

Stress makes city lizards more street-smart than their rural cousins'

While the urban ones wait till the very end to move when humans approach them, the panicky rural male tends to scamper away earlier: Study

MOHIT M. RAO
BENGALURU

Urban male lizards may be “duller” in appearance, but their “stressed lives” on the streets of our cities has seen them become more “street-smart” than their timid cousins in rural areas.

From scaring lizards in their perches to setting them running on a race track, a team from the Centre for Ecological Sciences at the Indian Institute of Science has been studying the incredible nuances of the South Indian Rock Agama to understand how the species adapts to our chaotic city lives.

Assistant Professor Maria Thaker and her team primarily compared a set of urban lizards—observed or captured from suburban north Bengaluru— which has seen explosive urbanisation over the past two decades with their counterparts in the rocky shrub lands of Kolar district. Their research has already revealed in some depth how cities change what lizards eat or how they escape, and how they communicate.

Urban life

Perhaps mimicking the life of an urban human, a lizard in the city was found to be bigger in size than their rural counterparts, while increased volume of food in their gut pointed to easier availability of insects. “They do eat more, and they move less than rural lizards. But, they are ‘bigger’ and not ‘fatter’... They are a sedentary ambush predator, not lazy,” Dr. Thaker said.



Their sedentary lifestyle can perhaps be attributed to lizards having developed “street-smart” in the city — with a yet-to-be-published study finding that urban lizards learn about dangers quicker than their rural counterparts. Researchers found that urban lizards wait till the very end to move when humans approach them, and even then, they move just enough to remain “just out of hand’s reach”. The “panicky” rural male lizard, however, tends to scamper away earlier and runs longer distances when approached.

“The urban male lizard is really street-smart and learnt that humans are not a threat and will stay just out of harm’s way without expending too much energy,” Dr. Thaker added.

Being bigger may be a consequence of the city, but it



Maria Thaker (right) and her team compared a set of urban Rock Agama (top) — observed or captured from suburban north Bengaluru — with their counterparts in Kolar district.

has definitely not made them slower from their rural counterparts.

On experiments involving

race tracks, urban males were found to be as fast as rural males, if not marginally faster at times.

What lizards teach us

STAFF REPORTER
BENGALURU

Further questions of what lizard colours mean physiologically, how predators see lizards, and even the cognitive ability of urban and rural lizards are being explored. “These questions essentially dissect what makes a successful organism. Lizards are an important part of the ecosystem and their incredible diversity in our backyard provide an opportunity to understand how species adapt through

conditioning and evolution,” said Dr.

Thaker, who worked with her students— Anuradha Batabyal, Shashank Balakrishna, and Amod M. Zambre.

These observations, they believe, will help us understand how animals adapt in an increasingly anthropocene world. And, in this, the Rock Agamas seem to be a model species: being vertebrates, their responses are translatable across the spectrum of mammals and other animals; their “stress hormones” are

similar to numerous species, including humans; while, their communication challenges is similarly seen in various animals now forced to coexist in rapidly urbanising regions.

Three research papers have recently been published in the journals, Behavioural Ecology and Sociobiology, and Animal Behaviour, including one research that sought to stimulate the fan-throated lizard (*Sarada superba*) to understand what the colours on a male mean.

Stress impacts their colour

STAFF REPROTER
BENGALURU

The stressful lives in the city, where predators in the form of dogs and raptors are plenty, seem to have had an impact on the kind of colours lizards display. Male Rock Agamas communicate through colours: dorsal side colour changes from yellow to red and lateral side colour from orange to black in the presence of a female; while, in the presence of males or conditions of stress, they change to bright yellow (dorsal) and

bright orange (lateral). The colours on an urban lizard are not just duller than their rural counterparts, but, they also change slower. So, if it takes an urban male around 1,200 seconds to change to maximum intensity, it takes just 400 seconds for rural male lizards to do that.

Apart from stress, perhaps the “change” nature of interaction can explain this in the city. Rock Agamas are territorial by nature and this is seen in rural areas. But, in urban areas, with a landscape

fragmented by concrete and manicured gardens, groups of lizards tend to live in higher densities and in some ways, they have become used to communal living. “There are more neighbours in the city, and the lizards can’t spend all their time “shouting” at their neighbours. Having bright colours can be dangerous or costly to maintain, so lower colour intensity for communication may be the result,” Anuradha Batabyal, who co-authored the paper, said.