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ACTION PLAN FOR THE CONSERVATION OF MARINE MAMMALS (MMAP) IN THE WIDER CARIBBEAN REGION

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1. INTRODUCTION

1. The marine mammal fauna of the Wider Caribbean Region (WCR) is diverse, and marine mammals have significant ecological, aesthetic and economic value to the countries and territories of the region. Regional success in managing and conserving marine mammals will ultimately depend in the first instance on countries' commitment to build their internal capacities and to implement a regional concept by establishing conservation priorities, standards, and strategies for marine mammal conservation and education. The immediate goal of the MMAP is to assist participating governments in the region in their efforts to develop and improve marine mammal conservation policies and practices.

2. At least 32 species of marine mammals have been documented from the region—six species of baleen whales (Mysticeti), 24 species of toothed whales (Odontoceti), one sirenian (the West Indian manatee), and three pinnipeds (the Caribbean monk seal, the hooded seal, and the California sea lion) (See Appendix I). For many of these species, waters of the region serve as primary habitat for critical activities that include feeding, mating and calving. Although some species have been studied extensively elsewhere, data are scarce concerning the biology, life history, distribution and behavior of most cetacean (whale and dolphin) and manatee populations in the Caribbean Sea and Gulf of Mexico are scarce. The WCR is the one of only two regions in the world to have experienced the extinction of a marine mammal species (the Caribbean monk seal) in the past 250 years.

1.1 GLOBAL CONTEXT

3. Several species of marine mammals found in the Caribbean Sea and the Gulf of Mexico are listed in Annex 1 to Article 64 of the United Nations Convention on the Law of the Sea (UNCLOS, 1982) and are also listed as endangered or vulnerable in the Annexes of multilateral agreements, including UNEP's Specially Protected Areas and Wildlife Protocol (SPAW, 1990), the Convention on International Trade in Endangered Species of Flora and Fauna (CITES, 1973), the Convention on the Conservation of Migratory Species of Wild Animals (CMS, 1979, also known as the Bonn Convention) and the International Convention for the Regulation of Whaling (ICRW, 1946).

4. Under Article 65 of UNCLOS, States are to "co-operate with a view to the conservation of marine mammals and in the case of cetaceans shall in particular work through the appropriate international organizations for their conservation, management and study." Article 194(5) states that "measures must be taken to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species" Article 244(2) encourages States to "actively promote the flow of scientific data and information and the transfer of knowledge resulting from marine scientific research." CITES lists all of the baleen whales, the sperm whale, the tucuxi and the West Indian manatee in Appendix I as species in danger of extinction that are or may be threatened by trade. Most other small cetaceans that occur in the WCR are in Appendix II, as species that may become threatened with extinction unless trade is regulated.

5. The CMS lists all great whales except for the Bryde's whale on Appendix I as "endangered" and most small cetaceans on Appendix II, which means that their conservation would benefit significantly from international cooperation. The CMS provides a mechanism for the development of legally binding regional agreements on marine mammals.

6. Currently, the Schedule of the International Whaling Commission (IWC), the body created to implement the ICRW, treats the baleen whales and the sperm whale as protected species. Some members do not recognize the IWC's competence over small cetaceans. However, the IWC Scientific Committee's Subcommittee on Small Cetaceans reviews the status of populations and strategies for addressing specific conservation problems facing them.

7. The large, commercially important baleen whales, the sperm whale, the West Indian manatee and some species and populations of small cetaceans are included in the IUCN's Red List of Threatened Animals (where "Threatened" includes Critically Endangered, Endangered, and Vulnerable species). Humpback and sperm whales are listed as Vulnerable whereas the Bryde's whale is considered as Data Deficient meaning that insufficient information exists to assess its risk of extinction (owing in part to taxonomic difficulties e.g. there are at least two species of Bryde's whales). The West Indian manatee occurs only in the Caribbean range states included in the SPAW Protocol; thus, with the extinction of the Caribbean monk seal, the West Indian manatee is the only endemic Caribbean marine mammal.

8. Many Caribbean nations are Parties to the Convention on Biological Diversity (CBD/Rio Convention), a Convention inspired by the world community's growing commitment to sustainable development. Although not specifically referring to marine mammals, the CBD identifies the sustainable use of marine and coastal living resources as one of its thematic areas of action. This agreement encourages regional and/or international cooperation in conserving and managing species and habitats, monitoring populations and fostering public awareness.

9. Finally, the Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals, adopted in 1984 and subsequently endorsed by the UN General Assembly, calls for governments to implement programmes to maintain and conserve marine mammals and their associated marine biodiversity.

1.2 REGIONAL CONTEXT

10. During the past two decades, awareness of marine mammals and their habitats in the Caribbean Sea and the Gulf of Mexico has increased. The Specially Protected Areas and Wildlife (SPAW) Protocol, born out of the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention), came into force in 2000 and is now the only regional biodiversity agreement for the advancement of the conservation and protection of the marine environment in the Wider Caribbean Region.

11. Articles 11 and 21 of the SPAW Protocol call for the development and implementation of programmes for protected species, as well as guidelines and criteria for the management of protected species, including migratory species. Article 14 recognizes traditional use to satisfy cultural and subsistence needs. Annex II of the SPAW Protocol lists all species of marine mammals of the Wider Caribbean Region as threatened and endangered. In this context, governments have agreed on the need to develop a regional management plan for the conservation of marine mammals, through Decisions IV (2) and 2 of the First and Second Meetings of the Contracting Parties to the SPAW Protocol (Havana, Cuba, 27-29 September 2001 and Montego Bay, Jamaica, 6 May 2002, respectively); Decision 1 of the Tenth Intergovernmental Meeting on the Action Plan for the Caribbean Environment Programme and Seventh Meeting of the Contracting Parties to the Cartagena Convention, 7-11 May 2002; and the results of the informal consultation summarized by the Regional Activity Centre for SPAW (SPAW/RAC) in UNEP(DEC)/CAR WG.25/CRP.2 and presented to the Second Meeting of the Scientific and Technical Advisory Committee (STAC 2) in Curaçao in 2003 (Appendix II).

12. In this process, governments of the region have reviewed and considered the following information documents which outline the status of marine mammal conservation in the region, propose priorities for action, and form the basis of the proposed activities in the MMAP. They are available from the UNEP website at: http://www.cep.unep.org/pubs/meetingreports/MMAP/mmap.php.

- Elements for the development of a Marine Mammal Action Plan for the Wider Caribbean: A Review of Marine Mammal Distribution {UNEP (DEC)/CAR IG.20/INF.3}

- Marine Mammals of the Wider Caribbean Region: A Review of their Conservation Status {UNEP(WATER)/CAR WG.22/INF.7}

- Regional Management Plan for the West Indian Manatee, Trichechus manatus. CEP Technical Report No. 35. 1995 and

- Action Plans and relevant materials from other UNEP Regional Seas Programmes.

1.3 OBJECTIVES—WHAT IS THE MMAP INTENDED TO ACHIEVE?

13. The immediate goal is to assist participating governments in the region in their efforts to develop and improve marine mammal conservation policies and practices. The Plan is intended to provide a framework for activities at the national level and regional or international co-operation, on the basis of respect for the sovereign rights of the participating governments. After SPAW Parties have adopted this Action Plan, individual countries may prioritize issues and threats through the development and implementation of their National Recovery Plans**.**

14. The MMAP consists of five target areas: increased scientific knowledge; enhanced public understanding; protective measures; policy development and improvement of law and its application. The long-term objectives are:

- Conservation and recovery of all marine mammal species and populations, and protection of their habitats in the region (e.g. feeding, breeding, and calving grounds, movement corridors, etc.).
- Establishment of regional cooperation programmes to increase scientific, technical, and educational exchange among relevant national, regional, and international organizations.

15. Although the SPAW Protocol gives a general mandate for the protection and management of marine mammals in the WCR, this MMAP focuses on the following two broad aims:

1.3.1 Management of human interactions and use

- Identify and assess all significant threats to marine mammals (in general and as species and populations);
- Address and mitigate human-related threats to marine mammals and the viability of their populations and habitats;
- Manage stranded marine mammals;
- Manage the holding and taking of marine mammals; and,
- Address risks and uncertainty when making decisions, and ensure that a precautionary approach is taken.

1.3.2 Species protection

- Improve understanding of the biology of all marine mammals, especially those that are threatened currently or that have been affected by past or present human activities;
- Maintain, and where appropriate, seek to restore, the distribution, abundance and diversity of marine mammals in the WCR;
- Protect habitats in the WCR that are “significant” to marine mammals; and,

- Seek to ensure that there are self-sustaining populations of all marine mammals throughout their natural range)

16. Although the above aims are closely linked, the first aim is an issues-led approach whereas the second is a species-led approach. To fulfill these aims, it is essential to have effective institutions (e.g. systems and administrative structures) in place, staffed by competent and trained managers and scientists, as well as systems for reporting information and monitoring progress toward the management goals (e.g. reporting and monitoring progress). In this context, adequate financial resources are necessary and this will pose a challenge that will require the cooperation and commitment of governments, relevant organizations and donors. As importantly, once human industries and activities become well established, it becomes difficult and expensive to develop, post hoc, appropriate regulations to prevent undue impacts to marine mammals (or other resources).

17. In light of the need to address a number of priority issues regarding marine mammal conservation in the WCR, the present document: MMAP Priority Actions: Five-Year Plan (MMAP-PA) identifies actions that should be executed within the next five years. With the adoption of the MMAP-PA by SPAW Parties, individual countries may prioritize issues and threats through the development and implementation of National Recovery Plans.

18. It was recognized that all actions within the framework of the MMAP-PA are to be implemented by those countries within the context of their national priorities and capabilities; as well as the available resources (human and financial) in the secretariat.

2. ISSUES AND ACTIONS

19. Threats to marine mammals and marine ecosystems persist and new threats are emerging. Most marine mammals face multiple threats. Conservation measures that already are in force need to be evaluated and re-evaluated, and new approaches need to be developed to address threats that were unrecognized or non-existent until recently. Hence the MMAP should be considered as a dynamic and evolving process.

    The issues addressed in the present document are arranged in their approximate order of priority for conservation action based on the:

    - range and conservation status of the species that they affect and the level of impact they are thought to have
    - numbers of animals affected
    - need for active protection and management
    - need for knowledge
    - potential for improved protection and threat mitigation and
    - abundance and distribution of marine mammal populations.

20. As more information is obtained and the status and vulnerability of the various species become better understood, the currently proposed general ranking of threats to marine mammals in the WCR may change. Also, countries may choose to address their own specific priority issues and species through the development and implementation of National Marine Mammal Action, Management or Recovery Plans.

2.1 FISHERIES INTERACTIONS

21. The interaction between fisheries and marine mammals may result in:

- Mortality or serious injury due, for example to incidental capture in nets or being hooked on lines;
- Deliberate mortality or serious injuries in hunts that target marine mammals; and
- Ecological effects from, for example, competition for food, displacement, or damage to habitat.

Direct Interactions

22. The population-level significance of marine mammal mortality or injury due to incidental or accidental capture in gear intended to take other species (a type of capture called bycatch) generally is unknown in the WCR. Also, in some locations in the WCR, marine mammals are captured specifically as bait for artisanal fishing. An improved understanding of the magnitude and impact of bycatch is needed for fisheries in the WCR. Fundamental questions need to be addressed in relation to accidental bycatch:

- How do marine mammals get caught in fishing gear?
- Are particular species or demographic groups within species (e.g. females with calves) particularly vulnerable?
- How can the magnitude of marine mammal bycatch in fisheries be estimated without onboard observer programmes?
- What is the nature, distribution and magnitude of fishing effort in relation to the distribution of marine mammals in the region?
- What types of gear, modifications or alternative fishing techniques can reduce bycatch while still allowing economically feasible fishing?
- Which and how many types of marine mammals are used as bait?
- What is the impact of this type of use on mamarine mammal populations in the WCR?
- Why are marine mammals used as bait, where is this done, how are the marine mammals caught, and which are the species used (which species are caught using marine mammals?)
- Which are the non-lethal alternatives for the use of marine mammals?

Directed exploitation – With the exception of the humpback whale fishery in Saint Vincent the directed cetacean fisheries in the WCR usually target small cetacean species and occasionally killer whales, pygmy, sperm and Bryde's whales. Manatees, in particular, are subjected to illegal, poorly documented hunting over much of their range.

Key Objectives

Improve Understanding: To conduct and support scientific research on the magnitude and impacts of fishery interactions with marine mammals.

Marine Mammal Population Assessment: To monitor and assess the impact of fisheries-related mortality on marine mammal populations in the WCR.

PRIORITY ACTIONS

Science

2.1.1 Improve information on takes of marine mammals in fisheries. This should include onboard observer programmes whenever feasible. Several countries have established fisheries catch and effort data collection programmes from commercial fleets. Ideally, improvement to these systems should include training programmes on species identification and the collection of relevant natural history data for fishers (both commercial and recreational) and other key stakeholders. Such programmes also should encourage fishers to report incidental catches or damage to animals which are later released but have a low chance of survival and should take advantage of and work in cooperation with existing initiatives. Technical collaboration with academic, non-governmental and international organizations (e.g., FAO, the Global By-Catch Assessment Project by Duke University and Blue Ocean Institute, IWC) will be required to gather relevant data and information on better practices. Disseminate results in technical and scientific fora.

Relationships and Community

2.1.2 Conduct interviews in the community to evaluate how marine mammals are used in the region, and evaluate the impact. Since this practice is usually carried out discreetly, it might not yield results with (or it is not possible to have) observers onboard, then analyses of the stomach contents or the stable isotopes of the stomach contents of the fish, can be carried out to evaluate whether or not they have been caught using marine mammals as bait.

2.1.3 The SPAW/RAC and CEP Secretariat develop stronger working relationships with Fisheries authorities and stakeholders (academia, NGOs etc) in order to address matters relating to fishing-related mortality of marine mammals. Managers and decision-makers, in particular from fishing authorities will be involved and integrated.

2.1.4 Evaluate and present non-lethal use of marine mammals to encourage alternative economies for those communities which intentionally or unintentionally, directly or indirectly, exert pressure on marine mammals.

FISHERIES INTERACTIONS	
Major outputs expected	**Main Partners**
1) Compilation and quantification of the magnitude of marine mammal takes (direct and bycatch) both commercial and recreational gear and distribution of fishing effort by gear type, as means to contribute to a comprehensive database in the region. 2) Dissemination of information on progress and barriers experienced in addressing fisheries interaction issues to appropriate technical and scientific fora, as well as information on the most problematic interactions and those causing serious	SPAW/RAC, CEP, fisheries and environmental authorities of SPAW Contracting Parties and relevant Governments, in collaboration with Global Conventions, Fishing Authorities, FAO, IWC, the Global By-Catch Assessment Project by Duke University, IUCN, Blue Ocean Institute, and relevant local and international NGOs and artisanal fishers.

injury and mortality. 3) Establishment and strengthening of observer programmes in the WCR and the identification of ways to reduce fishing-related marine mammal mortality in cooperation with Fisheries authorities and major stakeholders. ***4)*** Establishment and strengthening of incentive programmes which will allow artisanal fishers to report accidents with marine mammals while fishing**.**	

2.2 HABITAT DEGRADATION FROM COASTAL AND WATERSHED DEVELOPMENT

23. Some marine mammals occupy a relatively well-defined habitat year-round or have a narrow feeding niche that restricts them to a particular kind of habitat (e.g. manatees need access to aquatic vegetation and warm water).

24. Marine mammal habitat is degraded and lost in a variety of ways. The potential range of effects is immense, coastal species are particularly vulnerable, and most species suffer from multiple stressors (cumulative or synergistic effects). The effects of human activities on coastal habitat are inadequately understood and monitored.

Key Objectives

Improve Understanding. To increase knowledge of the distribution, habitat use and habitat requirements of marine mammals in the WCR.

Assess Impact. To characterize the links between human activities and the loss or degradation of marine mammal habitat and then to assess what types and amounts of such habitat have been lost, are in the process of being lost, and can be expected to be lost given current trends in human activities.

Mitigate and Avoid Negative Impacts. To maintain and strengthen existing efforts, and to stimulate new initiatives at the regional, national and/or local level to (a) manage human activities in ways that will stop further habitat degradation and loss, (b) restore and rehabilitate habitat that has been damaged or lost through past human activities, and c) train the local communities in order to enhance their awareness of the ecological and tourism importance of the marine mammals**.**

PRIORITY ACTIONS

Science

2.2.1 Seek a thorough and rigorous description of interaction areas where the potential exists for human activities to affect marine mammal habitat in the WCR, including indirect and down-stream effects. Technical cooperation will be required from Governments and partners to map and adequately characterize such areas and impacts.

2.2.2 If not already being used to manage data and to analyze and illustrate spatial relationships among scientific, social, economic, and other parameters, develop and apply Geographic Information Systems to improve understanding of marine mammal habitat issues**.**

Planning and Strategy

2.2.3 Include marine mammal habitat requirements in the national Integrated Coastal Zone Management (ICZM) framework and in other relevant regional initiatives or projects on coastal and marine ecosystems in the WCR as appropriate (e.g. the GEF Project – Sustainable Management of the Shared Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Regions; the AMEP Projects on Integrating Watershed and Coastal Area Management (IWCAM) in the Small Island Development States (SIDS) of the Caribbean and on Reducing Pesticide Run-off to the Caribbean Sea.

HABITAT DEGRADATION FROM COASTAL AND WATERSHED DEVELOPMENT	
Major outputs expected	**Main Partners**
1) Increased knowledge on the distribution, habitat use and habitat requirements of marine mammals in the region, along with identification of key priority areas where the impacts of human activities should be minimized or where habitat restoration is feasible. 2) Development of effective partnerships with local stakeholders, leading to agreements on activities to be pursued in coordination and cooperation with relevant organizations and projects in the WCR.	SPAW/RAC**,** and CEP, in collaboration with, SPAW Contracting Parties and relevant Governments, National Coastal Zone Management authorities, Mote Marine Labs, universities, NGOs and relevant projects and initiatives in the WCR.

2.3 POLLUTION AND MARINE MAMMAL HEALTH

25. Near shore environments, in particular, are exposed to a wide range of pollutants including persistent organochlorines, heavy metals, litter, oils (petroleum hydrocarbons) and nutrients from a variety of marine and land-based sources, including port, industrial and agricultural activities. Some of those pollutants concentrate in the food web. Although evidence for links between chemical pollutants and the health of exposed marine mammals remains largely circumstantial, there is a growing concern that exposure to contaminants can increase susceptibility to disease and affect reproductive performance in marine mammals.

26. In the WCR, agricultural endeavors and runoff have led to local concerns regarding coastal/estuarine/riverine pollutants such as pesticides, nutrients and herbicides, as well as organic contaminants from sugar refineries, fruit processing plants or domestic waste. Marine mammals are considered “sentinel species” because they may provide early warnings of changes or threats to environmental and/or human health. Their long lifespans and mammalian (i.e. human-like) general physiology contribute to their utility in this regard. Creation of appropriate monitoring programs can: a) create baselines against which to assess and mitigate future changes, and b) highlight locations in which health of marine mammals, coastal ecosystems, and even people may be compromised. In that regard, it will be vital to integrate analyses of contaminant levels, formal health risk assessment, and careful communication to communities to ensure that risks are properly recognized and mitigated, without creating unnecessary fear or panic.

27. Exposure to toxic substances and harmful chemicals such as oil, can have acute or chronic effects when animals ingest contaminated prey (or vegetation, in the case of manatees) or breathe contaminated air, or if it comes into contact with their skin. Polycyclic aromatic hydrocarbons (PAHS; the chemicals associated with oil pollution) have been assessed in marine mammals only rarely, but PAH contamination is one of the greater contaminant threats in the WCR.

28. Health of marine mammals depends on a variety of factors besides contaminant exposure, some of which may be transboundary in nature.

29. Given the expense of studies on health/contaminants, these should only be initiated after careful and cost-effective planning and solid experimental design. In this regard, the Plan recognizes that these monitoring studies and programmes require substantial financial resources and capabilities which are not available in many of the countries of the WCR. Every effort should be made to create and support existing, necessary minimum capacities in these countries so that they can successfully and sustainably carry out these studies.

Key Objectives

Impact Assessment. To implement a multidisciplinary approach that includes improved diagnostic tools and capacity for assessing health and linking health indicators to stress factors and better distinction between natural and human-caused health-impairment and mortality. Given the variability in contaminant types and levels in different countries of the WCR, research and mitigation must be country specific.

Mitigation and Avoidance of Effects. To stimulate ongoing and initiate new actions at the regional, national and/or local levels to use and protect coastal zones and related ecosystems in ecologically neutral or positive ways and protect habitat that is significance to marine mammals in the WCR.

PRIORITY ACTIONS

2.3.1 Review available information on contamination to identify key locations where contaminants are found, including biotoxins and other factors which could affect marine mammal health and the degree of overlap among these areas and the occurance of critical marine mammal habitats (as per 2.2.2).

2.3.2 Convene a Regional Pollution Workshop to compare information from the different countries, using standard methodology.

2.3.3 Design and seek funding to implement studies in the WCR, primarily in identified key sites, to assess and monitor environmental (including prey) and marine mammal contaminant levels, as well as clinical diagnostic markers of exposure or effects and possibilities for cooperation, through the convening of a second Regional Pollution Workshop. Such studies should involve tissue from stranded marine mammals and where appropriate, non-lethal biopsies of wild animals. Studies should also involve internationally standardized protocols for sample collection and analysis following those approved by appropriately credited laboratories of the Contracting Parties or other appropriate agencies.

2.3.4 Establish and provide minimum training for a watchdog, monitoring, rescue and rehabilitation network, including veterenarians and biologists among others, who will take care of emergencies concerning marine mammals affected by contamination (e.g. when oil spills occur).

2.3.5 Strengthening watchdog capacity with a view to reducing contamination in marine ecosystems.

POLLUTION AND HEALTH	
Major outputs expected	**Main Partners**
1) Report of the First Regional Workshop on Pollution for the WCR with identification and consensus on key sites where marine mammal health could be affected and where further efforts should be focused. 2) Report on the main sources of pollution (which products affect marine mammals), the main effect on the health of the marine mammals (sickness) and steps to be taken to alleviate the effects	SPAW/RAC; CEP, LBS, Oil Spills and SPAW Contracting Parties and relevant Governments in collaboration with universities, NGOs and relevant Conventions (e.g. Basel, Stockholm), Mote Marine Labs, IWC, Cetacean Conservation Medicine Group (CMED-CEPEC) and projects and initiatives (e.g. Global Programme of Action for the Protection of the Marine Environment from Land-based Activities-GPA), internationally and in the WCR .

2.4 PROTECTED AREAS AND OTHER MANAGEMENT REGIMES FOR POPULATION RECOVERY

30. The designation of specially protected areas (ranging from multiple-use parks to no-take reserves) is a tool increasingly used to pursue conservation goals. Protected areas that regulate or even exclude certain types of human activity can be economically costly in the short term, but may, under certain circumstances, also provide substantial immediate and long term economic benefits, ranging from fishery enhancement to recreational and educational opportunities for the public. Moreover, protected areas can be used as control sites for scientific research and comparative analyses. Management of discrete areas is one way to achieve some of the MMAP objectives.

31 Other heretofore untried approaches may also be useful to consider as a way to enhance marine mammal population status or range. One involves reintroductions of manatees (or possibly other species) to locations they once occupied. This approach has been used to recover the range of other endangered species and to re-establish populations in locations where threats to conservation may be much less than in other parts of the range. Such approaches may be controversial but should not be overlooked in an effort to promote population growth and range expansion for endangered or threatened species.

Key Objectives

Improve understanding. To improve knowledge on the value of protected areas and special management zones designed for the benefit of marine mammal conservation.

Impact minimization. To stimulate on-going and initiate new actions at the regional, national and/or local level to protect (or otherwise appropriately manage) areas that are important to marine mammals.

Population recovery. To consider novel approaches that may have potential to recover population status or range.

PRIORITY ACTIONS

Management

2.4.1 By mutual agreement among the Contracting Parties involved, design and declare marine protected areas and other management regimes, that maintain ecological connections (e.g. sister sanctuaries that promote the protection of transboundary assets) with user and stakeholder involvement and participation.

2.4.2 Review existing MPA Management or Implementation Plans, assess their effectiveness, identify deficiencies and strengths, and make recommendations to increase their value to marine mammal conservation, in close collaboration with STAC working group on protected areas (covering other activities of common concern, such as potential reintroducing of the manatee), through egroup and report recommendations and steps for future work to SPAW/STAC

2.4.3 Investigate the potential use of population enhancement measures, notably assessing the feasibility of re-introducing the manatee to the islands of the Lesser Antilles where it once existed.

PROTECTED AREAS AND OTHER MANAGEMENT REGIMES FOR POPULATION RECOVERY	
Major outputs expected	**Main Partners**
1) Recommended measures to increase the value of MPAs to marine mammal conservation under the SPAW Protocol and hence support of improved management at MPAs and of better practices.	SPAW/RAC, CEP and STAC in collaboration with CaMPAM; SPAW Contracting Parties; relevant national and local MPA authorities/managers and stakeholders, universities, IUCN and ECCN, ECCEA and other NGOs.
2) Increased collaboration and synergies in support of MPAs management under SPAW and associated initiatives within the region.	
3) A formal assessment, supported by appropriate research, regarding reintroduction of manatees to suitable locations in the Lesser Antilles to establish a viable new population.	The Government of France: Parc National de la Guadeloupe; UNEP/RCU; manatee research specialists in the Wider Caribbean: NGOs and Foundation for funding.

2.5 RESEARCH

32. Research (including surveys, monitoring, and information management) should form an integral part of any conservation or recovery plan for a species or population. In the WCR, research efforts have not been adequate to identify conservation units (e.g. management stocks), assess their status, or characterize and quantify effects of human activities on them. Emphasis should be placed on:

    - Acknowledgement of scientific uncertainty; and, quantifying and incorporating such uncertainty into decision-making. This may require the application of novel scientific methods as well as greater acceptance of precautionary perspectives in the region.
    - Monitoring through direct observation and the use of non-lethal methods.
    - Socioeconomic research to ascertain how local communities can benefit from the conservation process and be encouraged to protect marine mammals and their habitat.

33. All non-lethal but "invasive" research should meet with internationally accepted standards. The results of all scientific research should be encouraged to be made available through the RAC and disseminated through relevant scientific and public forums in the WCR and internationally. Although it is important to be able to justify conservation recommendations with empirical scientific data, in some cases this is not possible even though the threat clearly exists. Given funding, logistical and other constraints, it may take many years to collect and analyze sufficient data for full assessment of a particular threat factor. In such cases, a precautionary approach should be adopted.

34. Data collection protocols should be standardized across the WCR so that meaningful comparisons can be made of current and future research results.

Key Objectives

- Foster science that contributes to management and conservation.
- Ensure that the results of scientific studies are made available to a variety of stakeholders including the public in general, with an emphasis on local communities.

PRIORITY ACTIONS

2.5.1 Compile existing knowledge of marine mammals in the region (e.g. biology, genetic, ecology, abundance, distribution, seasonal movements, population dynamics, and habitat among others), especially in poorly studied areas, and make it available to stakeholders.

2.5.2 Identify gaps in scientific knowledge and make recommendations for research and monitoring to fill such gaps. At a minimum, it is important to collect baseline population data and catch statistics (both deliberate and incidental), through marine mammal group of scientists and experts.

2.5.3 Compile list of experts to serve as peer reviewers of existing methodologies for monitoring/research priorities and to recommend standard methods.

2.5.4 Create fora such as a Marine Mammal Expert Group in which experts, scientists and managers from the Contracting Parties or working in the region including experts, can discuss and share information on marine mammals. Convene this core group to update information as appropriate.

2.5.5 Support and carry out genetic research on captive marine mammals (including research for potential development of captive breeding programmes in the future).

RESEARCH	
Major outputs expected	**Main Partners**
1) Establishment of a Marine Mammal Expert Group (experts, scientists, managers) from the Contracting Parties and organizations working in the WCR with focus on exchange of research information. Terms of Reference for the Expert Group should be formulated by the CEP Secretariat and SPAW/RAC.	CEP Secretariat, STAC, SPAW/RAC and marine mammal scientists in the WCR (including those already members of the E-mail Marine Mammal Working Group), and in coordination with Mote Marine Lab, IUCN and other groups such as IWC.
2) Development of monitoring and investigating methodologies for marine mammals in the WCR following the peer review by experts.	SPAW/RAC and marine mammal scientists, etc. (see above).
3) Increased collaboration and synergy among individuals and groups studying marine mammals in the WCR.	
4) Relevant data, protocols and information on on-going or planned non-lethal marine mammal research in the region are collected and disseminated through CEP website.	

2.6 MARINE MAMMAL WATCHING IN THE WILD AND ASSOCIATED ACTIVITIES

35. Over the past few decades, marine mammal watching (whale, dolphin and manatee) in the wild has been promoted as non-consumptive use that promises monetary rewards to people and benefits to local communities and governments without requiring that the animals be killed or removed from their natural environment. The effects of tourism are important to consider, within the overall context of human-induced threats to marine mammals, to ensure that marine mammal watching is conducted in a manner that is respectful of the animals, local human communities, fellow tourists and the environment. In addition, marine mammal watching can provide an important platform to conduct research and provide a mechanism to share data across the WCR. Intensive, persistent and unregulated vessel traffic that focuses on animals while they are resting, feeding, nursing their young, or socializing can disrupt those activities, and possibly cause long-term problems for populations. It is important for the tourism industry and government agencies to develop and adopt guidelines, codes of conduct, or regulations to preclude or minimize such impacts.

    Potential negative effects include:

    - Destruction/pollution of habitat from coastal development;
    - Noise pollution from increased vessel traffic;
    - Increased risk of vessel strikes; and,
    - Disruption of behavior

- Changes in distribution.

Key Objectives

Improve understanding. To educate tourists and tourism stakeholders on marine mammal natural history, conservation, and best practices for marine mammal viewing.

Impact assessment. To assess the potential impacts of tourism activities on marine mammals and to monitor such activities in order to provide a basis for ongoing adaptive management.

Impact mitigation. To mitigate the impacts of marine mammal watching tourism through guidelines, codes of conduct, or where necessary, regulation. Insights from detailed studies in other areas should be used to inform management measures in the WCR. In other words, action should be taken on the precautionary assumption that responses by marine mammals to disturbance will be similar across taxa and across regions.

PRIORITY ACTIONS

Planning and Strategy

2.6.1 Convene a regional trilingual workshop on Best Practices for Marine Mammal Watching in the Wild and Associated Activities. .

Relationships and Community

2.6.2 Improve opportunities for local communities to benefit economically from marine mammal-based tourism. This may require public outreach and education programmes as well as programmatic interventions by government agencies and non-governmental bodies (e.g. chambers of commerce).

2.6.3. Encourage tourism operators to develop partnerships with scientists and scientific organizations, and thus ensure that data are collected and made available in a prescribed manner for scientific research.

2.6.4 Request that Parties contribute to a regional assessment of marine mammal watching activities – e.g. by providing information on the number/location of whale/dolphin watching operations, species involved, guidelines or regulations in place, economic value, associated scientific studies and educational materials (to be initiated at the Workshop).

2.6.5 Based on scientific investigation, adopt mechanisms as appropriate to manage marine mammal tourism, in collaboration with the authorities, local community and tourist operators.

MARINE MAMMAL WATCHING IN THE WILD AND ASSOCIATED ACTIVITIES	
Major outputs expected	**Main Partners**
1) National reports from Contracting Parties and priorities for marine mammal watching**.** Report of the Workshop in three languages and identification of regional and possibly species and country-specific priorities with regard to marine mammal watching. 2) Regional assessment of marine mammal watching activities that identifies opportunities, problems, and gaps. 3) Greater engagement of tourism operators with scientists. 4) Improved documentation and, if judged necessary, regulation of marine mammal watching activities to ensure that such tourism is sustainable and environmentally, as well as economically, beneficial. 5) Regional training workshops for tourism operators and formulation of regional code of conduct for observing marine mammals	CEP Secretariat, STAC, SPAW/RAC and marine mammal scientists of the WCR, Whalewatching Sub-committee (IWC), Dolphin Fleet, tourism industry stakeholders, local coastal zone and relevant authorities, MPA managers, IFAW, WDCS, ECCEA, Sea Vida, Cethus Foundation**,** and other NGOs.

2.7 MARINE MAMMAL STRANDINGS

36. Marine mammal strandings provide scientists opportunities to obtain certain basic information, data and samples, as well as to identify, and to some extent monitor, adverse human interactions with marine mammals. Tissue samples obtained from stranded animals can be used for a variety of scientific purposes including to monitor levels of anthropogenic contaminants (pollution) in marine systems.

37. Unusual mortality events, as well as the monitoring of chronic relatively low levels and causes of mortality and morbidity, can provide insight into ocean health if there is timely on-the-ground response and relevant data are collected and analyzed. In the WCR, there is a need for capacity building in this area, including standardized protocols, training in methods of sample collection, archiving of samples, and establishment of an on-line database for findings. Because many marine mammals move across national boundaries, cooperation among countries in the region is essential for realizing the full value of strandings data and samples. Response efforts provide the individuals involved with experience in dealing with distressed animals, and can generate significant public interest and involvement. Importantly, strandings can alert researchers and the general public to environmental problems that affect more than just the marine mammals that have come ashore.

38. Data from strandings can contribute to the identification and assessment of various threats to marine mammals such as pollution, disease, fisheries interactions, acoustic disturbance and vessel strikes.

Stranding data have provided important information on distribution and demography of species, including areas in which they had not previously been reported.

- ***Key Objectives***

- **Improve Understanding**. To learn more about the causes of strandings in the WCR, improve systems for responding to stranding events, and educate stakeholders on the scientific importance of reporting and investigating strandings.

- **Impact Assessment.** To compile and analyze data and samples from strandings and apply the results to assessments and mitigation of impacts of human activities.

PRIORITY ACTIONS

Resourcing and capacity

2.7.1 Compile a database of veterinarians, researchers, biologists, and marine policy experts in the WCR to help ensure that information is exchanged and that the capacity to respond to strandings is present throughout the region. The database should include both specialists and interested non-specialists, the latter including local fishermen and local marine mammal watching operators who are in a position to observe, report and assist in response to strandings.

2.7.2 Build capacity to address strandings through three Regional Stranding Response Training Workshops, following as a model the Eastern Caribbean Marine Mammal Stranding Response Training Workshop held in Trinidad and Tobago (15-18 November 2005) in English on developing a stranding network and data archives (which include standardized data sheets to include level A and level B data, necropsy protocols etc.); the Spanish and French-language workshops, on stranding response and necropsy training. Workshops will cover Levels I-III training as follows: 1) Level I- general necropsy training and on-the-beach protocols: 2) Level II- human interactions; and 3) Level III- zoonoses, contaminants training).

2.7.3 Develop a laminated guide to marine mammals of the WCR that includes two taxonomic keys: one based on external appearance and the other on features of the teeth, skull and skeleton. The guide will serve as a tool for front-line responders and future stranding training workshops, as well as for fisheries data collectors and it will contribute to the development of effective local, national and regional stranding response systems.

2.7.4 With support from the CEP secretariat, and through identified financial mechanisms, support the creation and/or strengthening of capacities and infrastructure in countries of the region, to identify and monitor threats to marine mammals, ecosystems, and humans.

2.7.5 Establish inasmuch as possible, 'injury' networks in each of the countries of the WCR, which has a reporting mechanism to respond to marine mammal injury, information which should be made available to all other countries.

2.7.6 Create propriate archives of samples for diverse studies such as pathology, contaminants, paracytology and genetics.

2.7.7 Build capacity to include standardized protocols, training in methods of sample collection, archiving of samples, and establishment of an on-line database for findings.

MARINE MAMMAL STRANDINGS	
Major outputs expected	**Main Partners**
1) Reports of the three Workshops in three languages.	SPAW/RAC, and CEP, in collaboration with marine mammal scientists, veterinarians, epidemiologists, and analytical chemists of the WCR, Government fisheries organizations, Mote Marine Lab, IUCN, ECCN, Centre for Cetacean Conservation and other NGOs.
2) A cadre of responders trained in all aspects of marine mammal strandings and other skills to transmit knowledge to others and the incentive and ability to develop local, national and regional response networks in the WCR.	Marine mammal experts and institutions. Injury networks that exist in the WCR and other regions

2.8 MARINE MAMMALS IN CAPTIVITY

39. Marine mammals are held in captivity in many parts of the WCR for public display and interactive programs that involve the touching, feeding and swimming with them, especially dolphins. The captivity industry has both welfare and conservation implications for marine mammals. Removal of live marine mammals from the wild means they are no longer available to help maintain their natural populations, and limitations imposed by captivity on their complex social behaviour cause stress. When conducted in the absence of robust assessments, live-capture removals can be a serious threat to local cetacean populations**.** In addition, extraction, capture and transportation to a captive location may cause death of individuals (especially the young) and those which do not die may display unsettled behavior resulting from the stress. In the case of exemptions for capture, regionally acceptable standards should be developed regarding selection for capture, captive procedures, immediate and post-capture handling procedures, maintenance and long-term display.

Key Objectives

Improve understanding. To analyze the costs and benefits of keeping marine mammals in captivity. Such an analysis should take account of the potential effects on the individual animals, on wild populations and on natural ecosystems as well as the educational and economic benefits to human societies.

Impact assessment. To assess the impact of live captures on marine mammal populations and ecosystems in the WCR (and outside it in the case of imports), and to assess the impacts of holding facilities on the local environment. Evaluate the impact of human interaction on the behaviour and health of marine mammals, such as touching and swimming with them.

Impact minimization. In the case of exemptions, ensure that live capture removals do not compromise the viability of wild populations of marine mammals, and guarantee that the knowledge, experiences and documentation available in the region, are used to train and inform at the regional level to ensure that the management of marine mammals in captivity is carried out responsibly and with minimal impact on wild populations.

Regulation of live capture, trade and possession: Develop a process to ensure the consistency of any exempted activities under the SPAW Protocol and their compliance with international regulations and agreements.

PRIORITY ACTIONS

Planning and Strategy

2.8.1 Encourage Parties to act in accordance with the SPAW Protocol in relation to captive marine mammals through the development of a process for evaluating and seeking exemptions.

2.8.2 Improve existing facilities and care through the development of national/regional standards for captive marine mammal health and welfare (also addresses 2.8.4 and 2.8.5).

2.8.3 In the case of exemptions for capture, regionally acceptable standards should be developed regarding selection of candidates for capture, capture procedures, immediate and post-capture handling, maintenance and long-term public display.

Management

2.8.4 Produce annual status reports of the specific, unambiguously identified marine mammals in captivity during the previous year in the WCR, including a public inventory of information on births, deaths, illness and genetics of individual animals and injuries incurred by the animals and public through participation in interaction programmes.

2.8.5 Develop and adopt guidelines for the language and process of the SPAW Protocol's Article 11 exemptions provision.

Science

2.8.6 Support and conduct research on the distribution, population structure, abundance and trends of marine mammal species targeted for live-capture to ensure compliance with the Protocol's provisions for environmental impact assessments and exemptions.

MARINE MAMMALS IN CAPTIVITY	
Major outputs expected	**Main Partners**
1) Regional Guidelines on exemptions for the capture, transfer and keeping of marine mammals in captivity, developed by the Contracting Parties using criteria established under the SPAW Protocol**,** taking into account the overview of relevant national and international legislation and guidelines as appropriate. 2) National reports of live captured, and inventory of imported/exported marine	SPAW/RAC, and CEP in collaboration with Marine Mammal scientists, veterinarians, epidemiologists, Governments, WDCS, ECCEA and other NGOs, tourism industry and facility providers. SPAW Parties and marine mammal organizations/institutions.

mammals in captivity and their source or origin. The format and content for such reports may be suggested and developed by SPAW/RAC in the context of on-going national reporting process consideration under SPAW, and may include permit information, numbers of animals taken, deaths during capture, final destination, identifying features, and current disposition of the animal. 3) Contracting Parties to establish clarification of the Article 11(2) on Exemption provision and development of guidelines to evaluate proposals for exemption, including public display (captivity). 4) Reports from rehabilitation centres and reintroduction of marine mammals in the WCR.	

2.9 ACOUSTIC DISTURBANCE/UNDERWATER NOISE

40. Noise degrades habitat and can affect the health, behavior, and distribution of marine mammals. A variety of human activities introduce sound into the marine environment, including commercial shipping and transportation, oil and gas development, military operations, dredging and coastal construction, scientific research (e.g. seismic research, acoustic thermography), fishing and recreation. Noise impacts can be related to the amplitude, duration, and frequency of the sounds as well as to the behavioural and social context of the animals at the time of exposure. Disturbance by noise can interrupt biologically significant activities (e.g. nursing, breeding, resting), impair communication (i.e. by masking), and drive animals away from critical habitat (e.g. feeding grounds, migration routes). Under certain circumstances, anthropogenic noise can cause injury and even death of marine mammals.

41. The mechanisms by which anthropogenic sounds affect marine mammals and their prey are not fully understood. Major scientific advances have been made in recent years as a result of detailed necropsies of stranded animals and carefully designed experiments involving free-ranging and captive marine mammals. However, the emphasis of research and management has tended to be on the acute effects of certain types of sounds on a few deep-water species. Relatively little attention has been given to species living in coastal, inshore, or freshwater environments where they are chronically exposed to anthropogenic sounds from multiple sources.

Key Objectives

Improve Awareness. To develop education programmes so people are more aware of the nature and seriousness of the threats posed by various types of underwater noise, to identify sources which exert major acoustic pressure on marine mammals and classification of the types of noise per the source (e.g. yachts, jetskies, ships, military manœuvres).

Impact Assessment: To initiate and continue to support research programmes that examine the chronic effects of ocean noise on marine mammals. All such research must be (a) tightly focused, (b) rigorously designed, (c) address questions of clear relevance to conservation, and (d) be consistent with internationally recognized standards with regard to animal welfare.

Impact Minimization. To support ongoing and new actions at the regional, national, and local levels aimed at explicitly integrating limits on underwater noise into management and regulatory regimes.

PRIORITY ACTIONS

2.9.1 Guidelines that address the problem of underwater noise and its effects on marine mammals and their prey. Such guidelines should reflect and be consistent with emerging global criteria.

2.9.2 Encourage Parties to initiate and support research programmes that examine the chronic effects of noise on marine mammals**.**

2.9.3 Develop education programmes to increase public awareness about ocean noise and its impacts on marine mammals.

ACOUSTIC DISTURBANCES/UNDERWATER NOISE	
Major outputs expected	**Main Partners**
1) High-quality, relevant research on the sources and effects of underwater noise on marine mammals is conducted and the results are used to inform management and regulatory actions aimed at protecting marine mammal populations.	SPAW/RAC, and CEP, in collaboration with marine mammal scientists, governments, relevant international organizations, NGOs, industries (e.g. shipping, transport, fishing, recreation, oil and gas development, coastal construction), militaries, and scientists engaged in research that produces underwater noise.
2) Guidelines to reduce underwater noise and its effects on marine mammals in the Wider Caribbean Region.	SPAW/RAC, CEP**,** and marine mammal scientists, etc. (see above).

2.10 VESSEL STRIKES

42. Another anthropogenic threat comes from vessel strikes, which can cause death and injury to marine mammals. The extent of this problem in the WCR is poorly understood. However, vessel strikes on Bryde's whales and small cetaceans have been observed and reported in Venezuela. Also, manatees are well known to be exceptionally vulnerable to vessel strikes. Factors affecting the incidence and severity of vessel strikes include: the density of marine mammals and vessels in the area; the ability of marine mammals to detect vessels and of vessel operators to detect marine mammals; and the ability of marine mammals or vessel operators to maneuver to avoid collisions. Outreach and education efforts will raise awareness of this threat and contribute to efforts aimed at assessing the magnitude of the problem.

Key Objectives

Improve understanding. To identify high risk areas for vessel strikes in each country.

Impact assessment. To assess the magnitude of vessel strikes in the WCR, particularly for endangered large whales, and manatees in the context of population status and other sources of mortality.

Impact minimization. To stimulate on-going and initiate new actions at the regional, national and/or local level to reduce the frequency and severity of vessel strikes.

PRIORITY ACTIONS

Management

2.10.1 Solicit reports of vessel strikes to determine rates and distribution of strikes (including but not limited to container ships and ferries) through collaboration with marine mammal viewing vessels, regulatory agencies, coast guard or military bodies, marine mammal scientists, and other sources of information such as, observers on board.

2.10.2 Collate information on vessel activity (vessel types, routes speed and volumes) and marine mammal distribution. Analyze that information to identify high-risk areas for vessel strike, through the convening of a Regional Workshop with identification of priorities for implementation.

2.10.3 Develop a formal Memorandum of Cooperation or Agreement with the IWC on information exchange between the two Conventions.

2.10.4 Develop an outreach programme to educate stakeholders and the boating public on the risk of injury and death to marine mammals by ship strikes.

2.10.5 Investigate and implement ways to mitigate impacts of ship collision with marine mammals.

VESSEL STRIKES	
Major outputs expected	**Main Partners**
1) Report on marine mammals and vessel strikes (also to address acoustic disturbances and underwater noise as in 2.9) with identification of priorities for follow-up and implementation at the regional and national levels. 2) Information on vessel activity, initial identification of high-risk areas and assessment of protection measures required to manage effects of vessel traffic on marine mammals in the WCR.	CEP Secretariat and SPAW/RAC in collaboration with marine mammal scientists, governments, IMO and other relevant international organizations, IWC's Scientific Committee and Conservation Committee, NGOs, industries and stakeholders: including the shipping, cruise, recreational/tourism and transportation industries.

2.11 CLIMATE CHANGE

43. Climate change is a complex, analytically challenging issue. Although the potential effects on marine mammals are speculative at this stage, the topic requires immediate attention and concern. It is difficult to establish direct links between climate change and the health of individual marine mammals (or populations), or to demonstrate indirect links between climate change and such things as the availability of prey resources.

44. The effects of climate change on health and body condition may be so subtle and indirect that the cause-and-effect link to climate is completely obscured. For example, increased numbers and intensity of hurricanes is likely to increase the perturbation of sediments and thus the bioavailability of contaminants to organisms, including marine mammals. Similarly, changes in wind patterns and precipitation may alter contaminant pathways and change the sizes and locations of deposition. If marine mammals suffer ill effects from contaminant exposure, climate change may be among the root causes.

45. More directly, in Florida there is evidence for diminished adult survival rates of manatees in areas hit by hurricanes and other major storms. If the prevalence and intensity of storms are related to climate change as many authorities have speculated, then climate change could have a negative effect on survival of manatees and perhaps other marine mammals.

Key Objectives

Develop baselines. To obtain baseline data from selected index areas representative of pelagic and coastal ecosystems. Such data will be needed to analyze and interpret the causes of changes in numbers, distribution, health and demography of marine mammals.

Improve understanding. To conduct rigorous scientific analyses and convey results to the public. It is essential to improve understanding of the links between climate change and marine mammal health, survival, habitat, etc., always with appropriate recognition of uncertainty and the importance of exercising precautionary judgment.

Impact minimization. To stimulate on-going and initiate new actions at the regional, national and/or local level.

PRIORITY ACTIONS

2.11.1 Participate in and contribute to relevant fora on climate change.

2.11.2 Disseminate information (appropriately qualified with regard to uncertainty) on the effects of climate change (both potential and proven) on marine mammal health, survival and habitat.

2.11.3 Identify and initiate studies in index areas to obtain baseline and longitudinal environmental (biotic and abiotic) data. Changes through time can then be tested for potential correlation with marine mammal health, survival rates, habitat conditions, etc.

CLIMATE CHANGE	
Major outputs ex[ected	**Main Partners**
1) Increased awareness and understanding of the links between climate change and marine mammal health, survival, habitat, etc. (including the implications for prey availability).	CEP Secretariat in collaboration with SPAW/RAC, Governments, relevant regional and international organizations such as IWC Scientific Committee and Conventions.

2.12 GENERAL TIMETABLE FOR IMPLEMENTATION

The following proposed table represents a general time scale for priority issues with the goal of effecting essential change, rather than simply to provide fora for discussion of necessary change. Although there is no single set of priorities that addresses the varying needs and threats faced by particular countries and sub-regions of the WCR, four issues have emerged from discussions of the electronic working group for consideration and discussion at the STAC that address needs, threats and/or economic development:

- marine mammal status (i.e., numbers, documented mortality, demography, health and fitness, identification and mitigation of threats) in index areas
- development of one or more stranding networks
- development of sustainable marine mammal watching tourism and
- habitat threats, both natural (hurricanes, red tides) and anthropogenic(e.g., trawling, dredge and fill, general coastal development)**.**

Notes: Q stands for quarters**; F** for French**; S** for Spanish

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
2.1 FISHERIES INTERACTIONS																
2.1.1 Improve information on takes of marine mammals in fisheries. This should include onboard observer programmes and should take advantage of and work in cooperation with existing initiatives. Technical collaboration with academic non-governmental and international organizations (e.g., FAO, the Global By-Catch Assessment Project by Duke University and Blue Ocean Institute, IWC) will be required to gather relevant data. Disseminate results in technical and scientific fora.																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
Distribute reporting form (same used for Barbados workshop) to include direct and indirect takes and current updated information.																
Data collation. (**TBD)**																
Data entry in RAC database and summary report for SPAW/STAC. (**TBD)**																
E-group to collect information on established observer programmes and feasibility of programmes in areas where they are lacking. (**TBD)**																
Egroup report and recommendations to SPAW/STAC. (**TBD)**																
2.1.2 Community interviews to evaluate use of marine mammals the region, and evaluate impact. Analyses of stomach contents or the stable isotopes of stomach (**TBD)**																
2.1.3 SPAW/RAC and CEP develop stronger working relationships with WCR, fisheries authorities and stakeholders.																
2.1.4 Evaluate and present non-lethal use of marine mammals to encourage alternative economies for those communities which intentionally or unintentionally, directly or																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
2.2 HABITAT DEGRADATION																
indirectly, exert pressure on marine mammals. (**TBD**)																
2.2.1 Thorough and rigorous description of interaction areas where the potential exists for human activities to affect marine mammal habitats in the WCR, including indirect and down-stream effects.																
Establish e-group to develop index areas for the assessment of intereaction areas.																
Secretariat distributes questionnaire.																
Collate data																
Report to SPAW/STAC on results and recommendations.																
2.2.2 Develop and apply Geographic Information Systems to improve understanding of marine mammal habitat issues. (**TBD**)																
2.2.3 Parties to include marine mammal habitat requirements in the national Integrated Coastal Zone Management (ICZM) framework.																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
2.3 POLLUTION AND HEALTH																
2.3.1 Review information on contamination available to identify key locations where contaminants are found, including biotoxins and other factors which could affect marine mammal health and the degree of overlap among these areas and the occurance of criticial marine mammal habitats (as per 2.2.1).																
Parties and Secretariat agree on steering committee to organize and raise funds for first workshop. SC to be chaired by Dr John Reynolds.																
2.3.2 Convene regional pollution workshop to compare information from different countries.																
2.3.3 Implement studies in key WCR sites, to assess and monitor environmental (including prey) and marine mammal contaminant levels as well as clinical diagnostic markers of exposure or effects, and cooperation through a second Regional Pollution workshop. Studies should involve tissue from stranded marine mammals and where appropriate, non-lethal biopsies of wild animals. (**TBD**)																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
Convene second regional workshop. (**TBD)**																
2.3.4 Watchdog, monitoring, rescue and rehabilitation network, including veterinarians and biologists, for emergencies concerning marine mammals affected by contamination (e.g. oilspills). (**TBD)**																
2.3.5 Strengthening watchdog capacity with a view to reducing contamination in marine ecosystems. (**TBD**)																
2.4 PROTECTED AREAS AND OTHER MANAGEMENT REGIMES FOR RECOVERY																
2.4.1 Agree among Contracting Parties to design and declare marine protected areas and other management regimes, that maintain ecological connections (e.g. sister sanctuaries that promote the protection of transboundary assets) with user and stakeholder participation. (**TBD**)																
Through egroup make recommendations for research, education and capacity building for existing and future MPAs and sister sanctuaries.																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
Report recommendations and steps for future work to SPAW/STAC. (**TBD**)																
2.4.2 Review existing MPA management or implementation plans, assess their effectiveness, identify deficiencies and strengths and make recommendations to increase their value to marine mammal conservation. Collaboration with STAC working group on protected areas (covering other activities of common concern, such as potential reintroducing of the manatee), through egroup. Recommendations and steps for future work to SPAW/STAC (**TBD**).																
2.4.3 Investigate potential use of population enhancement measures, notably assessing the feasibility of re-introducing the manatee to the islands of the Lesser Antilles where it once existed. (**TBD**)																
2.5 RESEARCH																
2.5.1 Compile knowledge of marine mammals in the region (e.g. biology, genetic, ecology, abundance, distribution, seasonal movements,																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
population dynamics and habitat among others), especially in poorly studied areas, and make available to stakeholders.																
2.5.2 Identify gaps in scientific knowledge and make recommendations for research and monitoring to fill them. It is important to collect base-line population data and catch statistics (both deliberate and incidental), through marine mammal group of scientists and experts (**TBD**).																
Recommendations to SPAW/STAC (**TBD)**																
2.5.3 Experts to serve as peer reviewers of existing methodologies for monitoring/research priorities and to recommend standard methods.(**TBD**)																
2.5.4 Secretariat to create marine mammal group from the Contracting Parties, or experts working in the region and convene this core group to update information.																
2.5.5 Genetic research on captive marine mammals (for potential future development																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
of captive breeding programmes). **(TBD)**																
2.6 MARINE MAMMAL WATCHING IN THE WILD																
2.6.1 Convene a regional trilingual workshop on Best Practices for Marine Mammal Watching in the Wild and associated activities.																
2.6.2 Improve opportunities for local communities to benefit economically from marine mammal-based tourism. (**TBD)**																
2.6.3. Encourage tourism operators to develop partnerships with scientists and scientific organizations for data collection. (**TBD**)																
Compilation of marine mammal outreach materials available to the WCR (**TBD)**																
Report recommendations and next steps to SPAW/STAC (**TBD)**																
2.6.4 Parties to contribute to regional assessment of marine mammal watching activities (to be initiated at the workshop).																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
2.6.5 Based on scientific investigation adopt as appropriate, mechanisms to manage marine mammal tourism. (**TBD**)																
2.7 MARINE MAMMAL STRANDINGS																
2.7.1Compile database of veterinarians, researchers, biologists and marine policy experts, in the WCR to ensure that information is exchanged.																
2.7.2 Build capacity to address strandings through three Regional Stranding Response Training Workshops, modeled after the ECMM Stranding Response Training Workshop held in Trinidad (15-18 Nov. 2005) in English. (second workshop will be for French speakers).								F								
Parties agree on steering committee to organize and raise funds for stranding workshops. SC to be chaired by Dr Nathalie Ward.																
2.7.3 Develop a laminated guide of marine mammals of the WCR which will serve as a tool for front-line responders and future stranding training workshops.																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
2.7.4 With support from the CEP Secretariat and through identified financial mechanisms, support the creation and/or strengthening of capacities and infrastructure.																
2.7.5 Establish 'injury' networks in each WCR country which has a reporting mechanism to respond to marine mammal injury. This information should be made available to all other countries. (**TBD**)																
2.7.6 Create appropriate archives of samples for diverse studies such as pathology, contaminants, paracytology and genetics. (**TBD**)																
2.7.7 Build capacity to include standardized protocols, training in methods of sample collection, archiving of samples and establishment of on-line database for findings. (**TBD**)																
2.8 MARINE MAMMALS IN CAPTIVITY																
2.8.1 Encourage Parties to act in accordance with the SPAW Protocol in relation to captive marine mammals through the development of a process for evaluating and seeking exemptions. (**TBD**)																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
2.8.2 Improve existing facilities through the development of national/regional standards for captive marine mammal health and welfare (also addresses 2.8.4 and 2.8.5). (**TBD**)																
2.8.3 Regionally acceptable standards to be developed in the case of exemptions for capture, capture procedures, handling, maintenance and display, etc. (**TBD**)																
2.8.4 Annual status reports of identified marine mammals in captivity in the WCR, including inventory on births, deaths, illness, genetics and injuries incurred through participation in interaction programmes.																
2.8.5 Guidelines for the language and process of the SPAW Protocol Article 11 exemptions provision.																
2.8.6 Research on distribution, population structure, abundance and trends of marine mammal species targeted for live-capture to ensure compliance with the Protocol's provisions for environmental impact assessments and exemptions. (**TBD**)																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
Report of egroup. (**TBD)**																
2.9 ACOUSTIC DISTURBANCE /UNDERWATER NOISE																
2.9.1 Guidelines to address the problem of underwater noise and its effects on marine mammals and their prey. (**TBD)**																
2.9.2 Encourage Parties to support applied research to improve understanding of the effects of noise on marine mammals. (**TBD**)																
2.9.3 Develop education programmes to increase public awareness about ocean noise and its impacts on marine mammals**.** (**TBD)**																
2.10 VESSEL STRIKES																
2.10.1 Solicit reports of vessel strikes to determine rates and distribution of strikes. (**TBD**)																
2.10.2 Collate information on vessel activity (vessel types, routes, speed and volumes) and marine mammal distribution and analyse information. (**TBD**)																
Regional Workshop for identification of priorities. (**TBD**)																

Issue/priority action	**2008 Q1**	**2008 Q2**	**2008 Q3**	**2008 Q4**	**2009 Q1**	**2009 Q2**	**2009 Q3**	**2009 Q4**	**2010 Q1**	**2010 Q2**	**2010 Q3**	**2010 Q4**	**2011 Q1**	**2011 Q2**	**2011 Q3**	**2011 Q4**
2.10.3 Develop Memorandum of Cooperation or Agreement with the IWC on information exchange.																
2.10.4 Develop outreach programme to educate stakeholders and the boating public. (**TBD**)																
2.10.5 Investigate and implement measures to mitigate impacts of ship collision with marine mammals. (**TBD**)																
2.11 CLIMATE CHANGE																
2.11.1 Participate in and contribute to relevant fora on climate change. (**TBD)**																
2.11.2 Disseminate information on the effects of climate change (both potential and proven) on marine mammal health, survival and habitat. (**TBD**)																
2.11.3. Identify and initiate studies in index areas to obtain baseline and longitudinal environmental (biotic and abiotic) data. (**TBD)**																