

Marine Biodiversity

Unusual behavior and habitat use of a male solitary dugong inhabiting coral reefs at the Cocos (Keeling) Islands --Manuscript Draft--

Manuscript Number:	MARB-D-14-00192R1
Full Title:	Unusual behavior and habitat use of a male solitary dugong inhabiting coral reefs at the Cocos (Keeling) Islands
Article Type:	Oceanarium
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Funding Information:	
Abstract:	Oceanarium
Response to Reviewers:	File uploaded

Unusual behavior and habitat use of a male solitary dugong inhabiting coral reefs at the Cocos (Keeling) Islands

Dugongs are distributed through the tropics and subtropics from east Africa to Vanuatu (Marsh et al. 2011). They prefer shallow (< 10 m) protected inshore areas where their food source (seagrass) is abundant. The Cocos (Keeling) Islands (12°12'S, 96°54'E) are an oceanic coral atoll in the Indian Ocean and not typical habitat of dugongs. In June 2002, a solitary male dugong (2 m in length) colonised the Cocos Islands having travelled more than 1000 km through oceanic waters greater than 5000 m deep (Hobbs et al. 2007). This remarkable colonisation event is well beyond the known geographic range of the species (Marsh et al. 2011). Here we describe the dugong's unusual behavior and habitat use based on our underwater observations from 2002 to 2014.

Dugongs tend not to interact with humans, however the Cocos dugong regularly approaches divers and snorkelers, coming within 0.5 m (Hobbs et al. 2007, Fig. 1a). These interactions are commonly 5 to 20 mins duration (Hobbs et al. 2007), but can last up to an hour. The dugong's unusual behavior includes approaching divers face-to-face, vertical orientation facing divers, circling divers, and using its forelimbs to spin around the anchor line (Fig. 1b). Human interactions have also been observed for a solitary dugong in Vanuatu (Adam, 1998). The Cocos dugong occasionally lies on its side motionless on the sand. Vocalisations of the dugong can be heard throughout the dive (Hobbs et al. 2007). The dugong chases large animals, including turtles, dolphins and manta rays, and is found with batfish and unicornfish (Fig. 1a,c). A lack of conspecifics may explain why the dugong interacts with humans and large marine fauna.

There are extensive seagrass beds within the shallows of the Cocos lagoon, however the dugong is usually seen on the outer reef dropoff, north of Direction Island (Hobbs et al. 2007). The water at this location is 20 m deep and drops rapidly to 5000 m. The area is devoid of seagrass and consists of coral reef and sand (Hobbs et al. 2007). The dugong may use this habitat because it provides access to deeper water and a quick escape from predators (e.g. tiger sharks, Wirsing et al. 2007) or because it is a regular dive site and can interact with humans.

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Figure legend

Fig. 1 The Cocos dugong interacting with a) batfish and divers, b) anchor line, and c) manta ray. Photos: K. Willshaw.

Figure

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