An Analysis of the Population Status of *Melanosuchus niger* in Guyana

Adonika Spellen

The concept of determining if a species meets the biological criteria to be listed in a particular Appendix under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), should consider the best available information. CITES Scientific Authorities are task with providing information about species status in their country before trade is allowed. For species not traded in high volume, or whose history of trade is not shadowed with extinction level exploitation, it is an easy task. However, for species such as the black caiman and other crocodilians, the determination of a finding of non-detriment takes a more complex approach. The population status of the species seems to be recovered or is recovering. Based on the requirements of Annex 1-Biological criteria for Appendix I, outlined in Resolution Conf. 9.24 (Rev. CoP17). Interpreting the meaning of "threatened with extinction" and applying the reverse Appendix I species could be easily distinguished from Appendix-II species. This logic is only meant to be applicable to assess if the situation that led to the listing of the species has changed. For a more accurate representation the initial proposal to place the species in Appendix I should be examined. However, this is not possible for the black caiman because it was listed at the inception of the CITES Convention in 1975.

Hutton and Webb (2002) examined CITES in terms of its ability to eradicate illegal trade using a case study of crocodilians. The study discussed the roles of the regulations imposed by CITES as measures to combat illegal trade in wildlife, and concluded that conservation plans for crocodilians require both strict conservation management of populations while also incorporating sustainable use (Hutton & Webb, 2002).

The objective of this study is to 1) provide an update on the population status of black caiman in Guyana with a focus of populations along the Rupununi River, and 2) to determine whether the black caiman population in Guyana continues to meet the biological criteria that warrants this species to remain a CITES Appendix-I listing or if it can be down-listed to Appendix II. These objectives served to answer the question of what is the current population distribution, abundance, structure and trends of black caimans in Guyana, and to understand their interactions with the local indigenous communities where they occur.

Black caimans are widely distributed throughout the Amazon basin and peripheral regions such as the Rupununi and upper Essequibo River basins in Guyana and the Kaw Region of French Guiana (Thorbjarnarson *et al.*, 1992). The study focused on the North Rupununi Wetlands in the administrative district of region nine which encompasses the Upper Takatu-Upper Essequibo areas. This area is bordered by Brazil. The region is connected to the Amazon basin via the Rupununi River, the known area of distribution for black caimans in Guyana. The North Rupununi is transformed into a wetland area with an approximate size of 3480 km^2 (de Souza *et al*., 2012), with an overall approximated size of 8000 km^2 and consisting of 750 lakes (Fernandes, 2006).

The survey was conducted in three rivers in the North Rupununi Wetlands. Namely 100.7 km of the Rupununi River that forms a hydrological link to the Amazon basin (Berardi et al., 2018), 47.3 km of the Upper Essequibo River (Yakato to Primus Inlet), and 36.5 km of the Rewa River. The Rupununi River is one of the main tributaries of the Essequibo River and the Rewa River is a tributary of the Rupununi River. The landscape changes as you travel

from Yupukari Village, which has a savanna type landscape with gallery forest, with rocky bordering the Rupununi River, after Crash Water the forest types transitions into mixed forest. After Crash Water the landscape transitions into a primary forest. The river itself is defined by fallen tress due to erosion of riverbanks, clusters of sandbanks and igneous rocky features.

The research questioned the suitability of the Appendix-I listing of black caimans using Resolution Conf. 9.24 (Rev. CoP17). The methodology was developed around the biological criteria in Annex I, which speaks to the biological criteria for a species to qualify for an Appendix-I listing. After a thorough examination of the criteria was done and in order to assess Guyana's population in the context of CITES various approaches would need to be undertaken to produce a final result. Resolution Conf. 9.24 (Rev. CoP17) urges Parties to review the population size, distribution and the population trends for the species under consideration.

- To answer the question of the population size, a population assessment in the North Rupununi was done
- To answer the question of their distribution, traditional knowledge was consulted
- To answer the question about the population trends, traditional knowledge and an exhaustive literature review on previous surveys on black caimans in Guyana were consulted

The population was assessed in terms of their abundance index, nesting sites and habitat. Three rivers, which included Rupununi, Rewa and Essequibo Rivers, were selected and surveys were conducted along various sections. Rupununi had a total of seven survey sights ranging from Katoka to Crash Water Creek. Rewa River (Small Government Pond to Seawall) had a total of three survey sights and for the Essequibo River (Yatoka Pond to Primus Inlet) three sites, which included ponds, were surveyed.

The survey covered a total of 184.5 km of sections in the Rupununi, Rewa and Essequibo, and 1609 black caimans were observed in total for this survey. Rivers and ponds were included in spotlight surveys and daytime nest searches. The Essequibo River showed the highest mean encounter rate, followed by the Rupununi River then the Rewa River. The number of caimans spotted was recorded in 10-minute intervals. A GPS point was recorded at the end of every 10 mins. This was done to determine the areas with the highest concentration of black caimans. The mean for the areas varied across sites. A total of 8 nests was discovered. The nests description ranged from showing signs of predation, intact active nests and nest from previous seasons. A total of 25 respondents were targeted to assess local utilization, human-black caiman conflict, and population status from a local perspective.

Results from the questionnaire revealed the following:

- Of the total respondents, surveyed 72% considered that the population had somewhat recovered.
- The survey found that black caimans were consumed on special occasions by 64% of the respondents. Collection of eggs was also recorded from 56 % of the respondents.
- Conflicts other than those caused by black caimans taking fish from nets, were concentrated in and around Apoteri Village. The survey recorded information from the Deputy Toshao of Apoteri, relating to children taken by black caimans, loss of limb or scarring.

- Traditional uses of teeth include charmed necklaces against bad luck and as an antivenom against snake bites. The skin is believed to possess antifungal properties it is sometimes burnt and applied to crops.
- All the respondents indicated that there were no rules about killing black caimans in the village. The preferred killing method seems to the traditional bow and arrow method, which targets behind the eyes.

Graham Watkins' survey result of 4.18 ind/km in 2002 (Watkins 2002) was lower than the 7.4 ind/km in 1990 (Gorzula 1990). Between 1990-2002 there were no report to suggest commercial use of the species. A closer examination of Watkins area of study revealed that counts were done over a 300 km distance and included new study sites in "dead zones" for the species. Dead zones are areas where the species occurs in low abundance. Peter Taylor on the other hand, limited his survey to a specific higher-intensity area ranging from Katoka Village to Simoni Creek in the Rupununi River (Peter Taylor, pers. comm. 2018). The calculation used by Taylor (2006) was done by taking the average of the pond data and the mean encounter rate of the river data which yielded 16.9 ind/km. Using this same method, the encounter rate for the Rupununi River will equate to 32 ind/km and for the Essequibo River 33 ind/km. While this estimate is evident in some areas, the results also indicated that the population occurs in clusters and the encounter rates can be as low as 1.2 ind/km.

The species does not appear to be commercialized or appear on the local markets. The species is offered the highest level of protection under the Wildlife Conservation and Management Act of 2016 and Internationally by CITES. These measures combined effectively safeguards black caimans in Guyana from domestic and international trade.

The findings of this research provide evidence to support that the population of black caimans in Guyana is distributed in the rivers of the North Rupununi Wetlands at encounter rates and size classes which indicates a productive population. The species does not seem to face consequential anthropogenic threats and is fulfilling its role in the ecosystem as a top predator.

References

Berardi, A., Jafferally, D., Simpson, M., Holden, F., & Li, F. (2018). *Mapping the Rupununi-Ireng Biodiversity Corridor between Amazonian and Guiana Shield Watershed.* Georgetown: unpublished.

CITES (2007). Consideration of Proposals for Amendment of Appendices I and II (2007). *Fourteenth meeting of the Conference of the Parties to CITES, 3-15 June 2007.* The Hague (Netherlands).

De Souza, L., Armbruster, J.W., & Werneke, D.C. (2012). The influence of Rupununi portal distribution of freshwater fish in the Rupununi District Guyana. *Cybium 36(1): 31-43*.

Fernandes, D. (2006). *Community Based Management of the Arapaima (Arapaima gigas) in Central Guyana.* Georgetown: Iwokrama International Centre for Rainforest Conservation and Development.

Gorzula, S. (1990). *Crocodilian Resources in Guyana.* Geneva: CITES Secretariat.

Gorzula, S., & Pilgrim, K. (1992). *Crocodilian Resources in Guyana. An update of Distribution, Status and Management Potential.* Biosphere Consultancy Scotland .

Government of Guyana (2016). *Wildlife Conservation and Management Act.* Georgetown: Government of Guyana.

Hutton, J., and Webb, G. (2002). Legal trade snaps back. Pp. 1-10 *in* Crocodiles. Proceedings of the 16th Working Meeting of the IUCN-SSC Crocodile Specialist Group. IUCN: Gland.

Taylor, P. (2016). Growth rates of black caimans in the Rupununi. *Amphibia-Reptilia* 1-6.

Thorbjarnarson, J., Ross, J.P., Messel, H., & King, F.W. (1992). Crocodiles, An Action Plan for their Conservation. IUCN: Gland.

Watkins, G. (2002). Black caiman surveys in the Rupununi. Crocodile Specialist Group Newsletter 21(2): 15-16.

Webb, G.J.W., Manolis, S.C., & Bayliss, P.G. (1986). Population research on crocodiles in the Northern Territory, 1984-86. Pp. 22-59 *in* Crocodiles. Proceedings of the 8th Working Meeting of the IUCN-SSC Crocodile Specialist Group. IUCN: Gland.