

Mason Bay Rat Project Report 2016 & 2017

New Zealand Deerstalkers Association – Southland Branch in
collaboration with the Department of Conservation.



Compiled by Daniel Lee and Kev Carter – DOC Rakiura



Department of
Conservation
Te Papa Atawhai

Scope

The New Zealand Deerstalkers Association – Southland Branch and the Department of Conservation – Rakiura are in partnership to deliver targeted pest control at Mason Bay. This collaboration is formalised under a 10 year Management Agreement (2013 to 2023) which captures the spirit of the partnership and roles and responsibilities of each party. The Department has undertaken to analyse the field data returned from NZDA trapping teams and produce a report which summarises the season and provides interpretation of the results.

This report covers the two year period of trapping including the 2016 and 2017 trapping seasons.

Background

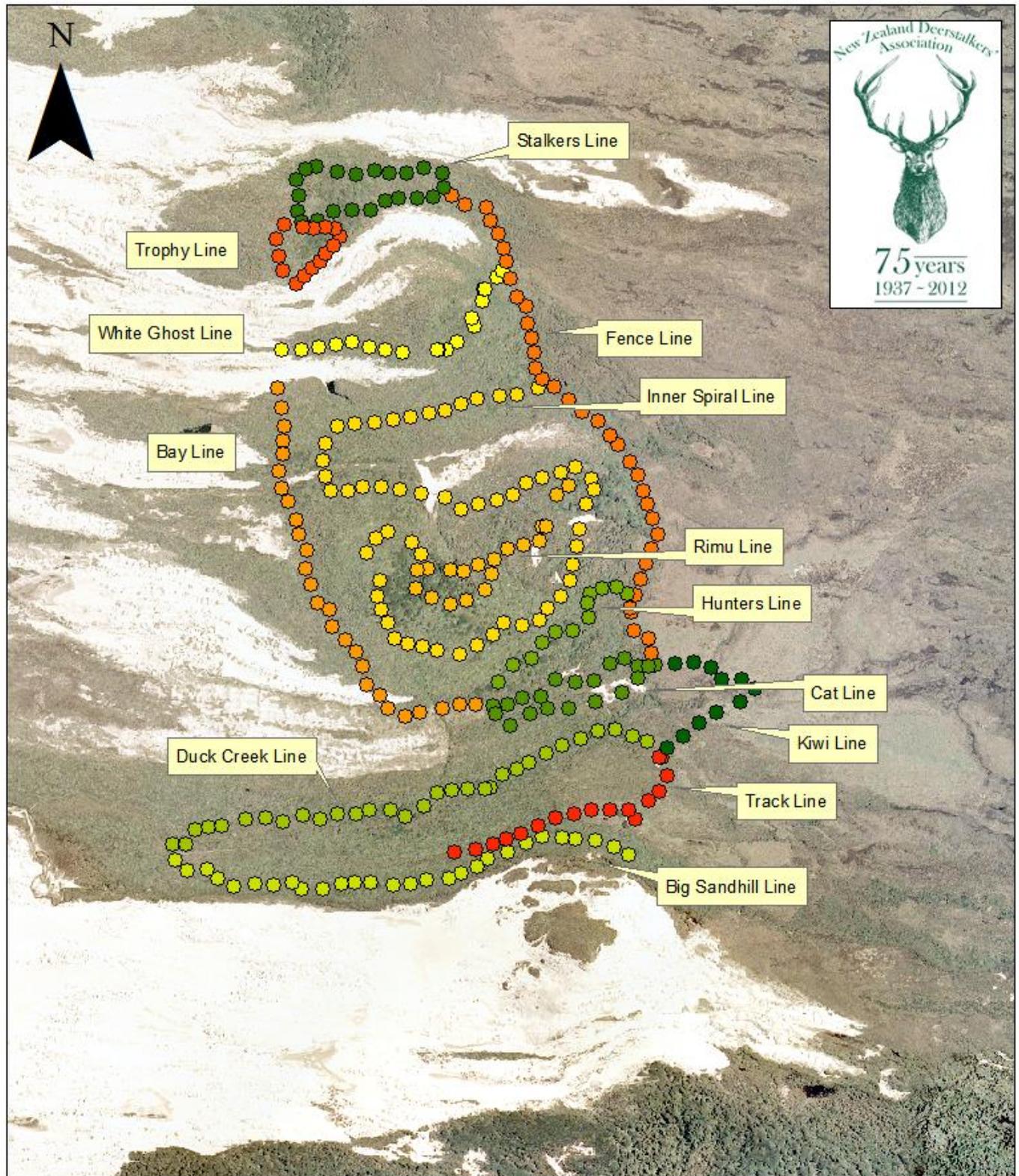
2016 saw the 12th anniversary for the rat control network at Mason Bay. Since its inception, the network has grown to cover around 300ha of mixed podocarp forest and inland dune system.

Mason Bay represents some of the only intact temperate dune system in the southern hemisphere, stretching inland up to three kilometres and reaching over 200m in height. It is home to a range of locally endemic plants and animals, including many threatened species. Flocks of New Zealand dotterel rest here and it is home to one of the largest and most visible populations of Kiwi in New Zealand.

While the Department of Conservation control invasive weeds in the dunes, the NZDA have been monitoring, baiting and maintaining a network of 309 victor rat traps every year (see map below) and giving their catch data to DOC for analysis. Control trips are targeted to spring and summer and generally range from August to December.

The primary aim of the project is to increase the productivity of nesting forest birds during their vulnerable breeding season by reducing rat density and therefore rat predation of eggs, chicks and disturbance of incubating adults.

Mason Bay Rodent Control Project



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0 0.25 0.5 1 Kilometers

ArcMap 10.3.1
2011 Aerial Photography
Map Date: 13/4/18
User: kcarter

Introduction

Rats are prolific breeders and while many do not survive more than a year, their destructive influence on our native wildlife cannot be overstated.

In ideal conditions of good habitat and plentiful food, every female rat has the potential to give birth to dozens of pups per year. As rats reach sexual maturity after just a few months, a population can grow from 2 to 2,000 in just twelve months, exacting a heavy toll on the ecosystem. Every rat that is taken out of the loop has the potential to stop hundreds or maybe even thousands more being bred and gives our native birds a chance to thrive by taking away egg predation chances and reducing competition for insects.

Additionally at Mason Bay, Good Nature traps have been trialled for cat and possum control in the past with limited success. Vertebrate pest monitoring has shown low numbers of possums and no poison control has been undertaken at Mason Bay to date.

Bird count data continues to be collected since the first observations 2012. This has been targeted to monitor 4 specific bird species that are most susceptible to rat predation: Bellbird, Robin, Tomtit and Kakariki. Analysis will be carried out on this data in due course.

This report will present both 2016 and 2017 data sets.

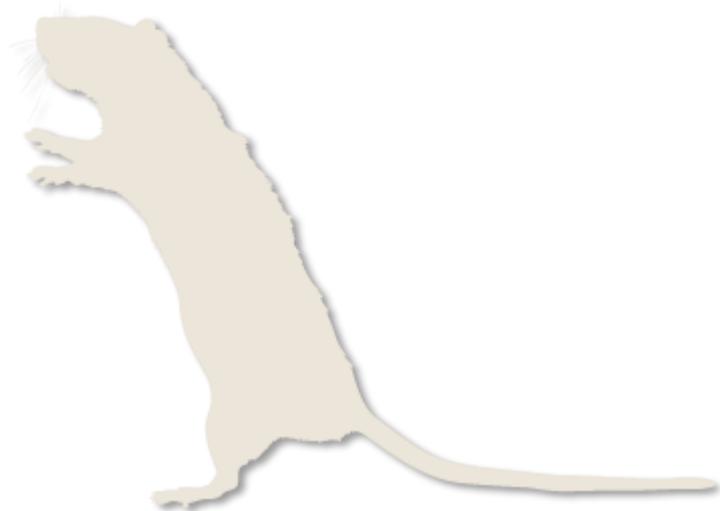
2016 results

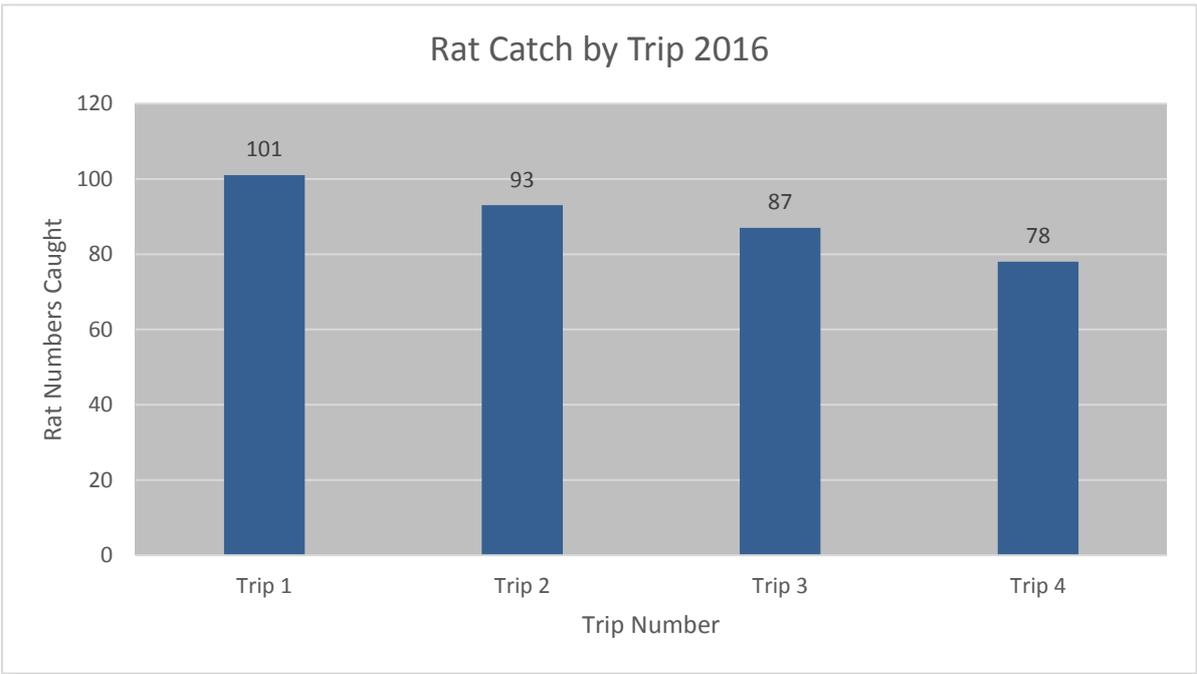
To better analyse the results, a 'catch rate' has been used to take into account the fact some lines have more traps, or some years have more checks, than others. The catch rate is calculated by comparing the number of rats caught with the effort (number of checks).

Four trips were completed in 2016, with trip three staying for 17 days in order to target cats. The graphic below shows that 2016 had quite high number of rats caught each trip. Even after the first trip where many old rats are cleared out, numbers remained high.

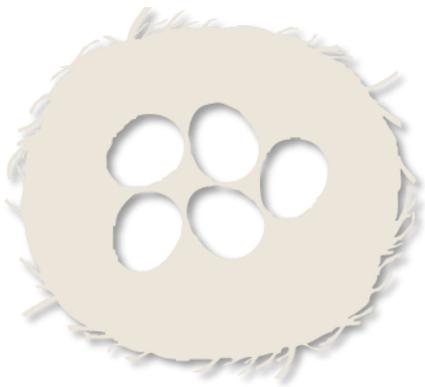
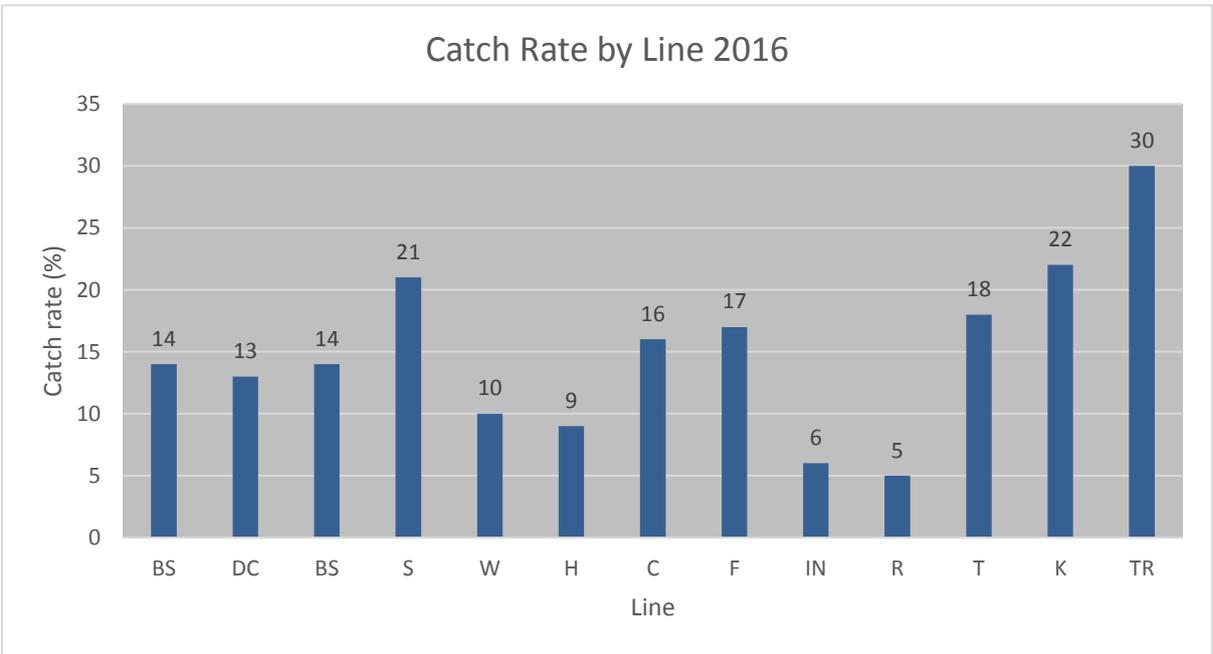
As predicted in 2015, 2016 was a Mast year and 359 rats were caught out of a total of 2,975 trap checks, an 12% catch rate.

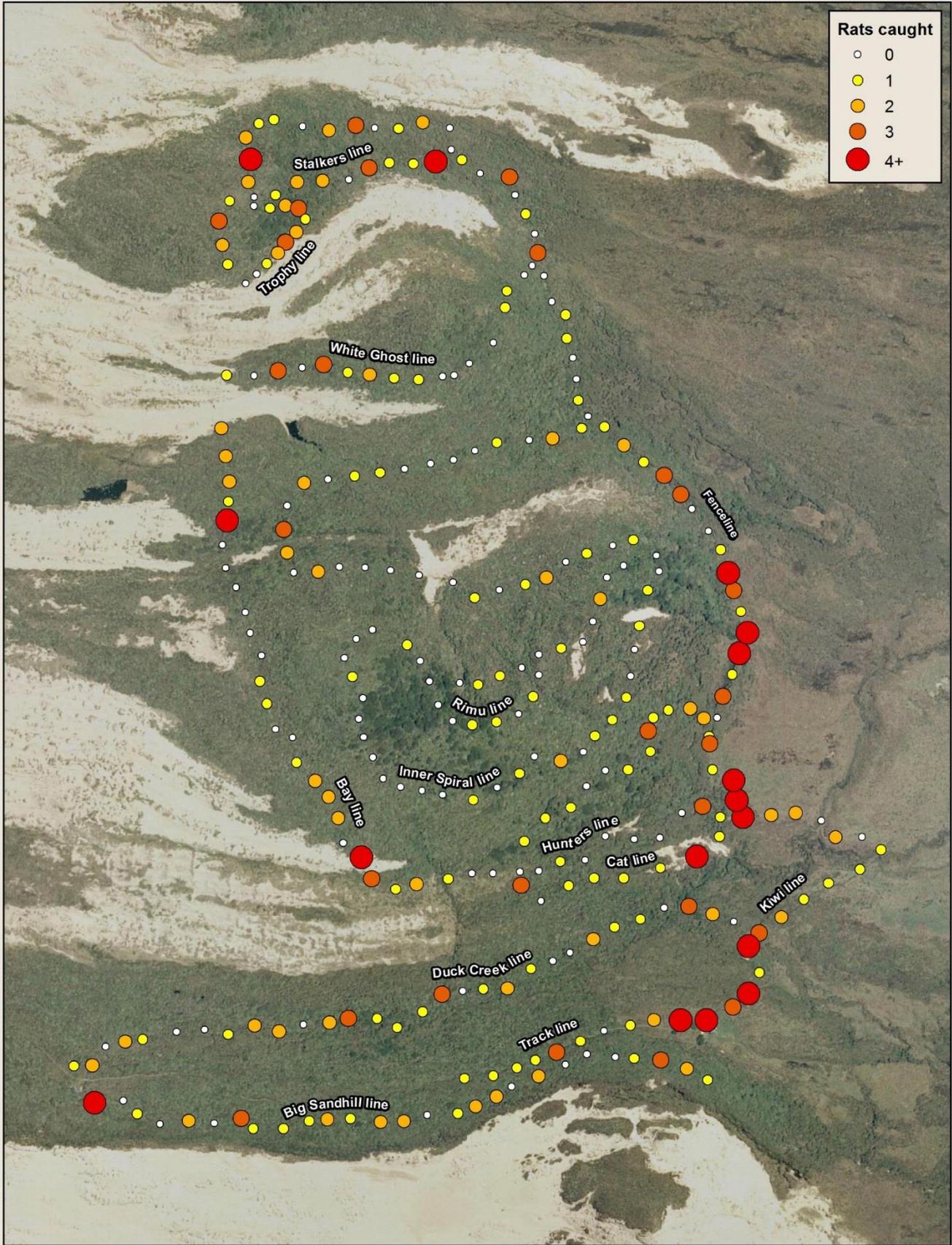
This is compared to 2015 where 156 rats were caught from 2,560 trap checks, a 6% catch rate. These high numbers show just how important ongoing checks for the season are, especially during years of high podocarp fruiting.





As individual lines go, Track, Kiwi and Stalker Lines had the highest catch per trap, with Track line achieving a 30% catch rate in 2016. The lowest were Rimu and Hunters lines, along with line Inner Spiral. The Graph below shows the catch rate per line in 2016.





Rats caught	
○	0
●	1
●	2
●	3
●	4+

200 m
 NZGD 2000 New Zealand Transverse Mercator
 1:9,000
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 Basemap: Eagle Imagery
 8/08/2018



Mason Bay Rat Trapping Results 2016-17

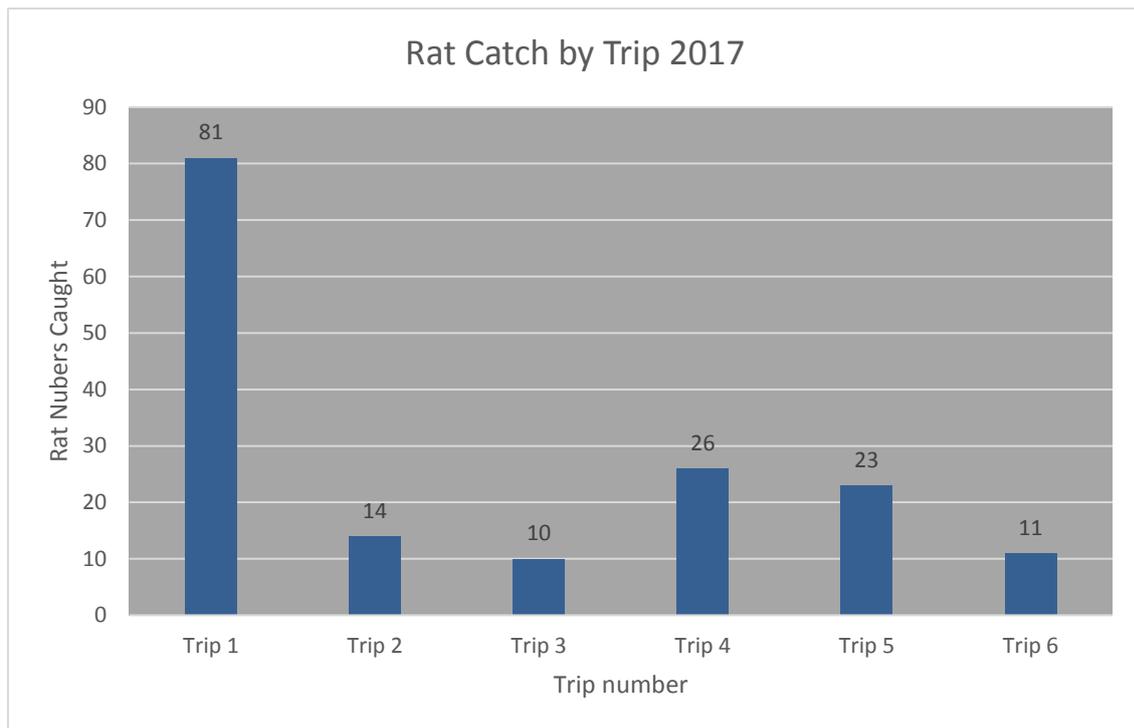


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2017 results

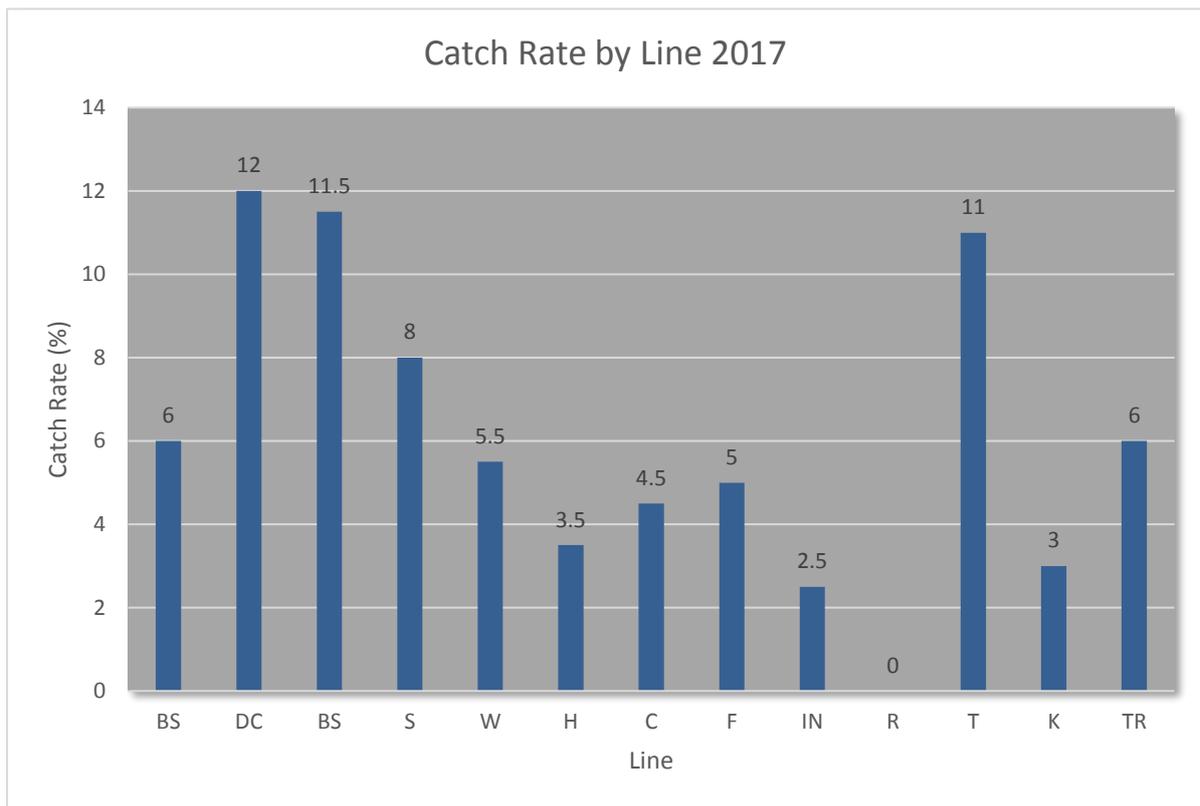
2017 saw a return to lower levels of rat catches similar to the 2014 and 2015 season with 165 rats caught from 2799 trap checks in 2017, another 6% catch rate.

The trip summary indicated that during the first trip only 20 new rats were caught, the others being old rats. Taking that into account we have an average of 17 rats per trip for the 2017 season. The average for 2016 was 90 rats per trip so a greatly reduced number this year.



The lines with the highest capture rates in 2017 were Duck Creek, Big Sandhill and Trophy. Although they are different lines to the high catch rate lines from 2016 (Stalkers, Track and Kiwi), they are in a similar location, with Track, Big Sandhill and Duck Creek all running parallel. Generally in forests, the Norway Rat often favours areas near creek banks and these lines offer ideal habitat for them, while Ship Rats can be more widespread.

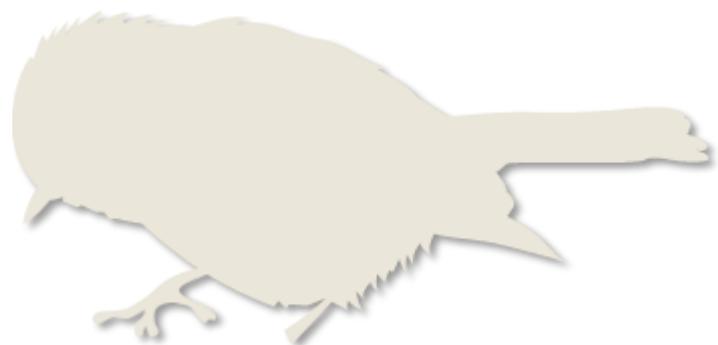
Stalkers and Trophy are also geographically very close to each other near to Big Sand Pass.

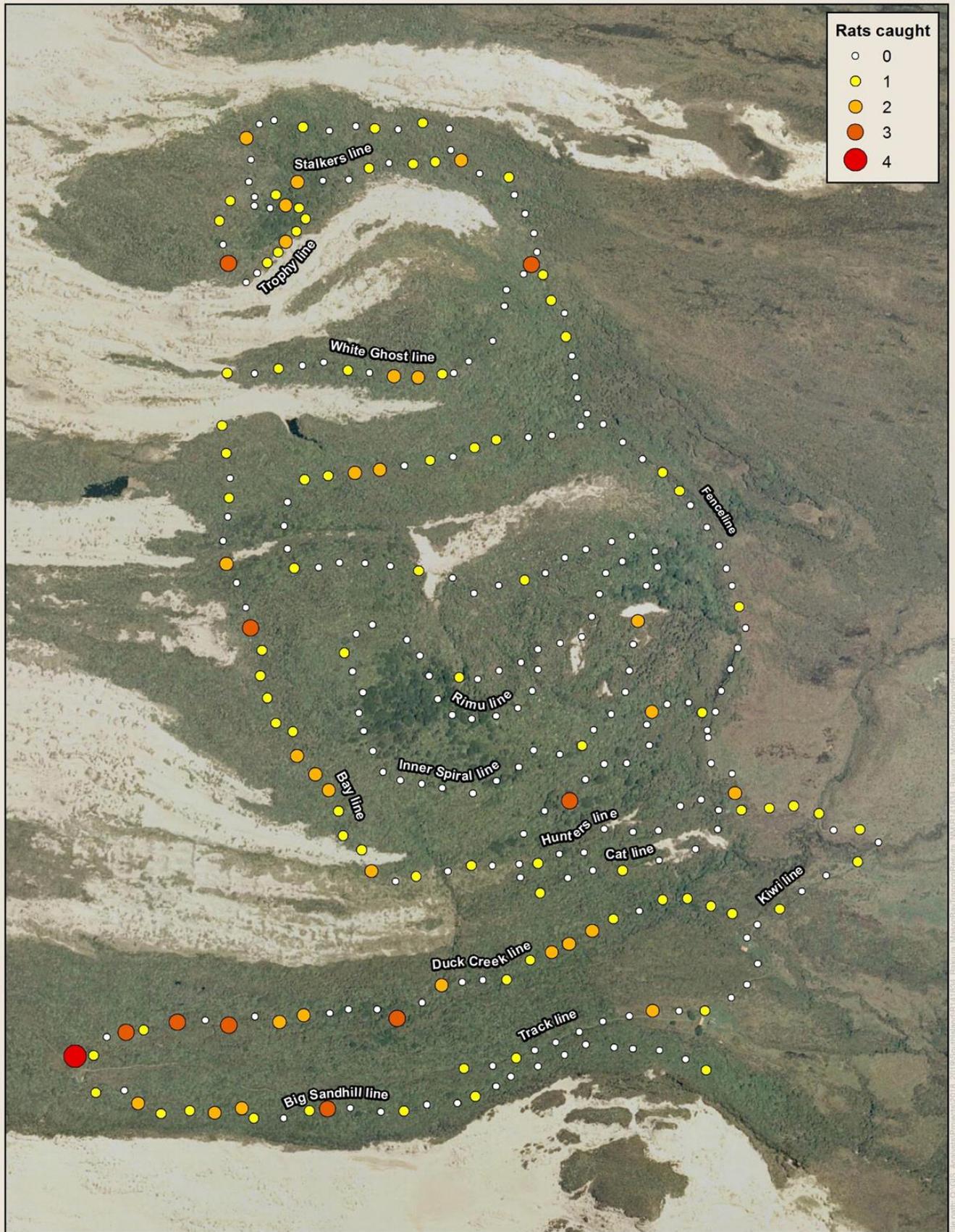


Inner Spiral and Rimu were again the lowest catch rate lines. As these lines gain altitude, the smaller abundance of large fruiting trees may be one explanation as to the low catch rates on these lines.

Of particular note were 7 feral cats that were caught using live-capture cage traps. 12 traps were set for 12 nights (or 144 trap-nights) by party 3. This party used pellets dipped in mutton-bird fat which were placed behind the trigger plate. Mutton bird fat was also dabbed on the trigger plate itself.

An additional 270 trap nights were run by parties 1,4,5 & 6 with no captures.





200 m

NZGD 2000 New Zealand Transverse Mercator
1:9,000
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Basemap: Eagle Imagery
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Mason Bay Rat Trapping Results 2017-18

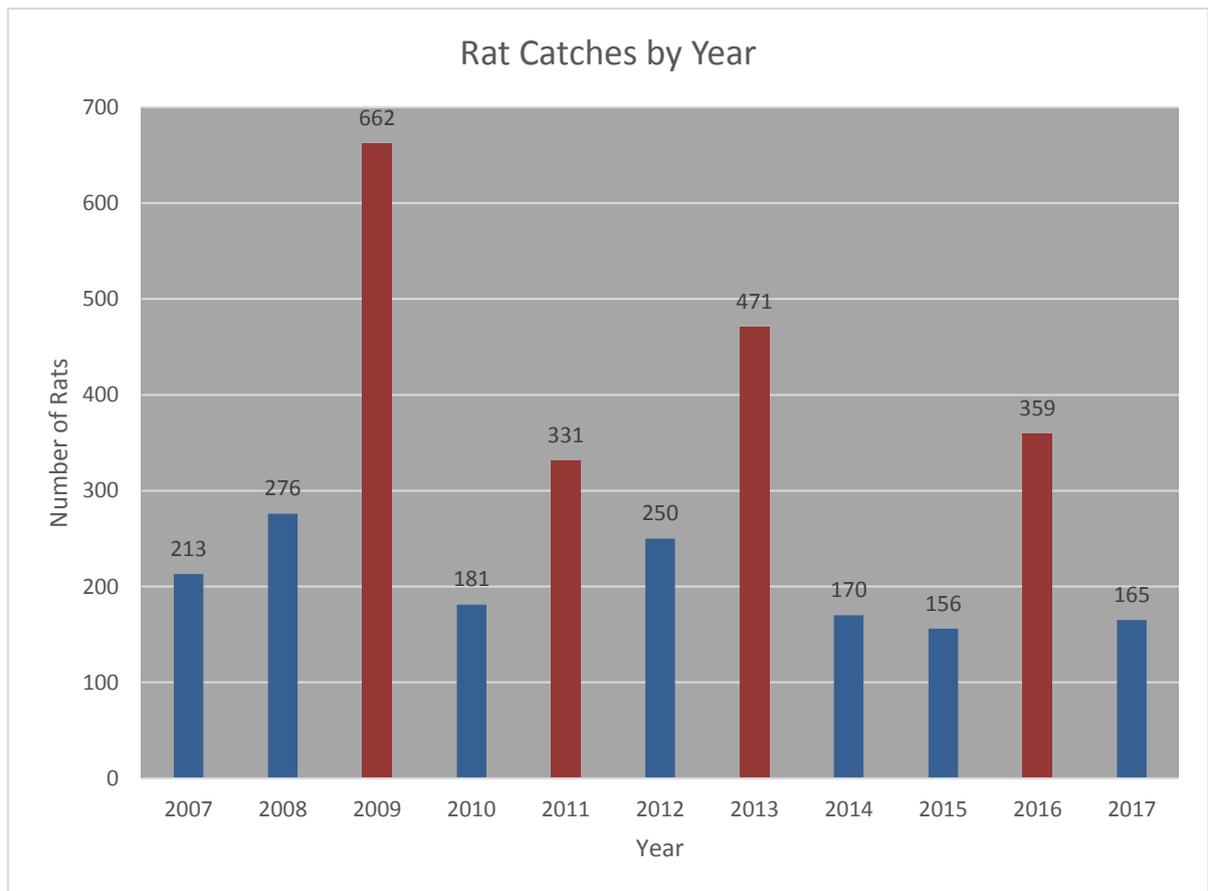


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The influence and important of podocarp mast years

The graph below shows rat catches per year. The blue columns represent 'normal' years, while the red columns represent rimu masting years during the summer (2008/09, 2011/12, 2013/14 and 2016/17)

The data has not been normalised for effort and so does not take into account the number of trap checks conducted in these years, but assuming a similar amount of effort, the mast year columns are clearly visible with a much higher rat catch in terms of raw rat numbers.



Recommendations

Upcoming Season

2018/2019 is predicted to be one of the biggest mast years yet for rimu and as the data show, rat numbers are prolific during these times through increased breeding success and survival due to reduced food competition with more fruit and seed being produced compared to an average year.

Sampling on Stewart Island/Rakiura show a high proportion of up-turned rimu tips indicated a high likelihood of a mast event.

Efforts to keep on top of rat numbers during this time will be even more crucial to allow native fauna to flourish in terms of increased nesting success and chick survivorship at Mason Bay.

Data sheets

Please ensure all sheets are filled out in full. There are differences in data sheets returned to us by different teams that makes it unclear as to how many trap checks were done on each trip.

It is important to ensure the amount of traps checks, and trip duration, is recorded accurately as this affects our catch rate data. The best way is to use a separate sheet for every round of trap checks. If you do use the same sheet all trip, ensure the amount of checks done to the lines on that sheet are written on the sheet, i.e:

'Lines checked twice during trip, Except Kiwi, which was checked three times'.

This will greatly help us analyse the data and spot any trends with greater confidence.

Lure

Different lures seem to have been trialled by the teams. It would be interesting to see how these lures go and what the teams are finding most effective. Trying different lures on traps in close proximity to each other may give an indication to what is most effective. Any observations would be interesting to read about.

Conclusion

Rakiura values the on-going work completed by the NZDA at Mason Bay. It has been a pleasure to see the effort gone into the monitoring and upkeep of the network, and also that rats are not the only pest being targeted. Possums and cats are still being caught by the teams. Well done everyone for your hard work and we look forward to seeing you out there over the upcoming summer.



We would like to make special thanks to Invercargill Hunting & Fishing for the generous financial support of the 2017 efforts.

