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First confirmed record of green turtle (*Chelonia mydas*) nesting along the Namibian coast

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Introduction

Green turtle *Chelonia mydas* (Linnaeus, 1758) are known to occur along the Namibian coast, with most published sightings from the Kunene River mouth area (Tarr 1987, Griffin & Channing 1991, Simmons *et al.* 1993, Anderson *et al.* 2001, Griffin 2003, Paterson 2007, Elwen & Braby 2015, Cunningham *et al.* 2018). However, there has been much speculation regarding actual breeding along the Namibian coast.

Most authors indicate that green turtles are not known to breed along the Skeleton Coast, but probably only occasionally exit for basking (Tarr 1987, Branch 1998, Boycott & Bourquin 2000, Griffin 2003, Bonin *et al.* 2006). There are relatively few green turtle rookeries along the eastern Atlantic seaboard with the most significant nesting site being in Guinea Bissáu and smaller numbers nesting on Bioko Island, Gabon, and in the Cabinda and Namibe Provinces in Angola where nesting takes place between December and March (Branch 2008). Weir *et al.* (2007) indicate that concentrations of adult and juvenile green turtles are known from Foz de Cunene and that breeding occurs in the Namibe Province in Angola, just north of the Kunene River (Foz de Cunene is actually inland along the Kunene River, but the reference is presumed to refer to the Kunene River mouth area). Griffin (2003) assumes that the Namibian green turtles originate from the known nesting beaches in southern Angola and even the southern Indian Ocean.

As far as we could determine there are only two previous references to actual green turtle breeding along the Namibian coast, by Haacke (Sandwich Harbour) and Fourie (Kunene River mouth, 1958), but both are anecdotal (Tarr 1987).

Nesting observation

On 4 February 2020 at 17h00, on a warm, sunny wind still day, an adult female of approximately 1 m in width was encountered closing a nest in typical fashion – i.e. projecting sand backwards with powerful thrust of the fore flippers (Figures 1 and 2). This was observed from 17h00 until 17h30 when the turtle returned to the sea (Figure 3). It was low tide during the observation period and the nest was located approximately 10 m above the high water mark on the spit of sand between the Kunene River mouth and the estuary (S17°15.571' & E11°45.102'). Although actual egg laying was not



Figure 1: Green turtle at nesting site at the Kunene River mouth (Photo: J. van Rooyen).



Figure 2: Green turtle projecting sand backwards whilst covering up the nest (Photo: J. van Rooyen).

observed, the action of the female green turtle was typical of nest closure after depositing eggs (Figures 1 and 2). Furthermore, she was visibly exhausted and rested whilst closing the nest as well as when she returned to the sea (Figure 3). Egg laying usually occurs at night during high tide (Bonin *et al.* 2006, Spawls *et al.* 2006), hence this record is somewhat unusual in the time of day. The nesting site was marked with driftwood in an attempt to deter people from driving over and damaging the nest. Hatching typically occurs after 54 and 74 days of incubation (Bonin *et al.* 2006). On 3 May 2020 (89 days after egg laying) the nest was partially opened confirming the presence of eggs (Figure 4). On 5 July 2020 – 5 months since egg laying occurred – there was still no sign of hatching, probably indicating a futile effort for this Namibian breeding attempt. Green turtles are not known to breed in similar cold coastal areas in Chile (Donoso *et al.* 1999, Sarmiento-Devia *et al.* 2015) with the most southerly breeding record along the South American coast known from Peru, albeit at a lower latitude – e.g. 3°41'00.8"S and 80°41'19.9"W (Forsberg *et al.* 2012). The cold ambient temperatures along the Namibian coast and occasional inundation of the nest during high tide resulting in wet nest conditions probably inhibit egg development.



Figure 3: Green turtle returning to the sea after covering up the nest (Photo: J. van Rooyen).



Figure 4: Eggs confirmed from nest on 3 May 2020 (Photo: J. van Rooyen).

Green turtles are protected in Namibia under the Marine Resources Act No. 27 of 2000 while the IUCN (2020) classifies green turtles as Endangered due to a decreasing population trend and a decrease in or widespread disturbance of nesting sites. Documenting and protecting potential nesting sites of this species is therefore of conservation importance. Although this was a single nesting event and may not be significant in terms of world-wide population numbers, it is the first published nesting observation for Namibia. Moreover, as breeding sites further north in Angola have declined in recent decades (Weir *et al.* 2007), this area may become an important regional nesting area to conserve.

The Kunene River mouth area and estuary is viewed as the most important habitat along the northern Namib coast (Cunningham & Jankowitz 2010) as well as a site of special ecological importance in Namibia for both sea turtles and migrant shorebirds (Curtis & Barnard 1998). On the terrestrial side, the Kunene River is the only perennial river in this otherwise extremely arid environment, which adds to its overall ecological importance. The Kunene River mouth is formally protected within the Skeleton Coast National Park, and potentially even qualifies as a Ramsar site, although it has not yet been thus designated (Shaw *et al.* 2004). The warmer water in the estuary likely offers the turtles respite from the cold Benguela Current offshore (Boycott & Bourquin 2000, Alexander & Marais 2007). If this area becomes a regular nesting site for *Chelonia mydas*, it will add to its ecological value and the need for its continued protection.

This sighting is viewed as the first confirmed nesting site of green turtle published for Namibia, and furthermore confirms the importance of the Kunene River estuary, not only for avifauna, but as a potential green turtle breeding site.

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