

**POPULATION AND GENETIC STRUCTURE OF THE
GREEN TURTLE (*CHELONIA MYDAS*)
IN WEST AND CENTRAL AFRICA; IMPLICATIONS
FOR MANAGEMENT AND CONSERVATION**

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ABSTRACT

Green turtles (*Chelonia mydas*) are endangered herbivorous sea turtles with a global tropical and subtropical distribution. They are philopatric to their natal beaches and carry out extensive developmental and adult migrations between breeding and feeding grounds. Due to long generation times and highly migratory habits, green turtles are subject to threats over wide geographic ranges, including capture of nesting females and fishery harvest of adults and immatures. Coastal surveys between Liberia and Gabon established the presence of five sea turtle species and described their status and distribution, previously largely unknown. Habitat degradation and exploitation of turtle meat, eggs and carapaces were found to be widespread. Phylogeographic analysis of green turtle rookeries in Guinea Bissau, Ascension Island, Bioko, São Tome, Principe and Comoros (Indian Ocean) was carried out by sequencing a fragment of the mitochondrial DNA control region. While some Atlantic rookeries were found to be genetically homogeneous, considerable divergence was noted between Atlantic and Indian Ocean haplotypes and populations. In addition, the fine-scale spatio-temporal structure of the important Ascension rookery was assessed using a large sample size. Overall, 796 tissue samples, including 325 from nesting females, exhibited 24 distinct haplotypes, of which 15 are previously undescribed. Bayesian mixed stock analyses of the feeding ground in Corisco Bay (Equatorial Guinea/Gabon) and of other fishery harvests in the Gulf of Guinea and West Africa were then carried out. Declines in these mixed populations were found to affect local rookeries (Bioko, São Tome and Principe), as well as rookeries as distant as Ascension, Guinea Bissau, Suriname, Venezuela, Brazil, Mexico and Comoros. The Ascension population, thought to occupy only feeding grounds in Brazil, was found to contribute a large proportion of the individuals in African mixed stocks. Conservation efforts in one part of the range may be in vain if the same population is affected by mortality in unprotected habitat under different national jurisdictions. Therefore, evidence presented here highlights the need for international coordination in conservation efforts and should be applied to designing management strategies throughout the region.