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Ninth Meeting of the Scientific and Technical Advisory Committee (STAC) to the Protocol Concerning Specially Protected Areas and Wildlife (SPA) in the Wider Caribbean Region

17–19 March 2021

## CAMPAM DATABASE AND CITIZENS SCIENCE MONITORING

*For reasons of public health and safety associated with COVID-19, this meeting is being convened virtually. Delegates are kindly requested to access all meeting documents electronically for download as necessary.*

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# ACP MEAs 3

## "CaMPAM Database and Citizens Science Monitoring"

### Final Report

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Expected Accomplishment(s): Provide technical support to the UNEP Caribbean Programme Secretariat to maximize the benefit from protected areas and make information available to ensure their effective implementation and management.

In support to Result 2.2 ACP MEAs III:

Development of regional representative networks of Marine Protected Areas: The expected result of this component is a functional network of SPAW-listed Protected Areas covering interconnected marine habitats and ecosystems for restoring and sustaining the health of the oceans.

January 30, 2021

## Introduction

The overall objective of the ACP MEAs Programme is to enhance the mainstreaming and implementation of MEAs related to biodiversity, marine and chemicals and waste, with a focus on the mainstreaming of biodiversity in agriculture, the management of chemicals and waste (including hazardous pesticides), the reinforcement of compliance and enforcement measures and strengthening of the implementation of regional seas conventions in ACP countries.

The Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (WCR) is a regional legal agreement for the protection of the Caribbean Sea. Adopted in Cartagena, Colombia on 24 March 1983 and entered into force on 11 October 1986, the Convention is supported by three technical agreements or Protocols on Oil Spills, Specially Protected Areas and Wildlife (SPAW) and Land Based Sources of Marine Pollution (LBS).

The purpose of the Cartagena Convention component of the Action specific for this consultancy is to support activities of the ACP countries to better manage their coasts and oceans and effectively implement their related regional seas conventions and protocols.

UNEP's Cartagena Convention Secretariat, through its SPAW Sub-Programme, is working with MPAs to develop a plan for the creation of a functioning network that will strengthen the interconnections of their habitats, species and conservation outcomes. To create this network, the Secretariat is evaluating the ecological components that connect SPAW MPAs in the Wider Caribbean, as well as the existing cooperative efforts among a wider set of MPAs that are part of the Caribbean Marine Protected Area Management Network and Forum (CaMPAM).

Activities done under the contract are related to activities 2.2.1, 2.2.2, 2.2.4; and 2.2.5; and were focused in improving the CaMPAM's digital infrastructure (website, interactive mapping and citizen science APP) development to support the network:

- **Activity 2.2.1** Develop an operational network of SPAW MPAs according to existing guidelines
- **Activity 2.2.2** Establish SPAW MPAs Networking Group to lead the Inter-Regional network of MPAs and for enhancing CaMPAM Network of Marine Protected Areas
- **Activity 2.2.4** Provide technical support, monitoring and research to Governments to enable their establishment of new SPAW MPAs
- **Activity 2.2.5** Provide capacity building and training for selected Government officials as well as MPA Managers and staff through national and regional workshops to improve the MPA Management.

## What is CaMPAM?

The use of MPAs has become increasingly popular in the wider Caribbean region as a tool to improve MPA management, conserve marine biodiversity, address overfishing impacts, decrease user conflicts, and provide economic alternatives to local coastal communities. This has resulted in substantial knowledge gained on optimal site selection and design, successful outreach approaches, effective management strategies, and appropriate methods to evaluate their effectiveness. Difficulties in exchanging information on lessons learned continue to constrain informed decision-making due to the geographic, socioeconomic, and cultural complexities of the Caribbean region. At the same time, communication among professionals has become progressively more vital given the increasing scientific interest in the examination of biophysical connectivity across the region.

CaMPAM was created in 1997 under the framework of the Caribbean Environment Program of the UN Environment Programme (UNEP-CEP) and the Specially Protected Area and Wildlife (SPAW) Protocol of the Cartagena Convention

activities. Since then, it has received the support of governments, private foundations, and individual experts. This initiative brings together MPA researchers, administrators, managers, and educators from governmental entities and non-governmental organizations as well as the private sector in an inclusive network to exchange ideas and lessons learned through a variety of mechanisms.

## Outputs (Products) and Outcomes of the contract

### Objective of the contract:

Provide technical support to the UNEP Caribbean Programme Secretariat to maximize the benefit from protected areas and make information available to ensure their effective implementation and management.

In support to Result 2.2 ACP MEAs III:

Development of regional representative networks of Marine Protected Areas: The expected result of this component is a functional network of SPAW-listed Protected Areas covering interconnected marine habitats and ecosystems for restoring and sustaining the health of the oceans.

### Justification:

The regional CaMPAM database undergoes continuous update, it is periodically enhanced and requires missing information to be completed.

### Outputs:

- Complete all records and variables for the 35 SPAW Listed MPAs and the GoM MPAs at the CaMPAM database in coordination with partners.
- Develop a Sargassum Telephone / Tab Application for Androids and Mac users to monitor Sargassum sightings in situ using the Monitoring Protocol from the University of South Florida.
- Promotion and adaptation of the use of open source software in Monitoring Report and Verification (MRV) processes for different collaborative projects of interest to the CEP at a regional level (Sargasso, marine turtles) and for self-management projects (traceability of fishery products, citizen science). Capacity building locally at KoBo Toolbox.
- Test the Sargassum and Turtle Telephone Applications with at least 6 countries from the SPAW Listed MPAs and produce statistical analysis.
- Provide online training in Spanish and English in how to use the Sargassum and Turtle telephone Applications.
- Introduce a field for Protected Areas Management Effectiveness (PAME) at the CaMPAM database and complete the information for the 35 SPAW Listed MPAs and the GoM MPAs at the CaMPAM database in coordination with partners.
- Make a video with instructions in how to use the Sargassum Telephone / Tab Application for different users in Spanish and English.
- Others as deemed necessary in support to the above outputs.
- Online training.

## Deliverables:

- Updated at least 100 MPA records in the CaMPAM database prioritizing the 35 SPAW Listed MPAs and the GoM MPAs and updating the interactive online map.
- Improved visual design of the CaMPAM geospatial database website
- One Sargassum Telephone / Tab Application for Androids and Mac users to monitor Sargassum sightings in the Wider Caribbean used by at least 100 users.
- One Turtle monitoring Telephone / Tab Application for Androids and Mac users to monitor Sargassum sightings in the Wider Caribbean used by at least 100 users.
- Delivered 2 Online training in Spanish and English in how to use the Sargassum telephone Application.
- New field for reporting Protected Areas Management Effectiveness (PAME) available at the CaMPAM database.
- One video with instructions in how to use the Sargassum Telephone / Tab Application for different users in Spanish and English.

## Obtained results

### CaMPAM Website and enhancement and development.

#### Improvement of visual design

The visual design of the entire website was revamped, the next screenshots show some of the website sections.

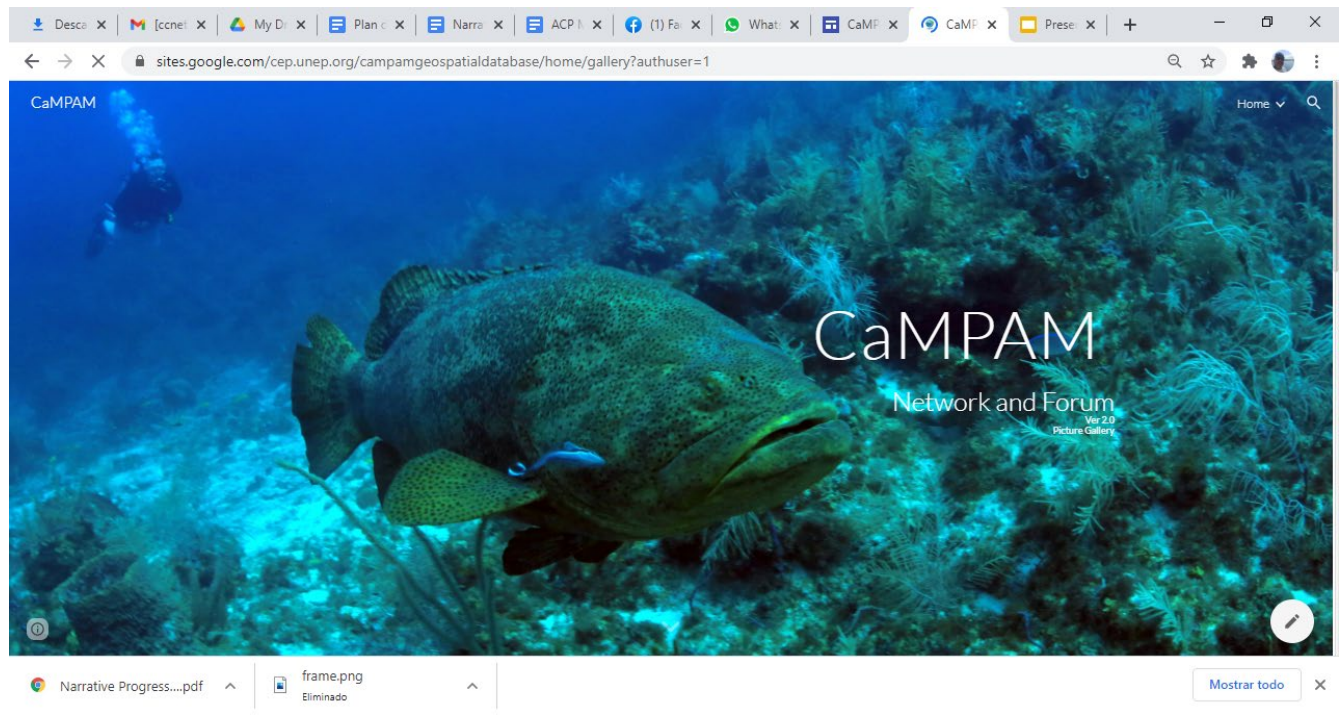


Fig. 1. [Website cover](#)

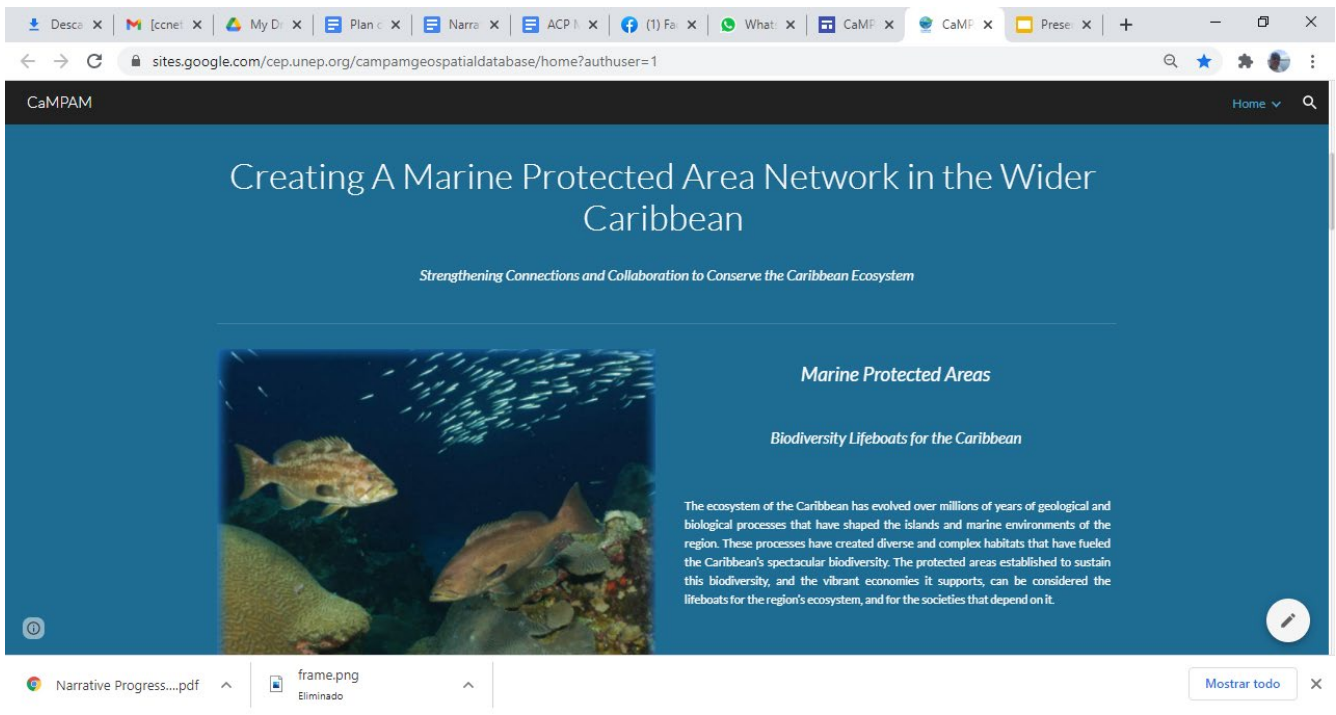


Fig. 2. [Main page](#)

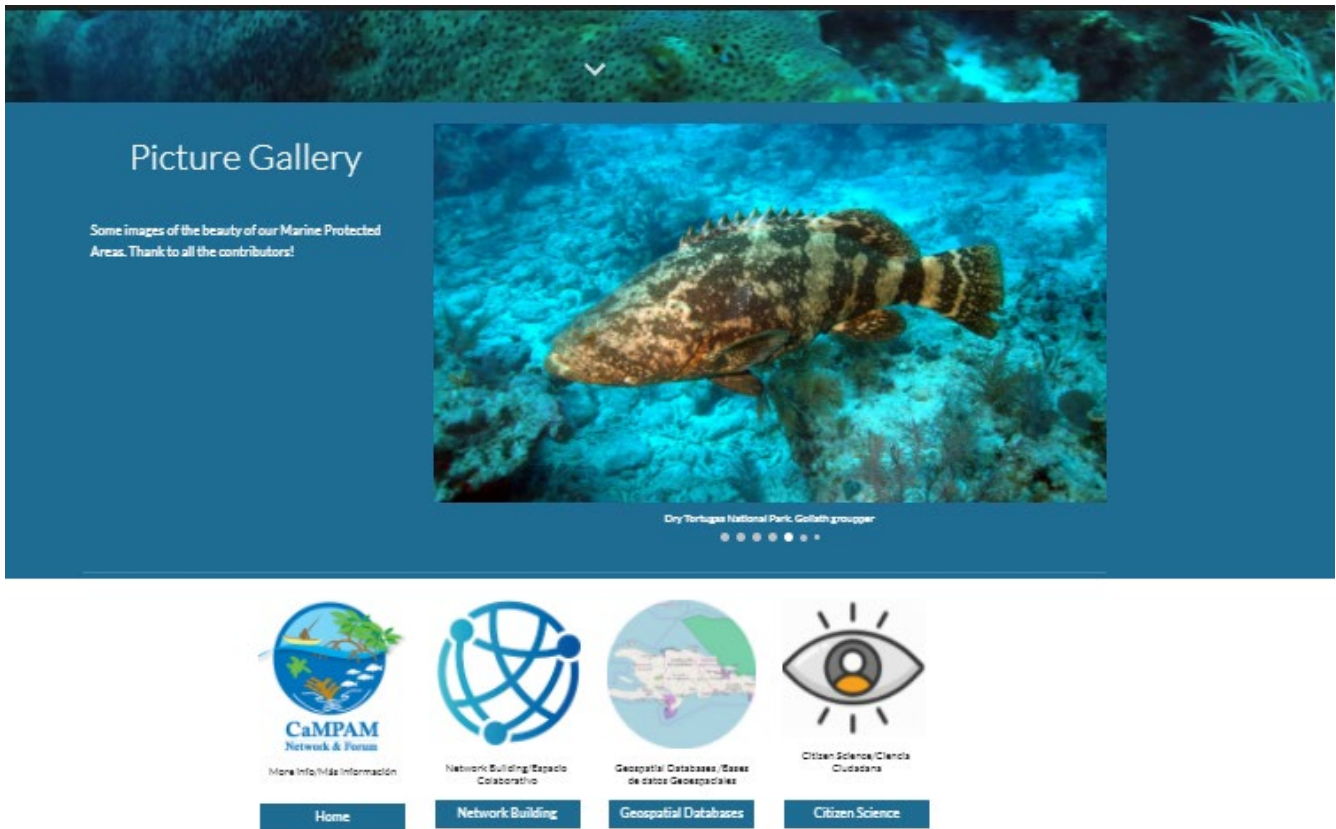


Fig. 2. [Picture Gallery](#)

## Geospatial Databases Section

Interactive maps are used for the representation of territories in a simplified way, that is, with more ease of understanding, but with an informative function from hypermedia and / or hypertext paths: there may be various information in interactive maps, such as, for example, geographic, physical, political, economic, social environmental data or information supported by audiovisual content, since it is possible to share photos, videos and audio in these interactive icons. The information is constructed from the crossing of data in desktop GIS platforms and is usually adopted in conjunction with other communication platforms so that the information can be shared and accessible to countless users. Interactive maps are frequently used as geographic reference support for projects and processes that require this type of technical support, facilitating the user navigability in the information for its use and analysis, the presentation of results and the visualization of geospatial variables. The work done for improvement of this section is described next:

### a) Updating of CaMPAM Marine Protected Areas Database

The CaMPAM Marine Protected Areas Database requires a constant update process, since from time to time the countries declare new MPAs, the existing ones change their data or their limits, or new countries are integrated into the network.

Regarding the work coordinated with other agencies (SPAW, BIOPAMA, IUCN, TNC), it is important to position the CaMPAM database among other efforts that seek to integrate the information of the Caribbean ecosystems in the face of the challenges that are yet to come, having congruent and standardized methods and approaches.

The database of marine protected areas of CaMPAM has been updated and is now spatialized in an interactive map. With more than 40 variables, your information has increased from 571 to 1069 records so far (new created MPAs in the last 10 years, MPAs of Gulf of Mexico and US shoreline, and those existing in the WDPA database as "marine" areas), many of them still need to be updated. A total of 554 Empty fields from 102 MPA records in the CaMPAM geospatial database have been filled with updated data. Two new fields were added to the database regarding the management effectiveness: the presence/absence of a PAME tool, and which one is used in the MPA to address PAME assessment.

Updated cells are shown marked in the [on line worksheet version of the CaMPAM Database](#)

The updating process used only open source GIS and data collection tools, which will facilitate its use and maintenance. The dataset can be downloaded in a variety of formats:

# Marine Protected Areas in The Caribbean



With the generous support of: / Con el generoso apoyo de:



Fig. 3. [Interactive map of the CaMPAM Marine Protected Areas Database](#)

Still with a poor response to the [MPA profile form](#) created to update the fields of the database by managers. More outreach and encouraging to get updated data will be done

## b) AGRR MAP Test

Last september 17, the First meeting of ACP MEA III Advisory/Expert Group took place. In that meeting a suggestion was made in order to upscale the interactive mapping capability into other projects or databases such as AGRR. A test map is already deployed, displaying some of the variables published by AGRR in its website.



# AGRRA Database Map (Test)

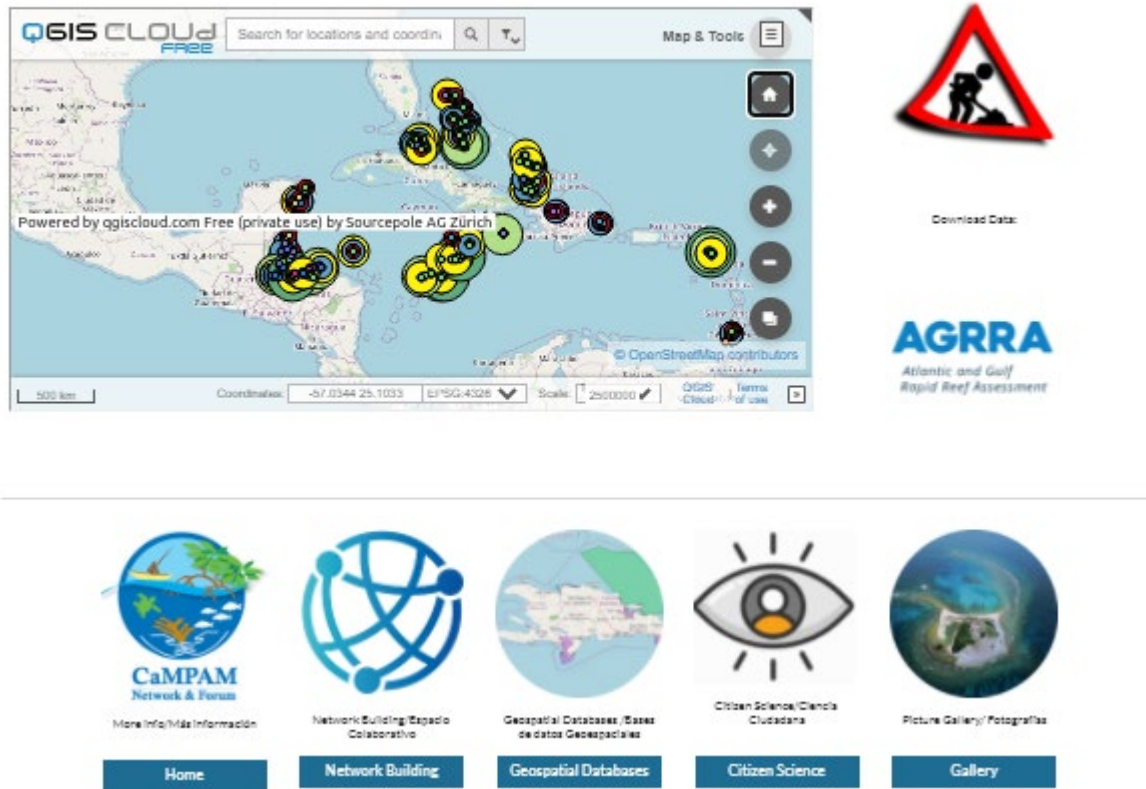


Fig. 4 . Experimental [map \(Test\)](#) showing [AGRRA](#) monitoring data.

## Citizen Science Section

A very useful outcome of this consultancy for the network of managers, is the creation of a demonstrative hub of Citizen Science Projects.

The citizen science project pilots were designed using the KoBoToolbox tool, which is also open source software. The use of this tool shows a lot of potential by allowing to collect, systematize and analyze many dimensions of data obtained in the field, through forms that are accessed through an APP. The APPs also allow you to collect georeferenced multimedia files.

At this time two pilot projects have been deployed:

- I-See Turtle: Global recording of sea turtle sightings, even in remote locations without an internet connection, from any device.
- I-See Parrot: Global recording of parrotfish, even in remote locations without an internet connection, from any device.
- Sargassum sighting APP: This tool was created and deployed and later merged with the NOAA-SARGASSUM WATCH Epi Collect APP, which have more than 9,000 records, in order to avoid effort duplication and to concentrate different efforts in a centralized database.

A virtual meeting with WIDECAS and the SPAW RAC representatives took place on Oct. 13th. At this time we are waiting for feedback and suggestions of improvement previously to the wide deployment of the I-See Turtle project.

The leadership was proposed to be transferred to WIDECAS along with training on the use of the KoBo Toolbox platform in order to give to them full privileges on the access and administration of the project.

One of the most important aspects in the development of this consultancy is the replicability by any user that has an internet connection, without incurring an expense in expensive software licenses. The process to be strengthened is the permanent training of the network partners, to implement GIS technology and interactive map publishing, as well as the collection of complex data in the field. The development of open source tools, along with the development of pilot applications, which can be applied to emerging processes such as climate change, sargassum outbreaks or coral diseases, are important processes of digital inclusion and democratization of technology.



Fig. 5. Citizen Science Hub section with two pilot projects.

## Capacity building

Two Webinars (1 in Spanish and 1 in english) were delivered on Jan 21 and 22. The webinars were about the different tools used to record sargassum sightings, as well as the products and services offered by the National Oceanic and Atmospheric Administration's CoastWatch Caribbean, Gulf of Mexico Regional Node and Atlantic OceanWatch which are directly related to the monitoring and follow-up of sargassum bursts. Some techniques and processes that allow for easy access to global and regional satellite data products commonly used for sargassum monitoring and forecasting were also described. Participants also received insights on how to use these tools to better understand, manage and protect the

region's ocean and coastal resources.



Fig. 6.- Banner fo webinar call about Sargassum sightings tools of NOAA

Another 2 webinars took place in January 2021 and were focused in:

- 1.- The sea turtle and parrot fish sighting applications: “I See Turtle” and “I-See Parrot”.
- 2.- The second part of each webinar was a briefing of KoBo Toolbox use for citizen science local scale projects.

A first draft video about how to use the Sea Turtle Application for different users in Spanish and English has been edited.

## Recommendations and next steps



### Future creation of an early alert system for Marine Protected Areas in the Great Caribbean Region

A collaboration Agenda has started with the NOAA/CoastWatch Caribbean and Gulf of Mexico Regional Node., in order to host the CaMPAM Marine Protected Areas database and develop an interactive map interfase with another datasets, and with access to NOAA’s satellite products and a Early Alert System for MPA’s ,obtained from those products focused in critical issues for MPA management such as coral bleaching (sea surface temperature), sargassum bursts, oil spills and hurricane strikes.



## Promotion of open source software use along the Caribbean Region

Open source software has become a cost-free alternative, with which it is possible to customize, develop and train other users in the use of these tools; without paying expensive licenses or being subject to the projected obsolescence processes. These are collective projects. For the development of the CaMPAM geospatial database, the open source tools QGIS / QGIS Cloud and KoBo Toolbox have been used. The existence of these tools also gives the project scalability and replicability, opening the possibility that any user from its AMP can implement similar solutions. It is important to promote the use of these tools and the formation of learning and development spaces oriented to the management aspects of MPAs. Technological solutions already exist, projects, applications and users must be generated. A capacity building process must also be promoted among the managers of the MPAs, for the empowerment of these tools.

### **The key process: subsequent self-management of the database and capacity building.**

The critical path leaves us the message that the database needs to be updated in a permanent process, it is alive. The role that local capacities play in each of the work teams of the members of the CaMPAM Network is key for the process of updating and publishing updated data to be self-managed and maintained over time.

Strengthening the capacities of member countries through open source platforms is key in an environment of resource limitation and rapid technological development. The training proposal could consist of replicating the entire critical path of this consultancy from the integration of data from different sources and its spatialization, to its analysis and management in a desktop GIS platform and the generation of by-products to build interactive maps on the web , that is, replicate the process and document learning.

### **KoBo Toolbox further development**

The use of this open source tool has many potentials if it was adopted by the managers of the areas to face the challenges of data collection in the field. Faced with threats of regional and global scale, such as the presence of lionfish, sargassum shoots and emerging coral diseases, the need for data collection protocols of regional scope, which are standardized and consistent in their systematization and analysis, are urgent. Standardized forms built into the KoBo Toolbox can help integrate efforts of various MPAs or governments in the face of these threats, having a common and synergistic framework. This tool was developed by a group of institutions in order to facilitate the collection of data in remote environments, difficult to access or in the event of a natural disaster.