Thoracic Temperatures of the Postman Butterfly Heliconius melpomene in Relation to Diurnal Ambient Temperature Changes on Coastal Guyana

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Earth rotation sets predictable daily regimes of light and temperature, and natural selection tuned all ectothermic animals to respond optimally to these cues. The timekeeping mechanisms, circadian clocks, regulate sleep and wake cycles, time-activity budgets, physiology, and metabolism. My study was inspired by the need to begin documenting the relationships among time of day, ambient temperature, butterfly thoracic temperatures, and thermoregulatory behaviors of an equatorial ectotherm because of global warming. I found a moderate positive correlation between ambient and body temperatures for the postman butterfly, Heliconius melpomene. Postman feeding, mate seeking, basking and shade seeking activities, and abundance patterns were greatest between ambient temperatures ranging from 25 to 32°C, and thoracic temperatures ranged between 30 and 32°C. These activity and abundance patterns were associated with the open habitat to shade seeking behaviors of individuals negotiating diurnal fluctuations of ambient temperatures to maintain relatively stable body temperatures that were usually above ambient.

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