

Morphology, Speed, and Gigantism: A Study of Urban Versus Rural Populations of Lava Lizards from the Galápagos Islands

Alex Karakuc and Grace Hearth

The San Cristóbal lava lizards (*Microlophus bivittatus*) are endemic to San Cristobal and nearby small islands. Lava lizards mainly inhabit volcanic rock areas, dry grassland and deciduous forests. The goal of our projects was to study lava lizard morphology and compare populations that live in rural versus urban habitats. By examining morphology and sprint speed, we hypothesized that relatively long limb length and rapid sprint speed would result from selection by cat predation and vehicle traffic in urban versus rural habitats. Lizards were caught by noose in several areas judged to be either rural or urban. We recorded snout vent length (SVL), tail length, head width, jaw length, and mass in the field and obtained multiple images of the lizards from multiple views. Subsequent laboratory analysis used ImageJ to precisely measure limb length and the area of epaulettes on mature males. Sprint speeds were calculated through measuring the time it took for each lizard to run 50 centimeters based on footage taken in the field using a GoPro camera. Analysis of our data has revealed that there is more variation in mean size of males than females. Based on previous studies, we speculate that females may achieve sexual maturity earlier and at smaller size than do males. Our data also suggest that males from rural areas were smaller and slower in sprint speed on average than males from urban locations. However, a notable exception was that males sampled from a remote island population demonstrated gigantism, where males were at least a third larger in overall SVL and mass than the average mainland population of males. We can only speculate that gigantism in this island population is perhaps due to lower predation rates, delayed sexual maturity, or sexual selection for territorial purposes. Future studies will continue to investigate questions related to morphology and sprint speed in the San Cristóbal lava lizards.