

# Mason Bay Project Report 2012 -13

A collaborative Project between the Southland branch of the NZ  
Deerstalkers Association and DOC Stewart Island Field Centre

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## 1. Background

The Mason Bay trapping network is a co-operative project between the Southland Branch of the NZDA& DOC Stewart Island Field Centre.

For the past six seasons NZDA volunteers have run a rat control network during the bird breeding season, with the aim of **increasing the productivity of native birds by reducing rat numbers at this crucial time of the year**. The trap network was first run in 2006 and was expanded in 2008 with a further 52 traps added. In 2009 the Kiwi line was added, bringing the number of traps up to 309. The traps require ongoing maintenance, which is carried out during the season by the NZDA trap check teams.

This season the scope of the project has expanded to trial possum control in order to further improve the forest habitat. Bird monitoring has also been trialled for the first time this year, with the aim of obtaining baseline data about forest bird populations within the trapped area.

## 2. Possum Trap Trial

### Background

In June 2012 DOC Stewart Island acquired a quantity of A12 gas powered self re-setting possum traps, manufactured by Goodnature, a Wellington Company. These traps have been available for purchase for at least a year but their effectiveness in the field is still relatively unknown – DOC are conducting some large-scale trials elsewhere in the country but results are not yet available. In consultation with NZDA it was decided that the traps should be deployed around the rat trapping grid at Mason Bay in order to;

- a. Expand the scope of the NZDA project to include possum control
- b. Trial these new traps in some challenging field conditions

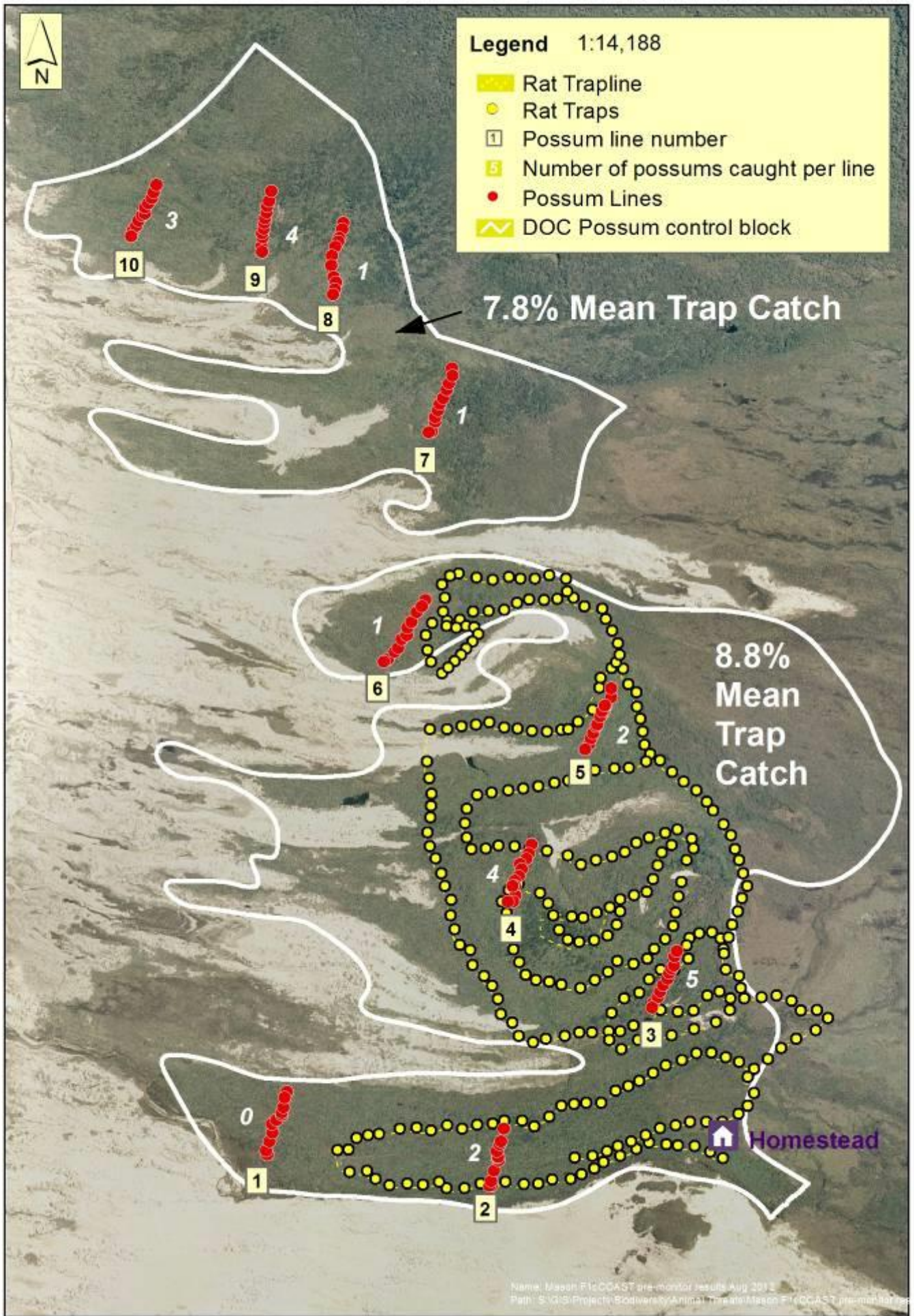
Up until now the Homestead block has been controlled on a 4-yearly rotation by DOC contractors using cyanide paste. If a trap network could be set up to effectively and continually suppress possums to low levels then the benefits to the forest habitat should be even greater than the current system, whereby possum numbers recover over four years prior to being controlled.

### Goodnature self re-setting possum traps

The traps are baited with an “auto lure” bottle with a “bite tab” inserted. Orange “possum paste” lure is daubed onto the tree (see photo) and onto the bite tab. When a possum bites the tab and pulls down, a bolt is shot through the top of its skull, killing it instantly. The trap re-sets immediately and the animal drops to the ground. Each trap can fire 12 times before the gas bottle needs to be changed.

The Goodnature information sheet for the re-setting traps is included as an appendix to this report.





Map 1 – Baseline possum population monitoring, Mason Bay

### Baseline possum population monitoring

In August 2012, Prior to deploying the self re-setting traps, monitoring of the possum population was undertaken to establish a baseline population index both within and outside the trapped area, to allow for comparison of possum abundance at a later stage. Monitoring was undertaken according to the NPCA (National Possum Control Agencies) protocol, the national standard for possum monitoring. Ten lines of ten leg-hold traps were run from randomly selected start points, 6 within the control area and 4 outside in an adjacent block of the same forest type. The traps were set and checked for 3 consecutive nights – results are displayed in Map 1 above. The results are expressed as mean trap-catch, i.e. the percentage of trap-nights on which possums were caught over the 3 days – this figure is then averaged over all the lines. For example a line of 10 traps gives us 30 trap nights when set over 3 nights. If 3 possums are caught then the percentage trap catch for that line is 10%.

As Map 1 shows, the mean trap catch result for inside and outside the planned re-setting trap area were broadly similar, not surprising given the similarity of the habitat and the fact that both of these blocks were last controlled during the same operation in 2010. The weather was poor during the possum monitor, with rain or showers on each of the three nights – possums are less inclined to move around during wet weather so it is likely that the mean trap catch results of around 8% are an underestimate of the possum populations for these two blocks. On Stewart Island a block is deemed to require possum control when the population is above a threshold of 10% trap-catch.

### Self re-setting possum trap network

In mid-August 2012, immediately after the pre-monitor was completed, the network of self re-setting traps was deployed. Initially 72 traps were placed – after a fortnight these were checked, re-lured, some repairs were made and an extra 13 traps were set out, making a total of 85 in the network. Traps were placed at a height of approximately 700mm, (to ensure good clearance from kiwi), at between 100 to 200 metre spacing around the rat trapping grid – adjustments to spacing were made for patches of poor habitat (e.g. low scrub along the Bay line) or if a particularly good spot was found e.g. a well-scratched tree or a tree next to a possum run. Map 2 shows the re-setting trap network.

In early October 2012 DOC staff returned to re-lure the traps and conduct a “body count”. At this stage kills had been much lower than expected and a decision was made to determine whether this was due to animals not being sufficiently attracted by the possum paste lure supplied. Every second traps was therefore baited with peanut butter on the bite-block. Following this second check responsibility for checking and re-luring the possum traps was taken on by the NZDA teams. The teams continued to bait each alternate trap with peanut butter. Summarised trapping results are shown in Table 1.

### Self re-setting trap issues

Three trail cameras were placed at 6 different re-setting traps during the season to record videos of animal interactions with the traps. Tables 2 and 3 summarise the results of this monitoring – in Table 2 one “encounter” is classed as a visit by one possum for a consecutive period of time (some animals hung around the trap for up to 10 minutes). If the animal was joined by another then this was classed as two encounters. If an animal went away but possibly the same animal returned later in the night this was classed as a separate encounter.

Time period	Kills at traps baited with Auto lure	Kills at traps baited with Peanut butter
Late August to early October (6 weeks)	18	<i>NA – peanut butter trial started early Oct</i>
Early October to Early December (8 weeks)	2	21

Table 1 – Summary of resetting trap kills, August to December 2012

Trap No.	No. nights recorded	Bait	No. of possums encountered	No. possums killed	No. Cats seen (individuals)	No. Cat encounters
F12	17	Auto lure	1	0	0	0
R1	17	Auto lure	8	0	2	5
DC6	17	Auto lure	0	0	0	0
PC5	45	Peanut butter	12	3	2	13
F18	32	Peanut butter	12	0	1	1
BS8	44	Peanut butter	7	0	1	2

Table 2 – Summary of video monitoring of a sample of self re-setting traps

Trap No.	Bait	Issues				
		No Interaction	Possum bites lid off trap	Possum eats lure off tree (but doesn't put head in trap)	Possum chews trap	Possum puts head full in trap but no kill
PF12	Auto lure	1				
PR1	Auto lure	7		1		
PDC6	Auto lure					
PC5	Peanut butter	3		6	1	
PF18	Peanut butter	3		2	7	7
PBS8	Peanut butter	4	1	1	1	

Table 3 – Summary of issues recorded from video monitoring of a sample of self re-setting traps

### Discussion

Kills from the Automatic traps were much lower than expected throughout the period. The relative success of putting peanut butter on the bite block (see table 1), compared to the standard auto lure & possum paste combination, suggests that the standard bait is not as attractive to possums as desired. This is supported by video monitoring, albeit for a small sample of traps. More possum interactions were recorded on traps baited with peanut butter (mean of 0.26 possums per night compared to 0.17 possums per night for standard baiting), and possums interacted more with the traps baited with peanut butter.

Table 3 summarises issues identified from the video monitoring. In 13 encounters possums did not approach the trap at all. In 10 encounters possums chewed the lure off the tree but were either reluctant or not attracted enough to then put their heads in the trap. Possums were observed chewing the trap and/or the gas bottle, but again did not put their heads in the trap, apart from at trap PF18. Here possibly the same individual returned repeatedly over the period, frequently chewing the trap and putting it's head fully in the trap. Quite why this individual was not killed during the monitoring is uncertain; perhaps the animal was licking the bite block

instead of biting and pulling down, or there was a fault with this trap. During set-up 2 traps were replaced due to faults where the gas joins the regulator, and 4 bottles were replaced during the period Aug to Dec 2012. None of these traps had killed any more than 1 possum, so it appears that gas leaks have been a problem during the period, affecting at least 7% of traps.

### Feral Cats

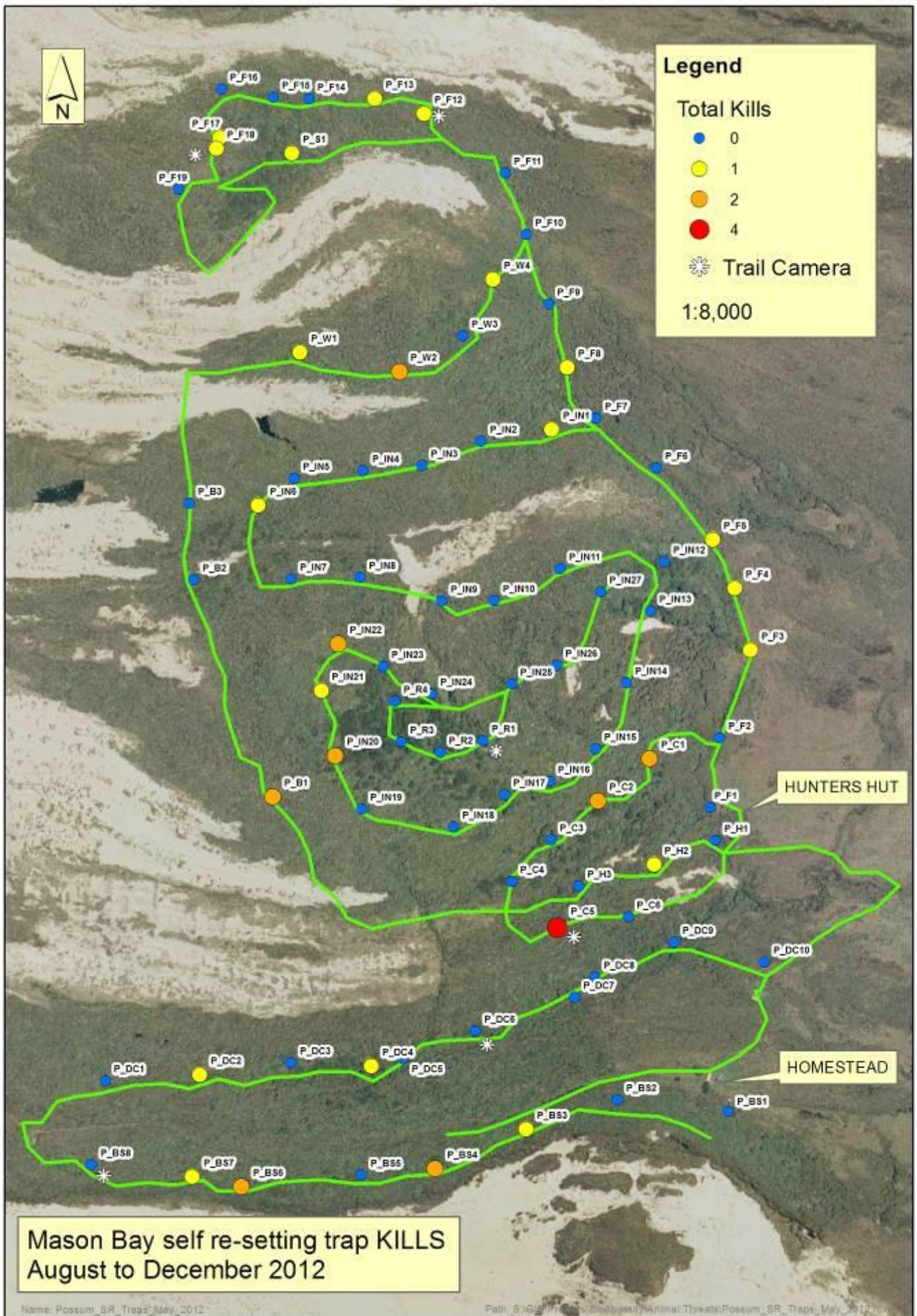
One or two cats were filmed walking past most traps. At trap PC5, two cats were filmed feeding regularly on possum carcasses underneath the trap. After each of three kills at this trap the same cats appeared within two to four days, and spent up to two hours around the trap, feeding in the daytime. Given the obvious attraction of fresh possum carcasses to cats it could be worth placing cat control devices at traps that catch possums regularly.

### The next stage

The low attractiveness of these traps to possums has also been identified by other trials around the country. Consequently Goodnature have developed an improved lure and auto lure/bite block system. Goodnature have sent down replacement auto lures and bite blocks for the whole network at Mason Bay.

In April a team will visit all traps to check and replace gas bottles and replace the auto lure/bite block with the new model. Six traps will be chosen at random for another round of trail camera monitoring.

In June the trap catch monitoring will be repeated. The result will tell us whether or not the re-setting trap network has effectively reduced possum numbers within the trapped area – if the traps have been effective we should see a lower mean trap catch result inside the trapped area compared to the un-trapped block.



Map 2 – Self resetting trap possum kills, Mason Bay, August to December 2012



## Rat Trapping Results from the 2012-13 season

Chart 1 below summarises captures for each trip this season. Chart 2 presents the same data as compared with captures since 2007.

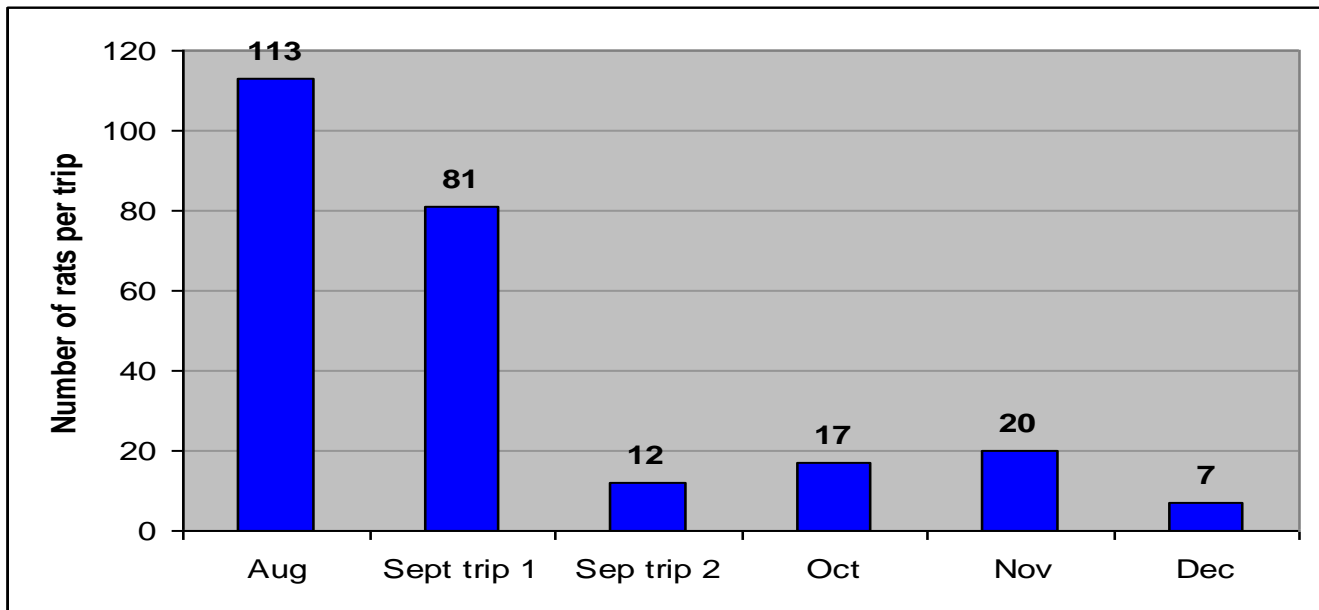


Chart 1; Total rat captures per trip, 2012.

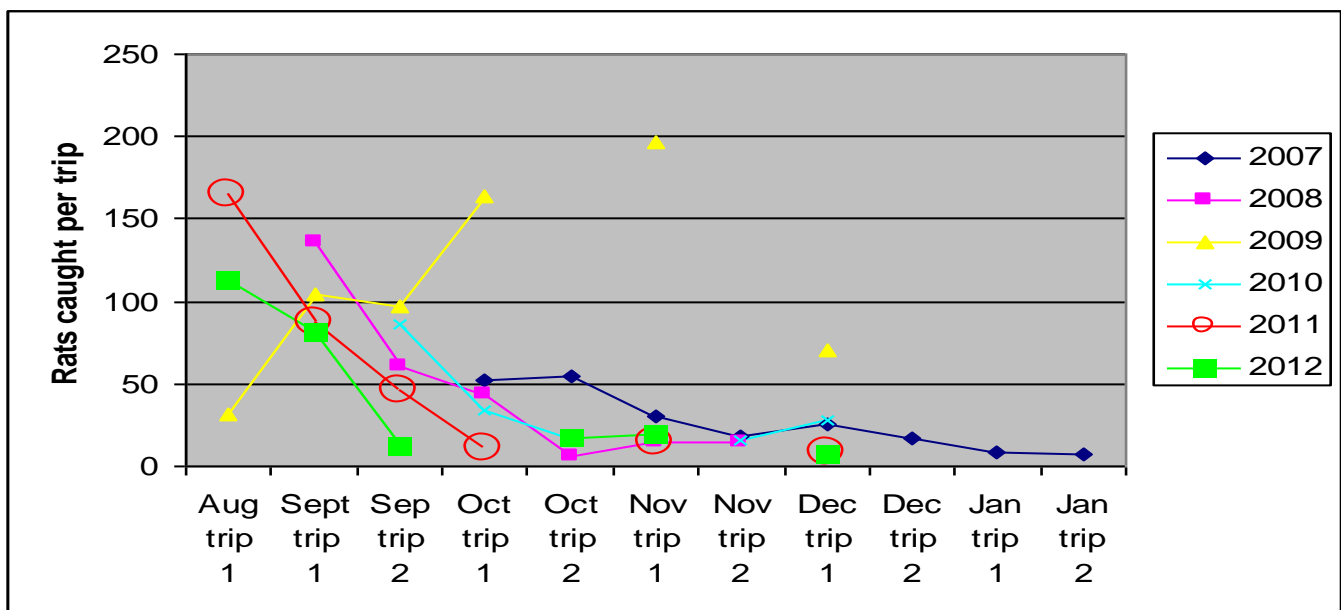


Chart 2; rat captures per trip, 2007-2012

Chart 3 compares this year's total catch with total catches over the last 6 years. A total of 250 rats were caught this season, a bit less than the average for the project to date, probably reflecting a lower background rat population this season.

This season captures were highest in August, which is not unexpected due to the traps having been open for the 9 months since the last check in December 2011. As in previous years, (with the exception of 2009), catches quickly declined to low levels (see Charts 1 & 2 above), indicating that in an "average rat season" the project is achieving the goal of reducing rat numbers in the trapped area during the bird breeding season. The high captures during the 2009 season reflected a high background rat population caused by a widespread podocarp (e.g. Rimu and Miro) seeding event during the summer of 2008/09. During these conditions it is very difficult to bring rat numbers down using traps alone.

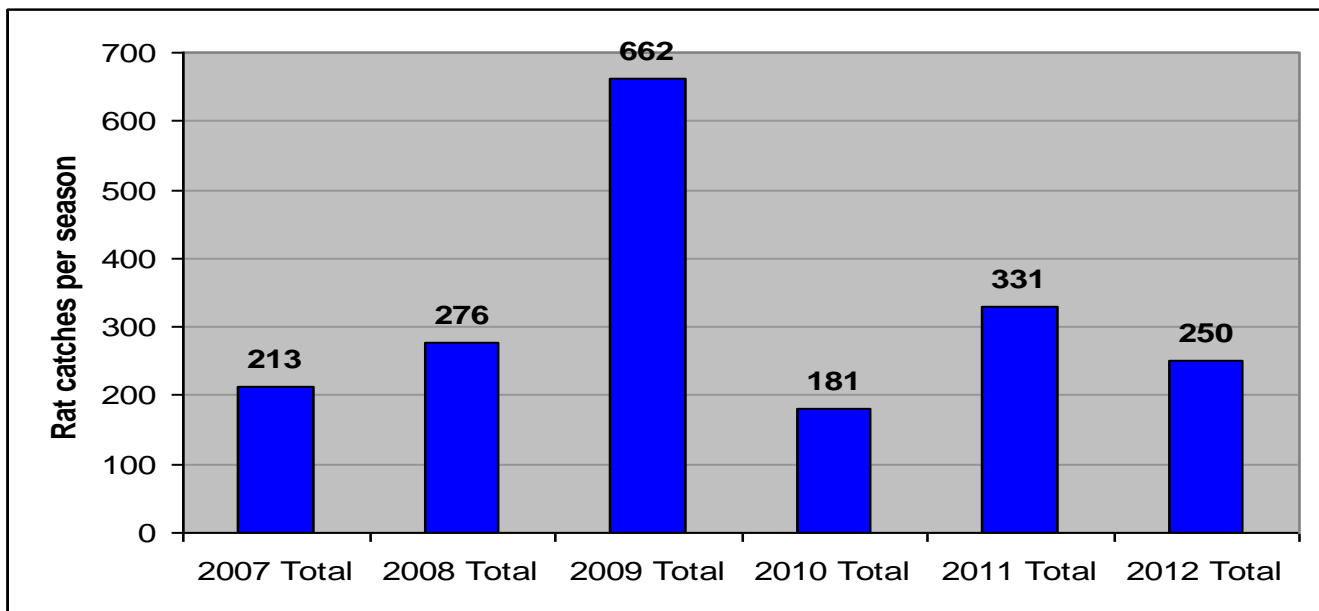


Chart 3; Total rat catches per year, 2007 - 2012

Result Monitoring – Tracking Tunnels.

Tracking Tunnels are used to give an index of rat abundance before and after the traps are run, both within and outside the trapped area. Tracking tunnels are a standard and trusted method of monitoring rodent abundance throughout New Zealand; the tunnels at Mason Bay are run according to a national protocol to ensure that our results are as reliable as possible.

Six lines of tunnels are spread across the Homestead block; 3 lines are within the trapped area and 3 lines are situated outside to allow comparison of rat abundance inside the trapped area with “background” rat abundance in the un-trapped area. Each line consists of 10 tunnels at 50 metre spacing. Pre-inked cards are baited with a knob of peanut butter and set for 1 night. The results are expressed as a percentage of cards that record rat footprints.

	Trapped Area	Un-trapped Area
Pre-control August 2012	30%	34%
Post-control January 2013	0%	4%

Table 1; Tracking Tunnel results, 2012-13 season.

Unfortunately the weather was poor during the January tracking tunnel check, with steady rain overnight and poor conditions preventing a re-run. As for possums, rat activity is reduced during wet weather, meaning that the tracking tunnel results may be inaccurate. Relying solely on the trapping data it is very likely that the rat population was significantly reduced within the trapped area.

Bird Monitoring

Bird monitoring has been undertaken by the trap teams for the first time this season, in order to create a baseline dataset to be compared against future seasons. Four bird species were chosen as “indicator species”, i.e. birds likely to be affected by rat predation and therefore likely to respond positively with rat control. The species chosen were bellbird, tomtit, robin and kakariki (parakeet). An updated trapping sheet was designed to allow trappers to capture bird information alongside the rat and possum catch data. An extra column was included other key species (NZ

Pigeon, Tui and Kiwi) but the primary focus of the monitoring was to be the four indicator species.

The method used has been applied successfully by other groups elsewhere in New Zealand. Each trap is treated as the start of a 50 metre bird transect. If any of the four indicator species are seen or heard at the trap or en-route to the next trap then the number of individuals encountered should be recorded on the data sheet. Over time we will be able to get an idea of how bird numbers are changing in response to predator control by looking at change in frequency of occurrence – e.g. robins might initially be found on only a small number of the 50 metre transects but over time they may be found on a lot more.

The surveys can only be undertaken in reasonable weather – in heavy rain, strong wind or cold temperatures trappers should not bother to record birds as activity will be much lower and this will affect our results.

This season 21 surveys were completed and the data has now been entered into a spreadsheet to be compared against results from the coming seasons.

### Conclusions and recommendations

Thanks to all the teams for an awesome effort this season. I will be in touch with the Southland NZDA to provide an update on the possum post-monitoring result. Hopefully the new auto-lure set-up will have a positive effect on possum kills, otherwise it might be worth looking into changing the trap type for next season.

## Appendix 1 – Goodnature Automatic possum trap instructions.

# THE ONLY THING YOU NEED TO RESET ARE YOUR IDEAS ABOUT POSSUM CONTROL

POSSUM  
AUTOMATIC  
HUMANE TRAP

A12

Thanks for taking the time to read the instructions. Be responsible with this automatic humane trap and use it as recommended. Always treat this trap as live and install the CO<sub>2</sub> canister only when the trap is set correctly and ready to use. Never move the trap while it's set. Set at a safe site and be considerate of others. Do not put your hands inside the entrance of the trap or intentionally place objects in front of the striker. Do not fire this trap in quick succession – this can result in extremely low temperatures in the regulator and cause damage to seals.

Goodnature automatic humane traps have achieved the highest standard for humaneness, killing possums instantly, resetting straight away.

### BAIT PREPARATION 3.

Remove the screw cap and install the orange bite block into the lure bottle and turn until it clicks into place – about 90°. The automatic non-toxic lure will flow straight away, add a smudge of possum paste to the diamonds in the bite block to direct the possum to the bite block.

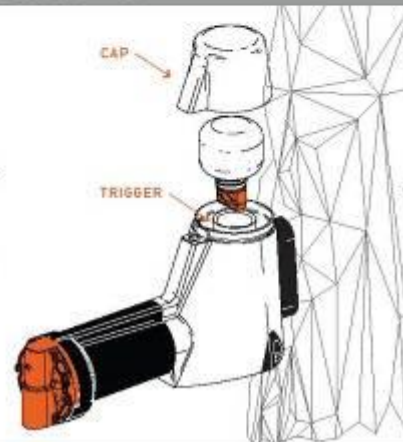


### INSTALLING THE BAIT 4.

Place the automatic lure into the trigger and click the cap in place.

The automatic lure delivers enough scent and flavor to encourage possums to bite the lure, this fires the striker and kills the possum instantly.

Smear some more goodnature possum paste on the tree below the trap.

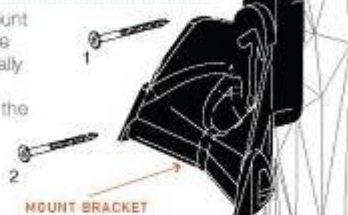


### SITE SET UP 1.

Find a straight tree with a trunk diameter at least 25cm (bread and butter plate diameter). The trap is designed to be set at least 70cm above the base of the tree. This ensures the possum gets all four paws on the tree and that other animals are less likely to be caught.

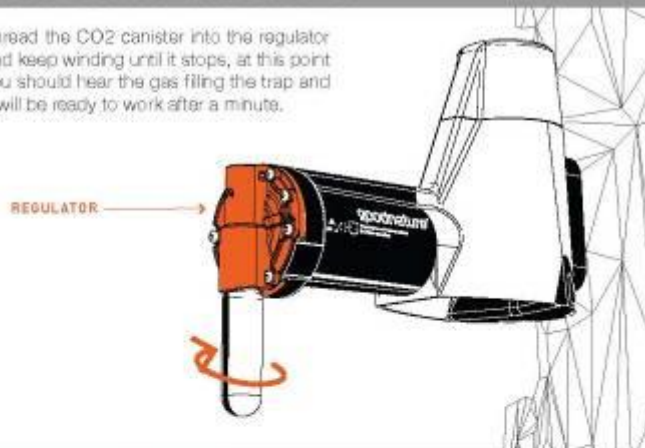
NEVER set this trap within reach of children - you can set the trap high and still catch the possum!

Remove the CO<sub>2</sub> canister from the mount bracket to reveal the screws. Install the top screw (1) to hang the mount vertically then tighten, follow up with the other screw (2) to lock the mount bracket to the tree.

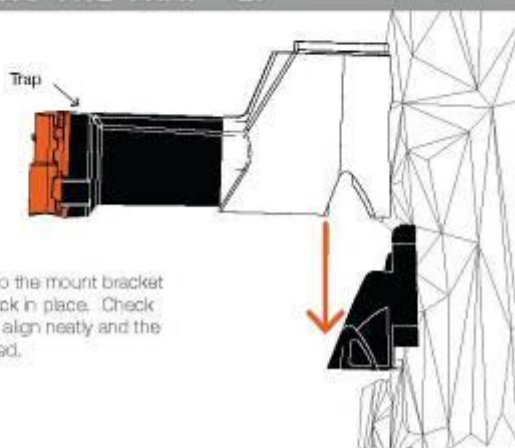


### INSTALLING THE CO<sub>2</sub> 5.

Thread the CO<sub>2</sub> canister into the regulator and keep winding until it stops, at this point you should hear the gas filling the trap and it will be ready to work after a minute.



### INSTALLING THE TRAP 2.



Slide the trap on to the mount bracket until you hear it click in place. Check that the two parts align neatly and the trap is firmly located.

### MAINTENANCE 6.

When replacing the CO<sub>2</sub> canister, unwind until the remaining gas has flowed out. There will be one remaining shot in the trap so if replacing the bait at this time, take care not to push the automatic lure bottle as this will fire the trap.

To move the automatic humane trap, unwind and relieve the gas, then fire the trap to relieve the last shot. Removing the trap from the tree is as easy as pushing down on the regulator and up on the white shroud that the possum puts its head in. Remember to always treat this trap as live.

Enjoy.