Physiological Ecology of Two Tree Weta Species

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Abstract

Tree weta in New Zealand have been extensively studied for the sexual selection that has resulted in their pronounced sexual dimorphism, yet surprisingly little basic ecological information about common tree weta species is available. Particularly, information on the interactions within and between tree weta species is lacking. As such, this thesis focuses on how tree weta in the North Island of New Zealand are distributed with attention on *Hemideina crassidens* and *H. thoracica* populations and whether or not their distributions are correlated with local temperatures. Using ArcSoft GIS software, I established that while *Hemideina crassidens* have established their populations in colder areas, they do not appear to show greater body size in response to this. Additionally, tree weta from high altitude populations on Mt Taranaki were collected as immature nymphs and raised alongside weta from lowland populations under two temperature treatments. The results indicate that two species of weta from high altitude are more alike in their growth rate than they are to lowland conspecific populations. Mt Taranaki tree weta not only showed fast rates of growth but were larger overall in later instars. Adult weta from Mt Taranaki and lowland populations were also tested for rates of oxygen consumption at various temperatures. Surprisingly, only the temperature at which the weta were tested resulted in metabolic differences, not the population or species differences that were predicted. This information allows more detailed investigations of environment and how changes of local and global climate may affect tree weta distributions.

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