

A reptile dysfunction: tail bifurcation in the Costa Rican Tropical Night Lizard, *Lepidophyma reticulatum* Taylor, 1955, a first for the family Xantusiidae

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Caudal autotomy is a well-documented survival strategy in reptiles involving self-amputation (shedding one's tail), often as a means of avoiding predation (Clause and Capaldi, 2006). This method of escape can work when there is the potential of immediate harm, by distracting a predator with a moving tail and/or substitute meal (Maginnis, 2006), but it can have long-term costs related to energy reserves and even fecundity, such as the production of fewer eggs (Smyth, 1974) or reduced courtship and copulation (Martin and Salvador, 1993; Barr et al., 2019). The typical process of caudal autotomy is initiated by the manner in which caudal vertebrae allow vertebral breakage (Etheridge, 1967; Higham et al., 2013). This can occur either at breakage planes in several caudal vertebrae close to the cloaca (“autotomic” vertebrae; Etheridge, 1967) or by dislocation and disarticulation of vertebrae (Barr et al., 2020).

Interestingly, the regrowth process of the tail after caudal autotomy occasionally involves a malformation, known as a tail furcation, in which multiple tail ends are grown. Baum and Kaiser (2024) listed tail furcations in 250 lizard species from 25 families, with the majority (91%) being bifid tails. In 13% of species, higher tail numbers may occur in addition to bifid tails, and in 9% of species only multiple tails have been observed. The current record number of tail ends is that of a gecko (*Hemidactylus platyurus*) with nine tail ends (Necas, 2018). The appearance of two tail ends has been called

either bifurcation or duplication, and we follow the definition of Henle and Grimm-Seyfarth (2020) wherein tail duplications are splits that begin proximally to the mid-length of the longest tail, and tail bifurcations are those which begin distal to the mid-length of the longest tail. We here report the first instance of a tail furcation in lizards of the family Xantusiidae.

On 15 April 2022, the second author encountered a subadult female *Lepidophyma reticulatum* (Fig. 1) near Platanillo de Barú, Costa Rica (9.2811°N, 83.8206°W, elevation 224 m), resting under a log at approximately midday. This lizard presented with a tail bifurcation in approximately the distalmost 10% of its tail. It displayed no aberrant behaviour related to the tail abnormality and was released after photography.

Lepidophyma reticulatum is known from southwestern Costa Rica and possibly southwestern Panama (Savage, 2002). It has a recorded maximum snout–vent length of about 110 mm (Leenders, 2019), and can be recognized by its black body colouration with yellow spots. The longer tail end of the deformed individual appears to have scales that match the original tail, whereas the shorter tail's scales are visibly smaller, leading us to believe that this case is in line with the categorization of “regeneration from an already regenerating tail forming multiple tails” (Barr et al., 2020). While this is the first published account of a tail furcation in the genus *Lepidophyma* and the Family Xantusiidae, the phenomenon has also been observed in *L. flavimaculatum* Duméril, 1851, *L. sylvaticum* Taylor, 1939, and *L. tuxtlae* Werler & Shannon, 1957, but without documentation (Christoph Grünwald, in litt.).

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Figure 1. *Lepidophyma reticulatum* with a bifurcated tail from Costa Rica. Photo by César L. Barrio-Amorós.

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