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The diet of tree weta: natural and captive folivory preferences of *Hemideina crassidens* and *Hemideina thoracica*

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Abstract

Tree weta are a well-known orthopteran group with a widespread distribution in New Zealand. Basic knowledge of tree weta diet was sought by examining wild diet, and dietary preferences, of two widespread tree weta species. This base line data should help improve our understanding of where tree weta fit into New Zealand forest ecosystems. In the present study I examined the natural (wild) diet of two tree weta species *Hemideina crassidens* and *H.thoracica* and some aspects of dietary preference. The frass of thirty-three wild tree weta indicated that tree weta do not eat at random. It was also of note that a favoured plant species present in the frass was an exotic legume, known to have a high nitrogen content. In captivity tree weta appeared to favour plant species with high nitrogen content, however, nitrogen is not the only factor affecting their dietary preferences. Plants produce feeding inhibitory compounds and by examining three selected plant species, inhibitory effects were identified in two plants species. These inhibitory effects such, as poisoning or affecting nutrient absorption, likely led to the tree weta to developing behavioural adaptations to limit plant toxins. Weta in this study ate on average only two plant species in a single night, however they increased the number of plant species they ate over two nights. By limiting the number of plant species eaten in a single night, tree weta may be allowing themselves time to deal with toxic compounds in the plant. Additional research into tree weta use of natural resources and dietary requirements would help further our knowledge of tree weta ecology.

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