



# GOOD PRACTICES HANDBOOK

## 3 | Citizen science, environmental data collection, and monitoring


A benchmark of educational tools  
and environmental activities already  
implemented in Europe and beyond.

# Ocean Sustainability through Education and Sport (OSES)



**Water sports offer humans a unique connection to the marine environment.** As opposed to “leisure tourists” water sports enthusiasts take advantage of this unparalleled ecosystem all year round, and many times regardless of air and water temperature. This makes water sports enthusiasts highly susceptible to environmental degradation, be it from pollution hindering water access or shifting hydrological conditions disrupting their activities.

These enthusiasts often evolve into professional athletes, ocean advocates, or water sports business owners contributing significantly to local economies. Consequently, education and awareness among water sports practitioners at all levels of engagement are essential for protecting and improving our marine environment. Sports can be a powerful tool for fostering eco-responsible actions and environmental awareness. Activities like waste collection, biodiversity awareness, coastal preservation, and oceanic issue discussions can be seamlessly integrated into sports, and help create an ocean-literate community dedicated to safeguarding our waters.



The OSES project aligns with the broader goal of supporting education through sport. We believe that sports can play a pivotal role in educating youth about environmental protection. Addressing ocean preservation serves as a pilot initiative that can be expanded to other sports in the future.

**Nautical sports, including surfing, sailing, scuba diving, and kayaking, have specific environmental concerns tied to marine area preservation. One unifying value across these sports is the imperative to protect their playground.**

Sport, with its educational and exemplary values, has the power to raise awareness and drive behavioral change in environmental protection. The «green sport» dimension in the European Union's Work Plan for Sport emphasizes the sector's potential to combat climate change and become more sustainable.

OSES seeks to strengthen the role of sports actors in addressing ocean conservation through three dimensions:




**Education for sustainable sport:** Developing tools and methodologies to instill eco-responsible actions and environmental awareness in youth through sports.



**Environmentally friendly sports practice, facilities, and events:** Gathering expertise to integrate environmental aspects into all sporting activities, including events, competitions, and organizational management.



**Evolution of sport and its practice in the context of climate change:** Focusing on ocean health and preservation by addressing activities significantly impacted by ocean challenges such as pollution, coastal development, and water quality issues.



The OSES Good Practices Handbook seeks to compile impactful actions and projects across Europe and beyond, serving as a benchmark for environmental awareness and ocean protection education.



# CITIZEN SCIENCE, ENVIRON DATA COLLECTION, AND MO

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Seahorse conservation in Mar Menor Lagoon



The background of the page is a deep blue underwater scene. It features a large school of small, silvery fish swimming in the upper left. Below them, a larger, more detailed fish is visible. The bottom of the image shows a sandy seabed with some coral and a blue mesh net. A large, white, stylized number '3' is partially visible on the left side, overlapping the text.

# ENVIRONMENTAL MONITORING

Collecting environmental data, whether for monitoring the state of the environment or for scientific research, demands consistency, regularity, and the use of appropriate methodologies. Often, to obtain representative data for a specific area, it is crucial to cover vast areas within a limited timeframe. This requires the involvement of a large number of people. However, research and monitoring projects may not always have the resources to hire and coordinate many individuals, especially when data collection does not necessitate full-time engagement but rather the participation of many individuals dedicating relatively small amounts of time regularly.

The concept of citizen science dates back to 1989, and although various approaches and definitions exist, it generally refers to the collection and analysis of data by members of the general public, often as part of collaborative projects with professional scientists. Citizen science finds applications across a wide range of study areas, with a notable focus on biology and conservation in published research. Importantly, participation in citizen science projects not only enhances the scientific community's capacity but also educates the public about the scientific process and raises awareness about various topics. Therefore, citizen science projects are vital for advancing scientific knowledge, particularly in the natural sciences, and for fostering environmentally literate societies.

In this section, we have compiled projects that engage water sports practitioners in scientific research and the monitoring of marine environments.



# DIVING FOR A KNOWN OCEAN

«Buceando por un océano conocido»

SCUBA DIVING



TARGET AUDIENCE



certified scuba divers

Led by *Buceo Conciencia*

## Massive scientific data collection for World Ocean Day

The project arises as a citizen science initiative in the field of diving and marine conservation. With the growing interest in the protection of marine ecosystems and the need to collect scientific data, the aim is to involve the diving community in the collection of information on marine life and underwater ecosystems. To achieve that we held a historic event aimed at setting a world record for the highest number of divers contributing to marine research on a single day. The call was aligned with World Ocean Day (WOD), encouraging divers to dedicate their diving on June 10 2023 (the first Saturday after the WOD) to contribute to the investigation of vulnerable fish off the Spanish coast.



### GOALS:

Promote the active participation of the recreational diving industry and divers in marine research and conservation.

Collect scientific data on marine biodiversity, ecosystem health, and other aspects relevant to the sustainable management of marine resources.

Promote awareness and knowledge about the importance of marine conservation among divers and society in general.

## METHODOLOGY:

**Call and registration** - An open call was made to all divers interested in participating in the project. They were invited to register and receive training on data collection protocols.

**The project gathered nearly 50 diving centers around Spain** (including the Canary and Balearic Islands, Ceuta, and Melilla) as official partners allowing the divers to register for the dive with the one closest to them as well as arrange gear and air rentals.

**On June 8 hosted do a live online** with the directors of each line of research to which the dives and data collection aimed to contribute. In this event, the divers learned everything related to diving on June 10 and all their questions were answered.

**Diving and data collection** - Participating divers dove at from more than 50 dive sites along the entire Spanish coast. During the dives, they followed the established protocols to document the state of vulnerable fish populations in the Mediterranean-Atlantic to later upload it to a marine citizen science platform: Observadores del Mar.

**Data validation** - The data uploaded to the platform will be validated by Observadores del Mar researchers.

**Dissemination of the project** - A communication campaign was carried out both on social networks and other media to broadcast each phase of the project.

**Replication and transfer** - The project results and methodology will be shared with other countries and regions interested in implementing similar initiatives. Support and training are provided to facilitate the replicability and transferability of the experience acquired.

**In summary**, the project focuses on organizing a large event with a massive call of divers participating in the scientific data collection concentrated in a single day. In 2023 662 certified scuba divers registered to participate in this initiative. By positioning the event as a historical fact, it generated greater media interest and enable us to make more visible the importance of involving the diving community in the generation of relevant information for the sustainable management of marine resources and finally improve scientific knowledge of the seabed of the Mediterranean, both scientifically and socially.



# SURFING FOR SCIENCE

PADDLE BOARDING, KAYAKING, ROWING 

**TARGET AUDIENCE**  general public

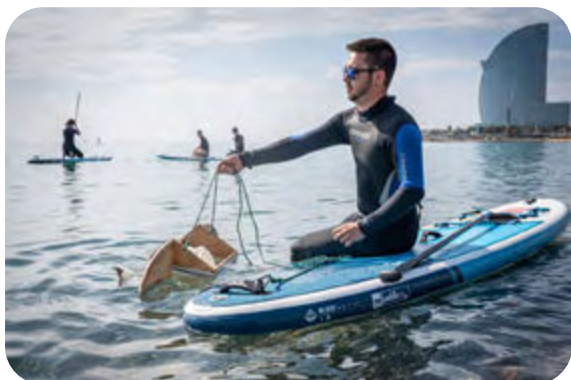
**Led by** *Surfrider Spain, University of Barcelona,*

## Paddletrawl: citizen science on plastic pollution

**Vast amounts of microplastics have been discovered floating on the surface of subtropical oceanic gyres.** However, our understanding of how plastic is distributed in the ocean remains incomplete, particularly in coastal areas. The motivation behind the «Surfing for Science» project stems from the conventional use of trawls towed by research vessels for collecting scientific samples. In this collaborative initiative, we've developed a floating net trawl designed to collect samples near the shore, using stand-up paddleboards

(SUPs), kayaks, and rowing boats – hence the term «paddle trawl.» Participants drag this trawl for approximately one nautical mile. These samples are then sent to the university laboratory for in-depth analysis. This method not only helps estimate the abundance of microplastics per square meter in surface coastal waters but also enables us to determine their origin and transport mechanisms.

Coordinated by the Spanish delegation of Surfrider Europe and the University of Barcelona, numerous associations have been actively collecting scientific samples since 2019. Samples are gathered on a weekly basis, and the public is encouraged to participate in this collection process through affiliated organizations along the Catalan coast and the Balearic Islands in the Mediterranean sea, and the Cantabrian coast in the Atlantic ocean.







Another pivotal component of this project is an interactive web application that allows users to access and explore the data collected in a shared database. This application provides a summary of the findings from the Surfing for Science project, including data on particle counts, concentrations, particle sizes, shapes, and the chemical composition of plastics. Additionally, the general public can view real-time maps on Wikiloc that display where the ongoing sample collections are taking place.

Thanks to its rigorous approach to data collection and analysis, this initiative stands out as an exemplary citizen science project. Results obtained from samples collected by citizens have been published in peer-reviewed scientific journals, underscoring their contribution to our understanding of plastic pollution in the oceans.

**SURFING  
FOR  
SCIENCE  
.ORG**

[www.surfingforscience.org](https://www.surfingforscience.org)

# HIPPOCAMPUS PROJECT

«Proyecto Hippocampus»

SCUBA DIVING



TARGET AUDIENCE



certified scuba divers

Led by *Asociación Hippocampus*

## Seahorse conservation in Mar Menor Lagoon

The Hippocampus Project, initiated in 2006 due to concerns about the declining seahorse population in Mar Menor Lagoon, evolved into the Hippocampus Association in 2007. Since its inception, our association has been actively conducting seahorse population censuses, collaborating with institutions like the Spanish Institute of Oceanography (IEO) in Murcia and the Fisheries and Aquaculture Service of the Ministry of Environment of the Region of Murcia.

Utilizing the Underwater Visual Census (UVC) method for population density estimation, trained volunteers follow a specific protocol, including initial training on the use of underwater materials and scientific diving. The volunteers also undergo theoretical training online, equipping them with essential knowledge about the methodology and tools used during underwater surveys.



Data collected by our divers is organized by sampling stations and then transferred to ArcGIS to generate density maps for three defined areas within the lagoon (coastal strip, central zone, rocky stratum). These maps allow for the assessment of population density and overall population size annually. Generic data from each dive, summarizing outing details, sightings, participating volunteers, and other relevant

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information, are recorded in a spreadsheet. The collected data actively contributes to the GBIF (Global Biodiversity Information Facility) database, aligning with the Hippocampus Association's commitment to global biodiversity conservation.

The project's notable outcome includes a recent article published in the Journal of Fish Biology. This publication evaluates and monitors the long-snouted seahorse (*Hippocampus guttulatus*) population in Mar Menor Lagoon, highlighting its decline in the last decades and the impact of the eutrophication crises in 2016 and 2019 on the species.

Moreover, we aspire to include the seahorse species in the National Catalogue of Threatened Species, aiming to enhance its protection and initiate a timely recovery plan. This comprehensive approach underscores the Hippocampus Association's dedication to the conservation and preservation of marine biodiversity.



 [www.asociacionhippocampus.com](http://www.asociacionhippocampus.com)

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# GOOD PRACTICES HANDBOOK

The OSES Good Practices Handbook serves as a reference point for assessing our progress as a society in terms of connecting water sports with OL, environmental awareness, and marine education.

It is aimed at people and organizations at different stages of their journey towards a cleaner, more sustainable ocean, and covers a number of themes :

1. **Connecting schools, water sports, and ocean literacy**
2. **Environmental cleanups**
3. **Citizen science, environmental data collection, and monitoring**
4. **Sustainable practices in water sport tourism**
5. **Engaging with local communities**
6. **Good Practices in Professional Sports**

**Discover the other sections of  
the handbook on :  
[www.oses-project.org](http://www.oses-project.org)**

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European Marine Science Educators Association (EMSEA)

GPDESIGN Unipessoal Lda

Ligue de Voile de Normandie

Professional Association of Diving Instructors EMEA (PADI EMEA)

Surfrider Foundation Spain

University of Barcelona



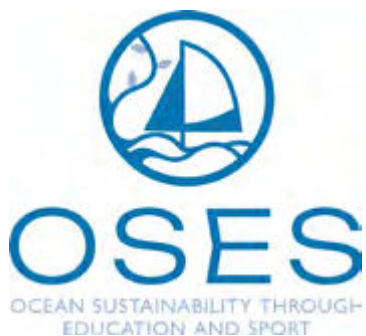
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Le Sport au service de la société

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FFVoile  
Normandie



 **DAN**  
DIVERS ALERT NETWORK EUROPE

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