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SHORT COMMUNICATION

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Notes on the behaviour, habits and natural history of *Caecilia atelolepis*

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Caecilians are usually regarded as timid, seldom encountered, limbless amphibians that are only found by chance, often during or after heavy rainfall (Dunn, 1942; Taylor, 1968; Lynch, 2000). In Colombia, the actual diversity of Gymnophiona had been underestimated mainly because the old studies (especially those of Dunn, 1942 and Lynch, 2000) relied too heavily on groove counts as the main taxonomic character for species identification, undermining the role of auxiliary morphological characters. The use of additional morphological characters such as body proportions, colouration, dentition and squamation (pioneered by Taylor, 1968) has resulted in many taxonomic surprises, such as the recently described *Caecilia atelolepis* (Fernández-Roldán et al., 2023).

The original description of *C. atelolepis* (Fernández-Roldán et al., 2023) reported little about the natural history of this caeciliid that is known from the cloud forests of the western slopes of the Cordillera Oriental of Colombia in departamentos Boyacá, Cundinamarca and Santander (1700–2300 m a.s.l), aside from the fact that the holotype had been found beneath a rotten log and that a paratype was dug out of a swamp. Nonetheless, we now have new information that we thought was worth sharing given that caecilian natural history is a neglected field (Gower & Wilkinson, 2005).

On 23 March 2023 two caecilians were observed in the garden at Reserva Natural Cuzcungos in Supatá, Cundinamarca, Colombia (5° 2’29’’ N, 74° 14’29’’ W, 2000 m a.s.l.). The study site consists of a farm that contains small relicts of Andean cloud forest that have been preserved since 2003. Alejandro López (owner of the reserve) informed us that, at 11:00 h a blue-coloured, large-sized individual of *Caecilia atelolepis* was found active while hunting, biting, and swallowing a slug (Mollusca: Gastropoda) or ‘‘babosa’’, as locally known. The caecilian held its prey in its mouth and proceeded to move its head rapidly from side to side – very much like a snake would – and then swallowed the slug; the caecilian then retreated and escaped.

Precisely one hour later (noon) a second, smaller-sized, darker conspecific appeared by the garden and was also searching for slugs, which are abundant at the reserve; this individual was captured by A. López and left in a bucket with ample humid leaf litter until our arrival at reserva Cuzcungos in the morning of 25 March 2023. Even though the first caecilian was not captured, we consider this to be *C. atelolepis* given that the only other caeciliid known to inhabit the western slopes of the Cordillera Oriental of Colombia in departamento Cundinamarca is *Caecilia thompsoni*, but this species does not inhabit cloud forests above 1600 m a.s.l. and bears numerous secondary grooves (Fernández-Roldán et al., 2023), unlike the non-captured individual observed and photographed by A. López (https://www.inaturalist.org/observations/152044732).

Upon our arrival, we received the caecilian, took it out from the bucket and about 30 minutes after being handled by JDF for photographs the caecilian surprisingly emitted a series of soft squeaky noises (chirps). Unfortunately, we were unable to record the call but some caecilians such as *Sylvacaecilia grandisonae* from Ethiopia, an unidentified Gymnophiona supposedly from Colombia or Peru, as well as some species of *Ichthyophis* and *Siphonops* are known to emit certain soft, squeaky, chirp-like calls as well as very soft croaks (Largen et al., 1972; Thurow & Gould, 1977; Duellman & Trueb, 1986); the calls of *C. atelolepis* fit this description. We were recently informed of another call by an individual of *Caecilia abitaguae* from eastern Ecuador (Santiago Maigua Salas, pers. comm). We hesitate to term this a ‘defence mechanism’ given that such a soft sound can only be heard in near silence and within close proximity to the ear.

The keepers of the farm informed us that a third caecilian was recently found dead, and was allegedly killed by the chickens of the farm, JDL recalls a similar experience while collecting a *Caecilia nigricans* (ICN 41232) in San José del Palmar, Chocó, Colombia. He heard a loud noise emitted by a flock of chickens that were attacking a caecilian in the farm that he was using as a field station, to the extent that one of the chickens had decapitated the caecilian and run away with the head, leaving only the body to be preserved. The neighbours of Reserva Cuzcungos shared a couple of video recordings of more caecilians (allegedly *C. atelolepis*), which are also frequently seen on their farms in broad daylight.

On 27 April 2023, the caecilian that had been captured was brought to Universidad de Los Andes, Bogotá D.C., euthanised and preserved following standard protocols (Heyer et al., 1994) and deposited at the Museum of Natural History C.J. Marinkelle, where it was assigned the collection number ANDES-A 5444. We identified ANDES-A 5444 as *C. atelolepis* because it has the following meristics and measurements. An adult male witha total body length of 780 mm, a body width of

Figure 1. General view of *Caecilia atelolepis* (ANDES-A 5444) from Reserva Natural Cuzcungos, Supatá, Cundinamarca, Colombia

Figure 2. Closeup view of the dorsal surfaces and flanks of the body showing the bite marks (scars at top centre of photo) potentially inflicted by a conspecific between primary grooves 44 and 45

15.4 mm at mid-body point, an attenuation index (i.e. length divided by width) of 51.9 times, and a dark blue head against an overall light grey body colouration in preservative (70% ethanol), darker on the dorsal surfaces and lighter towards the flanks and ventral surfaces, with 127 primary grooves (the last two complete ventrally but not so dorsally) and no secondary grooves (Fig. 1), bearing five denticulations on the anterior margin of the vent and five on the posterior margin of the vent; the anterior margin of the vent bears two very small anal glands. All teeth monocuspid, overall big, pointed and widely separated from each other, with 5-6 premaxillary-maxillaries, 7-8 vomeropalatines, 5-5 dentaries and 1-1 inner mandibulars (Table 1S, see Supplementary Material).

On the morning of 25 April 2023, the main body colouration of the caecilian was blackish, darker on the dorsal surfaces than on the ventral surfaces, which were grey; the head was dark blue, in contrast to the mainly black colouration. On the evening 27 April 2023 the caecilian had changed from its previous blackish colouration pattern and was now bearing a blue head, a mostly purple body, darker on the dorsal surfaces and lighter on the flanks and ventral surfaces (Fig. 1). Subdermal scales are present within the connective tissue of the skin but the specimen is peculiar or atypical in that it lacks dermal scales within the dermal pockets of the body, a peculiarity shared by two other conspecifics from Pauna, Boyacá, Colombia (IAvH 15926 and UPTC-Am 184) (Fernández-Roldán et al., 2023), these three scaleless specimens come from sites at above 2000 m a.s.l.

We detected a set of notable bite marks on the skin of ANDES-A 5444 between the primary grooves 44 and 45, which given their size and contour, could have been inflicted by another *C. atelolepis* (Fig. 2); the head and body also bear many small scratches or scars. In the African *Schistometopum thomense* larger-sized males are known to aggressively bite smaller males – but not females – when put within proximity of each other, especially in the head and collars (Teodecki et al., 1998). Our observations concur with those of Teodecki et al. (1998) in that only the teeth on the upper jaw (i.e. premaxillary-maxillary and vomeropalatine teeth) were evident on the skin of ANDES-A 5444. JDF recalls being bitten by an agitated individual of *Caecilia perdita* (CPZ-UV 6074) in September of 2019 brought from Buenaventura, Valle del Cauca, Colombia, to Universidad del Valle, Cali, that left him with a set of similar bite marks on his fingers as he attempted to euthanise it.

The recent natural history observations of *C. atelolepis* in Supatá, Cundinamarca, Colombia in 2022–2023 could indicate that this is not a particularly rare or difficult species to find, meaning that it probably does not require a lot of digging on behalf of the researchers. This should encourage biologists to do much-needed long-term ecological/behavioural studies that are instead often focused on frogs (Granados-Pérez & Ramírez-Pinilla, 2020) or to a lesser extent on salamanders (Ortega et al., 2009). The fact that these fossorial, limbless amphibians are active above the ground during the daytime, especially without previous rainfall, suggests that the traditional view of caecilians as mysterious, rarely encountered animals merely found by chance is, at least in the case of *C. atelolepis*, unsubstantiated.

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