

Monitoring invertebrates at Rewanui

At Rewanui, our long-term aim is to restore the native habitat so that a wide range of native species thrive there. Invertebrates are food for some native birds and reptiles; also they spread pollen and seeds, break down organic matter, and form an essential part of healthy bush and forests. A healthy native invertebrate population is a good indicator of healthy native habitat.

In 2008, we began a three-year programme to monitor birds, invertebrates, reptiles, and vegetation at Rewanui. A specialist from the Greater Wellington Regional Council biodiversity team was contracted to do the monitoring. Our aim was to get an idea of the relative abundance of native wildlife in different types of habitat at Rewanui. From this initial baseline data, future changes in wildlife populations can be gauged. We also wanted to find out how native species responded to on-going pest control over the entire property.

We used two techniques for monitoring invertebrates: (i) wetahouse surveys, and (ii) pitfall trapping. Monitoring was done at the same twenty seven stations where we monitored rodents, and birds (see Information Notes 6, 7). There were nine stations in each of the three main habitat types at Rewanui: (i) native bush (ii) non-native vegetation, such as hill grazing or plantation trees, and (iii) mixed native/non-native vegetation.

Monitoring tree weta using wetahouses

Weta are related to grasshoppers and crickets and are an important part of native bush food chains. They are also a favourite food of rats. During the day they shelter in dark crevasses and tree holes, coming out at night to feed mostly on vegetation.

Weta adapt gradually to using wetahouses for daytime shelter. Our wetahouses are made of native totara (although untreated pine would do) with a perspex window and a swing-door which can be opened to count the weta inside but otherwise is kept shut. They have two holes in the sides for weta to gain entry. These holes are no more than 18 millimetres big, so mice are kept out.

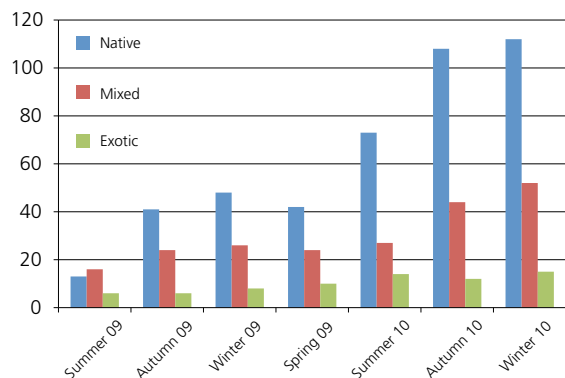
We nailed three wetahouses vertically to separate trees, shrubs, (or fenceposts), 1.0 to 1.5 metres above the ground at each of our 27 monitoring stations. We counted the weta once every three months over two years.



Weta monitoring results

The Wellington tree weta (*Hemideina crassidnes*) was the most abundant native species in our wetahouses across all three habitat types. As weta got used to using the wetahouses, and rat control continued, weta numbers increased.

Wetas in wetahouses, Rewanui, 2009–2010



Monitoring other invertebrates using pitfall traps

Pitfall traps made from plastic drink bottles were placed in the ground at each of our 27 monitoring stations, left open for four nights, and baited with cat biscuits. Ground invertebrates (and some flying insects) fall in and cannot escape. A total of 108 pitfall traps were monitored at Rewanui over a total of 3456 trap-nights, yielding almost 3000 invertebrates.

Our contractor counted and identified all invertebrates larger than five millimetres (which were then released). They were sorted into some 82 different groups. Checking invertebrate pitfalls was time-consuming compared to checking wetahouses.

Overall, invertebrate numbers were greatest in summer, and in the exotic habitat. The Diptera (flies) and Hymenoptera (ants, bees and wasps) preferred native habitat; Arachnida (spiders), Orthoptera (mostly crickets), Gastropoda (mostly slugs) and Isopoda



Tree weta.

(slaters) were most abundant in mixed and exotic habitats. Total numbers of these groups did not change significantly over the two years.

The conclusion we reached was that the cost of continued pitfall trap monitoring is hard to justify. They took a lot of effort, and there were no clear patterns of change in invertebrate numbers in response to pest control over the two years.

Monitoring weta on your own property

Once you have either made or bought a supply of wetahouses, monitoring weta is quick and easy. Monitoring weta over several years will help you gauge how well your rat control is working. You could combine weta monitoring with five-minute bird counts (see Information Note 7) and vegetation surveys (Information Note 9) to see how healthy overall your native bush is.

For more advice, and on-site assistance, contact:

1. Your regional council biodiversity team
2. Private specialist contractors
3. Masterton Men's Shed build and sell wetahouses.

More information

1. Pest control and monitoring native wildlife at Rewanui

See other Information Notes in this series.

2. About the work at Rewanui

Montfort Trimble Foundation:
www.trimblefoundation.org.nz

Tree species trials: Stuart Orme, Woodnet
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Acknowledgements

MAF's Sustainable Farming Fund supported our trials and monitoring from 2008–2011.

Nyree Fea was responsible for wildlife monitoring at Rewanui from 2008–2011.

Rewanui belongs to the Montfort Trimble Foundation, a trust dedicated to growing trees for the benefit of local people. The farm is being developed as a trial and demonstration property. Our focus is on new approaches to adding trees to the farming mix.

Photos: Nyree Fea, Marieke Lettink

