

Predation behavior with individuals aggregation on streetlights in *Tarentola mauritanica* (Squamata: Gekkonidae) from Southern Spain

Ana Lozano-Del CAMPO^{1,2} and Roberto GARCÍA-ROA^{3,*}

1. Fonoteca Zoológica (FonoZoo.com), National Museum of Natural Sciences (CSIC) of Madrid, Spain.

2. Department of Biodiversity and Evolutionary Biology, National Museum of Natural Sciences – Spanish Research Council (MNCN-CSIC).

José Gutiérrez Abascal, 2, 28006, Madrid, Spain. E-mail: analozca@gmail.com

3. Department of Evolutionary Ecology, National Museum of Natural Science – Spanish Research Council (MNCN-CSIC).

José Gutiérrez Abascal, 2, 28006, Madrid, Spain. E-mail: r.garcia-roa@mncn.csic.es

* Corresponding autor, R. Garcia-Roa, E-mail: r.garcia-roa@mncn.csic.es

Received: 02 July 2014 / Accepted: 19. August 2014 / Available online: 30. September 2014 / Printed: December 2014

Abstract. *Tarentola mauritanica* is the most common gecko species in the Iberian Peninsula. It is widespread in most of the anthropogenic areas, where it shows predating behavior and male territoriality, especially during breeding season. In this note, we report an atypical aggregation of this species found in the streetlamps of the most frequented area of a campsite in Ronda, Malaga, Spain. There are previously reported *T. mauritanica* diurnal aggregations in retreat sites, but not much information can be found related to the interaction among reptiles in small places with high prey availability. This unusual tolerance to the presence of other males in such a reduced but suitable place for predating as a spotlight near humid facilities could be explained as an adaptive strategy to increase their success in hunting.

Key words: aggregation, predation, geckos, lizard, territoriality.

The diversity of predation strategies is widely reported in reptiles. It may be influenced by different factors such as prey availability, habitat, ontogeny, *etc* (Stephens & Krebs 1986). Taking advantage of artificial night lighting for foraging or even for basking is a very common behavior among nocturnal species of reptiles, especially members of the family Gekkonidae (Werner 1990). The “night-light niche” hosts a great amount of invertebrates attracted by artificial light, increasing prey availability (Garber 1978, Perry et al. 2008). In this paper, we report an observation of related behavior in *Tarentola mauritanica*, a common Mediterranean species of gecko, which inhabits human buildings, but also rocky grounds in nature. It is considered a sit-and-wait predator in human habitats, for instance, predating near spotlights at night (Valverde 1967). However, it is an active prey seeker in some cases. *T. mauritanica* shows diurnal and nocturnal activity, basking early both in the morning and at night, and hiding the rest of the day (Salvador 2011). On July 2013, at 23 h. approximately, we observed many adults of *T. mauritanica* preying near the light of streetlights in a campsite near to Ronda, Málaga, Spain (36.72209°N, -5.17733°E, 756 m elevation). We want to highlight the unusual aggregation that we observed inside six streetlights in the most anthropic area of the campsite. There were between 6 and 11 individuals of both sexes gathered within 350 mm height, 180 mm width and 180 mm depth lamps, having the largest individual sizes, while we could only find smaller isolated adults and juveniles in the streetlamps in peripheral areas. Although Martínez-Rica (1974) cited the presence of 14 individuals of *T. mauritanica* on a tree, and other authors have reported the trend of geckos to aggregate diurnally within retreat-sites (Kearney et al. 2001, Shah et al. 2003), it is difficult to find such a large aggregation of specimens of this species in a limited space while predating, even more so during breeding season, due to male spatial intolerance (Salvador 2011). However, it is important to consider that habitat structure could affect foraging dynamics in some geckos species (Petren & Case 1996, 1998). Social aggregation has been widely studied in animals, sometimes occurring as a re-

sponse to the stress caused by several factors like extreme temperatures or low humidity (Cohen & Alford 1996, Bloomstein et al. 2004), or with the aim of facilitating reproduction or avoiding predators (Krause & Ruxton 2002, Spieler, 2003). However, far too little attention has been paid to reptiles regarding competitive aggregation in places with a high prey density (Greeff & Whiting 2000, Schutz et al. 2007). Predator ability to find prey and to adapt their trophic niche to different environments is crucial for a correct population dynamic in a species (Stephens & Krebs 1986). Bathrooms, canteens and swimming pools are usually in the heart of campsites, and that is where the invertebrate density may be higher due to humidity and high light levels (Petren & Case 1996). Therefore, it is likely that *T. mauritanica* individuals living in these places tend to gather near human facilities as a result of the high prey availability, resulting in these cluster-like aggregations in smaller spaces, which may be an adaptive response intended to increase the obtention of prey.

Acknowledgements. We thank P. Mas for her assistance in the field-work; S. Carreira and J. García for insightful comments on the manuscript.

References

- Bloomstein, D.P., Im, S., Nicodemus, A., Zugmeyer, C. (2004): Yellow-bellied marmots (*Marmota flaviventris*) hibernate socially. *Journal of Mammalogy* 85: 25–29.
- Cohen, M.P., Alford, R.A. (1996): Factors affecting diurnal shelter use by the cane toad, *Bufo marinus*. *Herpetologica* 52: 172–181.
- Garber, S.D. (1978): Opportunistic feeding behavior of *Anolis cristatellus* (Iguanidae: Reptilia) in Puerto Rico. *Transactions of the Kansas Academy of Sciences* 81: 79–80.
- Greeff, J.M., Whiting, M.J. (2000): Foraging-mode plasticity in the lizard *Platysaurus broadleyi*. *Herpetologica* 56: 402–407.
- Kearney, M., Shine, R., Comber, S., Pearson, D. (2001): Why do geckos group? An analysis of “social” aggregations in two species of Australian lizards. *Herpetologica* 57: 411–422.

- Krause, J., Ruxton, G.D. (2002): *Living in Groups*. New York: Oxford University Press.
- Martínez-Rica, J.P. (1974): Contribución al estudio de la biología de los geconidos ibéricos (Rept., Sauria). Publicaciones del Centro Pirenaico de Biología Experimental 5: 1-291.
- Perry, G., Buchanan, B.W., Fisher, R.N., Salmon, M., Wise, S.E. (2008): Effects of artificial night lighting on amphibians and reptiles in urban environments. pp. 239-256. in Mitchell, J.C., Jung Brown, R.E., Bartholomew, B. (eds), *Urban Herpetology*. Society for the Study of Amphibians and Reptiles, Salt Lake City, UT. Herpetological Conservation Number Three.
- Petren, K., Case, T.J. (1996): An experimental demonstration of exploitation competition in an ongoing invasion. *Ecology* 77: 118-132.
- Petren, K., Case, T.J. (1998): Habitat structure determines competition intensity and invasion success in gecko lizards. *Proceedings of the National Academy of Sciences* 95: 11739-11744.
- Salvador, A. (2011): Salamancha común - *Tarentola mauritanica* (Linnaeus, 1785). Enciclopedia Virtual de los Vertebrados. Salvador, A., Marco, A. (eds), Museo Nacional de Ciencias Naturales, Madrid. <<http://www.vertebradosibericos.org/>> <accessed on 20 July 2014>.
- Schutz, L., Stuart-Fox, D., Whiting, M.J. (2007): Does the lizard *Platysaurus broadleyi* aggregate because of social factors? *Journal of Herpetology* 41: 354-359.
- Shah, B., Shine, R., Hudson, S., Kearney, M. (2003): Sociality in lizards: why do thick-tailed geckos (*Nephurus mii*) aggregate? *Behaviour* 140: 1039-1052.
- Spieler, M. (2003): Risk of predation affects aggregation size: a study with tadpoles of *Phrynomantis microps* (Anura: Microhylidae). *Animal Behaviour* 65: 179-184.
- Stephens, D.W., Krebs, J.R. (1986): *Foraging theory*. Princeton Univ. Press.
- Valverde, J.A. (1967): Estructura de una comunidad mediterránea de vertebrados terrestres. *Monografías de Ciencias Moderna* 76.
- Werner, Y.L. (1990): Habitat dependent thermal regimes of two Hawaiian geckos (Reptilia: Gekkonidae). *Journal of Thermal Biology* 15: 281-290.
-