

First South Asia Sub-regional Workshop of UNEP/CMS Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range in the South Asia

6-7, June 2011
Tuticorin, India

EXECUTIVE SUMMARY



June, 2011



भारतीय वन्यजीव संस्थान
Wildlife Institute of India



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WORKSHOP RECOMMENDATIONS

In a major step towards enhanced regional cooperation for the conservation of the Dugong (Sea Cow), India hosted the **First South Asia Sub-Regional Workshop on the Conservation and Management of Dugongs** on 6th and 7th June 2011, in Tuticorin, Tamil Nadu. The Ministry of Environment and Forests, UNEP/CMS Secretariat and the Wildlife Institute of India had jointly organized the workshop. The policy and conservation management experts from India, Pakistan, Sri Lanka and Bangladesh, experts from UNEP/CMS Secretariat, the Environment Agency of Abu Dhabi, State Forest Departments of Tamilnadu, Gujrat and Andman & Nicobar Islands, field officers of the Gulf of Mannar Biosphere Reserve, representatives of the State Fisheries Department, Central Marine Fisheries Research Institute, Wildlife Trust of India, Reefwatch Marine Organization, Wildlife SOS, GEER Foundation and various other stakeholders attended the workshop.

In his 'Message' for the workshop, Minister of Environment and Forests, Jairam Ramesh said *"I am happy that South Asian Range States are coming together for the conservation and management of this shared and unique marine mammal. In India, we have constituted a Task Force for the conservation of dugongs, in order to have a focused conservation approach. We are committed to addressing the conservation threats faced by the dugong in our waters, and this workshop will take regional and national agendas forward. But as we know, for the most effective kind of conservation, we need the cooperation of all States in the region. He also highlighted the involvement of local communities in the conservation of dugongs as of utmost importance for success of the initiative."*

Dr Jagdish Kishwan, Additional Director General of Forests (Wildlife) and Director, Wildlife Preservation, Ministry of Environment and Forests, Chief Guest, said the ministry was interested in focusing on the marine biodiversity with adequate measures to conserve and protect dugongs and their habitats in this part of the world. Dr Donna Kwan, Programme Officer, UNEP/CMS explained the progress made by the Dugong Range Countries in signing the MOU for Conservation and Management of Dugongs and expressed the hope that the Governments of Bangladesh, Pakistan and Sri Lanka would agree to sign the Dugong UNEP/CMS MoU as early as possible. Shri A.K. Srivastava, Inspector General of Forests (Wildlife), Ministry of Environment and Forests, said that the workshop was expected to take

the dugong conservation agenda forward not only in India but in other dugong range countries of South Asia also.

Recommendations

Participating South Asian countries and organizations including UNEP/CMS Strongly encourage the Governments of Bangladesh, Pakistan and Sri Lanka to sign the Dugong UNEP/CMS MoU early, and latest before second meeting of the Signatory States.

And decide to

develop and deliver a practical and resource-efficient strategy to collaborate in, and implement regional conservation and management initiatives for the conservation of dugongs and their habitats.

enhance communication among participating countries and organizations including UNEP/CMS so that issues, opportunities and management interventions related to the trans-boundary conservation of dugongs and their habitats can be addressed in a collaborative, effective and timely manner.

identify individually and collectively with guidance from UNEP/CMS, the financial and technological resources to support implementation of these recommendations.

जयराम रमेश
JAIRAM RAMESH



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MESSAGE

South Asia has a shared geography with common seascape and a long rich history of social and cultural ties. This region is also home to several diverse natural ecosystems, ranging from the seas and oceans to the mighty Himalayas, harbouring a rich diversity of floral and faunal species including the only existing species of herbivorous marine mammal, the dugong or the 'sea cow'. Dugong lives exclusively in the sea including the Gulf of Mannar, Palk Bay, Gulf of Kutch, and waters of Andaman and Nicobar Islands in India. It is indeed disturbing that the coastal and marine biodiversity including dugong and their habitats in the region are under severe threat due to the anthropogenic pressures. We need to join hands to strengthen regional co-operation among the South Asian countries for conservation of the rich biodiversity including the migratory dugong, as valuable national assets and also as a shared global heritage.

I may mention that the Government of India in the Ministry of Environment and Forests had signed an MoU with CMS-UNEP in April 2008 for conservation and management of Dugongs. The Ministry has also constituted a 'Task Force for Conservation of Dugongs' and included the Dugong under the 'Species Recovery Programme' in its scheme - 'Integrated Development of Wildlife Habitats' for a focused conservation approach.

I am happy to note that the Ministry of Environment and Forests together with the Wildlife Institute of India and UNEP/CMS Office - Abu Dhabi is organizing the First South Asia Sub-regional Workshop on Conservation and Management of Dugongs and their Habitats throughout their Range in the South Asia on 6th and 7th June 2011 at Tuticorin, Tamil Nadu, India. I was keen to come to Tuticorin and address this important workshop myself. However, at the last moment due to exigency of work, I reluctantly had to miss this opportunity of being with you - the participants from South Asian countries including India. Nevertheless, I hope that the objective of this workshop to support and enhance regional cooperation in preparation and implementation of a Dugong Conservation and Management Plan in the South Asia region under the auspices of the UNEP/CMS Secretariat would be fully met.

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I would like to underline here that proactive cooperation among and commitment of South Asian countries constitute the most essential step forward to institutionalize the collaborative efforts of member nations in conservation of dugong and its habitats in the region. At this occasion, when all dugong range States in the South Asian Sub-region meet for the first time in the Gulf of Mannar Biosphere Reserve, which is the largest habitat of dugong in the region, I would like to thank UNEP/CMS Abu Dhabi Office for sponsoring this workshop, and also the participating countries, viz, Pakistan, Bangladesh and Sri Lanka, apart from India for their common vision and commitment to work together to help protect the unique dugong and its habitat across seas in the region. Let me add here a word of caution that such programmes succeed only when these are owned by the local communities. I am hopeful that the current initiative will besides conserving and protecting dugong would simultaneously focus on protecting and enhancing livelihoods of the local communities of South Asia.

I congratulate the participating institutions, agencies, experts, the UNEP/CMS Abu Dhabi Office, Environment Agency – Abu Dhabi, Wildlife Division of the Ministry, Wildlife Institute of India, State Forest Departments of Tamil Nadu and Gujarat, Union Territory of Andaman and Nicobar Islands, District Administration of Tuticorin, GEER Foundation, Reef Watch Marine Conservation and other Civil Society Organizations, Marine Research Foundation, Malaysia and all others who have joined hands in promoting and strengthening regional cooperation to conserve the dugong and its fragile habitats in this region.

I convey my best wishes for a grand success of the workshop.


(Jairam Ramesh)

BACKGROUND

Dugong (*Dugong dugon*) also called as 'Sea Cow' is one of the four surviving species in the Order Sirenia and it is the only existing species of herbivorous mammal that lives exclusively in the sea including in India. Dugong are usually found in calm sheltered, nutrient-rich water, generally in bays, shallow island and reef areas which are protected against strong winds and heavy seas and which contain extensive sea grass beds and these habitats are still available in Gulf of Mannar, Palk Bay, Gulf of Kutch and Andaman and Nicobar islands in India. Dugong is considered to be rare over most of its range. Several reasons have been attributed for their population decline, some of which include, sea grass habitat loss and degradation, gill netting, disease, chemical pollutants, indigenous use and hunting etc. Dugongs are vulnerable to anthropogenic pressures as they are solely dependent on sea grasses in coastal areas which now have been seriously damaged by fishing, trawling, dredging, etc. Dugongs have also been hunted for their meat, oil, hides, bones and teeth. However, hunting has been totally banned in several countries including India. Feeding grounds of dugong i.e. seagrass beds are highly degraded due to change in the fishing technology.

In order to conserve and manage the Dugongs at global level, the 7th meeting of the Conference of Parties of the Convention on Migratory Species (CMS) had passed a resolution and urged all Dugong range states to cooperate among themselves to develop and adopt a 'Memorandum of Understanding' and an Action Plan for the Conservation and management of Dugongs throughout the species range. In this connection, in October 2007, UNEP/CMS organized an Intergovernmental Meeting in Abu Dhabi to conclude the Memorandum of Understanding on the Conservation and Management of dugongs and their habitats throughout their range. The agreement entered into force on 31 October 2007 with the signature of seven range states and later with the approval of Union Cabinet, the Government of India has also signed this Memorandum of Understanding in April 2008 to strengthen the ongoing conservation programme of dugongs and their habitats in the Indian water with the support of international community.

The first official signatory State meeting of the Memorandum of Understanding on the Conservation and Management of Dugongs (*Dugong dugon*) and their Habitats throughout their Range was held at Abu Dhabi, United Arab Emirates, 4–6 October 2010.

A ‘Task Force for Conservation of Dugong in India’ was visualized during this First Official Signatory State Meeting of UNEP/CMS Dugong MoU. Since, India being having a largest population of dugong in the South Asia Sub-region has a significant role to play in the dugong conservation at global level in general and in the south Asia sub-region in specific. Among five sub-regions identified for dugong conservation at global level by CMS, status and conservation actions for dugong in south Asia sub-region is not satisfactory and it needs to be addressed immediately to prevent further declining of dugong and its habitat in this region.

In this background the Ministry of Environment and Forests in the Government of India constituted a ‘Task Force for Conservation of Dugongs’ to look into the entire gamut of issues related to conservation of dugongs and implementation of the ‘UNEP/CMS Dugong MoU’ in India and also facilitate to act as a leading nation in the South Asia Sub-region with respect to dugong conservation. The Task Force comprised the Additional Director General of Forests (Wildlife) as Chairman with the Chief Wildlife Wardens of concerned states having dugong, Government and Non-Government Organizations and subject experts who have been working in dugong and their habitats conservation.

In its first meeting, the Task Force took a decision to organise a sub-regional workshop with UNEP/CMS Dugong MoU Office, Abu Dhabi, so that members from all countries in the sub-region could meet and take a comprehensive decision on conservation and monitoring of dugongs and their habitat in the region. In this background, the Ministry of Environment and Forests, Government of India in collaboration with the Wildlife Institute of India and UNEP/CMS Office - Abu Dhabi organized the First South Asia Sub-Regional Workshop of UNEP/CMS Dugong MOU on 6-7 June 2011 in Tuticorin, Tamil Nadu, India. The workshop was expected to bring the technical and policy participants from South Asia dugong range states (i.e. India, Bangladesh, Pakistan and Sri Lanka) together. The overall objective of this meeting was to support and enhance regional cooperation to implement the dugong CMP in the South Asia region under the auspices of the UNEP/CMS Secretariat to the Dugong MOU,

and to also encourage non-signatory dugong range states to sign the Dugong MOU. This meeting provided a vital opportunity for the countries to provide updates on the status of their dugong populations and associated habitat, as well as to seek grounds for future collaboration in the fields of both research and management. It aimed at helping to develop capacity amongst staffs from collaborating countries to conduct standardised surveys on dugongs; updating information on dugongs and artisanal fisheries; and progressing dugong conservation in the South Asia sub-region. The workshop was funded by the UNEP/CMS Office - Abu Dhabi. Detailed agenda of the workshop is in Annexure I.

PROCEEDINGS

The workshop was conducted in eight sessions. Each session was chaired by an eminent expert and he/she was supported by one co-chair, one convenor and a repertoire. Details about session's chairs, co-chairs, convenor and repertoire are provided in the Annexure I. Details of the proceedings follows;

Mr. A.K. Srivastava, Inspector General of Forests (Wildlife), Ministry of Environment and Forests, Government of India welcomed all the participants and resource persons and briefed about the background of workshop and stressed the importance of conservation of dugong and their habitats in the South Asian region for their survival as well as welfare of the human life who are also depend on the same habitat for their livelihood. He provided an overview on the workshop and highlighted the commitment of the Government of India in conservation of dugong in the region. Already 14 countries have signed the MoU designed to facilitate national and trans-boundary actions leading to conservation of dugongs and their habitats. It has nine objectives, including reducing mortality; protect, conserve and manage habitats; raise awareness; improve legal protection and enhance regional cooperation. "We have fewer than 200 dugongs, mostly in GoMB and Andaman and Nicobar waters. There are very few in Gulf of Kutch. Cooperation of neighbouring countries is necessary as the migratory range of the species is long," says A.K. Srivastava.

Message of Hon'ble Minister of State (Independent Charge) for Environment and Forests, Government of India had been read by **Ms. Prakriti Srivastava**, Deputy Inspector General of Forests (Wildlife), Government of India. In his message for the workshop,

Minister of Environment and Forests, **Mr. Jairam Ramesh** said *“I am happy that South Asian Range States are coming together for the conservation and management of this shared marine mammal. India has constituted a Task Force for the conservation of dugongs, in order to have a focused conservation approach. We are committed to addressing conservation threats faced by the dugong in our waters, and this workshop will take regional and national agendas forward. But as we know, for the most effective kind of conservation, we need the cooperation of all States in the region, as well as the involvement of local communities.”*

Mr D. V. Negi, Principal Chief Conservator of Forests/Chief Wildlife Warden, Government of Andaman and Nicobar Islands while thanking the UNEP/CMS Secretariat and other organisers for this workshop had emphasised the urgent need of initiating the conservation plan of dugong in the region especially in Andaman and Nicobar islands. He had also shared his ongoing conservation efforts in the Andaman and Nicobar islands and assured to implement the UNEP/CMS Dugong MoU in the islands.

Dr. K. Sivakumar, Scientist, Wildlife Institute of India had explained the objectives and had opened the agenda of the workshop formally. In his speech, he mentioned that the overall objective of workshop was to support and enhance regional cooperation to implement the dugong CMP in the South Asia region under the auspices of the UNEP/CMS Secretariat to the Dugong MOU, and to also encourage non-signatory dugong range states in the region to sign the Dugong MOU. He had also mentioned that the workshop would provide a vital opportunity for the countries to provide updates on the status of their dugong populations and associated habitat, as well as to seek grounds for future collaboration in the fields of both research and management. Workshop also aimed at helping to develop capacity amongst staffs from collaborating countries to conduct standardised surveys on dugongs; updating information on dugongs and artisanal fisheries; and progressing dugong conservation in the South Asia sub-region.

Dr Donna Kwan, Programme Officer, UNEP/CMS Dugong Secretariat, Abu Dhabi had provided an overview of the UNEP/CMS Dugong MoU and Conservation and Management Plan of dugong and their habitats. In her speech she narrated the origin, objective and

functioning of UNEP/CMS Dugong Office at Abu Dhabi. She had also briefly presented the various activities including ongoing activities of her office. Lastly, she urged non-signatory dugong range countries in the region to join with UNEP/CMS Dugong MoU to successfully implement the conservation plan to recover the species in the region.

Dr. Jagdish Kishwan, Additional Director General of Forests (Wildlife), Ministry of Environment and Forests, Government of India in his inaugural address as the Chief Guest had urged the participants and resource persons to discuss the available conservation tools and management methods and to suggest the action plans for conservation of dugong and their habitats in the region. Dugong is the creature which is famed and loved as 'virgin of the sea.' It lives in shallow coastal waters and at sea grass lands. Due to the influence of trawl fishing, blast fishing, increased dredging for shipping industry, discharge of sewage and industrial effluents into seas and destruction of coral reefs and sea grass beds, the marine biodiversity has been disturbed. Hence, ensuring the survival of dugongs is a formidable task. Tranquillity on the path of development is advisable. In India, dugong has been accorded with highest level of legal protection and classified under Schedule - I of Wildlife Protection Act, 1972. Three areas of the Indian coast — the Gulf of Mannar, the Palk Bay, the Gulf of Kutch and the Andaman and Nicobar Islands — have remnant populations of dugongs”.

With appropriate research on this endangered marine species, education of science coupled with supplement of financial resources, it could be conserved. “Memoranda of signing with other countries on conservation and protection of dugong have become essential. More importantly, the involvement of local community is the utmost necessity for safeguarding dugongs, which will face the threat of extinction in the next 40 years. Saving this species is a difficult task but not really impossible”, he added. During October 2010, a taskforce for the conservation of dugongs was constituted with the agenda to look into the entire range of issues.

He has also emphasized on the need to conserve the dwindling coastal and marine biodiversity in India as well as in the South Asia region. During his speech he had also appreciated the cultural and traditional value of this species in the region which should be carried forward while implementing the conservation plan so that local communities could

easily accept the management actions. He had also mentioned about the importance of involvement of local communities in conservation of dugong in the region. Issues and challenges in conservation of dugong in the human dominated seascape/landscape was also explained by him while wishing the participants for successful workshop. At the end he had formally declared the opening of the workshop and invited Dr. Sivakumar to start the next session.

COUNTRY REPORTS

Four range countries in the sub-region Bangladesh, Sri Lanka, Pakistan and India have presented their country reports on dugong through their respective country representatives.

Bangladesh: Mr. Abdullah-Al Mamun and Mr. Mohammad Shah-e-Alam have presented the country report of Bangladesh. In their presentation they have mentioned that the Bangladesh, having an area of 147,570 sq km, has a great biological diversity. Like many other countries, most sightings of dugongs were reported as accidental capture in fishing nets or anecdotes from fishermen. But, due to lack of any systematic research, it is difficult to verify the current status of dugong in Bangladesh. There are reports on the occurrence of the dugong in Bangladesh in the last century or before. The Chittagong District Gazetteer (1908) states "The dugong appears to have been captured on one occasion, more than 20 years ago, off Maheshkhali Island, and has been seen of late years at the mouth of the Matamuhuri river". In 1976, a dead dugong was also detected in the Maheshkhali channel near Cox's Bazar. However, the current status of Dugong in Bangladesh waters and the extent of their distribution are unknown due to lack of any systematic study. But existence of dugong in other parts of the Bay of Bengal like coasts of Myanmar and Andaman-Nicobar Island increases the possibility of dugong's existence in Bangladesh coast. A recent study in Rakhine coastal zone of Myanmar near St. Martin's Island reveals that dugong currently exists in the waters of Myanmar. This study supports the occurrence of dugong in Bangladesh waters. However, the abundance of dugong is yet to be assessed. Reported seagrasses are *Halophila decipiens*, *H. beccarii* and *Halodule uninervis*, *Halodule pinifolia*, *Ruppia maritima*

Bangladesh Wildlife (Preservation) Act, 1974 is the only act that can protect the wildlife resources of the country including some of the marine animals like Gangetic Dolphin, Blue

Whale, Fin Whale, Estuarine Crocodile etc. But unfortunately dugong is not included in the list of protected wildlife, possibly on the ground of lack of authentic information of their occurrence in the Bangladesh coast. However, under the provision of the act, six protected areas (marine-cum-territorial habitat) such as Sundarbans East Wildlife Sanctuary, Sundarbans South Wildlife Sanctuary, Sundarbans West Wildlife Sanctuary, Char Kukri-Mukri Wildlife Sanctuary, Nijhum Dweep National Park and Kuakata National Park have been declared and managed in the coastal areas that mainly encompass the protection of the coastal biodiversity. One Ecologically Critical Area (ECA) St. Martin's Island is managed for protecting corals and other marine biodiversity. But these PAs do not give emphasis on the protection of Dugong and their habitat. Initiatives will be taken to conserve dugongs and their habitat in Bangladesh which include: 1. Survey should be conducted along the coastline to assess the quantitative data on occurrence and distribution of dugong in Bangladesh. 2. Assessment of the feasibility of one or more Dugong Sanctuaries in which hunting, killing and capturing of dugong and destruction of their habitat will be banned, 3. A culturally appropriate education or training program should be initiated to inform fishers and other members of the coastal communities on aspects of dugong biology, conservation and management, 4. Dugong should be considered as the wildlife and should be included in the second schedule and third schedule of the Bangladesh Wildlife Preservation Act, 1974. 5. If dugong does not exist in Bangladesh waters, they should be declared as locally extinct. 6. Research work should be undertaken in universities and other research organizations to assess the current condition, area and extent of the dugong habitat, 7 Regional co-operation and support is imperative to conserve and manage dugong population and their habitat sustainably.

Sri Lanka: Dr. W.A. Dharmakeethi and Mr. Thushan Kapurusinghe have presented the country report of Sri Lanka. Mr. Thushan during his presentation mentioned that the population of dugong in Sri Lanka is seems to be continuously declining although there was no systematic survey conducted on this species. IUCN Sri Lanka Red List included the dugong as vulnerable species. The only places where Dugongs have been recorded so far in Sri Lanka are the Puttlam lagoon (Kalpitiya) and the Gulf of Mannar of the north western coast of Sri Lanka. According to the current status of Dugongs these places are believed to be few of the rare spots where this elusive species is found today. At present due to loss of feeding grounds, indiscriminate fishing practices and hunting for meat and oil resulting over exploitation are leading to declining of their population in Sri Lanka. Therefore, while

considering the low reproductive rate of the species, it is doubtful whether a viable population is still surviving in the northwestern waters of Sri Lanka i.e. Pak Bay and Gulf of Mannar sea. Recently, the Sri Lankan Navy came across two carcasses of this rare marine mammal in possession of fisherman's in Mannar, followed this the National Aquatic Resources Research & Development Agency (NARA) was called in for technical assistance and expertise for further investigation. It was suspected that the Dugongs were killed as a result of a dynamite blast usually used to catch fish. Government of Sri Lanka has taken various steps to protect this species and also planning to carry out survey and research on this species in near future.

Pakistan: Mr. Abrarul Hasan and Mr. M.Hafiz ur Rahman have presented the country report of Pakistan. In their presentation they have narrated various legal frameworks available in the country for protection and conservation of marine biodiversity. Dugong has never been recorded from coastal waters of Pakistan but should be looked out for because of its endangered status. According to UNEP (2002) the known range of dugongs does not indicate its distribution in coastal waters of Pakistan. However, an International workshop on the conservation of dugongs was held in Queensland, Australia where it was stated that Pakistan does not provide suitable habitat but individual dugongs may stray into these waters. Moreover, dugong mortality during fishing activity has never been reported in Pakistan. Mortality of some of the cetaceans usually black finless porpoise, bottlenose dolphin and Indo-Pacific humpback dolphin is common on the coast of Pakistan. During a recent survey of Makran coast, 57% fishers had the experience of entangling dolphins in their fishing nets (Hasan 2008) but not even single reporting of dugong. However, dugong, an important sea mammal is found in the waters of gulf of Kachchh and gulf of Khmbhat (India) (Pandy 2004), near Indus delta of Pakistan and there is possibility that sometimes stray animals may enter into Pakistan waters. Similar is the case of populations of Persian gulf which may also enter into Pakistan's western coast. Therefore, a small project focusing water around Jiwani and Indus delta may be prepared to find out stray individuals of dugong who enter into Pakistan waters. In conclusion, they mentioned that a research programme is needed to locate suitable sea grass beds for Dugongs in Pakistan. At present no significant sites are reported in Pakistan that may provide suitable habitat for dugongs.

India: Dr. K. Sivakumar from the Wildlife Institute of India had presented the country report of India. Historically, the dugong distribution in India was reported as abundant but limited to Andaman and Nicobars Islands, Gulf of Mannar, Palk Bay, Gulf of Kutch, and Lakshadweep Islands. The most favored dugong habitats were the Gulf of Mannar, Interview Island and several inlets and bays around the Little Nicobar and Great Nicobar. Due to intensive fishing and various developmental activities, the dugong population in the Gulf of Kutch had been pushed at the verge of extinction. Dugong populations in the off-coast of Lakshadweep Islands have also seems to be extinct as there was no recent sighting of this species in this region. Dugongs were common in Andaman & Nicobar islands during the British era, but steeply declined later due to poaching and habitat destruction. Dugongs are reported in Ritchie's Archipelago, North Reef, Little Andaman, Camorta, Little Nicobar and part of the great Nicobar Islands. However, large populations are no longer seen and numbers are believed to have been declining since the 1950s. At present, it is assumed that about 250 dugongs may be occur in four different fragmented populations in India. After tsunami 2004, which had damaged much of the dugong habitats in the Nicobar regions further threatened the dugong population here. However, quantitative data on status of dugong in India is not available.

The Dugongs are protected under the Schedule-I of the Wildlife (Protection) Act, 1972, which provides the maximum protection to a species in the Indian territory and also prevents any kind of trade on this species. Larger portion of the habitat of dugong in India has been included in the existing Wildlife Protected Areas Network, for example, Gulf of Mannar Marine National Park, Gulf of Kutch Marine National Park, M.G. Marine National Park etc. With the approval of Union Cabinet, the Government of India has also signed the Memorandum of Understanding on the conservation and management of Dugongs and their habitats throughout their range in April 2008 to strengthen the ongoing conservation programme of dugongs and their habitats in the Indian water with the support of international community. Since then the several programme to protect and conserve the dugongs and their habitats have been initiated in India. The Wildlife Institute of India is already engaged in research on marine biodiversity and could be lead institution for conservation and management planning for Dugongs in India. Government of India is implementing a Centrally Sponsored Scheme titled 'Integrated Development of Wildlife Habitats'. Under this

Scheme financial and technical assistance is provided to the State/Union Territory Governments for conservation of wildlife and their habitats. One of the components of the scheme is 'Recovery of Critically Endangered Species' and the Dugongs has been identified as one of the 15 species for initiating recovery programmes. India had also constituted a special task force to over see entire gamut issues related to conservation of dugongs in India(see Annexure IV for more details).

CONSERVATION STRATEGIES

Dr H.S. Das, National Environment Agency, UAE, Abu Dhabi presented the National Conservation Strategy and Action Plan for dugongs and their habitats: Goals, Actions and Priorities. Before explaining the national conservation plan he had urged all participants to stick with guidelines for 'Conservation Management Plan' prepared by the UNEP/CMS Dugong Office, Abu Dhabi. Range states may prioritize their actions depending upon the need and prevailing threats to dugong in their states but general framework provided by the UNEP/CMS Secretariat should not be modified at a greater extent. He had explained different goals and actions of the National Conservation strategy and action plan for dugongs and their habitats in India as a case study. He had also emphasised the importance of prioritisation of actions in each goal as 'immediate' and 'long term'. While prioritizing the actions the impact of delay in implementing those actions should also be taken into consideration. He also opined that detailed research involving satellite tracking etc should be given second priority as identification of habitat and distribution of dugongs are in first priority.

Dr. E. Vivekanandan from Central Marine Research Institute (CMFRI), Chennai delivered a talk on 'Status of Dugong in India and strategies for conservation'. He reported that the Gulf of Mannar region has population size ranges from 77 to 158 (~average 100), Andaman & Nicobar region has 44 to 81 individuals (~average 60) and Gulf of Kachchh has 10 to 15 individuals (~average 12) and the total probable numbers in India is 131 to 254 (~average 172). He also highlighted the rapid declination of population size in the past few decades considering the facts that about 250 dugongs were killed in Gulf of Mannar & Palk Bay between 1974 and 1975 alone. This declining rate was confirmed by the fisherman interview conducted by CMFRI, about 73% of respondents told that the population declining. At the end he suggested the following conservation strategies for conservation and monitoring of

Dugongs in India. He had also emphasized the importance of involving personal from fisheries sectors for the successful dugong conservation programme in India.

STANDARD DUGONG SURVEY METHODOLOGY

Dr. Nicolas Pilcher, Technical Advisor of Dugong Program, CMS-UNEP, Abu Dhabi Office had handled the technical session of the workshop. During first part of the technical session he had introduced the standardized catch/ bycatch questionnaire data format for recording dugong sightings. He explained the various information on the data sheets such as name of the interviewer, name of the place, data sheet serial no., survey ID & number, sighting record no., number & type of individual seen, habitat information, size, mother calf pair (Y/N), duration of sighting (Day/night), date & time and other information. Second part of the technical session, he explained different dugong interview survey design. He explained three important survey design such as stratified sampling, effort & efficiency and random selection. Under stratified sampling effort he emphasised the need to balance survey effort in places where we know and where we don't know. Third part of the technical session, he explained the interview methodology, techniques and data integrity. He emphasized the following points on the setting seen: the role of the Introductory Statement, Ethical approach, Make all interviews equal and Realistic expectations. He also explained the various basic approaches to conduct the dugong interview survey. As part of the interview survey he also highlighted the importance of maps and identification field guide manuals for marine mammals during survey. At the end of the technical session he circulated soft copies of the dugong survey manual and the standardized questionnaire.

Dr. Pilcher had also introduced the Global Genetics studies of dugongs to the workshop participants. In his presentation he had narrated detailed objectives and methodology of this study. He had also distributed a genetic sample collection kit to each range countries participated in the workshop.

The entire technical session was very interactive and participants have raised several questions related to methodology, analysis and interpretation of results. Dr. Pilcher had convincingly answered all questions with a lot clarity.

STATE REPORTS

Ms. Elrika, Mr. R.D. Kamboj and **Dr. Shekar Niraj** have presented the state conservation reports of dugongs of Andaman and Nicobar islands, Gujarat and Tamil Nadu respectively. Ms. Elrika presented her ongoing research activities aimed to study the behaviour and habitat ecology of dugongs in Andaman and Nicobar islands. Mr. Kamboj had explained the present status and distribution of dugongs in Gulf of Kutch region and also narrated the details of all associated flora and fauna of dugong in the Gulf of Kutch. He informed that about 10-15 dugongs are likely occur in Gujarat coast. He had informed participants about various conservation measures initiated in the state regarding management of dugongs and their habitat and requested the Government of India to provide technical support to strengthen the conservation plan in the state. Finally, Dr. Niraj briefed about all ongoing conservation actions in the state of Tamil Nadu especially in the Gulf of Mannar Biosphere Reserve regarding the management of dugongs and their habitats in this region. He had also mentioned that the dugong is the flagship species in the Gulf of Mannar as per conservation plan concerned.

Dr. Ketan Tatu, GEER Foundation, Gujarat presented the Study report on Dugongs, conducted for Ministry of Environment and Forests, Government of India. Dr. Tatu had explained details of objectives and methodology adopted in this study. This study has adopted more or less similar interview based methodology proposed by the UNEP/CMS Dugong Office. This study could predict about 250 dugongs in India but in three different populations. Dugong population in the Gulf of Mannar assumed to be the largest followed by Andaman and Nicobar islands and the Gulf of Kutch. Threats and conservation perspectives of dugong and their habitats in India was also detailed by him during his talk.

Mr. Hasmukh Hoslo Jiwa, Greenlife Society, Andaman and Nicobar islands presented the required conservation actions for the management of dugong and their habitats in the region. He had also emphasised the importance of involvement of local communities in the conservation programme for success.

FROM UNEP/CMS DUGONG MOU SECRETARIAT

Dr. Donna Kwan, explained the technical resources required/ available to support the range countries to successfully implement the ‘Conservation Management Plan of Dugong and their habitats’ prepared by the Secretariat in detailed manner. She had also explained the in-country dugong surveys (to be funded by this project) Planning Assistance under Small Scale Funding Programme. He invited the range states to submit the proposal in this regard to the Secretariat as soon as possible. She had also mentioned that Dr. Pilcher would help the range states to prepare the proposal and carry out survey in their respective countries. India had already committed to carry out the survey using its own funding resources.

WORKSHOP CONCLUSION

Dr. Sivakumar had coordinated the conclusion session and all participants of the workshop agreed for the following recommendations;

Participating South Asian countries and organizations including UNEP/CMS Strongly encourage the Governments of Bangladesh, Pakistan and Sri Lanka to sign the Dugong UNEP/CMS MoU early, and latest before second meeting of the Signatory States.

And decide to

develop and deliver a practical and resource-efficient strategy to collaborate in, and implement regional conservation and management initiatives for the conservation of dugongs and their habitats.

enhance communication among participating countries and organizations including UNEP/CMS so that issues, opportunity s and management interventions related to the trans-boundary conservation of dugongs and their habitats can be addressed in a collaborative, effective and timely manner.

identify individually and collectively with guidance from UNEP/CMS, the financial and technological resources to support implementation of these recommendations.

At the end Dr. Niraj provided the vote of thanks to the organisers, participants and press.

Annexure I

First South Asia Sub-regional Workshop of UNEP/CMS Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range in the South Asia

6-7, June 2011, Tuticorin, India

PROGRAMME SCHEDULE

Day 1 (Monday, 6 June 2011) Inauguration		
09:00-10:00 am	Registration	
10.00 - 10:10 am	Welcome Address	Mr A. K. Srivastava, Inspector General of Forests (WL), Ministry of Environment and Forests
10.10 - 10.15 am	Message of Hon'ble Minister of State (Independent Charge) for Environment and Forests	To be read by Ms Prakiti Srivastava, Deputy Inspector General of Forests (WL), Ministry of Environment and Forests
10.15 - 10.25 am	Address	Mr D. V. Negi, PCCF/Chief Wildlife Warden, Government of Andaman and Nicobar Islands
10.25 -10.35 am	Workshop Objectives and Agenda Opening Statement	Dr K. Sivakumar, Wildlife Institute of India
10.35 -10.45 am	Overview of the UNEP/CMS Dugong MoU and Conservation and Management Plan	Dr Donna Kwan, UNEP/CMS
10.45 -10.55 am	Inaugural Address	Dr Jagdish Kishwan, Additional Director General of Forests (Wildlife) and Director, Wildlife Preservation, Government of India, Ministry of Environment and Forests
10.55 -11.00 am	Vote of Thanks	Dr K. Sivakumar, Wildlife Institute of India
11.00 – 11.30 am	Tea	
Session I: Country Reports Chair: Mr. Abrar ul Hasan, Pakistan Co-Chair: Dr. W.A.D. Ananda Dharmakeerthi, Sri Lanka Convenor: Mr. Abdullah Al Mamum, Bangladesh Repertoire: Dr. J. A. Jhonson, WII		

11.30 - 11.45 am	Overview of population status, conservation and management of dugong and their habitats in the respective countries	Representative from Bangladesh
11.45 - 12-00 noon		Representative from Sri Lanka
12.00 - 12-15 pm		Representative from Pakistan
12.15 – 12-30 pm		Representative from India
Session II: Conservation Strategy Chair: Md. Shah-E-Alam, Bangladesh Co-Chair: Mr. Thushan Kapurusinghe, Sri Lanka Convenor: Mr. Md. Hafiz-ur-Rehman, Pakistan Repertoire: Mr. Hasmukh, A&N Islands/Gujarat		
12.30 – 12-45 pm	National Conservation Strategy and Action Plan for dugongs and their habitats: Goals, Actions and Priorities	Dr H.S. Das, National Environment Agency, UAE, Abu Dhabi
12.45 – 1-00 pm	Status of dugong in the country and strategies for its conservation	Presentation by Dr E. Vivekanandan, Principal Scientist, Chennai Research Center, Central Marine Fisheries Research Institute (CMFRI)
13.00 -14.00 pm	Lunch	
Session III: Survey Methodology Part I Chair: Dr. W.A.D. Anand Dharmakeerthi, Sri Lanka Co-Chair: Mr. Md. Shah-E-Alam, Bangladesh Convenor: Dr. H.S. Das, Environment Agency, UAE Repertoire: Ms. Meetu Gupta, Wildlife SOS		
14.00 – 15-30 pm	1. Introduction to Standard Dugong Methodology 2. Dugong Survey Questionnaire 3. Processing and presenting data: quantitative & qualitative	Dr Nicolas Pilcher, Director, Marine Research Foundation, Malaysia
15.30 - 16.00 pm	Tea	

Session IV: Survey Methodology Part II Chair: Mr. R.D. Kamboj, Gujarat Co-Chair: Dr. Rahul Kaul, WTI Convenor: Dr. Patterson Edward, SDMRI Repertoire: Mr. Sundarakumar, GOMNP		
16.00 -16-30 pm	Creation of maps : overlaying habitat, distribution and threat data	Dr Nicolas Pilcher
16.30 -17-00 pm	Discussion	Dr Donna Kwan, Dr Nicolas Pilcher, Dr H.S. Das
19.30 Hrs	Reception Hosted by Dr. Jagdish Kishwan, Addl. Director General of Forests (Wildlife), Ministry of Environment and Forests, Government of India Dinner Hosted by Mr. Gautam Dey, Principal Chief Conservator Forests, Government of Tamil Nadu	
Day 2 (Tuesday, 7 June 2011)		
07:00 -11.30 am	Field Visit to Gulf of Mannar National Park	Dr Shekhar Kumar Niraj, Director, Gulf of Mannar Marine Biosphere Reserve (GOMMBR)
Session VI: State Reports Chair: Ms. Mitali Dutt Karkar, Reefwatch Co-Chair: Dr. H.S. Das, UAE Convenor: Dr. Shekar Niraj, GOMBR Repertoire: Dr. Senthilkumar, GOMNP		
12.00 – 12.15 pm	Presentation of the comprehensive conservation plan for Dugong and their habitat in the respective States: Salient features of the conservation plan and present status of implementation	Presentation by Mr D. V. Negi, PCCF/Chief Wildlife Warden, Andaman and Nicobar Islands
12.15 - 12-30 noon		Presentation by Mr S. K. Goyal, PCCF/Chief Wildlife Warden /Shri R.D. Kamboj, CCF, Marine National Park, Jamnagar, Gujarat
12.30 - 12.45 pm		Presentation by Mr Gautam Dey, PCCF/Chief Wildlife Warden, Tamil Nadu or his representative
13.00-14.00 pm	Lunch	
Session VII: Mixed Bag Chair: Dr. Nicolai Pilcher, MRF, Malaysia Co-Chair: Dr E. Vivekanandan, (CMFRI)		

Repertoire: Dr. Deepak S, GOMBRT		
14.00 - 14.30 pm	Study report on Dugongs, conducted for Ministry of Environment and Forests by GEER Foundation	Presentation by Dr. Ketan Tatu, GEER Foundation)
14.30 -15.00 pm	Technical resources required/ available to support projects	Dr Donna Kwan
15.00 -15.30 pm	In-country dugong surveys (to be funded by this project) Planning Assistance	Dr Donna Kwan
15.30-16.00 pm	Tea	
Session VI: Conclusion		
16.00 –16-30 pm	Workshop Recommendations, Interaction and Feedback	Dr Donna Kwan, Ms. Prakriti Srivastava, Dr Shekhar Niraj, Dr Sivakumar
16-30 -17.00 pm	Closing remarks and vote of thanks	Dr K. Sivakumar, Dr Donna Kwan, Ms Prakriti Srivastava, DIG(WL), Dr Shekhar Niraj

Annexure II
Participants & Resource persons

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23	Dr. Patterson	Director, SDMRI, Tuticorin
24	Mr. Malleshappa	Director, KMTR, Government of Tamil Nadu
25	Mr. Uppreti	Conservator of Forests, Tirunelvely, Government of Tamil Nadu
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32	R. Senthil kumar	GOMNP, Ramanathapuram, Tamil Nadu
33	T. Rajendiran	ACF, GOMNP, Tuticorin
34	Nagarajan	FRO, GOMNP, Tuticorin

Annexure IV Country Reports

Country Position Paper: Conservation of Dugong in India

1. Introduction:

1.1 **Dugong** (*Dugong dugong*) also called as ‘Sea Cows’ is one of the four surviving species in the Order Sirenia and it is the only existing species of **herbivorous mammal that lives exclusively in the sea including in India. It is a large primary consumer and has considerable potential as a source of protein.** The Dugong ranges along the coast of east Africa into the Red Sea, along the coast of southern Asia to as far east as the Solomon Islands, and along the northern coasts of Australia from southern Queensland to subtropical Western Australia.

1.2. **Dugong are usually found in calm sheltered, nutrient-rich water** less than five meters deep, generally in bays, shallow island and reef areas which are protected against strong winds and heavy seas and **which contain extensive sea grass beds and these habitats are still available in Gulf of Mannar, Palk Bay, Gulf of Kutch and Andaman and Nicobar islands in India.** However, they are not confined to only inshore water. There have been sighting near reefs up to 80 km offshore in waters up to 37 meters deep. Studies have suggested that there is a correlation between the sea grass and dugongs abundance.

1.3 Dugong is considered to be rare over most of its range. **Human exploitation has led to extermination of the species** in several previously inhabited archipelagoes, including Mascarene, Laccadive, Maldives, Barren, Narcondam, Cocos and Christmas Islands around the rim of the Indian Ocean and Lesser Sunda Islands in Indonesia east of Java. The species is listed as vulnerable to extinction at a global scale. However, Dugongs are still abundant in the shallow seas around tropical Australia, and it is likely that Australia may contain the main reservoir of dugongs in the world next is the coast of United Arab Emirates

2. Historical distribution of dugong in India:

2.1. Historically, the dugong distribution in India was reported as abundant but limited to Andaman and Nicobars Islands, Gulf of Mannar, Palk Bay, Gulf of Kutch, and Lakshadweep

Islands. The most favored dugong habitats were the Gulf of Mannar, Interview Island and several inlets and bays around the Little Nicobar and Great Nicobar. In the Gulf of Mannar, about 250 dugongs were illegally caught and butchered at the villages of Kilakarei and Peripattinum alone between April 1983 and August 1984. This information clearly shows that once the Gulf of Mannar had a good population of dugong but illegal take of this species let the population under threat. However, concluded that Palk Strait and the Gulf of Mannar should be important areas for dugongs in India. As per assessment of UNDP, the dugong population in the Gulf of Mannar has almost completely depleted.

2.2. There were sporadic records of dugongs in the west coast of peninsular India, however, the only known dugong population remained in western India was in the Gulf of Kutch. **Due to intensive fishing and various developmental activities, the dugong population in the Gulf of Kutch had been pushed at the verge of extinction.** Dugong populations in the off-coast of Lakshadweep Islands have also seems to be extinct as there was no recent sighting of this species in this region.

2.3. Dugongs were common in Andaman & Nicobar islands during the British era, but steeply declined later due to poaching and habitat destruction. Dugongs are reported in Ritchie's Archipelago, North Reef, Little Andaman, Camorta, Little Nicobar and part of the great Nicobar Islands. However, large populations are no longer seen and numbers are believed to have been declining since the 1950s.

3. Current status and distribution of dugong in India:

3.1. Dugongs continue to occur in Gulf of Mannar and Palk Bay, and in Gulf of Kutch of mainland India. Dugong also occurs in Andaman and Nicobar islands. Ministry of Environment and Forests, Government of India with help of GEER Foundation, Gujarat has recently carried out an interview based survey on dugong populations at national level and also observations made by the Central Marine Fisheries Research Institute and various other organizations in India have revealed that the dugong populations all over India are declining. At present, it seems to be that the largest population of dugong in India is in Gulf of Mannar and Palk Bay region followed by Andaman and Nicobar islands, although the population size is presumed to be very small. Dugong population in Gulf of Kutch is already being critically

endangered. After tsunami 2004, which had damaged much of the dugong habitats in the Nicobar regions further threatened the dugong population here. However, quantitative data on status of dugong in India is not available.

4. Major Threats:

4.1 **Several reasons have been attributed for their population decline, some of which include, vessel strikes, habitat loss and degradation, disease, chemical pollutants, indigenous use and hunting, incidental drowning in nets etc.** Dugongs are vulnerable to **anthropogenic pressures** as they are solely dependent on sea grasses in coastal areas which now have been seriously damaged by **fishing, trawling, dredging**, etc. Dugongs have also been hunted for their meat, oil, hides, bones and teeth. However, hunting has been totally banned in several countries including India.

4.2. **Feeding grounds of dugong i.e. seagrass beds are highly degraded due to change in the fishing technology.** Traditionally, fishermen used non-mechanized boats for fishing in the shallow water especially seagrass beds, however, due to modernization of fishing technology **that gradually replaced this traditional crafts to mechanized crafts**, which are never been friendly with seagrass beds and degraded this habitats swiftly. Moreover, water pollution and siltation are also hampered this unique habitat of dugong. Although the dugong is getting highest level of protection by law but still this species have been reported with incidental catch while fishing.

5. Ongoing Conservation Measures:

5.1. The Dugongs are protected under the **Schedule-I of the Wildlife (Protection) Act, 1972**, which provides the maximum protection to a species in the Indian territory and also prevents any kind of trade on this species.

5.2. The Dugong population across the world is also declared as **Vulnerable by IUCN** and listed in **Appendix-I of CITES**, which prevent international trade on this species. Being a signatories, the Government of India strictly adhere to the CITES rules and regulations to prevent trade on protected endangered species including dugong.

5.3. **Larger portion of the habitat of dugong in India has been included in the existing Wildlife Protected Areas Network, for example, Gulf of Mannar Marine National Park, Gulf of Kutch Marine National Park, M.G. Marine National Park etc.** A study carried out by during 2004 had also revealed that the incidental catch of dugong by fishermen is significantly lower in Indian part of Gulf of Mannar than Sri Lanka that was due to joint efforts of Government of India and Tamil Nadu Forest Department who have created awareness among people about this species.

5.4. In order to conserve and manage the Dugongs, the **7th meeting of the Conference of Parties of the Convention on Migratory Species (CMS)** had passed a resolution and urged all Dugong range states to cooperate among themselves to develop and adopt a **‘Memorandum of Understanding’** and an Action Plan for the Conservation and management of Dugongs throughout the species range. Two meetings under the auspices of CMS were convened at Bangkok during August 2005 and May 2006 to finalize the Memorandum of Understanding and the Action Plan for Conservation and Management of Dugongs and their habitat in their range states.

The CMS Secretariat has sought for the advice of Signatory States on the need for a sub-regional groupings. Five sub-regions viz. South West Indian Ocean, North West Indian Ocean, South Asia, South East Asian and Pacific sub-regions have been identified. Of these, India, Bangladesh, Pakistan, Maldives and Sri Lanka fall in the South Asia Sub-region and India is having the largest habitat for dugongs with perhaps the highest population in this region. India may therefore volunteer to lead the South Asia sub-region in implementing the recommendations of CMS-Dugong MoU in the region by developing a comprehensive proposal for survey, assessment and conservation of dugongs in active collaboration with UNEP-CMS, Signatory States, particularly South Asian nations, concerned research and academic institutions, State/UT Governments, NGOs and the local communities particularly the fishermen. The Wildlife Institute of India is already engaged in research on marine biodiversity and could be lead institution for conservation and management planning for Dugongs.

5.5 **With the approval of Union Cabinet**, the Government of **India has also signed the Memorandum of Understanding** on the conservation and management of Dugongs and their habitats throughout their range in April 2008 to strengthen the ongoing conservation programme of dugongs and their habitats in the Indian water with the support of international community. Since then the ongoing protection and management of dugongs and their habitats have been strengthened with following actions;

5.5.1 Identified populations of dugong in Gulf of Mannar, Gulf of Kutch and in Andaman & Nicobar islands have been under strict protection to reduce the direct and indirect causes of dugong mortality. Various conservation awareness programmes targeting fishermen communities of these regions have been initiated to minimise the mortality of dugong due to fishing. Surveys have also been initiated to assess the population status of dugong in India, however, combination of different survey techniques including aerial surveys would need to be carried out to find out the status of dugong populations as well as their habitats soon. Necessary steps to restore the degraded grasslands in the Gulf of Mannar have already been initiated and the same kind of initiative would be followed in other regions where seagrasses are degraded due to various anthropogenic activities. In this connection, technical supports would be sought from international agencies.

5.5.2 A study to understand the dugong ecology, behavior along with various aspects of their habitat has been undertaken by 'Reef Watch' in the Andaman and Nicobar islands. **Similar kind of study needs to be initiated at national level to assess and monitor the ecology and habitat of dugong in Gulf of Mannar, Palk Bay and Gulf of Kutch.** The Government of India is examining the possibility of initiating a study through Wildlife Institute of India, Dehradun on satellite tracking of dugong in Gulf of Mannar and Palk Bay to understand their trans-boundary movement along with aerial survey is also in priority.

5.5.3 Considerable area of habitat of dugong is under the Protection as these areas have already been declared as Wildlife Protected Areas. However, some more areas have been identified by the Wildlife Institute of India as potential habitats of dugong which need to be brought under the Wildlife Protected Area Network with the participation of local communities.

5.5.4 Government of India is implementing a Centrally Sponsored Scheme titled **‘Integrated Development of Wildlife Habitats’**. Under this Scheme financial and technical assistance is provided to the State/Union Territory Governments for conservation of wildlife and their habitats. One of the components of the scheme is **‘Recovery of Critically Endangered Species’** and the **Dugongs** has been identified as one of the 15 species for initiating recovery programmes.

6. India’s Plan of Action:

6.1. The Ministry of Environment and Forests in the Government of India would be constituting a ‘Task Force for Conservation of Dugongs’ to look into the entire gamut of issues related to conservation of dugongs and implementation of the ‘UNEP/CMS Dugong MoU’ in India.

6.2. We recognise the urgent necessity of carrying out a detailed study to understand the status and extent of dugong in India along with status of their habitats. In this connection, combination of aerial surveys with interview-based techniques would be used to estimate the dugong populations.

6.3 We feel it necessary to identify other important and potential habitats of dugong in India to bring them under the Protected Area Network for better conservation planning, involving various stakeholders viz. policy makers, protected area managers, researchers, NGOS, local community representatives and the fishermen.

6.4 Awareness programmes focussing on Dugong conservation will be strengthened to reach the target communities.

6.5 Ministry of Environment and Forests will look into the matters related to providing financial & technical support to the concerned federal states of India for taking up conservation activities for Dugongs and their habitats.

6.6 India proposes to organise South Asia Sub-regional workshop at the Wildlife Institute of India, Dehradun involving Bangladesh, Pakistan, Sri Lanka and Maldives, for which support of UNEP/CMS Secretariat would be sought under the Small Grant Programme.

6.7 India proposes to carry out a joint survey on extent and distribution of dugong in Gulf of Kutch with Pakistan and in Gulf of Mannar with Sri Lanka under UNEP/CMS Small Grant Programme. India will also carry out survey and assessment of Dugong in Andaman & Nicobar Islands.

Country Report: Bangladesh

Country Report

Overview of the population status, conservation and management of Dugong and their habitats in Bangladesh

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Background

The dugong (*Dugong dugon*) is found in shallow and coastal island waters of at least 37 countries in the Indo-Pacific region, and was historically distributed around the region's marine habitat (Marsh and Lefebvre 1994). Researchers believe that dugongs are locally extinct in many countries (Marsh *et al.* 2002) and its population declines to 20% in the last 90 years. However, it is listed as 'vulnerable to extinction' on the IUCN Red List due to population declines, habitat loss/degradation, and human exploitation (Hines *et al.* 2008). Though Bangladesh was not listed (Marsh and Lefebvre 1994, Marsh *et al.* 2002) as a part of the dugong range, various reports suggest that dugongs are available in Bangladesh waters in sparse numbers. List of mammals of Bangladesh includes dugong as a vulnerable species (Wikipedia, 2011). Like many other countries, most sightings of dugongs were reported as accidental capture or anecdotes from fishermen. But, due to lack of any systematic research, it is difficult to verify the current status of dugong in Bangladesh.

Bangladesh, having an area of 147,570 sq km, has a great biological diversity in such an unusually overpopulated (130 million with more than 800 people per sq km) country with a very limited range of habitats. Bangladesh coast, facing the Bay of Bengal in the South is 710 km long, stretching from South-west corner of the Sundarbans Mangrove Forest to St. Martin's Island (Figure- 2). Most of these coastal areas are deltaic having muddy to sandy soil, and much dissected by water courses and large and small islands. Patches of stones and boulders occur only in the South-eastern part of the coast, while the St. Martin's Island is surrounded by boulders and is regarded as "Coral Island". The Bangladesh Exclusive Economic Zone in the Bay of Bengal spans an area of 166,000 Sq. km which is an artisanal fishing ground; though fishing is limited by environmental factors to an area of about 14,000

Sq. km (Khan *et al.* 2003). In 1996-97 the annual fish production was 274,704 tons of fish, 95% of which was caught by coastal artisanal fisheries (Khan *et al.* 2003).

Like many other countries, most sightings of dugongs were reported as accidental capture in fishing nets or anecdotes from fishermen. But, due to lack of any systematic research, it is difficult to verify the current status of dugong in Bangladesh. This country report describes the existence of dugong and availability of their habitat in Bangladesh and suggests some initiatives and legislative measures for conservation and management of dugongs and their habitats.

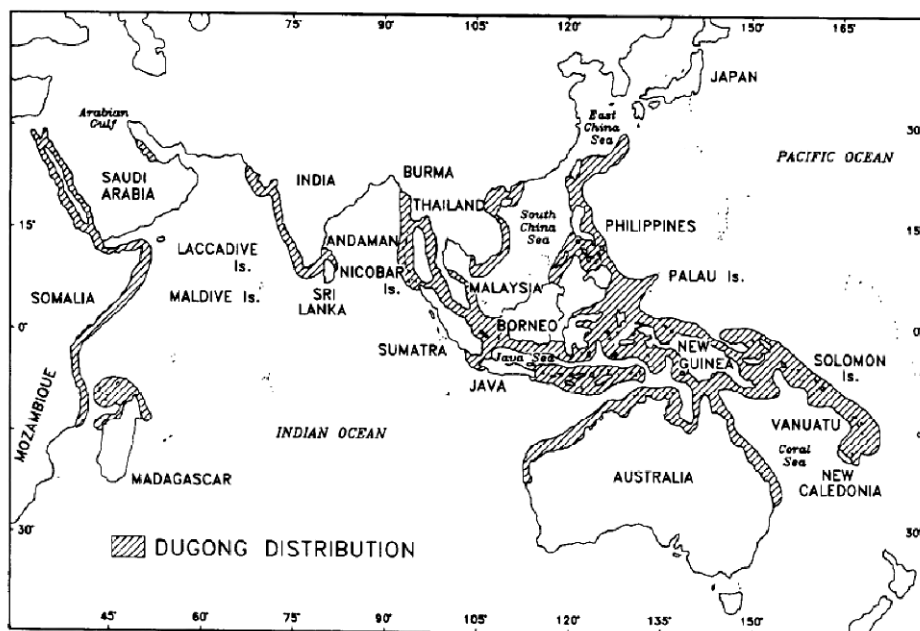


Figure-1: Distribution of Dugong in the Indo-pacific (Marsh and Lefebvre 1994)

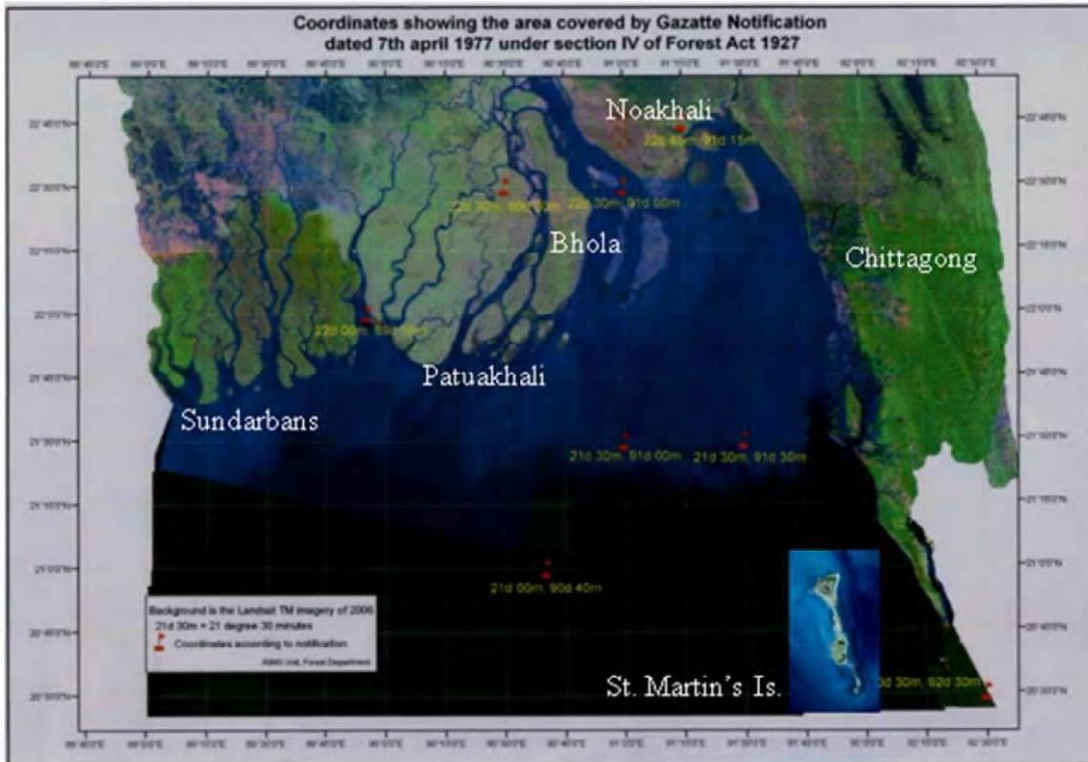


Figure-2: Map showing Bangladesh Coasts

Distribution and abundance of dugongs

There are reports on the occurrence of the dugong in Bangladesh in the last century or before. The Chittagong District Gazetteer (1908) states "The dugong appears to have been captured on one occasion, more than 20 years ago, off Maheshkhali Island, and has been seen of late years at the mouth of the Matamuhuri river". In 1976, a dead dugong was also detected in the Maheshkhali channel near Cox's Bazar (Figure- 2).

The current status of Dugong in Bangladesh waters and the extent of their distribution are unknown due to lack of any systematic study. Studies or inventories regarding distribution and abundance are rare. But existence of dugong in other parts of the Bay of Bengal like coasts of Myanmar and Andaman-Nicobar Island increases the possibility of dugong's existence in Bangladesh coast. A recent study in Rakhine coastal zone of Myanmar near St. Martin's Island reveals that dugong currently exists in the waters of Myanmar (Tun and

Ilangakoon, 2009). This study supports the occurrence of dugong in Bangladesh waters. However, the abundance of dugong is yet to be assessed.

Distribution of key seagrass and other dugong habitats

Very Little study has been done on the distribution of seagrasses in Bangladesh. Studies are limited to identification of seagrasses from different parts of the coast. Information on seagrass beds is lacking (Kamal and Khan, 2009). Islam and Aziz (1980) reported only two seagrass (*Halophila decipiens*, *Halodule uninervis*) available in St. Martin's Island. However, according to another report, so far five types of seagrasses are identified from coastal and estuarine areas of Bangladesh (Kamal and Khan, 2009). Reported seagrasses are *Halophila decipiens*, *H. beccarii* and *Halodule uninervis*, *Halodule pinifolia*, *Ruppia maritima* (Table-1).

Table-1: Reported Seagrasses in Bangladesh coast

Family	Seagrass Species	Location
Hydrocharitaceae	<i>Halophila decipiens</i>	St. Martin's Island
	<i>Halophila beccarii</i>	
Cymodoceaceae	<i>Halodule uninervis</i>	St. Martin's Island
	<i>Halodule pinifolia</i>	
	<i>Ruppia maritima</i>	

(Source: Kamal and Khan, 2009)

The dugong (*Dugong dugon*) is the only strictly herbivorous marine mammal. They are heavily dependent on the seagrasses for subsistence and are thus restricted to the coastat habitat. Seagrass of the family *Potamogetonaceae*, *Hydrocharitaceae* and *Cymodoceaceae* are the key source of food for the dugong. Seagrasses of the two key families are available in Bangladesh.

Large dugong communities are seen to concentrate on wide, shallow and protected areas such as bays, mangrove channels and the lee sides of large inshore islands where there are seagrass beds. Bangladesh is blessed with world's largest single-tract mangrove forest Sundarbans

with numerous creeks and channels and a number of islands like St. Martin's, Moheshkhali, Kutuddia, Sandweep, Hatia, Bhola etc. Survey is yet to be done in the area to identify and assess the area and extent of the potential seagrass habitats.

Legislative support for protection of dugong and their habitat

The IUCN Red List lists the dugong as vulnerable and the Convention on International Trade in Endangered Species of Wild Fauna and Flora regulates and in some countries has banned international trade. Bangladesh Wildlife (Preservation) Act, 1974 is the only act that can protect the wildlife resources of the country including some of the marine animals like Gangetic Dolphin, Blue Whale, Fin Whale, Estuarine Crocodile etc. But unfortunately dugong is not included in the list of protected wildlives, possibly on the ground of authentic information of their occurrence in the Bangladesh coast. Being a threatened as well as protected wildlife in the neighbouring countries like Myanmar, at least it should be included in the second schedule of the Bangladesh Wildlife (Preservation) Act, 1974 which protect possession or import of meat or oil in the country. Moreover, studies should be undertaken to explore the current occurrence of dugong in the Bangladesh coast and to assess their habitat. If they occur, they should be included in the third schedule of the act which prohibits hunting, killing or capturing (Table-2).

Table-2: Legal Provision for protecting marine mammals in Bangladesh

Name of the Schedule	Part No.	Listed No. of Wildlives	Legal provision	No. of Marine Mammals protected
First Schedule	Part -I	36 Crustaceans, Amphibians, Reptiles Birds and Mammals,	Open to shooting and may be hunted on an ordinary game hunting permit	0
	Part -II	Mammals, Reptiles and Birds	Hunting requires a special permit	not specified
Second Schedule	-	Any protected animals	Possession or import of any trophy or meat, horns, tusks and skins requires a certificate of lawful	All protected marine mammals in the third schedule

			possession	
Third Schedule	-	545	Animals not allowed to be hunted, killed or captured	Gangetic Dolphin, Common Dolphin, Blue Whale, Fin Whale and Estuarine Crocodile, Turtle

Under the provision of the act, six protected areas (marine-cum-territorial habitat) such as Sundarbans East Wildlife Sanctuary, Sundarbans South Wildlife Sanctuary, Sundarbans West Wildlife Sanctuary, Char Kukri-Mukri Wildlife Sanctuary, Nijhum Dweep National Park and Kuakata National Park have been declared and managed in the coastal areas that mainly encompass the protection of the coastal biodiversity. One Ecologically Critical Area (ECA) St. Martin's Island is managed for protecting corals and other marine biodiversity. But these PAs do not give emphasis on the protection of Dugong and their habitat.

Nature and magnitude of threats to dugongs

The detection of dugong in the eastern coastal region long ago was dead specimen. This strongly supports that the Bangladesh waters is not safe for its movement due mainly to fishing nets. But killing or capturing of any dugong was not reported. Unintentional killing during fishing in the shallow water and near shore may happen. No dugong meat or oil is yet observed in the market. However, an exploration study may authentically verify the observation. Accidental bycatch in the fishing net is also a possible threat to the dugong population.

Proposed future research and / or conservation action

Initiatives should be taken to conserve dugongs and their habitat in Bangladesh which include: 1. Survey should be conducted along the coastline to assess the quantitative data on occurrence and distribution of dugong in Bangladesh. 2. Assessment of the feasibility of one or more Dugong Sanctuaries in which hunting, killing and capturing of dugong and

destruction of their habitat will be banned, 3. A culturally appropriate education or training program should be initiated to inform fishers and other members of the coastal communities on aspects of dugong biology, conservation and management, 4. Dugong should be considered as the wildlife and should be included in the second schedule and third schedule of the Bangladesh Wildlife Preservation Act, 1974. 5. If dugong does not exist in Bangladesh waters, they should be declared as locally extinct. 6. Research work should be undertaken in universities and other research organizations to assess the current condition, area and extent of the dugong habitat, 7 Regional co-operation and support is imperative to conserve and manage dugong population and their habitat sustainably.

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Workshop Photographs



Field visit



Workshop in Media

The Hindu : NATIONAL / TAMIL NADU : Need for conservation of dugongs

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THE HINDU

Today's Paper » NATIONAL » TAMIL NADU

Published: June 7, 2011 00:00 IST | Updated: June 7, 2011 04:09 IST

Need for conservation of dugongs

Staff Reporter

They are endangered marine species found in South Asian waters



MAKING A POINT:Jagdish Kishwan, Additional Director General of Forests (Wildlife) and Director, Wildlife Preservation, addressing the workshop in Tuticorin on Monday.— Photo: N. Rajesh.

: In a bid to enhance regional cooperation for the conservation of dugong (sea cow), Ministry of Environment and Forests hosted the first South Asia Sub – Regional Workshop on Conservation and Management of Dugongs in Tuticorin on Monday.

The workshop was jointly organised by the Ministry of Environment and Forests, United Nations, Environment Programme and Convention on Migratory Species. Dugongs are endangered marine species which are also found in the South Asian waters of India, Pakistan, Bangladesh and Sri Lanka.

Jagdish Kishwan, Additional Director General of Forests (Wildlife) and Director, Wildlife Preservation, Ministry of Environment and Forests, chief guest, said the ministry was interested in focusing on the marine biodiversity with adequate measures to conserve and protect dugongs and their habitats in this part of the world.

"Dugong is the creature which is famed and loved as 'virgin of the sea.' It lives in shallow coastal waters and at sea grass lands. Due to the influence of trawl fishing, blast fishing, increased dredging for shipping industry, discharge of sewage and industrial effluents into seas and destruction of coral reefs and sea grass beds, the marine biodiversity has been disturbed. Hence, ensuring the survival of dugongs is a formidable task. Tranquillity on the path of development is advisable. In India, dugong has been accorded with highest level of legal protection and classified under Schedule - I of Wildlife Protection Act, 1972. Three areas of the Indian coast – the Gulf of Mannar, the Palk Bay, the Gulf of Kutch and the Andaman and Nicobar Islands – have remnant populations of dugongs".

With appropriate research on this endangered marine species, education of science coupled with supplement of financial resources, it could be conserved. "Memoranda of signing with other countries on conservation and protection of dugong have become essential. More importantly, the involvement of local community is the utmost necessity for safeguarding dugongs, which will face the threat of extinction in the next 40 years. Saving this species is a difficult task but not really impossible", he added. During October 2010, a taskforce for the conservation of dugongs was constituted with the agenda to look into the entire range of issues.

A.K. Srivastava, Inspector General of Forests (Wildlife), Ministry of Environment and Forests, said there were less than 200 dugongs in India and utmost care should be accorded to conserve them. Donna Kwan of United Arab Emirates said a long time was required to replace the dead ones. It would take seven to eighteen years to attain maturity. Inadequate sea grass could cause delays over breeding, she said.

Prakriti Srivastava, Deputy Inspector General of Forests (Wildlife), V. Negi, Chief Wildlife Warden, Andamans, Shekar Kumar Niraj, Director, GOMBR, M. Sundarakumar, Wildlife Warden, Gulf of Mannar Marine National Park, Ramanathapuram, and delegates from Pakistan, India, Bangladesh and Sri Lanka attended.

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THE HINDU

S & T » Energy & Environment

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Sign MoU to protect dugongs, India urges neighbours

B. Aravind Kumar

With fewer than 200 dugongs (commonly known as sea cow) in its waters, India is strongly encouraging its neighbours in South Asia to sign the Dugong United Nations Environment Programme/Convention of Migratory Species (UNEP/CMS) MoU as early as possible.

The first South Asian Dugong Conservation workshop, which was held at Tuticorin as the Gulf of Mannar Biosphere (GoMB) has the largest population of dugongs in the country, has asked Bangladesh, Pakistan and Sri Lanka to sign the MoU at the earliest.

Nine objectives

Already 14 countries have signed the MoU designed to facilitate national and trans-boundary actions leading to conservation of dugongs and their habitats. It has nine objectives, including reducing mortality; protect, conserve and manage habitats; raise awareness; improve legal protection and enhance regional cooperation. "We have fewer than 200 dugongs, mostly in GoMB and Andaman and Nicobar waters. There are very few in Gulf of Kutch. Cooperation of neighbouring countries is necessary as the migratory range of the species is long," says A.K. Srivastava, Inspector General of Forests (Wildlife), Ministry of Environment and Forests. "Pakistan has no recent evidence of dugong population. In Sri Lanka there is evidence but could be migratory," he says.

High genetic biodiversity value

According to Convention of Migratory Species, the dugong is a sea-grass dependent marine mammal of tropical and subtropical coastal waters, with high genetic biodiversity value.

Currently classified as vulnerable to extinction under the IUCN Red List of Threatened Species, the dugongs are vulnerable to human-related influences due to their life history and dependence on sea grasses that are restricted to coastal habitats under increased pressure from human activities.

The draft Task Force Report on dugongs prepared by the Department of Endangered Species Management, Wildlife Institute of India, attributes several reasons for the decline in population, some of which include sea grass habitat loss and degradation, gill netting, chemical pollutants, indigenous use and hunting.

In GoMB, there has been a 30 per cent increase in population density in the past 20 years, essentially fishermen whose fishing ground has remained the same.

"A particular type of net where 40 to 50 persons operate it for five to six hours sweeps the sea floor completely," says J.K. Patterson Edward, director, Suganthi Devadason Marine Research Institute, Tuticorin. Another killer is the domestic sewage let into the marine biosphere without treatment.

In Andaman & Nicobar Islands, there has been a steady decline in dugong population due to poaching and habitat destruction. The poaching is more by foreign nationals than the local islanders, activists say.

"The co-ordination is to develop and deliver a practical and resource-efficient strategy to collaborate and implement regional management initiatives for conservation," says Jagdish Kishwan, ADGP (Wildlife) and Director, Wildlife Preservation, MoEF.

Keywords: [South Asian Dugong Conservation](#), [UNEP/CMS](#), [Convention of Migratory Species](#), [IUCN](#)

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India to Host Workshop on Conservation and Management of Dugongs

Environment

MONDAY, 06 JUNE 2011 23:22 WRITTEN BY ONESH SINGH RAWAT

Tuticorin (ABC Live): India is hosting the first South Asia Sub-Regional Workshop on the Conservation and Management of Dugongs on 6th and 7th June 2011, in Tuticorin, Tamil Nadu.

Policy and conservation management experts from India, Pakistan, Sri Lanka and Bangladesh will come together to discuss the status of dugong conservation in their respective countries; establish standardized methods to survey dugongs and their habitats; and work towards preparing a coordinated Dugong Conservation and Management Plan in South Asia under the United Nations Environment Programme and the Convention on Migratory Species (UNEP/CMS).

The workshop is being organized jointly by the Ministry of Environment and Forests, and the UNEP/CMS Secretariat, in collaboration with the Wildlife Institute of India. Representatives from India, Pakistan, Sri Lanka and Bangladesh; the Environment Agency of Abu Dhabi; State Forest Departments; experts and Civil Society Organisations will take part in the workshop.

In his message for the workshop, Minister of Environment and Forests, Jairam Ramesh said "I am happy that South Asian Range States are coming together for the conservation and management of this shared marine mammal."

India has constituted a Task Force for the conservation of dugongs. In order to have a focused conservation approach. We are committed to addressing conservation threats faced by the dugong in our waters, and this workshop will take regional and national agendas forward. But as we know, for the most effective kind of conservation, we need the cooperation of all States in the region, as well as the involvement of local communities."

Workshop Agenda

Dugongs are endangered marine mammals that are also found in the South Asian waters of India, Pakistan, Bangladesh and Sri Lanka. Believed to have been the origin of mermaid legends, remaining populations are at serious risk of becoming extinct in the next 40 years.

The workshop will:

1. Provide updates on the status of dugong populations and associated habitats
2. Introduce Standardized survey methodologies that will identify key dugong habitats, estimate population numbers and trends, and evaluate impacts including direct harvest, habitat degradation and fisheries bycatch
3. Initiate training and capacity building on monitoring and survey techniques
4. Seek grounds for future collaboration in the fields of both research and management
5. Monitor dugong conservation in the South Asia sub-region India will also detail the status of the Dugong in the country, and enumerate strategies for its conservation. Importantly, State Forest Departments of Tamil

Nadu, Gujarat and Andaman and Nicobar will present their comprehensive conservation plan, and provide updates on the status of implementation.

Dugong Conservation in India Three areas of the Indian coast have remnant populations of Dugongs: the Gulf of Kutch, the Gulf of Mannar and the Palk Bay, and the Andaman and Nicobar waters. However, these populations are threatened by mechanized fishing and illegal hunting, pollution and destruction of coral reefs and sea grass beds.

Dugongs are accorded maximum protection under the Wild Life (Protection) Act, 1972 as Schedule I species, and are classified as vulnerable to extinction under the IUCN Red List of Threatened Species. Recognizing the threats to this marine mammal, the Government of India and the Ministry of Environment and Forests signed the CMS-UNEP MoU for the conservation and management of the dugong in April 2008.

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