

**SOCIO-CULTURAL AND ENVIRONMENTAL FACTORS INFLUENCING THE  
NESTING AND CONSERVATION OF MARINE TURTLES IN SONGOR RAMSAR  
SITE GHANA**

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**ABSTRACT**

Ghana's 550km coast currently supports three of the six turtle species that visit the Atlantic ocean of Africa. Seventy percent of the Ghana coast, 375km, comprise sandy beach that is suitable as turtle nesting areas. Marine turtles face a range of threats, both at the nesting sites and in the wider marine environment. The Songor wetland, one of the five coastal wetlands designated as Ramsar sites in Ghana, is among the areas along the coast that marine turtles visit and use as nesting sites.

The coastline of Ghana is heavily populated hence natural resources are overexploited. Natural and human activities that occur along the coast in the Ramsar site exert critical pressure on the vulnerable habitats and resources. Also the habitats of the nesting turtles are altered by these activities. Ada, the study area and Ningo-Prampram are known to receive considerable number of turtles during the nesting season. The upsurge in human population along the coast, habitat destruction by natural and human induced activities, beach front development and the decline in respect for traditional beliefs and norms that protect marine turtles have prompted the current investigations to ascertain the influence of these on the nesting and conservation of marine turtles in the Songor Ramsar site.

Biological, environmental and socio-cultural studies were conducted in the Songor Ramsar site from August 2004 to April 2005 in three demarcated zones (Volta estuary – Ocanseykope-[Zone 1]; Anyakpor – Small House-[Zone 2]; Kablevu – Wokumagbe-[Zone 3]). Biological data were collected through direct field observations while soil samples along the coast beside fresh turtle nests were taken at various depths and analysed at the laboratory for pH, salinity, moisture content, temperature, texture and particle size. 117 people from selected communities within the three demarcated zones were interviewed to evaluate the socio-cultural aspects of the conservation of the marine turtles.

During the nine month survey (August 2004 – April 2005) a total of 230 live and dead individuals of three species of marine turtles were recorded comprising 30 (13.0%) leatherback turtles (*Dermochelys corriacea*), 190 (82.6%) olive ridley (*Lepidochelys Olivacea*) and 10 (4.3%) green turtles (*Chelonia mydas*). *Dermochelys corriacea* were the most common live turtle species on the beach accounting for 85.7% of the total live specimens encountered. Of the species recorded on the beach, *Lepidochelys corriacea* were the most abundant, contributing 82.6% of the total number of live and dead specimens encountered. The 21 individual live marine turtles recorded comprised 18 *Dermochelys corriacea* and 3 *Lepidochelys Olivacea*. No live *Chelonia mydas* were observed during the study period. The highest number of live *Dermochelys corriacea* were recorded in February 2005 (11 individuals), while the lowest number was recorded in March 2005. 209 individual dead turtles were encountered on the coast during the study period. 136 of the dead turtle were *Lepidochelys Olivacea*.

Ninety-four turtle crawling tracks of the three species, comprising 51 *Dermochelys corriacea*, 31 *Lepidochelys Olivacea* and 12 *Chelonia mydas* were observed and recorded. Of the three zones the highest turtle crawling tracks were recorded in Zone 2. The highest monthly totals of 12 crawling tracks were recorded for *Dermochelys corriacea* in February 2005. In April 2005, the highest monthly total of 10 and 4 crawling tracks were recorded for *Lepidochelys Olivacea* and *Chelonia mydas* respectively. Three hundred and twenty seven (327) eggs / nest spots of the three turtle species were recorded and these comprise 178 *Dermochelys corriacea*, 113 *Lepidochelys Olivacea* and 36 *Chelonia mydas* of which 144 were in Zone 3, 115 were in Zone 2 and 68 in Zone 1. The highest monthly totals of 48 individual nest spots were recorded for the *Dermochelys corriacea* in December 2004. However, 41 of the nest with egg recorded for the three marine turtles were exposed. These comprised 14 *Dermochelys corriacea*, 18 *Lepidochelys Olivacea* and 9 *Chelonia mydas*. Out of the 41 nest with egg exposed the highest monthly totals of 4 of the *Dermochelys Corriacea* were in October 2004. Turtle eggs and nest that were exposed were observed to be influence by human activities, sea erosion, and flooding and clay underlay of the beach. Hatchlings of marine turtles were widely distributed along the coast. A total of 99 individual hatchlings were recorded comprising 58 *Dermochelys corriacea*, 24 *Lepidochelys Olivacea* and 14 *Chelonia mydas*. Out of the above total of 99, a monthly total of 16 were recorded for *Dermochelys corriacea* in October 2004. The highest number of hatchlings of the three species of turtles recorded in Zone 2 may have been influenced by stable coastal condition, less beachfront development and limited human activities along the beach. Besides, the incubation of the eggs and the emergence processes of the hatchlings may not have been interrupted in this zone.

A total of 163 nests with egg spots were observed to be preyed of which 83 were for the *Dermochelys corriacea*, 65 and 15 were for *Lepidochelys Olivacea* and *Chelonia mydas* respectively. Feral dogs preyed

on 100 nests with eggs while unconfined pigs and tufted ghost crabs (*Ocypoda cursor*) preyed on 23 and 40 nests with eggs of the three species respectively. The most important predator was the domestic dog and the highest incident of predation was recorded in the month of December.

The three zones did not exhibit significant variability in environmental conditions during the study period. Beach erosion and accretion were the most variable parameters reflecting in beach loss and restoration in the different zones. Beach erosion was very high in zone 1 with a maximum value of 8.1 meters in August while accretion was high in zones 2 and 3 with values of 0.1 meters recorded in October and November and 0.2 meters in January. Beach erosion and cliffs formed along the coast prevented nesting turtles from laying eggs above the high water mark. Egg clutches laid in such area were exposed by sea erosion and eaten by domestic and wild predators. Water tide varied over the study period and influenced turtle nesting. The highest water tidal height value of 1.74m was recorded in October 2004. Pollutants such as refuse materials and debris occurred commonly along the entire coast. These pollutants were abundant in zone 1 than zone 2 and 3. The high presence of human excreta observed in zones 1 and 3, may be linked directly to communities living close to the beach and who lacked basic sanitary facilities. However, none of these pollutants along the beach appeared to have any direct influence in nesting turtles.

Physicochemical analysis of soil samples collected along the beach and from the fresh nests with egg spots of the three turtle species produced results that did not vary significantly. Salinity values recorded were high in August, September and October 2004, while soil pH values ranged between 7.1 - 7.8 during the study period. Soil moisture contents were high between January and April, whilst the texture of soil collected from depths below 10cm could be classified as fine with particle size of 0.02mm. The values recorded appear to have been influenced by seasonal environmental factors like low rainfall, high evaporation and concentration of ions. These values, however, did not seem to influence the selection of nesting areas by the turtles.

Socio-cultural studies revealed that turtles play a vital role in the socio-cultural and traditional lives of the people. About 86% of the respondents said they learnt of the marine turtle from the beach whilst the media (TV and radio) constituted a source of information for only 10.6% of the respondents. 32.6% of the respondents believed that Danbgebiaweh clan obeyed taboos and traditional beliefs that conserved turtles, whereas 21.2% were of the view that it was rather the Lomobiaweh clan. 82.9% of the respondents stated that government laws were the most effective turtle conservation tool whilst only 2.6% were of the opinion that the traditional laws were most effective. The respect, fear, strict application and severity of the government laws among others were some of the reasons stated by the respondents. However, turtles were still conserved by traditional beliefs and norms in the survey area. Currently the degree of respect and fear for the traditional beliefs and norms has reduced due to Christianity, relatively high education, high human population density and migration. Among some of the clan members who do not eat the turtle

meat, there is still the belief that certain curses, diseases and death would be meted out by the gods when one eats the turtle meat.

Management strategies that could be applied to protect the turtles include:

- reduction in block molding and sand winning along the coast that facilitates erosion of the beach;
- regulation of the use of big mesh size nets that trap and drown the smaller turtle species;
- enforcement of the wildlife and wetlands conservation regulations along the coast;
- collaboration with traditional heads to promote and enforce the traditional beliefs and norms that protect turtles.

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