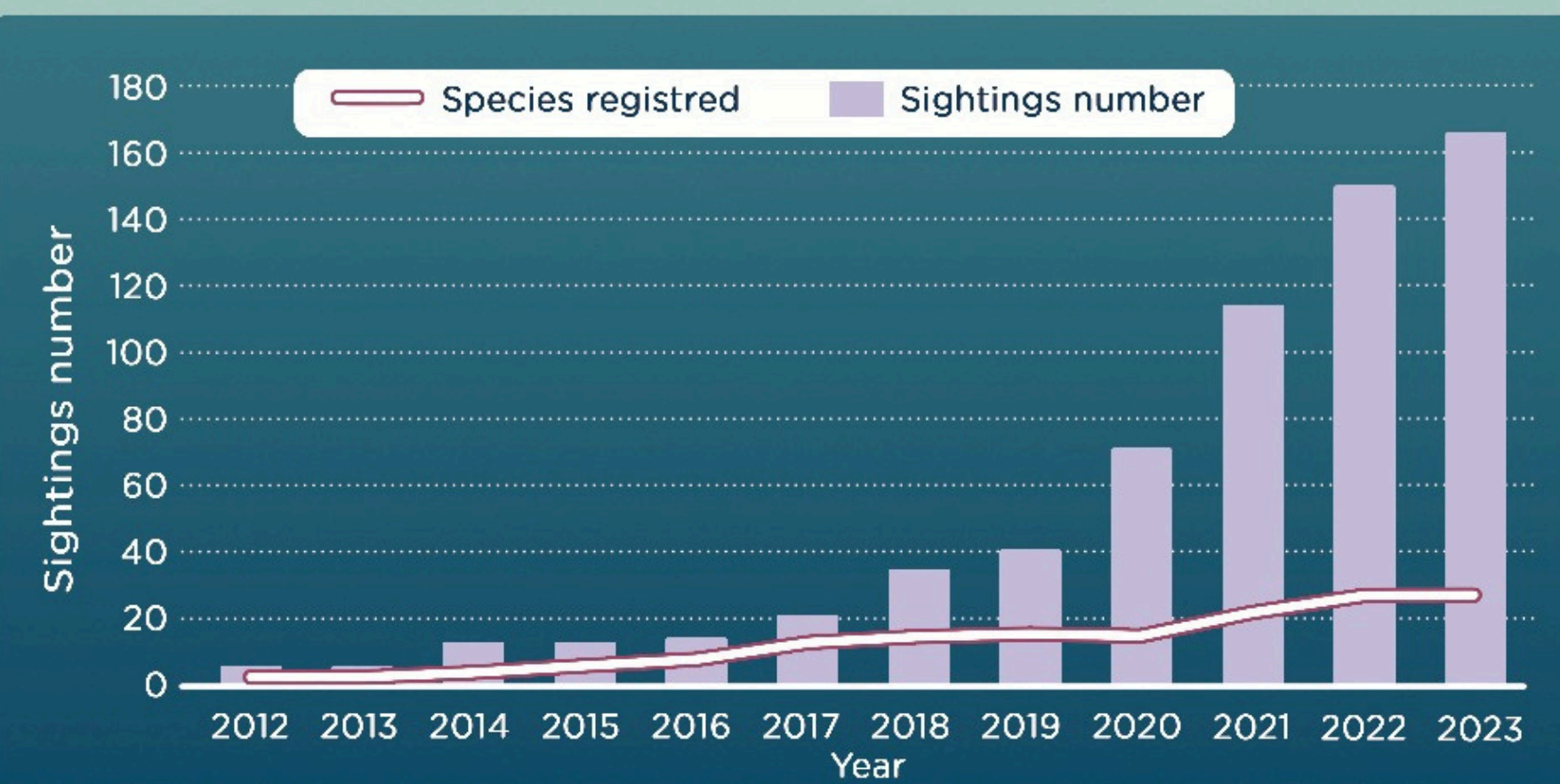
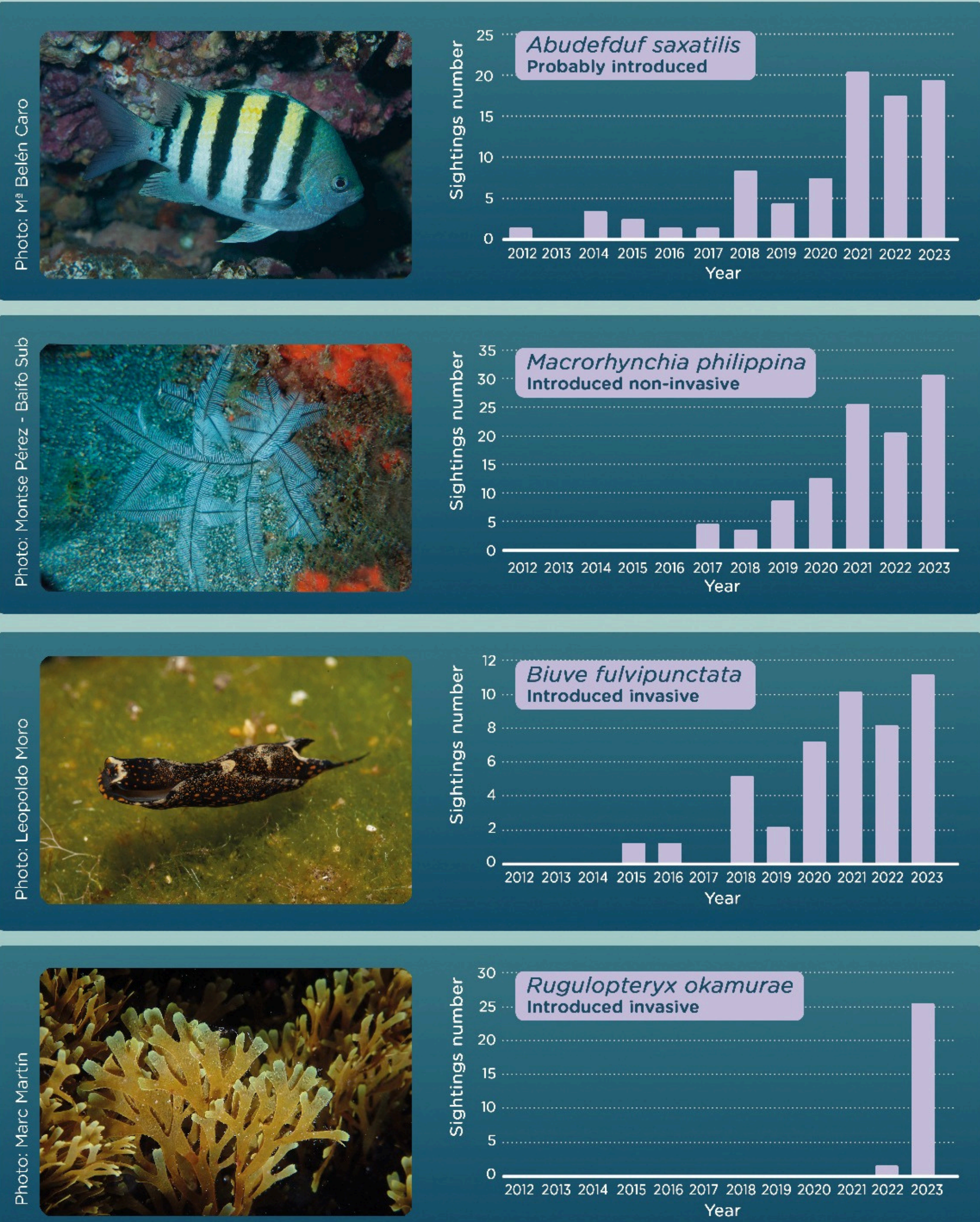


Figure 2. Total sightings of exotic species and different species reported on the RedPROMAR platform within the Canary Islands.

Figure 3. Sightings of exotic species reported on the RedPROMAR platform within the Canary Islands.

Specific cases of exotic species reported on RedPROMAR.



Examples of noteworthy sightings of exotic species reported on RedPROMAR



CONCLUSIONS

- ▶ The capacity of marine citizen science to make a significant contribution to understanding and monitoring marine biodiversity is reaffirmed. In this case, the focus has been on exotic species, but it could be extrapolated to other groups.
- ▶ Despite occasional shortcomings, citizen science remains capable of providing novel and valuable data that is often highly interesting to the scientific community and can be utilized for public policy and decision-making. At the same time, it can reveal gaps in knowledge within certain taxonomic groups, sometimes even advancing beyond current scientific understanding.
- ▶ Highlighting the importance of dedicating outreach efforts to train users in detecting and reporting relevant information, thereby increasing their knowledge and awareness of local marine ecosystems.
- ▶ If you have spotted any exotic marine species in the Canary Islands, we encourage you to report it through the RedPROMAR platform!



- ### How to participate
1. **Join to our workshops.** Take a look at the RedPROMAR social networks, where we will propose new free and accessible workshops.
 2. **Go Dive, enjoy and take pictures.** In which the organism can be properly appreciated.
 3. **Record your observations.** Upload the information of your dives to the RedPROMAR APP, indicating date, location and photograph.
 4. **Become a Citizen Scientist.** Contribute and learn about the marine biodiversity of the Canary Islands.



ACKNOWLEDGMENTS

We extend our gratitude to all users who have actively reported and/or are currently reporting on the platform, thereby promoting knowledge and conservation of our marine ecosystems. Your engagement serves as a fundamental pillar of RedPROMAR. This project is co-financed by the European Union under the Canary Islands FEDER Program 2021-2027.

