THERMAL TOLERANCE AND THERMOREGULATION BY TAIWANESE RHACOPHORID TADPOLES (*BUERGERIA JAPONICA*) LIVING IN GEOTHERMAL HOT SPRINGS AND STREAMS

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Abstract: We measured the critical thermal maxima (CTMax) of tadpoles of *Buergeria japonica* inhabiting streams and geothermal hot springs. The CTMax of all *B. japonica* tadpoles was over 41 C, indicating that the tadpoles are heat-tolerant. At Rushan, we monitored the temporal and spatial distribution of tadpoles over a 24-h period in a 220 cm X 70 cm-plot that is fed by a geothermal hot spring. The thermal profiles of the plot varied seasonally, but the highest water temperature selected by tadpoles remained similar (ca 37 C). In the winter, the thermal range of the plot was lower (29.5 — 40.6 C), and tadpoles could be found in the majority of the plot. In contrast, during the spring and summer the temperature ranges of the plot were higher (33.1—43.8 C and 33.0 — 42.4 C, respectively), and tadpoles could be found only in the cooler sections of the plot, especially around 1000 h with direct solar radiation. These results suggest that extreme heat tolerance and behavioral thermoregulation (i.e., heat avoidance behavior) are the main means by which *B. japonica* tadpoles cope with the high temperatures in geothermal hot springs.

Key words: Anura; *Buergeria japonica*; Heat tolerance; Hot Spring; Thermal Physiology; Thermoregulation