

Saurophagy of a *Lacerta trilineata* juvenile by a *Podarcis muralis* adult

Saurophagy (from Greek *savra* - *σαύρα*, «lizard», and *phagia* - *φαγία*, “to eat what the first part denotes”, meaning lizard-eating) is common in some animal groups such as birds (Ríos-López et al. 2015) and snakes (Delaugerre 2011) and rather accidental in some others like amphibians (Nicolaou et al. 2014). Among lizards, some species may feed on other species of lizards (interspecific saurophagy) (Wall & Shine 2013), while, in extreme conditions where high population density and food scarcity may promote harsh competition (e.g. on islands), cannibalism (intraspecific saurophagy) may also occur (Cooper et al. 2015).

Podarcis lizards feed mainly on terrestrial arthropods, insects being the most common prey group (Pérez-Mellado & Corti 1993, Carretero & Llorente 2001). Herbivory and cannibalism are less pronounced in mainland populations compared to islands (Van Damme 1999, Pafilis et al. 2013; Sagonas et al. 2015). However, some species with wide distribution ranges (e.g. *P. erhardii*, *P. siculus*) are known for opportunistic choices, enhancing their diet with atypical prey items (e.g. Brock et al. 2014, Mačát et al. 2015).

The common wall lizard (*P. muralis*) (Laurenti, 1768) has the widest range among the genus *Podarcis*, occurring from southern Peloponnese in Greece up to southern United Kingdom and from Galicia in Spain to Turkey (Sillero et al. 2014). The diet of the species mainly comprises arthropods, among which the main prey taxa are Coleoptera, Homoptera, Diptera, Araneae and Isopoda (Capula et al. 1993). Cannibalism and ovophagy are an exception (Žagar & Carretero 2012, 2016). Our extensive survey of peer-reviewed literature yielded no records for the consumption of other lizards species by *P. muralis*. Here we report a case of interspecific saurophagy from Greece.

On 13 October 2015, during a field trip in central Greece (38° 88'16.08"N, 22°04'64.07"E) we observed an adult male *P. muralis* standing over a dead juvenile Balkan green lizard (*Lacerta trilineata*) (Bedriaga, 1886) (Fig.1a). After a while, *P. muralis* started to consume the carcass (Fig.1b). Though reptiles typically ingest their prey starting from the head, in this case the common wall lizard commenced eating *L. trilineata* from the rear end (Fig.1c). With rough movements of the head, *P. muralis* engulfed its prey (Fig.1d, e). The process of until complete consumption lasted around 3.5 min (Fig.1f). As we did not witness the cause of death of the *L. trilineata* individual, we can only stipulate whether the juvenile lizard was killed by *P. muralis* or not. In the latter case, this saurophagy is also a case of scavenging (Pianka 2000).

Though interspecific saurophagy has been repetitively reported in other continents (e.g. Blamires 2000, Zanchi et al. 2012, Passos et al. 2016), it is less frequent within European species (e.g. Pelitteri-Rosa et al. 2015, Dias et al. 2016). To our knowledge, this is only the second report of a *Podarcis* species preying on a different species of lacertid (Dias et al. 2016). This record enhances our knowledge on the feeding biology of the most common lizard in Europe. More similar observations will shed further light on the general ecology of the genus and lizard interactions.



Figure 1. Consumption of juvenile *Lacerta trilineata* by a male *Podarcis muralis* in a period of 3.5 minutes.

References

- Blamires, S.J. (2000): Natural History Notes. *Varanus panoptes* (Northern Sand Goanna), Diet. Herpetological Review 31: 177.
- Brock, K.M., Donihue, C.M., Pafilis, P. (2014): Novel records of frugivory and ovophagy in *Podarcis* lizards from East Mediterranean Islands. North-Western Journal of Zoology 10(1): 223-225.
- Capula, M., Luiselli, L., Rugiero, L. (1993): Comparative ecology in sympatric *Podarcis muralis* and *P. sicula* (Reptilia: Lacertidae) from the historical centre of Rome: What about competition and niche segregation in an urban habitat? Bollettino di Zoologia 60: 287-291.
- Carretero M.A., Llorente G.A. (2001): What are they really eating? Stomach versus intestine as sources of diet information in lacertids. pp. 105-112. In: Vicente, L & Crespo, E.G. (eds), Mediterranean basin lacertid lizards: a biological approach. ICN, Lisboa.
- Cooper, W.E., Dimopoulos, I., Pafilis, P. (2015): Sex, age and population density affect aggressive behaviors in island lizards promoting cannibalism. Ethology 121(3): 260-269.
- Delaugerre, M. (2011): Going out tonight? When insular *Hierophis viridiflavus* breaks the Whip Snakes Rules Acta Herpetologica 8(1): 47-52.
- Dias, G., Lius, C., Pinho, C., Kaliontzopoulou, A. (2016): A case of *Podarcis carbonelli* intake by *Podarcis virescens*. Herpetology Notes 9: 105-108.
- Mačát, Z., Veselý, M., Jablonski, D. (2015): New case of fruit eating observation in *Podarcis siculus* (Rafinesque-Schmaltz, 1810) (Lacertidae) from Croatia. Biharean Biologist 9(2): 159-159.
- Nicolaou, H., Zogaris, S., Pafilis, P. (2014): Frog vs. lizard: An unusual feeding behaviour in the Levantine Marsh Frog, *Pelophylax bedriagae* from Cyprus. North-Western Journal of Zoology 10(1): 221-222.
- Pafilis, P., Anastasiou, I., Sagonas, K., Valakos, E. D. (2013): Grazing by goats on islands affects the populations of an endemic Mediterranean lizard. Journal of Zoology 290: 255-264.
- Passos D.C., Monteiro, F.A.C., Nogueira, C.H.O. (2016): Dangerous neighborhood: saurophagy between syntopic *Tropidurus* lizards. Biota Neotropica 16(1): e20150062.

- Pelitteri-Rosa, D., Liuzzi, C., Bellati, A. (2015): First record of adult *Podarcis siculus* (Rafinesque-Schmaltz, 1810) predation by *Tarentola mauritanica* (Linnaeus, 1758). Herpetozoa 28(1/2): 89-92.
- Pérez-Mellado, V., Corti, C. (1993): Dietary adaptations and herbivory in lacertid lizards of the genus *Podarcis* from western Mediterranean islands (Reptilia: Sauria). Bonn Zoological Bulletin 44: 193-220.
- Pianka, E.R. (2000): Evolutionary Ecology, 6th Edition. Benjamin-Cummings Publishing Company.
- Ríos-López, N., Joglar, R.L., Rodríguez-Gómez, C.A., Díaz-Vázquez, C.J., Rivera, I. (2015): Natural history notes of saurophagy: an update from the Puerto Rican vertebrate fauna. Life: The Excitement of Biology 32: 118-136.
- Sagonas, K., Pafilis, P., Lymberakis, P., Valakos, E.D. (2015): Trends and patterns in the feeding ecology of a widespread Balkan lizard. North-Western Journal of Zoology 11(1): 117-126.
- Sillero, N., Campos, J., Bonardi, A., Corti, C., Creemers, R., Crochet, P.A., Isailović, J.C., Denoël, M., Ficetola, G.F., Gonçalves, J., Kuzmin, S. (2014): Updated distribution and biogeography of amphibians and reptiles of Europe. Amphibia-Reptilia 35(1): 1-31.
- Van Damme, R. (1999): Evolution of herbivory in lacertid lizards: effects of insularity and body size. Journal of Herpetology 33: 663-674.
- Wall, M., Shine, R. (2013): Ecology and behaviour of Burton's Legless Lizard (*Lialis burtonis*, Pygopodidae) in Tropical Australia. Asian Herpetological Research 4: 9-21.
- Žagar, A., Carretero, M.A. (2012): A record of cannibalism in *Podarcis muralis* (Laurenti, 1768) (Reptilia, Lacertidae) from Slovenia. Herpetology Notes 5: 211-213.
- Žagar, A., Carretero, M.A. (2016): Attempted oophagy in *Podarcis muralis* (Laurenti, 1768) Herpetozoa 28(3/4): 203-205.
- Zanchi, D., Passos, D.C., Borges-Nojosa, D.M. (2012): *Tropidurus hispidus* (Calango). Saurophagy. Herpetological Review 43(1): 141.

Key words: lizard-eating, feeding ecology, *Podarcis muralis*, lacertids, Greece.

Article No.: e187503

Received: 26. March 2017 / Accepted: 12. February 2018

Available online: 19. February 2018 / Printed: June 2019

Pavlos ANDRIOPOULOS¹ and Panayiotis PAFILIS^{2*}

1. National and Kapodistrian University of Athens, School of Biology, Dept. of Ecology and Taxonomy, Greece.

2. National and Kapodistrian University of Athens, School of Biology, Dept. of Zoology and Marine Biology, Greece.

*Corresponding author, P. Pafilis, E-mail: ppafil@biol.uoa.gr