



RECENT SIGHTINGS OF MARINE MAMMALS IN ANDAMAN ISLANDS, INDIA

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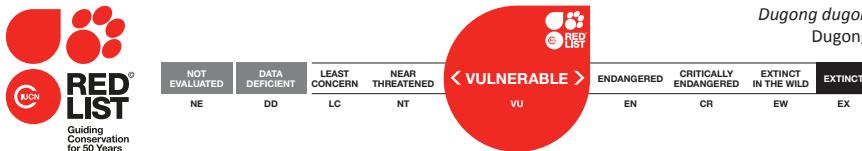
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Abstract: This study reports opportunistic sightings of marine mammals between August 2013 and January 2014 in the Andaman region. Seven sightings were recorded during this period out of which one was of a Dugong, which is significant considering its small population size in India and limited data on its distribution and abundance. The rest were 24 dolphins (*Tursiops* sp.). Four sightings were of the same pod of dolphins on different days at the same location. Two sightings occurred during regular coral reef monitoring survey and the other five during fishery resource survey by trawling operations. These sightings are of great significance as there is a lack of studies on marine mammals from the region. Sighting records are useful for understanding aggregation site, behaviour, habits and habitat and residency patterns and provide important information for conservation of marine mammals.

Keywords: Dolphins, Dugong, marine mammals, sighting.

Marine mammals play an important role in the marine ecosystem. They are amongst the top predators in the marine realm and display a very vivid social life. While some feed on sea grass and tiny plankton and fishes others feed on large fishes, turtles and other mammals also. Mammals are widely distributed from the poles to the tropics and from estuarine and coastal waters to open seas (Venu & Malakar 2015). There are nearly 130 marine mammal species reported from world oceans (Jefferson et al. 2008) belonging to three major orders, namely: Cetacea (whales, dolphins, porpoises), Sirenia (manatees and dugong) and Carnivora (sea otters, polar bears and pinnipeds). From India, 25 species of cetaceans and one species of sirenian are known mostly from numerous reports of accidental catch and stranding especially from the east and west



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coast of India. In India, all species of marine mammals are protected under the Wildlife (Protection) Act, 1972 (Vivekanandan & Rajagopalan 2011). Marine mammals from the Andaman and Nicobar (A & N) Islands are poorly understood. In recent years sighting of killer whales near Nicobar (Abhilash et al. 2011) and stranding of 40 pilot whales in north Andaman (Raghunathan et al. 2013) are the two major reports from these islands. The most comprehensive study of marine mammalian fauna in India in recent times was carried out onboard FORV 'Sagar Sampada' between October 2003 and November 2011 (Vivekanandan & Jeyabaskaran 2012). During this period of survey 626 sightings were recorded with 8674 individuals of 18 species. Sighting records play an important role in understanding distribution, abundance and behaviour. Even reports of opportunistic sightings such as described in this paper can be an important factor of information as dedicated long term study is still lacking in India.

METHODS

The sighting records presented in this paper are from near-shore waters off middle and south Andaman. All the sightings are opportunistic and were recorded between August 2013 and January 2014. Standard methods (Vivekanandan & Jeyabaskaran 2012) were used for studying and identifying the marine mammals. On each sighting, the number of individuals were counted and their behaviour was recorded. Photographs as well as videos were taken with the help of Canon Power Shot SX230 HS digital camera with a water proof housing and Nikon D3100 DSLR camera. The co-ordinates of each location were recorded using a handheld GPS device (Garmin etrex Vista H) as well as a GPS (Furuno GP-31) on-board the trawler. Identification of species was carried out with the help of marine mammal identification guides of Carwardine (1995) and Vivekanandan & Jeyabaskaran (2012).

RESULTS

A total of seven sightings consisting of 25 individuals were recorded during this period, out of which one was a Dugong (*Sirenia: Dugongidae*) and the rest were dolphins. Of these seven sightings, one sighting of dolphin was made from the shore at Chidiyatapu, one of *Dugong dugon* was made while snorkelling at Burmanullah and five sightings of dolphins were made from on-board a fishing trawler in middle and south Andaman (Table 1). Photographs of all the sightings were taken except the last one of two dolphins.

Sighting 1 (Image 1): On 9 September 2013 during a regular survey of coral reefs to Chidiyatapu (Mundapahad Beach) a pod of dolphins numbering 12–14 individuals was observed. The sighting occurred while the survey team was at the beach. At around 12:10 hr the pod was seen just outside the coral reef in front of the beach. The coral reef in Chidiyatapu is situated at a distance of about 225m from the beach. The direction of their travel was from north-west to south-east of the islands.



Image 1. Photograph showing dorsal fins of four individuals of dolphins at the backdrop of Ruthland Island, as viewed from Mundapahad Beach

Table 1. Chronology of sighting

Sighting	Date and time	Location	GPS coordinates	Mammalian fauna
1.	09.09.2013, 12:10hr	Chidiyatapu	11°29'21.86"N & 92°42'22.05"E	12–14 dolphins
2.	14.12.2013, 13:48hr	Burmanullah	11°34'29.96"N & 92°44'27.46"E	1 <i>Dugong dugon</i>
3.	08.01.2014, 12:32hr	North East of Kyd Island	11°58'13.24"N & 92°48'46.28"E	8–10 <i>Tursiops aduncus</i>
4.	10.01.2014, 12:15hr	North East of Kyd Island	11°59'51.56"N & 92°47'35.91"E	8–10 <i>Tursiops aduncus</i>
5.	11.01.2014, 8:58hr	North East of Kyd Island	11°58'22.50"N & 92°47'24.40"E	8–10 <i>Tursiops aduncus</i>
6.	12.01.2014, 8:30hr	North East of Kyd Island	11°59'13.62"N & 92°47'56.59"E	8–10 <i>Tursiops aduncus</i>
7.	22.01.2014, 11:35hr	South of Interview Island	12°45'25.38"N & 92°40'28.12"E	2 dolphins

The pod seemed to be of common dolphins (*Tursiops* sp.) or other similar species (Carwardine 1995) but could not be verified as the sighting was from a great distance. *Tursiops* sp. have more or less a greyish body and slightly hooked up tip of dorsal fin among many other characters. The pod was seen swimming at the surface and breathing at regular intervals of 4–5 minutes until they were out of sight in the bay. The typical feature of the area is that the Chidiyatapu bay is a small part of a long channel (around 12km) connecting the west (Bay of Bengal) to the east (Andaman Sea) running along the breadth of South Andaman. Towards the Bay of Bengal lies Mahatma Gandhi Marine National Park (MGMNP) composed of 15 protected islands and towards Andaman Sea lies Chidiyatapu, the southernmost tip of South Andaman. The direction of their travel can imply two explanations of their movement (as shown in Fig. 1) which most probably might be a regular route but not reported so far. Out of the two explanations the first one is that the pod might have entered from and exited to the Andaman Sea itself. The second explanation is that they might have entered through MGMNP and were travelling east to exit to the Andaman Sea after crossing Chidiyatapu bay where the pod was eventually sighted.

Sighting 2 (Image 2): An opportunistic sighting of a *Dugong dugon* (Muller, 1776) occurred on 14

December 2013 at Burmanullah in the main island of South Andaman. A team composed of the authors was carrying out a survey of corals and reef fishes by snorkelling when the dugong was sighted. The animal was healthy and about 3m in length but the sex could not be determined as it was moving fast and the visibility was low. The depth at the point of sighting was around 3.5m. Moments before the sighting a whistling sound was heard but could not be confirmed if it was made by the same animal. The animal was observed when it suddenly approached the first author close to the outer reef and then turned back from the outer edge of the coral reef and could be seen for only a few seconds. This behaviour can be compared to observer directed behaviour as mentioned by D'souza & Patankar (2009).

Sighting 3, 4, 5, 6 (Image 3A-D): These four sightings were most interesting as the same pod of dolphins 8–10 individuals of *Tursiops aduncus* (Ehrenberg, 1832) were observed in the same geographical area on 8, 10, 11 and 12 January 2014. All these sightings were made during trawling operations near the north-eastern part off Kyd Island in South Andaman where the average depth of water was around 20m. The behaviour of the pod was quite interesting as they were observed to follow the cod end of trawl net for hours together until the net was hauled to the shallow waters. Other behaviours

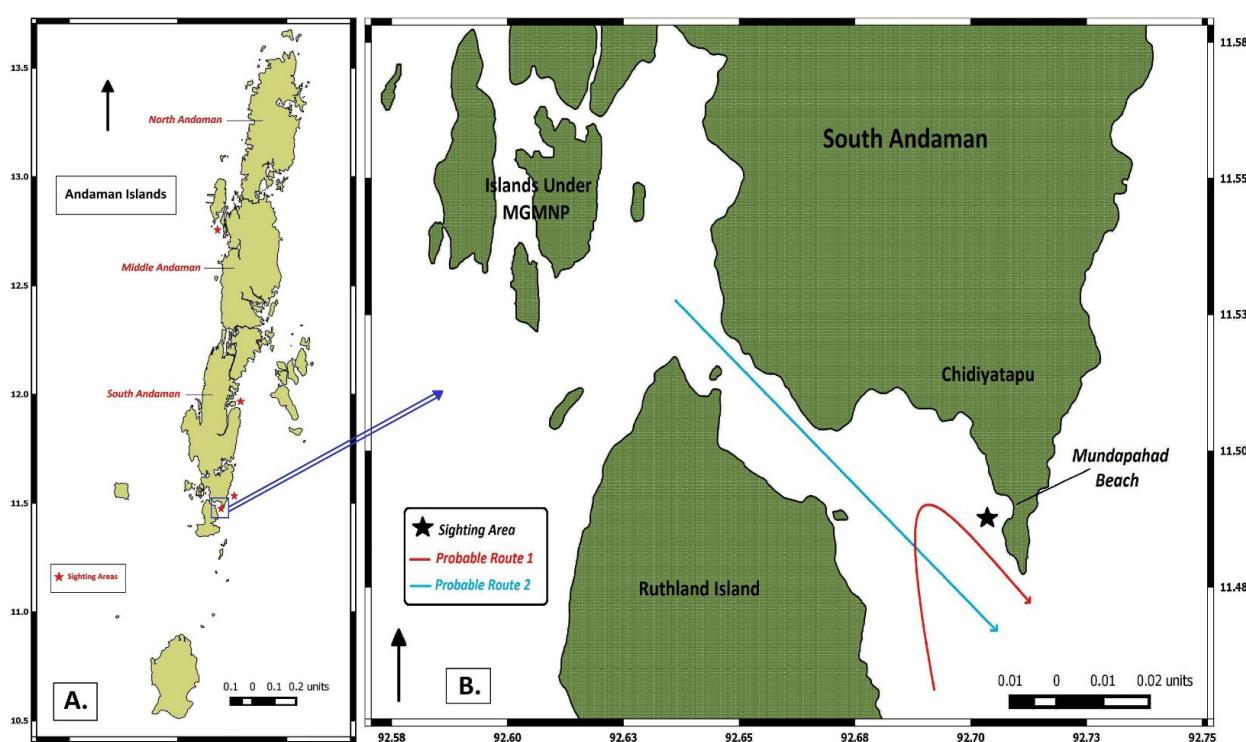


Figure 1. A - Andaman Islands with the sighting areas; B - The actual sighting area in Chidiyatapu bay and the two probable routes of the dolphins.



Image 2. Photographs of the dugong which was sighted in Burmanullah, South Andaman

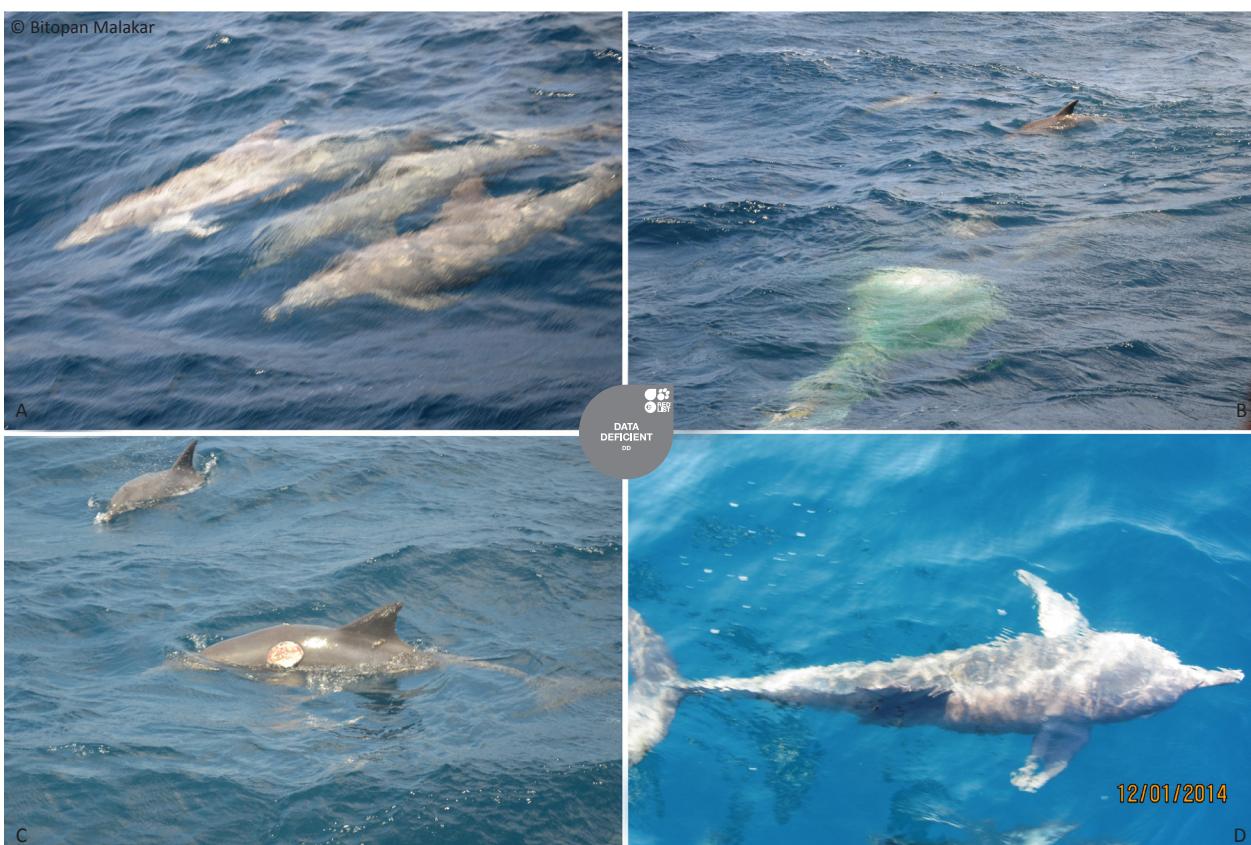


Image 3. Photographs of *Tursiops aduncus*

A - Four individuals swimming together at the surface; B - Few individuals seen chasing the cod end of the trawl net while hauling; C - The injured adult individual along with another individual; D - A younger individual as seen while bow riding

observed were bow-riding, wake-riding and frequent breaching as described by Carwardine (1995). Bow riding (jumping and swimming just in front of the trawler) by two individuals one of which was a younger individual was observed on 12 January 2014. The conclusion that the sighting was of the same pod is due to two reasons. First, the pod was sighted repeatedly in the same area north east off Kyd Island. Second, an adult individual

with a deep scar just in front of the dorsal fin on its back was sighted every time. Though the injury seemed to be severe (Image 3C), the dolphin was found to be active. At least two individuals were younger when compared to the others and were very active as they breached most number of times. While most members followed the trawl net, 2–4 individuals remained close to the boat riding the waves created by the boat and breaching

occasionally. Individuals were seen eating small fishes that escaped from the net and the live discards thrown out of the boat by the fishermen. The dolphins did not show much interest in dead discards (fishes) that were floating in the water. Marine birds were observed consuming the dead discards.

Sighting 7: This sighting occurred on 22 January 2014 south of Interview Island during a trawling operation. Two healthy individuals of dolphins were sighted close to the trawler resurfacing three times before going out of sight. The two individuals seemed to be of *Tursiops* sp. but could not be confirmed due to less availability of time before being identified or photographed.

DISCUSSION

This study reports the occurrence of bottlenose dolphins and dugong in Andaman region and a part of the behaviour study of a pod of dolphins off Kyd Island. *Dugong dugon*, declared as the state animal of A & N Islands, was once abundant among these islands, but its abundance and distribution is poorly known now (D'souza & Patankar 2011). This mammal was once present in the marine waters throughout the coastline of India. It is now estimated that only 200 individuals of Dugong are present in small pockets along the vast coastline of India (Sivakumar 2013). Due to hunting, accidental catch during fishery activities and rapid habitat destruction, this animal is endangered in India today (Vivekanandan & Jeyabaskaran 2012). Dugongs are listed as 'Vulnerable' in IUCN Red List of Threatened Species and in India it is listed under Schedule I of Wildlife (Protection) Act, 1972 (D'souza & Patankar 2009). At present in India dugongs occur in Gulf of Mannar, Palk Bay, Gulf of Kachchh and A & N Islands (Vivekanandan & Jeyabaskaran 2012). A & N Islands is an ideal location for conservation of dugongs due to less anthropogenic pressure over these islands. An estimate using interview-based survey suggests that 44–81 individuals of dugong may be present in the coastal waters of A & N Islands (Pandey et al. 2010). Extensive work on the abundance and distribution of dugongs and detailed study of sea grass beds have been carried out by D'souza et al. (2013) in the Andaman & Nicobar region. This is the first ever underwater sighting in Burmanullah after almost five years when D'souza & Patankar (2009) sighted a male individual in Kodiaghhat in 2007–08. D'souza & Patankar (2009) also sighted two dugongs, one each in Havelock and Neil Islands during the same period (2007–08). The estimated distance between this sighting in Burmanullah and the previous sighting in Kodiaghhat is about 5km. It could not be confirmed whether the present sighting is

of the same individual sighted in the previous reports. A news article was published on this sighting in the local daily 'The Daily Telegrams' from Port Blair on 29 December 2013 so as to create awareness among the local public of the Andaman & Nicobar Islands.

Indo-pacific Bottlenose Dolphins (*Tursiops* sp.) are very common in seas and oceans of the world. Among all dolphins, bottlenose dolphins are the second most common species in Indian seas after pantropical Spinner Dolphins (*Stenella longirostris*) (Vivekanandan & Jeyabaskaran 2012). The four sightings of the same pod of *Tursiops aduncus* in the same area is significant, as it indicates the residential nature of the species. Resident dolphins have been an interesting case of studies worldwide (Ballance 1990; Lott 2004; Lusseau et al. 2005; Vermeulen & Cammareri 2009; Chabanne et al. 2012) to understand their pattern of residency, feeding and social behaviour and to understand their role in the food chain in coastal areas. The residency status of this pod of dolphins near Kyd Island is yet to be confirmed. Their behaviour in response to trawling operations is noteworthy and can lead to a greater understanding of their habits. Close similarity between *Tursiops aduncus* and *Tursiops truncatus* creates difficulty in identification. Previously *Tursiops* was thought to be a monospecific genus (Vivekanandan & Jeyabaskaran 2012) with only *T. truncatus* as the reported species. But recently, through genetic studies it is confirmed that the genus consists of two species (Hale et al. 2000). Recent genetic studies have confirmed that bottlenose dolphins from Indian seas is of *T. aduncus* (Jayasankar et al. 2008). Other minor variations are of morphological characters: *T. truncatus* is larger than *T. aduncus* and has a shorter beak. Body colouration is more or less uniform grey in *T. truncatus* (offshore ones) (Carwardine 1995) whereas in *T. aduncus* colouration is dark grey dorsally and light pale grey ventrally and maybe with dark spotting with sexual maturity (Vivekanandan & Jeyabaskaran 2012). The presence of *T. aduncus* in the waters of A & N Islands has been confirmed during cetacean survey onboard FORV Sagar Sampada between 2003 and 2011 (Vivekanandan & Jeyabaskaran 2012).

CONCLUSION

Reports of dolphin sightings by fishermen, locals and tourists are common off Andaman Islands, but published records are rare. Much is yet to be understood about the marine mammals of these islands. Fishermen can play an important role in reporting any mammalian sighting as found by the authors who accompanied the fishermen during the trawling operations in January

2014. Educating fishermen about the importance of marine mammals will help in reducing accidental catches and their sighting reports will help in formulation of conservation strategies and knowledge of areas of aggregation in the EEZ of India (Venu & Malakar 2015). For future conservation of the marine mammalian fauna of A & N Islands, sighting reports like this one can play an important role. A dedicated long term study on cetaceans from this region will be more helpful in understanding the distribution, abundance and behaviour of the mammalian fauna.

REFERENCES

- Abhilash, K.S., B. Anoop, K.S.S.M. Yousuf, R. Jeyabaskaran & E. Vivekanandan (2011).** Occurrence of Killer Whale *Orcinus orca* in Andaman waters. In: Dr. S Jones Centenary Colloquium on 'Challenges in Marine Mammal Conservation & Research in the Indian Ocean', 26–27 August 2011, Kochi.
- Ballance, L.T. (1990).** Residence patterns, group organization, and surfacing associations of bottlenose dolphins in Kino Bay, Gulf of California, Mexico, pp. 267–283. In: Leatherwood, S. & R.R. Reeves (eds.). *The Bottlenose Dolphin*. San Diego. Academic Press.
- Carwardine, M. (1995).** *Whales, Dolphins and Porpoises*. Dorling Kindersley Limited, London, 256pp.
- Chabanne, D., H. Finn, C. Salgado-Kent & L. Bejder (2012).** Identification of a resident community of Bottlenose Dolphins (*Tursiops aduncus*) in the Swan Canning Riverpark, Western Australia, using behavioural information. *Pacific Conservation Biology* 18: 247–262.
- D'souza, E. & V. Patankar (2009).** First underwater sighting and preliminary behavioural observations of Dugongs (*Dugong dugon*) in the wild from Indian waters, Andaman Islands. *Journal of Threatened Taxa* 1(1): 49–53; <http://dx.doi.org/10.11609/JoTT.o2002.49-53>
- D'souza, E. & V. Patankar (2011).** *Ecological studies on the Dugong dugon of The Andaman and Nicobar Islands: A Step Towards Species Conservation*. Nature Conservation Foundation, Mysore, 19pp.
- D'Souza, E., V. Patankar, R. Arthur, T. Alcoverro & N. Kelkar (2013).** Long-term occupancy trends in a data-poor Dugong population in the Andaman and Nicobar Archipelago. *PLoS ONE* 8(10): e76181; <http://dx.doi.org/10.1371/journal.pone.0076181>
- Hale, P.T., A.S. Barreto & G.J.B. Ross (2000).** Comparative morphology and distribution of the *aduncus* and *truncatus* forms of Bottlenose Dolphin *Tursiops* in the Indian and Western Pacific Oceans. *Aquatic Mammals* 26: 101–110.
- Jayasankar, P., B. Anoop, E. Vivekanandan, M. Rajagopalan, K.M.M. Yousuf, P. Reynold, P.K. Krishnakumar, P.L. Kumaran, V.V. Afsal & A.A. Krishnan (2008).** Molecular Identification of delphinids and finless porpoises (Cetacea) from Arabian Sea and Bay of Bengal. *Zootaxa* 1853: 57–67.
- Jefferson, T.A., P.I. Stacey & R.W. Baird (2008).** *Marine Mammals of the World: A Comprehensive Guide to their Identification*. Academic Press, 592pp.
- Lott, R. (2004).** Group size, social associations and resident patterns of Bottlenose Dolphins (*Tursiops truncatus*) in Cardigan Bay, Wales. Master of Science thesis, School of Biological Sciences, University of Wales, Bangor, 97pp.
- Lusseau, D., B. Wilson, P. Hammond, K. Grellier, J.W. Durban & K.M. Parsons (2005).** Quantifying the influence of sociality on population structure in Bottlenose Dolphins. *Journal of Animal Ecology* 1: 1–11.
- Pandey, C.N., K.S. Tatu & Y.A. Anand (2010).** *Status of Dugong (*Dugong dugon*) in India*. GEER Foundation, Gandhinagar, 146pp.
- Raghunathan, C., S.S. Kumar, S.D. Kannan, T. Mondal, C.R. Seeraj, R. Raghuaraman & K. Venkataraman (2013).** Mass stranding of Pilot Whale *Globicephala macrorhynchus* Gray, 1846 in North Andaman coast. *Current Science* 104(1): 37–41.
- Sivakumar, K. (2013).** Status of *Dugong dugon* in India: strategies for species recovery, pp. 419–432. In: Venkataraman, K., C. Sivaperuman & C. Raghunathan (eds.). *Ecology and Conservation of Tropical Marine Faunal Communities*. Springer-Verlag Berlin Heidelberg; http://dx.doi.org/10.1007/978-3-642-38200-0_27
- Venu, S. & B. Malakar (2015).** Diversity of marine mammals of India - status, threats, conservation strategies and future scope of research, pp. 283–302. In: Venkataraman, K. & C. Sivaperuman (eds.). *Marine Faunal Diversity in India: Taxonomy, Ecology and Conservation*. Academic Press, UK; <http://dx.doi.org/10.1016/B978-0-12-801948-1.00018-5>
- Vermeulen, E. & A. Cammareri (2009).** Residency patterns, abundance, and social composition of Bottlenose Dolphins (*Tursiops truncatus*) in Bahía San Antonio, Patagonia, Argentina. *Aquatic Mammals* 35(3): 379–386; <http://dx.doi.org/10.1578/AM.35.3.2009.379>
- Vivekanandan, E. & M. Rajagopalan (2011).** Challenges in Marine Mammal Conservation & Research in the Indian Ocean, Central Marine Fisheries Research Institute, Kochi.
- Vivekanandan, E. & R. Jeyabaskaran (2012).** *Marine Mammal Species of India*. Central Marine Fisheries Research Institute, Kochi, 228pp.

