

Snakes as prey of Cuvier's Dwarf Caiman (*Paleosuchus palpebrosus*: Alligatoridae), with a new observation from central Amazonia, Brazil

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The Dwarf Caiman, *Paleosuchus palpebrosus* (Cuvier, 1807) is among the smallest and most secretive crocodylians in the world, and this is the main reason why information on the species' natural history and ecology are still scarce (Magnusson and Campos, 2010). The species is widely distributed in South America, occurring in Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, and Venezuela. In Brazil the species occupies widely divergent ecosystems (Magnusson, 1992), including Amazonian rainforest, *caatinga* (in northeastern Brazil), *cerrado* (on the central plateau), Atlantic Forest, and Pantanal (a large wetland in western Brazil). *Paleosuchus palpebrosus* can occupy a wide variety of microhabitats, such as flooded forest, rivers, lakes, and even roadside ditches (Magnusson, 1985; Botero-Arias, 2007; Campos et al., 2010; Magnusson and Campos, 2010). Because different habitats may have different prey availability, the Dwarf Caiman's diet is expected to vary regionally (Magnusson, 1985; Campos et al., 2010; Magnusson

and Campos, 2010). Based on the known diet for other Amazonian caiman species (Magnusson et al., 1987; Da Silveira and Magnusson, 1999) we would expect *P. palpebrosus* to have an opportunistic-generalist diet. However, basic information on its diet, such as the diversity of prey that could be consumed, foraging mode, and the feeding behavior itself are poorly known (Magnusson, 1985; Magnusson et al., 1987; Campos et al., 1995; Botero-Arias, 2007). In this study we report an observation of *P. palpebrosus* preying on a snake in central Amazonia. Additionally, we present a revised account of the prey types consumed by the species.

Ontogenetic variation in diet has been reported widely in crocodylians, including *P. palpebrosus* (Medem, 1967, 1981; Seijas and Ramos, 1980; Magnusson



Figure 1. The predator, an adult Cuvier's Dwarf Caiman, *Paleosuchus palpebrosus*, from the Purus River in central Amazonia, Brazil.

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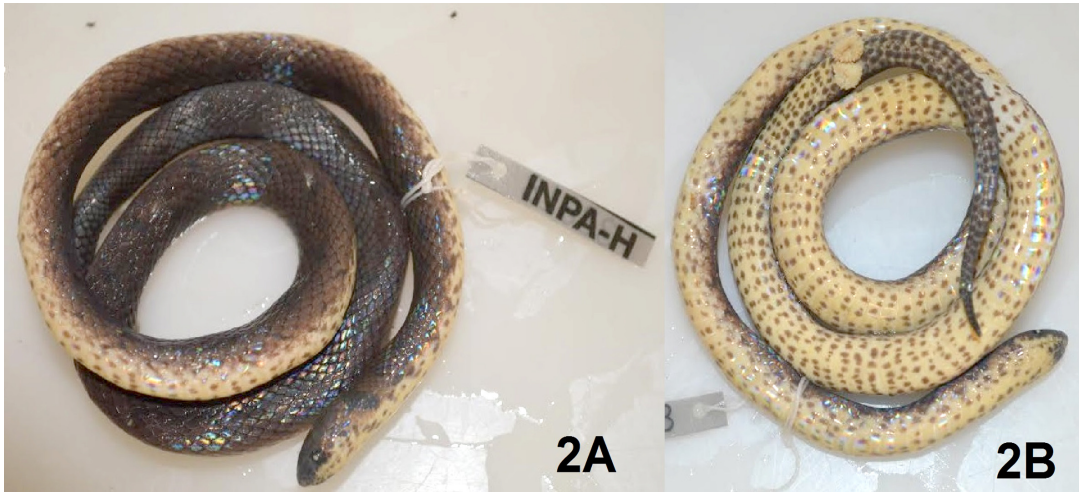


Figure 2. The prey, an adult Neck-banded Groundsnake, *Atractus torquatus*, in (A) dorsal and (B) ventral views.

Table 1. Revised prey information on the diet of Cuvier's Dwarf Caiman, *Paleosuchus palpebrosus*. Columns are numerically labeled to identify six different studies (1 = Medem, 1958; 2 = Medem, 1983; 3 = Magnusson *et al.*, 1987; 4 = Campos, 1995; 5 = Botero-Arias, 2007; 6 = Mudrek, 2016), in which food items marked with an "X" were reported. The hyphen indicates that data were unavailable.

Food item	1	2	3	4	5	6
Terrestrial Invertebrates			X			X
Spiders	X	X			X	X
Beetles	X				X	X
Crabs	X	X	X	X	X	
Fresh-water Shrimp	X	X	X		X	
Mollusks		X	X		X	X
Amphibians		X			X	
Snakes	X	X			X	
Alligators	X	X				X
Fishes	X	X	X		X	X
Birds		X			X	
Small Mammals	X	X			X	X
Large Mammals		X				
Main prey type	Fishes	Aquatic invertebrates	Aquatic invertebrates	-	Aquatic invertebrates	Fishes and Beetles

*Medem (1983) indicated that the diet of *P. palpebrosus* was as varied as that of *P. trigonatus*. The data are from *P. trigonatus*.

et al., 1987; Thorbjarnarson, 1993; Da Silveira and Magnusson, 1999). Juveniles mainly prey on aquatic and terrestrial invertebrates (Medem, 1967, 1981, 1983; Magnusson *et al.*, 1987; Botero-Arias, 2007), whereas

adults tend to incorporate both aquatic and terrestrial vertebrates into their diet (Medem, 1981, 1983; Campos *et al.*, 1995; Botero-Arias, 2007; Britton, 2017). Reptiles seem to be rare in the diet of *P. palpebrosus* compared

to other prey types (Medem, 1981, 1983; Botero-Arias, 2007), but snakes and other crocodylians are the most commonly reported reptiles in the species' diet.

We found an adult Cuvier's Dwarf Caiman (Fig. 1) preying on a Neck-banded Groundsnake *Atractus torquatus* (Dipsadidae; Fig. 2A,B). The caiman (male, 50 cm snout-vent length, 95 cm total length, weight 2.8 kg) was found on 25 March 2013 in an *Igapó* forest (seasonally flooded by black water rivers) located on the southern bank of the Purus River (4.2675° S; 61.7311° W; WGS84; elevation 60 m). The caiman was in a lentic region of the river, near the bank, and the snake (male, 48 cm total length) was hanging from its mouth. The groundsnake lifestyle suggests that the caiman caught it in the water, but this information is speculative. The snake was almost intact, we preserved it in 10% formalin, and deposited it in the herpetological section of the Zoological Collection of the Instituto Nacional de Pesquisas da Amazônia - INPA, Manaus, Brazil (accessioned as INPA-H 33818).

During nocturnal surveys of caimans in the same region, in August 2014, we observed two additional individuals of *P. palpebrosus* holding snakes in their mouths, but it was not possible to identify the snake species. Although snakes have been reported in studies on the diet of *P. palpebrosus* (Table 1), they usually occur at very low frequencies. The species' diet is mainly composed of fish and aquatic invertebrates, but sporadic observations have suggested that snakes may be an important source of protein to caimans in flooded forests in the Amazon. However, a better understanding of the relevance of snakes for the Dwarf Caiman's diet depends on specific studies on the food web, for example, by tracking isotopes to infer ecological relationships among different caiman species, and between caimans and the habitats they occupy (Villamarin, 2016).

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