

Exploring an Amazonian species in recovery process: defining conservation areas for *Melanosuchus niger*

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Abstract: For the conservation of biodiversity, it is essential to know the distribution of genetic variability of the species and understand their demographic dynamics, which allows to identify appropriately, taxonomic and population units for their protection and management. Considering populations as functional units in an ecosystem, it is necessary to identify and protect genetically distinct local populations, to maximize their evolutionary potential and reduce the risk of extinction. In this way, it is possible to delineate intraspecific conservation units considered as biologically significant entities for conservation, and thus apply management and monitoring programs more efficiently, plan harvest quotas, carry out reintroductions of individuals, prioritizing the use of limited financial resources for conservation. In this study, we define the conservation areas for the Amazonian crocodilian species *Melanosuchus niger*, through the use of molecular markers (Cyt B mitochondrial gene and SNPs), for its entire range. We took into account the patterns of distribution of genetic variability and genetic differences between locations to identify genetic units. It was possible to delimit four management units (MUs) with discrete patterns of distribution, corresponding to the populations of the Araguaia, Guaporé, Uraricoera and Napo river basins, all differentiated from the main population, which is broadly distributed along the Amazon River plain. These MUs showed divergence in haplotypic and allelic frequencies, but no reciprocal monophyly in the mitochondrial DNA. The population from Amazon river plain presented a continuous pattern, compatible with isolation-by-distance model, so we estimated independent geographical intervals and based on that defined three areas as operational units for management: Western, Eastern and Central regions of the Amazon basin. Although the species is cataloged in Low Risk, as a result of its recovery in some places, it is still dependent on conservation due to illegal meat hunting and destruction of its habitat, so the definition of these seven areas is very important for conservation and management planning.

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