UNITED NATIONS

EP

United Nations Environment Programme

UNEP

Distr. LIMITED

UNEP(DEPI)/CAR WG.36/INF.8

23 October 2014

Original: ENGLISH

Sixth Meeting of the Scientific Technical Advisory Committee (STAC6) to the Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region

Cartagena, Colombia, 8 December 2014

REPORT ON THE LIFEWEB-SPAIN UNEP-CEP MEETING ON SCENARIOS FOR TRANSBOUNDARY MARINE MAMMAL MANAGEMENT IN THE WIDER CARIBBEAN, SAN JUAN, PUERTO RICO, 23 - 24 APRIL 2014

LifeWeb-Spain UNEP-CEP Meeting on Scenarios for Transboundary Marine Mammal Management in the Wider Caribbean

San Juan, Puerto Rico, 23 - 24 April 2014

I. INTRODUCTION

1. In keeping with the objectives of Protocol on Specially Protected Areas and Wildlife in the Caribbean (SPAW), its Action Plan for the Conservation of Marine Mammals in the Wider Caribbean Region, and the Programme of Work for Protected Areas under the Convention of Biological Diversity (CBD), the Government of Spain and UNEP have developed a partnership in support of LifeWeb, which includes a Project: "Broad-scale Marine Spatial Planning of Marine Mammal Corridors and Protected Areas in Wider Caribbean and Southeast & Northeast Pacific".

2. The project was launched in 2010 to assist countries develop and apply cross-sectoral ecosystem approaches to management of areas and the protection of marine mammals in both regions. Activities include mapping of critical marine mammal habitats and regional-scale migration routes, as well as of socio-economic information on human activities to promote broad-scale spatial planning of marine mammal corridors and critical habitats.

3. Five components are included in the Project:

    a) Data integration and mapping: in order to visualize critical habitats, human activities, and marine mammal distribution and migrations in the Wider Caribbean and South-East Pacific regions;
    b) Training, exchanges and networking on integrated marine spatial planning, management and governance;
    c) Communication strategy and awareness raising on marine spatial planning and its value as a tool;
    d) Strengthening regional policies underpinning transboundary governance; and
    e) Demonstration projects on marine mammal management planning

4. UNEP/DEPI Marine and Coastal Ecosystem Branch serve as Project Coordinator working in close cooperation with UNEP's Caribbean Environment Programme (CEP), the Regional Activity Centre for the SPAW Protocol (SPAW-RAC), the Permanent Commission for the South Pacific (CPPS), the UNEP Regional Offices for Latin America and the Caribbean, and for North America (ROLAC and RONA respectively). Key project partners include the Caribbean Marine Protected Areas Management Network and Forum (CaMPAM), US National Oceanic and Atmospheric Administration (NOAA), French Marine Protected Areas Agency, the Dutch Caribbean/Ministry of Environment, and UNEP GRID-Arendal.

II. BACKGROUND AND OBJECTIVES OF THE MEETING

5. In 2012, during an Inter-regional Workshop on Broad-scale Marine Spatial Planning and Transboundary marine mammal management (21-24 May, Panama City, Panama) one of the main recommendations for the Wider Caribbean was that scenarios for transboundary management of marine mammal be developed using the work already done under the various components of the LifeWeb project, in priority geographic areas. Once such areas ranges from the Dominican Republic to Grenada and encompasses all the Eastern Caribbean. To that end, under the coordination of UNEP CEP and the SPAW-RAC, a small expert group was established in August 2013, that has worked with Fundación MarViva (Costa Rica) on reviewing the maps already produced on marine mammal distribution, threats and protection, and on identifying possible conflict areas and mitigation measures. The latter formed the basis for proposing scenarios for transboundary management of marine mammals contained in the main working document titled "Marine Spatial Planning and Transboundary Management of Marine Mammals in the Wider Caribbean" (http://www.car-spaw-rac.org/?Scenarios-for-marine-mammal)

6. The specific objectives of the meeting were:

    a) Review and discuss the proposed scenarios developed on the basis of the mapping produced on marine mammal distribution, threats and protection, possible conflict areas and mitigation measures; (main working document); and

    b) Identify next steps in the process of applying marine spatial planning for transboundary management of marine mammals in the Wider Caribbean, including lessons learned and recommendations for Countries and UNEP CEP and the SPAW-RAC

7. The Agenda and the list of participants appear as Annex 1 and Annex 2 to this report respectively.

III. MEETING RECORD

Opening Remarks

8. The workshop was opened at 08:50 hs on 23 April 2014, with remarks by Secretary Carmen R. Guerrero Perez, Department of Natural and Environmental Resources on behalf of the Government of Puerto Rico. In her address she outlined the current efforts and priorities of Puerto Rico in the promotion of conservation of their 23 species of marine mammals, notably with the West Indian manatee, including the Manatee Conservation Centre, and a marine mammal rescue programme that has been established for the last eight years. Puerto Rico´s initiatives on environmental education were also highlighted. She thanked UNEP offices for their work and the staff of her department for their support to the present meeting. She also welcomed participants to Puerto Rico.

9. Ms. Alessandra Vanzella-Khouri, addressed the meeting on behalf of UNEP and the Caribbean Environment Programme, Kingston, Jamaica, thanking participants for their presence and the Government of Puerto Rico for their commitment of policies and strategies for the conservation and management of marine mammals. She noted all island governments of the geographic area selected for the scenarios development were invited to the meeting and she commended the fact that most were in attendance. She also gratefully acknowledged the valuable support from the Government of Spain in the implementation of this LifeWeb Project in the Wider Caribbean.

10. In her remarks, she provided an overview of the work of the Caribbean Environment Programme, the Cartagena Convention and its Protocols and their relevance to the goals of this LifeWeb Project. She outlined the objectives of the Convention for the Protection and Development of the Wider Caribbean (Cartagena Convention) and in particular its biodiversity Protocol on Specially Protected Areas and Wildlife (SPAW). She highlighted that the Convention, the only regional legally binding environmental treaty for the Wider Caribbean, and its Protocols on oils spills, land-based sources of pollution and biodiversity have entered into force.

11. Welcome greetings were extended from Ms. Hélène Souan, Director of the Regional Activity Centre for Specially Protected Areas and Wildlife (SPAW-RAC), Guadeloupe, which was primarily responsible for the organization of the meeting, along with the Government of Puerto Rico. She also stated the importance of the existing Marine Mammal Action Plan (MMAP) for the region, adopted by Governments in 2008 and being implemented through a 5-year priority plan, under the coordination of UNEP-CEP and the SPAW-RAC. The MMAP provides opportunities for capacity building, enhancement of scientific knowledge and transboundary management.

12. The Meeting elected Mr. Romain Renoux, Réserve naturelle de St. Martin and Agoa Sanctuary, as the Chairperson. After an initial round of presentations by

each participant (see list of participants in Annex 2), key presentations were made as follows, in keeping with the meeting agenda (Annex 1):

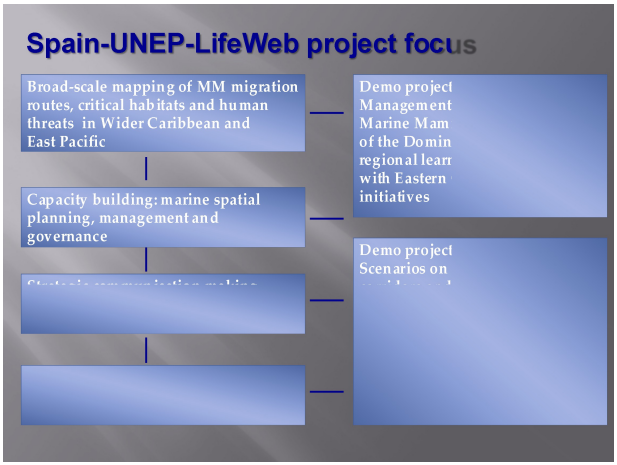
PRESENTATION 1: Ms. Monica Borobia, Project Coordination Consultant - **Overview and Progress of the Spain-UNEP LifeWeb Project: "Broad-scale Marine Spatial Planning of Mammal Corridors and Protected Areas in the Wider Caribbean and South-East & Northeast Pacific".**

13. Ms. Monica Borobia, Project Coordination Consultant, provided an overview of project progress and status. She outlined project specific objectives as follows:

- Map essential marine mammal habitats and migratory routes through data collation, geographic information system (GIS)-analysis , including socio-economic information and human impacts (e.g. fisheries, shipping, and tourism);
- Introduce cross-sectoral planning approaches via capacity building and learning exchanges on marine spatial planning, marine mammal protected area (MMPA) networks and tools, and good practices on transboundary governance and equitable sharing of MMPA benefits;
- Develop cross-sectoral marine spatial planning and management scenarios (via "demonstration projects" in the Wider Caribbean and Eastern Pacific regions) -- showcasing different aspects of managing critical habitats and migration routes involving Governments and stakeholders.
- Develop strategic communication materials and products on benefits – "making the case" - for integrated and transboundary management of marine mammal migration routes and critical habitats
- Promote and support implementation of the two Marine Mammal Action Plans and related instruments in the Wider Caribbean and Southeast & Northeast Pacific via collaborative initiatives:
  - Sub-regional and inter-regional science-policy dialogues;
  - Consultations with relevant stakeholders in design of transboundary governance and management options; and

- Targeted dissemination of lessons, good practices and strategic information for policy support

14. A series of closely-linked and mutually supporting project components and activities include:



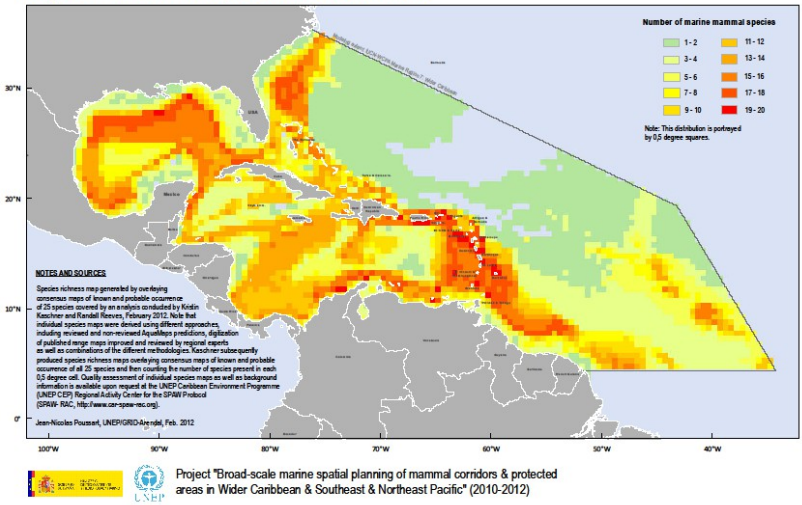
15. Ms. Borobia proceeded to present a summary of the LifeWeb Project results to date for the Wider Caribbean region, which include:

MODELING AND MAPPING RESULTS FOR SELECTED MARINE MAMMAL SPECIES (PROJECT COMPONENT1)

Component 1 of the LifeWeb project on regional data integration and mapping aimed to: (i) better apply existing information sources to visualize marine mammal critical habitats and migration routes and key human uses of these areas, (ii) integrate data currently available and (iii) identify what gaps remain specific to such critical habitats and to regional-scale migration routes of marine mammals. For the Wider Caribbean (see examples of maps below):

- distribution maps for 25 marine mammal species, accompanied by factsheets retracing methodology and data sources used with notes in French, English and Spanish, after expert review (Aquamaps modeling) (available through www.car-spaw-rac.org).
- map of manatee habitats;
- map of cumulative species richness with probabilities;
- Marine mammal threats and socio-economic impacts;
- Marine mammal protection and policies, including legal protection, Marine Mammal Protected Areas and Marine Protected Areas for manatees; and
- Captivity and take (incidental catch).

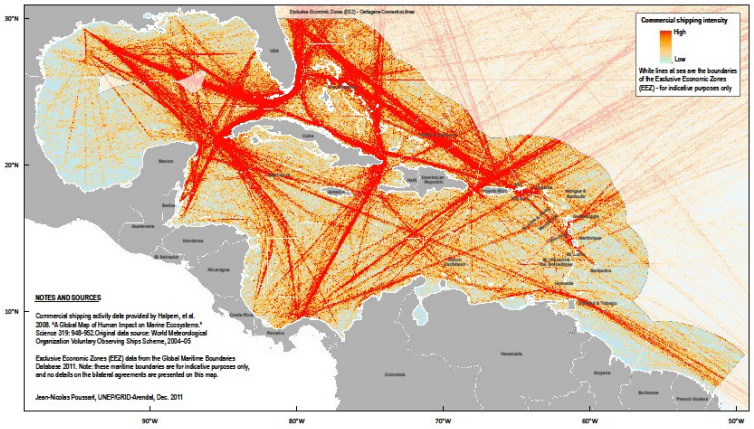
Marine mammal species richness map based on consensus maps of known and probable occurrence



Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)

Commercial Shipping Intensity

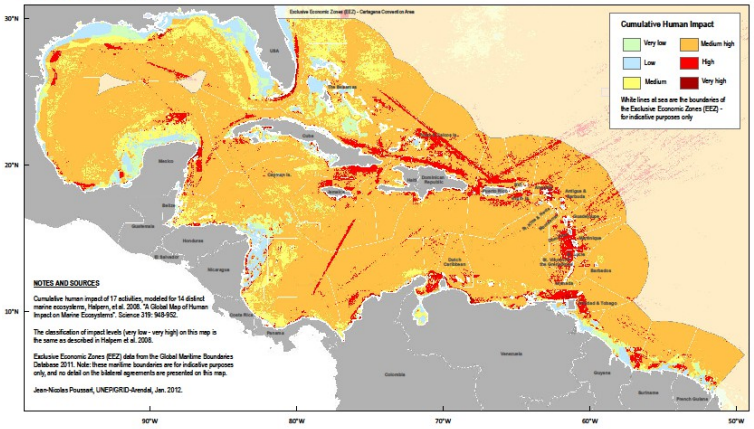
in the Wider Caribbean Region



Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)

Cumulative Human Impact

on marine ecosystems



Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)

16. The mapping carried out reflect the first such comprehensive attempt to spatially delineate habitat suitability for 25 species of marine mammals in the Wider Caribbean and threats by human activities with key associated socio-economic aspects, which are crucial elements for the application of MSP.

PILOT DEMONSTRATIONS (COMPONENT 5): MANAGEMENT PLAN FOR THE MARINE MAMMAL SANCTUARY OF THE DOMINICAN REPUBLIC (SMMDR)

17. The Marine Mammal Sanctuary of the banks of La Plata and La Navidad, located north-northeast of the Dominican Republic, was designated as a protected area in 1986, with an area of 3.400 km², which in 1996 was extended to 25.000 km². With the enacting of Law 202-04 it was subsequently changed to its present size of 32.000 km². It protects the habitat for the largest population of humpback whales (*Megaptera novaeangliae*) in the North Atlantic that migrates annually to the warm waters of the Caribbean in winter. It is estimated that about 17,000 whales (85%) of the total North Atlantic population of humpback whales use the waters of the Sanctuary to perform vital functions such as mating and breeding. In this sense, the Sanctuary is considered a critical habitat for the survival of this species.

18. However, during its 25 years of existence, it has operated without a management plan. As of 2011, under the auspices of LifeWeb Project, a Management Plan for the Marine Mammal Sanctuary has been drafted, based on the principles of Ecosystem-based Management (EBM). The Management Plan drafting was conducted through a participatory process involving eight meetings with more than 20 institutions, in the collection of diagnostic information, identification of threats, selection of management objectives, critical areas for marine mammals and user areas.

19. The process of formulating the management plan followed the guidelines of the Methodological Guide for the Preparation and / or updating of management plans of protected areas of the Dominican Republic. This process included four phases: i) preparatory phase of the planning process, ii) diagnostic phase of the

status of the protected area management, iii) analysis phase of technical and legal framework for management, iv) phase of management proposals .

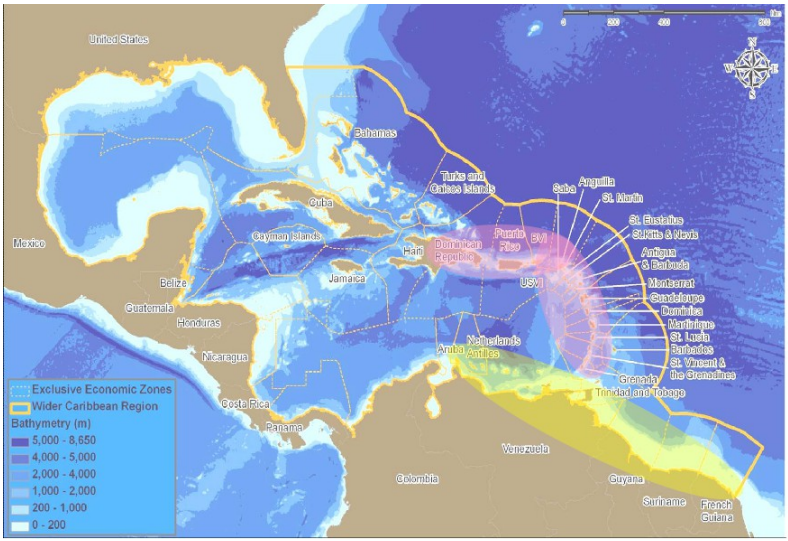
20. Institutionally the, plan formulation process was led by the Ministry of Environment and Natural Resources (Department of Protected Areas and Biodiversity) and the Dominican Republic Foundation for Marine Research (FUNDEMAR). It will constitute an important benchmark for the conservation of marine mammals in the Wider Caribbean. Its completion and future implementation will also serve a key platform for cooperative efforts and activities among other protected areas in the region, notably through a "sister sanctuary" concept, with partner actions on training, research and data sharing, with the Agoa Sanctuary (Caribbean´s French Antilles) and the Stellwagen bank national marine Sanctuary (USA). As sister sanctuaries, the concept promotes new avenues for collaborative education, scientific and management efforts, including joint-research and monitoring programs. This relationship will be crucial to the long-term conservation of the North Atlantic humpback whale population, as well as to the development of future cooperative agreements with other countries.

WIDER CARIBBEAN MARINE SPATIAL PLANNING SCENARIO EXERCISE ON TRANSBOUNDARY MANAGEMENT OF MARINE MAMMALS

21. As indicated previously, a result of the Inter-regional Workshop held under the LifeWeb Project (Panama City, Panama, 21-24 May 2012), was the selection of two sub-regional areas for the development of scenarios under the concepts of Marine Spatial Planning in the Wider Caribbean, due to their importance as habitats for marine mammals and on-going cooperation dynamics on marine mammals (see indicative Figure below, areas are generally defined with no specific geographic limits) :

    1) from the Dominican Republic to Grenada, including all of the Eastern Caribbean; and

2) continental coast of South America from Venezuela to the border between Brazil and French Guiana, including the Dutch islands of Aruba, Bonaire, Curaçao, and Trinidad and Tobago.



22. The present meeting will be reviewing the work carried out referring to priority sub-region 1 (see “presentation 3”). Progress has also been made in sub-region 2. A workshop on “Transboundary Management of Marine Mammals in Northern South America” was held in Paramaribo, Suriname, 18-20 March 2013.

23. That workshop was designed to provide local support and accelerate regional and national marine protected areas establishment efforts, as well as promote regional collaboration among countries of Northern South America (participants from Aruba, Colombia, Venezuela, Trinidad and Tobago, French Guiana, Suriname, Guyana and Brazil). The workshop was also supported by

the French Agency for Marine Protected Areas (AAMP), Green Heritage Fund Suriname (GFS)and WWF Guianas.

24. The aim was to formulate an action plan for the effective management of marine areas and marine mammals in Northern South America to support the protection of the marine biological diversity in the region. The Regional Action Plan encompasses the area from Maranhão state in Brazil to Colombia and include the Economic Exclusive Zones for Brazil (Maranhão, Pará and Amapá states), French Guiana, Suriname, Guyana, Venezuela, Colombia (Caribbean region), Trinidad and Tobago and the ABC Dutch Caribbean islands (Aruba, Bonaire and Curaçao). This area is in line with the relevant spatial scales of marine mammal populations living in the region, and with the geographical extent of current threats and pressures to which these species are exposed.

25. As a result of the Workshop, a Steering Committee from representatives of the target area has been established with the SPAW-RAC as a co-facilitator with the objective of promoting follow-up to the workshop and fostering the implementation of the Regional Action Plan for transboundary management of marine mammals. A first set of activities is already being implemented in the area.

26. In concluding, Ms. Borobia also summarized other outputs generated by the LifeWeb Project, including for the Eastern Pacific region:
    - "Cetacean Atlas - Large Scale Marine Spatial Planning for Migratory Routes and Critical Habitats of Marine Mammals in the Eastern Pacific" as a result of mapping and modeling work;
    - Strategic Communication on Marine Spatial Planning;
    - Draft Policy Paper on Lessons Learned and the application of Marine Spatial Planning to Marine Mammal Transboundary Management;
    - Factsheets (in English , French and Spanish) , Press Releases, Key Presentations and Programmatic Synergies with partner organizations; and

- Manual on Marine Spatial Planning concepts and practices for Latin America.

PRESENTATION 2: Mr. Jorge Jimenez, Fundación MarViva - **Marine Spatial Planning, Overview, Theory and Practice.**

27. On behalf of Fundación MarViva, Mr. Jorge Jimenez, introduced the conceptual framework for MSP. In his presentation he focused on the following:

- The Integrated Coastal Zone Management and Ecosystem-Based Management Approaches;

- The need for MSP, its relevance to: i-Maritime Traffic and Port Access, ii- Land and Sea-Based Pollution, iii- Climate Change, iv- Fishing Stocks Depletion;

- MSP Conceptual Elements: i-Sea heterogeneity, ii- Multi-Sectorial Approach, iii-Participatory process, iv-Ecosystem-based Management, v- Coordination Bodies, vi-Conflicts and Trade-offs, vii- Zoning and Use-Regulations;

- Basic Requirements for MSP: i-Institutional and Regulatory Framework, ii-High-Level Coordination, iii-Governance Mechanisms, iv-Technical Information; and v. User's participation;

- Advantages and Expected Products out of an MSP process: i-Stable institutional and regulatory framework, ii- Financial Investment Security, iii-Multi-sectorial 'buying-in", iv- Participatory Governance Processes, v-Zoning Schemes and vii-Monitoring and performance analysis.

28. Most countries already designate or zone marine space for human activities such as : maritime transportation, oil and gas development, offshore renewable energy, offshore aquaculture. However, most zoning and planning is done on a sector-by-sector, case-by-case basis without much consideration of effects on other human activities or the marine environment. Consequently, two major types of conflict have emerged :

• Conflicts among human uses (user-user conflicts); and
• Conflicts between human uses and the marine environment (user-environment conflicts).

29. These conflicts weaken the ability of the ocean to provide the necessary ecosystem services. Decision-makers end up only being able to react to events. By contrast, MSP is a future-oriented process. It can offer a way to address both types of conflict and select appropriate management strategies. It offers an opportunity to make efficient use of marine resources, which should be used to produce goods and services in a sustainable manner, as well as to avoid duplication of effort by different public agencies and levels of government in MSP activities, including planning, monitoring, and permitting.

30. Mr. Jimenez introduced the methodological framework involving MSP, starting with cumulative effects of uses, focusing on:

Compatibility Among Uses and the Environment:

- Ecosystems/Habitat Analysis: i-Habitat Identification and Mapping, ii- Habitat Analysis: Criteria: Rarity-Ecological Importance-Fragility-Productivity-Diversity-Wilderness, iii- Integrity and Viability Analysis.
- Human Activities Analysis: i-Identification and Mapping, ii- Characterization and Values: Criteria: Extension, Intensity, Duration.
- Value Assignment: Amount of People involved, Timing, Methods, Amounts extracted, Economical Yield, iii- Mapping cumulative human impacts

Integrating Mapping on Spatial Conflicts:

- Compatibility Analysis: i-Conflict Intensity Value Assignment, ii-Compatibility Matrix

- Analyzing Conflicts by : i-Non-Compatible Use-Use, ii-Non-Compatible Use-Environment, iii- Non-Compatible Use-Regulation

31. Mapping the cumulative impacts in specific areas is an important component to understand the current state of the ecosystem we seek to analyze. The effect of an activity is a function of the spatial and intensity scales, and the degree to which the ecosystem responds to the pressure. Having a panel of experts is essential in the process.

32. To meet current and future demands of the seas and oceans, we need to take into account the interests of all its users and the biodiversity that depends on it. When conflicts arise about the most important services (e.g. whale migration routes crossing shipping lanes which are very profitable), how can make informed decisions? Since such decisions are based on values, it is essential to view and discuss possible scenarios and compensation for an effective MSP approach. In order to organize the use of marine space, it is necessary to analyze human activities which contribute to the area under management and the environmental context where they occur. It is also important to highlight potential conflicts between uses / users and between uses and capabilities of the ecosystem to produce those goods and services sustainably. Planners and managers need to design and construct future scenarios that reconcile the interests of all users and ensure the productive capacity of ecosystems and biodiversity conservation.

The 10 steps of MSP

1. Defining the need
2. Defining the area
3. Establishing the Authority
4. Developing a Financial and Working Plan
5. Organizing and strengthening the participation of users
6. Assessing and analyzing the current situation
7. Defining and analyzing future conditions (Future Scenarios)
8. Developing a Plan
9. Implementing and ensuring compliance with the Plan
10. Monitoring and reviewing the operation of the plan

Source: MarViva, adaptado de Ehler & Douvere. 2009. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides , 53, ICAM Dossier , 6, UNESCO.

Key Products of MSP

- Inventory and mapping of important biological and ecological components and their status
- Inventory and mapping of human activities and future prospects with their respective characterization
- Inventory and mapping of the existing legal regulations
- Analysis of compatibility between various human activities / uses
- Assessment of human activity pressures / ecosystem uses and conservation targets
- Assessment of conflict extent

Combined Discussion Summary

33. Governance and institutional continuity are important elements to be considered for the application of Marine Spatial Planning (MSP), specially in the realities of political structures in the region. The involvement of stakeholders is equally important to generate ownership of the process.

34. It was recognized that there are difficulties and limitations to be addressed for a successful MSP process in the region, such as determining where the users are, i.e. which areas are being used by different stakeholders and determining compatibility among such uses. In this context cross checking is crucial to ensure that user areas are real and reflect their dynamic uses temporally and spatially.

35. It was clarified that the concept of a marine mammal "Sanctuary" does not preclude the existence of other marine activities such as fisheries, shipping and tourism. Hence the use of MSP to mitigate conflicts and generate scenarios for cross-sectoral co-existence with marine mammal populations and critical habitats is to be encouraged.

36. Political engagement and institutional strengthening to support further development and consolidation of MSP processes in the Wider Caribbean for broad-scale transboundary management of marine mammals is highly desirable, recognizing that it does not in any way affect, influences or impinges on national sovereign rights . It was also recommended to build synergies with relevant intergovernmental organizations, such as the Organization of Eastern Caribbean States (OECS), as well as under international agreements, such as the International Whaling Commission (IWC). The UNEP-CEP Secretariat noted that collaboration with both organizations is already underway and further strengthening will be pursued under this activity.

PRESENTATION 3: Mr. Jorge Jimenez, Fundación MarViva - **Scenario construction, data sets, scales, variables, methods, critical areas AND Mitigation measures emanating from the MSP analysis and scenario construction.**

37. The last phase of the LifeWeb project in the Wider Caribbean consisted in the development of scenarios on marine mammal transboundary management for the priority geographic area selected for that purpose by country participants at the 2012 Panama Workshop: from the Dominican Republic to Grenada, including all of the Eastern Caribbean. Mr. Jimenez presented the contents of the main working document titled "Marine Spatial Planning and Transboundary Management of Marine Mammals in the Wider Caribbean", outlining the process used in the construction of the proposed draft scenarios.

38. A small expert group from the Wider Caribbean (acting in their personal capacity) was invited to participate on the development of the scenarios, who provided technical inputs and recommendations, as follows: Paul Hoetjes (Caribbean Netherlands), Asha Singh (–Trinidad and Tobago), Peter Sanchez (SMMDR, Dominican Republic), Oswaldo Vasquez (Atemar, Dominican Republic), Romain Renoux (Agoa Sanctuary, St. Martin), Anne Reglain (IMO/RAC- REMPEITC, Curaçao), Nathalie Ward (NOAA-US), John Reynolds (Mote Laboratory, US).

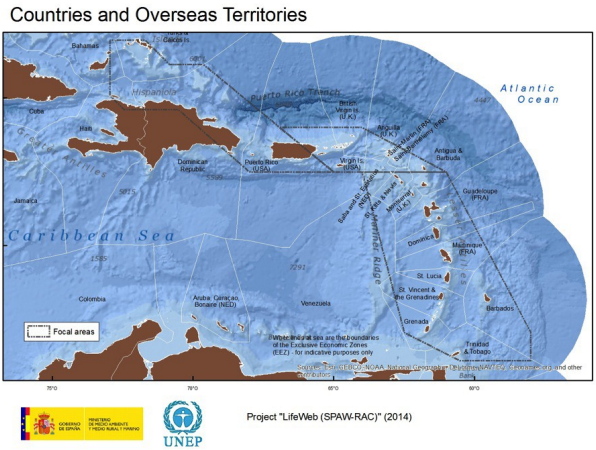
39. In addition to the above expert group, the Lifeweb Project coordination team also provided technical assistance and Fundación MarViva, from Costa Rica was primarily responsible for the development of scenarios based on the data already collected under the Lifeweb Project, as follows: Hélène Souan, SPAW-RAC; Alessandra Vanzella-Khouri, CAR-RCU; Monica Borobia, Consultant and Jorge Jimenez, MarViva.

40. As a result, the main working document outlines the process in the application of marine spatial planning and the work of the expert group in developing scenarios for transboundary management of marine mammals in the region.

This pilot scenario exercise builds upon data provided by countries and experts but also generated by the LifeWeb Project under component “Data integration and Mapping”.

41. This document was intended as background to generate discussions and feedback from Governments of the Wider Caribbean, and in particular those attending the present meeting.

42. Subsequent mapping analysis of the area extending from the Dominican Republic south to Grenada defined three smaller focal areas located around: a- The Marine Mammal Sanctuary of the Dominican Republic (including Puerto Rico), b-The Virgin Island Region, and c- the Lesser Antilles Corridor. The limits of these three areas were further refined based on distribution maps previously generated for the species selected for the analysis (see below).



43. During the marine spatial planning analysis and following discussions at the Inter-regional workshop in Panama, marine mammal species of high interest and that are representative of a group (by their use of habitat, behaviour,

migration pattern etc.) were selected: the Humpback Whale *Megaptera novaeangliae,*the Bottlenose Dolphin *Tursiops truncatus* and the Sperm whale *Physeter macrocephalus* and analysis was centered on their known distributions.

44. During the MSP analysis, recommendations were made by the expert group to include two additional species, the manatee *Trichechus manatus* (a coastal species) and the short-finned pilot whale *Globicephala macrorhynchus* (widely distributed throughout the region in deep offshore areas).

45. The limits of the focal areas selected above, were adjusted to the marine mammals distribution limits provided by existing maps, previously generated by the LifeWeb Project. These maps describe the known occurrence and probable occurrence of the selected marine mammals species based on a 60% presence threshold. Distributions were mapped out of 0.5-degree squares.

46. Limitations encountered in data include:

- Scarce information on the biology, population status, migration and habitat requirements of marine mammal species;
- Most maps produced through modeling efforts were done by different
- Institutions and for different purposes;
- Different scales limited the combined analysis; and
- Data quality was suboptimal for marine spatial planning analysis at the country/regional level.

47. However, despite the limitations above enough information was available to develop a general understanding of the distribution of the selected species and their interactions with main human uses at the broad level, allowing the identification of critical areas throughout the region, which in turn served as the basis for the generation of management scenarios.

Human Activities

48. Based on the maps generated under the LifeWeb Project and few others that were available, different human activities were analysed that directly or indirectly might be affecting marine mammals within their known distribution ranges. Some of the available maps, such as seismic research, hotel distribution, etc., were discarded from the analysis due to limitations in their range, scale or lack of relationship with marine mammals distribution.

49. Maps used included fishing effort, commercial shipping and land-sourced non-point organic pollution. The commercial shipping activity was generated out of ship tracks per one Km^2 cell. The fishing effort was defined for all gears as boat meters divided by the spatial extent (Km^2) of the fishing area (boat meters/Km^2), while the non-point organic pollution was generated out of the annual use of pesticides divided by the coverage area of urban agricultural landscapes. Several activities, of interest for the scenario development, could not be mapped because of the lack of spatialized, consistent data at the Caribbean scale.

Overlap Analysis

50. Marine mammals species distribution was overlapped with the selected uses coverage to identify areas were this overlap might be creating significant conflict (use-habitat conflicts). While overlap between a species distribution and a human use does not necessarily represent a conflict and a negative impact of the use over the habitat, it does indicate that a deeper analysis is required in those areas where the interaction is more intense (for example, where traffic or fishing efforts are higher). A compatibility analysis is needed to reach that stage. Typically the compatibiliity analysis requires more information than the one provided by the existing maps. In the compatibility analysis, the balance between uses pressure and habitat resilience/tolerance is compared to conclude whether the overlap is indeed a proof of use-habitat conflict. For this analysis, an expert group is required to discuss from a multi-disciplinary

perspective the pressure-tolerance levels of the interaction and to develop a compatibility matrix.

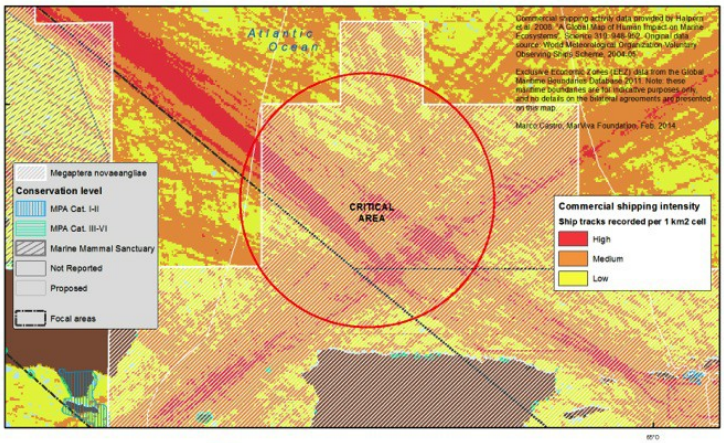
51. Again, in spite of data limitations, the overlap analysis drew attention to areas where a more intense interaction is happening and the proposed potential measures to be considered in those areas.

Critical Areas

52. Results from the overlap analysis identified several Critical Areas within each Focal Area. The overlap analysis allows identification of areas where the interaction between a use and a species distribution is intense, although not necessarily conflictive. That is, a critical area is likely to harbor use-habitat conflicts, but a later compatibility analysis would be required to assess the conflict degree. In all the three Focal Areas, Critical Areas were identified and the three selected uses (maritime traffic, fishing and pollution) were involved in some of these Critical Areas. For Focal Area # 1, the Critical Areas are shown in the following maps:

Northern Puerto Rico critical area

Humpback Whale Habitat vs. Commercial Shipping Routes

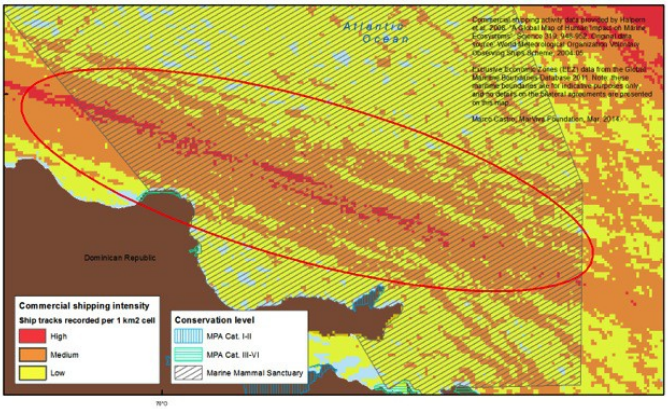


Project "LifeWeb (SPAW-RAC)" (2014)

Focal Area 1

Northern Dominican Republic critical area

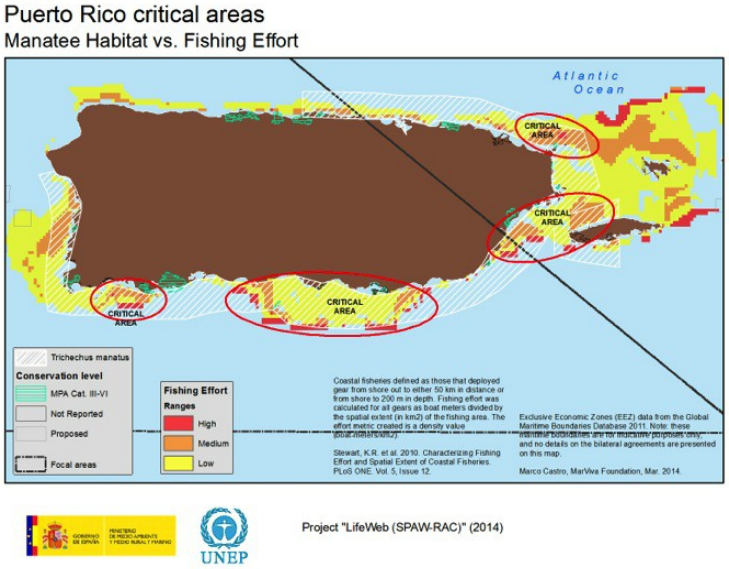
Humpback Whale Habitat vs. Commercial Shipping Routes

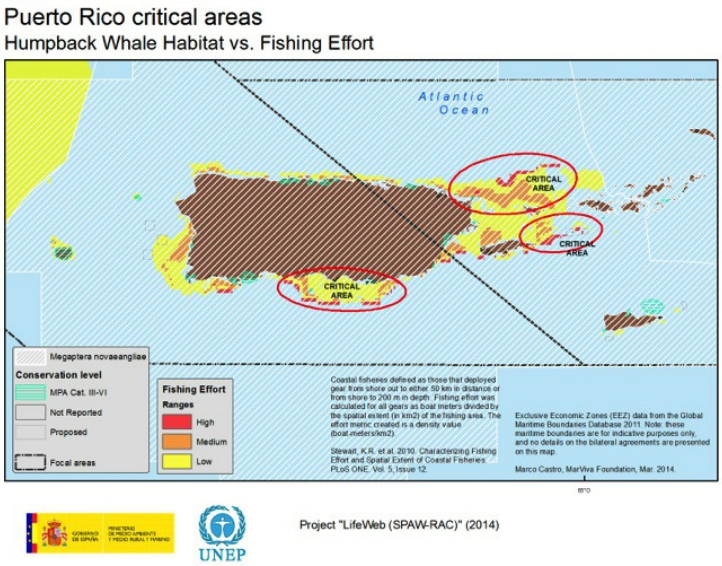


Project "LifeWeb (SPAW-RAC)" (2014)

53. Critical Areas were identified in Focal Area(FA)_1: 1. Areas with intense commercial traffic were overlapping well-known habitats for Humpback whales, including the Marine Mammal Sanctuary on the north coast of Dominican Republic. 2. Likewise north of Puerto Rico major maritime routes intersect on an area used by whales for their eastward migrations.

54. Fishing effort is the other use that heavily interacts with the species distribution patterns within this focal area. Of particular concern was the fishing activity in the southern and eastern sides of Puerto Rico.



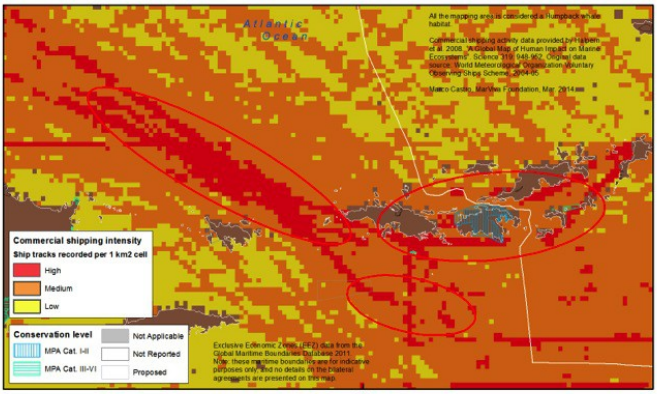


55. While fishing impacts on marine mammals in Caribbean waters are generally unknown, some incidents of entanglement with gill nets and long-lines have been reported. Due to their coastal habits the manatee and the humpback whale (out of the selected species) require attention in the southern and eastern coast of Puerto Rico.

Focal Area 2

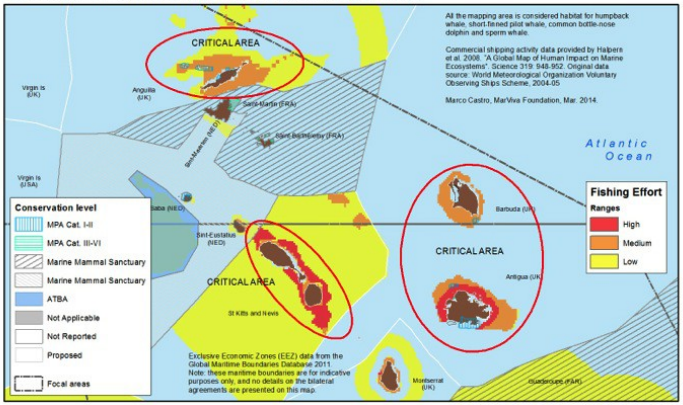
56. For Focal Area 2 maritime traffic and fishing efforts were identified at several Critical Areas. The high intensity of maritime traffic between St. John and Culebra coupled with the reported concentration of humpback whales in this area highlights the need to establish management measures in this sector. Similarly, the high fishing pressure observed around St. Kitts and Nevis, Antigua and Anguilla, are indicative of potential conflicts with the selected marine mammals species whose distribution includes those areas.

Virgin Islands critical areas
Humpback Whale Habitat vs. Commercial Shipping Routes



Project "LifeWeb (SPAW-RAC)" (2014)

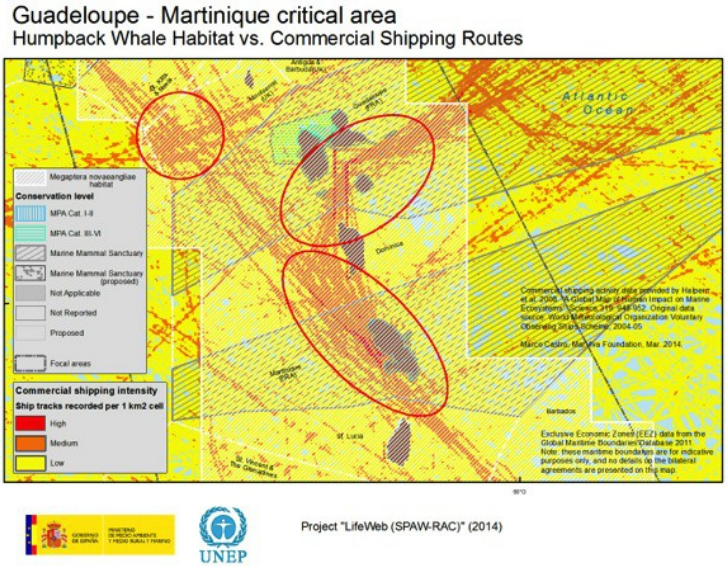
Northern Lesser Antilles critical areas
Coastal Marine Mammals Habitat vs. Fishing Effort

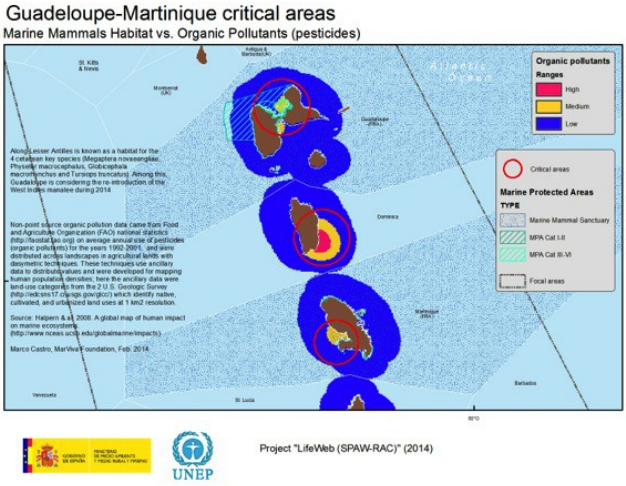


Project "LifeWeb (SPAW-RAC)" (2014)

Focal Area 3

57. In this focal area maritime traffic in the neighborhood of Martinique, Guadeloupe and St. Kitts and Nevis indicates a Critical Area for the selected marine mammals species (except the Manatee). Within the same area, Guadeloupe, Martinique and Dominica have coastal areas with pollution levels that may have implications for management.





Scenarios

58. Creating management scenarios, using large scale, non-detailed maps and missing compatibility analysis, only generates rough approximations for management decisions for those critical areas with high use intensity. Scenarios generated under these conditions need to be used as approximations to management approaches that might need a more detailed analysis if information is available.

59. The proposed scenarios resulting of this analysis are centered on the use of four management tools that seem appropriate for the type of overlap found. The first tool is related to the creation of Particularly Sensitive Sea Areas (PSSA) under the auspices of the International Maritime Organization (IMO). Under its established norms, IMO recognizes the PSSA as "an area that needs special protection because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activities".

60. The second recommended tool is the creation of Regulated Fishing Areas. This measure , usually under the management of a national Fisheries Agency, seeks to regulate fishing activities to minimize its impact on habitats or other populations. Different countries called them differently: Responsible Fishing Areas, Exclusive Zones for Artisanal Fishing, Regulated Fishing Areas, etc. The use of hook and line, regulations on gillnet use and the exclusion of trawling and industrial fishing are characteristics of these areas.

61. The third tool is the creation of Marine Protected Areas (MPAs) or Marine Managed Areas (MMAs). This type of area is established to protect habitat conditions and key ecosystems.

62. At the regional level, the strengthening of networks of Marine Protected Areas or Marine Managed Areas is the fourth tool recommended. The migratory nature of some of the marine mammals species analyzed and the seasonal movements (offshore/inshore) of some of the other species highlights the need for connectivity measures among the critical areas found in the three focal areas.

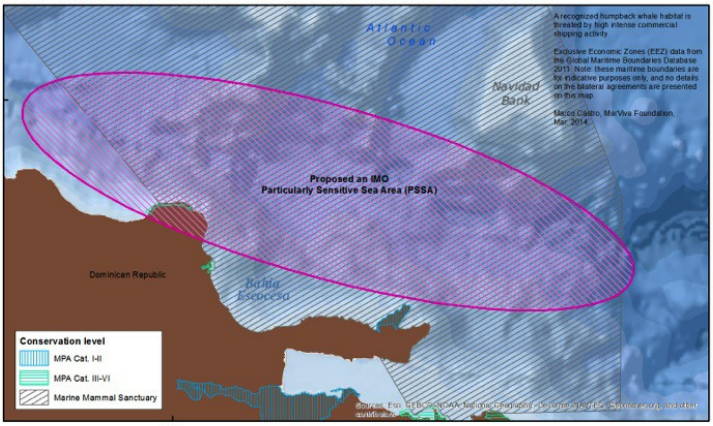
63. The lack of detailed information, prevent the provision of definitive geographic and spatial limits to the proposed scenarios, with only proposed approximations on their spatial distribution and coverage. A more detailed analysis would be required to establish the physical limits of such proposed areas.

Focal Area 1- Proposed Scenarios

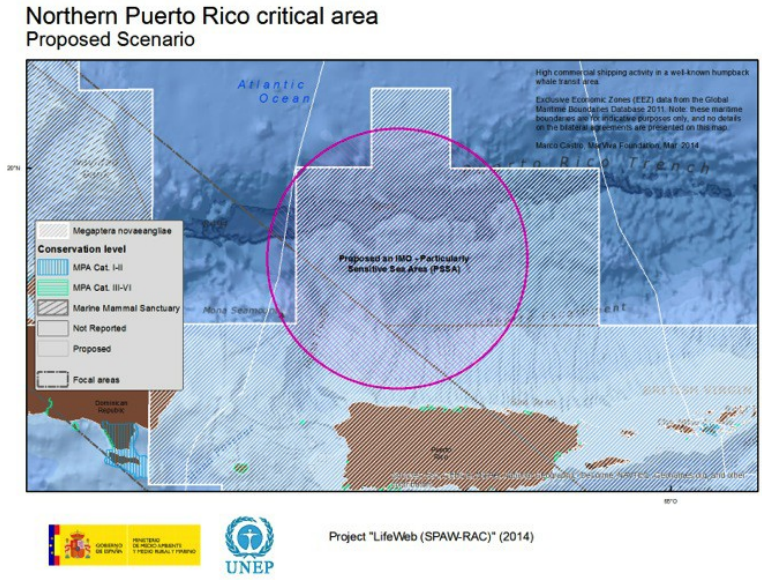
64. In the case of the areas with high-intensity traffic at northern Dominican Republic and Puerto Rico, it was recommended the establishment of a PSSA to minimize conflict, not only with humpbacks but likely with many of the other marine mammals in the region. This implies the fulfillment of criteria and processes required by IMO. Re-routing is unlikely in both cases, but narrowing

the traffic channel, reducing speed and noise and controlling waste disposal would benefit those areas that concentrate marine mammal populations and are a route for the humpback migrations between the North Atlantic and the Caribbean.

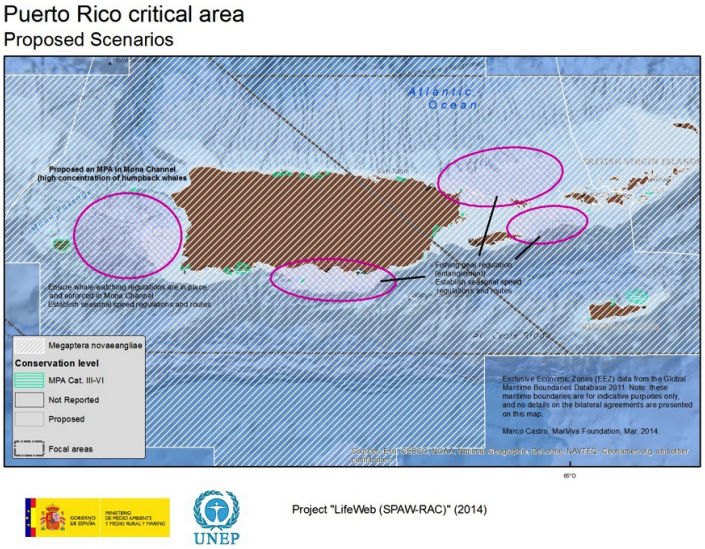
Northern Dominican Republic critical area
Proposed Scenario



Project "LifeWeb (SPAW-RAC)" (2014)



65. In Puerto Rico, Marine Protected Areas covering significant areas of the marine realm are scanty. Within this Focal Area the Mona Passage is a critical area where high seasonal abundance of humpbacks promotes an important whale-watching industry.



66. The establishment of a Marine Protected/Managed Area in this region would benefit not only the marine mammal populations that seasonally concentrate there, but also more resident populations, including the manatee populations between Cabo Rojo and the Guanajibo River mouth in the west coast.

67. At the same time, consideration should be given to fishing grounds in the south and east of Puerto Rico being converted into Regulated Fishing Grounds. This would not only benefit the artisanal fishers by excluding more destructive gears (such as trawling) but will also reduce the chance of entanglement for marine mammals species including the manatee populations in Ceiba (east coast), Jobos Bay, and Guayama and Salinas (southeast coast).

Focal Area 2- Proposed Scenarios

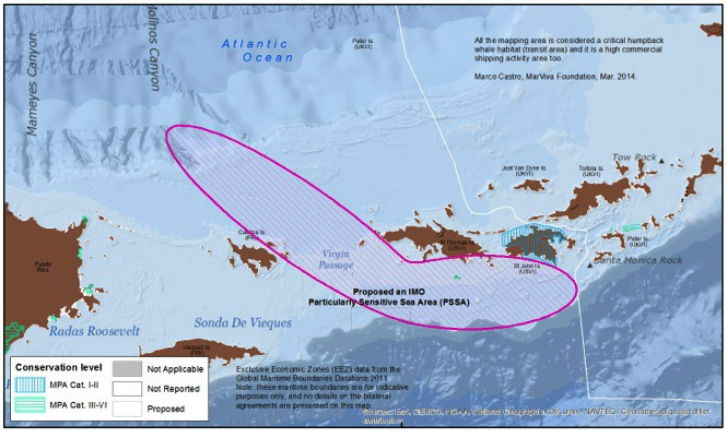
68. The Focal Area 2 is an area where tourism and artisanal fisheries combine. The maritime traffic generated by the tourism sector is very intense around the Virgin Islands while fishing is intense around Antigua, Anguilla and St. Kitts and Nevis.

69. The critical areas found identify potential conflicts at the Virgin Passage between Culebra and St. John Islands due to the heavy maritime traffic, and at the coastal areas of most of the Lesser Antilles to the east of the Focal Area, due to the high fishing effort reported there.

70. The proposed scenarios include the establishment of a PSSA at the Virgin Passage designed to regulate the intense traffic in this area where necessarily marine mammal movements also coincide. In the Eastern side of St. Kitts and Nevis the establishment of a Marine Protected Area would expand the previous results from the USAID-TNC Marine Spatial Planning exercise done at these islands .

Virgin Islands critical areas

Proposed Scenario



Project "LifeWeb (SPAW-RAC)" (2014)

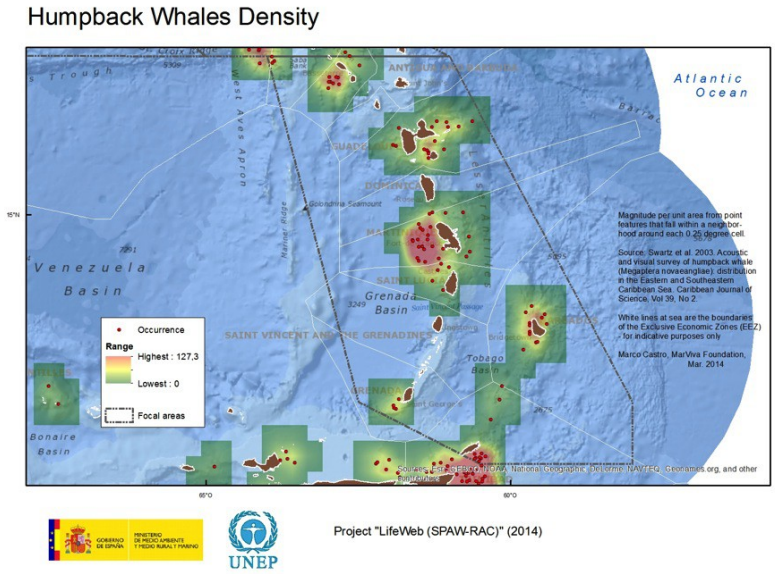
Northern Lesser Antilles critical areas

Proposed Scenario

Project "LifeWeb (SPAW-RAC)" (2014)

Focal Area 3-Proposed Scenarios

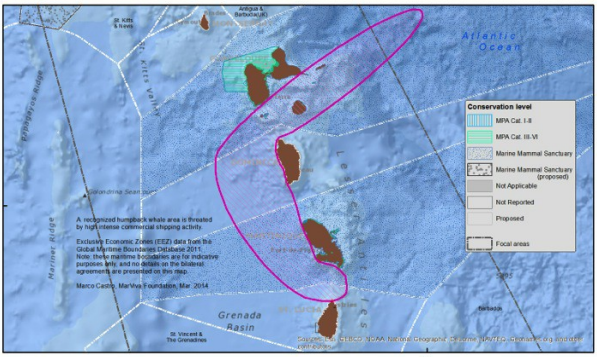
71. The easternmost of the Lesser Antilles have critical areas generated by the intense maritime traffic, high fishing pressure and coastal pollution. While data on the distribution and density of marine mammals is generally scarce in this area for the selected species, higher concentrations of humpback whales west of Martinique have been reported, overlapping with high intensive traffic between Martinique and Guadeloupe islands.



72. For this Focal Area, the establishment of another PSSA to be defined northwest of St. Lucia up to the eastern part of Guadeloupe would be recommended. At the eastern coasts of Martinique and/or Guadeloupe measures already established to secure habitat protection to marine mammals are in line with the strengthening of a regional network of MPAs/MMAs. Lastly, the southeastern coast of Dominica shows levels of pollution associated with

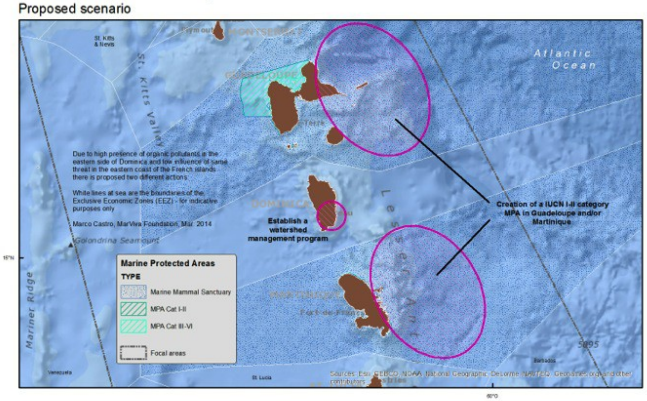
land use patterns in the associated watersheds. A watershed management plan would assist to reduce detrimental land-sea interactions in the area.

Guadeloupe - Martinique critical area
Proposed Scenario



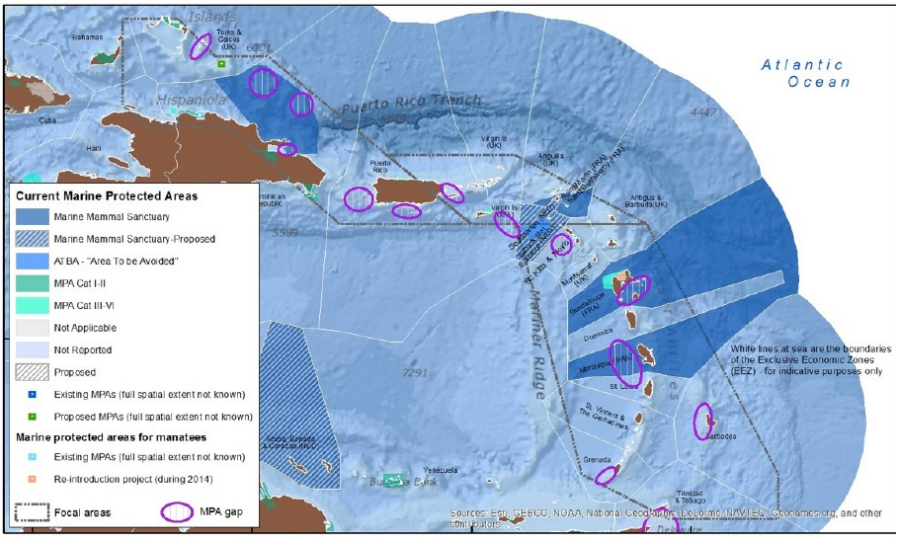
Project "LifeWeb (SPAW-RAC)" (2014)

Guadeloupe-Martinique critical areas
Proposed scenario



Project "LifeWeb (SPAW-RAC)" (2014)

73. While specific studies linking conservation goals with habitat requirements for key marine mammals species are needed, the proposed sites summarized for the region below, while still broad preliminary recommendations, cover critical areas within the three focal areas.



Combined Discussion Summary

74. It was clear that there were limitations with the mapping data, as not all human activities were mapped at regional level, but in general the meeting felt that the critical areas identified for the focal areas match local knowledge.

75. There is a need to adjust the terminology used throughout the analysis and main background document on the development of scenarios, avoiding “MPA gaps” and adopt the use of Marine Managed Areas (MMA) instead, taking into

account the importance of habitat conservation needs in addition to marine mammal species management needs.

76. Proper governance structure is a requirement for successful MSP. Successful implementation of the suggested scenarios will depend on the existence of an efficient representative governance structure beyond solely political driven processes. Local, national and regional arrangements need to be established (if non-existent) to coordinate activities with the backing of a legal framework. It is through this governance structure that MSP processes and the implementation of the agreed scenarios should be conducted.

77. Efforts in terms of time and funds in the implementation of scenarios that do not come from the agreements reached by a multi-sectorial, participative, legally-backed structure are unsustainable and bound to disappear with time. The Involvement of society in participation rather than just information strategies, while challenging, is fundamental, specially to mobilize relevant industries and private sector.

78. The promotion of communication among Wider Caribbean countries on LifeWeb results and the usefulness of MSP is crucial. In particular, building synergies where appropriate, e.g. the current initiative by the OECS on "Ocean Governance " where a network of MPAs is proposed. In this case, there is a clear opportunity for cooperation given that UNEP-CEP and OECS have signed a Memorandum of Cooperation.

79. The meeting discussed the proposed scenarios for each Focal Area providing its feedback on their adequacy and relevance as follows:

Focal Area 1

80. The proposed Northeast Critical Area was deemed not so important as no significant sightings of manatees have been reported and hence fishing conflicts are unlikely to have an impact. Most fishing activities are focused on conch and lobster and therefore no gillnet entanglements are likely to occur.

81. The Critical Area encompassing the Mona Passage may benefit from possible temporal tools rather than more permanent spatial interventions given that it serves as a passage /transient area for large whales and hence not as critical, with Point Desecheo being an important concentration area for marine mammals.

Focal Area 2

82. The proposed critical area is practically 100% correct, however it was recommended by the representative of St. Kitts and Nevis to add the South of Nevis as a critical area giving the intensity of fishing and maritime traffic in this region as per results of mapping exercise.

83. It was noted that since 2010 Saba established a PSSA and tankers above 300 gross tonage are banned from the Saba Bank with fines up to USD 560.000. This measure may be responsible for the increased ship traffic observed in St. Kitts. Fishermen are losing less traps as a result of shift in traffic.

Focal Area 3

84. It was felt that the proposed scenario would not only benefit humpback whales but sperm whales as well, as movements are known among Guadeloupe, Martinique and Dominica, with the species being coastal in habits in the area. It was also felt that the critical area proposed is more adequate for implementation of temporal measures.

Information Gaps

In the process of the discussing the proposed scenarios, gaps on information and data needs were identified for future work and can be summarized as follows in no order of priority:

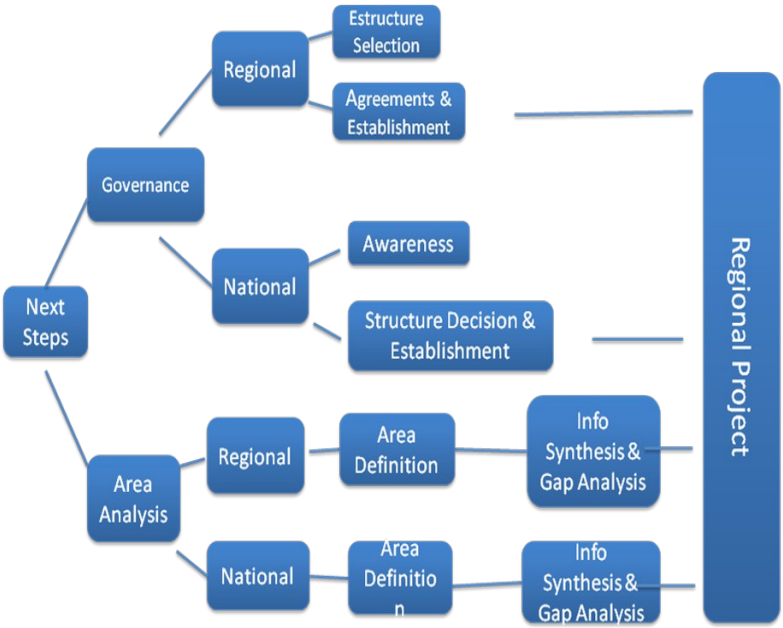
- Fisheries effort by gear type (involve FAO/WECAFC and CRFM);
- Intensity of small craft and cruise-ships traffic (number of vessels, routes and timing);
- Statistics on port usage to map movements of crafts among ports;
- Marine mammal species distribution based on actual densities and at a 1x1 Km resolution;
- Habitat conditions and physical parameters of relevance (temperature, chlorophyll concentration, etc.) at a small scale;
- Noise data (including seismic activity) which can be easily tapped from existing sources, such as from NOAA-US given their implications in the region for marine mammals;
- Pollution data from other sources such as UNEP CEP Technical Report 52, Know Why Network Project Report, work by IAEA, UNU-INWEH, and GEF UNEP REPCar Project on pesticide residues;
- Assess actual vulnerability of the species concerned to human activities;
- Updated information from the Dominican Republic and integrate as feasible in the process of further MSP implementation.

It must be noted that most of the data above do not exist currently at the Caribbean level and that additional efforts are needed to gather such data.

Potential Future Actions and Recommendations

85. Ms. Vanzella-Khouri moderated discussion on the demonstration role of the LifeWeb Project in the Wider Caribbean and next steps in moving forward the implementation of the scenarios proposed.

86. The key elements in the further development of an MSP process are depicted in the figure below. This is particularly relevant considering the discussions at the present meeting and agreement reached by participants on the need to continue to implement marine mammal transboundary management scenarios, based on the proposals put forward as a result of the LifeWeb Project.



General Recommendations

87. In addition to the specific inputs provided by participants to the proposed scenarios, the following general recommendations were made by the meeting:

a. Countries of the Wider Caribbean embrace and integrate MSP within national policies as a tool required for transboundary management of marine mammals in the region.

b. Countries, UNEP-CEP SPAW, interested organizations and experts promote fund raising efforts and resource mobilization for MSP processes to be implemented, including the proposed measures on the scenarios developed through the present LifeWeb Project.

c. Countries and relevant organizations strengthen and build upon existing on-going.

d. Institutional cooperation agreements in the Wider Caribbean, including through "sister sanctuary" arrangements which allow for MSP work on transboundary management of marine mammals to be more conducive at the present stage.

e. Countries increase national sectoral integration for MSP in the Wider Caribbean, identifying and engaging actors, including relevant private sector stakeholders for their active participation in vision building and implementation of goals.

f. Countries and UNEP-CEP SPAW review, at all relevant levels, the results of this pilot scenario exercise and consider how to best refine and as appropriate implement them at the local, national and regional level Governments of the Wider Caribbean which have not done so, join the SPAW Protocol as Contracting Parties in light

of the benefits this will provide to enhance regional cooperation and strengthening of national capacities.

Recommended Next Steps

a. UNEP-CEP SPAW explores with relevant countries (namely Dominican Republic, Puerto Rico, US Virgin Islands, British Virgin Islands) further development of a marine mammal management scenario and considering the additional inputs provided by the Meeting.

b. Data and information gaps as outlined in this report (see paragraph 86) be addressed strategically in collaboration with other organisations and based on readily available information (e.g. fishing efforts, land-based sources pollution, marine mammal distribution etc).

c. Data information needs identified by countries at the present meeting be taken into consideration when developing additional support activities.

d. Specific follow-up activities be developed on the framework of the SPAW Marine Mammal Action Plan and this LifeWeb Project with interested countries on a case by case basis in order to facilitate further progress and maintain the momentum generated by the Project .

e. UNEP-CEP SPAW explores options to tailor dissemination of results of this Project to national governments and relevant fora such as the IWC/SPAW Ship Vessel Strike Workshop International Whaling Commission, Convention on Biological Diversity, Convention on Migratory Species, other Regional Seas Conventions, ICMMPA and

the IUCN WPC, FAO/WECAFC, the CLME Project, CRFM and the OECS Ocean Governance initiative.

f. The electronic project working group established to provide technical inputs in the process of scenario construction presented at this meeting will be expanded to include all participants and used for dissemination and exchange of information.

g. Future follow-up activities and actions be incorporated in the proposed workplan and budget of the SPAW Programme as feasible.

h. The results of this LifeWeb Project will be presented at the upcoming meeting of Contracting Parties of SPAW (COP 8) in November 2014.

i. Explore possible synergies for data collection relevant to the further implementation of MSP processes in the Wider Caribbean with the cruise ship industry, taking the opportunity of their upcoming " Florida & Caribbean Cruise ship association Meeting" (St. Maarten, 6-10 Oct 2014).

Information Sharing

88. In the context of sharing information of relevance to the status of marine mammals in the Wider Caribbean, after recommendations were reviewed and endorsed by the meeting, the following was presented:

89. The Chairperson, Mr. Renoux, informed the meeting on the tagging efforts of humpback whales in the Northern Lesser Antilles (Project MEGARA). Following the deployment of satellite tags by the NGO Breach, the University Antilles-Guyane and NOAA-USA on humpback whales in Guadeloupe from 2010 to 2012, a scientific mission, called "Megara", took place for the first time in the

northern Lesser Antilles from March 25th to April 3rd, 2014. This mission deployed Argos satellite tags on eight adult humpback whales and collected biopsies (skin and blubber samples). It was organized by the northern Lesser Antilles marine protected areas' managers, led by the Natural Reserve of Saint-Martin , and benefited from the support and/or involvement of the Agoa sanctuary, the SPAW-RAC, NGO Megaptera, the Dutch Government, the Environmental Agency of St Bart, the Marine Foundation of St. Maarten, Anguilla, Statia, Saba, and the company "Exagone". The main goal was to improve our knowledge of this species in order to better protect it. Beyond the involvement of scientific experts in tagging and skin sampling, the project includes an important educational component since the data collected from the Argos satellite tags are used to raise public awareness, and pupils in particular, to cetaceans, thanks to a partnership with the NGO My school, my whale (Mon école, ma baleine). Schools from Statia, St Maarten, Saba, Anguilla, Saint-Martin and Saint-Barthélémy are involved in this project using a free access website to follow tagged whales migration and using customised educational tools. The movement of these whales can be followed accessing the link: http://www.seaturtle.org/tracking/index.shtml?project_id=979.

90. Dr. Debrot shared with the meeting three recent papers that were published on marine mammals of the Aruba, Bonaire and Curaçao, as well as for the Windward Dutch Islands (http://www.car-spaw-rac.org/?Scenarios-for-marine-mammal)

91. Dr. Ward also shared with the meeting two recent publications relevant to marine mammals for the Wider Caribbean, including a guide on the handling and information gathering from strandings tailored to the region.

III. CLOSING OF THE MEETING

92. On behalf of UNEP-CEP, Ms. Vanzella-Khouri thanked the Government of Puerto Rico for their valuable assistance in the convening of the meeting, and all participants for their valuable inputs and expressed the hope that the exchanges can continue in the very near future.

93. She also recognized the support of the Government of Spain to the LifeWeb Project without which this pioneering initiative could not have been carried out, as well as the Government of France for its continued contribution to the SPAW Programme, specially through the SPAW-RAC in Guadeloupe and its dedicated staff.

ANNEX 1 : AGENDA

LifeWeb-Spain UNEP-CEP Meeting on Scenarios for Transboundary Marine Mammal Management in the Wider Caribbean
San Juan, Puerto Rico, 23-24 April 2014

PROGRAMME

23 APRIL

08:30 – 12:30 hs

1. INTRODUCTION AND WORKSHOP BACKGROUND

1.1 Welcome Remarks

- Alessandra Vanzella-Khouri, Programme Officer, UNEP-CAR/RCU, Jamaica
- Hélène Souan, Director, Regional Activity Centre for the Protocol on Specially Protected Areas and Wildlife, Guadeloupe
- Puerto Rico Authorities

1.2 Election of Chairperson and round of introduction by participants, adoption of the Programme

1.3 The Spain-UNEP LifeWeb Project: "Broad-scale Marine Spatial Planning of Mammal Corridors and Protected Areas in Wider Caribbean and Southeast & Northeast Pacific": Overview and Progress, Meeting objectives

1. Presented by Monica Borobia, Project Coordination Consultant

Q&A session

10: 45 – 11:00 hs Coffee Break

11:00- 12:30 hs

1.4 Marine Spatial Planning, overview, theory and practice

2. Presented by Jorge Jimenez, Fundación Marviva, Costa Rica

Q&A session

12:30 – 13:30 hs Lunch

13:30 -17:00 hs

2. MARINE SPATIAL PLANNING AND SCENARIO CONSTRUCTION – DEMONSTRATION CASE FOR THE WIDER CARIBBEAN

2.1 Scenario construction, data sets, scales, variables, methods and critical areas

3. Presented by Jorge Jimenez, Fundación Marviva, Costa Rica

Q&A session

15:30 -15:45hs Coffee Break

2.2 Mitigation measures emanating from the Marine Spatial Planning analysis and Scenario construction

4. Presented by Jorge Jimenez, Fundación Marviva, Costa Rica

Q&A session

2.3 Summary of key messages from discussions on Day 1

5. Hélène Souan, Director, SPAW-RAC

24 APRIL

08:30 – 12:30 hs

3. DEMONSTRATION CASE FOR THE WIDER CARIBBEAN: ROLE AND NEXT STEPS

3.1 Potential Future Actions and Recommendations: Discussion on demonstration role of Lifeweb in the Wider Caribbean and next steps

- Moderator : Alessandra Vanzella-Khouri, Programme Officer, UNEP-CAR/RCU, Jamaica
- General discussion among all participants

10: 30 – 10:45 hs Coffee Break

3.1 CONTINUED

12:30 – 13:30 hs Lunch

13:30 -14:30 hs

3.1. CONTINUED

14:30-15:30 hs

3.2 Conclusions, Lessons Learned, Principal messages from the Demonstration Case and Final Recommendations

15:30:15:45 hs Coffee Break

3.2 CONTINUED

- Alessandra Vanzella-Khouri, Programme Officer, UNEP-CAR/RCU, Jamaica and Hélène Souan, Director, SPAW-RAC

17:00 hs CLOSURE OF THE MEETING

ANNEX 2 – LIST OF PARTICIPANTS			
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Jimmy Van Rijn	Saba	Saba Bank Marine Protected Area	jimmyvanrijn@gmail.com
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