

# Identification of crocodilian species through barcodes

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**Abstract:** Systematics studies have become an important aspect for management and conservation of species from the order Crocodilia. All of them are listed in CITES appendixes, and in order to control illegal traffic of animals and sub products, we must be able to correctly asses the specific identity of the samples. Genetic barcoding is a very efficient tool for species identification in the animal kingdom. This technique is based on the sequencing of a region of a mitochondrial gene, the Cytochrome oxidase I subunit b (COI). Our principal aims were to design a single primers pair that allows obtaining this sequence from the genetic material of any crocodile species and, test the potential utility of barcoding in forensic studies as well as verify the correct identification of museum's collections. We obtained successfully barcodes, using our designed primers, from blood and tissue samples of 10 specimens of each native species (n= 20) and from 12 museum preserved caiman specimens. The studied fragment's length was 610 bp, and each species had one single haplotype. We also compared sequences from public databases of all the species included in the Order Crocodilia (N=346). We performed a phylogenetic analysis and we obtained a tree which resulted similar to the current crocodilian phylogeny. Barcodes are very useful tools to identify specific crocodilian haplotypes and, in our study, they have allowed identify certain taxonomic classification problems in sympatry regions among species, and potential hybridization zones, where further studies are necessary. The primers recently designed by our working group can be applied to obtain barcodes from the other crocodilian species samples, and this information can contribute significantly to systematic studies.

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