

Lizards found unable to distinguish between groups with different numbers of individual components

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Goldteju *Tupinambis teguixin*. Credit: Wikipedia/CC BY-SA 3.0

(Phys.org)—A team of researchers with members from the University of Padova and the University of Ferrara, both in Italy, has found that unlike

most other animals studied to date, ruin lizards (*Podarcis sicula*) are unable to understand numerical differences in groups of objects. In their paper published in the journal *Biology Letters*, the team describes how they conducted experiments with the lizards and what they found.

Multiple studies have been conducted over the years to determine if animals have numerical cognition—the ability to see and understand that one group contains more or fewer objects than another—until now, every vertebrate tested has been able to determine whether a plate of [food](#) contains a larger [number](#) of items than another. In this new effort, the researchers found that ruin lizards are the lone exception.

To learn more about ruin lizard abilities (also known as the Italian wall lizard, native to many parts of Europe and the United States), the researchers obtained several specimens and conducted experiments designed to test for numerical awareness. They constructed an apparatus consisting of a Y-shaped structure that held a single lizard in a position in which it could see two different plates of food set to the left or right. The lizard was then allowed to advance to the plate it saw as most desirable. The researchers ran multiple trials of the experiment varying both the number of [food items](#) on a given plate and the size of the food items, recording the result of each trial run as they went.

The researchers found that the lizards were able to differentiate between plates of food based on size, but not on numerical numbers. They would go for bigger sized fly larvae, for example, but showed no preference when looking at plates containing different numbers of same size fly larvae. The [researchers](#) conclude that while the [lizards](#) appear to have similar [size](#) discrimination abilities compared to other animals that have been tested, they are unique in that they have no numerical discrimination abilities.

More information: Maria Elena Miletto Petrazzini et al. Quantitative

abilities in a reptile (), *Biology Letters* (2017). [DOI: 10.1098/rsbl.2016.0899](https://doi.org/10.1098/rsbl.2016.0899)

Abstract

The ability to identify the largest amount of prey available is fundamental for optimizing foraging behaviour in several species. To date, this cognitive skill has been observed in all vertebrate groups except reptiles. In this study we investigated the spontaneous ability of ruin lizards to select the larger amount of food items. In Experiment 1, lizards proved able to select the larger food item when presented with two alternatives differing in size (0.25, 0.50, 0.67 and 0.75 ratio). In Experiment 2 lizards presented with two groups of food items (1 versus 4, 2 versus 4, 2 versus 3 and 3 versus 4 items) were unable to select the larger group in any contrast. The lack of discrimination in the presence of multiple items represents an exception in numerical cognition studies, raising the question as to whether reptiles' quantitative abilities are different from those of other vertebrate groups.

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