

An unusual case of predation by the western green lizard *Lacerta bilineata* Daudin, 1802 (Squamata: Lacertidae) on the slow worm *Anguis fragilis* Linnaeus, 1758 (Squamata: Anguidae)

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The western green lizard *Lacerta bilineata* Daudin, 1802 is a Lacertidae from Western Europe, which is mainly distributed in Italy and France. In this latest country, the population from the Rhine valley on the limestone piedmont of the Vosges Mountains in Alsace is disconnected from the rest of the distribution (Lescure and Massary, 2012). This population is under special scrutiny because of its unfavourable conservation status. This lizard is indeed labelled “Endangered” in the Red list of reptiles of Alsace (Vacher, 2015), mainly due to habitat fragmentation and loss coupled with a scarce distribution in the region (Thiriet and Vacher, 2010).

Food habit of the western green lizard is mainly composed of invertebrates (Naulleau, 1990; Elbing, 2001; Vacher and Geniez, 2010), and particularly Coleoptera and isopods (Angelici et al., 1997). Nonetheless, small vertebrates are consumed from time to time, especially juvenile lizards including its own species, and juvenile snakes (Naulleau, 1990; Elbing, 2001).

We relate the observation of an adult male *Lacerta bilineata* that was feeding on a juvenile slow worm *Anguis fragilis* Linnaeus, 1758 (Fig. 1) on 24 April 2018 on the Zinnkoepfle hill, located in the county of Soultzmatt (Haut-Rhin department).

Predation on other reptiles by the western green lizard is mentioned in the literature, even though they constitute a minor portion of the diet of this species.

Cases of predation on the ruin lizard *Podarcis siculus* (Rafinesque-Schmatz, 1810) or on the Scincidae *Chalcides chalcides* (Linnaeus, 1758) were collected in central Italy (Angelici et al., 1997). Cases of cannibalism of adult on juveniles have also been reported (Angelici et al., 1997).

The slow worm is included in the diet of other reptiles, mainly the smooth snake *Coronella austriaca* Laurenti, 1768 (Völkl and Alfermann, 2007; Reading and Jofré, 2013), which is known to prey mainly on lizards and other snakes (Völkl and Alfermann, 2007; Vacher and Geniez, 2010). For example, the slow worm constitutes about 5% of the diet of an English population of the smooth snake (Reading and Jofré, 2013). Other snakes such as the asp viper *Vipera aspis* (Linnaeus, 1758) (G. Guiller, comm. pers.) or even the common adder *Vipera berus* (Linnaeus, 1758) (Völkl and Alfermann, 2007) can sometimes consume slow worms, even though this prey seems very rare in its diet. To our knowledge, the only case of predation on the slow worm by another Lacertidae has been reported in the ocellated lizard *Timon lepidus* (Daudin, 1802) in Spain (Hernandez et al., 1991), even though vertebrates constitute a small fraction of the diet of this lizard (Castilla et al., 1991; Hernandez et al., 1991). The eastern green lizard *Lacerta viridis* (Laurenti, 1768) as well as the sand lizard *Lacerta agilis* Linnaeus, 1758 are mainly insectivores, and can consume plants from time to time, but to our knowledge only one case of predation on small vertebrates have been recorded for *Lacerta viridis* and none for *Lacerta agilis* (Peters, 1970; Crovetto and Salvidio, 2013; Sagonas et al., 2018). Predation on small vertebrates by the western green lizard, and especially on the slow worm, remains unusual and opportunistic, as this species is mainly insectivorous (Angelici et al., 1997), all the more that the slow worm is not a vagile species and remains very discrete most of the time (Völkl and Alfermann, 2007).

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Figure 1. Adult male of western green lizard *Lacerta bilineata* Daudin, 1802, preying on a juvenile slow worm *Anguis fragilis* Linnaeus, 1758, in Soultzmat, Haut-Rhin, France, on 24 April 2018. Picture by Thomas Wendling.

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References

- Angelici, F.M., Luiselli, L., Rugiero, L. (1997): Food habits of the green lizard, *Lacerta bilineata*, in central Italy and a reliability test of faecal pellet analysis. *Italian Journal of Zoology* **64**: 267–272.
- Castilla, A.M., Bauwens, D., Llorente, G.A. (1991): Diet composition of the Lizard *Lacerta lepida* in Central Spain. *Journal of Herpetology* **25**: 30–36.
- Crovetto, F., Salvidio, S. (2013): Feeding habits of the sand lizard *Lacerta agilis*, in the North-Western Italian Alps. *Folia Zoologica* **62**: 264–268.
- Ebling, K. (2001): Die Smaragdeidechsen. Beiheft der Zeitschrift für Feldherpetologie 3. Bochum, Laurenti Verlag.
- Hernandez, A., Alege, J., Salgado, J.M. (1991): Ecología trófica de *Lacerta lepida* en la provincia de León, noroeste de España. *Amphibia-Reptilia* **12**: 283–292.
- Lescure, J. Massary, J.C. de (2012): Atlas des Amphibiens et Reptiles de France. Muséum national d’Histoire naturelle, Paris/Biotop, Mèze.
- Nauulleau, G. (1990): Les Lézards de France. *Revue Française d’Aquariologie-Herpétologie* **17**(3/4): 65–128.
- Peters, G. (1970): Studien zur Taxonomie, Verbreitung und Ökologie der Smaragdeidechsen. IV. Zur Ökologie und Geschichte der Populationen von *L. v. viridis* (LAUR.) im mitteleuropäischen Flachland. *Beiträge Tierwelt Mark VII, Veröffentlichungen des Bezirksmuseums Postdam* **21**: 49–119.
- Reading, C., Jofré, G. (2013): Diet composition changes correlated with body size in the Smooth snake, *Coronella austriaca*, inhabiting lowland heath in southern England. *Amphibia-Reptilia* **34**(4): 463–470.
- Sagonas, K., Valakos, E., Lymberakis, P., Pafilis, P. (2018): Traits of reproduction and feeding of the European Green Lizard, *Lacerta viridis* (Laurenti, 1768), at the southern edge of its distribution. *Herpetozoa* **30**(3/4): 115–129.
- Thiriet, J., Vacher, J.P. (2010): Atlas des Amphibiens et Reptiles d’Alsace. BUFO, Colmar/Strasbourg.
- Vacher, J.P. (2015): Les Reptiles. In: *Livre Rouge de la Nature Menacée en Alsace*, pp. 57–61. Heuacker, V., Kaempff, S., Moratin, R., Muller, Y., Ed., Strasbourg, ODONAT.
- Vacher, J.P., Geniez, M. (2010): Les reptiles de France, Belgique, Luxembourg et Suisse. Mèze, Paris, Collection Parthénope, éditions Biotop, Muséum national d’Histoire naturelle.
- Vökl, W., Alfermann, D. (2007): Die Blindschleiche. Beiheft der Zeitschrift für Feldherpetologie 11. Bielefeld, Laurenti Verlag.

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