

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.

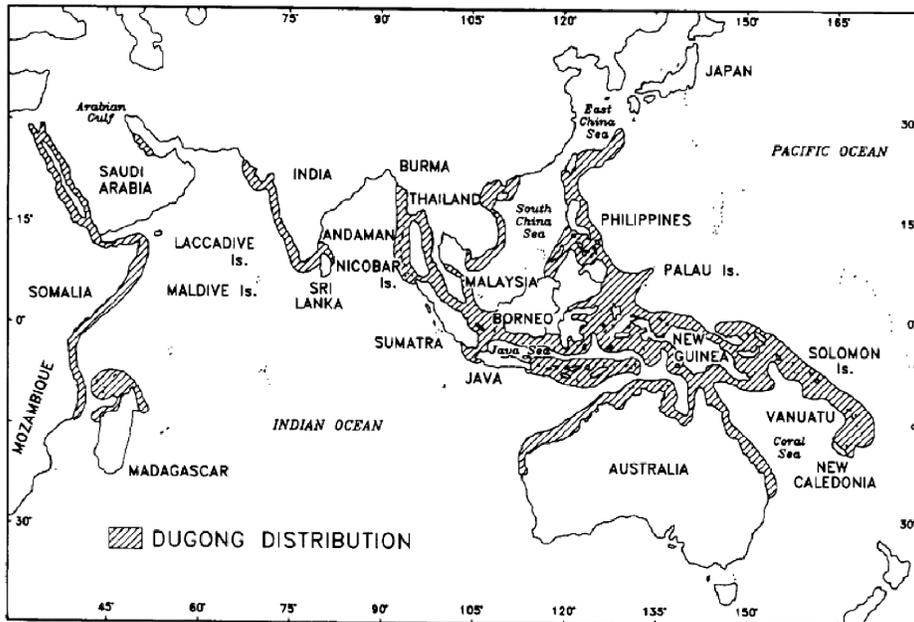


Figure-1: Distribution of Dugong in the Indo-pacific (Marsh and Lefebvre 1994)

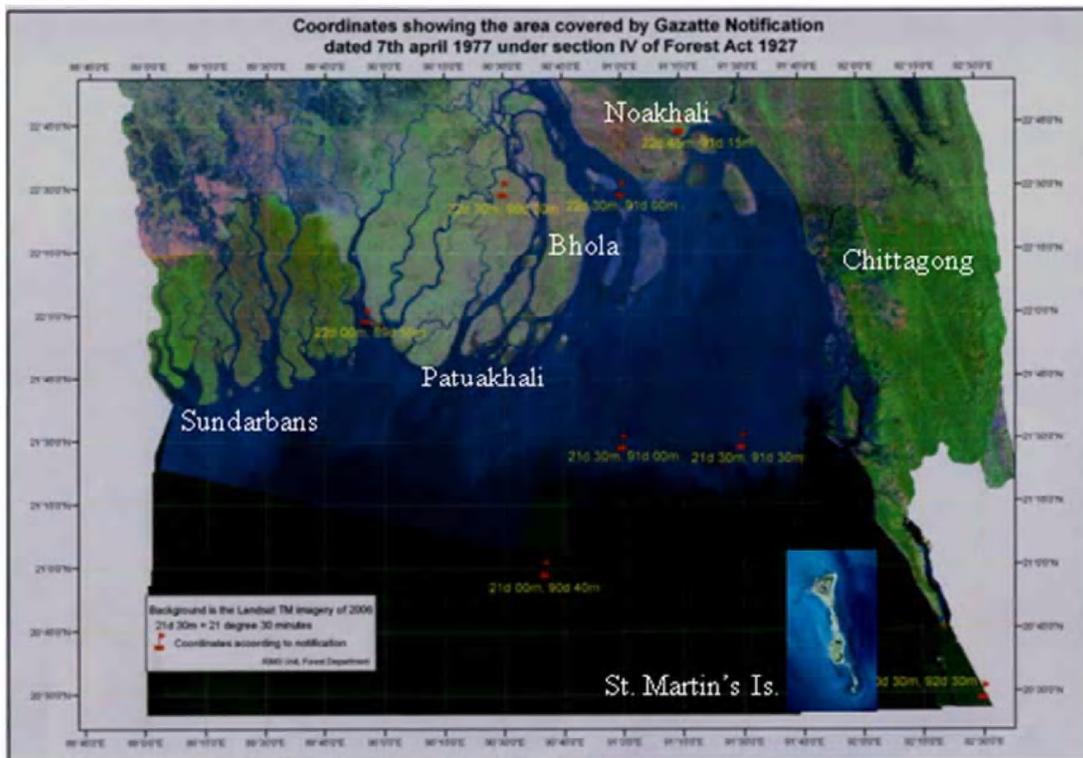


Figure-2: Map showing Bangladesh Coasts

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 coastal 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 possession	All protected marine mammals in the third schedule
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-terrestrial 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.

References

Abu Hena M. Kamal and Mohd Ashraf A. Khan, 2009. Coastal and estuarine resources of Bangladesh: management and conservation issues. *Maejo Int. J. Sci. Technol.* 3(02), 313-342.

A. K. M. N. Islam and A. Aziz, "A marine angiosperm from St. Martins Island, Bangladesh" *Bangladesh J. Bot.*, **1980**, 9, 177-178.

Aziz, A, 2009. Coastal and Marine Plant Resources of Bangladesh: Management and Exploitation. Keynote Paper presented in the Annual Botanic Conference, 2009.16pp.

Khan, M.A.A., N.U. Sada, and Z.A. Chowdhury. 2003. Status of the Demersal Fishery Resources of Bangladesh, p. 63-82 In G. Silvestre, L. Garces, I. Stobutzki, M. Ahmed, R.A. Valmonte-Santos, C. Luna, L. Lachica-Alino, P. Munro, V. Christensen, and D. Pauly (eds.) Assessment, Management and Future Directions of Coastal Fisheries in Asian Countries. World Fish Center Conference Proceedings 67,1 120 p.

Marsh, H. and L.W. Lefebvre. 1994. Sirenian status and conservation efforts. *Aquatic Mammals* 20 (3): 155-170.

Marsh, H., H. Penrose, C. Eros, and J. Hugues. 2002. Dugong Status Report and Action Plans for Countries and Territories. Early Warning and Assessment Report Series UNEP/DEWA/RS.02-1, 172 p.

Tun, T. and Ilangakoon, A. D.2007. Assessment of Dugong (*Dugong dugon*) occurrence and distribution in an extended area off the Rakhine coast of western Myanmar. Report to the Society of Marine Mammalogy.32pp.

http://www.banglapedia.org/httpdocs/HT/A_0277.HTM Dated-12/05/2011.

http://en.wikipedia.org/wiki/List_of_mammals_of_Bangladesh Dated-14/05/2011.