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Change – The transformative power of citizen science

“Get on board with researchers”: Life Conceptu Maris marine citizen science campaign

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Abstract

The manuscript provides an overview of the mid-term results of the citizen science campaign activities conducted within the Life CONCEPTU MARIS project (LIFE20 NAT/IT/001371) whose aim is to improve the conservation status of cetaceans and pelagic sea turtles by addressing information gaps, setting up an internationally agreed-upon approach for surveillance, and identifying appropriate conservation measures. It fosters a cooperative effort by engaging the scientific community, stakeholders, policy makers and citizens in a common effort to support biodiversity.

Keywords: awareness, biodiversity, cetaceans, ferries, Habitat Directive, marine ecosystem, monitoring, sea turtle.

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The Mediterranean Sea faces significant changes amplified by global warming and induced by anthropogenic pressures to which Cetaceans and Pelagic Sea Turtles are exposed.

The conservation status of CEPTU species is still considered data deficient for most taxa according to the last Habitats Directive Art. 17 Report (2013–2018) and the EEA Report (No 10/2020), which states that "*marine mammals (cetaceans) are among the species with the highest proportion of unknown assessments (over 78%)*". The data deficiency is mainly due to the fact that CEPTU species spend the majority of their life in remote offshore areas most difficult to monitor because of their extent, highly dynamic nature and the high costs involved in carrying out regular large-scale surveys that overcome socio-political borders.

In the frame of the LIFE Conceptu Maris project researchers and citizen scientists cooperate to monitor these species which serve as key indicators of ecosystem functioning and dynamics and of the integrity of the trophic web. At the end of the first year of the citizen science campaign approximately 315 citizens from 13 different countries had applied to the project. 154 of them have completed an online training and 82 have participated in training sessions onboard the ferries (Fig. 1) which operate along 17 routes in the Mediterranean Sea. All data are stored in the Capo Carbonara Marine Protected Area repository and will be available upon request.

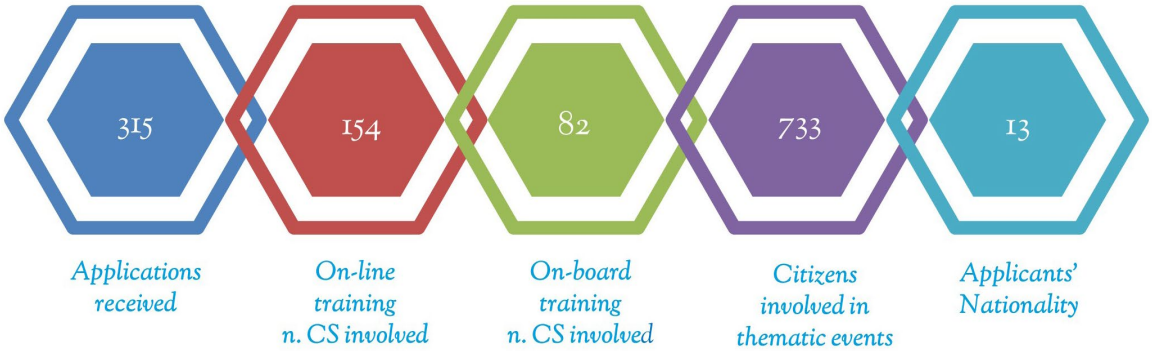

Figure 1.

Over the past decade, a multidisciplinary synergistic approach has been developed for the long-term monitoring of marine megafauna (e.g., marine mammals, sea turtles, sharks, manta rays, sunfish, sea birds) and addressing major threats (such as marine litter and maritime traffic) through coordinated efforts within several EU projects (e.g., Medsealitter, ABIOMMED, Impel MTT). This approach, which uses ferries as platforms of opportunity and floating laboratories for research purposes, is extended to citizens trained according to standardized protocols, through appropriate measuring tools (binoculars, GPS, range stick), and identification sheets for species recognition, ensuring the quality of data collected by citizen scientists.

Before boarding, citizens attend a two-phase training course: an online theoretical introduction (video training course) to the visual monitoring protocol and species identification methods; and a practical phase on-board with the experienced researchers, whose constant presence ensures the collection of validated data. The training material is created using simple and intuitive terms and images, since the end-users do not have a scientific background. On board, the four observers (experts and citizens) position themselves on the wings of the command bridge initially observing with the naked eye (Fig. 2). During the campaign's first call, citizens have contributed to gathering 809 sightings of sea turtles, 1751 sightings of cetaceans, for a total number of 265 surveys and 59,428.40 Km of effort.

Figure 2.

The Citizen Science activities of Conceptu Maris play a significant role in driving change with strong scientific, policy and societal value. Scientific value is enhanced by gathering data to generate a better understanding of CEPTUs conservation status. The current engagement of citizen scientists ensures the continuity of monitoring activities in the long term, gradually forming expert observers capable of collaborating with researchers, who alone would not be able to ensure the sustainability of monitoring activities. Citizens will also be acknowledged in future scientific publications based on data collected during the monitoring session.

Citizens are also able to autonomously report sightings of CEPTU species through the App "Marine Ranger" (Life DELFI, LIFE18 NAT/IT/000942). All citizens involved in the media campaign are informed about the conservation action by the project's media channel and the newsletter.

The value of Citizen Science extends beyond scientific understanding. The high-quality data collected together with citizens will be processed using standard metrics developed by the project to assess the conservation status of CEPTU species. This data will be integrated into a decision support model co-designed with policymakers, who are permanent members of the project's Advisory Board. Citizens play a fundamental role in facilitating the initial phase of this process aimed at defining scientific solutions to support the implementation of European biodiversity policies.

A societal value is also achieved by raising awareness of environmental issues related to the project among the general public, and citizens directly involved in monitoring activities. In order to reach out to the general public, a comprehensive media campaign was launched, including a dedicated project website page (visited by 7,234 people between 2023 and 2024), newsletter, social media networks (reaching around 210,000 individuals through Instagram and Facebook), press releases (resulting in over 90 Conceptu Maris articles and press citations), participation in radio and TV programs, and 18 thematic events (involving 733 attendees). The onboard experience leads citizens to a clear understanding of the current challenges facing marine species and ecosystems. One of the most valuable societal results of the Conceptu Maris Citizen Science campaign is the establishment of a community dedicated to the conservation of cetaceans and turtles. This has helped to strengthen the connection between marine ecosystems and people and has generated a sense of belonging, motivating individuals to adopt new perspectives and strive for a new ecological balance.

Guidelines for Citizen Science involvement in the visual monitoring of CEPTU aboard ferries have been developed to offer a methodological approach, advice and practical guidance for establishing a Citizen Science programme for recruitment and training on-line and on-board.

The involvement of citizen scientists in marine conservation remains limited, particularly concerning CEPTU monitoring. Nevertheless, the Conceptu Maris project is dedicated to bridging this gap by actively enhancing citizen engagement in monitoring efforts, extending beyond the project's duration.

References

Conceptu Maris Project: https://www.lifeconceptu.eu/