



# Specially Protected Areas and Wildlife Protocol and Programme

Newsletter N°17 - October 2015

## Commonly used Acronyms

**BEST:** Voluntary scheme for Biodiversity and Ecosystem Services in Territories of European overseas

**CaMPAM:** Caribbean Marine Protected Area Management Network and Forum

**CEP:** Caribbean Environment Programme

**ECMMAN:** Climate Resilient Eastern Caribbean Marine Managed Areas Network

**EEZ:** Exclusive Economic Zone

**GCFI:** Gulf and Caribbean Fisheries Institute

**GRMN:** Global Coral Reef Monitoring Network

**MPAs:** Marine Protected Areas

**PAs:** Protected Areas

**SPAW:** Specially Protected Areas and Wildlife

**SPAW-RAC:** Specially Protected Areas and Wildlife - Regional Activity Center

**UNEP-CEP:** United Nations Environment Programme - Caribbean Environment Programme

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## News of the month

**Caribbean Netherlands establish "Yarari", a new marine mammal and shark sanctuary**  
*Paul Hoetjes, Policy Coordinator Nature, Ministry of Economic Affairs, National Office for the Caribbean Netherlands*



*Saba school kids unveiling a mural together with the Lt. Governor of Saba (left), the State Secretary (4th from right) and the National Representative for the Caribbean Netherlands (3rd from right).*

"Yarari" is a Caribbean Native Taíno word meaning 'a fine place'. During her recent visit to Saba and Bonaire, Dutch State Secretary of Economic Affairs, Mrs. Sharon Dijksma, and the respective island governments, signed a formal proclamation for a new Marine Mammal and Shark Sanctuary, named the "Yarari" Sanctuary. Yarari comprises both the territorial waters and the EEZ waters of the two islands and was established at the request of the islands who consider the protection of their shark and marine mammal populations of great importance.

The Sharks and Marine Mammals play a major role

in the tourism sector, and there is potential future development of whale watching - in particular humpback whales which are known to be seen around the islands annually when they have their calves and winter in the Caribbean. In addition to humpback whales, at least twenty other species of whales and dolphins live in the area, including Orcas and Sperm Whales. As an added bonus, the presence of sharks in the area are a great attraction for divers, while playing a very important role in the health of the coral reefs and fish populations by keeping them healthy and resilient. This is particularly relevant as populations of sharks worldwide are in sharp decline and therefore need extra protection against illegal fishing and bycatch through regulated fisheries. The local nature conservation and fisheries organizations through the sanctuary will therefore be involved in this protection.

The "Yarari" Sanctuary is now the eleventh shark sanctuary in the world, and the fourth marine mammal sanctuary in the Caribbean and will allow the Netherlands to actively protect sharks and marine mammals in the Caribbean Sea by providing a haven—a 'fine place'— for marine mammals and sharks.

### More sharks, more fish

**A statement from State Secretary Dijksma :** "This special sanctuary ensures the protection of these animals in the waters around Saba and Bonaire. Sharks are important not only for tourism but also



for fishing. When there are more sharks, there are – contrary to what you might expect – also more fish”.

**Commissioner Chris Johnson of Saba :** *"I am very pleased that the two governments of Saba and Bonaire, along with the Government of the Kingdom of the Netherlands have realized the importance of this issue and the favorable impact that this has for the islands and the region as a whole."*

Various studies have shown that a decrease in number of sharks, as top predators, leads to a disturbed natural balance in the sea. This can affect the overall fish population, and good fish stocks are important for fishermen on the islands that depend on fishing.

For more information, please contact: [paul.hoetjes@rijksdienstcn.com](mailto:paul.hoetjes@rijksdienstcn.com).

## FOCUS ON

**SPAW's Sister Sanctuary Programme: Partnership and Protection Beyond Borders.**

**Nathalie Ward, PhD, Stellwagen Bank National Marine Sanctuary, SSP Coordinator.**

*The sister sanctuary model promotes a strategy that defines emerging problems (beyond EEZ's), kindles commitment to critical habitats, and manifests the true spirit of regional cooperation, which is a key element to ensure effective management for biodiversity protection and the conservation of migratory, marine mammal species.*

— Alessandra Vanzella-Khouri, SPAW Programme Coordinator, 2007

North Atlantic humpback whales travel more than 3,000 miles without a passport along their round-trip routes—acknowledging no sovereignty but their own as they move between the Caribbean Sea and the North Atlantic Ocean. Among this population are some of the best-studied whales in the world—the almost 1,000 individuals that return to feed each year in the Stellwagen Bank National Marine Sanctuary (SBNMS) within the U.S. Gulf of Maine.

In 2007, Stellwagen Bank National Marine Sanctuary created the Sister Sanctuary Program (SSP) as a means to extend protection for North Atlantic humpback whales beyond U.S. borders. The program focuses on migration corridors and international breeding and feeding grounds.

Currently, science-based sister sanctuary relationships have been forged among five nations—first with the Dominican Republic in 2007, then with French Antilles (Agoa, 2011), followed by Bermuda (2012) and extending eastward to the Caribbean Netherlands (Yarari) in 2015. Over the past eight years, the coverage of the multi-sanctuary programme has increased from 2,100 sq. km to 669,440 sq. km (See Map below).

With education, conservation and science exchanges, this network of marine mammal sanctuaries is the first such international partnership in the world protecting one of the ocean's most iconic and beloved species throughout a significant portion of its migratory range. As additional sites join, this chain of sister sanctuaries will help to ensure a safer future for the North Atlantic's humpback whales—our international citizens.

### Photo-Identification

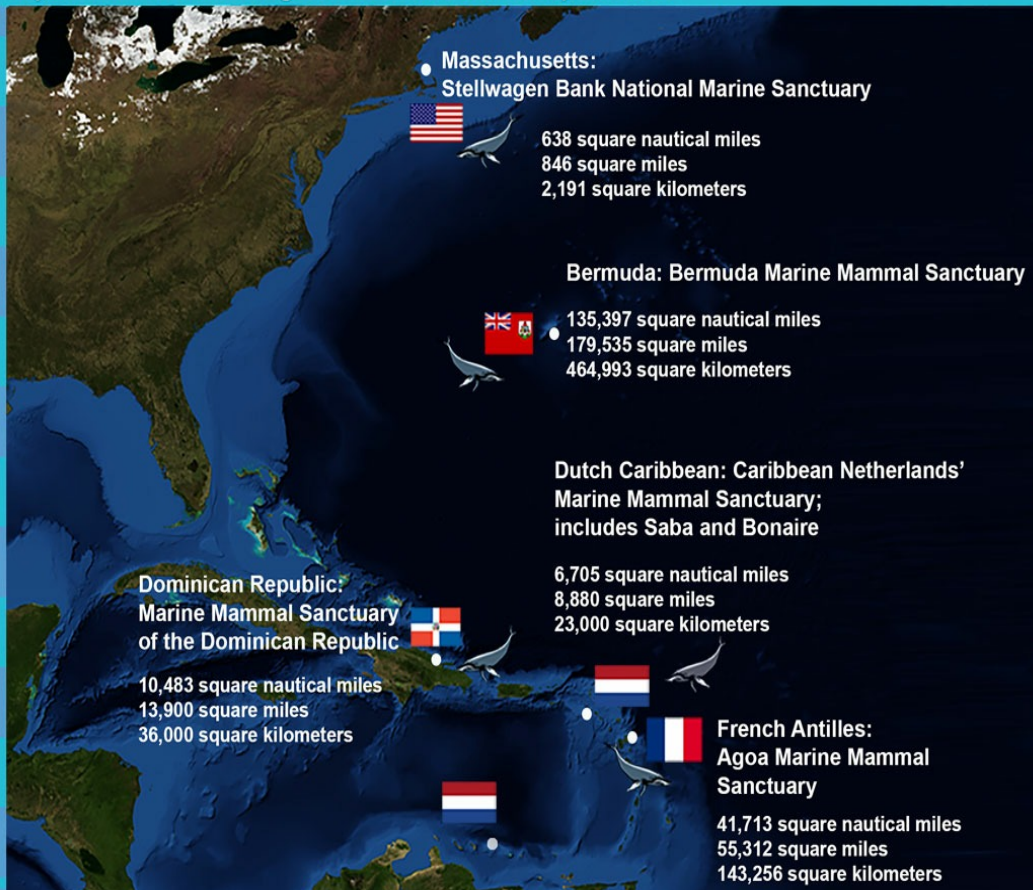
Scientists estimate that today's North Atlantic humpback population numbers conservatively about 12,000. Knowing the identity of individual humpbacks is of critical importance for whale science and conservation. But how do researchers tell these ocean inhabitants apart?

Office of National Marine Sanctuaries  
National Oceanic and Atmospheric Administration

STELLWAGEN BANK NATIONAL MARINE SANCTUARY



### Beyond Borders: Stellwagen Bank Sister Sanctuary Network



Just like human fingerprints, whales have their own distinct patterns, but for humpbacks these markings can be found on the underside of the tail. However, their massive flukeprints are five meters across and visible from a couple of hundred meters away! No two humpbacks have exactly the same tail pattern. With photo-identification scientists can ID an individual anywhere it may travel throughout its life by looking at the markings.

Over the course of four decades, some 8,000 individual photographs of fluke patterns have been entered into the North Atlantic Humpback Whale Catalogue curated by Allied Whale (College of the North Atlantic, Bar Harbor, ME). Long-term study can reveal the milestones of an animal's life: through photo-ID one can learn which individuals are male or female, unravel the structure of families or other social groupings, and get clues to population numbers. For example, the study of a female whale over many years can reveal her age at first reproduction, the number of calves she bore, her reproductive success or loss, her age when she experienced reproductive decline, and

*Science-based sister sanctuary relationships have been forged among five nations—US SBNMS, Dominican Republic (2007), French Antilles (Agoa, 2011), Bermuda (2012) and recently declared Caribbean Netherlands (Yarari) marine mammal sanctuary in 2015. (Graphic: SBNMS).*

ultimately her lifespan.

### CARIB Tails—A Citizen Science Program

*Humpback whales have been seen in the waters of the Eastern Caribbean for hundreds of years, but we are only recently recognizing the importance of these animals to our local history and economy.*

— Amandine Eynaudi, Manager of Agoa MMS, 2014

In 2014, the SSP launched CARIB Tails, a citizen science program targeting the Eastern Caribbean yachting/boating community. Why? Whales and boats share a special environment—our open ocean. And yachters and cruisers in the Caribbean Sea now have the opportunity to take on a special role to help protect their fellow travellers. All that is needed is a camera and knowledge of safe boating around whales. By photographing the distinct patterns on the tails of humpback whales, the CARIB Tails citizen scientists can help researchers track the movements of these whales between their North Atlantic feeding grounds and their breeding grounds in the Wider Caribbean Region. While thousands of photographs from northern feeding grounds, like Stellwagen Bank National Marine Sanctuary, fill the North Atlantic Humpback Whale Catalog (NAHWC), very limited information from the breeding and calving grounds exists. Researchers are especially interested in remote and under-surveyed areas of the Eastern Caribbean (EC).

Photographs from CARIB Tails and SSP researchers have already contributed substantially to growth in the sample from the Eastern Caribbean.



Photo Credit : Center for Coastal Studies (2008)

*"Footprints" was our first fluke photo match confirming the migration exchange between Agoa and SBNMS—photographed in 2008 in the Gulf of Maine's northern feeding ground and the southern breeding/calving ground off Guadeloupe in 2014.*

The SSP's fluke photos have recently contributed to an IWC scientific paper identifying the southeast Caribbean as a possible third breeding ground for the North Atlantic humpbacks, which has critical management implications (Stevick, et al. 2015). But we still don't know how much mixing occurs between different sides of the Atlantic. Contributions of tail fluke photographs of humpback whales from the Caribbean region are critical for conservation efforts and may provide some much-needed answers.

At the SSP meeting hosted by the Netherlands in March 2015 (St. Maarten), the partners formally established the Marine Mammal Protected Areas Network (MaMPAN) as an integral framework for the implementation of UNEP/SPAW's Marine Mammal Action Plan along with the Sister Sanctuary Alliance (SSA)—a group of 42 NGOs (to date) that partner and assist with country-specific program development and implementation from French-, Dutch- and Spanish-speaking sister sanctuary nations.

The sister sanctuary concept is part of a larger international and global vision of Marine Mammal Protected Areas (i.e. UNEP's Specially Protected Areas and Wildlife Protocol for the Wider Caribbean Region) that prioritizes management regimes that maintain ecological connections between marine protected areas in order to satisfy species' requirements. As additional sites join, the chain of sister

sanctuaries will help to enhance an ecosystem-based approach to sanctuary transboundary management through cooperation and coordination of capacity building, research, monitoring, and education involving humpback whales and the respective marine bank ecosystems that they frequent.

For references or more information, please contact: [Nathalie.Ward@noaa.gov](mailto:Nathalie.Ward@noaa.gov) CARIB Tails website: [www.caribtails.org](http://www.caribtails.org)

### Interested In A Video?

— "SAFE PASSAGE FOR HUMPBACKS: Safe Boating Under Sail" A Yachter's Safe Boating Training video will be available 31 January 2016. To request a copy please contact: Nathalie Ward at [nathalie.ward@noaa.gov](mailto:nathalie.ward@noaa.gov) or [caribtails@gmail.com](mailto:caribtails@gmail.com)

## PROJECTS

### Biodiversity for Sustainable Development in the Caribbean through Ecosystem Based Management: UNEP-CEP project funded by the Government of Italy

The project "[Biodiversity for Sustainable Development in the Caribbean through Ecosystem Based Management](#)" is an initiative funded by the Directorate General for Development Cooperation (DGCS) of the Italian Government, aimed at supporting the SPAW Programme of the UNEP Caribbean Environment Programme (CEP) on conservation and sustainable use of marine and coastal areas. With this project, the Italian Government continues its support for the "Caribbean Challenge" Initiative (CCI) through which some governments in the region committed to protecting 20% of their marine and coastal resources in 2020 in response Aichi Target to No.11.

This regional project aims to create tools and practices for an integrated management of the Caribbean coastal zone using the ecosystem approach. The project focuses mainly on the development of a tool that integrates and systematically processes biophysical and socioeconomic information of the selected area to help make decisions about the fate of the coastal zone (for conservation, fisheries, tourism, urbanization, ports) as part of an integrated coastal and marine spatial planning process that will benefit current and future generations.

In this sense, the project also aims to develop the institutional

### Revised Guidelines for nomination of Species under the Annexes of the SPAW Protocol

One of the objectives of the SPAW Protocol is to support the conservation of threatened and endangered species. In pursuit of this objective, each Party is free to propose new species for listing by providing the relevant documentation supporting the listing, and in keeping with the criteria approved by the Parties for this purpose.

Following a decision of the last meeting of the Contracting Parties to the SPAW Protocol (COP 8, Cartagena, Colombia, December 2014), the Guidelines for Nomination of Species to the SPAW Annexes have been reviewed. These guidelines are the result of the work and consultations of the *Ad Hoc* Working Group which was recently re-established. The guidelines still require discussion at the next meeting of the Scientific and Technical Advisory Committee (STAC) before final adoption by the COP. However Parties are encouraged to use these draft guidelines in the event that they wish to propose new species for nomination.

You can find the guidelines on the SPAW-RAC website at: <http://www.car-spaw-rac.org/?Guidelines-for-Nomination-of-640>

For more information, please contact: [anne.fontaine.carspaw@guadeloupe-parcnational.fr](mailto:anne.fontaine.carspaw@guadeloupe-parcnational.fr)

capacities of the region using an "Integrated Decision Support System", and strengthen the transfer of information to improve UNEP-CEP's Regional Database of Marine Protected Areas and use existing data in the system in the process of strategic and operational planning of marine conservation areas and management. This project will help strengthen the activities offered by the Network and Forum of Caribbean Marine Protected (CaMPAM) of UNEP-CEP's SPAW programme area.

The project will be implemented at pilot sites in one or two countries who will participate through the work of its experts, and will include delivery and preliminary implementation of useful processes and results in coastal zone management.

For more information on this project, please contact: Jodi Johnson, SPAW Programme Assistant, [jj@cep.unep.org](mailto:jj@cep.unep.org)

### The *Sargassum* issue in the Wider Caribbean region: a growing need for sharing experiences and information



2015 has seen a particularly high influx compared to previous years and many organizations, including government agencies and the private sector, are now taking steps to fight the influx while providing answers to questions. The

SPAW-RAC is continuing its efforts to develop regional cooperation towards understanding the phenomenon and to research solutions.

#### Sharing information

A number of stakeholders from a range of sectors – tourism, manufacturing, academia, and the general public have begun to pay more attention amid growing fears. For example, the [Caribbean Alliance for Sustainable Tourism](#) (CAST) has released a [Resource Guide for the Caribbean](#) and the [GCFI](#) has recently updated a fact sheet on Pelagic *Sargassum* Influx in the wider Caribbean available in [English](#), [Spanish](#) and [French](#).

#### Sharing experiences

Sharing experiences and facilitating cooperation on the *Sargassum* issue is very important considering that each territory affected by the phenomenon may have different characteristics both economic (e.g. the importance of tourism) and ecological (e.g. the coastal configuration and associated ecosystems). In light of this, on August 17th a [Sargassum symposium](#) was held by the University of the West Indies in Barbados and was streamed live online. It was the first regional Caribbean event on the issue providing an opportunity for the phenomenon to be explained to the public while gathering stakeholders from islands of the Eastern Caribbean allowing them to share their experiences, including management strategies.

The SPAW-RAC is now working closely with a growing number of organizations and experts which are very active on the *Sargassum* issue. In addition to those already mentioned, the University of Southern Mississippi is monitoring *Sargassum* strandings in the Caribbean through a [reporting site](#), while the Texas A&M University is working with satellite observations to predict arrivals of *Sargassum* (SEAS) and has developed an [Sargassum Predictive Web App](#) in conjunction with NASA's Stennis Center. Additionally, the [Sargasso Sea Commission](#) is currently highlighting the ecological importance of the *Sargassum* ecosystem and its protection in parts of Atlantic from in-water collection, and the [WIDECAST](#) continues its focus on the potential impact on sea turtles.

Continuing initiatives have ensured that the *Sargassum* issue is now an important and relevant topic of discussion at regional events - the subject was broached during the 2nd Council of Environmental Ministers, Sustainability of the Organization of Eastern Caribbean States (OECS) on September 8th in Antigua and Barbuda. Likewise, the Latin American and Caribbean Large Marine Ecosystems (CLME) Symposium held in Cancun, Mexico on September 7th - 8th organized a special Working Group session to analyze the presence of *Sargassum* in coastal areas of the Wider Caribbean Region. On November 9th – 13th, the [GCFI annual meeting](#) will be another major event during which talks on the *Sargassum* phenomenon are expected.

#### Launch of a regional on-line forum

With the objectives to enhance the sharing of experiences and good practices and to further strengthen collaboration, the SPAW-RAC started to formalize a network of experts, scientists and managers through an online forum

### The BEST 2.0 grant programme for the European Union Overseas just opened!



The [BEST 2.0 Programme](#) is a funding facility supported by the European Commission (DG DEVCO) as part of the EU Biodiversity for Life ([B4Life](#)) flagship. It aims to promote the conservation of biodiversity and sustainable use of ecosystem services, including ecosystem-based approaches to climate change adaptation and mitigation, as a basis for sustainable development in Europe's Overseas Countries and Territories (OCTs).

Specifically, it seeks to enable, empower and strengthen local authorities and civil society organisations which are committed to local development, biodiversity conservation and sustainable use of ecosystem services in OCTs.

In the Caribbean region, the programme is open to 13 territories, namely Aruba, Bonaire, Bermuda, Curaçao, Saba, St. Eustatius, St. Maarten, Anguilla, Montserrat,

Turks and Caicos Islands, British Virgin islands, Cayman Islands and St. Barthelemy. Capitalizing on the BEST III initiative, the BEST 2.0 programme will - amongst others - support implementing actions in the key biodiversity areas identified through the participative Ecosystem profiles process led by the BEST knowledge hubs.

The SPAW-RAC along with the Reserve Naturelle of St. Martin, are in charge of the BEST 2.0 Caribbean Hub - we are therefore pleased to announce the launch of the first calls for BEST 2.0 proposals. In our region, it starts with the [Medium grants](#), and proposals to fund projects are accepted through the [BEST 2.0 Programme portal](#) until **December 4th 2015**. This is the first step of the BEST 2.0 which will prioritize the Small Grants component – keep in mind that **the next BEST 2.0 Small Grant call will be launched next spring in our region!**

You are encouraged to explore the dedicated [BEST 2.0 Programme's portal](#) to find more useful information on applying for a grant, including the [operational manual](#), [Guidelines for applicants](#), explanations about [small](#) (<100 000 Euros) and [medium](#) (< 400 000 Euros) grants, eligibility criteria, application procedure and [frequently asked questions](#).

Please contact Julie Belmont ([julie.belmont.carspaw@guadeloupe-parcnational.fr](mailto:julie.belmont.carspaw@guadeloupe-parcnational.fr)), BEST 2.0 project officer for the Caribbean, regarding any queries you may have.

dedicated to the *Sargassum* issue. The aim of this tool is to help gather information about the *Sargassum* issue and facilitate exchanges on both scientific knowledge and more technical managerial issues between stakeholders of the Caribbean countries and beyond (e.g. Western Africa). We kindly encourage all experts and interested organizations and individuals working on this issue to contribute to this collective debate by using the regional forum.

For any questions or to be added to the forum, please write directly to [frederique.fardin.carspaw@guadeloupe-parcnational.fr](mailto:frederique.fardin.carspaw@guadeloupe-parcnational.fr) at the SPAW-RAC.

## SPAW PAs / CaMPAM news

### CaMPAM – ECMMAN Small Grant Program:

The “Climate Resilient Eastern Caribbean Marine Managed Areas Network” (ECMMAN) Project is funded by the German Federal Government and coordinated globally by [The Nature Conservancy](#) (TNC) and the SPAW-RAC for its Small Grant component. The supported projects, located in 6 countries of the Eastern Caribbean, namely Dominica, Grenada, St. Lucia, Antigua and Barbuda, St. Vincent and the Grenadines, and St. Kitts and Nevis, are currently under implementation.

Despite some delays in the implementation of the planned activities, the grants have allowed for hiring experts and MPA staff, as well as holding stakeholder meetings, training activities, educational activities, biophysical monitoring and other important activities aimed at strengthening existing marine management areas.

For details on such activities go to the CaMPAM website and find a [summary of each project](#).

### Learn more about St. Kitts and Nevis CaMPAM-ECMMAN project:



With resources provided by the project “Establishment of two Marine Managed Areas (The Narrows Marine Reserve and The Narrows Fishing Priority Area)” with support from the CaMPAM-ECMMAN Small Grant and managed by the [Nevis Historical and Conservation Society](#) (NHCS), education and compliance officers were hired in collaboration with the [Department of Marine Resources](#).

These officers have led the implementation of community consultation workshop and the preparation and distribution of public awareness materials, particularly among the fishing community – fishermen are considered an important stakeholder group and were involved in the process of establishing a fishing priority area and a marine reserve in The Narrows (a shallow water channel between St. Kitts and Nevis with coral reefs and seagrass beds).

An [awareness](#) campaign is in progress and a [Facebook page](#) has been created. The designation of the marine managed area is in the process of being reviewed for approval by the Cabinet, after which demarcation buoys will be installed.

## SAVE THE DATE

### SPAW events at the GCFI conference:

This year the [68th GCFI annual meeting](#), co-hosted by the Fundacion [MarViva](#), will be held in Panama City, Panama, from November 9th to November 13th 2015. The theme for the marine community of the

Caribbean region is “Two Oceans....Same Coastal issues.”

Among the various sessions and workshops that will take place, the SPAW programme will support the organization of the following events:

#### ■ “MPA Science and Practice” session (November 12th 2015)

Following the commitment of UNEP-CEP SPAW programme to promote the application of the ecosystem-based approach to MPA management, this session coordinated by CaMPAM since 2004, will focus primarily on this area. For more information on this session, please contact Dr, Georgina Bustamante, CaMPAM coordinator ([gbustamante09@gmail.com](mailto:gbustamante09@gmail.com)).

#### ■ Lionfish management workshop (November 12th 2015 side event, on invitation)

Under the aegis of the [Regional Lionfish Committee](#), the purpose of this workshop is to promote best management strategies and tools and share main lessons learnt.

For more information on this workshop and to be invited, please contact Franck GOURDIN at SPAW-RAC ([franck.gourdin.carspaw@guadeloupe-parcnational.fr](mailto:franck.gourdin.carspaw@guadeloupe-parcnational.fr)) and / or Ruben E. TORRES, Reef Check Dominican Republic ([ruben@reefcheck.org](mailto:ruben@reefcheck.org)).

## UPCOMING EVENTS

■ **9 - 13 November 2015:** 68th GCFI Conference. Panama City, Panama: [www.gcfi.org/Conferences/68th/Panama\\_en.html](http://www.gcfi.org/Conferences/68th/Panama_en.html)

■ **16 - 20 November 2015:** MARCUBA: [www.congresomarcuba.com](http://www.congresomarcuba.com)  
Havana, Cuba

■ **1 – 4 December 2015:** ICRI 30th General Meeting will be held in Pattaya City, Thailand: [www.icriforum.org/ICRIGM30](http://www.icriforum.org/ICRIGM30).

■ **29 February - 4 March 2016:** International Sea Turtle Symposium - Lima, Perú. Deadline for abstract submission and guidelines: 15 October 2015. For more information: <http://symposium.internationalseaturtlesociety.org>

## PUBLICATIONS



**Legal Frameworks for MPA Enforcement in the Caribbean: Challenges and Opportunities :** <http://eli-ocean.org/mpa/caribbean-mpa-enforcement>

Legal Frameworks for MPA Enforcement in the Caribbean: Challenges and Opportunities  
Revised ed. June 2015



■ **Results from an assessment of MPA economic benefits in Fiji and Vanuatu.** [To obtain a copy of the full report.](#)

■ Stevick, P.T., L. Bouveret, N. Gandilhon, C. Rinaldi, R. Rinaldi, F. Broms, C. Carlson, A. Kennedy, N. Ward, and F. Wenzel. 2015. “Humpback whales in the southeast Caribbean are behaviorally distinct from those off the Dominican Republic.” *Journal of Cetacean*

Research Management. Presented to IWC sub-committee on Aboriginal Whaling Management Plans and the sub-committee on Stock Definition (IWC, San Diego, California, USA May 2015 as paper SC/66a/AWMP2).

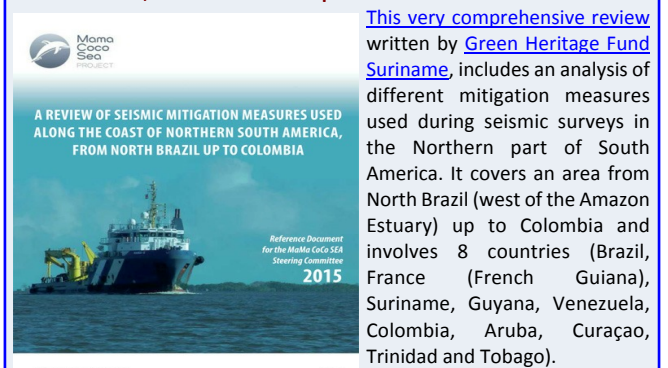


**Living Blue Planet Report: Species, habitats and human well-being.** This report recently published by WWF, provides the most accurate picture of the state of the ocean - and the results are not good. We have lost half the fish populations that we rely on in less than half a century. The findings spell trouble for all nations, but will especially impact people in the developing world who rely on seafood for their daily diets and economic livelihoods.

ENG: <http://wwf.panda.org/?referer=wwffr>

FR: <http://www.wwf.fr/?5640/Rapport-Planete-Vivante-Oceans-2015-le-declin-des-oceans-met-en-perilla-securite-alimentaire-de-lhumanite>

#### A review of seismic mitigation measures used along the coast of Northern South America, from north Brazil up to Colombia



This very comprehensive review written by [Green Heritage Fund Suriname](#), includes an analysis of different mitigation measures used during seismic surveys in the Northern part of South America. It covers an area from North Brazil (west of the Amazon Estuary) up to Colombia and involves 8 countries (Brazil, France (French Guiana), Suriname, Guyana, Venezuela, Colombia, Aruba, Curaçao, Trinidad and Tobago).

Mitigation measures used within the wider region and those used internationally (New Zealand, Australia, UK, Gulf of Mexico) are also included for comparison. The study highlights topics that are generally part of seismic mitigation guidelines e.g. exclusion or mitigation zone (EZ), pre-watch period (PW), soft start (SS), gun-tests, line change, mitigation gun (MG), shutdowns (SD)/power down (PD) or Pause, Species of Concern (SoC) and the role of Marine Mammal Observers.

This review has been co-financed by [Green Heritage Fund Suriname and WWF](#) and forms a part of activities proposed through the [MaMa CoCo Sea project](#). This project aims to develop cooperation efforts for marine mammal conservation in areas under Amazonian influence - MaMa CoCo Sea is short for Marine Mammal Conservation Corridor for Northern South America).

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