

Nest Ecology, and Community Conservation of Crocodiles in Belize

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The state of crocodylian nesting ecology is hardly understood, especially within the American Crocodile's (*Crocodylus acutus*) range. Our work aimed to better understand the nesting ecology of the American crocodile as well as collect other important population data. My time in Belize with the Crocodile Research Coalition was filled with various aspects of conservation biology being put into practice, including ongoing monitoring and management, as well as community outreach along with the nesting research. In the range of the American crocodiles, especially their nesting ecology in Belize, a lot of the scientific journaling was pioneered by Steven G. Platt. (Platt, 2000)

The purpose of this research was to learn more about the nesting ecology of all the crocodiles in Belize, as well as getting more accurate estimates of the population overall. To understand the nesting ecology of the crocodiles, we conducted nest surveys along the banks of rivers and other suitable habitat. These surveys consisted of walking around and looking for mounds or holes and other signs of crocodile nesting or active reproduction in the area. We also did capture surveys to monitor the health of the population by taking samples for heavy metal analysis and genetic tests. These samples would give us more insight to the health of the individuals in the population in terms of hybridization and heavy metal bioaccumulation. There is frequent hybridization of Moreletts (*Crocodylus moreletii*) and American crocodiles in Belize (Platt, 2008); the genetic samples, once processed, will help determine the degree of hybridization.

To ensure that the data being collected was being put to good use, we participated in frequent community outreach events as well. Crocodiles are revered as competition for fishermen, and although it is illegal to harvest crocodiles in Belize, it happens often. People need food, and crocodiles are a readily available bush meat. Outreach helped in making the community aware of the legalities of harvesting crocodiles, and the deployment of gillnets which have been banned in Belize as they result in a lot of crocodylian by catch. The outreach events also helped make people in the community feel like they could hold each other accountable, furthering the reach of our science communication.

My focus during the internship was the nesting ecology of the crocs. From the multiple nests' surveys, we did we found one active nesting site and three nests after they had already hatched. The active nest site that we found was on the pine savannah side of the river, which made it an extremely unique habitat to find a nest in. Usually, crocodiles are not thought of as a pine savannah animal, finding a nest in the savannah was unique and not often documented. The eggs were carefully excavated, counted, and weighed on a scale. They were then placed back into the nest and re-covered with the nesting material (sand and pine needles). Revisiting the site after the crocs have hatched gives us a good estimate of successful reproduction, based on how many of the total eggs hatched.

We also found three freshly hatched nests at a site where we had previously done a nesting survey but overlooked the mounds as they blended into the terrain well. These nests were suspected to be there, but we couldn't gather any data from them as we found them too late. The findings for our project were inconclusive because we only had one nest with proper data, and I couldn't revisit the sites to do a hatchling survey after they had already hatched. Although we don't have a conclusive result from the study, I was able to learn some incredibly valuable skills in the process of collecting the data.

There is no conclusion to be drawn from the data I had collected as I do not have the access to review it, and neither was I able to follow up with a hatchling survey. However, we do know that there are crocs that build nests near each other as we found three nests close to each other within the mangroves. Although we couldn't draw any conclusion from just these four nests, knowing that those sites exist, and that there are reproducing individuals in the population is encouraging as a conservationist and allows us to have more baseline data for future analysis of reproductive trends.

Platt, S. G., & Thorbjarnarson, J. B. (2000). Nesting ecology of the American crocodile in the coastal zone of Belize. *Copeia*, 2000(3), 869–873. [https://doi.org/10.1643/0045-8511\(2000\)000\[0869:neotac\]2.0.co;2](https://doi.org/10.1643/0045-8511(2000)000[0869:neotac]2.0.co;2)

Platt, S. G., Rainwater, T. R., Thorbjarnarson, J. B., & McMurry, S. T. (2008). Reproductive Dynamics of a tropical freshwater crocodilian: Morelet's crocodile in northern Belize. *Journal of Zoology*, 275(2), 177–189. <https://doi.org/10.1111/j.1469-7998.2008.00426.x>