



UNEP/CMS OFFICE – ABU DHABI

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Secretariat to the Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range

REPORT ON

First Technical Meeting for the Conservation of the Dugong and its Habitat in the South West Indian Ocean

ANTANANARIVO, MADAGASCAR
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1. Introduction

Background

The First Technical Meeting for the Conservation of the Dugong and its Habitat in the South West Indian Ocean (SWIO) was held between 4th and 6th August 2010 at the Colbert Hotel, Antananarivo, Madagascar. It was supported financially by the CMS Abu Dhabi office as part of its function as the Secretariat to the *UNEP/CMS Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range* (Dugong MoU). The meeting was organized and facilitated by the non-governmental organization, Community Centred Conservation (C3) which has been actively involved in dugong research and conservation activities within the SWIO since 2006.

The Dugong MoU seeks to conserve and protect dugong throughout its global range across over 40 range states. In the lead-up to the First Official Signatory State Meeting of the Dugong MoU (held in Abu Dhabi 4-6 October 2010), the UNEP/CMS Office funded a number of sub-regional projects which included technical meetings/workshops to support dugong conservation efforts in range states and the implementation of the Dugong MoU. This meeting was the first of its kind in the SWIO convening relevant governmental and non-governmental actors from eight out of the nine range states in this sub-region.

Meeting Objectives

The main barrier to dugong conservation in East Africa and the western Indian Ocean islands continues to be the lack of technical and financial capacity to implement suitable actions. The Dugong MoU's Conservation and Management Plan (CMP) for dugongs in the western Indian Ocean provides the framework to progress conservation and management actions in this region and this meeting was a first step towards implementing the objectives of the CMP in the SWIO region under the auspices of the UNEP/CMS Secretariat for the Dugong MoU, and to also encourage non-signatory dugong range states to sign the Dugong MoU.

The specific objectives were to:

1. Provide a vital opportunity for the countries to present updates on the status of their dugong populations and associated habitat
2. Brief relevant actors in the standardized research protocol developed by UNEP/CMS for gathering data on dugongs
3. Seek grounds for future collaboration in the fields of both research and management.

Meeting Outcomes

The meeting revealed much new information about the status, distribution and threats to dugongs and their habitats, providing an update to the most recent regional review published by WWF and containing data available as of 2002 (WWF EAME, 2004).

This was the first time representatives from Somalia had attended a dugong technical meeting and the first time the Mozambican government was present at a UNEP/CMS Dugong meeting, the latter indicating their interest in signing the MoU at the upcoming First Signatory State Meeting in Abu Dhabi.

A summary of priority areas for research was produced and possibilities for trans-boundary collaboration identified by participants. The UNEP/CMS standardized questionnaire was distributed and explained to participants and the UNEP/CMS Project Manual was introduced as a useful reference when implementing surveys. Further discussions were held regarding the mapping of dugong habitat and means to economize funds when implementing low-cost rapid assessments. Means of processing and applying project results to management decision-making were also discussed.

National reporting forms were filled out by participants and identification of national and regional priorities were summarized following group break-out sessions. Participants were informed of funding available for piloting the questionnaires in priority areas and requested to draft proposals for consideration by the UNEP/CMS and C3 at the First Official Signatory State meeting to the Dugong MoU. It was anticipated that funds would be released and projects initiated after the next wet season, from April 2011 onwards.

Participants were provided with a full set of presentations and summarized discussions as well as photos and audio recordings from the meeting.

Opening remarks

The Madagascan Minister for the Environment, Water and Forests, General de Brigade Herilanto Raveloharison, opened the meeting by thanking all the participants and talking about the importance of the dugong in Madagascar within the context of biodiversity conservation.

Dr. Donna Kwan (DK), Programme Officer for UNEP/CMS Dugong Secretariat, then provided an overview of the Dugong MoU and the Conservation and Management Plan to the participants. Meeting participants introduced themselves as this was the first time for many of them to meet one another and the meeting objectives were presented.

2. Country Status updates

The whole of Day 1 was allocated to country status updates to set the scene for the ensuing discussions. Eight out of the nine SWIO range states invited were represented by governmental officials, mostly from Fisheries and Wildlife departments, as well as two non-governmental organizations actively involved in dugong research. Countries represented were Comoros, Kenya, Madagascar, Mayotte, Mozambique, Seychelles, Somalia, and Tanzania, with the exception of Sudan.

One technical representative from each country provided a 20 minute presentation on the status, distribution and threats to dugongs and their habitats in addition to current research and management activities. There were questions and discussion following each presentation.

Common themes from the country status updates included the fact that remaining dugong populations along the east African coast and particularly around the western Indian Ocean islands were recognized as small, in decline and under threat from extinction. Accidental capture in gill nets remains the major threat to the survival of these populations, especially outside of protected areas as does poaching and coastal development. In particular it was noted that all countries identified greater public awareness about the species and threats to its continued existence as a key priority.

This was the first time Somalia had been represented at a UNEP/CMS Dugong meeting and thus new information provided by the government fisheries representatives was particularly interesting and appreciated.

At the end of the day DK explained the format for national reporting and participants started to fill out these forms so that information could be analyzed and results fed back to the participants before the end of the meeting.

3. Research methods

3.1 Low cost methods

Day 2 focused on dugong research methods appropriate in developing countries with small populations. Emphasis was placed on the importance of standardizing data collection methods to facilitate regional and international coordination of dugong research and conservation efforts. The day started with a presentation by Patricia Davis (PD) of C3 on how useful low-cost, low-tech methods can be in eliciting information about dugongs for management purposes. Ways in which projects could economize and therefore implement rapid assessments over large areas with limited financial and technical resources were summarized. C3 had conducted surveys in both Comoros and Madagascar using funding amounting to 25,000USD (with some funding provided through UNEP/CMS) and managed to gather extensive quality data on status, distribution, threats, cultural importance and perceived changes of dugong populations in addition to mapping extensive areas of seagrass. These examples were used to demonstrate how organizations in other countries could capitalize on small funds to gain specific and relevant data for conservation and management purposes.

3.2 CMS Questionnaire

Technical consultant to UNEP/CMS, Dr. Nicholas Pilcher (NP), then introduced the standardized questionnaire developed by 10 experts in March 2010 at a UNEP/CMS Dugong technical meeting in Singapore. He went through each question and explained its relevance and the data it could elicit as well as the way in which the study should be introduced to fishers, ethical considerations, data validity and the need for appropriate training of surveyors.

Project GloBAL developed by Duke University in 2007 (<http://bycatch.env.duke.edu/>) with the intention of assessing bycatch of large marine fauna in artisanal fisheries was explained since it formed the basis of some parts of the UNEP/CMS Dugong questionnaire relating to gear type and fishing methods. The GloBAL study had already been conducted by NP in Malaysia and

within the SWIO region by non-governmental organizations in Comoros (C3) and Tanzania (Sea Sense), yielding the first information of its kind.

A break-out session followed with participants being paired up and one acting as the interviewer, the other as a respondent so that they could personally test out the questionnaire and become familiar with its layout and content as well as raise any concerns. A few suggested amendments to the formatting of questions and options for response were noted by NP.

3.3 Habitat mapping

PD (C3) gave a presentation about broad and fine-scale mapping of seagrasses, demonstrating examples of completed studies and maps from Comoros and Madagascar. SeagrassWatch is the recommended internationally-standardized methodology which enables linkages to global seagrass databases and comparability of data across countries as well as the means of monitoring by local communities. Methods manuals are available online from <http://www.seagrasswatch.org/manuals.html>. C3 is also able to provide interested parties with two training MS PowerPoint© presentations for mapping seagrasses, both fine-scale (SeagrassWatch) and broad-scale (using satellite imagery). Several participants were keen to gain these resources and they could be made available through the CMS Secretariat if required.

3.4 Interview methods & survey design

NP discussed the methods for interviewing in different contexts, such as individuals vs. groups, covering information from the relevant chapters of the Project Manual. He also discussed the importance of the manner and approach of surveyors, data integrity, stratified sampling and the need to cover a representative geographical area. He emphasized that it is important to still conduct surveys in areas you may not believe to be important for dugongs since having data that shows dugongs do not exist in certain areas is just as important as collecting data in areas where they are already known to occur. He mentioned that consideration also needs to be given to the fact that these animals do move and habitats and threats can change over time influencing the relative distribution of the population.

3.5 Using project results

NP presented the means for using data from the surveys, in particular the importance of maps accurately depicting locations of dugong sightings, fishing grounds and any temporal data. Examples of how researchers could use the questionnaire data to overlay threats with dugong habitat were provided.

4. Future regional efforts

4.1 Resources available through UNEP/CMS

The last day was spent consolidating information gained through the course of the meeting, in particular from the completion of the national reporting forms and discussing tangible

collaborative opportunities as well as coordination of dugong research initiatives at the national level.

Technical resources available through the UNEP/CMS were discussed such as information and reports on the website, the questionnaire, Project manual and data upload file (to put data into the MS Excel standard database). Go to <http://www.cms.int/species/dugong/index.htm> > Notice Board > Standardised Dugong Catch/By-catch Questionnaire, click on file.

NP also described the means of uploading data into the standardized data entry sheet (Excel format).

4.2 Complementary national and regional resources/programmes

Participants were asked to describe ongoing national and regional marine and coastal research programmes which their countries were currently engaged in so that potential synergies could be sought by the CMS Secretariat for research and protection efforts concerning dugongs and/or seagrass habitat. Only those that may be of specific interest in terms of potential coordination with dugong-specific research and conservation are listed below:

REGIONAL PROGRAMMES

Many participants listed regional programmes they are currently involved including those listed below:

WIOLAB (Addressing land-based activities in the Western Indian Ocean) – addresses some of the major environmental problems and issues related to the degradation of the marine and coastal environment resulting from land-based activities (LBA) in the Western Indian Ocean (WIO) region. <http://www.wiolab.org/>

SWIOFP (South West Indian Ocean Fisheries Project) – has been running for over years, mostly database work to consolidate information from across the region. It includes a marine turtle and marine mammal section with funds for seagrass mapping and/or dugong research. A training module for marine mammals was held in Mauritius at the end of August 2010. The regional coordinator is based in Mauritius and DK noted the UNEP/CMS would get in touch with them. Jerome Bourgea and Jeremy Kiszka may be involved in the marine mammal component. <http://www.swiofp.net/>

ASCLME (Agulhas and Somali Current Large Marine Ecosystems Project) – is a programme based in South Africa (due to expertise in Oceanography) but covering the region. A professor at Cape Town University is responsible for the programme which is in its 2nd year. <http://www.asclme.org/>

All of above have institutional capacity building and training. Each country has appointed a national coordinator for each programme and all are of 5 year duration. A problem mentioned with these big regional programmes is the time taken to get them started and therefore the limited information actually applied to management.

La Rochelle University – extensive aerial surveys over the western Indian Ocean islands. DK has received information from Jeremy Kiszka regarding the sighting of 6 dugongs off north west Madagascar. Contact Vincent Ridoux. vridoux@univ-lr.fr

MPAN-IOC (Marine Protected Area Network project of the Indian Ocean Commission countries) - Mapping sensitive areas in WIO for prioritization of management and strengthening MPA management. <http://www.amp-coi.org/>

IOSEA WIO MTTF (The Indian Ocean South East Asia Turtle Memorandum of Understanding Western Indian Ocean Marine Turtle Taskforce) is another MoU coordinated through the UNEP/CMS out of an office in Bangkok. Under this MoU various sub-regional taskforces have been established with the purpose of coordinating sea turtle research and conservation efforts. Participants mentioned this regional taskforce is yet to fully address regional issues and promote collaboration between countries. [http://www.ioseaturtles.org/content.php?page=WIO-MTTF Terms of Reference](http://www.ioseaturtles.org/content.php?page=WIO-MTTF_Terms_of_Reference)

NATIONAL PROGRAMMES

Comoros

- Ministry of Environment, Ministry of Fisheries, Moheli Marine Park and various NGOs all coordinated at the Ministry of Environment level to ensure coordination.
- Marine protection component of a large national marine and terrestrial biodiversity programme (such as prevention of sand extraction), funded by FAO and FFEM.
- Dugong research started in 2006 on all islands by C3. National Conservation Action Plan in planning this year with the Ministry of Environment.

Kenya

- Ongoing MPA programme.
- USAID funding for national sea turtle conservation strategy.
- Collaborating on border with Somalia with WWF on seagrasses, dugongs and sea turtles (habitat mapping).
- In south near border with Tanzania, have a dolphin ecotourism programme which reported sighting dugongs recently.
- Kenya Coastal Development Project is to set up 2 MPAs north of Malindi and to strengthen management of parks where dugongs exist.
- There is a Recomap-funded project to support development of management plans for MPAs (<http://www.recomap-io.org/>).
- Kenya has adopted the means of national taskforces to coordinate efforts for marine conservation (e.g. sea turtles and marine mammals) and avoid duplication of effort. These taskforces are not only for coordination of activities but also mobilization of resources in order to implement action plans. (e.g. WWF has funded some national workshops as have WCS). They get funding for the first few meetings and then after that the stakeholders commit to further partial funding.
- Discussions underway about transboundary collaboration across the Kenyan-Tanzanian border (small islands).

Madagascar

- National coral reef monitoring programme (COREMO) includes seagrasses.
- There are wetland/mangrove projects run by CNRE, CNRO and IHSM.
- Various NGOs involved in marine conservation work throughout the country.
- Dugong research and habitat mapping started in June 2009 by C3 in northern Madagascar and results being analysed now.

Mayotte

- Started the work on the National Action plan in November.
- France is responsible for developing action plans for New Caledonia and Mayotte through 2011.
- A big project currently underway is the creation of a large MPA in Mayotte in 2010 covering 70,000km² of the lagoon.

Mozambique

- Ministry of Coordination of Environmental Affairs in charge of various areas which are under protection/management
- National marine programme has awareness activities but these have focused on marine protected areas.
- Bazaruto Archipelago National Park, a key dugong area was previously supported by WWF but since last year has been supported by an oil exploration company which has funded Bazaruto Archipelago Support Programme specifically to increase capacity for enforcement of park regulations.
- Ministry of Fisheries is coordinating improvement of social infrastructure for artisanal fishers.

Seychelles

- Seychelles Island Foundation (SIF) is in charge of Aldabra World Heritage Area where dugongs occur.
- Other NGOs work on whale sharks and sea turtles.
- Seychelles is involved in several regional programmes which cover marine mammals.

Tanzania

- Tanzania Coastal Management Partnership (TCMP: goal is to improve the well being of coastal residents and their environment through the implementation and strengthening of the Tanzania National Coastal Strategy). The USAID funded coastal biodiversity and livelihoods project (PWANI) is managed via TCMP
- Marine and Coastal Environment Management Project (MACEMP: funded by World bank and seeks to improve the regulatory and institutional framework for management of marine resources)
- Surface and Marine Transport Regulatory Authority (SUMATRA: deals with shipping, marine pollution etc. In process of developing an emergency contingency plan for oil spills and mapping areas of high biodiversity)

- SeaSense conducting dugong and sea turtle research and conservation.

4.3 Financial resources and SSFA

Funding of 5,000-10,000USD per project is available to support SWIO Sub-Region Range States (i.e. project partner/s) to conduct surveys using the UNEP/CMS Standardised Catch/Bycatch Survey Questionnaire. It is intended that this funding be used to cover material and logistical costs to conduct surveys in one or more priority areas identified in SWIO range states. Proposals need to be drawn up and ideally brought to the SS1 meeting in October. Projects would start after February 2011. Each project partner is strongly encouraged to:

- Seek additional funding and other resources to extend the survey in all the identified priority areas as well as any additional areas of potential interest.
- Pool funding and resources to work in collaboration with other project partners

4.4 Priority locations and capacity to implement the CMS questionnaire surveys

Feedback from participants helped to identify key areas and capacity to implement the CMS questionnaires, see Appendix 2 for summary table.

4.5 Key priority issues and actions

Results from national reporting were analyzed and helped to identify issues which were seen as national and/or regional priorities. DK presented a summary table from national reporting forms, to be finalized at a later date, just to show how the data could be consolidated and presented.

Group work revealed the following regional priorities, highlighted actions are those mentioned by more than one of the three groups:

Regional actions required	Group A	Group B	Group C
Sub-regional coordination mechanism (e.g. taskforce/committee)			
Standardised methods			
Strengthen institutional capacity			
Habitat mapping			
Regional sensitization & awareness strategy			
Address the IUCN listing as 'vulnerable'			
Involve communities in activities			
Coordination with ongoing marine programmes			
Research into movements especially transboundary			
Address threats across national jurisdictions			
Dugong sanctuaries			
Legislation at national and regional level			
Regional conservation vision			
Regional status report to lever donor interest			
Training in habitat mapping			

Identify institutions which can process data at regional level			
Develop our sub-regional action plan			
Guidance for Focal Points			
Lever funding from private sector (fisheries, tourism, development & petroleum)			
Share existing expertise across countries			

4.6 Update on SS1 meeting

DK updated everyone on the SS1 and the other sub-regional meetings that would precede this (20-21 September 2010). The North West Indian Ocean and South West Indian Ocean groups will meet together in early October in Abu Dhabi so that they may align any messages they want to propose at SS1. Also she reminded participants that they need to decide on their preferences regarding definition of geographic sub-regions.

4.7 Closure of meeting

Thanks were given by Madagascan CMS Dugong Focal Point, Claudine Ramiarison to all participants as well as the organizers. Thanks were also given by the organizers to all participants and the meeting was officially closed. A dinner for all delegates took place that evening in Antananarivo.

Appendices

APPENDIX 1

Agenda: Technical Meeting for the Conservation of the Dugong and its Habitat in the SWIO

Day 1 (Wednesday 4 August 2010) STATUS UPDATE		
08.30	<ul style="list-style-type: none"> Welcome 	UNEP/CMS
	<ul style="list-style-type: none"> Opening Speech 	Minister
	<ul style="list-style-type: none"> Overview of the UNEP/CMS Dugong MoU and Conservation and Management Plan 	UNEP/CMS
09:15	Morning Tea	
09:45	<ul style="list-style-type: none"> Meeting Objectives and Agenda 	UNEP/CMS Patricia Davis
	<ul style="list-style-type: none"> Introduction of Participants 	All
10:30	<ul style="list-style-type: none"> Country/Organization Reports on Status of Dugong and National Dugong Work 	Comoros, Mayotte, Kenya, Mozambique
12:30	Lunch	
13:30	<ul style="list-style-type: none"> Country/Organization Reports on Status of Dugong and National Dugong Work (continued) 	Madagascar, Seychelles, Somalia, Tanzania
15:00	Afternoon Tea	
15:30-17:00	<ul style="list-style-type: none"> Introduction to national reporting format and completion of forms 	UNEP/CMS Participants

Day 2 (Thursday 5 August 2010) RESEARCH METHODS		
08:30	<ul style="list-style-type: none"> Case study : How low cost methods can reveal conservation priorities for dugongs 	Patricia Davis
09:00	<ul style="list-style-type: none"> Introduction to Standard Dugong Methodology (methodology developed at the Singapore Meeting (3-4 March 2010) to identify key dugong habitat, population numbers and trends, and impacts including direct harvest, habitat degradation and fisheries by-catch) 	Nicolas Pilcher
10.00	Morning Tea	
10:30	<ul style="list-style-type: none"> Dugong Questionnaire continued 	Nicolas Pilcher
11:00	<ul style="list-style-type: none"> Practicing questionnaire and identifying adaptations for SWIO case 	Break-out session
12:00	Lunch	
13:00	<ul style="list-style-type: none"> Seagrass mapping : presentation of methods for broad and fine-scale mapping 	Patricia Davis

13:30	<ul style="list-style-type: none"> • Interview methods and survey design 	Nick Pilcher
15:00	Afternoon Tea	
15:30 – 17:00	<ul style="list-style-type: none"> • Using project results 	Nick Pilcher

Day 3 (Friday 6 August 2010) FUTURE REGIONAL EFFORTS		
08:30	<ul style="list-style-type: none"> • Technical resources required/available to support projects (online references, data collation through CMS, creation of a SWIO taskforce) 	Nick Pilcher CMS
	<ul style="list-style-type: none"> • Complementary national & regional programmes 	Participants
	<ul style="list-style-type: none"> • Financial resources (funding opportunities, combining with fisheries & turtle research, CMS funds, coordinated proposals) 	Donna Kwan
10:00	Morning Tea	
10:30	<ul style="list-style-type: none"> • Key priority issues and actions for dugong conservation work in the SWIO region Consolidation & feedback from national reporting forms	Donna Kwan
	<ul style="list-style-type: none"> • Priorities for In-country dugong surveys 	Nick Pilcher
12:00	Lunch	
13:00	<ul style="list-style-type: none"> • Regional priorities for dugong research & conservation 	Participants in small groups
14:00	<ul style="list-style-type: none"> • Feedback from groups on regional priorities 	Group spokesperson
15:00	<ul style="list-style-type: none"> • Key messages for WIO meeting (3 October) and Signatory State Meeting (4-6 October) 	Donna Kwan
15:30	Afternoon Tea	
16:00	Closing Remarks	Claudine Ramiarison Patricia Davis
16:30	Meeting Close	19:00 Chez Sucetts

APPENDIX 2 : NATIONAL PRIORITY AREAS & RESOURCES

Country	Priority Areas	Resources Available	Resources needed	Can this be a regional initiative?	Other
Comoros	Not important to conduct more interviews as completed by C3 from 2006-2008. Priority sites are south Moheli, and north Grand Comore (Mitsimouli). We need put our resources into the action plan and protect these areas.	They have some resources to make this action plan but will need funding for implementation of actions later (2011-)	Financial assistance for implementing management	Work together with Mayotte, Mozambique and Tanzania.	Already been working with Mayotte and aligning action plans throughout 2010-2011
Kenya	The Lamu-Loma delta area (nr. Somalia), Ungurana Bay to Watamu area (Extensive seagrass area), Diami to Vanga area (Nr. Tanzania border (Dugong sighting in April))	They have man power available, KWS has aircraft but they are in high demand and expensive. Costs for operation needed, also has boats. KWS would need to use boats/aircraft to get to the survey areas as access is difficult. Roads are very poor, especially in rainy season. Just running costs needed then they can do survey in 2-3 months	KWS have enough man power, just need the operational costs covered	Yes possible to work with Somalia. They will discuss with the delegation that is present at this meeting. Collaboration with Tanzania is already underway for terrestrial work	
Madagascar	Priority areas are complex of west coast (Bays of Mahajambe, Bombetoke and Baly). In the east, Bay of Antongil and in south-west the Bay of Saint Augustin	Need to consolidate information from WCS, WWF and MNP which currently manage these areas. Expertise already present. C3 has completed extensive dugong and habitat surveys in north (2009-2010). After the first steering committee meeting can get info on finances. CNRO can help but unsure to what extent.	Finance required for surveys	Mozambique because of the closeness. This will be the first time any sort of collaboration has been initiated with them.	
Mayotte	Not necessary to prioritize as it is such a small area and it is well protected	Questionnaire not necessary as the knowledge is already collected. First priority is avoiding bycatch, in the future will be policing the lagoon more. Need better monitoring of seagrass.		Priority to work with Comoros	

Mozambique	Inhembre Province, Inhembre Govero, Anjouche-Pebane, Moumbo de Praiz-Pelma	Some resources in the Besorouti region, funding already available. But not for the other two regions. They have people to do the work - same teams that have already been used for similar surveys	Technical assistance at the data analysis stage will possibly be required. Will contact NP then.	With Tanzania	Will do a small trial of the questionnaire at the end of August 2010
Seychelles	not required				
Somalia	Kismayo (nr. Kenya border, Gesira beach (nr Mogadishu), Bajuni island	Manpower not a problem, but funding is very difficult.	Funding for surveys	Would like to work with Kenya as they share the same dugong population	
Tanzania	Rufiji District, Kilwa District, Mafia District	Students from university of Dar es salaam (through Sea Sense). Potential that Tanzania Research Institute could collaborate. Manpower is not a problem. Funding available as WWF have contracted out dugong, turtle and cetacean work to Sea Sense. SS may have money left over from year one to do the CMS survey, but it may have to overlap into year 2. Earliest start at January 2011		Kenya and northern Mozambique	

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