

# Mitochondrial DNA analyses reveal mainland-insular dispersal of American crocodiles across the Caribbean

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**Abstract:** The American crocodile (*Crocodylus acutus*) is one of most widely distributed true crocodile species in the new world. However, *C. acutus* is currently categorized as “Vulnerable” by the IUCN Red List due to an extended unsustainable use and habitat transformation across its range. Conservation efforts have allowed populations to recover to the point dispersal movements began to be documented. In 2012 and 2018 the environmental authority of San Andres, Providence, and Santa Catalina archipelago reported the arrival of two *C. acutus* from unknown localities. The former animal was sacrificed due to a potential human-wildlife conflict with tourist/locals and no samples were collected. The latter animal was captured and kept to determine the potential origin of it. To this end, we used wildlife forensics to establish the most likely origin of this individual based on phylogeographic analyses. We amplified, sequenced, and analyzed two mitochondrial genes (Cytochrome Oxidase I-*COI* and Cytochrome B-*CytB*) from a sample collected in 2018. Phylogenetic and phylogeographic analyses were performed including existing sequences from the NCBI database and samples collected from Tayrona (TNNP) and Salamanca Island (SINNP) national natural parks. Reconstructed phylogenies derived from Bayesian Inference and Maximum Likelihood analyses showed that the American crocodile found in San Andrés belongs to an evolutionary lineage endemic from Colombia (Magdalena-Buritaca). The TCS haplotype network analysis showed a strong genetic similarity between the San Andres individual and those from SINNP. Thus, the most likely origin for the *C. acutus* that arrived to San Andres is somewhere around the Magdalena river area, which is located ~700-km from the island, highlighting the capacity of *C. acutus* to perform sea incursions, opening up the possibility of active dispersal events across the Caribbean, and suggesting the potential of these type of analyses to be used as a conservation strategy.

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