Wall lizard becomes accustomed to humans and stops hiding

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The wall lizard (*Podarcis muralis*) that coexists with humans becomes habituated to them and takes refuge less and less as they approach. Credit: Daniele Pelliteri-Rosa

Habituating to predators or fleeing and hiding are tactics that vary between species. Scientists from two research centres in Italy and Spain have observed that adult male common wall lizards sharing their living spaces with humans become accustomed to them and hide less when

humans approach them. Yellow lizards were the most "daring".

Humans have an increasing presence in different species' natural habitats. For this reason, scientists are investing much time in studying wild animals' capacity to tolerate these disturbances. Lizards are an appropriate model for research into this subject, as they can be found in high densities in many environments and are relatively easy to observe in the field and handle in laboratories.

Scientists from the Eco-Ethology group of the University of Pavia (Italy) and the National Museum of Natural History (CSIC) in Spain used the lizards to analyse their reactions to attacks by human predators and the strategies they adopt, depending on the local risk level. To do this, they simulated human attacks on two populations in completely different settings: rural and urban habitats.

"The species we used in the study was the common wall lizard (*Podarcis muralis*). The main aim was to detect the possible influence of urbanisation on their antipredator response in terms of activity, time spent hidden in refuges after attacks and habituation to predators after repeated attacks," Sinc was told by Jose Martín of the Spanish National Museum of Natural History and co-author of the paper, published in the journal *Animal Behaviour*.

The findings show that urban lizards spend less time in their refuges following simulations of predator attacks and that the become habituated, as their successive hiding times decreased faster than those of the rural lizards. This detail suggests different levels of caution against potential predators. "The study has important implications for our understanding of humans' effect on animal populations and animals' resp

The explanation for this is that for prey, the majority of humans they

come across represent "ineffective, dangerous predators" that rarely attack and are easily escaped from with low-intensity, low-cost antipredator responses. In this way, they save themselves always having to respond with high-intensity antipredator strategies, which can be very costly in terms of lost time and energy.

Red lizards cower when threatened

As this species displays polychromatism (there are individuals with yellow, red and white bellies), which has an important role for the species, the researchers also took individual colouration into consideration in the study.

"Independently of whether the population was rural or urban, yellow lizards gradually decreased the time they spent in their refuges compared to the other two morphs," Martín explained. "On the other hand, red lizards progressively spent longer periods before emerging from their refuges after successive tests, suggesting growing sensitisation to potential attacks by predators."

Previous studies had found differences between differently coloured lizards in terms of stress and haematological profiles, for instance, as well as in immune response, female reproductive strategies and males' chemical signals.

"By using a lizard species as a model, we shed light on two key points of evolutionary ecology, concerning both antipredator response optimisation and factors enabling polymorphism to be maintained," the researcher concluded.

More information: Daniele Pellitteri-Rosa et al, Urbanization affects refuge use and habituation to predators in a polymorphic lizard, *Animal Behaviour* (2017). DOI: 10.1016/j.anbehav.2016.11.016