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Wellington tree weta (*Hemideina crassidens*)
diet and the effect of some of their dietary choices

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Abstract

Tree weta have often been referred to as “invertebrate mice” by New Zealand ecologists. This phrase does not help in the understanding of the ecology of tree weta, and it is likely that a lack of information or simplistic interpretation has led to its use. One important aspect that can be examined to refine our understanding of tree weta ecology is diet. This would help improve our understanding of where tree weta fit into New Zealand forest ecosystems. In the present study I examined the treatment of tree weta as “invertebrate mice” and investigated in detail aspects of the diet of one species, the Wellington tree weta, *Hemideina crassidens*. Unexpectedly tree weta seemed to prefer to consume high protein sources such as invertebrates, rather than the food they are generally assumed to eat; leaves. Tree weta that were raised on a diet high in protein were able to reach much larger size than those raised on a diet containing less protein. However, the large amount of excess fat stored by the tree weta on the high protein diet, suggested that they were not strictly regulating their nutrient intake. And the larger animals did not increase their fitness by producing more or better quality eggs. When their nutritional state was set with an artificial pre-treatment diet, experimental tree weta did not then balance their nutrients by eating a complementary food. The tree weta may instead be over-consuming protein when it is readily available. New Zealand trees are low in nitrogen so if a high quality protein source was available it may be beneficial for tree weta to consume as much as possible and store it for when protein is in short supply. This could allow tree weta to stay in their roosts for longer periods to avoid predation and desiccation. More knowledge on tree weta behaviour related to activity patterns including leaving the roosts and foraging routines could be beneficial in understanding the costs and benefits of fat and protein storage in tree weta.
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