

# CANNIBALISM IN A SANTA CRUZ LAVA LIZARD, *MICROLOPHUS INDEFATIGABILIS* (TROPIDURIDAE), IN THE GALÁPAGOS ISLANDS

## CANIBALISMO EN UNA LAGARTIJA DE LAVA DE SANTA CRUZ, *MICROLOPHUS INDEFATIGABILIS*, EN LAS ISLAS GALÁPAGOS

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**Resumen.**– En esta nota, describo la observación de un macho adulto de *Microlophus indefatigabilis* (Lagartija de Lava de Santa Cruz) alimentándose de un juvenil de su misma especie. Esta observación se suma a siete reportes previos de canibalismo en esta especie, un comportamiento relativamente extendido entre las lagartijas del género *Microlophus*.

**Palabras clave.**– Comportamiento alimentario, depredación intraespecífica, dieta, isla oceánica, Sauria, Tropiduridae.

**Abstract.**– In this note, I describe the observation of an adult male of *Microlophus indefatigabilis* (Santa Cruz Lava Lizard) feeding on a juvenile of the same species. This observation adds to seven previous reports of cannibalism in this species, a behavior that is relatively widely distributed among *Microlophus* lizards.

**Keywords.**– Conspecific predation, diet, feeding behavior, oceanic island, Sauria, Tropiduridae.

Cannibalism is the act of killing and consuming an individual of the same species. This behavior is widespread among the animal kingdom and has been documented for over 100 species of reptiles and amphibians (Polis & Myers, 1985). In some species of lizards, cannibalism propensity has been found to correlate positively with population density, likely associated with food availability and intraspecific competition (Pafilis et al., 2009; Cooper et al., 2015). Additionally, most cannibalism events involve the consumption of juveniles by adults, and cannibals are most frequently males (Labra et al., 2022).

Here, I describe an observation of a Santa Cruz lava lizard, *Microlophus indefatigabilis*, preying on a juvenile of the same species in an urban park in Puerto Ayora (0.740531° S, 90.310597° W, 12 m a.s.l., Santa Cruz Island), the most populous town of the Galápagos Archipelago (Ecuador). On July 22, 2023, at 11:22, I observed an adult male of approximately 20 cm (body-tail length) standing on the rocky ground of the park with a juvenile lava lizard in its mouth. Initially, the adult was holding the juvenile by the neck (Fig. 1A). As I approached, it moved a

short distance (approximately 1 m) and swallowed more of the juvenile – with only the posterior portion of its body (posterior legs and tail) protruding from the adult's mouth (Fig. 1B) – and made repeated ascending and descending head movements. The observation lasted about 40 seconds, during which time the adult finished swallowing the prey and then ran out of my sight (see two videos of the event in supplementary material).

A recent literature survey conducted by Labra et al. (2022) found reports of cannibalism in 9 of the 22 (41%) species of lava lizards (*Microlophus*), but with a generally low number of reports of this behavior for each species and a low frequency of conspecifics in their diets. My observation adds to the seven previous reports of cannibalism for *M. indefatigabilis*. The earliest observation and picture of cannibalism of a lava lizard in the Galápagos Islands was published in a popular science article in LIFE Magazine in 1958 (Thompson, 1958). The species identity is not indicated in the article, but its coloration roughly matches that of a Santa Cruz lava lizard. The first mention in the scientific literature of this behavior in a Santa Cruz lava lizard



**Figura 1.** *Microlophus indefatigabilis* alimentándose de un juvenil de su misma especie. A) Al principio, el macho adulto sostenía al juvenil por el cuello. B) Luego, fue tragando al juvenil desde la cabeza y al cabo de unos segundos, solo sus patas posteriores y su cola quedaban fuera de la boca del adulto. Fotos: V. Crespo-Pérez.

**Figure 1.** *Microlophus indefatigabilis* feeding on a juvenile conspecific. A) The adult male was initially observed holding the juvenile by the neck. B) Later, the adult swallowed the juvenile head-first and after some seconds only the posterior legs and tail protruded from the adult's mouth. Photos: V. Crespo-Pérez.

was made by Stebbins et al. (1967), who reported finding the tail of a juvenile inside the stomach of a large male. Later, East (1995) found a young lizard inside the stomach of an adult, but Stone & Snell (2002) published the first direct observation. These authors observed an adult female feeding on a juvenile, and like in our case, the adult ingested the juvenile head-first. Subsequent observations were made by Lewbart et al. (2017) and Rowe et al. (2019) who observed males feeding on conspecifics.

*Microlophus indefatigabilis* is a generalist forager with the highest dietary diversity among the species of *Microlophus* (Labra et al., 2022). These lizards feed on fruits, seeds, flowers, insects, crustaceans, spiders, scorpions, centipedes, Mourning Geckos (*Lepidodactylus lugubris*), and their own shed skin (Arteaga et al., 2020). Dietary diversity has been found to be positively related to cannibalism propensity, and *M. indefatigabilis* is also the lava lizard with the highest number of cannibalistic reports. This suggests that feeding on conspecifics could be an opportunistic behavior, most common in the largest males that have the strength necessary to subdue a juvenile lava lizard (Labra et al., 2022). However, comparing the number of cannibalistic reports suggests that *M. indefatigabilis* consumes more conspecifics than species that also have a relatively high dietary diversity, like *M. quadrivittatus*, *M. bivittatus* and *M. peruvianus* (see Fig. 1 and Table 1 in Labra et al., 2022).

Possibly, *M. indefatigabilis* distribution in the most populated island of the archipelago, which hosts a research station, provides more opportunities for research and observations of feeding behavior (Labra et al., 2022). Nevertheless, a quick literature search in Scopus for the four species of lava lizards with the highest dietary diversity showed that more papers have been published about *M. bivittatus* and *M. peruvianus* (12 and nine papers), than about *M. indefatigabilis* (six papers). Interestingly, *M. bivittatus* has no cannibalistic reports, despite its distribution in the second most populated island of the Galápagos (San Cristóbal) that also hosts a research station. All this highlights the need of further study to fully pinpoint the mechanisms driving cannibalism in lava lizards.

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## SUPPLEMENTARY INFORMATION

Two videos can be found in the following links:

Video 1. <https://www.youtube.com/shorts/72ohbeZuKjw>

Video 2. <https://www.youtube.com/shorts/vzzE33rMiTo>

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