



# Key Native Ecosystem rodent monitoring report

2007 – 2008 annual report



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# **KNE rat monitoring programme**

Results to Date – April 2008

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## 1. Summary

This report summarises rodent monitoring from January 2003 to June 2008 and outlines the response of rodent populations to:

- An intensive Brodifacoum baiting regime in broadleaf forest; and
- time and season.

Possum and rodent control effectively limits rodent populations to low levels. The average rat (*Rattus spp.*) tracking index for broadleaf forest with a well-established baiting regime is 5%. Refer to Chart 1 on page 6. The rat-tracking index ranged from 0% to 14%. The baiting regime appears to control rat numbers to levels that have positively improved biodiversity outcomes for birds. Mouse (*Mus musculus*) populations appear to have strong seasonal variation peaking in July and falling in January. Refer to Chart 1. Mice do not appear to be significantly affected by current control programmes.

In Pounui rat-tracking indices remain high, averaging 55% with mouse activity lower than for rats averaging 20%.

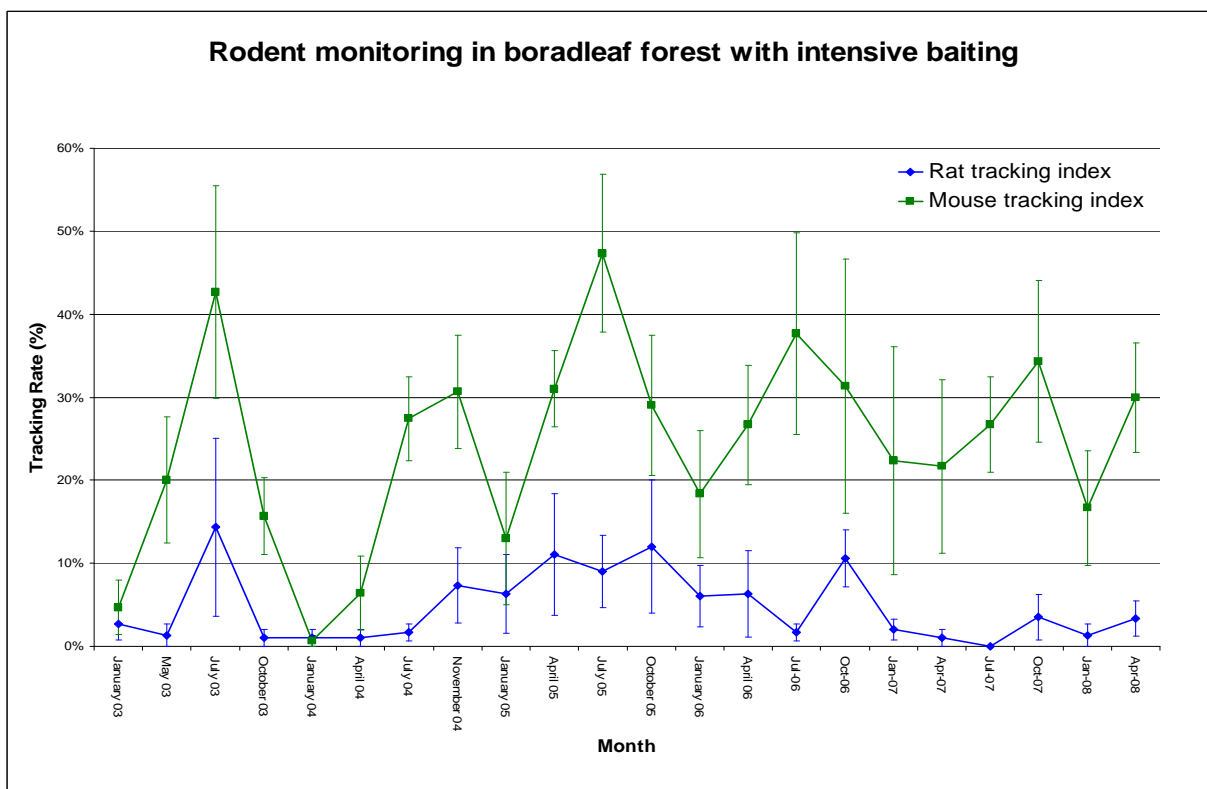
In Hayward's Scenic Reserve the Animal Health Board (AHB) possum control on line 3 has been removed, however, rats remain low in this area with only one tunnel tracked over the 2007-08 financial year, while rats still track at very high levels on the other two lines (>80% tracking index).

Rat tracking at Tauherenikau fluctuated between 0 and 40%. The January and April 2008 monitor recorded the highest rat activity in Tauherenikau to date.

Over the last financial year, rat activity in beech and broadleaf forests (Keith George and Witako) has remained below 20%. On average, the tracking index is 7.84%.

Long Gully rodent monitoring started prior to the establishment of pest control and rodent activity levels have ranged between 0 and 35%. The baiting regime in this reserve is Cholecalciferol and Pindone. There has been no further baiting since the initial knock down was carried out. Following the initial baiting, rat activity dropped to zero but is now on the increase.

Chart 1 shows the average tracking rates for rats and mice in broadleaf forest habitat (Fensham, Johnsonville Park, Wrights Hill and Porirua), that receives intensive Brodifacoum baiting.



## 2. Introduction

A rodent monitoring programme has been running in selected Key Native Ecosystems (KNEs) since January 2003. The objective of the project is to determine whether the current pest control regime maintains rats to less than 10% and a dramatic activity increase away from this level would indicate that the control programme needs reviewing.

The by-kill of rats is now an integral part of KNE management and the rodent monitoring data has become an important tool in planning multi-pest control regimes.

## 3. Methods

The rodent monitor is conducted in accordance with the latest Department of Conservation (DoC) protocol. The Greater Wellington Regional Council (Greater Wellington) rodent monitor design uses one to four randomly allocated lines of 10 tracking tunnels in 10 KNE sites (eight sites prior to the addition of Tauherenikau in 2005 and Long Gully in 2007). Tunnels with two papers and an inkpad are set for one fine night and baited with peanut butter.

Monitoring is carried out four times over the course of a calendar year (January, April, July and October) to detect seasonal changes in rodent numbers. However, from November 2008, the timing of the monitor was changed to February, May, June and November to maintain consistency with DoC protocol.

The tracking tunnel method gives a rodent activity index. The activity index is the percentage of tunnels with rats or mouse tracks present. Each line is one sample unit, and the activity index for a site is the mean of the lines. The activity index is a relative index and not a measure of actual abundance (e.g. rodents per hectare). The methodology can saturate at relatively low population levels (i.e. all tunnels showing footprints). Therefore this method works best when rodent populations are low. Data is presented as charts to illustrate results over time. Line averages, and the pooled averages are used to calculate error bars.

Sites are differentiated based on the main habitat type and the control treatment regime.

- The main group of four sites (Johnsonville Park, Wrights Hill, Porirua Scenic Reserve and Fensham Reserve), are predominantly broadleaf forest with Brodifacoum bait stations on 150m<sup>2</sup> grids filled three to four times a year.
- Keith George and Witako are predominantly beech forests and the baiting regime is similar to that in the broadleaf forests. However, the baiting in Keith George tends to be two to three times a year and a large part of Witako receives no baiting.
- Pounui has trapping and limited baiting.
- Tauherenikau is predominately podocarp (Kahikatea) forest with the same intensive baiting regime as the broadleaf forest.
- Long Gully is early stage regenerating bush with quite a bit of gorse and has Pindone and Cholecalciferol baiting.
- Hayward's Scenic Reserve is under AHB management and in the 2007 calendar year received some baiting and trapping in different areas.

## **4. Results**

In broadleaf forests, the current baiting regime maintains rodents to relatively low levels, less than 14%, with an average of 5%. Refer to Diagram 1 on page 10. There are noticeable seasonal fluctuations and mice remained highly variable and at significantly higher levels than rats.

### **4.1 Wrights Hill**

- Rat activity peaked in July but never exceeded 10%.
- Mouse activity climbed in this last calendar year.

### **4.2 Pounui**

- The rat-tracking index averaged 55% but had been as high as 90%.
- Mouse activity dropped to 0% each January and peaked in winter.

#### **4.3 Fensham**

- Rat activity increased to over 10% twice since January 2003.
- Mouse activity levels regularly peaked over 20%, but generally remained low.

#### **4.4 Johnsonville**

- From November 2004 to January 2006, rat activity remained above 20%. However, this last financial year no rats have been tracked.
- Mouse tracking has fluctuated considerably.

#### **4.5 Witako**

- There have been two large peaks in rat activity above 20% but in general rat activity has remained low.
- Mouse activity has equalled rat activity apart from July 2004.

#### **4.6 Porirua**

- Since monitoring started, rats have been detected in three monitors but only once did the tracking index exceed 10%.
- Mice have fluctuated from 0% to 63% with activity peaking in July.

#### **4.7 Keith George**

- Rats averaged 7.5% with both rats and mice have shown marked seasonal fluctuations.

#### **4.8 Long Gully**

- Both rats and mice had the same tracking index pre control. After control rat activity dropped to zero and mouse activity increased. Rat activity remained low for three months but has since started to climb.
- Mouse activity increased when the rat activity decreased following control. It is now increasing again.

#### **4.9 Tauherenikau**

- Rat activity peaks at 20% or more annually but not always at the same time each year. Since October 2007, the rat activity has continued to climb and is now at the highest recorded level of 40%.
- Mouse activity has fluctuated between 0% and 100% and has been very low this year.

#### **4.10 Hayward's Scenic Reserve**

- In January 2008 the AHB removed bait stations that had been in place since January 2007. Rats on lines in the baited area have remained very low 10% (one tunnel tracked) or 0%. Tracking on lines that were not in the baited area continued to have high rat activity levels > 85%.

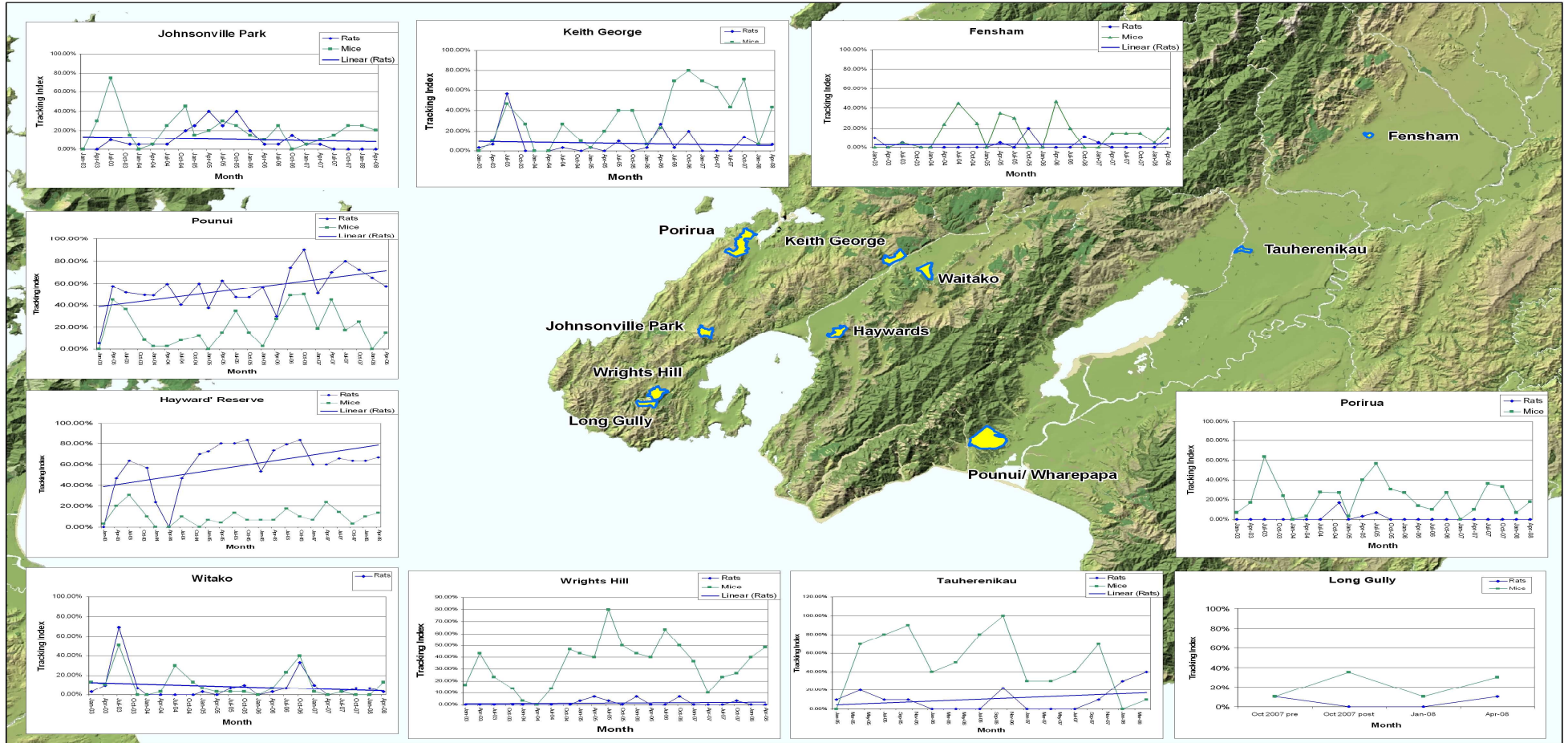
#### **5. Other pest species**

The monitor for the 2007/08 financial year detected hedgehogs in Witako, Wrights Hill, Johnsonville Park, Long Gully and Tauherenikau. As expected with animals that hibernate during the winter, most activity was recorded during the summer months.

A mustelid was tracked in Pounui in January 2008.



Diagram 1 shows the location for each site of rat monitoring and rodent tracking index trend lines



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Figure 1.  
**Greater Wellington Rat Monitoring Sites and Results**

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## **6. Discussion**

The current baiting regime effectively maintains rat activity levels to below 15% and levels average 5%. Fluctuations in rat activity are possibly due to seasonal variations in food supply, combined with the timing of bait station filling. Monitors done at the end of the lag phase of the baiting regime, prior to refilling, may detect a slight increase in activity, especially if the last fill was four months prior.

Johnsonville Park has the highest rat activity levels of the four broadleaf habitat sties. The other sties are generally 0% with rats tracked occasionally. Since July 2007 there have constantly been no rats detected in Johnsonville Park. From November 2004 to June 2005 the bait stations in Johnsonville Park did not get filled and this may have contributed to the large increase in rat activity at that time.

Keith George and Witako reserves which are both in Upper Hutt, are the only two sites with a predominantly beech habitat. Rat activity in both these reserves seems to fluctuate more than activity levels in broadleaf forests. The average activity level is slightly higher than for broadleaf forest. This may be a response to greater food availability as the beech trees provide abundant seasonal fruit supplies. Past years may account for the high level of activity in both reserves in the winters of 2003 and 2006.

Tauherenikau shows a seasonal fluctuation in rat numbers that varies in magnitude, and timing each year. This suggests that seasonal food availability in the predominantly podocarp forest, the size of the block, or other factors along with bait availability, is influencing rat population levels.

If there is a large amount of seasonally abundant food in any forest type, the rats will be less likely to seek out bait, or will consume a sub-lethal dose. This could reduce the control efficacy of the bait and will promote bait shyness. This effect is likely to be seasonal.

## **7. Future changes**

Department of Conservation protocol stipulates that the monitor will be done February, May, August and November each year. Our monitoring started in January 2003 and has run a month earlier than the protocol stipulates. Greater Wellington will be changing the monitor times from November 2008 to match DoC protocol and Greater Wellington's Parks and Forest monitor schedule.

From 1 July 2008, monitoring at Pounui will discontinue. Pounui currently receives some trapping and baiting around the lake. This is a non-intensive bating regime, and the baited areas are not monitored. The usefulness of the monitoring information is limited as this reserve cannot be classified as either controlled or non-controlled.

## 8. Supply of monitoring data - Terms and Conditions

The enclosed information is supplied, within the framework of our data quality system, from the best practice currently available. Greater Wellington has exercised all reasonable skill and care in controlling the contents of the information.

As Greater Wellington endeavour to continuously improve our service, we may amend the data on which this information is based, where necessary and without notice, at any time.

Under no circumstances will the Greater Wellington Regional Council or its employees or agents be liable in contract or otherwise to compensate you for any loss, injury or damage (including loss of profits or consequential loss) arising directly or indirectly from the supply by Greater Wellington or its agents of inadequate, inaccurate or incorrect monitoring information.

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