

Loggerhead sea turtle *Caretta caretta* found preying on a sea cucumber on a reef in Belize

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Abstract

The loggerhead sea turtle (*Caretta caretta*) is known to prey on slow-moving or sessile organisms. During annual surveys of queen conch (*Strombus gigas*) in southern Belize, the first direct visual documentation that sea turtles prey on sea cucumbers was obtained, confirming the limited evidence previously obtained from gut content analyses. An individual of *C. caretta* was observed at ~16 m depth in a habitat characterised by sand and coral rubble, with dispersed soft corals. It was seen swimming with a donkey dung sea cucumber (*Holothuria mexicana*) in its mouth, trying to bite and swallow it, releasing and picking it up again several times. Overfishing of sea cucumbers in Central America, the Caribbean and Mexico may have unknown consequences for protected species such as sea turtles, as the availability of this prey type is decreasing at an alarming rate. The present observation may also have implications for sea cucumber ranching facilities where sea turtles have often been observed.

Introduction

The loggerhead sea turtle *Caretta caretta* is an opportunistic generalist predator of slow-moving or sessile organisms such as seahorses, jellyfishes, sea pens, crabs, molluscs and tunicates (e.g. Parker et al. 2005; Plotkin et al. 1993). Despite existing reports of the presence of sea cucumber remains in the gut contents of loggerheads from Australia (Thompson 1980) and the central Mediterranean Sea (Casale et al. 2008), no direct evidence of predation by a sea turtle on a sea cucumber has been reported in the scientific literature. A recent review of the role of economically important sea cucumbers in food webs listed several specialist and opportunist predators but did not mention sea turtles (Purcell et al. 2016). Here we present the first direct photographic evidence of a sea turtle preying on a sea cucumber.

Methods

Monitoring took advantage of the annual queen conch stock assessment conducted by Reef Conservation International (ReefCI 2019). Mentionable behaviour in other groups of marine species were also recorded. The total area surveyed by scuba divers was ~600 m² at depths of 4–18 m. Each dive lasted about 40 min, during which two 2-m wide by 50-m long transects were surveyed in each of three sites per day, from 7 to 9 May 2018. In total, 11 sites were surveyed within the Sapodilla Cayes Marine Reserve in southern Belize. These annual surveys have been conducted at the same sites since 2004.

Results and discussion

On 8 May 2018 at 12:05 local time, an individual *C. caretta* was observed feeding on an adult sea cucumber (*Holothuria mexicana*) at a depth of ~16 m on Fore Reef in an area called Sandy Bomb (16° 6' 36.0" N 88° 7' 48.0" W), which is part of the Belize Barrier Reef. The seafloor there is characterised by sand and coral rubble with dispersed soft corals (Fig. 1). *C. caretta* was swimming with the sea cucumber in its mouth while trying to bite and swallow it (Fig. 1 a, b). It also released the sea cucumber and picked it up again several times. The white internal collagen tissue layer of the sea cucumber body wall (Fig. 1a) was seen to protrude underneath the shaved skin, as a result of successive bites. The whole event, from capture to ingestion, lasted about 2 min, after which the turtle swam away. Moreover, a similar observation was also made by sea cucumber fishers south of Sypio Caye (16° 27' 18.42" N and 88° 16' 54.78" W) around 10:00 local time on the 15 May 2015 (H. Saldivar, local fisher, pers. comm.).

Conclusions

The depletion of originally abundant sea cucumber populations through overfishing in Central America, Mexico and the Caribbean implies a progressive shortage of this easy prey (large and slow-moving) for sea turtles (Fitzpatrick et al. 2008; NMFS 2009), with as yet unknown cascading effects. On the other hand, sea turtles are often seen entering sea cucumber ranching facilities (pers. observ.). While predation on cultured sea cucumbers was never confirmed, the present note suggests that depletion of sea cucumbers from turtle feeding may be a valid concern for the industry.

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Figure 1a, b. The sea turtle *Caretta caretta* (~90 cm straight carapace length) feeding on the sea cucumber *Holothuria mexicana* (~15 cm total length) on Fore Reef in Belize. (Images: Willie Caal, ReefCI)

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