

First documented case of cannibalism in *Podarcis guadarramae* with adult male and female prey competition

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RESUMEN: se describe un caso de canibalismo protagonizado por dos adultos de *Podarcis guadarramae*, macho y hembra, sobre una hembra subadulta. El macho depredó sobre la hembra subadulta y posteriormente la hembra trató de quedarse con la presa, pero solamente logró devorar su cabeza. Fue el macho quien ingirió finalmente la presa. En *P. guadarramae*, este es el primer caso documentado de canibalismo en el que se consume un congénere entero, y es especialmente notable debido a la competencia observada entre un macho y una hembra por la presa.

The Guadarrama wall lizard *Podarcis guadarramae* is a small wall lizard with an adult snout–vent length ranging from 37 to 70 mm, whose distribution is restricted to the Iberian Central System Mountains and peripheral areas (Geniez *et al.*, 2014; Carretero *et al.*, 2022). It is a heliothermic and saxicolous species that actively searches for prey (Diego-Rasilla & Pérez-Mellado, 2000, 2003). This species feeds on a variety of small invertebrates, primarily Araneae, Coleoptera, Diptera and Homoptera (Pérez-Mellado, 1983, 1998; Ortega-Rubio, 1991), with prey sizes typically ranging from 2 to 5 mm (Pérez-Mellado, 1998). The trophic ecology of *P. guadarramae* has been extensively studied through stomach content analysis, and no remains of conspecifics have been found (Pérez-Mellado, 1983, 1998). Nevertheless, Ortega Diago & Pérez-Mellado (2012) reported an observation of caudophagy in a male of this species.

Here, I report a case of cannibalism involving a subadult female *P. guadarramae* and two adults, a male and a female. This event took place in a private garden in Salamanca (40°57'N / 5°41'W; 772 masl) on April 3th, 2024 (video: <https://www.herpetologica.org/BAHE/videos/>

BAHE35_2[H3535].mp4). During the observation, the air temperature ranged from 20 to 21° C, with a light breeze blowing.

At 13:10 GMT, an adult male *P. guadarramae* was observed preying on a subadult female conspecific. The subadult female was basking on a pavement plate when, suddenly, the adult male approached, attacked, and captured her, resulting in her death. For 8 minutes, until 13:18, the male manipulated his prey, attempting unsuccessfully to ingest her (Figure 1). He then abandoned his prey, only



Figure 1: The male manipulating the subadult female for ingestion.

Figura 1: El macho manipulando a la hembra subadulta para ingerirla.

to return two minutes later at 13:20 to bite her again. Failing to swallow her, the male left her once more and moved away a little over one meter to bask in the sun.

As the male had left, I approached the dead lizard and measured its snout-vent length (34 mm) and tail length (4 mm; it shed most of the tail in response to the predator attack), then left the lizard's corpse in the same place where the adult male lizard had abandoned it. The male was undisturbed and remained basking for 13 minutes before returning to the corpse. This time, he manipulated the prey for 9 minutes until 13:42, then moved a few centimeters away before handling it again at 13:46 for one minute.

An adult female, basking on the trunk of a grapevine (*Vitis vinifera*) 193 cm above the ground, directly above the spot where the male was located with his prey, descended at 13:47 to meet the male and his prey. Arboreal basking behavior in this species is rare and had not been previously reported; *P. guadarramae* typically uses rocks for basking (Diego-Rasilla & Pérez-Mellado, 2003) or utilizes building walls and pavement plates in urban areas.

The adult female snatched the prey from the male and moved about 20 cm to a new location, where she unsuccessfully attempted to swallow the corpse for 21 minutes. During this time, the male unsuccessfully tried to reclaim it. The female struggled with the male over the prey on several occasions, holding it by the head and the male by the body or one of its front legs. The female managed to retain the prey, but as the male insisted, she sought refuge with her prey behind the flowerpot on which they were standing, also out of sight of the observer. The male did not follow her there. When the female reappeared, what remained of the sub-adult specimen's head were

just a few tatters from which the female tore off fragments. By 14:19, she had consumed the head of the prey while the male basked a few centimeters away.

A few minutes later, the male managed to reclaim the corpse from the female and swallowed it completely by 14:36 (Figures 2). The entire process, from capture to ingestion, took one hour and 26 minutes.

In lizard species of the genus *Podarcis* where cannibalism has been observed, it predominantly involves adults consuming juveniles, adult tails, or eggs (Polis & Myers, 1985; Castilla & Van Dam-



Figure 2: The adult male nearly finished ingestion with only toes of prey visible. At the upper left corner, the adult male in final stage of ingestion with only hind limbs and tail of prey visible.

Figura 2: El macho adulto casi terminó de ingerir la presa y solo se veían los dedos de ésta. En la esquina superior izquierda, el macho adulto en la etapa final de la ingestión con solo las extremidades traseras y la cola de la presa visibles.

me, 1996; Capula & Aloise, 2011; Dappen, 2011; Grano *et al.*, 2011; Žagar & Carretero, 2012; Madden & Brock, 2018), with evidence suggesting that adult males exhibit a higher tendency for cannibalism compared to females (Castilla & Van Damme, 1996; Žagar & Carretero, 2012; Simović & Marković, 2013; Cooper *et al.*, 2015; Lam & Rosa, 2022). Here, cannibalism targeted a subadult female who was close to becoming an adult, distinguishing this case from those involving juveniles.

It has been suggested that cannibalism can be an advantageous strategy when food resources are scarce, particularly in crowded island populations (Polis, 1981; Pérez-Mellado & Corti, 1993; Castilla & Van Damme, 1996), and that cannibalism may reduce future competition for resources and mating opportunities (Polis, 1981; Cooper *et al.*, 2015). However, this

observation was conducted in a garden with abundant invertebrates but only a few lizards (six in the spring of 2024) and, interestingly, the adult male killed a subadult female who would have matured into an adult within several weeks, thus becoming a potential mate during the breeding season. Cannibalism in this scenario appears to be an opportunistic consequence of normal predatory behavior (Polis & Myers, 1985), especially for the adult female, who seized the opportunity presented by the male's capture of the prey.

In *P. guadarramae*, this is the first documented occurrence of cannibalism where entire conspecifics are consumed, and it is especially noteworthy due to the observed competition between an adult male and an adult female for the prey.

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