Mason Bay Rat Trapping

Annual Report

August – December 2009

Photo: Deane Carson

A co-operative project between the Southland branch of the New Zealand Deerstalkers Association and the Stewart Island Field Centre, Department of Conservation

With funding support from the Community Trust of Southland

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Aim of the Project

To increase the productivity of native birds at Mason Bay by reducing rat numbers over the bird breeding season

Introduction

Rats are known predators of native species including birds and invertebrates. They can reduce the numbers of many bird species by preying on eggs, chicks and adults. They have also been responsible for the extinction of a number of bird species in New Zealand. Rats also inhibit forest health by consuming seeds and small plants. All three rat species (Norway rat, Ship rat and Kiore) are widespread over Stewart Island, with each species occupying different habitat niches.

Possum control is carried out over 28,000 ha of Stewart Island; however this has little impact on rat numbers. The possum control is carried out using poison bait bags which are removed at the end of the operation, meaning there is little poison available for rats. Mason Bay and its surrounds are under sustained possum control.

An initial approach by the NZDA to DOC was followed up by the setting of 241 traps over a 300ha area of coastal forest at Mason Bay in August 2006. Materials, organisation and flights were provided by DOC and the NZDA provided the manpower to clear tracks and set out trap lines. Over the 2006/2007 summer the traps were checked and re-baited on a number of occasions.

Over the 2007 season there were regular checks of the trap lines and new lines installed. Flights into Mason Bay were provided by DOC and the NZDA provided the trappers. Each trip had four hunters. There were eight trips over the season with two in October, two in November, two in December and two in January. Traps were checked and shut down in March.

Regular trap checks occurred over the 2008 season. DOC and NZDA started sharing the cost of flights to and from Mason Bay (generously supported by the Community Trust of Southland) and six trips were run.

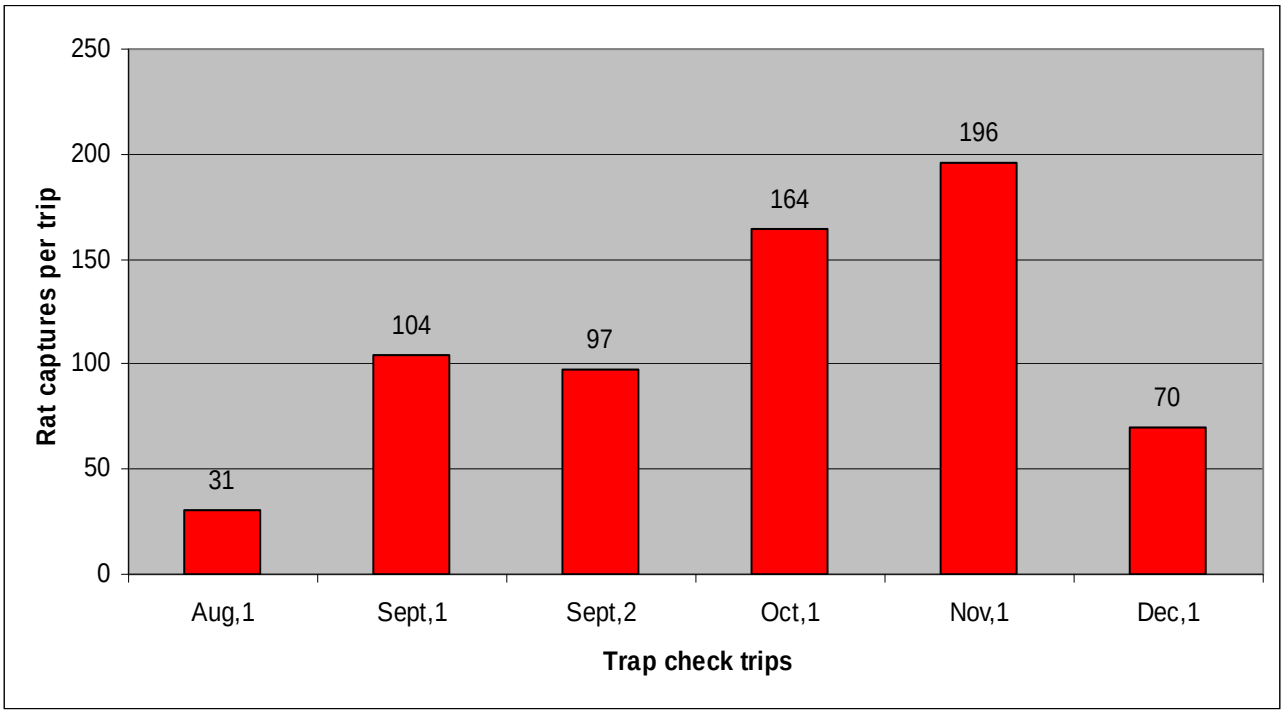
Over the 2009 season six trips were run to check traps, with the timing of the trips largely the same as last year. An initial trip was run in August that opened the traps, set up new trap lines, ran tracking tunnels and cleared vegetation along the trap lines. Two DOC staff from Stewart Island and seven hunters spent five days accomplishing these tasks. One new line was installed this year between the historic woolshed and the hunters hut. This has been named the ‘Kiwi’ line and includes 15 traps.

The dates for this past season’s trips were:

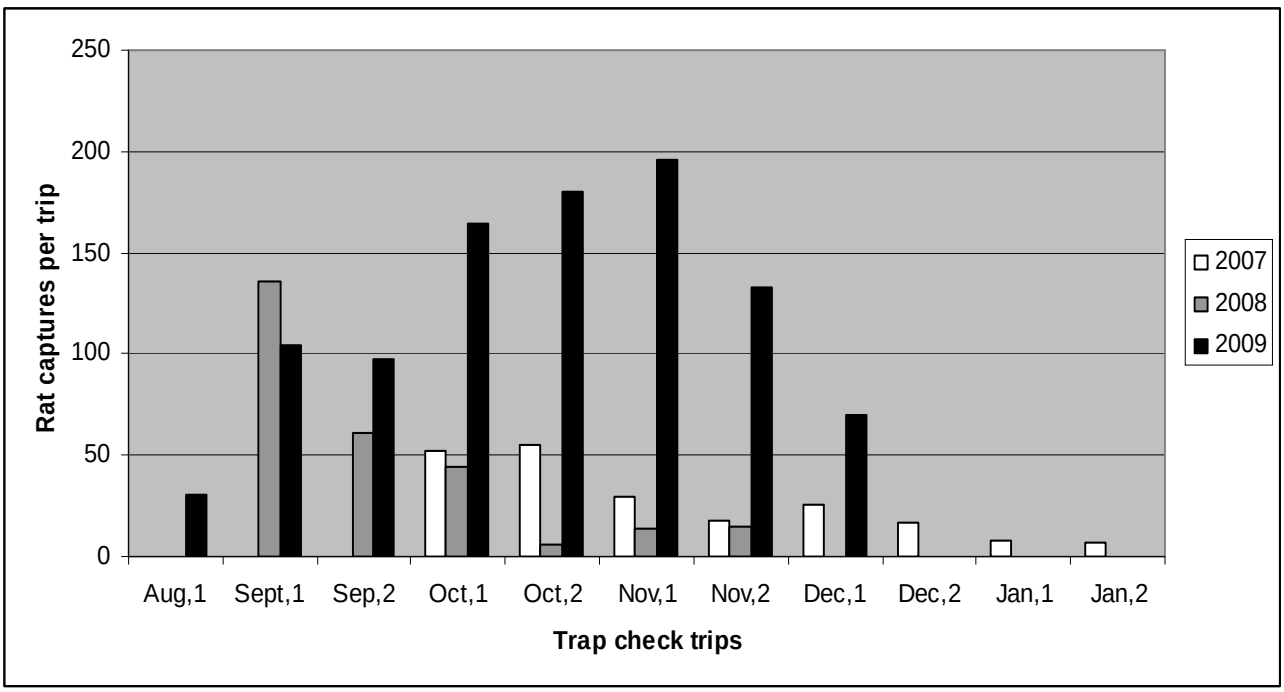
7 – 15 August
3 – 9 September/ 24-30 September
15 - 21 October
12 – 18 November
16 – 21 December

Results:

Trapping



Graph 1: Rat captures per trip 2009.

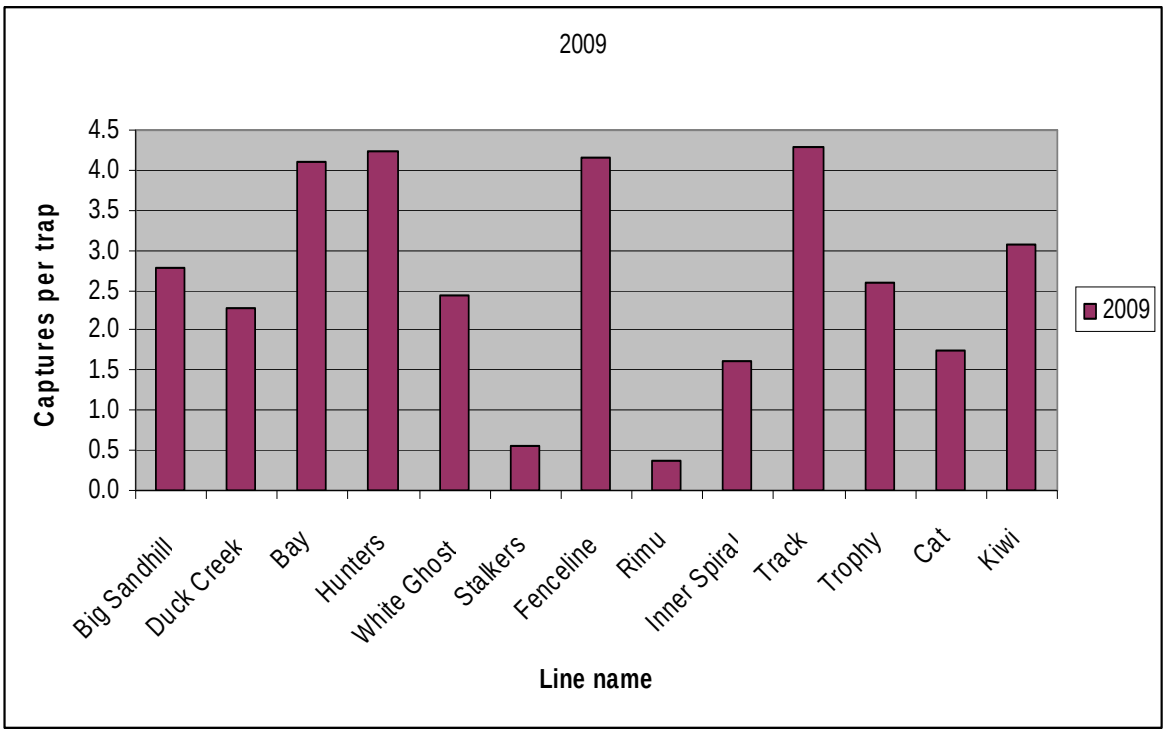


Graph 2: Rat captures per trip in 2007, 2008 and 2009.

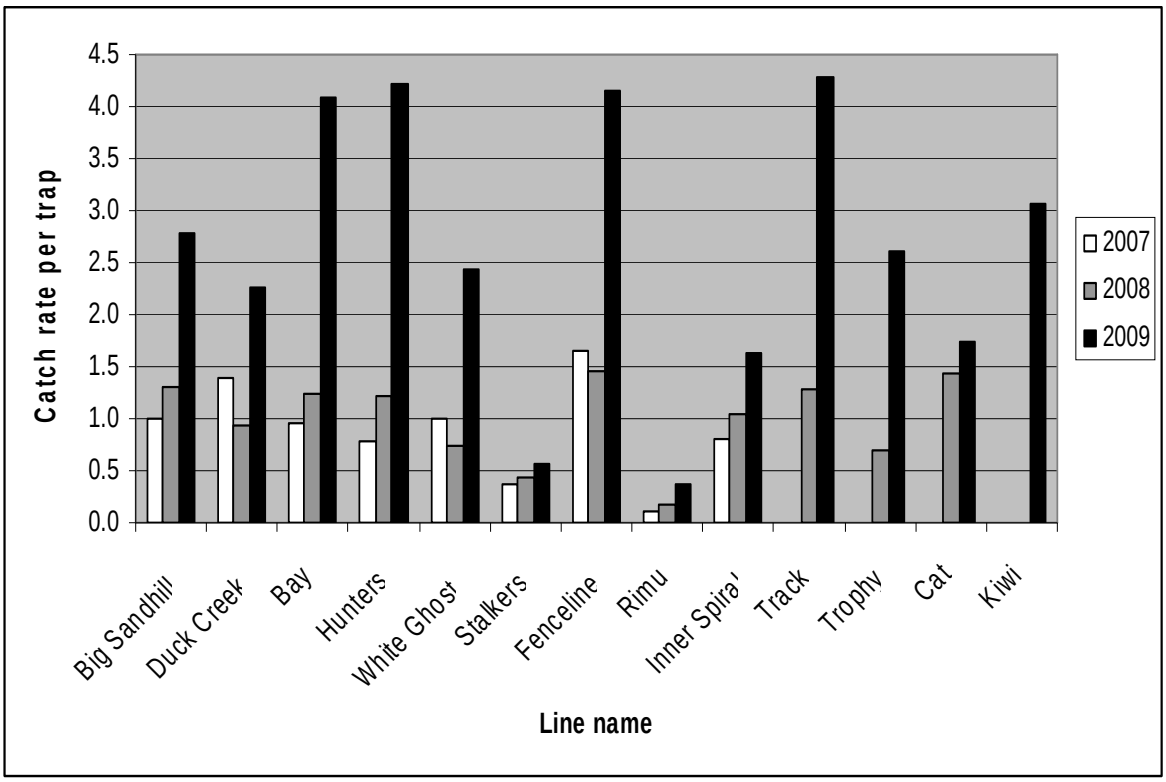
Graph two compares the captures from each trip in 2007, 2008 and 2009

Results

Trapping



Graph 3: Rat captures per trap, 2008/2009



Graph 4: Rat catch per trap (captures corrected for the number of traps per line)

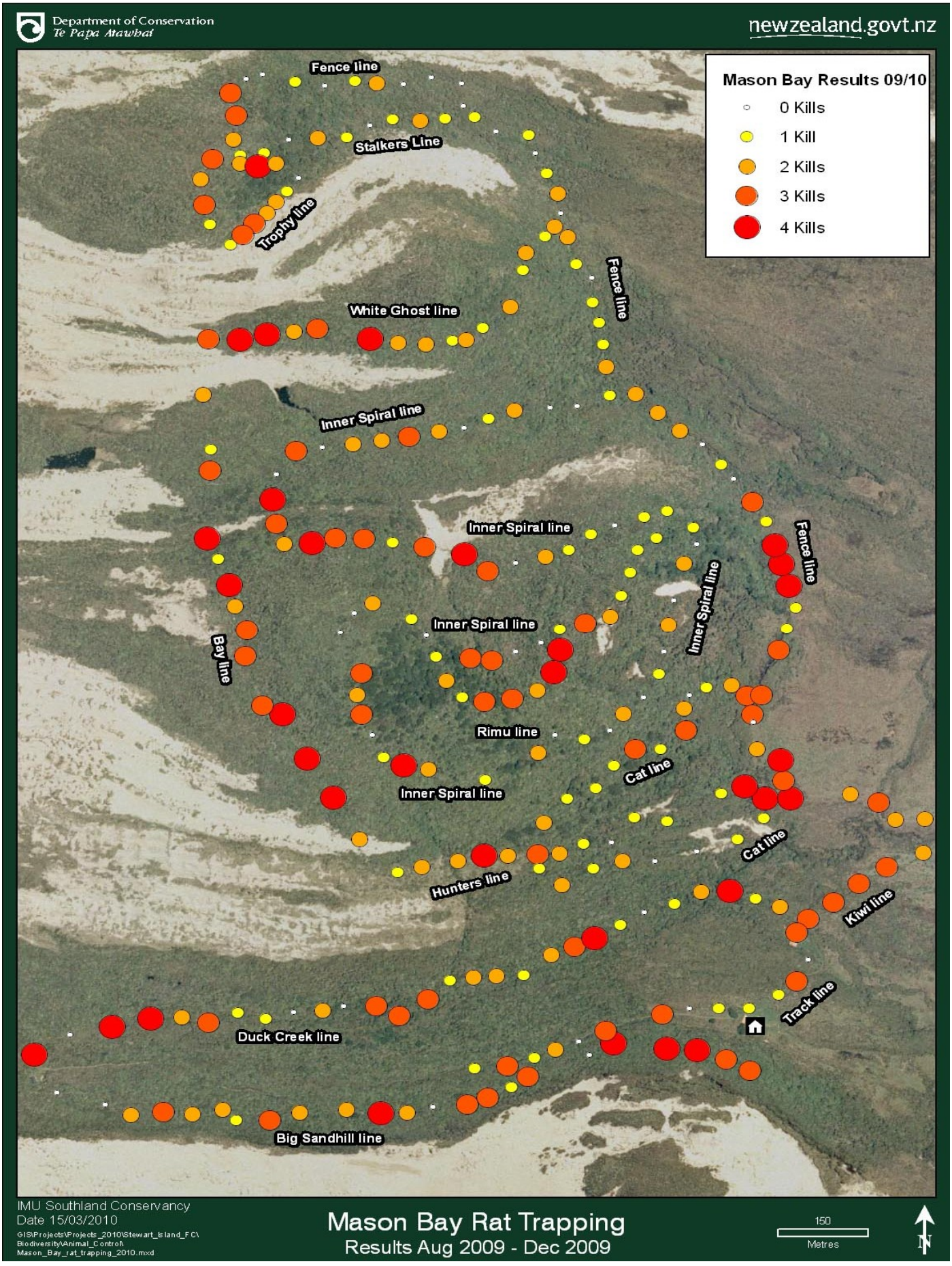


Figure2. Map of number of rats caught per trap, over the entire season.

Tracking Tunnels

Tracking tunnels have been established as a method of assessing rat numbers before the trapping season started, and after the season had finished. The tracking tunnel method of monitoring changes in rat numbers is the most popular rat monitoring method in New Zealand.

The tracking tunnels at Mason Bay were set up in 2007 and run according to a national protocol. The design consists of six tracking tunnel lines; three lines are set out in each a control and treatment block. Each line consists of 10 tunnels placed along a predetermined bearing 50 metres apart. Trakka cards are baited with a knob of peanut butter and set out for one night in the tunnels, both pre and post control. The results are recorded as a percentage of tunnels that have rat footprints in them.

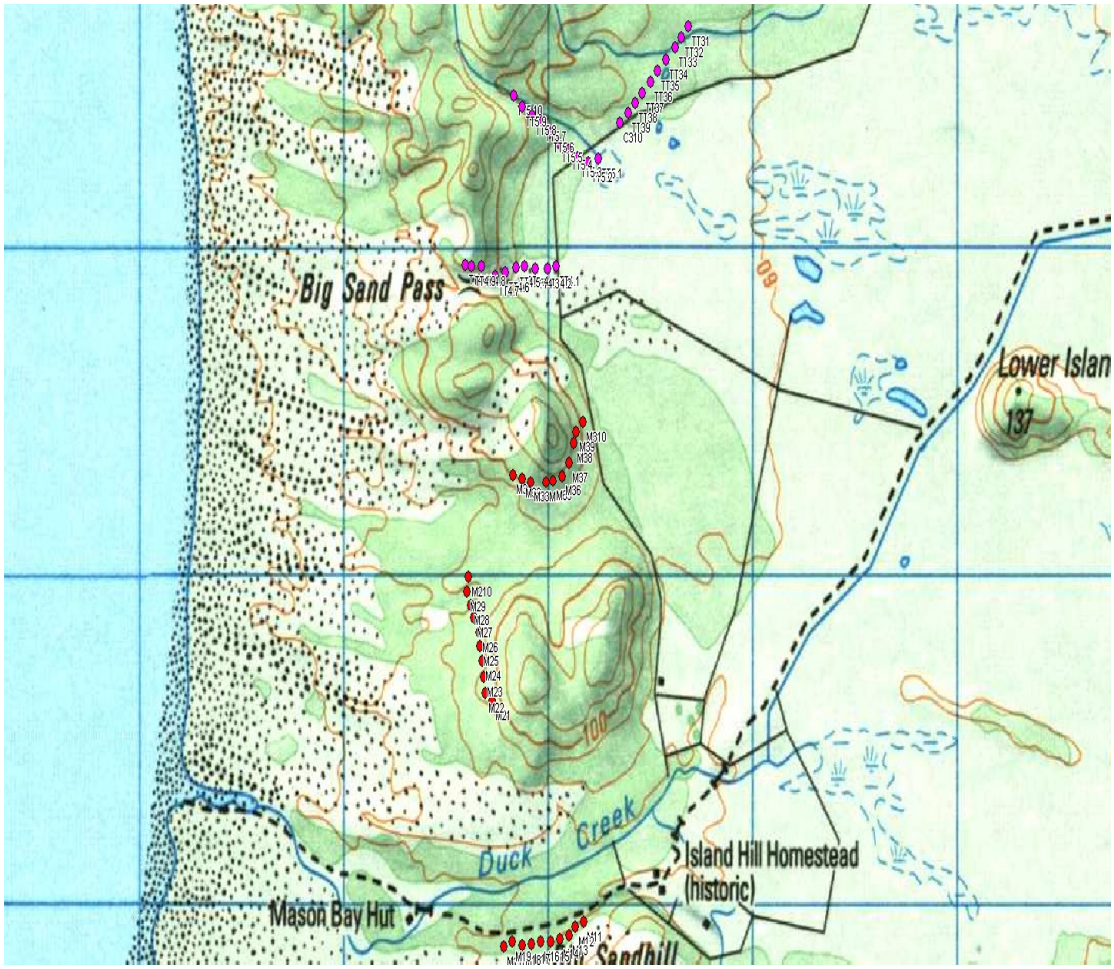


Figure 3: Location of tracking tunnels at Mason Bay.

The tunnels were run over the night of the 8th August 2009 (pre control) and again over the night of the 9th February 2010 (post control). While this was a month after control had ceased, it was the earliest we were able to go to Mason Bay.

	Trapped area	Un-trapped area
Pre Control	**30%**	**25%**
Post control	**16.7%**	**0%**

Tracking Tunnel Results

Trapped area-Pre control

Line 1		**Line 2**		**Line 3**	
Tunnel	**Species**	**Tunnel**	**Species**	**Tunnel**	**Species**
1.1	rat	2.1	/	3.1	/
1.2	/	2.2	rat	3.2	rat
1.3	/	2.3	rat	3.3	/
1.4	/	2.4	rat	3.4	/
1.5	/	2.5	rat	3.5	rat
1.6	/	2.6	/	3.6	/
1.7	/	2.7	/	3.7	/
1.8	/	2.8	/	3.8	/
1.9	rat	2.9	/	3.9	/
1.ten	/	2.ten	/	3.ten	rat

Trapped area-Post control

Line 1		**Line 2**		**Line 3**	
Tunnel	**Species**	**Tunnel**	**Species**	**Tunnel**	**Species**
1.1	/	2.1	/	3.1	/
1.2	/	2.2	rat	3.2	/
1.3	rat	2.3	/	3.3	/
1.4	/	2.4	/	3.4	/
1.5	/	2.5	/	3.5	rat
1.6	/	2.6	/	3.6	rat
1.7	/	2.7	/	3.7	/
1.8	/	2.8	rat	3.8	/
1.9	/	2.9	/	3.9	/
1.ten	/	2.ten	/	3.ten	/

Tracking Tunnel Results

Un-trapped area-Pre control

Line 4	
Tunnel	**Species**
4.1	/
4.2	/
4.3	/
4.4	/
4.5	/
4.6	/
4.7	/
4.8	/
4.9	/
4.ten	/

Line 5	
Tunnel	**Species**
5.1	/
5.2	rat
5.3	rat
5.4	rat
5.5	/
5.6	/
5.7	/
5.8	/
5.9	/
5.ten	/

Line 6	
Tunnel	**Species**
6.1	rat
6.2	rat
6.3	/
6.4	/
6.5	/
6.6	/
6.7	/
6.8	/
6.9	/
6.ten	/

Un-trapped area-Post control

Line 4	
Tunnel	**Species**
4.1	/
4.2	/
4.3	/
4.4	/
4.5	/
4.6	/
4.7	/
4.8	/
4.9	/
4.ten	/

Line 5	
Tunnel	**Species**
5.1	/
5.2	/
5.3	/
5.4	/
5.5	/
5.6	/
5.7	/
5.8	/
5.9	/
5.ten	/

Line 6	
Tunnel	**Species**
6.1	/
6.2	/
6.3	/
6.4	/
6.5	/
6.6	/
6.7	/
6.8	/
6.9	/
6.ten	/

Discussion

A vastly greater number of rats have been caught during the Rat trapping programme this year than in comparison with past years. Although the programme has been expanded, and number of traps within it increased, it has not been on a scale to account for such an increase in rat captures.

The most likely explanation for this large increase in rat numbers is;

1. A seed mast event of Podocarp species such as Rimu, Miro and Totara that occurred over the previous summer period. Increased food availability led to more rats breeding.

2. Favourable environmental conditions experienced throughout greater Southland during spring, these mild conditions were well suited for the breeding, and survival of juvenile rats.

This year was also the first year that tracking tunnels have been run in both the area where the traps are being run, as well as an adjacent block where no control is being undertaken. The reason for this is so that a direct comparison can be made between rat populations in the area where they are being controlled, and a similar area that receives no control.

Pre-control tracking indices in both the treatment and non-treatment areas show that rat numbers were at 30% and 16.7% respectively. However after control had ceased for the season, and the tunnels were run again, numbers of rat were at 25% and 0% respectively.

Possible reasons for this could be;

1. The length of time between the end of control and when the tunnels were run (2 months). This was due to timing of other activities in the area that staff could undertake while running the tunnels.
2. The habitat where control is being undertaken may also lend itself to higher numbers of rats due to factors such as greater food supplies, den sites, or lower numbers of predators.
3. The design of the tracking tunnel monitoring has been modified from the original protocol to fit this operation due to the small area that the traps are within, and limited resources.

Planned dates for trips during the up-coming season are:

17 – 21 September
6 – 12 October
25 - 31 October
15 – 21 November
4 – 10 December

Acknowledgements
Thank you to the Community Trust of Southland for their generous support of this project. Also thanks to the NZDA members who volunteered their time to come and remove rat remains from the traps.