

Dugong and its conservation

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Introduction

Dugong, also known as sea cow (*Dugong dugon*) is one of the herbivore mammals that exclusively inhabits the marine environment. It is such a voluminous animal encompassing the space of a dolphin, a manatee, a hippopotamus, and an elephant, all put together in a single creature. These animals are on the verge of extinction due to very low reproductive rates and various case studies prove that they are very sensitive animals with emotions. As they are facing a wide range of threats there is an alarming need for its conservation.

Taxonomic classification:

Kingdom	:	Animalia
Phylum	:	Chordata
Class	:	Mammalia
Order	:	Sirenia
Family	:	Dugongidae

Dugongs belong to the order Sirenia, commonly referred as sea cows. Sirenia comprises 2 families such as Dugongidae and Trichechidae. Dugong belongs to Dugongidae family

Distribution /Abundance:

Dugong species are abundant in the Gulf of Mannar, Palkbay, Gulf of Kutch and Andaman and Nicobar Islands. The number of species surviving is continuously

reducing in terms of number and less than 250 species of sea cow are found in Indian waters. Dugong can grow up to 13.32 feet and weighs up to one ton. They usually have a lifespan of nearly 60 -70 years.

Morphology

The body is generally spindle-shaped and the color ranges from light grayish brown to bright brown with metallic shimmer, close examinations revealed that the skin is rough with furrows and wrinkles on the head.

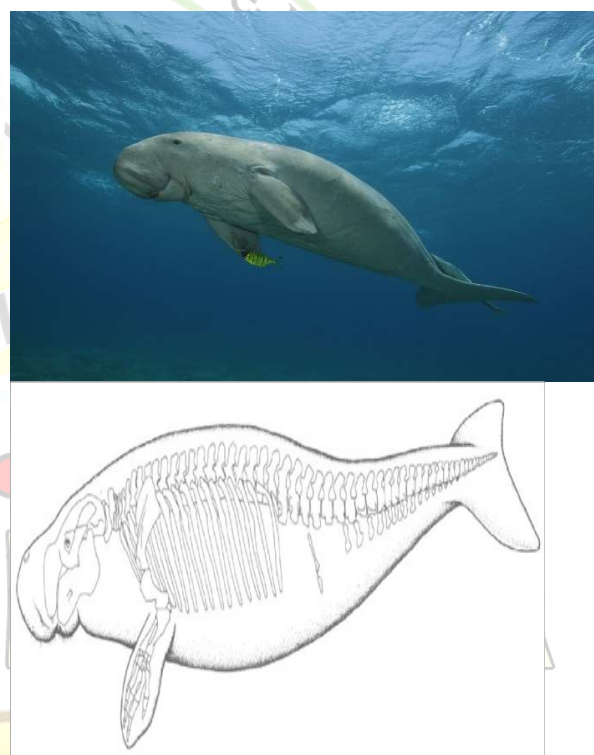


Figure 1

Figure 2 - Ian Mcniven &Rieky feldman 2023

They tend to possess thin mouths with short and wide trunks with tusk-like teeth. Short and slender bristles are present. They tend to have fluked tails like dolphins.

The forelimbs of dugong are modified as flippers, which is used for aquatic locomotion. They swim by using the movement of the tail up and down and using their flippers.

Feeding



These are non – ruminant herbivores. They usually feed on sea grasses and spend most of their life in the seabed. Nearly 30 kg of seagrass are grazed by dugongs per day. Since the eyesight of the dugong is poor it uses its smell power to find a seagrass bed. The stomach is comparatively small.

Reproductive biology

Dugong usually attains its sexual maturity at 10-12 years of age. Courtship mating behavior has been recorded. It is observed that it tends to show mating behavior like a female moving and rotating her body and making abrupt movements on the surface as tail and body are exposed above the water.

On several case studies, it is revealed that rushing behavior was associated with a male attempting to mate with a female by rolling her onto her back in the water. Tusks of male are used for their intersexual interactions, as it was evidenced from the scars present on the adult body. Reproduction is through internal fertilization and the gestation period ranges around one year. During birth, the calves are more than 1m in length.

Parental care is highly prominent as calves remains close to the mother until they reach the 2nd year of age and the mother takes care of calves helping them to breath and feed. Female tend to produce milk for up to 18 months for her child, but calves commence to feed on vegetation while reaching 3 months of age itself. The milk nutritional composition consists of higher content of lipids, proteins and comparatively higher salt content.

Threats to dugong

- Due to various survival antagonistic factors, dugong is under a high risk of extinction. Majorly they are caught as accidentally bycatch and their habitat

destruction is the foremost cause for their rate of decline.

- Dugongs are purposely hunted for their body parts, as they are deemed to be medications to various disorders.
- Tusks, bones, skin and oil of dugong are used for treating skin problems, fevers, cold and arthritis.
- Anthropogenic activities also put dugong at high risk, such as increased use of hydroelectric power and trenching of rivers leading to waterway traffic. The development of coastal areas by the destruction of marine ecosystems is one of the causes.
- Sea grass meadows which are important feed and living habitats of dugongs, are currently listed among the top threatened ecosystems as a consequence of pollution.
- Red tide is also one of the reasons as the algal bloom releases harmful toxins which cause lethal effects to many of marine species.

Conservation status

Sirenian species are facing a high risk of extinction and are specified under various categories in the IUCN red list. All the species are categorized as vulnerable. Various national and international conventions and regulations concerning sirenian are:

- 1) Marine Mammal Protection Act of 1972(MMPA)



2) Convention on international trade in endangered species of flora and fauna (CITES)

3) Dugong is being listed in the CBD (Convention on Biodiversity) and the Convention of Migratory Species.

4) The Ministry of Environment, Forests and Climate Change constituted a 'Task Force for Conservation of Dugongs' to look into issues related to conservation of dugongs and implementation of the 'UNEP/CMS Dugong MoU' in India.

5) The Gulf of Mannar Biosphere (GOMBR) harbours seaweeds which provides an ideal feeding ground for marine mammal sea cow (dugong dugon).

India's first Dugong conservation reserve was announced to be set up at Park Bay region, Tamil Nadu, on 21 September 2022.

Coastal areas present in Thanjavur and Pudukottai along Palk Bay from Adirampattinam to Ammattipattinam contain nearly 12,250 ha of seagrass beds, protecting this not only conserves dugong but also act as a breeding and nursery grounds for many teleost fishes and crustacean species.

Recommendations and Conclusion:

The recommendations for conservation of Dugong includes,

- ❖ Giving priorities to feeding areas and breeding areas that constantly support the largest number of dugongs,
- ❖ Reducing threats by following proper guidelines for gears and speed limit introduction in boats.
- ❖ Workshops regarding conservation of endangered mammals should be undertaken and
- ❖ Areas inhabited by them should be declared as conservation sites.

Since Dugongs are important herbivorous mammals, facing a high rate of extinction, they should be conserved in order to sustain biodiversity and ecological benefits derived from the Dugong species

Reference:

1. Blair, D., McMahon, A., McDonald, B., Tikel, D., Waycott, M., and Marsh, H. (2014). Pleistocene sea-level fluctuations and the phylogeography of the dugong in Australian waters. *Mar. Mamm. Sci.* 30, 104–121.
2. Bryden, M.M., Marsh, H., and Shaughnessy, P. (1998). "Dugongs, Whales, Dolphins, and Seals: A Guide to the Sea Mammals of Australia". Allen and Unwin, 176 pp.
3. Cope, R.C., Pollett, P.K., Lanyon, J.M., and Seddon, J.M. (2015). Indirect detection of genetic dispersal (movement and breeding events) through pedigree analysis of dugong populations in southern Queensland, Australia. *Biol. Conserv.* 181, 91–101.
4. Ian Mcniven ., Rieky feldman (October 2023). Ritually orchestrated seascapes : Hunting magic and Dugong bone mounds in torres strait, NE Australia *Cambridge Aecheological Journal* (1302):169-194
5. <https://freedivinguae.com/2019/02/17/dugong-conservation-in-the-uae-bu-tinah-island/>