Ecological Mapping, Species Coverage, Methodology,
Socio-economic Mapping of Human Impacts,
Challenges and Lessons Learned for the Wider Caribbean Region

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The Lifeweb project “Broad-scale Marine Spatial Planning of Mammal Corridors and Protected Areas in Wider Caribbean and Southeast & Northeast Pacific”

MAIN FEATURES :

- A project funded by the Government of Spain
- Both for the Wider Caribbean and the Southeast & Northeast Pacific
- Coordinated and administered by UNEP with assistance of the SPAW-RAC for the Caribbean and CPPS for the Pacific, and of many partners
- A 2.5 years project started in mid-2010
- Focus not only on cetaceans but on sirenians (manatees) too.
- Goal: To improve spatial protection of marine mammals through the development and enforcement of appropriate tools including MPAs for MM and sanctuaries
MAIN OBJECTIVES:

- Provide an overview of essential habitats and regional-scale migration routes for marine mammals in need of better management in Southeast and Northeast Pacific and Wider Caribbean through collation and GIS-mapping of existing data, including socio-economic information;

- Introduce integrated planning approaches, including providing technical guidance, regional training and learning exchanges on marine spatial planning and MMPA networks design;

- Apply integrated marine spatial planning and management approaches and tools in demonstration projects.

- Develop strategic communication products

- Promote the implementation of each Marine Mammal Action Plan and related instruments
Components of the Lifeweb project

Component 1: Regional integration, mapping and GIS analysis of MM migration routes, critical habitats and human threats

Component 2: Regional training and learning-exchanges on integrated marine management and governance

Component 3: Strategic communication – ‘Making the case’ for transboundary MM management

Component 4: Reinforcement of regional polices and protocols (and associated institutional frameworks) underpinning transboundary governance

Component 5: Demonstration projects on MM management planning
  > Demonstration Project 1: Development of management plan for the Silver Bank Whale Sanctuary, Dominican Republic and learning-exchanges to the Eastern Caribbean
  > Demonstration Project 2: Eastern Tropical Pacific Corridor (Costa Rica, Panama, Colombia and Equador), data integration and visualization of MM corridors and critical habitats, plus outline of sub-regional management framework
Component 1 on Regional data integration and mapping: Background and Objectives

BACKGROUND:

- Need to better apply existing information sources to visualize MM critical habitats and migration routes and key human uses of these areas.
- Effort is needed to integrate data currently available and identify what gaps remain specific to essential habitats and regional-scale migration routes for marine mammals.

OBJECTIVES/ACTIVITIES:

1. Inventory and collation of existing ecological and socio-economic information in coherent format

2. GIS-analysis and mapping of ecological and socio-economic information to visualize regional maps of MM migration, critical habitats, area-based management measures, human pressures

3. Layout and production of information products such as maps and ‘fact sheets’
Component 1 on Regional data integration and mapping:

Expected outputs and approach

ISSUES ADDRESSED THROUGH COMPONENT 1:

- **Distribution** of MM species in the WCR: for all 25 species that occur regularly in the region, i.e.
  - 24 cetaceans (large whales, dolphins, beaked whales, orcas, etc)
  - and the Antillean Manatee (*Trichechus manatus*)
  - NB: species like harbour porpoise or fn whale were excluded because their range has very few overlaps with the region studied here
- Maps of **species richness** for the species above
- Mapping of the **main threats and impacts** that MM are facing
- Mapping of **policies and governance** for the conservation of MM
- Overlays of **species richness with some key issues** regarding threats and protection

OUTPUTS:

For each of the issue described above, production of:

- One regional map
- Corresponding datalayers and datasets
- Factsheets (in English, Spanish and French) presenting the methodology and data sources unless the method is simple and can be directly summarized on the map
Component 1 on Regional data integration and mapping: Partners

• Coordination by the SPAW Regional Activity Center

• 3 main partners:
  
  ➢ GRID-Arendal (Jean-Nicolas POUSSART): extraction of data and production of all final maps
  
  ➢ WDCS (Kristin KASCHNER): modeling the distribution of marine mammal species
  
  ➢ Randall REEVES: review of the distribution map and coordination of their review by regional experts
METHOD:

1. **Use of AquaMaps**: online species distribution model where maps are generated using a relative environmental suitability model (RES) developed by Kaschner et al. (2006) that uses available information about habitat usage of a given species.

2. **Review of AquaMaps predictions**: analysis and review with Randall Reeves and experts to provide advice, overlooked literature, and in some cases iterative evaluations of the model outputs.

3. **Exception: Antillean Manatee**: No AquaMaps prediction was made for the manatee because it doesn’t fit in the model (no envelops available). Instead a distribution map was prepared by extracting information on occurrence from the comprehensive review that is included in the revised **Regional management plan for the manatee** (Reynolds and Quintana-Rizzo, 2010). A map of suitable habitat for manatees was also produced using the data in the management plan.
Ecological mapping of species distribution and richness: Outputs / Distribution

Approximate known regular occurrence of humpback whales (*Megaptera novaeangliae*) in the Wider Caribbean Region during winter breeding season

**Notes and Sources**
Regional present-day species occurrence during the winter and early spring season based on information from literature and expert advice. The whales are known to occur outside the shaded areas occasionally, and it is possible that some historically used habitat has yet to be re-occupied as the population recovers from depletion by whaling. Also, further research in poorly studied parts of the region may reveal a wider distribution than indicated here.


Map generation and review conducted by Kristin Kraschner and Randall Reeves, February 2012.

Jean-Nicolas Pouzet, UNEP/GTZ-AoT, February 2012.

Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Ecological mapping of species distribution and richness: Outputs / Distribution

Consensus map of known occurrence and probable occurrence based on habitat suitability

Sperm Whale
(Physter macrocephalus)

Distribution of known and probable occurrence of the species
Note: This distribution is portrayed by 0.5 degree squares.

NOTES AND SOURCES
Reviewed AquaMaps predictions (http://www.aquamaps.org) of regional species occurrence, generated using available regional data and further revised based on expert opinion where deemed necessary. Map displays the known occurrence and probable occurrence based on a 50% presence threshold. Expert comments and mapping parameters available upon request at the UNEP Caribbean Environment Programme (UNEP CEP) Regional Activity Center for the SPAW Protocol (SPAW-RAC, http://www.car-spaw-rac.org).

Map generation and review conducted by Kristin Kaschner and Randall Reeves, February 2012.

Jean-Nicolas Poupart, UNEP/GRID-Arendal, February 2012

Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Ecological mapping of species distribution and richness: Outputs / Distribution

Consensus map of known occurrence and probable occurrence based on habitat suitability

Common Bottlenose Dolphin

(Tursiops truncatus)

- Distribution of known and probable occurrence of the species
- Note: This distribution is portrayed by 0.5 degree squares.

NOTES AND SOURCES
- Reviewed AquaMaps predictions (http://www.aquamaps.org) of regional species occurrence, generated using available regional data and further revised based on expert opinion where deemed necessary. Map displays the known occurrence and probable occurrence based on a 60% presence threshold. Export comments and mapping parameters available upon request at the UNEP Caribbean Environment Programme (UNEP CEP) Regional Activity Center for the SPAW Protocol (SPAW-RAC, http://www.caribbeanrac.org).
- Map generation and review conducted by Kristin Kaschner and Randall Reeves, February 2012.
- Jean-Nicolas Poussart, UNEP/GRID-Arendal, February 2012.

Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Ecological mapping of species distribution and richness: Outputs / Distribution

Consensus map of known occurrence and probable occurrence based on habitat suitability

Guiana Dolphin
(Sotalia guianensis)

Distribution of known and probable occurrence of the species
Note: This distribution is portrayed by 0.5 degree squares.

NOTES AND SOURCES

Map generation and review conducted by Kristin Kaschner and Randall Reeves, February 2012
Jean-Nicolas Poussart, UNEP/GRID-Arendal, February 2012

Project "Broad-scale marine spatial planning of mammal corridors & protected
Ecological mapping of species distribution and richness: Outputs / Distribution

Map of known occurrences and trend of populations

West Indian Manatee
(Trichechus manatus)

Estimated Populations (per country):
- 1 - 50
- 51 - 150
- 151 - 500
- 501 - 1500
- 1501 - 3500

Trend of Populations (per country):
- Possible increase
- Likely stable
- Likely stable / probably declining
- Unknown / probably declining
- Probably declining
- Unknown (data deficiency)

NOTES AND SOURCES:

Exclusive Economic Zones (EEZ) data from the Global Maritime Boundaries Database 2011. Note: these maritime boundaries are for indicative purposes only, and no detail on the bilateral agreements are presented on this map.


Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Ecological mapping of species distribution and richness:
Outputs / Species richness

Marine mammal species richness map

NUMBER OF MARINE MAMMAL SPECIES

- 0 - 6
- 7 - 8
- 9 - 10
- 11 - 12
- 13 - 14
- 15 - 16
- 17 - 18
- 19 - 22

Note: This distribution is portrayed by 0.5 degree squares.

NOTES AND SOURCES
Species richness map based on consensus maps of known and probable occurrence of 26 species covered by an analysis conducted by Kristin Kuchinsky and Randall Reeves, February 2012. Note that only species documented to occur regularly in the WCR were included in the analysis and that individual species maps showing areas of regular "core" occurrence, were derived using different approaches, including reviewed and non-reviewed AquaticMaps predictions, digitization of published range maps improved and reviewed by regional experts as well as combination of the different marine biologists' Kaiser or subsequently produced species richness maps by overlaying consensus maps of known and probable occurrence of all 26 species and then counting the number of species present in each 0.5 degree cell. It should be stressed that species richness maps were not intended to illustrate a complete "inventory" of the species known or likely to occur in each cell, but rather simply to highlight areas where, according to the consensus maps, there is substantial and regular overlap of core habitat of different species covered by this analysis.

Jean-Nicolas Pousett, UNEP/GRID-Arendal, March 2012

Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Socio-economic mapping of threats and impacts: Data, methods and organisation of work

CHOICE OF TOPICS:

- Major known threats and impacts for marine mammals in the WCR
- With georeferenced information available

Sources of information:
- Published literature and reports
- In some cases additional data exist but not georeferenced and/or with large geographic gaps (e.g. cetacean by-catch) → they could not be included in the analysis

ORGANIZATION OF WORK:

- Work led by GRID-Arendal: identification of information, extraction, preparation of maps, finalization of outputs
- With assistance of the SPAW-RAC

TOPICS COVERED:
Socio-economic mapping of threats and impacts:
Outputs (1/6)

Threat from Land-based Sources of Pollution (sediment delivery)

NOTES AND SOURCES
The threat from land-based sources of pollution as modeled by the World Resources Institute (WRI) for the Reefs at Risk Revisited Project (2011). Values represent the sediment delivery at river mouths, based on local erosion in the watershed, adjusted for the sediment delivery ratio (based on watershed size) and sediment trapping by dunes and mangroves.

http://www.wri.org/publication/reefs-at-risk-revisited

Exclusive Economic Zones (EEZ) data from the Global Maritime Boundaries Database 2011. Note: these maritime boundaries are for indicative purposes only, and no detail on the bilateral agreements are presented on this map.

Threat from Coastal Development in the Wider Caribbean Region

NOTES AND SOURCES

The threat from coastal development as modeled by the World Resources Institute (WRI) for the Reefs at Risk Revisited Project (2011). This threat is based on the size of cities, ports, and airports; size and density of hotels; and coastal population pressure (a combination of population density, growth, and tourism growth).

http://www.wri.org/publication/reefs-at-risk-revisited

Exclusive Economic Zones (EEZ) data from the Global Maritime Boundaries Database 2011. Note: these maritime boundaries are for indicative purposes only, and no detail on the bilateral agreements are presented on this map.

Socio-economic mapping of threats and impacts: Outputs (3/6)

Coastal Fishing Effort Densities
in the Caribbean Region (excl. the United States and Mexico)

NOTES AND SOURCES

Coastal fisheries defined as those that deploy gear from shore out to either 50 km in distance or from shore to 200 m in depth. Fishing effort was calculated for all gears as boat-meters divided by the spatial extent (in km²) of the fishing area. The effort metric created is a density value (boat-meters/km²).


Exclusive Economic Zones (EEZ) data from the Global Maritime Boundaries Database 2011. Note: these marine boundaries are for indicative purposes only, and no detail on the bilateral agreements are presented on this map.


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

NOTES AND SOURCES

Exclusive Economic Zones (EEZ) data from the Global Maritime Boundaries Database, 2011. Note: these maritime boundaries are for indicative purposes only, and no details on the bilateral agreements are presented on this map.


Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Live Captures and Facilities Holding Common Bottlenose Dolphins
in the Wider Caribbean Region, from 1995 to 2009

NOTES AND SOURCES
This map displays a summary of live captures and import/export of Common Bottlenose Dolphins during the period 1995 to 2009. Data on the number of facilities holding captive dolphins is an estimate by the Whales and Dolphin Conservation Society (WDCS) from September 2010 study.

Full list of references and further information available upon request through the UNEP Caribbean Environment Programme (UNEP CEP) Regional Activity Center for the SPAW Protocol (SPAW-RAC, http://www.car-spa-w-rac.org).

Jean-Nicolas Poussart, UNEP/GEOGRID-Arendal, April 2012

Project “Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific” (2010-2012)
Socio-economic mapping of threats and impacts:
Outputs (6/6)

Cumulative Human Impact
on marine ecosystems

NOTES AND SOURCES

The classification of impact levels (very low - very high) on this map is the same as described in Halpern et al. 2008.

Exclusive Economic Zones (EEZ) data from the Global Maritime Boundaries Database 2011. Note: these maritime boundaries are for indicative purposes only, and no detail on the bilateral agreements are presented on this map.


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

- Legal protection of marine mammals at the national level with respect to direct take, and observed take (whether legal or illegal)
- Existing or projected MPAs (including sanctuaries) for MM in the WCR
- MPAs that potentially meet the needs of manatee

SOURCES OF INFORMATION:

- **Legal protection of MM / direct take**: literature, information on the web, contact of national experts and key partners
- **MPAs for cetaceans**: Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for Cetacean Habitat Conservation and Planning *(Hoyt, E. 2011)*
- **MPAs for manatees**: Regional management plan for the Antillean Manatee + review of available literature

ORGANIZATION OF WORK:

- **Work led by GRID-Arendal**: identification of information, extraction, preparation of maps, finalization of outputs
- **With assistance of the SPAW-RAC**
Mapping of policy and governance: Outputs (1/3)

Marine Mammal Protection (2)

Direct take (fisheries) of marine mammals

NOTES AND SOURCES
This map represents a classification at the national level of what is known regarding direct take (fisheries) of marine mammals. Information compiled by the UNEP Caribbean Environment Programme (UNEP CEP) Regional Activity Center for the SPAW Protocol (SPAW-RAC, http://www.csr-spow-rac.org).


Project "Bread-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Mapping of policy and governance: Outputs (2/3)

Marine Mammal Protection (1)
Sanctuaries and protected areas

Marine mammal sanctuaries
- Existing marine mammal sanctuaries
- Under development (Dutch Caribbean)

Marine Protected Areas (MPAs) for cetaceans
- Existing MPAs
- Existing MPAs (full spatial extent not known)
- Proposed MPAs (full spatial extent not known)

Marine Protected Areas (MPAs) for manatees (excl. the USA)
- Existing MPAs
- Existing MPAs (full spatial extent not known)

Note: Boundaries at sea represent the Exclusive Economic Zones (EEZ) - for indicative purposes only

NOTES AND SOURCES

This map represents marine protected areas (MPAs) and sanctuaries with management and/or action plan, and/or legislation targeting the protection of marine mammals. The MPAs classified as having been created for cetaceans or serving in some way to help protect cetacean habitat are from Hoyt, E. 2011. Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for Cetacean Habitat Conservation and Planning. For the West Indian Manatee, those locations represent areas where manatees are possibly present and where some level of protection is implemented, as mentioned in the Regional Management Plan for the West Indian Manatee (CEP Technical Report 48, 2010).

Further information available from: UNEP Caribbean Environment Programme Regional Activity Centre for the SPAW Protocol (SPAW-RAC), Caribbean Marine Protected Area Management (CaMPAM) Network and Forum; Whale and Dolphin Conservation Society (WDCS)

Jean-Nicolas Poussot, UNEP/GRID-Arendal, May 2012
Protected areas (potentially meeting the needs) for the West Indian Manatee (Trichechus manatus)

This map represents protected areas where the West Indian Manatees are possibly present, and where some level of protection is implemented, as mentioned in the Regional Management Plan for the West Indian Manatee (CEP Technical Report 48, 2010). RAMSAR sites located in the West Indian Manatee distribution zone are also included.

OBJECTIVE:

Provide a basis for discussion on transboundary management and marine spatial planning by displaying how the species distribution or richness overlaps with either major threats and/or protection → To identify critical areas
→ To identify critical corridors
→ To identify existing protections and gaps

SELECTED ISSUES:

- **Species richness with shipping intensity:** areas/corridors with high risk of collisions
- **Species richness with cumulative human impact:** areas (mostly coastal) where special attention could be given because of high human impact on MM
- **Species richness with existing and projected MPAs:** areas where MM are protected, gaps inbetween, and challenges for networking
Synthetic maps: overlaying ecological maps with threats and/or protection

Outputs (1/3)

Areas of high commercial shipping intensity and marine mammal species richness

NOTES AND SOURCES

This map represents areas of high commercial shipping intensity and high species richness. Shipping data is from Holper, et al. 2008. "A Global Map of Human Impact on Marine ecosystems". Science 319: 946-952. Species richness map based on consensus maps of known and probable occurrence of 25 species covered by an analysis conducted by Kristin Korschner and Randell Revesz, February 2012. [Quality assessment of individual species maps as well as background information about the methodology, input and data sources are available upon request at the UNEP Caribbean Environment Programme (UNEP CEP) Regional Activity Center for the SPAW Protocol (http://www.car-spaw-roc.org)].

Synthetic maps: overlaying ecological maps with threats and/or protection

Areas of high human impact and high marine mammal species richness

NOTES AND SOURCES
This map represents areas of high cumulative human impact and high species richness. Cumulative human impact data from Halpern et al. 2008. "A Global Map of Human Impact on Marine Ecosystems." Science 319: 948-952. Species richness map based on consensus maps of known and probable occurrence of 25 species covered by an analysis conducted by Kristin Katschner and Randall Reeves. February 2012 [quality assessment of individual species maps as well as background information about the methodology, input and data sources are available upon request at the UNEP Caribbean Environment Programme (UNEP CEP) Regional Activity Center for the SPAW Protocol (http://www.car-spaw-rac.org)].

While lines at sea are the boundaries of the Exclusive Economic Zones (EEZ) - for indicative purposes only.


Classification:
Cumulative Human Impact.
Based on classes as described in Halpern et al. 2008. Low = “Very Low” and “Low”, Medium = “Medium” and “Medium high”, High = “High” and “Very high”.

Species richness (number of species per 0.5 degree cell): Low = 0 - 7, Medium = 8 - 14, High = > 14

Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Synthetic maps: overlaying ecological maps with threats and/or protection

Marine Mammal Protection and Species Richness

in the Wider Caribbean Region

Notes and Sources:
The MPAs classified as having been created for cetaceans or serving in some way to help protect cetacean habitats are from Hoyt, E. 2011. Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for Cetacean Habitat Conservation and Planning. For the West Indian Manatee, these locations represent areas where manatees are possibly present and where some level of protection is implemented, as mentioned in the Regional Management Plan for the West Indian Manatee (CEP Technical Report 48, 2010). Species richness map based on consensus maps of known and probable occurrence of 25 species covered by an analysis conducted by Kristin Kastner and Randall Reeves, February 2012. Further information available from UNEP Caribbean Environment Programme Regional Activity Center for the SPAW Protocol (SPAW-RAC, http://www.caribbeanmpas.org).


Project "Broad-scale marine spatial planning of mammal corridors & protected areas in Wider Caribbean & Southeast & Northeast Pacific" (2010-2012)
Other combinations can be selected:
Only a first set of possible overlayings is presented here
- Such cross-analysis can be done for each MM species
- Other threats/impacts/policies can be displayed together with species distribution/richness

→ A free-access mapping tool has been developed by the SPAW-RAC on his website which allows users to build their own map choosing between the different available datalayers
Synthetic maps: overlaying ecological maps with threats and/or protection

Objectives and selected issues

Other combinations can be selected:

- Such cross-analysis can be done for each MM species
- Other threats/impacts/policies can be displayed together with species distribution/richness

→ A free-access mapping tool has been developed by the SPAW-RAC on his website which allows users to build their own map choosing between the different available datalayers.

Application: cartודü CS

Synthetic maps: overlaying ecological maps with threats and/or protection

Objectives and selected issues
### SUMMARY TABLE OF THE PROJECT OUTPUTS

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<th>English</th>
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<th>Spanish</th>
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<td>MPAs for marine mammals</td>
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<td>Legal protection regarding marine mammals take</td>
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<td>Potential MPAs for manatees</td>
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<td><strong>Synthetic maps</strong></td>
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<td>Species richness and high maritime traffic</td>
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<td>High species richness and high cumulative human impact</td>
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<td>Species richness and MPAs</td>
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Challenges and next steps

CHALLENGES:

- **Paucity of data in the WCR**, in particular on MM distribution and abundance (huge gaps in transect-line surveys)

- Distribution maps are **based on predicted occurrence**: although they have been reviewed by experts, **they should be taken with caution** when used for management. A quality index helps characterize their reliability

- **Some threats/impacts could not be mapped** (*e.g.* noise, by-catch) or only partially (*e.g.* fishing where off-shore fishing could not be included in the maps)

- **Lack of information on the actual status of protection** of MM in a number of countries: impossible to find whether they are protected from take at the national level, or not
Challenges and next steps

NEXT STEPS:

- **Refine and update distribution maps** as more monitoring campaigns are implemented

- Urgent **need of comprehensive, standardized and transboundary surveys of MM distribution and abundance**: to get consistent data, but also to mutualise efforts

- In parallel, **experts must provide guidance on the possible ways to extensively use existing data**: there are data available in the region, but not standardized (opportunistic sightings, stranding records, whale-watching records) and it should be valued to the extent possible

- **Some maps must still be refined** (protection)

- It will also be important to **document the movements of large-scale migratory species**, in particular those moving in and out the region (e.g. humpback whales). Preliminary information from tagging exist but such efforts must be expanded and their results compiled.
Component 2 on Regional training and learning-exchanges on integrated marine management and governance

OBJECTIVES:

- Building capacity for marine spatial planning and MPA planners at a national level
- Raising awareness and engaging countries in training/technical consultations
- Reinforce existing MM protected areas efforts in the WCR and build synergies

MAIN ACTIVITIES:

- Wider Caribbean regional training course and consultation with government planners and experts on marine spatial planning, management and governance options to support MM management

- Sub-regional consultations/training activities on spatial planning and management of MM corridors and critical habitats in the framework of the building of marine mammals conservation corridors → focus on two areas:

1) **Eastern Caribbean** (which includes North from the Dominican Republic to South of Trinidad, to encompass the Virgin Islands and the Lesser Antilles)

2) **North of the South America** (Brazil, Guyanas, Venezuela, Colombia, Trinidad & Tobago, ABC Dutch Islands) = MaMa CoCo Sea Project
Component 2 on Regional training and learning-exchanges on integrated marine management and governance

1) Eastern Caribbean Corridor:

- **Marine spatial planning scenario exercise** during the Inter-Regional Workshop on Broad-Scale Marine Spatial Planning and Transboundary Marine Mammal Management (Panama, May 2012)

- **Scope**: building on existing and projected sanctuaries and bilateral cooperation to promote and reinforce multilateral cooperation for managing human activities impacting migration corridors of MM along the Eastern Caribbean, with special focus on humpback whales, sperm whales and dolphins

- Applying existing data and mapping outputs (see component 1) on MM distribution and human activities impacting MM corridors and habitats in order to reduce known and possible impacts on MM as well as transboundary cooperation agreements for that purpose

→ Decision to use **Seasketch** (platform for collaborative ocean geodesign) as a decision support tool for spatial planning and zoning of human activities (data upload in the platform still in process...)
Component 2 on Regional training and learning-exchanges on integrated marine management and governance

2) North of the South America:

- **MaMa CoCo Sea Project**: first workshop during ICoMMPA2 (Martinique, November 2011)

- Follow-up workshop (Paramaribo, right now) financially supported by the LifeWeb

- **Scope**: formulation of an action plan including pooling and sharing of capacity building and management actions, with special focus on *Sotalia spp.*

- First outputs in the coming days…
An important number of maps have been produced thanks to a collective effort to document marine mammal distribution, threats and protection in the Wider Caribbean Region.

Many challenges still exist and the maps deserve to be refined and complemented…

The outputs of component 1 must be dealt with some caution especially for management purposes…

…However, this is the first time ever such work is completed for the Wider Caribbean Region! The outputs may of course be discussed, but they are based on a transparent and reliable method where limits are explicitly pointed out. As such, they are thought to be useful to provide a basis for discussion on MM transboundary management and governance and on marine spatial planning.
Thank you for your attention!

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