



First Confirmed Records of Spectacled Caimans, *Caiman crocodilus* (Linnaeus 1758), in the Department of Pando, Bolivia

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Crocodylians are large ambush predators widely distributed in tropical and subtropical habitats across the globe (e.g., Grigg and Kirshner 2015). Twenty-five species of alligators, caimans, crocodiles, and gharials are currently recognized (Grigg and Kirshner 2015; Shirley et al. 2018; Carr et al. 2021) with the potential of reaching as many as 30 extant species, once cryptic species, and species complexes (Hall and Portier 1994; Eaton et al. 2009; Milián-García et al. 2018; Muniz et al. 2018; Bittencourt et al. 2019; Roberto et al. 2020) are clarified. Five crocodylian species are known to inhabit Bolivia: Yacare Caiman, *Caiman yacare* (Daudin 1802); Broad-snouted Caiman, *C. latirostris* (Daudin 1801); Black Caiman, *Melanosuchus niger* (Spix 1825); Cuvier’s Dwarf Caiman, *Paleosuchus palpebrosus* (Cuvier 1807), and Schneider’s Smooth-fronted Caiman, *P. trigonatus* (Schneider 1801). Of these, the Yacare Caiman is the most common and widely distributed species in the country (Embert 2007; Rodríguez-Cordero et al. 2019).

The Spectacled Caiman, *Caiman crocodilus* (Linnaeus 1758) is one of the most widely distributed and geographically variable crocodylian species in the Americas, ranging across 16 countries (Brazil, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, Suriname, Trinidad and Tobago, and Venezuela) plus introduced populations in Cuba and the United States (Puerto Rico and Florida) (Balaguera-Reina and Velasco 2019). *Caiman crocodilus* is currently recognized as an unresolved species complex due to high morphological (at least four groups) and genetic (at least eight mitochondrial lineages) variation across its range (Roberto et al. 2020; Balaguera-Reina et al. 2021, 2022). As part of the IUCN Red List assessment, M. Tellez and A. Llobet, crocodylian experts from Belize and Bolivia, respectively, were asked whether Spectacled Caimans could be confirmed as present in either of these countries. In both instance, a lack of records (e.g., specimens, photographs, field observations) precluded



Figure 1. Four different Spectacled Caimans (*Caiman crocodilus*; SUI:VERT:48046.1–4) observed along the Madre de Dios River, Department of Pando, Bolivia, on 28 July 2021. Photographs by Natalio Roque-Marca.

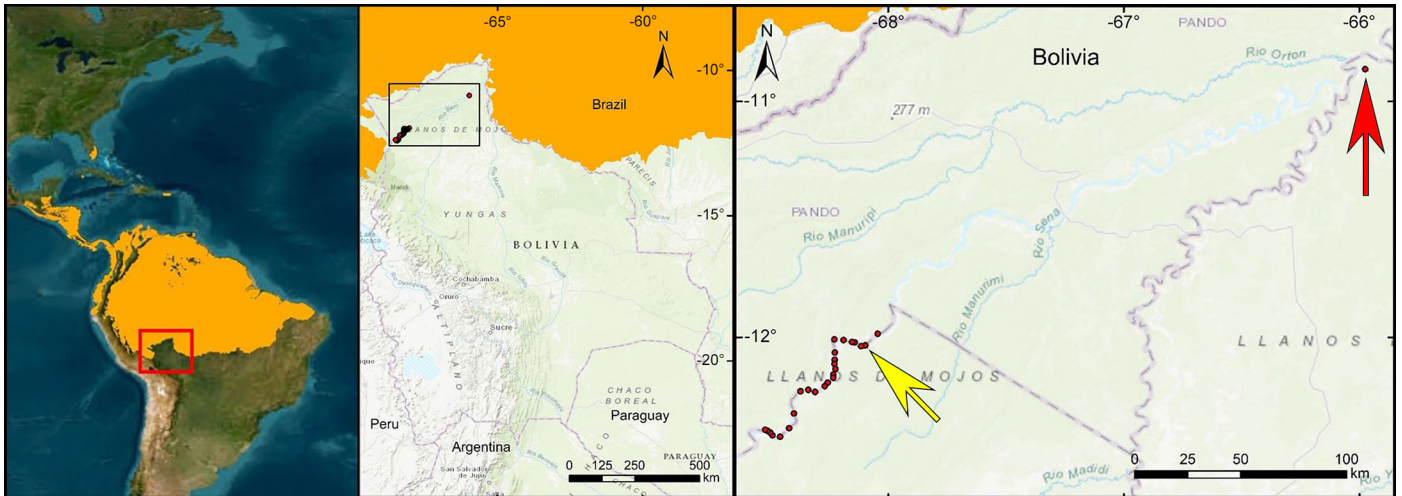


Figure 2. Map depicting in orange the entire range of the Spectacled Caiman (*Caiman crocodilus*) as documented in the IUCN Red List; the red square marks the area addressed in this note (left). Map showing documented localities for *C. crocodilus* in Bolivia; orange indicates the previously documented distribution of the species (Balaguera-Reina and Velasco 2019) (center). Map showing documented localities for *C. crocodilus* along the Madre de Dios River, Department of Pando, Bolivia; orange indicates the previously documented distribution of the species; the yellow arrow marks the locality of an individual (SUI:VERT:48046.5) photographed in 2021 on the bank of the Madre de Dios River, Bolivia (Fig. 3); and the red arrow marks the locality of an individual documented in Voss (2018) (Fig. 5).

the inclusion of these countries in the species' currently recognized range (Balaguera-Reina and Velasco 2019).



Figure 3. A Spectacled Caiman (*Caiman crocodilus*) (SUI:VERT:48046.5) photographed in 2021 on the bank along the Madre de Dios River, Bolivia. Photograph by Natalio Roque-Marca.

Spectacled Caimans are medium-sized crocodylians that rarely reach 3 m in length (maximum recorded length is 2.7 m in males) and reach sexual maturity at four years of age (~1.2 m in total length; Ayarzagüena 1984). This species is quite versatile in terms of habitat and nesting requirements, allowing nesting females to lay mound nests made from almost any substrate (Medem 1981). This lack of substrate selectivity for nests is considered an advantage over other crocodylian species that are more sensitive in substrate selection (Balaguera-Reina and Velasco 2019). Spectacled Caimans are currently listed as Least Concern by the IUCN Red List (Balaguera-Reina and Velasco 2019) but are included in Appendix II of CITES. Many South American countries, notably Venezuela and Colombia, have implemented conservation and sustainable-use programs (Velasco 2008; Caldwell 2017; Marioni et al. 2021).



Figure 4. Yacare Caimans (*Caiman yacare*) photographed in the Department of Beni, Bolivia. This is the most widely distributed crocodylian in Bolivia. Photographs by Andrés L. Rodríguez-Cordero.

On 28 July 2021, we observed 25 *C. crocodilus* of various sizes and unknown sex along the Madre de Dios River, Department of Pando, Bolivia (from -11.98492, -68.04451 to -12.39201, -68.52179) and (-12.39201, -65.97523; Voss 2018) (Figs. 1–3). Coordinates were taken using a Garmin GPSMAP64S (Garmin Ltd.) for each observation (Table 1). Although we could not determine exact sizes, most individuals were either mature or approaching maturity (>1 m) and were either basking or in the river at air temperatures of 23.19–29.44 °C (mean 26.3 °C). Field identification was congruent with species descriptions in having light-colored bodies, faint or absent marks on the mandibles, and a lack of extensive dark bars on the lateral ends of ventral scales (Mertens 1943; Wermuth 1953; Brazaitis 1973; Medem 1983; Brazaitis et al. 1998). Spectacled Caimans are mor-

Table 1. Records of Spectacled Caimans (*Caiman crocodilus*) on 28 July 2021 along the Madre de Dios River, Department of Pando, Bolivia. Photographic vouchers were deposited in the University of Iowa Museum of Natural History (SUI:VERT:48046.1–25).

Specimen (SUI:VERT:#)	Location (WGS84) (latitude, longitude)
48046.1	-11.98493, -68.04451
48046.2	-12.03373, -68.09709
48046.3	-12.03754, -68.11448
48046.4	-12.02144, -68.14154
48046.5	-12.01973, -68.15298
48046.6	-12.01154, -68.18922
48046.7	-12.00869, -68.22855
48046.8	-12.06426, -68.22651
48046.9	-12.09551, -68.22677
48046.10	-12.11258, -68.22776
48046.11	-12.13383, -68.22353
48046.12	-12.15808, -68.23255
48046.13	-12.17123, -68.23298
48046.14	-12.19201, -68.25649
48046.15	-12.20681, -68.26948
48046.16	-12.23176, -68.30993
48046.17	-12.22261, -68.33890
48046.18	-12.22853, -68.37175
48046.19	-12.32280, -68.39991
48046.20	-12.38529, -68.42057
48046.21	-12.42123, -68.45859
48046.22	-12.41551, -68.49149
48046.23	-12.40384, -68.50061
48046.24	-12.39598, -68.51204
48046.25	-12.39201, -68.52178



Figure 5. A Spectacled Caiman (*Caiman crocodilus*) documented by Voss (2018). Photograph by Vincent Voss.

phologically similar to Yacare Caimans (Fig. 4); the latter, however, have distinct dark blotches on the upper and lower jaws, dark bars along the lateral edges of the ventral scales, and frequently are very dark (Medem 1960; Brazaitis 1973; Brazaitis et al. 1998).

The identity of the species was confirmed from photographs by Biologist Alvaro Velasco Barbieri, Chair of the Crocodile Specialist Group of Venezuela, Dr. Christopher A. Brochu, University of Iowa, Dr. William E. Magnusson, and Dr. Grahame Webb, Former Chair of the IUCN Crocodile Specialist Group. Photographs and coordinates were deposited at the University of Iowa Museum of Natural History (SUI:VERT:48046.1–25).

These records represent the first confirmed reports of *Caiman crocodilus* in Bolivia and extend the range of the species some 192 km (straight-line distance) to the south. We also located a record of *C. crocodilus* (an adult unknown sex; Fig. 5) reported in GBIF (Global Biodiversity Information Facility) on 17 June 2018, 257 km NE of our nearest locality (-12.39201, -65.97523) (Voss 2018). Spectacled Caimans likely are distributed across all of northern Bolivia (including the Department of Beni), making this area a potential hybridization zone with the Yacare Caiman. Future fieldwork and genetic analyses are necessary to determine the full extent of the range of *C. crocodilus* in northern Bolivia and identify the genetic lineage and morphological group to which this population belongs.

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