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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.

# Table of Contents

<b>Acknowledgements .....</b>	<b>ii</b>
<b>Abstract .....</b>	<b>iii</b>
<b>Table of Contents .....</b>	<b>iv</b>
<b>List of Figures.....</b>	<b>1</b>
<b>List of Tables.....</b>	<b>2</b>
<b>1. General Introduction .....</b>	<b>3</b>
1.1 Why is diet important?.....	4
1.2 Diet in the wider group .....	5
1.3 Recent research into tree weta diet – seed dispersal .....	6
1.4 Thesis overview .....	6
<b>2. Exploring the concepts of niche convergence in a land without rodents: the case of weta as small mammals .....</b>	<b>8</b>
2.1 Introduction .....	9
2.2 Basis for the metaphor .....	10
2.3 Validity of the metaphor .....	11
2.4 Does the phrase “invertebrate mice” help our science or our understanding? .....	13
2.5 Fecundity .....	13
2.6 Metabolism .....	15
2.7 Environmental impacts .....	16
2.8 Conclusions .....	17
<b>3. Is the tree weta <i>Hemideina crassidens</i> an obligate herbivore? .....</b>	<b>19</b>
3.1 Introduction .....	20
3.2 Methods .....	21
3.3 Results .....	22
3.4 Discussion.....	24
<b>4. Dietary protein supplementation and its effect on growth and reproduction in tree weta (<i>Hemideina crassidens</i>).....</b>	<b>30</b>
4.1 Introduction .....	31
4.1.1 Diet and reproduction.....	32
4.2 Methods .....	33
4.2.1 Growth .....	33

4.2.2	Reproduction.....	34
4.2.3	Egg number and size.....	35
4.3	Results.....	36
4.3.1	Growth.....	36
4.3.2	Condition scores.....	37
4.3.3	Egg number and size.....	38
4.3.4	Nutrient analysis of eggs.....	38
4.4	Discussion.....	40
<b>5.</b>	<b>Carbohydrate and protein feeding patterns in Wellington tree weta (<i>Hemideina crassidens</i>)... ..</b>	<b>44</b>
5.1	Introduction.....	45
5.2	Methods.....	47
5.3	Results.....	49
<b>5.4</b>	<b>Discussion.....</b>	<b>51</b>
<b>5.5</b>	<b>Conclusions.....</b>	<b>55</b>
<b>6.</b>	<b>General conclusions.....</b>	<b>57</b>
<b>7.</b>	<b>References.....</b>	<b>61</b>

## List of Figures

2.1	Comparison of various small mammal and weta species.....	12
2.2	Population increase of <i>Mus musculus</i> and <i>Motuweta isolata</i> over a three year period.....	15
3.1	The percentage of the individual weta that ate each of the food types, grouped into males and females, adults and juveniles and overall the weta.....	23
3.2	Frequency at each food type was eaten for each number of food types eaten....	24
4.1	Tibia length and weight of weta in the high protein and low protein groups.....	37
4.2	Examples of condition of female adult tree weta.....	39
4.3	Relationship between the number of days that a female tree weta has been an adult and the number of eggs that egg individual produced, for each feeding group.....	39
4.4	Relationship between the average lengths of eggs produced by each female and the proportion of nitrogen in the eggs, across the low and high protein groups.....	40
5.1	Average amount eaten by the tree weta in each of the four test groups on the pre-treatment over each of the four nights.....	50
5.2	The average amount eaten by each tree weta in the test phase of the experiment from each dish presented.....	51

## List of Tables

2.1	Summary of the differences between tree weta ( <i>Hemideina</i> ) and the mouse ( <i>Mus</i> ).....	18
3.1	References to tree weta diet in captivity and in the field.....	27
4.1	Scale used for condition score of dissected adult female tree weta.....	35
4.2	Comparison of tree weta weights between the high protein diet and the low protein diet, at five group stages.....	36
5.1	The four diet groups in the nutrient balancing test.....	48
5.2	Amount of diet eaten by males and females during the pre-treatment phase of the experiment.....	49
5.3	The average amount of carbohydrate and protein eaten in each diet during the pre-treatment for each of the pre-treatment groups.....	49