

The Thermal Biology of Two Tropical Rainforest Lizard Species

Ryan D. Baldrige, Sarah Gullet, Ashley Jackson, Oscar A. Barboza, and Dr. Richard D. Durtsche

Department of Biological Sciences
Northern Kentucky University, Highland Heights, KY 41099

Oscar A. Barboza
Department of Tropical Ecology, Universidad Nacional de Costa Rica

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Abstract

We studied the thermal biology of two tropical rainforest lizards, the four-lined ameiva (*Ameiva quadrilineata*) and the basilisk or "Jesus Christ" lizard (*Basiliscus basiliscus*), during the early rainy season of 2005 at the Northern Kentucky University Center for Undergraduate Research and Tropical Studies (CURTS) on the Osa peninsula of Costa Rica. We evaluated lizard thermoregulation by measuring the environmental temperatures and body temperatures of lizards in field conditions and under thermogradient conditions. These two lizard species use different feeding strategies that are linked to their phylogeny. *A. quadrilineata* are active foragers, frequently moving through the habitat, whereas *B. basiliscus* are more sedentary, wait-ambush foragers.

Lizard activity was determined through hourly walks of a 300 m habitat transect. These data suggested that *A. quadrilineata* have a unimodal activity period, with peak activity at 0900 h. *B. basiliscus* are uniformly active throughout the day. Our observations also indicated that *A. quadrilineata* readily occupied the forest floor in areas of filtered sun. Previous studies suggested that they were restricted to open areas and forest edges.

Semi-natural sun-to-shade thermogadients (with a range of up to 20°C), which reflected potential environmental conditions, were used to determine the lizards' preferred body temperature (T_{set}). Field lizard body temperatures (T_b), preferred lizard body temperatures (T_{set}), and data logger measures of environmental temperatures (T_e) were used to calculate the thermal quality of the habitat and to determine the accuracy of the field body temperatures to thermal preferendum. These calculations were used to determine each lizard species' deviation from thermoconformity.