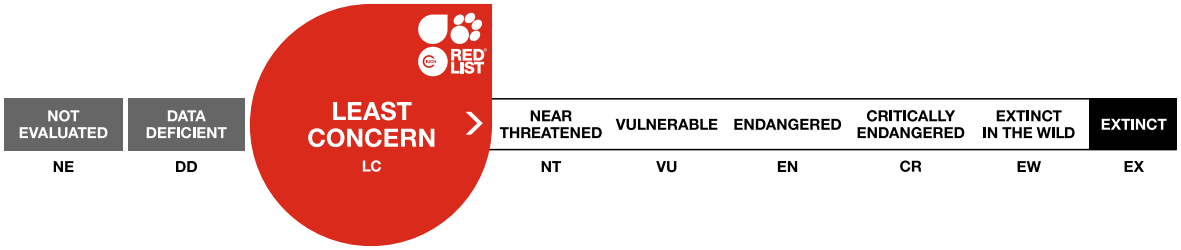
The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2025: T13053A512056
Scope(s): Global
Language: English

Melanosuchus niger, Black Caiman

Assessment by: Botero-Arias, R., Hernández-Rangel, M., Thorbjarnarson, J.B., Magnusson, W.E. & Da Silveira, R.



View on www.iucnredlist.org

Citation: Botero-Arias, R., Hernández-Rangel, M., Thorbjarnarson, J.B., Magnusson, W.E. & Da Silveira, R. 2025. *Melanosuchus niger*. *The IUCN Red List of Threatened Species* 2025: e.T13053A512056. https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

Copyright: © 2025 International Union for Conservation of Nature and Natural Resources

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged.

Reproduction of this publication for resale, reposting or other commercial purposes is prohibited without prior written permission from the copyright holder. For further details see Terms of Use.

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership. The IUCN Red List Partners are: ABQ BioPark; Arizona State University; BirdLife International; Botanic Gardens Conservation International; Conservation International; Missouri Botanical Garden; NatureServe; Re:wild; Royal Botanic Gardens, Kew; Sapienza University of Rome; Senckenberg Society for Nature Research; Texas A&M University; and Zoological Society of London.

If you see any errors or have any questions or suggestions on what is shown in this document, please provide us with feedback so that we can correct or extend the information provided.

Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Reptilia	Crocodylia	Alligatoridae

Scientific Name: *Melanosuchus niger* (Spix, 1825)

Synonym(s):

- *Alligator niger* Owen, 1840
- *Caiman niger* Spix, 1825
- *Champsa nigra* Wagler, 1830
- *Crocodilus sclerops var. niger* Cuvier, 1829
- *Jacare niger* Mook, 1921
- *Jacare nigra* Gray, 1844
- *Jacaretinga niger* Vaillant, 1898

Common Name(s):

- English: Black Caiman
- French: Caïman noir
- Spanish; Castilian: Caimán Negro, Caimán del Amazonas, Lagarto Negro, Yacaré Negro
- Dutch; Flemish: Zwarte Kaaiman
- Japanese: Kuro Kaiman
- Portuguese: jacaré-açú
- Sranan Tongo: Black Caiman, Blaka Caiman

Taxonomic Notes:

The genus *Melanosuchus* has been reported in the late Miocene in South America (De Souza-Filho *et al*. 2020), and the Black Caiman is the only living species of this genus (Medina 1976; Brochu 1999; Oaks 2011; Bona *et al*. 2014, 2017; Foth *et al*. 2015; De Souza-Filho *et al*. 2020; Rio and Mannion 2021). No subspecies are recognized.

In morphology-based phylogenetic analyses, *Melanosuchus* appears within the genus *Caiman* and, in some cases, as the sister clade of *Caiman latirostris* (Poe 1996, Brochu 1999, Salas-Gismondi *et al*. 2015, Hastings *et al*. 2016), which led to the proposal that *Melanosuchus niger* should be assigned to the genus *Caiman* (Poe 1996). However, phylogenies recovered from molecular data strongly support the monophyly of the genus *Caiman* and place *Melanosuchus niger* as a sister species of this group (Hrbek *et al*. 2008, Oaks 2011, Bittencourt *et al*. 2019, Roberto *et al*. 2020, Muniz *et al*. 2021) and is recognised by the IUCN SSC Crocodile Specialist Group Taxonomy and Identification Group (Vliet *et al.* 2024).

Assessment Information

Red List Category & Criteria: Least Concern ver 3.1

Year Published: 2025

Date Assessed: March 1, 2023

Justification:

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

Black Caiman (*Melanosuchus niger*) has a wide distribution across northern and central South America. Although this species was heavily exploited during the mid-20th century, populations have recovered considerably, and healthy populations thrive throughout much of the species' range. Population reduction over the last three generations (75 years) has been estimated as less than 30% and thus does not qualify the species as threatened under criterion A.

Both its extent of occurrence (EOO) and area of occupancy (AOO) are well above the thresholds, therefore it does not qualify as threatened under criterion B. Similarly, the estimated number of mature individuals is approximately 10,000, thus exceeding the thresholds of both criteria C and D. No quantitative analysis on probability of extinction has been conducted, therefore criterion E cannot be applied.

Based on the above, and the lack of change in the population since the last assessment in 2000, *Melanosuchus niger* is assessed as Least Concern.

Previously Published Red List Assessments

2000 – Lower Risk/conservation dependent (LR/CD)

1996 – Endangered (EN)

1994 – Vulnerable (V)

1990 – Endangered (E)

1988 – Endangered (E)

1986 – Endangered (E)

1982 – Endangered (E)

Geographic Range

Range Description:

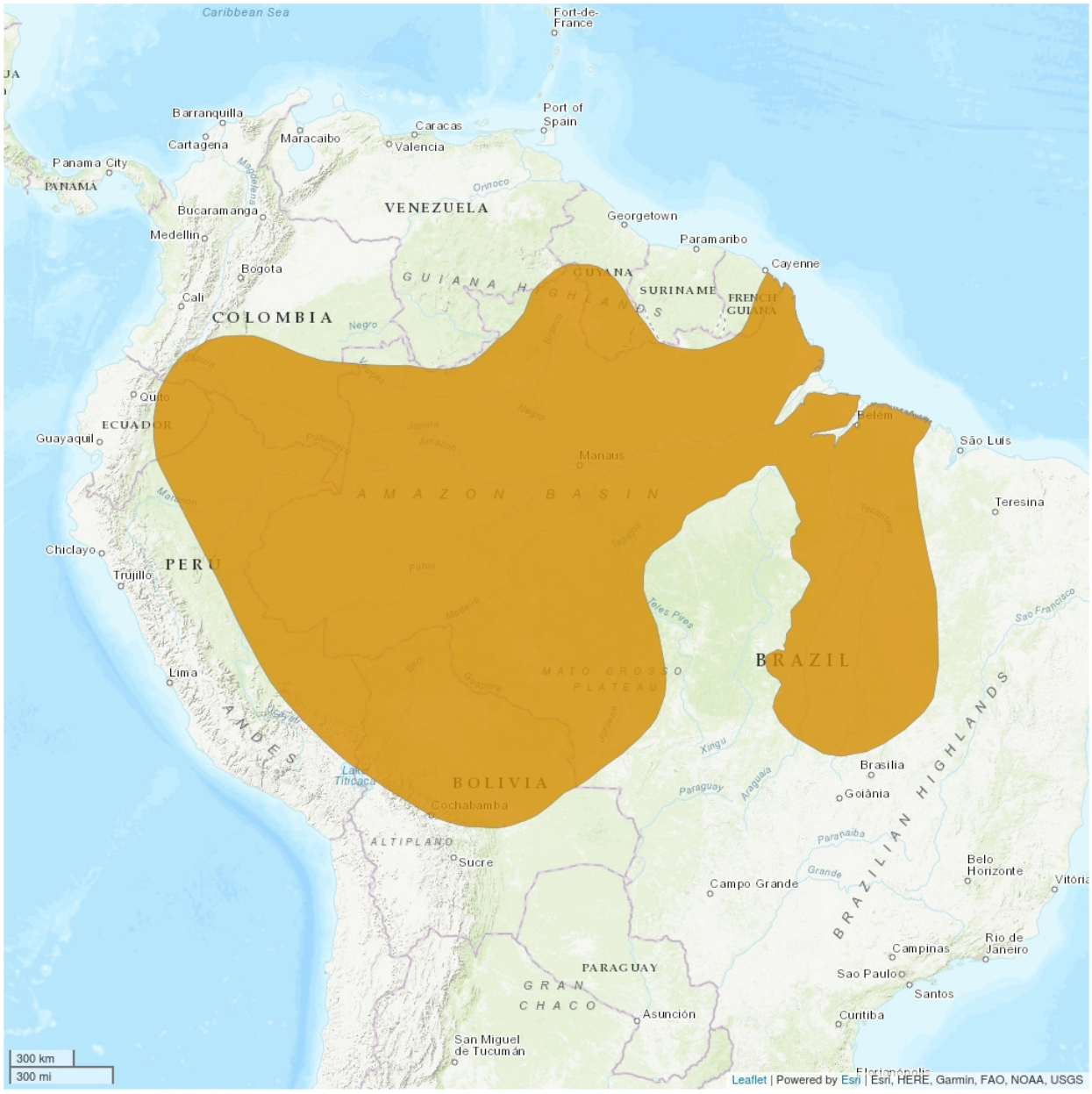
The distribution of the Black Caiman encompasses much of northern and central South America, including seven countries: Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, and Peru, but more than 70% of its distribution area falls within Brazil. The presence of the species in Venezuela has been refuted several times.

Widely and exclusively distributed throughout the Amazon region, the Black Caiman's distribution includes the Andean-Amazonian piedmont in the northwest, Amazon floodplain forests, and tributaries of the Amazon River that flow from the Brazilian and Guiana Shields, as well as coastal regions in French Guiana. It occurs in a diversity of environments throughout its distribution, occupying large rivers and canals, oxbow lakes, flooded grasslands, floating meadows, and wetlands associated with Amazonian swamps and peatlands. It also occurs in flooded savannas and environments associated with coastal mangroves and wet coastal savannas. However, it is more abundant in waterbodies in the Amazonian floodplain forests (Medem 1963, 1981, 1983; Plotkin *et al*. 1983a; Vasquez 1991; Ross 1998; Da Silveira 2002; Thorbjarnarson 2010; Campos *et al*. 2018).

Country Occurrence:

Native, Extant (resident): Bolivia, Plurinational States of; Brazil; Colombia; Ecuador; French Guiana; Guyana; Peru

Distribution Map



Legend

EXTANT (RESIDENT)

Compiled by:

IUCN SSC Crocodile Specialist Group 2023





The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

Population

Melanosuchus niger is widely distributed throughout the Amazon region, embracing much of northern and central South America and occupying various habitats, including large rivers, flooded areas, swamps and river meanders. The effect of commercial hunting, mainly for the skin trade in the mid-20th century and for the meat trade at the end of the 1970s, resulted in an evident decline in the wild populations. Although there are few population studies of *M. niger*, and its abundance is not homogeneous throughout its distribution, reports show the recovery of its original distribution in some areas, with high-density populations indicating that *M. niger* is apparently an abundant species, only partially and locally depleted (Rebêlo and Magnusson 1983; Yamashita *et al*. 1996; Da Silveira and Thorbjarnarson 1999; Da Silveira 2002, 2003; Farias *et al*. 2004; Vasconcelos 2005; De Thoisy *et al*. 2006; Da Silveira *et al*. 2008, 2011; Thorbjarnarson 2010; Botero-Arias and Regatieri 2013; Marioni *et al*. 2013a, 2021; Botero-Arias *et al*. 2022).

Population studies of *M. niger* have demonstrated genetic structure based on mitochondrial markers and microsatellites. There is evidence of genetic differentiation between populations in the northeast distribution in French Guiana and the State of Amapá (Brazil), compared to those in Ecuador and western Brazilian Amazonia (Farias *et al*. 2004, Vasconcelos 2005, De Thoisy *et al*. 2006, Vasconcelos *et al*. 2008). With the utilization of different markers (Cytochrome B and SNPs) and expanding the number of samples, it was discovered that the genetic structure of *M. niger* populations is strongly linked to different factors such as isolation by distance, presence of waterfalls and rapids, and distinct watersheds. This information enabled the identification of at least eight Management Units with particular relevance for the conservation of the species (Hernández-Rangel 2015, Hernández-Rangel *et al*. 2022; Hernández-Rangel *et al*. unpublished data).

Bolivia*Melanosuchus niger* is classified as Vulnerable (VU) on Bolivia's National Red List (2008) (Llobet *et al*. 2008). It mainly inhabits the northeast of the country, specifically in the departments of Beni, Cochabamba, La Paz, Pando, and Santa Cruz. The species is particularly prevalent in protected areas within these departments, such as Noel Kempff Mercado National Park, Madidi National Park, Isiboro Sécure Indigenous Territory and National Park, Amazonica Manuripi National Reserve, Pilón Lajas Biosphere Reserve, and Beni Biological Station Biosphere Reserve. The species in Bolivia has experienced slow recovery rates in most of its historical distribution, and low population densities continue to be a concern throughout its range (King and Videz-Roca 1989, Pacheco 1993, Ten *et al*. 2008, Rodriguez-Cordero 2019, Rodriguez-Cordero *et al*. 2019). Intense hunting for its skins between the 1940s to 1960s resulted in a significant decline in the natural populations of *M. niger* (Plotkin *et al*. 1983a).

In the 2000s, population studies were carried out in 12 lakes in the Ichilo River floodplain (department of Santa Cruz) and the average observed density of *M. niger* was one individual/km. It was also reported that small *M. niger* populations, consisting mainly of sub-adults and juveniles, were found in the Bolivian Amazon Basin (Aguilera *et al*. 2008), although it occurs in fewer water bodies than *Caiman yacare*, which is sympatric in its range. In the Low Ichoa River Basin, Isidoro Securé National Park (department of Beni), *M. niger* were recorded at observed densities of 1.6 to 2.2 individual/km (Mendez 2006, Rodriguez-Cordero 2019). In Baures TUIOC (Autonomous and communally owned indigenous land, department of Beni), 19% of the population was confirmed as *M. niger* whilst the remainder were *C. yacare* (Chungara 2017). Also, in the department of Beni, surveys of the Joaquiniano TUIOC recorded

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

255 *M. niger* at an observed density of 1.93 individuals/km, mainly sub-adults [total length (TL) between 51 and 120 cm], with the highest densities recorded in forest lakes (Pallete 2015, Rodriguez-Cordero 2019).

Between 2015 and 2017, surveys were conducted during the dry season on the floodplains of the Beni basin, including the Mamoré, Iténez, and Beni sub-basins. The surveys covered 1,507 km of shoreline and registered a total of 53,551 individuals, of which only 2,854 (5.33%) were *M. niger*. The surveys were carried out on nine Indigenous Lands, and the abundance of *M. niger* varied among waterbodies types: Baure ranged from 0.82 to 29 individuals/km, Canichana from 0.68 to 3.95 individuals/km, Cayubaba from 1.40 to 27.50 individuals/km, Itonama from 2.50 to 23.15 individuals/km, Joaquiniano from 2.37 to 32.70 individuals/km, Moré from 1.82 to 8.86 individuals/km, Movima from 1.04 to 27.92 individuals/km, Sirionó from 0.00 to 0.8 individuals/km and Tacana from 1.43 to 105.0 individuals/km. The study showed significant differences in the abundance of *M. niger* in the waterbodies occupied, with a population structure dominated by juveniles and sub-adults (TL between 81 and 180 cm), indicating a slow population recovery (Rivas *et al*. 2023).

Recent surveys conducted between 2020 and 2021 in eight lowland management areas in the departments of Beni and Santa Cruz found small populations of, again, mainly juvenile and sub-adult *M. niger*, with densities ranging from 0.35 to 8.13 individuals/km (mean 3.7 individuals/km). The Itenéz Integrated Management Natural Area Departmental Park (River Itenéz) and the Baures and Cavineno TUIOC had the highest densities (Rios 2022).

Brazil:The latest update of the Brazilian Red List reports that *Melanosuchus niger* is currently considered a species of Least Concern (LC), with stable populations and likely an upward trend (Marioni *et al*. 2013b, Coutinho *et al*. 2022). The species is widely distributed across an extensive part of the Brazilian territory, representing almost 70% of the total range of the species. In Brazil, *M. niger* can be found in the Amazon, Tocantins, and Araguaia basins, as well as in rivers located in the State of Amapá that flow directly into the Atlantic Ocean. However, population density varies among regions. Various studies have been conducted to evaluate this variation, and high densities have been recorded in some locations (Marioni *et al*. 2013a, Silva *et al*. 2021, Coutinho *et al*. 2022).

A study conducted by Da Silveira (2002) in the Mamirauá Sustainable Development Reserve (State of Amazonas) revealed a 580% increase in the number of *M. niger* seen, from 556 individuals in 1994 to 3,789 individuals in 1998. The proportion of *M. niger* compared to Spectacled Caiman (*Caiman crocodilus*) increased from 38% to 82%, and the number of nesting females increased from one nest in 1996 to 22 nests in 1999. Currently, *M. niger* in the Mamirauá SDR has a stable population trend, representing 85–90% of total caimans seen (the rest are predominantly *C. crocodilus*) and a high density of *M. niger* nests (Botero-Arias, unpublished data).

Between 2004 and 2005, spotlight surveys conducted in 85 locations across five Brazilian states (Amazonas, Amapá, Goiás, Rondônia, and Tocantins) detected *M. niger* in 94% of the locations, totalling 36,962 individuals. The density ranged from 2.1 to 466.5 individuals/km (CITES 2007). Similarly, monitoring conducted from 2004 to 2008 in the Lago do Cuniã Extractive Reserve (State of Rondônia) recorded average observed densities ranging from 5.1 to 100.4 individuals/km (Mendonça and Coutinho 2009), which remained stable over the period of study (Marioni *et al*. 2013a, Coutinho *et al*. 2022).

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

Surveys conducted between 2006 and 2009 in the Meandros do Rio Araguaia Environmental Protection Area (State of Tocantins) also indicate that the *M. niger* population has been growing in the region (Andrade and Coutinho 2007; Andrade and Coutinho 2009). Additionally, a study conducted in 2008 in the unprotected area of the Lake Badajós region (State of Amazonas), found 1,266 caimans, of which 82% were M. niger, with the density ranging from 14 to 38 individuals/km (Marioni *et al*. 2013a). Another study conducted in 2008 in Cabo Orange National Park, located in the northernmost region of Brazil, sampled 46.3 km of rivers and lakes and sighted 425 caimans, of which 370 (87%) were identified as *M. niger* (Andrade and Coutinho 2011).

Colombia:
In 2015, the National Red List classified *Melanosuchus niger* as Vulnerable (VU) (Morales-Betancourt and Trujillo 2015). Although there are indications of population recovery in some areas, densities remain very low. Moreover, each subpopulation is estimated to have less than 1,000 mature individuals (Morales-Betancourt and Trujillo 2015). The species is distributed in the Amazonas, Putumayo, and Vaupés departments. M. niger was once abundant throughout the Colombian Amazon region, especially in the lower Caquetá and Putumayo Rivers, the Caucayá River, and La Apaya Lake. However, commercial hunting for skins, which began in the 1930s, caused a significant decline in the wild population. By the end of the 1970s, the species was considered extinct in Colombian territory (Medem 1981, Plotkin *et al*. 1983a, Barahona *et al*. 1996a, Rodríguez-Melo 2000). Between 1994 and 1997, surveys conducted in 14 localities of the Putumayo, upper Caquetá, Caguán, Apaporis, and Amazon Rivers found the highest relative apparent densities of the caiman in La Apaya (0.64 individuals/ha), Sunicocha (0.32 individuals/ha), and Yarinas (0.29 individuals/km) in the Putumayo River basin and Garzacocha Lake (0.85 individuals/ha) in the Upper Amazon River. The reports concluded that caiman numbers were increasing, particularly in the Putumayo River (Barahona *et al*. 1996a, Barahona *et al*. 1996b, Rodríguez-Melo 2000). For the formulation of the national program for the conservation and sustainable use of *M. niger*, the surveys and interviews indicated that the species was present in 50% of the 139 sites visited, with a population structure typical of unexploited areas in the Putumayo River between the Santa Clara and Puerto Ticuna sectors, where adults, juveniles, and hatchlings were present. In 2008 and 2009, studies evaluated populations of *M. niger* in the Caquetá (La Pedrera), Putumayo (Tarapacá and Puerto Leguízamo), Amazon, and Loreto Yacu Rivers, and nearby lakes. The highest apparent densities were found in the lakes of the Putumayo River basin (Tarapacá: 0.53 individuals/km and Puerto Leguízamo: 0.38 individuals/km (Bermúdez-Romero 2010).
Ecuador:*Melanosuchus niger* is considered Vulnerable (VU) in the National Red List (Carrillo *et al*. 2005). The species is distributed in northeastern Ecuador in the provinces of Orellana and Sucumbíos, and reported in several protected areas; Yasuní National Park, Limoncocha Biological Reserve, Cuyabeno Wildlife Reserve (Reserva de Producción de Fauna) and Tiputini Biodiversity Station. Heavy hunting between 1930 and 1970 resulted in significant population reductions. However, the species has recovered slowly, despite considerable fragmentation among areas.

Most of the information on the status of *M. niger* in Ecuador comes from a few locations of the Aguarico River system (Cuyabeno lakes and river, Lagartococha lake system and river, Imuya Pacuya and Zancudococha lakes) and in the Napo River system (Tiputini and Yasuni Rivers, and Limoncocha, Taracoa, Añangucocha, Challuacocha, Garzacocha and Jatuncocha lakes). In the 1980s, *M. niger* was already common in some areas of the Ecuadorian Amazon, with significant populations in various river systems. Apparent densities for populations of the Aguarico were stable during several annual surveys in the Cuyabeno region (3.15 to 5.68 individuals/km over nine years), Zancudococha (23.5 individuals/km over

five years) and Imuya (23.6 individuals/km over two years). However, the Limoncocha Lake population, belonging to the Napo system, suffered declines over eight years of annual surveys (Asanza 1992). Between 1992 and 1994, 18 surveys were conducted and *M. niger* were observed in almost all localities, with densities ranging from 0 to 13.5 individuals/km. The locations with the highest densities (>10 individuals/km) were Challuacocha, Imuya, and Limoncocha (Hines and Rice 1992; Hines and Rice 1994). In the mid-1990s, a long-term monitoring effort in Cuyabeno Reserve reported observed densities ranging from 0.13 to 3.41 individuals/km in several lakes within the reserve (Ron 1995, Vallejo 1995, Vallejo *et al*. 1996, Ron *et al*. 1998). In 1999, the mean density reported for some lakes in northeastern Ecuadorian Amazonia was 6.6 individuals/km, comparable to the densities previously reported in this region by Hines and Rice (1994) and Ron (1995) but lower than those reported by Asanza (1992) in Zancudococha and Imuya (Endara 2000). Continuing the surveys almost a decade later, researchers focused on five previously studied lakes: Canangueno, Mateococha, Zancudococha and Imuya. The results showed apparent densities of up to 8.89 individuals/km and a higher proportion of *M. niger* than *Caiman crocodilus* in the latter two lakes (Dueñas-Serrano 2008). In 2012, the number of *M. niger* were recorded for two Cuyabeno lakes, Canangueno and Mateococha, which revealed a consistently low density and species proportion compared to data collected over 17 years (Ortiz 2012, Ortiz *et al*. 2020). Between 2002 and 2011, monitoring in Limoncocha reported apparent densities of up to 8.73 individuals/km. These results suggest that the population has remained stable during these years (Thorbjarnarson 2003, Urresta 2003, Villamarin 2006, Carrillo 2009, Madera 2011). In 2017, the most recent survey of caimans was conducted to standardize a monitoring protocol for *M. niger* in four different areas: Huririma, Salado, and Lagaro Rivers and Jatuncocha Lake. The survey reported an encounter rate ranging from 0 to 5.7 individuals/km (Naveda-Rodríguez *et al*. 2020).

French Guiana:*Melanosuchus niger* is classified as Near Threatened (NT) on the National Red List (La Liste Rouge des Espèces Menacées en France, Faune Vertébrée de Guyane; Moncorps *et al*. 2017). The species has been protected by Ministerial decree since 1986 and almost 50% of its current distribution area is within the designated Kaw-Roura Nature Reserve with a RAMSAR classification. *Melanosuchus niger* is limited to the northeast corner of French Guiana, inhabiting the mangroves and seasonally flooded grasslands of Kaw River, the swampy area of Savanne Angélique, the mangroves of the lower part of the Approuague River (Plotkin *et al*. 1983a,b), although there haven't been any confirmed sightings in several years, and Pointe Béhague (De Thoisy and Auffret 2003). While the species was previously found in the Mahury and Oyak Rivers in the west, and the Kourouai and Ouanary Rivers in the east, it became extinct in those areas due to commercial hunting (De Thoisy and Auffret 2003). The first study of *M. niger* in the Kaw region was conducted in 1979, revealing a high density of the species and the presence of some large individuals (Darlington 1979, Plotkin *et al*. 1983b). Later expeditions to the Angelique and Gabrielle Creeks in the same region found high densities (up to 38 and 48 individuals/km, respectively) mainly in inaccessible areas, in contrast with dramatic population declines at the edges (Ouboter *et al*. 1999, Blanc and De Thoisy 2001). A recent survey in Agami Pond, one of the Kaw marshes areas that holds water during the dry season, confirmed the presence of a large *M. niger* population, with most individuals measuring up to 2 metres (Caut *et al*. 2019).

An ongoing mark-recapture study by Lemaire and Mangione (unpublished data) has collected data on *M. niger* since 2019 in two locations in Kaw-Roura Nature Reserve, namely the Kaw River and Savanne Angélique, a swamp area with several permanent water bodies and patches of flooded forest. Compared to the high abundance of *Caiman crocodilus* and *Paleosuchus palpebrosus* in the Kaw Rriver, *M. niger* density is low, which might be explained by continuous illegal harvest. The inaccessible

Savanne Angélique site has a high density of sub-adult and adult individuals, with a further increase of adults during the breeding season of migratory Agami Herons (*Agamia agami*) from mid-April until end of June. During this time, occurrence of individuals greater than 4 m temporarily increases (R. Mangione, unpublished data). Nevertheless, most of French Guiana's *M. niger* habitat is inaccessible, and so far no hatchlings have been observed in the principal locations, indicating the seclusion of breeding areas.

Guyana:

Guyana law protects *Melanosuchus niger*, which is classified as a "Totally Protected Species" under the Wildlife Conservation and Management Act of 2016. The distribution of *M. niger* in Guyana is restricted to the upper and middle Essequibo, Rupununi, Rewa and Berbice Rivers, as well as the Takatu and Ireng Rivers in the Amazon basin (Medem 1983, Plotkin *et al*. 1983a, Gorzula *et al*. 1990). However, commercial hunting in the 1950s caused significant depletion of the natural populations, and the species was almost extinct by 1965 (Medem 1983, Gorzula *et al*. 1990, Uruena 1990, Spellen 2019). Recent studies have shown a recovery in the population of *M. niger* (Spellen 2019, 2020).

Gorzula and Woolford (1990) reported the species in 16 localities in Guyana, with a notable recovery in the northern Rupununi region. They reported a density of 7.4 individuals/km over 41.2 km of shoreline surveyed and estimated the population to be between 2,000 and 4,000 non-hatchlings. This population was considered one of the largest in South America (Uruena 1990). The recovery of the species continued through the 1990s, and reports in the 2000s indicated that populations in North Rupununi Wetlands were abundant (J.B. Thorbjarnarson, pers. comm., 2010). Watkins (2002) observed 2,443 individuals in 300 km of river and 275 km of lakes in the Rupununi, Rewa and Essequibo basins, with an density of non-hatchling caimans of 1.82 individuals/km in rivers and 4.18 individuals/km in lakes. Taylor (2006) and Spellen (2019) also reported a healthy population in the Rupununi River, with encounter rates up to 16.9 individuals/km during the low water period. Ingwall-King (2013) estimated a density of 3.1 individuals/km in a small section of the Rewa River. The most recent survey of *M. niger* populations in Guyana, conducted in the Rupununi, Rewa and Essequibo Rivers, observed 1,609 caimans in 184.5 km of sections, with mean encounter rates of 11.99, 8.89, and 14.54 individuals/km, respectively (Spellen 2019, 2020). There is a well-studied and recovering population of *M. niger* in Yupukari, located on the Rupununi River. The Caiman House Field Station (CHFS) serves as a base of operations for a long-term mark-recapture study of the local population since 2005, with over 750 marked individuals. The community also operates ecotourism activities, providing access to large adult *M. niger* (Rosenblatt *et al*. 2021).

Peru:

Melanosuchus niger is classified as Near Threatened (NT) in the Peruvian Red List (SERFOR 2018). The species is found in the Amazonian lowland forests of the northeast and east of the country, including the Loreto, Ucayali, Madre de Dios, San Martín, and Huánuco departments. The species was once abundant in Peru, but commercial hunting led to a decline in wild populations, which were rare in the 1970s and 1980s, and considered on the border of extinction (Plotkin *et al*. 1983a).

In the southern region of Peru, population studies were conducted in Cocha Cashu in Manú National Park from 1971 to 1972, which showed a population size of 37 individuals, mostly juveniles (Otte 1978). In 1977, there was a 50-60% increase in population size and by 1982, the population was estimated to be 213 individuals (Vásquez 1982). In Cocha Cashu, an apparent density was reported of 24.74 to 27.75 individuals/km, with a population skewed heavily towards juveniles (Herron 1985). Although *M. niger* is now widespread in this region, and has shown clear signs of recovery, they are not highly abundant in

most areas.

Surveys at the Pacaya National Reserve between 1967 and 1968 registered apparent densities of *M. niger* up to 2 individuals/km, with a ratio of 1:20 relative to *Caiman crocodilus* (Ponce and Hofmann 1968). Twelve years later, surveys in the Samiria River in Pacaya-Samiria National Reserve registered a mean observed density of 0.28 individuals/km, with a proportion of 1:30.4 to *C. crocodilus* (Verdi *et al*. 1980). In the Jenaro Herrera region, a density of 0.46 individuals/km was reported in the lake system at the beginning of the 1970s. In 1978, the apparent density was 3.11 individuals/ha in nearby swamp areas (Ríos *et al*. 1974, Vásquez 1981). In the Samiria River basin, overall encounter rates between 0.52 and 1.14 individuals/km have been reported (Street 2003). An evaluation in the Samiria River basin showed variation in the abundance of *M. niger* among areas according to hunting level, with intensive hunting (Shiringal) showing 0.13 individuals/km, moderate hunting (Tacshacocha and Ungurahui) showing 1.6 and 1.41 individuals/km, and a low hunting area (Santa Elena) showing 0.51 individuals/km (Bodmer *et al*. 2005). In 2007, evaluations in the Pacaya and Yanayacu Pucate River basins found a mean *M. niger* encounter rate of 2.32 individuals/km, with the highest density for the Pacaya basin where 5.38 individuals/km and for the Yanayacu basin where up to 17.19 individuals/km were seen in some areas (ProNaturaleza 2007). Between 2012 and 2016, the observed abundance of *M. niger* in Pacaya Samiria National Reserve varied in different sectors: Tacshacocha ranged from 0.04 to 1.09 individuals/km, Ungurahui from 0.03 to 8.14 individuals/km, Wishto from 0.08 to 5.97 individuals/km, Pithecia from 0.88 to 4.1 individuals/km and Santa Elena were at 0.75 individuals/km. In 2014, only one *M. niger* was observed in Pucacuro National Park (J.D. Freitas, pers. comm., 2017).

Studies conducted in the Yavarí River basin, on the border between Peru and Brazil, showed that out of the total caimans observed, nine were *M. niger*, 10 were *Paleosuchus trigonatus* and 463 were *Caiman crocodilus* (Newell, 2001). In the Lago Preto region of the Yavarí River, a total of 540 caimans were reported, with only 24 being *M. niger* and an apparent density of 0.32 individuals/km (Swan 2005). Freezer (2008) recorded 720 caimans, of which only 13 were *M. niger*, at an apparent density of 0.18 individuals/km. Bodmer *et al*. (2009) reported an apparent density in Lago Preto of 0.34 individuals/km, a slight non-significant increasing trend in *M. niger* numbers seen between 2001 and 2008. In the Yavarí-Mirín, Pérez-Peña *et al*. (2012) reported a *M. niger* apparent density of 0.22 individuals/km.

Current Population Trend: Increasing

Habitat and Ecology **(see Appendix for additional information)**

Melanosuchus niger, as the largest Amazonian predator, is considered a keystone species, playing an important role in the trophic network (Fittkau 1970, Somaweera *et al*. 2020, Griffith *et al*. 2022, Lourenço-de-Moraes *et al*. 2023). The species can occupy a wide variety of environments in rural and urban areas, including artificial waterbodies resulting from hydropower dams, artificial lakes, and water reservoirs (Marioni *et al*. 2013a, 2021b; Campos *et al*. 2018). However, the species is absent in small forest streams and streamlets of closed-canopy terra firme forests (upland forest), especially near the headwaters, with low incident sunlight. The species is rare or absent upstream of rapids and waterfalls. Although *M. niger* is found in habitats where it overlaps with other caiman species, several authors have suggested they seem to have a different niche.

Melanosuchus niger is the biggest Amazonian vertebrate and the largest of the seven Alligatoridae species. However, the maximum size of both sexes is difficult to determine. Medem (1983) cited hunted

individuals that surpassed 5.1 m total length (TL). Studies in Guyana reported that size-at-age models predicted that males and females reach mean asymptotic sizes of 3.8 m and 2.9 m TL, respectively (Taylor *et al*. 2016). In Brazil, information available on somatic growth indicated that small to medium-sized individuals grow more slowly in floodplain forest (várzea) habitats with high primary productivity and a high caiman abundance in comparison with the blackwater-flooded forests (igapó) habitat with lower productivity and low caiman abundance, indicating a density-dependent process (Da Silveira *et al*. 2013).

Age and size at maturity are also unknown for both sexes. Histological analysis of gonads and bones in two wild males (1.8 m and 2.9 m TL, respectively) indicated the former was still immature and the latter an adult, at estimated ages of 10 and 14 years, respectively. Similarly, histology of the reproductive systems of two females (2.2 m and 2.9 m TL, respectively) were reportedly immature and reproductively capable, respectively, at around 15 and 17 years of age (Da Silveira *et al*., unpublished data). Without accurate empirical support, several authors have assumed that females start nesting at 2.5 m TL, meaning an age of 19 to 20 years in the Brazil study (Da Silveira *et al*. 2013) and 13.7 to 22.8 years in the Guyana study (Taylor *et al*. 2016). Age at maturity estimation in males is more complex. Even if they are physiologically capable of reproduction, small males may be inhibited from mating by larger individuals. Multiple paternity (polyandry) has been reported for a small caiman population in Anavilhanas National Park in the Brazilian Central Amazon (Muniz *et al*. 2011).

This species builds mound nests during the dry season, in forests, near banks or on masses of floating aquatic plants, locally known as matupá. Females generally lay between 35 and 50 eggs. Eggs have a rigid shell and an elliptical shape, weighing 121.8 g on average (Medem 1963, 1981, 1983; Villamarín-Jurado and Suárez 2007; Thorbjarnarson 2010; Villamarín *et al*. 2011, 2021; Barão-Nóbrega *et al*. 2018; Silva *et al*. 2021).

Melanosuchus niger populations are widely dispersed in available habitats during the flooding season. In the dry season, they concentrate in permanent lakes, rivers, canals and riverbeds, exhibiting gregarious behaviour in juveniles and sub-adults. The large adults probably hold territories, increasing competition for food, high-quality nesting sites and potential partners (Plotkin *et al*. 1983a; Thorbjarnarson 1998, 2010; Da Silveira *et al*. 2008; Caut *et al*. 2019).

Melanosuchus niger show seasonal movements in response to changes in water levels, prey availability and population density (Caut *et al*. 2019). Like other crocodilians, *M. niger* is considered a territorial species, with dominant males having a defined home range which they patrol and defend within broad movement patterns. Females appear to use a well-defined zone, associated with nesting areas and a small home range, restricted to brief seasonal movements. Juveniles may disperse from their natal areas in search of new habitats. In some cases, they may undertake long-distance movements (Da Silveira *et al*. 2011a). An unexpected long movement was reported for a male (3.6 m TL) using VHF radio-tracking in the Mamirauá Sustainable Development Reserve. The individual was killed four years and seven months after the initial measurement for the salt-meat trade in the Amana SDR, 33 km from the capture site. This long movement may indicate the size of reserves that may be required to protect the species (Da Silveira *et al*. 2011a).

Systems: Terrestrial, Freshwater (=Inland waters)

Use and Trade

Reports from explorers and naturalists indicate that *M. niger* was abundant in the 19th century (Bates 1863, Fittkau 1970, Smith 1981, Best 1984). Commercial exploitation of the species began at the beginning of the 1900s as a response to the high demand for exotic skins in North America, Europe and Asia (Medem 1981, Brazaitis *et al*. 1996, Yamashita *et al*. 1996, Antunes *et al*. 2016, Mendonça *et al*. 2016, Marioni *et al*. 2021, Botero-Arias *et al*. 2022). The overexploitation of *Crocodylus intermedius* and *C. acutus* for the hide market in South America led to a significant decline in their populations and, as a consequence, the trade extended to *M. niger* as an alternative. Compared to other Amazonian caimans, *M. niger* was preferred because its skin has less osteoderms which affects the aesthetic appeal of the finished leather (Medem 1971, 1981; Plotkin *et al*. 1983a; Herron 1985; Brazaitis *et al*. 1996; Thorbjarnarson 2010).

The harvesting and international trade of *M. niger* was one of the longest, most widespread, and most intensive of all caiman species in Central and South America. From 1950 to 1965, over 7.5 million legally sourced *M. niger* skins were supplied to the international market from the Amazon (Medem 1981, Smith 1981, Plotkin *et al*. 1983a, Da Silveira and Thorbjarnarson 1999, Thorbjarnarson 2010, Antunes *et al*. 2016, Campos-Silva *et al*. 2017). There appears to be a relationship between the collapse in 1912 of Amazonian rubber prices and the massive harvesting of M. niger in the central-western Brazilian Amazon. Between 1904 and 1969, 4.4 million *M. niger* skins were traded from this region. The historical peak was in 1943 when 313,907 were sold. In the 1960s, the number of caimans traded was only 8% of the peak production in 1943 (Antunes *et al*. 2016).

The commercial exploitation of *M. niger* finished with the collapse of worldwide skin trade, the intensification of regional enforcement, international regulation of the use and trade of biodiversity, as well as the creation of a system of protected areas and other conservation strategies. However, following the collapse of the skin trade, a well-structured illegal market emerged for *M. niger* meat. This practice still occurs in several regions of the Amazon and represents a critical threat to the conservation of caimans in some localities (Da Silveira and Thorbjarnarson 1999; Da Silveira 2002, 2003; Marioni *et al*. 2007; Morales-Betancourt and Trujillo 2015; Mendonça *et al*. 2016). Over the last 50 years, the intense exploitation of caimans to supply the salted meat market has generated a stable value chain of hunting, processing and trade. Despite being illegal, this dried-salted meat production represents a robust, economical alternative for the local communities many of which are socioeconomically disadvantaged (Botero-Arias *et al*. 2022).

The use of *M. niger* as bait for Piracatinga Catfish (*Calophysus macropterus*) emerged in 2000 as another commercial activity (Da Silveira and Viana 2003). Reports indicate that fishing for this species using caiman baits was implemented initially in Colombia and Peru and introduced in Brazil in 2000, encouraging seasonal trade to supply fish markets during the Catholic Holy Week. The primary concern for piracatinga fishing is not the exploitation of the fish itself but the illegal use of baits made with caiman or dolphin (*Inia geoffrensis* and *Sotalia fluviatilis*) meat (Botero-Arias and Regatieri 2013, Botero-Arias *et al*. 2014, Brum *et al*. 2015, Franco *et al*. 2016, Pimenta *et al*. 2018, Botero-Arias *et al*. 2022).

The use of caimans and river dolphins as bait for piracatinga fishing has given rise to a lucrative illegal activity, creating a complex underground network of natural-resource exploitation that thrives on inadequate control and enforcement. Studies on the value chain of piracatinga fishing in Brazil have

revealed that the originally seasonal activity has become a more frequent source of income for communities due to its accessibility. However, the gradual increase in fishing pressure on aquatic fauna used as bait has raised concerns among scientists, leading to a federal moratorium on piracatinga fishing (Inter-Ministerial Normative Instruction No. 6 of July 17, 2014), which banned the activity for five years, aimed at discouraging the use of crocodilians and dolphins. This moratorium has been renewed in subsequent years until 2023. In July of 2023, the ban was extended indefinitely. However, if sustainable alternatives are identified, piracatinga fishing using alternative baits could be re-evaluated within the next three years. Similar measures have been implemented in Colombia, Ecuador, and Peru, and efforts have been made to promote sustainable fishing practices, such as using artificial baits and developing alternative livelihoods including ecotourism. Moreover, initiatives have been taken to regulate regional and international piracatinga trade (Da Silveira and Viana 2003, Da Silveira 2011, Botero-Arias *et al*. 2014, Brum *et al*. 2015, Franco *et al*. 2016, Marioni *et al*. 2021, Botero-Arias *et al*. 2022).

After reports showed *M. niger* recovery following a reduction in illegal trade, management programs were proposed to protect the wild populations in Ecuador and Brazil. In Ecuador, a ranching program was implemented with a zero quota for commercial purposes after the species was downlisted in CITES from Appendix I to Appendix II. However, the program was unsuccessful and closed in 2008 due to the need for more value-chain development (Larriera *et al*. 2005, Velasco 2005). In the Brazilian Amazon, attempts to use *M. niger* and Caiman crocodilus in ranching systems have similarly been unsuccessful to date (Botero-Arias *et al*. 2022).

In Brazil, scientific research conducted in the 1990s showed that protection measures had led to a recovery in *M. niger* populations. The study suggested that a regulated harvest program could be successful based on biological criteria and community co-management. As a result, the state and federal governments committed to implementing harvest programs for wild populations in the Protected Area System, which is allowed and regulated by Brazilian environmental law. In 2007, the listing of *M. niger* in CITES was changed from Appendix I to Appendix II.

The first experiments involving *M. niger* were conducted in the Mamirauá SDR in 2004, extracting 61 individuals. Subsequently, two additional harvests were carried out in 2006 and 2008, with the removal of 567 individuals. These three events were led by the state of Amazonas Government, with the primary objective of validating slaughtering and processing techniques with the focus on improving the sanitary aspects of meat production, including defining technical criteria for slaughtering and pre-processing the meat while identifying critical contamination points throughout the process (Botero-Arias *et al*. 2009, Botero-Arias and Regatieri 2014). Similar harvesting activities for *M. niger* and *Caiman crocodilus* have been developed in the Lake of Cuniã Extractive Reserve (RESEX), in the State of Rondônia (Marioni *et al*. 2021, Botero-Arias *et al*. 2022).

The commercial expectation of the harvesting system in Brazil was that meat was to be sold on local markets, and the skins would be primarily supplied to the domestic leather industry. Between 2008 and 2018, Brazil exported 2,272 *M. niger* skins, mainly to Mexico and Argentina, as well as a much smaller number to European and Asian markets.

In 2011, a legal framework supported by the state of the Amazonas for the local indigenous use of *M. niger* meat included specific technical guidelines for harvesting, slaughtering and processing. It was not until 2020, nine years after the latest regulations were enacted, that another commercial offtake of

crocodilians was carried out in Mamirauá SDR. On this occasion, 28 *M. niger* were harvested and processed on a floating structure. The resulting products were sold locally, while the skins were sold to a private enterprise in another Brazilian state for further testing of processing technologies (Franco 2021). Although the commercial harvest was deemed successful, the high investment required for constructing, maintaining and operating the processing structure, coupled with limited information on the value chain, makes replicating this experience in other Amazonian locations challenging (Marioni *et al*. 2021, Botero-Arias *et al*. 2022).

Melanosuchus niger trade is carried out illegally in a diffuse manner, with a primary focus on marketing in urban areas. The skin is discarded due to gaps in the trade, processing and value chain. Despite efforts to explore sustainable use through experimental programs, a straightforward, comprehensive management approach has yet to be established for this species. As a result, the current state of *M. niger* management remains experimental, and there is a need for more effective measures to ensure that it is sustainably utilized in a way that benefits both local communities and the broader ecosystem (Botero-Arias *et al*. 2010, Botero-Arias and Regatieri 2013, Marioni *et al*. 2013, Franco *et al*. 2019, Marioni *et al*. 2021, Silva *et al*. 2021, Botero-Arias *et al*. 2010).

Ecotourism activities involving interaction with free-living caimans have been the only non-consumptive-use option for the Amazonian species. This economic activity occurs throughout the Amazon and represents an important source of income for local people. However, it is still largely unregulated, and the actual impact both economically and on the caimans themselves is poorly understood. Wildlife tourism is increasingly seen as an economically viable option for justifying conservation efforts to protect large predators.

In Guyana, since the early 2000s, *M. niger* has been incorporated as a monetary incentive in wildlife tourism activities, offering local communities a significant source of income. This initiative not only provides economic benefits but also has positively influenced the attitudes of the local community in Yupukari towards wildlife conservation. M. niger tourism has become an effective and sustainable economic alternative that undergoes continual evaluation and improvement (Spellen 2019, Rosenblatt *et al*. 2021).

Experimental research has recently been conducted at two sites in the Brazilian Amazon with differing environmental characteristics (varzea and igapo) to evaluate the level of physiological stress experienced by individuals during human-crocodilian interactions in tourism activities. Results from the study suggest that *M. niger* individuals experience more intense stress-related physiological reactions from manipulation and flash photography than sympatric individuals of *Caiman crocodilus* (Mendonça *et al*. 2023). *Melanosuchus niger* took over 6 hours to return to basal-range corticosterone levels after muscular stress, whereas *Caiman crocodilus* only took half an hour (Duncan *et al*. 2022). This research aims to provide information that can be used to develop safe public policies.

Threats **(see Appendix for additional information)**

Melanosuchus niger was abundant in the 19th century. However, due to the high profitability of the skin trade, intense hunting began in the 1900s and continued, although less intensively, through the 1970s. This overexploitation was identified as a contributing factor to the decline of wild *M. niger* populations (Medem 1981, 1983; Plotkin *et al*. 1983a; Brazaitis *et al*. 1996; Da Silveira and Thorbjarnarson 1999; Thorbjarnarson 1999; Thorbjarnarson 2010; Thorbjarnarson and Da Silveira 2000; Antunes *et al*. 2016;

Botero-Arias *et al*. 2022).

Prior to the 1990s, *M. niger* was categorized as one of the most endangered crocodilian species in the Neotropical region (Medem 1981, 1983; Plotkin *et al*. 1983a). The primary factors contributing to their endangerment were unsustainable practices, such as trading their skin, as well as habitat loss and degradation caused by human activities. Additionally, local fishermen hunted them due to perceived competition for resources. In over half of the countries where this species can be found, wild populations were considered severely depleted (Medem 1981, Brazaitis *et al*. 1996, Yamashita *et al*. 1996, Ross 1998, Da Silveira and Thorbjarnarson 1999, Da Silveira 2002, Vasconcelos 2005, Rueda-Almonacid *et al*. 2007, Botero-Arias *et al*. 2010, Botero-Arias *et al*. 2014, Mendonça *et al*. 2016, Marioni *et al*. 2021, Botero-Arias *et al*. 2022, Esbach *et al*. 2022).

Following the prohibition of *M. niger* hunting in the 1970s, the exportation of their skins declined significantly. There had been no recorded cases of regional or international trade in caiman skins since the 1980s (Rebêlo and Magnusson 1983, Brazaitis *et al*. 1996, Marioni *et al*. 2021, Botero-Arias *et al*. 2022). Nevertheless, the trade of caiman meat emerged as an unlawful substitute as an income source for local people. In the 1980s, the Middle Amazon River (called the Solimões River in Brazil) became a major global hub for the illicit trade of caiman meat, traded mainly to Colombia and Pará State in Brazil, and often sold as salted pirarucu meat (*Arapaima gigas*) (Da Silveira and Thorbjarnarson 1999). However, implementing the Mamiraua SDR and a community-based resource management system helped reduced the illegal caiman trade. It was eventually replaced by the Piagaçu-Purus SDR on the lower Purus River, which became a significant hub for the trade of salted caiman meat in the 2000s, sold mostly in a little-known market in the state of Pará, Brazil (Da Silveira and Thorbjarnarson 1999, Marioni *et al*. 2007, Mendonça *et al*. 2016).

The *M. niger* meat trade appears to have diminished around the Amazon on both the local and regional scales. However, the informal trade of salted meat is considered an important activity that could affect local caiman populations. Nonetheless, there have been indications of recovery in several areas where populations have increased despite continued sporadic hunting.

The use of *M. niger* and Amazonian dolphins as bait for the piracatinga fishing activities is currently considered the most significant threat. Although the efforts of conservationists, community scientists, environmental agencies and society moved to ban the piracatinga trade and the illegal use of caiman and dolphins, the magnitude and effect of this activity still needs to be evaluated (Da Silveira and Viana 2003, Botero-Arias *et al*. 2014, Brum *et al*. 2015, Franco *et al*. 2016, Pimenta *et al*. 2018, Marioni *et al*. 2021).

The rise in *M. niger* abundance has resulted in an increased frequency of human-crocodile conflict over the last decade, including some fatalities, as well as attacks on domestic animals and pets. This has resulted in a negative perception of caiman, leading to the pre-emptive removal of several caimans in an attempt to avoid potential confrontations and prevent future attacks. With the urban expansion and changes in the annual flooding regime (more extreme water levels), negative interactions between *M. niger* and humans are becoming increasingly common in closer proximity to cities and human settlements (Cook *et al*. 2022, Haddad Jr *et al*. 2011, Hernández-Rangel *et al*. 2010, Pierre *et al*. 2023). This has been particularly evident through frequent reports on social media. Moreover, there have been reports of the destruction of caiman nests and the killing of hatchlings by local people in an attempt to

control the growth of wild caiman populations (T.A. Andrade, pers. comm. 2011).

Additionally, with the increase in densities, *M. niger* are occasionally killed due to the misconception that caimans compete with human fishers and cause economic losses due to fishing equipment damaged by caimans. Further, the expanded use of various fishing methods, such as hooks, nets, and traps, aimed at capturing commercial fish, such as pirarucu (*Arapaima gigas*), has led to caimans becoming trapped and drowning (Rueda-Almonacid *et al*. 2007, Alonso *et al*. 2008, Hernández-Rangel *et al*. 2010, Cook *et al*. 2022, Harris *et al*. 2022, Pierre *et al*. 2023).

Populations of *M. niger* are likely affected by urban expansion, logging, and other forms of habitat destruction. Deforestation and burning of riversides for harbour construction, community crops and buffalo breeding can cause degradation, erosion and loss of habitat, leading to the destruction of vegetation in riparian areas, which can negatively impact wild populations (Plotkin *et al*. 1983a, Hernández-Rangel *et al*. 2010, Marioni *et al*. 2013a, Botero-Arias *et al*. 2022). The transformation of the habitat for the construction of dams and hydroelectric reservoirs has suggested a strong effect on the population dynamic, behaviour, and biology of *M. niger*. Campos (2015) documented the death of 42 caimans in the Santo Antônio dam reservoir area over a two-year period, with more than half measuring over 4 m TL. The damming of rivers causes flooding in these areas, bringing caimans and fishermen into closer proximity, which can exacerbate conflicts, particularly with larger individuals.

Studies have shown that caimans are affected by bioaccumulation in their tissues through the trophic chain, particularly by mercury (Hg). This occurs through biomagnification in the food chain of aquatic organisms, which can have harmful effects on wildlife and pose potential health risks to humans (Brazaitis *et al*. 1996; Schneider *et al*. 2012; Schneider *et al*. 2015; Eggins *et al*. 2015; Marrugo-Negrete *et al*. 2019; Lemaire *et al*. 2021a,b,c, 2022). Illegal gold exploration and oil spills have the potential to affect the health of *M. niger* in many areas of the Amazon. Additionally, gold mining can involve the destruction of habitats and the disruption of natural water flows. Oil spills are another significant threat to the health of *M. niger* as they reduce the availability of prey and contaminate the water (Kimerling 1990, Whale 1995, Kimerling 2013, Fraser 2016, Ortiz *et al*. 2020).

Unregulated tourist activities involving caimans have become increasingly widespread in the Amazon. Ecotourism operations often rely on close human interaction, which can elevate stress hormone levels in *M. niger*. There is a lack of regulation for operators to adhere to, which means that these activities could negatively impact the health of these animals (Mendonça *et al*. 2023).

Conservation Actions **(see Appendix for additional information)**

Until the 1990s, *M. niger* was considered one of the most threatened Neotropical crocodilians. The main conservation problems were related to unsustainable use, transformation and habitat loss, and hunting by local fishermen due to alleged competition for resources. With the development and implementation of conservation strategies in the Amazon, the creation of protected areas, and advances in basic research and monitoring programs, the conservation status of this species has been reversed. The identification of high-density populations throughout its distribution indicates that *M. niger* is an abundant species, only partially and locally depleted (Rebêlo and Magnusson 1983, Yamashita *et al*. 1996, Da Silveira *et al*. 1997, Thorbjarnarson 1998, Da Silveira and Thorbjarnarson 1999, Thorbjarnarson 1999, Thorbjarnarson and Da Silveira 2000, Da Silveira 2002, Da Silveira 2003, Da Silveira 2011, Farias *et al*. 2004, Thorbjarnarson 2010, Botero-Arias *et al*. 2022).

Although *M. niger* are considered as Least Concern, the conservation priorities vary between the range states. Conservation priorities are mainly based on the data obtained in Brazil and generalized for the rest of the distribution. Many countries have defined the species conservation status, but without clear measures and information on the population, which makes difficult the implementation of a regional strategy for the conservation of the species.

In the 1970s, the hunting of caimans in South America was banned under federal law. After this prohibition, *M. niger* populations have increased in many locations. However, the use of caiman meat emerged as an alternative, but illegal, source of food for local people. In more than half of the countries where it is found, natural populations of *M. niger* are considered to be seriously diminished but their stronghold in Brazil shows a large, widespread and stable population. In Ecuador, Bolivia and Guyana, stable populations, isolated from human settlements, have been documented (Plotkin *et al*. 1983a, Thorbjarnarson 1999, Thorbjarnarson 2010).

In the 1990s, structured and systematic research efforts were developed on the biology and population dynamics of caiman in the middle Amazon River (known as the Solimões River in Brazil) region. The results of these surveys indicated high abundances of *M. niger* and *Caiman crocodilus* with a tendency for the populations to recover quickly after extensive hunting (Da Silveira and Thorbjarnarson 1999).

Overall, *M. niger* management programs primarily target the protection of natural populations. However, the programs in Ecuador and Brazil have included a sustainable use approach. In Ecuador, a ranching program was implemented with a zero quota for commercial purposes under the CITES Ranching Resolution (Resolution Conf. 11.16) in 1994 but the program was unsuccessful and closed in 2008. In Brazil, *M. niger* was changed from CITES Appendix I to Appendix II in 2007 and both the state and federal Governments committed themselves to implementing harvest programs for wild populations in Sustainable Development Reserves (Botero-Arias *et al*. 2010, 2022; Marioni *et al*. 2021). Unfortunately, the lack of logistical and technical planning, combined with poor biological information to regulate the extraction and sale of caiman products, has aroused strong doubts about the development and future of caiman harvesting programs in the Amazon. The lack of studies on the potential production as well as value chain and marketing strategies based on the historical and cultural context of traditional caiman hunting has limited the potential use of Amazonian caimans (Marioni *et al*. 2021, Botero-Arias *et al*. 2022).

The increase in abundance of *M. niger* was determined by the decrease in the international skin trade in the 1970s combined with the implementation and regulation of the Protected Areas system. However, the illegal meat trade on a regional scale, and using caiman meat as bait in piracatinga fishing, requires special attention to avoid conservation threats to the species. There is a need for the development of a *M. niger* harvesting system, determined via a strategic conservation plan for all countries involved that includes additional income for Amazonian communities (Marioni *et al.* 2007, Marioni 2013a; Mendonça *et al*. 2016; Marioni 2021, Botero-Arias *et al*. 2022).

Melanosuchus niger conservation strategies would possibly benefit from the definition of criteria for a large-scale population monitoring program. Improved knowledge about biology, breeding ecology and population dynamics could improve decision-making processes for conservation. However, such activities do not substitute for the involvement of local people in habitat protection and sustainable use.

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.

https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

This requires understanding of the illegal value chains historically used in local and regional contexts for the *M. niger* trade (Villamarín *et al*. 2011, Marioni *et al*. 2013a, Marioni 2021, Botero-Arias *et al*. 2022, Esbach *et al*. 2022).

Credits

Assessor(s): Botero-Arias, R., Hernández-Rangel, M., Thorbjarnarson, J.B., Magnusson, W.E. & Da Silveira, R.

Reviewer(s): Mangione, R. & Manolis, C.

Facilitator(s) and Compiler(s): Balaguera-Reina, S.A. & Isberg, S.

Authority/Authorities: IUCN SSC Crocodile Specialist Group (crocodiles, alligators and caimans)

Acknowledgements

Acknowledgements: We would like to acknowledge input from Adam Rosenblatt, Adonika Amereisa Spellen, Alfonso Llobet, Alyssa Melville, Andrés Cordero, Barthira Rezende de Oliveira, Benoit de Thoisy, Boris Marioni, Diego Freitas, Diego Ortiz, Fabio L. Muniz, Fernando Li, Francisco Villamarin, Guido Miranda, James Aparicio, Luís Pacheco, Matthew Hallet, Meshach A. Pierre, Mónica Morales, Ninon Rios, Paul Ouboter, Pedro G. Vásquez Cuesta, Peter Taylor, Santiago Ron, Washington Mendonça and Zilca Campos.

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

Bibliography

Aguilera, X., Van Damme, P.A., Coronel, J.S. and Oberdorff, T. 2008. Distribution patterns, population status and conservation of *Melanosuchus niger* and *Caiman yacare* (*Crocodylia, Alligatoridae*) in oxbow lakes of the Ichilo River floodplain, Bolivia. *International Journal of Tropical Biology* 56: 1-21.

Alonso, J.C., Bonilla, C.A., Castellanos, L. and Maldonado, R.A. 2008. Estado del conocimiento y perspectivas para el caimán negro (*Melanosuchus niger* Spix, 1925) en la Amazonía Colombiana. In: Trujillo, F., Alonso, J.C., Diazgranados, M.C. and Gómez, C. (eds), Fauna Acuática Amenazada en la Amazonía Colombiana, pp. 125-140. Fundación Omacha, Fundación Natura, Instituto Sinchi, Corpoamazonia, Bogotá, Colombia.

Andrade, T.A. and Coutinho, M.E. 2007. Ecologia populacional dos jacarés (*Melanosuchus niger e Caiman crocodilus*) na Área de Proteção Ambiental Meandros do Araguaia/GO-MT. Anais do III Congresso Brasileiro de Herpetologia. Belém.

Andrade, T.A. and Coutinho, M.E. 2011. Distribuição e abundância de crocodilianos no Parque Nacional Cabo Orange, Amapá, Brasil. Anais da Sociedade Brasileira de Herpetologia, IX Congresso Latino Americano de Herpetologia. Curitiba.

Andrade, T. and Coutinho, M.E. 2000. Ecologia da nidificação de jacaré-açu (*Melanosuchus niger*) na Área de Proteção Ambiental Meandros do Araguaia/GO-MT. Anais do IV Congresso Brasileiro de Herpetologia. Pirenópolis.

Antunes, A.P., Fewster, R.M., Venticinque, E.M., Peres, C.A., Levi, T., Rohe, F. and Shepard, G.H. Jr. 2016. Empty Forest or empty rivers? A century of commercial hunting in Amazonia. *Science Advances* 2: e1600936.

Asanza, E. 1992. Population dynamics, ecology and conservation of the black caiman, *Melanosuchus nigerin* Ecuadorian Amazonia. In: Crocodiles. Proceedings of the 11th Working Meeting of the IUCN SSC Crocodile Specialist Group: pp. 22-30. IUCN, Gland, Switzerland.

Barahona, S., Bonilla, P., Martinez, A., Naranjo, H. and Rodriguez, M.M. 1996a. Estado, distribucion, sistematica y conservacion de los Crocodylia Colombianos. Censo 1994-1996. Ministerio del Medio Ambiente, Direccion General Forestal y de Vida Silvestre, Subdireccion de Fauna, Bogota.

Barahona, S.P., Bonilla, H., Naranjo, A., Martinez, P. and Rodriguez, M. 1996b. Estado, distribución, sistemática y conservación de los Crocodylia colombianos. In: Crocodiles. Proceedings of the 13th Working Meeting of the IUCN SSC Crocodile Specialist Group: pp. 32-51. IUCN, Gland, Switzerland.

Barão-Nóbrega, J.A.L., Marioni, B., Botero-Arias, R., Nogueira, A.J.A., Lima, E.S., Magnusson, W.E., Da Silveira, R. and Marcon, J.L. 2018. The metabolic cost of nesting: body condition and blood parameters of *Caiman crocodilus* and *Melanosuchus niger* in Central Amazonia. *Journal of Comparative Physiology B* 188: 127-140.

Bates, H.W. 1863. *The naturalist on the river Amazons*. London.

Bermúdez-Romero, A.L. 2010. Acciones para el Uso y Conservación de la Fauna Acuática Amenazada en la Amazonia Colombiana. Instituto de Investigaciones Científicas Sinchi Informe interno Leticia, Amazonas Colombia.

Best, R.C. 1984. The aquatic mammals and reptiles of the Amazon. In: H. Sioli (ed.), *The Amazon: Limnology and Landscape of a Mighty Tropical River*, pp. 371-412. Dr. W. Junk Publishers, Boston.

Bittencourt, P.S., Campos, Z., de Lima Muniz, F., Marioni, B., Souza, B.C., Da Silveira, R., de Thoisy, B., Hrbek, T. and Farias, I.P. 2019. Evidence of cryptic lineages within a small South American crocodilian:

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

the Schneider's dwarf caiman *Paleosuchus trigonatus* (Alligatoridae: Caimaninae). *PeerJ* 7: e6580.

Blanc, M. and De Thoisy, B. 2001. Black Caiman (*Melanosuchus niger*) in the Kaw Swamps Natural Reserve, French Guiana: a first year survey. *Crocodile Specialist Group Newsletter* 20: 30-31.

Bodmer, R., Fang, T. and Puertas, P. 2009. Wildlife Populations in the Pacaya-Samiria National Reserve and Lago Preto, Perú. Unpublished report.

Bodmer, R., Puertas, P., Perez, P., Rios, C., Escobedo, A., Dosantos, A., Recharte, M., Flores, W., Arevalo, F., Ruck, L., Antunez, M.Y. and Valverde, Z. 2006. Monitoreo de Fauna Silvestre en la Concesion de Conservacion de Lago Preto - Paredon, Rio Yavari, Loreto - Peru. Unpublished Report to WCS, Iquitos, Peru.

Bona, P., Fernandez Blanco, M.V., Schever, T.M. and Both, C. 2017. Shedding light on the taxonomic diversity of the South American Miocene caimans: the status of *Melanosuchus fisheri* (Crocodylia, Alligatoroidea). *Ameghiniana* 54: 681-687.

Bona, P., Starck, D., Galli, C., Gasparini, Z. and Reguero, M. 2014. *Caiman* cf. *latirostris* (Alligatoridae, Caimaninae) in the late Miocene Palo Pintado Formation, Salta Province, Argentina: paleogeographic and paleoenvironmental considerations. *Ameghiniana* 51: 26-36.

Botero-Arias, R. and Regatieri, S.A. 2013. Construindo as bases para um Sistema de Manejo Participativo dos Jacarés Amazônicos - Série Protocolos de Manejo dos Recursos Naturais. Instituto de Desenvolvimento Sustentável Mamirauá, Tefé/AM, Brazil.

Botero-Arias, R., Franco, D. de L, and Marmontel, M. 2014. A mortalidade de jacarés e botos associada à pesca da piracatinga na região do Médio Solimões-Amazonas, Brasil. IDSM, Tefé, Brasil.

Botero-Arias, R., Marioni, B., Verdade, L.M., Magnusson, W.E. and Da Silveira, R. 2022. Crocodilianos na Amazônia brasileira: da coexistência à conservação inclusiva das comunidades locais. In: Del Moral Sachetti, F., Soler, L., Castilla, C., Bravo-Malca, A., de Souza, J. and Gomez, N. (eds), Coexistencia entre fauna silvestre y humanos: Análisis de experiencias en el contexto latinoamericano., pp. 14-42. Comfauna - Fundación Natura, Bogotá.

Botero-Arias, R., Marmontel, M. and Queiroz, H. 2010. Projeto De Manejo Experimental De Jacarés No Estado Do Amazonas: Abate De Jacarés No Setor Jarauá - Reserva De Desenvolvimento Sustentável Mamirauá, Dezembro De 2008. *Scientific Magazine UAKARI* 5: 49–57.

Brazaitis, P., Rebelo, G. and Yamashita, C. Submitted. Report of the WWF/TRAFFIC USA survey of Brazilian Amazonia crocdilians: survey period - July 1988 to January 1992. Unpublished report to WWF.

Brochu, C.A. 1999. Phylogenetics, taxonomy, and historical biogeography of Alligatoroidea. *Journal of Vertebrate Paleontology* 19: 9-100.

Brum, S.M., da Silva, V.M.F., Rossoni, F. and Castello, L. 2015. Use of dolphins and caimans as bait for *Calophysus macropterus* (Lichtenstein, 1819) (Siluriforme: Pimelodidae) in the Amazon. *Journal of Applied Ichthyology* 31: 675-680.

Campos-Silva, J.V., Peres, C.A., Antunes, A.P., Valsecchi, J. and Pezzuti, J. 2017. Community-based population recovery of overexploited Amazonian wildlife. *Perspectives in Ecology and Conservation* 15(4): 266-270.

Campos, Z.M.S., Muniz, F.L. 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.

Carrillo, E., Aldás, S., Altamirano, M., Ayala, F., Cisneros, D., Endara, A., Márquez, C., Morales, M., Nogales, F., Salvador, P., Torres, M.L., Valencia, J., Villamarín, F., Yánez, M. and Zárate, P. 2005. Lista Roja

de los Reptiles del Ecuador. Fundación Novum Milenium, UICN-Sur, UICN-Comité Ecuatoriano, Ministerio de Educación y Cultura. Serie Proyecto PEEPE. Quito.

Carrillo, J.A. 2009. Abundancia relativa del caimán negro (*Melanosuchus niger*), de la laguna de Limoncocha, Provincia de Sucumbíos-Ecuador. BSc thesis, Universidad Internacional SEK.

Caut, S., Francois, V., Bacques, M., Guiral, D., Lemaire, J., Lepoint, G., Marquis, O. and Sturaro, N. 2019. The dark side of the black caiman: Shedding light on species dietary ecology and movement in Agami Pond, French Guiana. *PLoS One* 14: e0217239.

Chungara, R. 2017. Abundancia y distribución del lagarto (*Caiman yacare*) y caiman negro (*Melanosuchus niger*) en el Territorio Comunitario de Origen Baure, Beni-Bolivia, 2015. BSc thesis, Universidad Autónoma del Beni.

CITES. 2007. Convention on International Trade in Endangered Species of Wild Fauna and Flora. CoP14 Prop. 13. Considerations of Proposal for Amendment of Appendices I and II. Conference of the Parties. The Hague (Netherlands).

Cook, P., Hawes, J.E., Campos-Silva, J.V. and Peres, C.A. 2022. Human-wildlife conflicts with crocodilians, cetaceans and otters in the tropics and subtropics. *PeerJ* 10: e12688.

Coutinho, M.E., Bataus, Y.S.L., Rodrigues, J., Uhlig, V.M., Andrade, T.A., Bassetti, L.A., Farias, I.P., Magnusson, W.E., Valadão, R.M. and Campos, Z. 2022. *Melanosuchus niger*. Sistema de Avaliação do Risco de Extinção da Biodiversidade - SALVE. Goiânia/GO, Brasil.

Darlington, P.J. 1979. Large population of the giant Black Caiman found in French Guiana. *Museum of Comparative Zoology Newsletter* 9.

Da Silveira, R. 2002. Conservacao e manejo do jacare-acuna (*Melanosuchus niger*) Amazonia Brasileira. In: A. Larriera and L.M. Verdade (eds), *La Conservacion y el Manejo de Caimanes e Cocodrilos de America Latina*, pp. 61-78. C.N. Editoria, Piracicaba, Sao Paulo, Brazil.

Da Silveira, R. 2003. Avaliação preliminar da distribuição, abundância e da caça de jacarés no baixo rio Purus. In: De Deus, C.P., Da Silveira, R. and Py-Daniel, L.H.R. (eds), Piagaçu-Purus: Bases Científicas para a Criação de uma Reserva de Desenvolvimento Sustentável., pp. 61-64. Instituto de Desenvolvimento Sustentável Mamirauá, Manaus/AM, Brasil.

Da Silveira, R. 2011. Management of wildlife in the floodplain: a critical look at threats, bottlenecks, and the future in Amazonia. In: Pinedo-Vasquez, M., Ruffino, M.L., Padoch, C. and Brondízio Eduardo, S. (eds), *The Amazon Várzea: The Decade Past and the Decade Ahead. 1st edition*, pp. 137-144. Springer, Dordrecht Heidelberg London New York.

Da Silveira, R., Amaral, J. V., Magnusson, W.E. and Thorbjarnarson, J.B. 2011a. *Melanosuchus niger* (black caiman). Long distance movement. *Herpetological Review* 4: 424-425.

Da Silveira, R. and Thorbjarnarson, J.B. 1999. Conservation implications of commercial hunting of black and spectacled caiman in the Mamiraua Sustainable Development Reserve, Brazil. *Biological Conservation* 88: 103-109.

Da Silveira, R. and Viana, J.P. 2003. Amazonian crocodilians: a keystone species for ecology and management or simply bait? *Crocodile Specialist Group Newsletter* 22(1): 16-17.

Da Silveira, R., Campos, Z., Thorbjarnarson, J.B. and Magnusson, W.E. 2013. Growth rates of black caiman (*Melanosuchus niger*) and spectacled caiman (*Caiman crocodilus*) from two different Amazonian flooded habitats. *Amphibia-Reptilia* 34: 437-449.

Da Silveira, R., Farias, I.P., Campos, Z., Magnusson, W.E., Hrbek, T. and Farias, I.P. 2011b. Multiple

paternity in the black caiman (*Melanosuchus niger*) population in the Anavilhanas National Park, Brazilian Amazonia. *Amphibia-Reptilia* 32: 428-434.

Da Silveira, R., Magnusson, W. and Thorbjarnarson, J. 2008. Factors affecting the number of caiman seen during spotlight surveys in Mamirauá Reserve, Brazilian Amazonia. *Copeia* 2008(2): 425-430.

Da Silveira, R., Magnusson, W.E. and Campos, Z. 1997. Monitoring the distribution, abundance and breeding areas of *Caiman crocodilus crocodilus* and *Melanosuchus niger* in the Anavilhanas Archipelago, Central Amazonia, Brazil. *Journal of Herpetology* 31(4): 514-520.

De Souza-Filho, J.P., Guilherme, E., De Toledo, P.M., De Souza Carvalho, I., Negri, F.R., Da Rocha Maciente, A.A., Cidade, G.M., Da Silva Lacerda, M.B. and De Souza, L.G. 2020. On a new *Melanosuchus* species (Alligatoroidea: Caimaninae) from Solimões Formation (Eocene-Pliocene), Northern Brazil, and evolution of Caimaninae. *Zootaxa* 4894: 561–593.

De Thoisy, B. and Auffret, E. 2003. Possible extension of the distributional area of Black Caiman in French Guiana. *Crocodile Specialist Group Newsletter* 22: 17–18.

de Thoisy, B., Hrbek, T., Farias, I.P., Vasconcelos, W.R. and Lavergne, A. 2006. Genetic structure, population dynamics, and conservation of black caiman (*Melanosuchus niger*). *Biological Conservation* 133: 474-482.

Duenas-Serrano, J. F., Ron, S. R., Villamarin, F., and Vallejo, A. 2008. Population trends of *Melanosuchus niger* and *Caiman crocodilus* (Crocodylia: Alligatoridae) in four black water lakes in Reserva de Produccion Faunistica Cuyabeno, Ecuador, Abstract. 6th World Congress of Herpetology. Manaus, Brazil.

Duncan, W.P., Júnior, J.N.A., Mendonça, W.C.S.D., Santa Cruz, I.F., Samonek, J.F., Morais, E.J.F., Marcon, J.L. and Da Silveira, R. 2022. Physiological stress response in free-living Amazonian caimans following experimental capture. *Journal of Experimental Zoology A: Ecological and Integrated Physiology* 337: 282–292.

Eggins, S., Schneider, L., Krikowa, F., Vogt, R.C., Da Silveira, R. and Maher, W. 2015. Mercury concentrations in different tissues of turtle and caiman species from the Rio Purus, Amazonas, Brazil. *Environmental Toxicology and Chemistry* 34: 2771-2781.

Endara A. 2000. Census of Black Caiman. *Crocodile Specialist Group Newsletter* 19(1): 16-17.

Esbach, M.S., Puri, M., Botero-Arias, R. and Loiselle, B.A. 2022. Beyond the Island: Integrated Approaches to Conserving Biodiversity Islands with Local Communities. *Biodiversity Islands: Strategies for Conservation in Human-Dominated Environments.*, pp. 551-568. Springer.

Farias, I.P., Da Silveira, R., de Thoisy, B., Monjelo, L.A., Thorbjarnarson, J., and Hrbek, T. 2004. Genetic diversity and population structure of Amazonian crocodilians. *Animal Conservation* 7: 1-8.

Fittkau, E-J. 1970. Role of caimans in the nutrient regime of mouth-lakes of Amazon affluents (an hypothesis). *Biotropica* 2(2): 138-142.

Foth, C., Bona, P. and Desojo, J.B. 2015. Intraspecific variation in the skull morphology of the black caiman *Melanosuchus niger* (Alligatoridae, Caimaninae). *Acta Zoologica* 96: 1-13.

Franco, D. de L., Botero-Arias, R. and Vital, T.W. 2019. Evolução das políticas para o uso sustentável da fauna no brasil: o caso do manejo comunitário de jacarés no amazonas. *Brazilian Journal of Development* 5: 16319-16339.

Franco, D.L. 2021. Slaughter and processing infrastructure in context of wildlife harvesting in the State of Amazonas, Brazil. *World Journal of Veterinary Science* 9: 50-54.

Franco, D., Sobrane, Filho. S., Martins, A., Marmontel, M. and Botero-Arias, R. 2016. The piracatinga, *Calophysus macropterus*, production chain in the middle Solimões River, Amazonas, Brazil. *Fisheries Management and Ecology* 23(2): 109-118.

Fraser, B. 2016. Oil in the forest. *Science* 353(6300): 641-643.

Freezer, B. 2008. The abundance and distribution of *Caiman crocodilus*, *Paleosuchus trigonatus* and *Melanosuchus niger* in the Lago Preto conservation concession, Peru. MSc thesis, University of Kent.

Gorzula, S. and Woolford, J. 1990. The crocodilian resources in Guyana. Part 1. A preliminary assessment of distribution, status and management potential. Ministry of Agriculture, Cooperative Republic of Guyana. CITES Secretariat, Sustained Management Systems (SMS).

Griffith, P., Lang, J.W., Turvey, S.T. and Gumbs, R. 2022. Using functional traits to identify conservation priorities for the world's crocodylians. *Functional Ecology* 37: 112-124.

Haddad Jr, V. and Fonseca, W.C. 2011. A fatal attack on a child by a black caiman (*Melanosuchus niger*). *Wilderness & Environmental Medicine* 22: 62-64.

Harris, A-E., Maharaj, G., Hallett, M.T., Pierre, M.A., Chesney, C. and Melville, A. 2022. Influence of diet overlap and nest-site aggression on human–black caiman conflict in Guyana. *Human Dimensions of Wildlife* 28(4): 372-381.

Hastings, A.K., Reisser, M. and Scheyer, T.M. 2016. Character evolution and the origin of Caimaninae (Crocodylia) in the New World Tropics: new evidence from the Miocene of Panama and Venezuela. *Journal of Paleontology* 90: 317-332.

Hernández-Rangel, S.M. 2015. Dinâmica e Estrutura Populacional do Jacaré-Açu (*Melanosuchus niger*). Masters thesis, Instituto Nacional de Pesquisas da Amazônia – INPA.

Hernández-Rangel, S.M., Hrbek, T. and Farias, I.P. 2022. Exploring an Amazonian species in recovery process: defining conservation areas for *Melanosuchus niger*. In: Crocodiles. Proceedings of the 26th Working meeting of the IUCN SSC Crocodile Specialist Group, Chetumal, Mexico: pp. 143. IUCN, Gland, Switzerland.

Hernández-Rangel, S.S., Piñeros Jiménez, V.J., Alonso González, J.C., Bermúdez Romero, A.L., Morales-Betancourt, M.A. and Bustillo, S. 2010. Evaluación y potencialidades de las poblaciones de caimán negro (*Melanosuchus niger*). In: Bermúdez Romero A.L., Trujillo F., Solano C., Alonso J.C. and Ceballos-Ruiz B.L. (eds), *Retos locales y regionales para la conservación de la fauna acuática del sur de la Amazonia colombiana*, pp. 128–147. Corpoamazonia, Instituto SINCHI, Fundación OMACHA, Fundación NATURA, Bogotá.

Herron, J.C. 1985. Population status, spatial relations, growth, and injuries in black and spectacled caimans in Cocha Cashu. Honors thesis, Princeton University.

Hines, T. and Rice, K.G. 1992. A report on an initial survey effort to assess the status of black caiman *Melanosuchus niger* in the Amazon region of Ecuador. In: Crocodile. Proceedings of the 11th Working Meeting of the IUCN SSC Crocodile Specialist Group: pp. 138-175. IUCN, Gland, Switzerland.

Hines, T. and Rice, K.G. 1994. A report on a survey to assess the status of black caiman (*Melanosuchus niger*) in the Amazon region of Ecuador. Unpublished report to Mr. Pablo Evans and the Management Authority of Ecuador.

Hrbek, T., Vasconcelos, W.R., Rebelo, G. and Farias, I.P. 2008. Phylogenetic relationships of south American alligatorids and the Caiman of Madeira River. *Journal of Experimental Zoology* 309A(10): 588-599.

Hrbek, T., Vasconcelos, W.R., Rebelo, G. and Farias, I.P. 2008. Phylogenetic relationships of South American alligatorids and the Caiman of Madeira River. *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology* 309: 588-599.

Ingwall-King, L. 2013. The implication of Spatial and Temporal scale on the supply, distribution and value of ecosystem services in Guyana. PhD thesis, Royal Holloway University.

IUCN. 2025. The IUCN Red List of Threatened Species. Version 2025-2. Available at: www.iucnredlist.org. (Accessed: 10 October 2025).

Kimerling, J. 1990. Disregarding environmental law: petroleum development in protected natural areas and indigenous homelands in the Ecuadorian Amazon. *Hastings International and Comparative Law Review* 14: 849.

Kimerling, J. 2013. Oil, contract, and conservation in the Amazon: Indigenous Huaorani, Chevron, and Yasuni. *Colorado Journal of International Environmental Law and Policy* 24: 43.

King, F.W. and Videz-Roca, D.H. 1989. The caimans of Bolivia: A preliminary report on a CITES and Centro de Desarrollo Forestal sponsored survey of species distribution and status. In: Crocodiles. Proceedings of the 8th Working Meeting of the IUCN SSC Crocodile Specialist Group, Quito, Ecuador: pp. 128-153. IUCN, Gland, Switzerland.

Larriera, A., Ortiz, B. and Velasco, A. 2005. Final Report Ecuador, Peru, Bolivia and Paraguay. IUCN SSC Crocodile Specialist Group.

Lemaire, J., Brischoux, F., Marquis, O., Mangione, R. and Bustamante, P. 2021a. Variation of total mercury concentrations in different tissues of three neotropical caimans: implications for minimally invasive biomonitoring. *Archives of Environmental Contamination and Toxicology* 8: 15-24.

Lemaire, J., Brischoux, F., Marquis, O., Mangione, R., Caut, S., Brault-Favrou, M., Churlaud, C. and Bustamante, P. 2022. Relationships between stable isotopes and trace element concentrations in the crocodilian community of French Guiana. *Science of the Total Environment* 837: 155846.

Lemaire, J., Bustamante, P., Mangione, R., Marquis, O., Churlaud, C., Brault-Favrou, M., Parenteau, C. and Brischoux, F. 2021b. Lead, mercury, and selenium alter physiological functions in wild caimans (*Caiman crocodilus*). *Environmental Pollution* 286: 117549+.

Lemaire, J., Bustamante, P., Marquis, O., Caut, S. and Brischoux. 2021c. Influence of sex, size and trophic level on blood Hg concentrations in Black caiman, *Melanosuchus niger* (Spix, 1825) in French Guiana. *Chemosphere* 262: 127819.

Llobet, A., Pacheco, L.F. and Aparicio, J. 2008. *Melanosuchus niger* (Spix, 1825). *Libro rojo de la fauna silvestre de vertebrados de Bolivia*, pp. 261-262. Ministerio de Medio Ambiente y Agua, La Paz, Bolivia.

Lourenço-de-Moraes, R., Campos, F.S., Cabral, P., Silva-Soares, T., Nobrega, Y.C., Covre, A.C. and Franca, F.G.R. 2023. Global conservation prioritization areas in three dimensions of crocodilian diversity. *Scientific Reports* 13: 2568.

Madera, R.J. 2011. Monitoreo de caimanes (Alligatorinae): aplicación en estudios poblacionales en la laguna de Limoncocha, Provincia de Sucumbíos. BSc thesis, Universidad Internacional SEK.

Marioni, B., Barão-Nóbrega, J.A.L., Botero-Arias, R., Muniz, F., Campos, Z., Da Silveira, R., Magnusson, W.E. and Villamarin, F. 2021. Science and conservation of Amazonian crocodilians: a historical review. *Aquatic Conservation* 31(5): 1056-1067.

Marioni, B., Botero-Arias, R. and Fonseca-Junior, S.F. 2013a. Local community involvement as a basis for sustainable crocodilian management in protected areas of central Amazonia: Problem or solution?

Tropical Conservation Science 6: 484-492.

Marioni, B., Farias, I., Verdade, L.M., Bassetti, L., Coutinho, M.E., Mendonca, S.H.S.T., Vieira, T.Q., Magnusson, W.E. and Campos, Z. 2013b. Avaliação do risco de extinção do jacaré-açu *Melanosuchus niger* (Spix, 1825) no Brasil. *Biodiversidade Brasileira* 3: 31-39.

Marioni, B., Von Mühlen, E. and Da Silveira, R. 2007. Monitoring caiman populations subject to high commercial hunting in the Piagaçu-Purus Sustainable Development Reserve, Central Amazonia, Brazil. *Crocodile Specialist Group Newsletter* 26: 6-8.

Marrugo-Negrete, J., Durango-Hernández, J., Calao-Ramos, C., Urango-Cardenas, I. and Diez, S. 2019. Mercury levels and genotoxic effect in caimans from tropical ecosystems impacted by gold mining. *Science of the Total Environment* 664: 899-907.

Medem, F. 1963. Osteología craneal, distribución geográfica y ecología de *Melanosuchus niger* (Spix), (Crocodylia: Alligatoridae). *Revista de la Academia Colombiana de Ciencias* 12: 5-23.

Medem, F. 1971. Situation report on crocodilians from three South American countries. In: Crocodiles. Proceeding of the 1st Working Meeting of the IUCN SSC Crocodile Specialist Group: pp. 54-72. IUCN, Gland, Switzerland.

Medem, F. 1981. *Los Crocodylia de Sur América*. Vol. I. Los Crocodilia de Colômbia. Colciencias, Universidad Nacional de Colombia, Bogotá.

Medem, F. 1983. *Los Crocodylia de Sur América*. Vol. II. Los Crocodilia de Colômbia. Colciencias, Universidad Nacional de Colombia, Bogotá.

Medina, C.J. 1976. Crocodilians from the Late Tertiary of Northwestern Venezuela: *Melanosuchus fisheri* sp. nov. *Breviora* 438: 1-14.

Mendez, D. 2006. Distribución y abundancia del lagarto (*Caiman yacare*) y caimán negro (*Melanosuchus niger*) en la planicie de inundación de la cuenca baja del río Ichoa, TIPNIS (Territorio Indígena y Parque Nacional Isiboro Sécure), Bolivia. BSc Thesis, Universidad Mayor de San Simon.

Mendonça, S. and Coutinho, M. 2000. Bases biológicas para o manejo do jacaré-açu (*Melanosuchus niger*) na Reserva Extrativista do Lago do Cuniã, Rondônia. In: IV Congresso Brasileiro de Herpetologia. Pirenópolis, Brasil.

Mendonça, W.C.D.S., Duncan, W.P., Vidal, M.D., Magnusson, W.E. and Da Silveira, R. 2023. Conservation implications of tourism and stress for Amazonian caimans. *Journal of Wildlife Management* 87(8): e22482.

Mendonça, W.C.D.S., Marionim B., Thorbjarnarson, J.B., Magnusson, W.E. and Da Silveira, R. 2016. Caiman hunting in Central Amazonia, Brazil. *Journal of Wildlife Management* 80: 1497-1502.

Moncorps, S., Siblet, J-P., Colas, H., Gigot, G., Jeusset, A and Kirchner, F. 2017. La liste rouge des espèces menacées en France. Faune vertébrée de Guyane.

Morales-Betancourt, M.A. and Trujillo, F. 2015. *Caimán negro Melanosuchus niger* (Spix, 1825). In: Morales-Betancourt, M.A., Lasso, C.A., Páez, V.P. and Bock, B.C. (eds), *Libro Rojo de Reptiles de Colombia (2015). Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (IAvH), Universidad de Antioquia, Bogotá*, pp. 198-201.

Muniz, F. de L,, Bittencourt, P.S., Hernández-Rangel, S.M., Roberto, I.J., Farias, I.P. and Hrbek, T. 2021. Biogeography and Comparative Phylogeography of New-World Crocodylians. In: Zucoloto, R.B., Amavet, P.S., Verdade, L.M. and Farias, I.P. (eds), *Conservation Genetics of New World Crocodilians*, pp. 95-122. Conservation Genetics of New World Crocodilians, 1st edn. Springer International Publishing.

Muniz, F.L., Da Silveira, R., Campos, Zilca., Magnusson, W.E., Hrbek, T. and Farias, I.P. 2011. Multiple paternity in the black caiman (*Melanosuchus niger*) population in the Anavilhanas National Park, Brazilian Amazonia. *Amphibia-Reptilia* 32: 428-434.

Naveda-Rodríguez, A., Utreras, V. and Zapata-Ríos, G. 2020. A standardised monitoring protocol for the black caiman (*Melanosuchus niger*). *Wildlife Research* 47: 317-325.

Newell, J. 2001. Population status of the caimans, *Caiman crocodilus*, *Melanosuchus niger* and *Paleosuchus palpebrosus* in the Yavari River, north Peruvian Amazonia and some aspects of their ecology. University of Kent.

Oaks, J. 2011. A time-calibrated species tree of Crocodylia reveals a recent radiation of the true crocodiles. *Evolution* 65: 3285-3297.

Oaks, J.R. 2011. A time-calibrated species tree of Crocodylia reveals a recent radiation of the true crocodiles. *Evolution (NY)* 65: 3285-3297.

Ortiz, D.A. 2012. Estudio poblacional de caimanes (Crocodylia: Alligatoridae) en la Amazonía Ecuatoriana. Pontificia Universidad Católica del Ecuador.

Ortiz, D.A., Dueñas, J.F., Villamarín, F. and Ron, S.R. 2020. Long-term monitoring reveals population decline of Spectacled Caimans (*Caiman crocodilus*) at a black-water lake in Ecuadorian Amazon. *Journal of Herpetology* 54: 31-38.

Otte, K.C. 1978. Untersuchungen zur Biologie des Mohrenkaiman (*Melanosuchus niger* Spix 1825) aus dem National park Manu (Peru). Beitrage zu Morphologie, Physiologie, Ethologie und Okologie, University of Munich, Germany.

Ouboter, P.E., Vie, J.C., Montford, T., Blanc, M. and Prevoteau, J.-M. 1999. Black caiman population in Kaw swamps. *Crocodile Specialist Group Newsletter* 19: 13-15.

Pacheco, L.F. 1993. Abundance, distribution, and habitat use of crocodilians in Beni, Bolivia. University of Florida.

Pallete, M. 2015. Abundancia y estructura del caiman negro (*Melanosuchus niger*) en el Territorio Comunitario de Origen Joaquiniano, Beni, Bolivia, 2015. BSc Thesis, Universidad Autónoma del Beni.

Pérez-Peña, P., Lourdes, R., Riveros, M. and Rojas, G. 2012. Evaluación del conocimiento indígena Kichwa como herramienta de monitoreo en la abundancia de animales de caza. *Folia Amazónica* 21: 115-128.

Pierre, M.A., Jacobsen, K.S., Hallett, M.T., Harris, A-E.M., Melville, A., Barnabus, H. and Sillero-Zubiri, C. 2023. Drivers of human–black caiman (*Melanosuchus niger*) conflict in Indigenous communities in the North Rupununi wetlands, southwestern Guyana. *Conservation Science and Practice* 5(1): e12848.

Pimenta, N.C., Barnett, A.A., Botero-Arias, R. and Marmontel, M. 2018. When predators become prey: Community-based monitoring of caiman and dolphin hunting for the catfish fishery and the broader implications on Amazonian human-natural systems. *Biological Conservation* 222: 154-163.

Plotkin, M.J., Medem, F., Mittermeier, R.A., and Constable, I.D. 1983. Distribution and conservation of the black caiman (*Melanosuchus niger*). In: A.G.J. Rhodin and K. Miyata (eds), *Advances in Herpetology and Evolutionary Biology*, pp. 695-705. Museum of Comparative Zoology, Harvard University, Cambridge, MA.

Plotkin, M.J., Mittermeier, R.A. and Constable, I.D. 1983b. The Black Caiman of Kaw. *Wildlife*: 374-377.

Poe, S. 1996. Data set incongruence and the phylogeny of crocodilians. *Systematic Biology* 45(4): 393-414.

Ponce, C. and Hofmann, R. 1968. La Reserva Nacional para manejo de fauna y la Estación Regional de Biología Amazónica. Lima, Peru.

ProNaturaleza. 2007. Reporte Tecnico. Monitoreo de especies de fauna silvestre en la Cuenca de los Rios Pacaya y Yanayacu Pucate, Reserva Nacional Pacaya Samiria 2007. ProNaturaleza, Loreto, Peru.

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: 95-104.

Rio, J.P. and Mannion, P.D. 2021. Phylogenetic analysis of a new morphological dataset elucidates the evolutionary history of Crocodylia and resolves the long-standing gharial problem. *PeerJ* 9: e12094.

Rios, J.N. 2022. Estado poblacional del lagarto (*Caiman yacare*) y del caimán negro (*Melanosuchus niger*) en sus áreas de distribución natural en Bolivia. *Boletín Bioamazonía* 14: 19-29.

Ríos, M., Dourojeanni, M.J. and Tovar, A. 1974. La fauna y su aprovechamiento en Jenaro Herrera (Requena, Perú). *Revista Forestal del Perú* 5(1-2): 1-23.

Rivas, L.R., García, V., Rojas, D., Cortez, E., Merubia, M., Salvatierra, A., Salazar, J.L., Pérez, J.C. and Moreno, F. 2023. Estado poblacional de caimanes (Alligatoridae) en nueve Tierras Comunitarias de Origen del Beni, Bolivia. *Neotropical Hydrobiology and Aquatic Conservation* 4(1): 3-25.

Roberto, I.J., Bittencourt, P.S., Muniz, F.L., Hernández-Rangel, S.M., Nóbrega, Y.C., Ávila, R.W., Souza, B.C., Alvarez, G., Miranda-Chumacero, G., Campos, Z., Farias, I.P. and Hrbek, T. 2020. Unexpected but unsurprising lineage diversity within the most widespread Neotropical crocodilian genus *Caiman* (Crocodylia, Alligatoridae). *Systematics and Biodiversity* 18(4): 377-395.

Rodriguez-Cordero, A.L. 2019. Conservation and geographic distribution of crocodylians in Bolivia (*Caiman yacare, Caiman latirostris, Melanosuchus niger, Paleosuchus palpebrosus, Paleosuchus trigonatus*). Masters thesis, Texas Tech University.

Rodriguez-Cordero, A.L., Balaguera-Reina, S.A. and Densmore III, L.D. 2019. Regional conservation priorities for crocodylians in Bolivia. *Journal for Nature Conservation* 52: 125753.

Rodriguez, M. 2000. *Estado y Distribucion de los Crocodylia en Colombia. Compilación de resultados del Censo Nacional, 1994 a 1997*. Ministerio del Medio Ambiente, Bogota, Columbia.

Ron, R.S., Vallejo, A. and Andanza, E. 1998. Human influence on the wariness of *Melanosuchus niger* and *Caiman crocodilus* in Cuyabeno, Ecuador. *Journal of Herpetology* 32(3): 320-324.

Ron, S.R. 1995. Estudio poblacional del caiman negro *Melanosuchus niger* y caiman de anteojos *Caiman crocodilus* (*Crocodylia: Crocodylidae*) en seis lagunasde la Amazonia Ecuatoriana. Pontificadora Universidad Catolica del Ecuador.

Rosenblatt, A.E., Lardizabal, K., Li, F., Holland, A., Lawrence, D. and Taylor, P. 2021. Tourism value of crocodilians: The black caiman (*Melanosuchus niger*) as a case study. *Herpetologica* 77(4): 289-293.

Rueda-Almonacid, J.V., Carr, J.L., Mittermeier, R.A., Rodríguez-Mahecha, J.V., Mast, R.B., Vogt, R.C., Rhodin, A.G.J., de la Ossa-Velásquez, J., Rueda, J.N. and Mittermeier, C.G. 2007. *Las tortugas y los cocodrilianos de los países andinos del trópico*. Conservation Internacional, Bogotá, Colombia.

Salas-Gismondi, R., Flynn, J.J., Baby, P., Tejada-Lara, J.V., Wesselingh, F.P. and Antoine, P-O. 2015. A Miocene hyperdiverse crocodylian community reveals peculiar trophic dynamics in proto-Amazonian mega-wetlands. *Proceedings of the Royal Society B: Biological Sciences* 282: 20142490.

Schneider, L., Eggins, S., Maher, W., Vogt, R.C., Krikowa, F., Kinsley, L., Eggins, S.M. and Da Silveira, R. 2015. An evaluation of the use of reptile dermal scutes as a non-invasive method to monitor mercury

concentrations in the environment. *Chemosphere* 119: 163-170.

Schneider, L., Peleja, R.P., Kluczkovski, A. Jr., Freire, G.M., Marioni, B., Vogt, R.C. and Da Silveira, R. 2012. Mercury concentration in the Spectacled Caiman and Black Caiman (Alligatoridae) of the Amazon: Implications for human health. *Archives of Environmental Contamination and Toxicology* 63(2): 270-279.

SERFOR. 2018. Libro rojo de la fauna silvestre amenazada del Perú, 1st edn. Serfor (Servicio Nacional Forestal y de Fauna Silvestre) Lima, Peru, Lima, Peru.

Silva, F.P., Maciel, J.C.T., de Lima Franco. D., Oliveira, B.R., Boteria-Arias, R. and Barreto-Lima, A.F. 2021. Pesquisa e Conservação de Crocodilianos da Região Norte do Brasil. In: Barreto-Lima, A.F., Santos, M.R. de D., Nobrega, Y.C. (ed.), *Tratado de Crocodilianos do Brasil*, pp. 457-497. Vitória: Editora Instituto Marcos Daniel.

Smith, N.J.H. 1981. Caimans, capybaras, otters, manatees, and man in Amazonia. *Biological Conservation* 19: 177-187.

Somaweera, R., Nifong, J., Rosenblatt, A., Brien, M.L., Combrink, X., Elsey, R.M., Grigg, G., Magnusson, W.E., Mazzotti, F.J., Pearcy, 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* 95: 936-959.

Spellen, A.A. 2019. Assessment of the Appendix I listing of Guyana's population of Black Caiman, *Melanosuchus niger*, in CITES. Masters Thesis, International University of Andalucia.

Spellen, A.A. 2020. Update on the status of Black Caiman in Guyana. *Bioamazon Newsletter: Bioamazon Project*: 18-23.

Street, K. 2003. The diet and abundance of three caiman species (*Caiman crocodilus*, *Melanosuchus niger* and *Paleosuchus trigonatus*) along the Rio Samiria, Peru. University of Kent.

Swan, N. 2005. Population status and ecology of three caiman species *Caiman crocodilus*, *Paleosuchus trigonatus* and *Melanosuchus niger* in the Lago Preto Conservation Concession, north-eastern Peru: the recovery of *Melanosuchus niger*? University of Kent.

Taylor, P., Li, F., Holland, A., Martin, M. and Rosenblatt, A.E. 2016. Growth rates of black caiman (*Melanosuchus niger*) in the Rupununi region of Guyana. *Amphibia-Reptilia* 37(1): 9-14.

Ten, S., Pena, R., Avila, P., Saavedra, H. and Gutierrez, E. 2008. Preliminary information about distribution and abundance of the Black caiman *Melanosuchus niger* in Beni, Bolivia. In: Crocodiles. Proceedings of the 19th Working Meeting of the IUCN SSC Crocodile Specialist Group: pp. 221-240. IUCN, Gland, Switzerland.

Thorbjarnarson, J. 1998. *Melanosuchus niger*. In: Ross, J.P. (ed.), *Crocodiles: Status survey and conservation ation plan*, IUCN SSC Crocodile Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

Thorbjarnarson, J. 1999. Crocodile tears and skins: International trade, economic constraints, and limits to the sustainable use of crocodilians. *Conservation Biology* 13: 465-470.

Thorbjarnarson, J.B. 2003. Caiman research training course. *Crocodile Specialist Group Newsletter* 22(3): 15.

Thorbjarnarson, J.B. 2010. Black caiman *Melanosuchus niger*. *Crocodiles. Status survey and conservation action plan. IUCN/SSC Action Plans for the Conservation of Biological Diversity*, pp. 29-39.

Thorbjarnarson, J.B. and Da Silveira, R. 2000. Secrets of the flooded forest. *Natural history* 3: 70-79.

Urresta, M. 2003. Evaluación de Impacto Ambiental Generado por Actividades Humanas en el Sector de la Laguna de Limoncocha y su Area de Influencia en la Distribución y Abundancia de la Población del Caimán Negro (*Melanosuchus niger*). BSc thesis, Universidad SEK.

Uruena, E. 1990. Black caiman in Guyana. *Crocodile Specialist Group Newsletter* 9: 24.

Vallejo, A. 1995. Estado poblacional, utilizacion de tipos vegetacionales y crecimiento de *Melanosuchus niger* and *Caiman crocodilus crocodilus* en Zancudococha y Cuyabeno, Amazonia Ecuatoriana. Departamento de Ciencias Biologicas.

Vallejo, A., Ron, S. and Asanza, E. 1996. Growth in *Melanosuchus niger* and *Caiman crocodilus crocodilus* at Zancudococha and Cuyabeno, Ecuadorean Amazon. In: Crocodiles. Proceedings of the 13th Working Meeting of the IUCN SSC Crocodile Specialist Group: pp. 91-93. IUCN, Gland, Switzerland.

Vasconcelos, W.R. 2005. Diversidade genética e estrutura populacional dos crocodilianos jacaré-açú (Melanosuchus niger) e jacaré-tinga (*Caiman crocodilus*) da Amazônia. Masters thesis, Instituto Nacional de Pesquisas da Amazonia - INPA.

Vasconcelos, W.R., Hrbek, T., da Silveira, R., de Thoisy, B., Dos Santos Ruffei, L.A.A. and Farias, I.P. 2008. Phylogenetic and conservation genetic analysis of the Black caiman (*Melanosuchus niger*). *Journal of Experimental Zoology* 309A(10): 600-613.

Vasquez R., P.G. 1981. Bases bio-ecologicas para el manejode los Alligatoridae en Jenaro Herrera (Requena-Peru). Univ. Nac. Agraria.

Vasquez, R., P.G. 1982. Analisis de la situacion actual de los caimanes y del cocodrilo de Tumbes en el Peru. *Revista Forestal del Peru* 1(2): 171-194.

Velasco, A. 2005. La conservación de los cocodrilos en Latino América y el Caribe. In: Crocodiles. Proceedings of the Regional (Latin America and the Caribbean) Meeting of the IUCN SSC Crocodile Specialist Group: pp. 75-87. IUCN, Gland, Switzerland.

Verdi, L., Moya, L. and Pezo, R. 1980. *Observaciones preliminares sobre la bioecologia del lagarto blanco* Caiman crocodilus *(Linnaeus, 1758) (Alligatoridae) en la Cuenca del Rio Samiria, Loreto-Peru*. UNAP-Cooperacion Tecnica del Gobierno Suizo (COTESU)-ORDELORETO, Seminario sobre los Proyectos de Investigacion ecologica para el manejo de los recursos naturales renovables del bosque tropical humedo del 12 al 18 de octubre 1980.

Villamarin, F. 2006. Black caiman population and ecological research in Ecuadorian Amazonia. *Crocodile Specialist Group Newsletter* 25(1): 7-8.

Villamarin, F. and Suarez, E. 2007. Nesting of the Black caiman (*Melanosuchus niger*) in northeastern Ecuador. *Journal of Herpetology* 41: 164-167.

Villamarín, F., Escobedo-Galván, A.H., Siroski, P. and Magnusson, W.E. 2021. Geographic distribution, habitat, reproduction, and conservation status of crocodilians in the Americas. In: Zucoloto, R.B., Amavet, P.S., Verdade, L.M., Farias, I.P. (ed.), *Conservation Genetics of New World Crocodilians*, pp. 1-30. Springer, Cham.

Villamarín, F., Marioni, B., Thorbjarnarson, J.B., Nelson, B.W., Botero-Arias, R. and Magnusson, W.E. 2011. Conservation and management implications of nest-site selection of the sympatric crocodilians *Melanosuchus niger* and *Caiman crocodilus* in Central Amazonia, Brazil. *Biological Conservation* 144(2): 913-919.

Vliet, K., Shirley, M., Ross, P. and Roberto, I. 2024. Living crocodylians of the world (2024). *Crocodile Specialist Group Newsletter* 43(2): 15-22.

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

Whale, S.O. 1995. New fishing treaty. *Oryx* 29(4): 229.

Yamashita, C., Rebêlo, G.H. and Brazaitis, P. 1996. The status of *Caiman crocodilus crocodilus* and *Melanosuchus niger* populations in the Amazonian regions of Brazil. *Amphibia-Reptilia* 17: 377-385.

Citation

Botero-Arias, R., Hernández-Rangel, M., Thorbjarnarson, J.B., Magnusson, W.E. & Da Silveira, R. 2025. *Melanosuchus niger*. *The IUCN Red List of Threatened Species* 2025: e.T13053A512056. https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

Disclaimer

To make use of this information, please check the Terms of Use.

External Resources

For Supplementary Material, and for Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.7. Forest - Subtropical/Tropical Mangrove Vegetation Above High Tide Level	Seasonal occurrence unknown	Marginal	-
1. Forest -> 1.8. Forest - Subtropical/Tropical Swamp	Resident	Suitable	Yes
4. Grassland -> 4.6. Grassland - Subtropical/Tropical Seasonally Wet/Flooded	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.13. Wetlands (inland) - Permanent Inland Deltas	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.2. Wetlands (inland) - Seasonal/Intermittent/Irregular Rivers/Streams/Creeks	Passage	Suitable	Yes
5. Wetlands (inland) -> 5.4. Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.6. Wetlands (inland) - Seasonal/Intermittent Freshwater Lakes (over 8ha)	Resident	Suitable	Yes
15. Artificial/Aquatic & Marine -> 15.1. Artificial/Aquatic - Water Storage Areas (over 8ha)	Passage	Marginal	-
15. Artificial/Aquatic & Marine -> 15.9. Artificial/Aquatic - Canals and Drainage Channels, Ditches	Resident	Marginal	-

Use and Trade

(http://www.iucnredlist.org/technical-documents/classification-schemes)

End Use	Local	National	International
1. Food - human	Yes	Yes	Yes
2. Food - animal	Yes	No	No
3. Medicine - human & veterinary	Yes	No	No
10. Wearing apparel, accessories	Yes	Yes	Yes
12. Handicrafts, jewellery, etc.	Yes	Yes	Yes
15. Sport hunting/specimen collecting	Yes	No	No

Threats

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Majority (50-90%)	Causing/could cause fluctuations
Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
1. Residential & commercial development -> 1.2. Commercial & industrial areas	Ongoing	Majority (50-90%)	Causing/could cause fluctuations
Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.1. Nomadic grazing	Ongoing	Minority (<50%)	Unknown
Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Unknown	Minority (<50%)	Unknown
Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.4. Scale Unknown/Unrecorded	Unknown	Unknown	Unknown
Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
3. Energy production & mining -> 3.1. Oil & gas drilling	Ongoing	Minority (<50%)	Unknown
Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	Unknown	Unknown
Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Majority (50-90%)	Slow, significant declines
Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.2. Intentional use: (large scale) [harvest]	Past, likely to return	Minority (<50%)	Rapid declines
Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Minority (<50%)	Unknown
Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.4. Unintentional effects: (large scale) [harvest]	Unknown	Minority (<50%)	Unknown
Stresses:	2. Species Stresses -> 2.1. Species mortality		

5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.5. Persecution/control	Unknown	Minority (<50%)	Causing/could cause fluctuations
Stresses: 2. Species Stresses -> 2.1. Species mortality			
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.6. Motivation Unknown/Unrecorded	Ongoing	Unknown	Unknown
Stresses: 2. Species Stresses -> 2.1. Species mortality			
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	Minority (<50%)	Negligible declines
Stresses: 2. Species Stresses -> 2.2. Species disturbance			
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.2. Abstraction of surface water (commercial use)	Ongoing	Minority (<50%)	Unknown
Stresses: 1. Ecosystem stresses -> 1.1. Ecosystem conversion			
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.4. Abstraction of surface water (unknown use)	Ongoing	Minority (<50%)	Causing/could cause fluctuations
Stresses: 1. Ecosystem stresses -> 1.1. Ecosystem conversion			
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.9. Small dams	Ongoing	Minority (<50%)	Causing/could cause fluctuations
Stresses: 1. Ecosystem stresses -> 1.1. Ecosystem conversion			
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.10. Large dams	Ongoing	Minority (<50%)	Causing/could cause fluctuations
Stresses: 1. Ecosystem stresses -> 1.1. Ecosystem conversion			
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.11. Dams (size unknown)	Ongoing	Unknown	Causing/could cause fluctuations
Stresses: 1. Ecosystem stresses -> 1.1. Ecosystem conversion			
7. Natural system modifications -> 7.3. Other ecosystem modifications	Unknown	Unknown	Causing/could cause fluctuations
Stresses: 1. Ecosystem stresses -> 1.1. Ecosystem conversion			
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.1. Sewage	Ongoing	Minority (<50%)	Unknown
Stresses: 1. Ecosystem stresses -> 1.2. Ecosystem degradation			
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.2. Run-off	Ongoing	Minority (<50%)	Unknown
Stresses: 1. Ecosystem stresses -> 1.2. Ecosystem degradation			
9. Pollution -> 9.2. Industrial & military effluents -> 9.2.1. Oil spills	Ongoing	Minority (<50%)	Causing/could cause fluctuations
Stresses: 2. Species Stresses -> 2.1. Species mortality			
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.4. Type Unknown/Unrecorded	Ongoing	Unknown	Unknown
Stresses: 1. Ecosystem stresses -> 1.2. Ecosystem degradation			
9. Pollution -> 9.4. Garbage & solid waste	Ongoing	Unknown	Unknown
Stresses: 1. Ecosystem stresses -> 1.2. Ecosystem degradation			
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	Unknown	Causing/could cause fluctuations

	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation	
11. Climate change & severe weather -> 11.2. Droughts	Ongoing	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion	
11. Climate change & severe weather -> 11.3. Temperature extremes	Ongoing	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance	
11. Climate change & severe weather -> 11.4. Storms & flooding	Ongoing	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation	

Conservation Actions in Place

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Action in Place
In-place research and monitoring
Action Recovery Plan: Yes
Systematic monitoring scheme: Yes
In-place land/water protection
Conservation sites identified: Yes, over entire range
Percentage of population protected by PAs: 51-60
Area based regional management plan: No
Occurs in at least one protected area: Yes
Invasive species control or prevention: Not Applicable
In-place species management
Harvest management plan: No
Successfully reintroduced or introduced benignly: No
Subject to ex-situ conservation: Yes
In-place education
Subject to recent education and awareness programmes: No
Included in international legislation: Yes
Subject to any international management / trade controls: Yes

Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Action Needed	**Notes**
1. Land/water protection -> 1.1. Site/area protection	-

Conservation Action Needed	Notes
1. Land/water protection -> 1.2. Resource & habitat protection	-
2. Land/water management -> 2.1. Site/area management	-
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management	-
3. Species management -> 3.1. Species management -> 3.1.2. Trade management	-
4. Education & awareness -> 4.1. Formal education	-
4. Education & awareness -> 4.2. Training	-
4. Education & awareness -> 4.3. Awareness & communications	-
5. Law & policy -> 5.1. Legislation -> 5.1.1. International level	-
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level	-
5. Law & policy -> 5.1. Legislation -> 5.1.3. Sub-national level	-
5. Law & policy -> 5.1. Legislation -> 5.1.4. Scale unspecified	-
5. Law & policy -> 5.2. Policies and regulations	-
5. Law & policy -> 5.3. Private sector standards & codes	-
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.1. International level	-
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level	-
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.3. Sub-national level	-
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.4. Scale unspecified	-
6. Livelihood, economic & other incentives -> 6.1. Linked enterprises & livelihood alternatives	-
6. Livelihood, economic & other incentives -> 6.3. Market forces	-
6. Livelihood, economic & other incentives -> 6.4. Conservation payments	-
6. Livelihood, economic & other incentives -> 6.5. Non-monetary values	-

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed	Notes
1. Research -> 1.2. Population size, distribution & trends	-
1. Research -> 1.3. Life history & ecology	-
1. Research -> 1.4. Harvest, use & livelihoods	-
1. Research -> 1.5. Threats	-
1. Research -> 1.6. Actions	-

© The IUCN Red List of Threatened Species: Melanosuchus niger – published in 2025.
https://dx.doi.org/10.2305/IUCN.UK.2025-2.RLTS.T13053A512056.en

Research Needed	Notes
2. Conservation Planning -> 2.2. Area-based Management Plan	-
2. Conservation Planning -> 2.3. Harvest & Trade Management Plan	-
3. Monitoring -> 3.1. Population trends	-
3. Monitoring -> 3.2. Harvest level trends	-
3. Monitoring -> 3.3. Trade trends	-
3. Monitoring -> 3.4. Habitat trends	-

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km²): 39877
Continuing decline in area of occupancy (AOO): No
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km²): 7076637
Continuing decline in extent of occurrence (EOO): No
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 8
Continuing decline in number of locations: No
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 0
Upper elevation limit (m): 250
Population
Number of mature individuals: 10,000
Continuing decline of mature individuals: No
Extreme fluctuations: No
Population severely fragmented: No
No. of subpopulations: 8
Continuing decline in subpopulations: No
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
No. of individuals in largest subpopulation: 1000

Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: No
Generation Length (years): 25
Movement patterns: Not a Migrant
Congregatory: Congregatory (year-round)

The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership.

The IUCN Red List Partners are: ABQ BioPark; Arizona State University; BirdLife International; Botanic Gardens Conservation International; Conservation International; Missouri Botanical Garden; NatureServe; Re:wild; Royal Botanic Gardens, Kew; Sapienza University of Rome; Senckenberg Society for Nature Research; Texas A&M University; and Zoological Society of London.