

Thermal Ecology of an Endemic Sri Lankan Kangaroo Lizard (*Otocryptis wiegmanni*) under Wild and Captive Conditions

P.H.T. Lakkana¹, K.G.D.D. Thilakarathne¹, J.K.H. Sampath², M. Meegaskumbura^{1*}

¹Department of Zoology, Faculty of Science, University of Peradeniya, Sri Lanka.

²Department of Biosystems Technology, Faculty of Technological Studies, Uva Wellassa University, Badulla, Sri Lanka.

Thermal ecology of Sri Lankan endemic agamid lizard species is poorly known, but vital for their conservation. This study examined the thermal ecology of *Otocryptis wiegmanni* both under wild and captive conditions. External body temperature (T_b), corresponding environmental temperature (T_e), sex and behaviour of 121 lizards were recorded. In captivity T_b and T_e were recorded at one hour time intervals within 24 hours for 10 days. For the wild condition, T_b and T_e were randomly collected both in day and night time. In the wild, T_b was significantly lower than T_e ($p > 0.05$) and mean difference was -1.59 °C. There is a positive correlation between T_b and T_e ($r = 0.816$, $p < 0.05$). The best fit regression line is $T_b = 5.86 + 0.695T_e$ ($R^2 = 66.6\%$). Regression coefficient (0.695) is significant ($p < 0.05$). Although in captivity, T_b was significantly lower than T_e ($p > 0.05$) and mean difference was -0.91 °C. T_b and T_e shows strong positive correlation ($r = 0.914$, $p < 0.05$). Best fit regression line is $T_b = 1.95 + 0.886T_e$ ($R^2 = 83.6\%$). Regression coefficient (0.886) is significant ($p < 0.05$). Moreover in both wild and captive conditions, T_b of males and females were not significantly different. Regression coefficients of both wild and captivity differ from the theoretical value of zero required for thermoregulation verify that *O. wiegmanni* is a *thermoconformii*) species. The T_b for this population ranged between 20 - 26.5 °C. We never observed *O. wiegmanni* showing obvious basking behaviour, may be a reason for having a lower T_b than T_e. Activities such as territorial and courtship display, mating, egg laying, and feeding occurred during daytime while they are dormant at night and mostly perch above ground. Moreover, *O. wiegmanni* is adept at tracking environmental temperature by selecting appropriate thermal microhabitats to maintain their body temperature within the optimal level. This study provides a basis and emphasizes the necessity of in-depth thermal ecological studies on Sri Lankan agamids.

Keywords: *Otocryptis wiegmanni*, Sri Lanka, Lizard, Thermal ecology, Body temperature