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FIRST RECORDED LEATHERBACK TURTLE (*DERMOCHELYS CORIACEA*) NESTING EVENT IN KENYA

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Although considered rare, leatherback turtles (*Dermochelys coriacea*) are found throughout the Southern West Indian Ocean (SWIO) and have been recorded in Kenyan waters (Frazier, 1975; Zanre, 2005; Hamann *et al.*, 2006). The only known significant nesting of leatherbacks in the region occurs at the Maputaland rookery in South Africa and Mozambique (Nel *et al.*, 2013; Pereira *et al.*, 2014). In Kenya, nesting has been recorded for green turtles (*Chelonia mydas*), hawksbill turtles (*Eretmochelys imbricata*) and olive ridley turtles (*Lepidochelys olivacea*) at various places along the coast (Okemwa *et al.*, 2004; Olendo *et al.*, 2017). One of these locations is the beach of the Watamu Marine National Park (WMNP), which is considered a key nesting site in Kenya (Okemwa *et al.*, 2004). The majority of the nests laid on this beach are from green turtles, although olive ridley and hawksbill turtle nests have been recorded too (Okemwa *et al.*, 2004).

Since 1997, Local Ocean Conservation (LOC) has been monitoring the beach of the WMNP (3.385472°S, 39.980611°E) and surrounding areas, under the auspices of the Kenya Wildlife Service (KWS). A team of trained beach and nest monitors (hereafter “monitors”) patrol the beach of the WMNP every night for two hours either side of high tide, resulting in a minimum patrol effort of four hours per night. The nesting turtle reported here was encountered during one of these patrols.

The monitors spotted the turtle at the end of a night patrol, in the early morning of the 23 January 2014. The nesting event took approximately 150 minutes

and finished after sunrise. This is longer than the total nesting time reported in other sources: of 93 minutes (Carr & Ogren, 1958) and 113 minutes (Eckert & Eckert, 1985) and 118 minutes (Reina *et al.*, 2002).

The nesting female measured 156.1cm long (curved carapace length; CCL) and 106.0cm wide (curved carapace width; CCW), which is within the size range of a mature female leatherback in the Indian Ocean (Eckert *et al.*, 2012). The turtle looked to be in good condition, but she did have a deep cut on the left shoulder. It was noted that the cut was not bleeding and looked like an old wound. It was a clean cut which suggests that it was caused by a knife. It is possible that the turtle became entangled in fishing gear and was injured as she was cut free. However, the injury did not unduly affect the nesting process.

Due to the presence of tourism activities and the high volume of foot traffic in the vicinity of the nesting site, there was a significant risk of the nest being trampled. If the nest was fenced off and signposted, this would have attracted more attention and created a risk of it being disturbed. It was, therefore, decided to move the clutch approximately 200m along the beach to a more secluded area. This was done immediately after the clutch was laid using methods similar to those outlined by Mortimer (1999). The clutch was made up of 91 eggs and 6 shelled albumen gobs. Average clutch size in the Maputaland rookery is 104 eggs (range: 60-160).

As per standard LOC protocol, the nest was monitored

daily for signs of disturbance or hatching. After 77 days the nest had not shown signs of hatching and since the average incubation of leatherback nests is approximately 60 days (Eckert *et al.*, 2012), it was decided to excavate the nest. The entire clutch had failed to produce hatchlings and inspection of the unhatched eggs showed no visible signs of embryonic development. It is more likely the eggs died during early stages of embryonic development than being infertile (Bell *et al.*, 2004). Why the nest failed is unknown, as the LOC monitors need to relocate clutches regularly and the success rates are similar to those left *in-situ* (70-80% hatching success, van de Greer, unpubl. data).

Although leatherback turtles have been encountered in the seas around Watamu before, nesting has never been reported anywhere along the Kenyan coast. This nesting event is unique in being the first documented leatherback nesting events in Kenya. The Mapatuland rookery is approximately 3,000km south of Watamu and is the closest known consistent nesting site. Tracking of post-nesting females from this rookery has shown that a significant portion of the population migrates north along the Mozambican coast and settles in the Sofala Banks area (Robinson *et al.*, 2016; Harris *et al.*, 2018). None of the tagged turtles, however, continued their migration along the coast into Tanzanian waters or Kenya beyond. One individual did appear to be heading further north in the open waters of the Mozambique Channel but even this track stops circa 650km short of the Tanzanian border (Harris *et al.*, 2018) and 1,500km short of WMNP. An alternative origin of the Watamu female is the rookery on Little Andaman Island (India), which is approximately 6,000km from Watamu. Post-nesting females from Little Andaman Island were tracked migrating into the SWIO, one of which appeared to be heading for Tanzania or Kenya (Swaminathan *et al.*, 2019).

Video of the nesting event can be viewed at <https://youtu.be/pr2JoaLlr4w> or by searching on YouTube for “LeatherbackseaturtlelayingeggsandswimminginKenya”.

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IMPACT OF NGO DRIVEN CONSERVATION ACTIVITIES ON LOCAL SEA TURTLE POPULATIONS AT CHAVAKKAD BEACH, KERALA, INDIA

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INTRODUCTION

Green Habitat is an NGO committed to the conservation of sea turtles at Chavakkad beach (10.62° N, 75.99° E), Kerala, South India. This is the largest nesting site for olive ridley (*Lepidochelys olivacea*) turtles in Kerala, with most nesting on the 6km coastline spanning Edakkazhiyur, Panchavadi and Akalad. Olive ridley turtles nest annually at Chavakkad beach from November-March. The species is categorised as Vulnerable on the IUCN Red List (IUCN, 2010) and included in Schedule-I of the Indian Wildlife (Protection) Act, 1972. Since the largest nesting congregation of olive ridley turtles in Kerala is on Chavakkad beach, conservation efforts at this site are important to the local nesting population.

Threats to turtles at Chavakkad beach

Local fishers and other residents have informed Green Habitat that consumption of turtle eggs used to be a prevalent practice in the region, as it was believed the eggs were a cure for conditions such as asthma and piles (haemorrhoids). The consumption of turtle meat also occurred but was comparatively less common. Threats to sea turtles and their habitats in the area have also included relatively high rates of bycatch (James *et al.*, 2019 and Saleem *et al.*, 2019b), light pollution and beach sand mining (Sundaram, pers.obs.).

Local stakeholders

Local stakeholders include fishers, teachers,

businesspersons and other persons from different occupations. The Forest Department has given support to the NGO by their presence at the meetings with the local fisher folk and other stakeholders. The NGO has also collaborated with local groups and self-government institutions, including the Mullassery Block *Panchayat* (rural local government), Pavaratty *Gram Panchayat* (village council), Chavakkad municipality, Seethi Sahib V. H. S. School, Edakkazhiyur, Open Scout Group of Enammakal, and local voluntary organisations, schools, colleges and clubs. The Seethi Sahib V.H.S. school has a club namely National Green Corps and some of the students from this club volunteer for Green Habitat.

At times, there has been no consensus between the various stakeholders, including fishers, government departments and conservation organisations such as Green Habitat, about what should be done to conserve sea turtles.

Sea turtle monitoring and conservation by Green Habitat

The *Kadalamakale Samrashikkuka* (Save the Sea Turtles) programme of Green Habitat started in 1998 and has included activities to stop illegal egg sale and collection, reduce bycatch, and protect turtle nests by moving them to a hatchery. The local community members initially resisted the NGO's efforts by destroying the turtle nests in the hatchery and objected to the awareness activities about the illegality of selling turtle eggs that would impact their livelihoods. After the initial resistance Green Habitat