

# Evidence of natural cannibalism in the slow worm, *Anguis fragilis* Linnaeus, 1758 (Squamata Anguidae)

Runa Schwabe<sup>1,2</sup> & Thomas Ziegler<sup>2,1</sup>

<sup>1</sup>Institute of Zoology, University of Cologne, Zùlpicher Strasse 47b, 50674 Cologne, Germany

<sup>2</sup>Cologne Zoo, Riehler StraÙe 173, 50735, Cologne, Germany

Corresponding author, e-mail: [ziegler@koelnerzoo.de](mailto:ziegler@koelnerzoo.de)

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## ABSTRACT

Cannibalistic behavior in the slow worm, *Anguis fragilis* Linnaeus, 1758 (Squamata Anguidae), has only been documented in a few cases. The oldest report dates back more than a century, but all detailed observations available to us refer to cases under captive conditions. Herein we report about a natural case of cannibalism in the slow worm from Germany. An adult individual was observed regurgitating a previously ingested juvenile headfirst in cultural landscape east of Cologne.

## KEY WORDS

Feeding behavior; Germany; Squamata.

Received 13.09.2022; accepted 18.08.2023; published online 05.09.2023

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## INTRODUCTION

The slow worm, *Anguis fragilis* Linnaeus, 1758 (Squamata Anguidae), is widely distributed throughout Europe (e.g., Platenberg & Griffiths, 1999; Gonzola et al., 2004) and shows a wide range of habitats. It occupies grassland, heathland, open woodland and wasteland (Platenberg & Griffiths, 1999; Edgar et al., 2010). Based on Günther (1996), the diet of the slow worm mainly includes slugs and earthworms. Occasionally, also insects, isopods and spiders are consumed. There furthermore exist some reported cases of cannibalism in the slow worm. One of the oldest proven reports dates back more than 100 years, based on an observation in a captive held adult female which tried to ingest one of her young (Delitz, 1921). Later on, further reports of cannibalism in the

species were published, with almost all of the cases dealing with cannibalistic behavior observed under captive conditions (Davies, 1967; Petzold, 1971; Çiçek et al., 1981). Herein we report about a recent case of natural cannibalism in this species, observed in summer 2021 in cultural landscape in Germany.

## MATERIAL AND METHODS

The observation took place on the 22<sup>th</sup> of August 2021 in Königsforst, which is a wooded area east of Cologne (Germany). Video recordings were made with an iPhone7, and subsequently screenshots of the most significant sequences taken, as was done similarly for a case of cannibalism in the common wall lizard by Ineich et al. (2022) (Fig. 1).

## RESULTS

On the 22<sup>th</sup> of August 2021 a slow worm was spotted moving along the edge of a bicycle path adjacent to a highway in the Königsforst at 3:45 pm. It was an adult individual, with a stout body and measuring about 40 cm total length. Shortly after the sighting the slow worm regurgitated a dead juvenile individual, headfirst, which appeared to be

already partly digested at its back (Fig. 1). After the regurgitation of the juvenile, a reddish secretion followed to be regurgitated (Fig. 1).

## DISCUSSION

Although the observed adult individual lacked a clearly pronounced dark dorsal mid-vertebral line,



Figure 1. Sequences (from top to bottom left and from top to bottom right) taken out of a clip showing the observed adult slow worm regurgitating a juvenile headfirst. Photos by. R. Schwabe.



the brown stripes, arranged in tiny longitudinal rows are typical for female individuals (Kwet, 2005). In addition, the stout body of the observed individual could indicate a gravid condition, but also could be evidence that prey has been ingested recently. The regurgitation event could be due to stress, as there was a noisy environment with several pedestrians standing around the sighted adult individual and there also were numerous close-by passing bicyclists. Whether the stout body of the adult individual was due to pregnancy or indicates that further juveniles or other prey have been ingested before, cannot be disclosed. The reddish secretion which likewise was regurgitated appeared like a mixture of blood, stomach fluid, and maybe resulting from the partly digested juvenile. However, it also cannot be excluded that the regurgitation was a physical reaction caused by envenoming, caused by previously ingested invertebrates, for example contaminated with herbicides.

Our literature inquiries revealed that previously published reports of cannibalism in the slow worm were almost all based on observations in captivity. Delitz (1921) observed cannibalistic behavior in a female slow worm towards her offspring under terrarium conditions. In an addendum to this article, Dr. Woltersdorff stated on page 44, that the old slow worm must have been very hungry or she must have mistaken the juvenile for a worm. He further stated that in any case this represents an exceptional case. Davies (1967) reported a captive female having eaten two of her freshly born offspring. Another such observation of an adult slow worm feeding on a young in captivity was reported by Çiçek et al. (1981), however, in this case the adult was a male individual. Cannibalistic behavior in the slow worm was also reported by Fretey (1987), but as general statement only without giving concrete information. Thus, our observation, to our best knowledge, seems to represent the first evidence for the occurrence of cannibalistic behavior under natural conditions, viz. in the natural habitat.

## ACKNOWLEDGEMENTS

We thank Prof. Dr. Annemarie Ohler (Paris, France) for kindly providing data from the book by J. Fretey.

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