http://communications.science.ankara.edu.tr

Communication Ankara Biology
Volume 34, Number 2, Pages 283-289 (2025)
ISSN 1303-6025 E-ISSN 2651-3749
DOI: 10.53447/communc.1714722

Short Report; Received: June 04, 2025; Accepted: July 06, 2025

AN UNUSUAL PREDATION EVENT BY THE ANATOLIAN ROCK LIZARD, *Anatololacerta anatolica* (WERNER, 1902) ON THE DWARF SNAKE, *Eirenis modestus* (MARTIN, 1838)

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Keywords

Anatololacerta anatolica
Feeding behavior
Opportunistic predation
Eirenis modestus
Türkiye

To cite this article

Hasturk, E.B., Kumlutas, Y., Candan, K., Yildirim-Caynak, E., Korkmaz, A.G., Ilgaz, C., An unusual predation event by the anatolian rock lizard, *Anatololacerta anatolica* (Werner, 1900) on the dwarf snake, *Eirenis modestus* (Martin, 1838).*Commun.Fac.Sci.Univ.Ank .Ser.C Biology*, 34 (2) (2025), 283-289. https://doi.org/10.1111/communc.1714722

Abstract

The members of the Lacertidae are rarely known to prey on snakes or snake-like reptiles. This study presents the first record of snake predation by Anatololacerta anatolica. The stomach content of a female specimen was found to contain a snake of the Eirenis modestus. This study provides some of the first direct data on the feeding biology of A. anatolica. It also contributes to the trophic diversity of the Lacertidae family by highlighting the potential feeding flexibility of the species.

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1. INTRODUCTION

Lizards, considered mesopredators [1] can influence community dynamics in ecosystems through top-down and bottom-up processes. Therefore, new evidence on lizard predatory behavior will augment our understanding of trophic interactions, the ecological processes that consider how organisms' function in the environment, and the functioning of the community [2].

Lizards display considerable dietary diversity. Most lizard species primarily eat arthropods, while some taxa have been reported to consume molluscs, small vertebrates, and even vegetable material [3]. Specifically, insectivorous lizards are known to be opportunistic in their feeding behavior and will eat arthropods that are of an appropriate size. Thus, the composition of their diet often varies

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Communications Faculty of Sciences University of Ankara Series C Biology
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depending on the prey available at the time, and this variation is typically described as seasonal or microgeographical variation. This variation can be determined indirectly, from habitat-based variation [4, 5, 6] or directly from diet studies [7, 8, 9].

Although the majority of lizards in the Lacertidae family are insectivorous [6], the family exhibits a high degree of ecological flexibility, as seen by the remarkable variations in food composition among populations and life stages. For instance, some studies have reported clear ontogenetic dietary shifts, with juveniles often consuming softer and more diverse prey types, whereas adults typically specialize on larger, chitinous arthropods [10]. In addition to age-related patterns, environmental factors such as habitat structure, island isolation, and seasonal resource dynamics also significantly affect diet variation. Island populations, for example, tend to possess broader trophic niches and increased consumption of plant material, likely reflecting an adaptive response to restricted arthropod availability [11]. A striking case of dietary flexibility is found in *Podarcis siculus* (Rafinesque-Schmaltz, 1810), which develops a shift from insectivory to herbivory within a few decades after being introduced to a densely vegetated island. This dietary transition was accompanied by notable changes in head morphology, bite force, and the development of digestive traits suited to processing vegetable matter [12]. In a different research, feeding and physiological responses of *Zootoca vivipara* (Lichtenstein, 1823) were investigated against an increase in temperature by 2°C. It was shown that the food choice could shift with increasing temperature. An increase in temperature led to a preference for more nutritious, predatory prey [13]. These studies reveal that lacertid lizards can rapidly develop adaptive feeding responses to environmental changes.

Examining the food of lacertid lizards can reveal significant data about their trophic roles in ecosystems and how they adapt to their surroundings. Furthermore, lizards are especially helpful for feeding research because they usually swallow their food whole, which makes it easier to identify ingested prey [2].

2. MATERIALS AND METHODS

The distribution of *Anatololacerta anatolica* is restricted to the region along the Büyük Menderes River in western Türkiye, extending from Uludağ (Bursa) in the north to Afyon in the east, and to the Greek islands of Samos and Ikaria [14]. It inhabits forests, edges of water, valley sides, stony and rocky areas [15].

3. RESULTS AND DISCUSSION

This note documents an unusual situation regarding the feeding behavior of *A. anatolica*. The dissection of a female *A. anatolica* collected from Karagöl in Izmir in May 1994 revealed the presence of a specimen of the snake species *Eirenis modestus* in its stomach, providing significant insight into the opportunistic feeding strategy of this species (Figure 1, 2). To our knowledge, this is the first recorded instance of *A. anatolica* preying on *E. modestus*. The snout-vent length (SVL) of the female lizard specimen was 68.42 mm, while that of the snake in its stomach was 131.72 mm (Figure 3). This significant difference in size indicates *A. anatolica*'s ability to consume prey larger than expected.

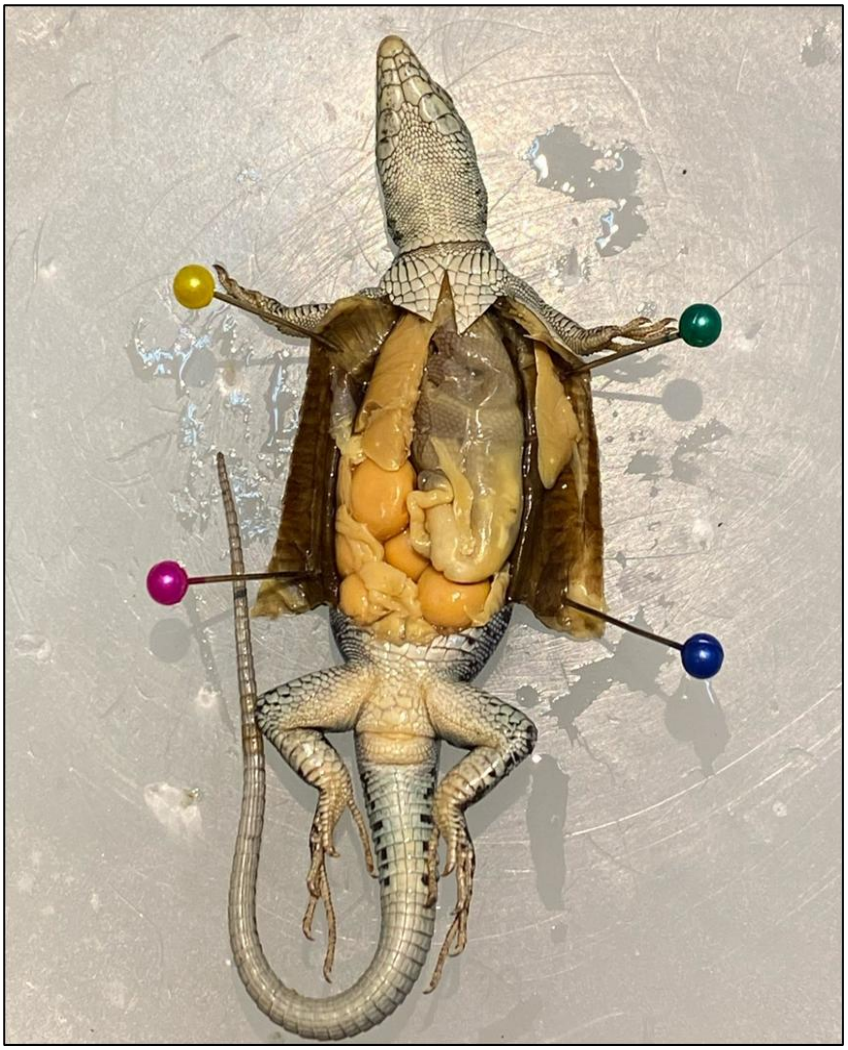


FIGURE 1. *E. modestus* inside the stomach of *A. anatolica* prior to removal



FIGURE 2. *E. modestus* individual recovered from the stomach of *A. anatolica* after dissection

Several observations of lacertids consuming snakes or snake-like prey have been scientifically reported. In a study on the Ocellated Lizard, *Timon lepidus* (Daudin, 1802), the largest European lacertid, the stomach of one individual contained the remains of a small snake belonging to the genus *Natrix* [16]. It was also observed that the same lizard species feed *Anguis fragilis* Linnaeus, 1758, a snake-like legless lizard species [17]. In another study, *Lacerta trilineata* Bedriaga, 1886 was observed to prey a legless lizard, *Anguis graeca* Bedriaga, 1881, which has a limited distribution in the region, and this event was documented with photographs and reported in 2020 [18].



FIGURE 3. The predator *A. anatolica* and its prey *E. modestus*

These findings indicate that snake predation among lacertid lizards is rare and typically occurs only under exceptional circumstances. While these rare records suggest that the food spectrum of lacertid lizards may expand under favorable conditions, snake predation is not a usual behavior. Therefore, while snake-eating behavior is possible in lacertid lizards, it is extremely rare and has only been documented in exceptional cases.

4. CONCLUSIONS

To date, no comprehensive studies have been conducted on the feeding biology of *A. anatolica*, and information on its trophic behavior is extremely limited. The findings presented in this study provide some of the first direct data on the species' potential feeding flexibility. In this context, these observations contribute to our understanding of the feeding strategies of *A. anatolica* and the general trophic range of the Lacertidae.

Author Contribution Statements Ç.I. and Y.K. - fieldwork, literature review, conceptualization, writing, editing. K.C., E.Y.C., E.B.H. and A.G.K.- conceptualization, literature review, article editing. All authors have read and approved the article.

Declaration of Competing Interests The authors declare no conflict of interest.

Ethical Statement All relevant national regulations and institutional guidelines for animal research, care, and use were followed. The study protocol, dated January 27, 2012, and numbered 02/2012, was approved by the Local Animal Ethics Committee of Dokuz Eylül University, Republic of Türkiye.

Use of Artificial Intelligence No artificial intelligence-based tools or applications were used in the preparation of this study. The entire content of the study was produced by the author(s) in accordance with scientific research methods and academic ethical principles.

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