

**CROCODILE  
SPECIALIST  
GROUP  
NEWSLETTER**

VOLUME 39 No. 3 • JULY 2020 - SEPTEMBER 2020



Lara, Ó. (1990). Estimación del tamaño y estructura de la población de *Crocodylus moreletii* en los lagos Petén Itzá, Sal-Petén, Petenchel y Yaxhá, El Petén, Guatemala. MSc thesis, National University, Heredia, Costa Rica.

Valerie Corado-García, Diana Velásquez-Ramírez and Rosa Roldán-Díaz, *Grupo de Cocodrileros de Guatemala (gcg.guate@gmail.com)*.

## Brazil

REARING BLACK CAIMAN (*MELANOSUCHUS NIGER*) OUTSIDE ITS DISTRIBUTION RANGE CONCERNS THE BRAZILIAN CROCODYLIAN RESEARCH COMMUNITY. On 23 December 2019, we became aware through social media ([www.facebook.com/leandro.silveira.iop/videos/1005334836503630/](http://www.facebook.com/leandro.silveira.iop/videos/1005334836503630/)) that hundreds of Black caiman (*Melanosuchus niger*) were moved from a closed commercial breeding facility (ranching production system) in the Goiás State, central Brazil, to different locations. Over 700 individuals were allocated to the Caimasul breeding facility (<https://caimasul.com>) in Mato Grosso do Sul State, for slaughter and meat production. Around 200 *M. niger*, mainly 2-3-year-old juveniles, and at least 10 adult/sub-adults were taken to the Jaguar Conservation Fund/Instituto Onça-Pintada (IOP) facilities (53°00'16"S, 17°54'07"W), located in the municipality of Mineiros, Goiás State. The IOP is a NGO with conservation purposes, mainly promoting the conservation of the jaguar (*Panthera onca*) and its natural habitats in Brazil ([www.jaguar.org.br](http://www.jaguar.org.br)).

Several IOP social-network posts showed the translocation under improvised conditions and without regard for any technical criteria (<https://youtu.be/8iY9SFPV3wI>). In these posts, the IOP staff announced the implementation of an *ex-situ* conservation breeding program for *M. niger* as a potential genetic reservoir for an endangered species. The IOP facilities appear inadequate in terms of security, as the enclosures lack effective barriers to prevent the escape of the caimans, especially large individuals. Although the transfer of these was undertaken between locations in Goiás State, the translocation of these animals occurred between two different hydrographic basins. The IOP facilities are located in the Paraná basin, ~450 km outside the natural range of *M. niger* (Campos *et al.* 2018; Fig. 1). The record by Campos *et al.* (2015) is the most southerly location for the species in the Tocantins-Araguaia basin. In this context, the escape of individuals to the Paraná and/or the Paraguay basins could be imminent, with unpredictable ecological consequences in environments where *M. niger* has never occurred (see possible dispersal routes in Figure 2).

It is well known that crocodylians can easily escape from captivity and become established. For example, in Florida (USA), there have been records of exotic species of *Mecistops*, *Paleosuchus*, *Crocodylus* and *Caiman* in the Everglades (Krisko *et al.* 2011; Rochford *et al.* 2016), with a well-established population of *Caiman crocodilus* (Elis 1980;

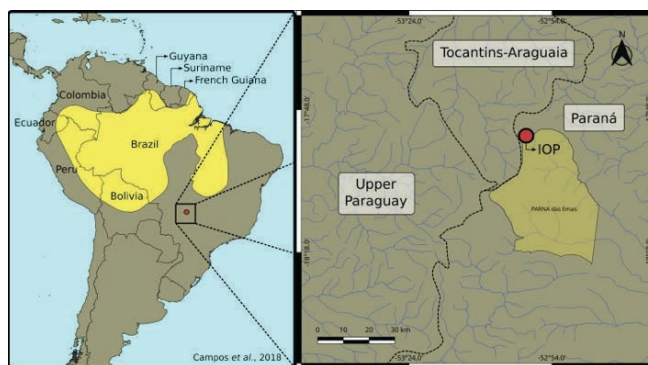


Figure 1. Distribution of *Melanosuchus niger*, location of Instituto Onça-Pintada (IOP), Paraná, Tocantins-Araguaia and Upper Paraguay Rivers basins, and Emás National Park (PARNAS DAS EMAS).

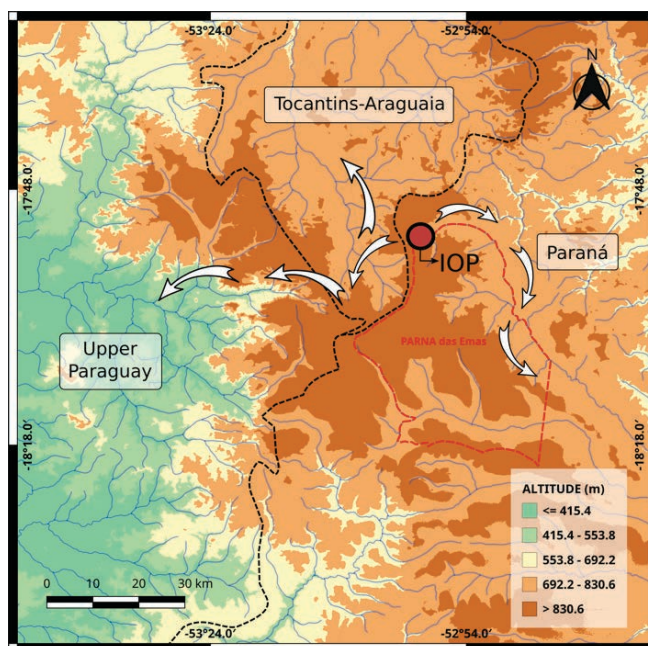


Figure 2. Potential dispersal routes (arrows) of *Melanosuchus niger* from Instituto Onça-Pintada (IOP) and the Paraná, Tocantins-Araguaia and Upper Paraguay Rivers basins.

Krisko *et al.* 2011). In México, *C. moreletii* have escaped from a farm and a new population was established out of its natural distribution on the Pacific coast of México (Rodríguez *et al.* 2008).

Until the 1990s, *M. niger* was considered one of the most threatened Neotropical crocodylians (Thorbjarnarson 2010). The species suffered serious conservation threats due to the unregulated hunting for skin and meat. The result of these uncontrolled actions was a decline in wild populations throughout the species distribution (Rebêlo and Magnusson 1983; Da Silveira and Thorbjarnarson 1999). Currently, populations of *M. niger* have recovered, and, in Brazil, the species is now classified as a LC-Least Concern species (Marioni *et al.* 2013), based on IUCN guidelines (ICMBio/MMA 2018). Currently, reports of high-density populations throughout its distribution, indicates that *M. niger* is an abundant species, only partially and locally depleted, with a tendency to recover very quickly (Da Silveira 2002). In view



of this, the proposal for an *ex-situ* conservation breeding program for *M. niger* conducted in an area outside the species distribution, is contrary to conservation-biology principles, with unclear goals, and without the understanding and support of the Brazilian crocodylian-research community.

The Black caiman is a keystone species, playing an important role in the trophic network, as an apex predator (Da Silveira and Magnusson 1999), and influencing the ecology of other organisms and their habitats (Fittkau 1970; Somaweera *et al.* 2020). The potential escape of Black caimans from the IOP facilities might involve serious consequences, and result in cascading effect on the ecosystem processes. Given its predatory role naturally, it is reasonable to assume that novel presence of Black caiman will disturb natural trophic interactions, especially impacting native predators, such as other caiman species. Besides, the dispersal of the Black caimans, and their interaction with the native wildlife, livestock or domesticated animals might increase the environmental health hazards, related with their emergence or translocation of infectious diseases, and the introduction of new pathogens (Bryan 1996; Peeler *et al.* 2011; Hulme 2014; Micheletti *et al.* 2020). The consequences are unpredictable but clearly tragic in the ecosystem structure and functioning. The Black caiman's dispersal in the Cerrado and/or Pantanal biomes, also represents a social risk, potentially creating conflicts with local communities. The negative perception about caimans might increase with the presence of a new species, particularly one that can reach more than 5 m. *Melanosuchus niger* can be a threat to local people, and their presence is likely to be seen as the introduction of a new competitor for the fisherman or a new potential predator on livestock and human attacks (Sideleau and Britton 2012; Nyhus 2016). Consequently, it might negatively influence the social dynamics and the ongoing and future conservation strategies in the region for endemic species.

The transfer of the *M. niger* to IOP facilities was approved by the Goiás State Environmental Secretariat (SEMAD), the State environmental authority. However, the main concern is because of the lack of expertise, besides the technical and scientific criteria for crocodylian management and conservation, and animal welfare issues not understood by IOP staff and SEMAD technicians. Until now, neither IOP nor SEMAD has contacted any crocodylian specialist in Brazil to assess the current state of the animals and define criteria for making decisions about their future.

The Brazilian Center for Scientific Research and Conservation of Reptiles and Amphibians [Centro Nacional de Pesquisa e Conservação de Répteis e Anfíbios - RAN ([www.icmbio.gov.br/ran/](http://www.icmbio.gov.br/ran/))] is the Federal environmental authority, and it has legal responsibility for the conservation and management actions of the reptiles and their enforcement. However, in this case, RAN staff was aware of the situation only after we sent them a letter on 11 March 2020, in which we alerted them to the situation, showed our concerns, and asked for details and explanations. However, they only replied with information provided by the SEMAD technicians and did not show concern about the conservation implications. The

lack of articulation between the state and federal authorities and their lack of attention to the concerns of the scientific community is worrying.

In conclusion, we highlight our concern about the safety of the enclosures used by IOP to avoid the escape of *M. niger* individuals larger than 1.5 m, and in any case infringes the general principle used by RAN until now that crocodylian species should only be raised in hydrographic basins within their natural range. We believe that this is a serious matter and the state of Goiás (SEMAD) and federal (RAN) institutions in Brazil need to address this subject properly to avoid unnecessary ecological damage.

#### Literature Cited

- Bryan, R.T. (1999) Invasive species and biodiversity management. Pp. 163-175 Based on papers presented at the Norway/United Nations (UN) Conference on Alien Species, 2nd Trondheim Conference on Biodiversity, Trondheim, Norway, 1-5 July 1996.
- Campos, Z., Muniz, F., Farias, I.P. and Hrbek, T. (2015). Conservation status of the Dwarf caiman *Paleosuchus palpebrosus* in the region of the Araguaia-Tocantins basin, Brazil. *Crocodyle Specialist Group Newsletter* 34(3): 6-8.
- Campos, Z., Muniz, F. and Magnusson, W.E. (2018). Where are the black caimans, *Melanosuchus niger* (Crocodylia: Alligatoridae), in the Xingu River basin, Brazil? *Herpetology Notes* 11: 1021-1024.
- Da Silveira, R. and Magnusson, W.E. (1999). Diets of spectacled and black caiman in the Anavilhanas Archipelago, Central Amazonia, Brazil. *Journal of Herpetology* XX: 181-192.
- Da Silveira, R. and Thorbjarnarson, J.B. (1999). Conservation implications of commercial hunting of black and spectacled caiman in the Mamirauá Sustainable Development Reserve, Brazil. *Biological Conservation* 88: 103-109.
- Da Silveira, R. (2002). Conservação e manejo do jacaré-açu (*Melanosuchus niger*) na Amazônia Brasileira. Pp. 61-78 in *La Conservacion y el Manejo de Caimanes e Cocodrilos de América Latina*, ed. by A. Larriera and L.M. Verdade. Piracicaba, C.N. Editoria: São Paulo, Brazil.
- Ellis, T.M. (1980). *Caiman crocodilus*: An established exotic in South Florida. *Copeia* 1: 152-154.
- Fittkau, E.J. (1970). Role of caimans in the nutrient regime of mouth-lakes of Amazon affluents (an hypothesis). *Biotropica* XX: 138-142.
- Hulme, P.E. (2014). Invasive species challenge the global response to emerging diseases. *Trends in Parasitology* 30(6): 267-270.
- ICMBio/MMA (2018). Livro Vermelho da Fauna Brasileira

Ameaçada de Extinção: Volume IV – Répteis / -- 1. ed.  
-- Brasília, DF. Brasil.

- Krysko, K.L., Burgess, J.P., Rochford, M.R., Gillette, C.R., Cueva, D., Enge, K.M., Somma, L.A., Stabile, J.L., Smith, D.C., Wasilewski, J.A. *et al.* (2011). Verified non-indigenous amphibians and reptiles in Florida from 1863 through 2010: Outlining the invasion process and identifying invasion pathways and stages. *Zootaxa* 3028: 1-64.
- Marioni, B., Farias, I., Verdade, L.M., Bassetti, L., Coutinho, M.E., de Mendonça, S.H.S.T., Vieira, T.Q., Magnusson, W.E. and Campos, Z. (2013). Avaliação do risco de extinção do jacaré-açu *Melanosuchus niger* (Spix, 1825) no Brasil. *Biodiversidade Brasileira* 3: 31-39.
- Micheletti, T., Fonseca, F.S., Mangini, P.R., Serafini, P.P., Krul, R., Mello, T.J., Freitas, M.G., Dias, R.A., Silva, J.C.R., Marvulo, M.F.V., Araújo, R., Gasparotto, V.P.O., Abrahão, C.R., Rebouças, R., Toledo, L.F., Siqueira, P.G.S.C., Duarte, H.O., Moura, M.J.C., Fernandes-Santos, R.C. and Russel, J.C. (2020). Terrestrial invasive species on Fernando de Noronha Archipelago: What we know and the way forward. Pp. 51-94 in *Invasive Species: Ecology, Impacts, and Potential Uses*, ed. by V. Londe. Nova Science Publishers: New York.
- Nyhus, P.J. (2016). Human-wildlife conflict and coexistence. *Annual Review of Environment and Resources* 41: 143-171.
- Peeler, E.J., Oidtmann, B.C., Midtlyng, P.J., Miossec, L. and Gozlan, R.E. (2011). Non-native aquatic animals introductions have driven disease emergence in Europe. *Biological Invasions* 13(6): 1291-1303.
- Rebêlo, G.H. and Magnusson, W.E. (1983). An analysis of the effect of hunting on *Caiman crocodilus* and *Melanosuchus niger* based on the sizes of confiscated skins. *Biological Conservation* 26(2): 95-104.
- Rochford, M.R., Krysko, K.L., Mazzotti, F.J., Shirley, M.H., Parry, M.W., Wasilewski, J.A., Beauchamp, J.S., Gillette, C.R., Metzger, E.F., Squires, M.A. and Somma, L.A. (2016). Molecular analyses confirming the introduction of Nile crocodiles, *Crocodylus niloticus* Laurenti 1768 (Crocodylidae), in southern Florida, with an assessment of potential for establishment, spread, and impacts. *Herpetological Conservation and Biology* 11: 80-89.
- Rodriguez, D., Cedeño-Vázquez, J.R., Forstner, M.R., and Densmore III, L.D. (2008). Hybridization between *Crocodylus acutus* and *Crocodylus moreletii* in the Yucatan Peninsula: II. Evidence from microsatellites. *Journal of Experimental Zoology Part A: Ecological Genetics and Physiology* 309(10): 674-686.
- Sideleau, B. and Britton, A.R.C. (2012). A preliminary analysis of worldwide crocodylian attacks. Pp. 22-25 in *Crocodiles. Proceedings of the 21st Working Meeting of the IUCN-SSC Crocodile Specialist Group*. IUCN: Gland.
- Somaweera, R., Nifong, J., Rosenblatt, A., Brien, M.L., Combrink, X., Elsey, R.M., Grigg, G., Magnusson, W.E., Mazzotti, F.J., Percy, A., Platt, S.G., Shirley, M.H., Tellez, M., Van der Ploeg, J., Webb, G., Whitaker, R. and Webber, B.L. (2020). The ecological importance of crocodylians: towards evidence-based justification for their conservation. *Biological Reviews* (<https://doi.org/10.1111/brv.12594>).
- Thorbjarnarson, J.B. (2010). Black Caiman *Melanosuchus niger*. Pp. 29-39 in *Crocodiles. Status Survey and Conservation Action Plan*. Third Edition, ed. by S.C. Manolis and C. Stevenson. Crocodile Specialist Group: Darwin.
- Ronis Da Silveira<sup>1</sup>, Robinson Botero-Arias<sup>2,3</sup>, Boris Marioni<sup>4</sup>, Augusto Kluczkowski-Junior<sup>5</sup>, Eduardo Conde Moura<sup>6</sup>, Fábio Maffei<sup>7</sup>, Diogo Dutra Araújo<sup>8</sup>, Thiago Costa Gonçalves Portelinho<sup>9</sup>, Igor Joventino Roberto<sup>10</sup>, Paulo Braga Mascarenhas-Junior<sup>11</sup>, Fábio Muniz<sup>10</sup>, Zilca Campos<sup>12</sup>, William E. Magnusson<sup>13</sup>, Luciano Martins Verdade<sup>14</sup> and Luis Bassetti<sup>14</sup>; <sup>1</sup>Laboratório de Manejo de Faunas, Instituto de Ciências Biológicas, Universidade Federal do Amazonas, Manaus-AM, Brazil; <sup>2</sup>Department of Wildlife Ecology and Conservation, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, USA; <sup>3</sup>Tropical Conservation and Development Program, Center for Latin American Studies, University of Florida, Gainesville, FL, USA; <sup>4</sup>Pós-Graduação em Biologia de Água Doce e Pesca Interior, Instituto Nacional de Pesquisas da Amazônia, Manaus-AM, Brazil; <sup>5</sup>Fundação de Vigilância em Saúde do Amazonas (Amazonas Health Department), Manaus-AM, Brazil; <sup>6</sup>Agência de Defesa Agropecuária e Florestal do Estado do Amazonas, Manaus-AM, Brazil; <sup>7</sup>Universidade Estadual Paulista, Faculdade de Ciências de Bauru, Bauru-SP, Brazil; <sup>8</sup>Instituto Boitatá de Etnobiologia e Conservação da Fauna, Goiânia-GO, Brazil; <sup>9</sup>Universidade Federal do Tocantins, Curso de Engenharia Ambiental, Palmas-TO, Brazil; <sup>10</sup>Laboratório de Evolução e Genética Animal, Universidade Federal do Amazonas, Manaus-AM, Brazil; <sup>11</sup>Pós-Graduação em Biologia Animal, Universidade Federal de Pernambuco, Recife-PE, Brazil; <sup>12</sup>Laboratório de Vida Selvagem, Embrapa Pantanal, Corumbá-MS, Brazil; <sup>13</sup>Coordenação de Biodiversidade, Instituto Nacional de Pesquisas da Amazônia, Manaus-AM, Brazil; <sup>14</sup>Centro de Energia Nuclear na Agricultura (CENA), da Universidade de São Paulo, Piracicaba-SP, Brazil.

## Europe

EAZA REPORTS 2019. In August 2020, the European Association of Zoos and Aquaria (EAZA) released its “2019 EAZA Annual Report” and “Taxon Advisory Group (TAG) Report”. The following details on activities with crocodylians have been extracted from these reports.

EAZA members are currently supporting the following