

Mason Bay Rat Project Report 2018

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



Compiled by 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 was proud to co-fund this project through the DOC Community Fund. DOC 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 2018 trapping season.

Background

The Mason Bay rat trapping project covers approximately 300ha of coastal forest situated amongst a broader dune ecosystem. The project has been underway since 2006 and

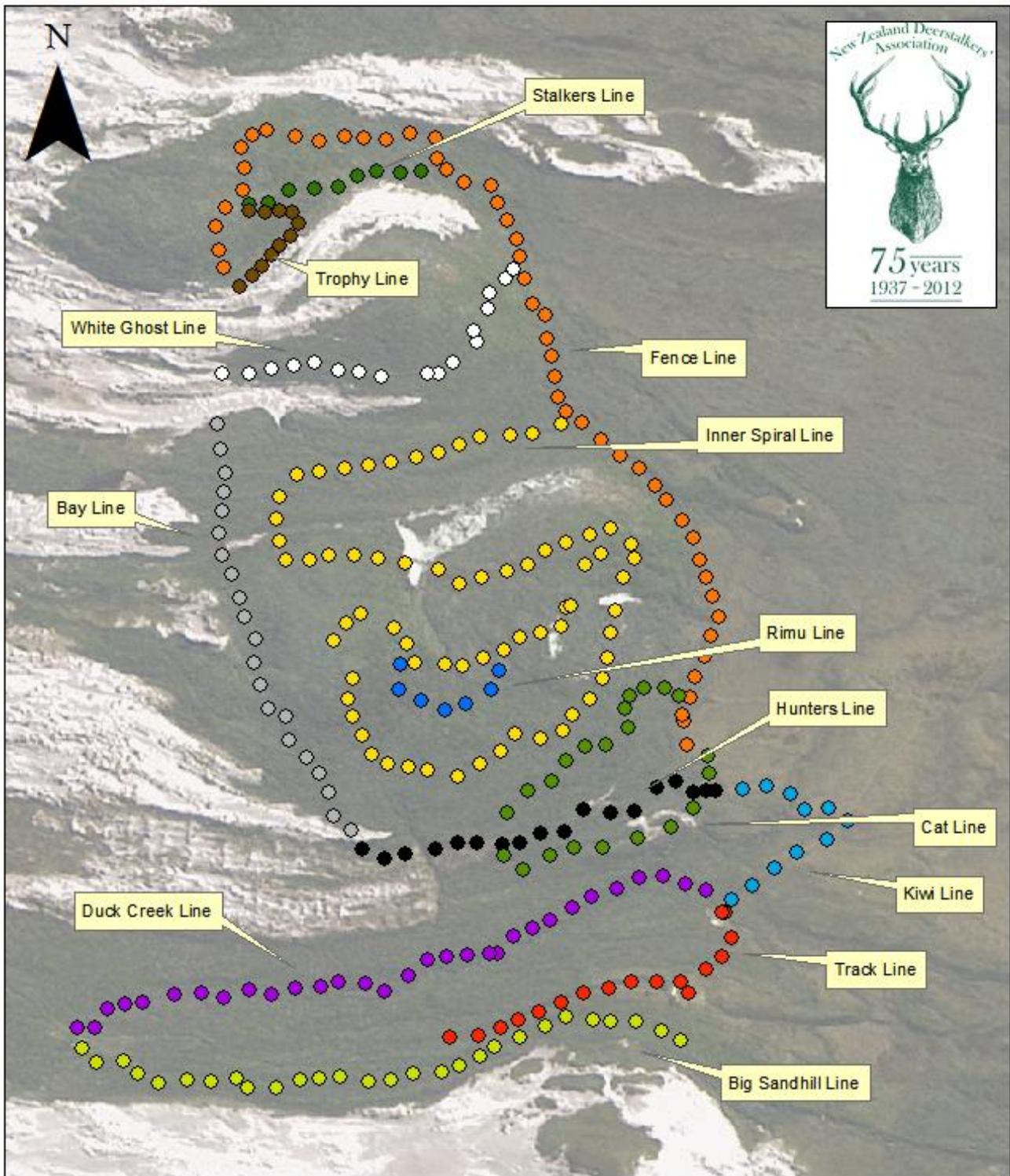
Mason Bay represents some of the only intact temperate dune system in the southern hemisphere, stretching inland up to three kilometres and reaching over 200m in height. It is home to a range of locally endemic plants and animals, including many threatened species. The location is a key wintering site for the critically endangered Southern New Zealand Dotterel which rest here during the high tides before flying across to places like the Freshwater River mouth mudflats to feed during the low tides. It is home to one of the largest and most visible populations of Kiwi in New Zealand as well as a range of forest bird species such as red-crowned parakeet, kereru, kaka, tui, bellbird, tomtit, fantail and more.

NZDA members maintain and rebait a network of 309 victor rat traps every year (see map below). 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.

Field data is provided to the Department of Conservation staff based on Rakiura to analyse and collate into an annual report.

Mason Bay Rodent Control Project



0 0.25 0.5 1 Kilometers

ArcMap 10.3.1
2011 Aerial Photography
Map Date: 17/4/19
User: karter

Q:\GIS Users\Rakiura\Projects\Biodiversity Programme\Assisted Community Programmes\NZDAMason Bay Project

Introduction

Rats are widely recognised as a key predator of vulnerable nesting birds through both raiding nests and directly targeting incubating adults, especially so with smaller bird species such as fantail and tomtits. Rat impacts are twofold in that they also compete with birds for food sources such as seeds and fruit. Rats are also known to eat invertebrates and reptiles.

All three species of rat present in New Zealand are present on Rakiura including the Norway, Ship and Pacific (kiore) rats. The dominance of different rat species depends on the habitat (eg: kiore are often out-competed by more aggressive ship and Norway rats) and each behaves in different ways. Norway rats are generally known as swimmers and are often associated with water bodies whilst ship rats are normally more plentiful in forested areas and are known climbers. These characteristics make ship rats of particular concern as they are more likely to locate bird nests.

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.

Rat population sizes naturally cycle over the course of any given year, increasingly rapidly through spring and summer after breeding and in response to increasing food availability with plants producing flowers, fruits and seeds. Rat plagues can occur in years when food availability is greater than average. In these years rat pups are more likely to survive through until adulthood.

Bird count data continues to be collected since the first observations in 2012. This has been targeted to monitor 4 specific bird species that are most susceptible to rat predation; bellbird, robin, tomtit and kakariki, which act as a series of indicator species to help us understand and quantify the benefits of the rat trapping programme in terms of increasing bird counts as our overall aim for the project.

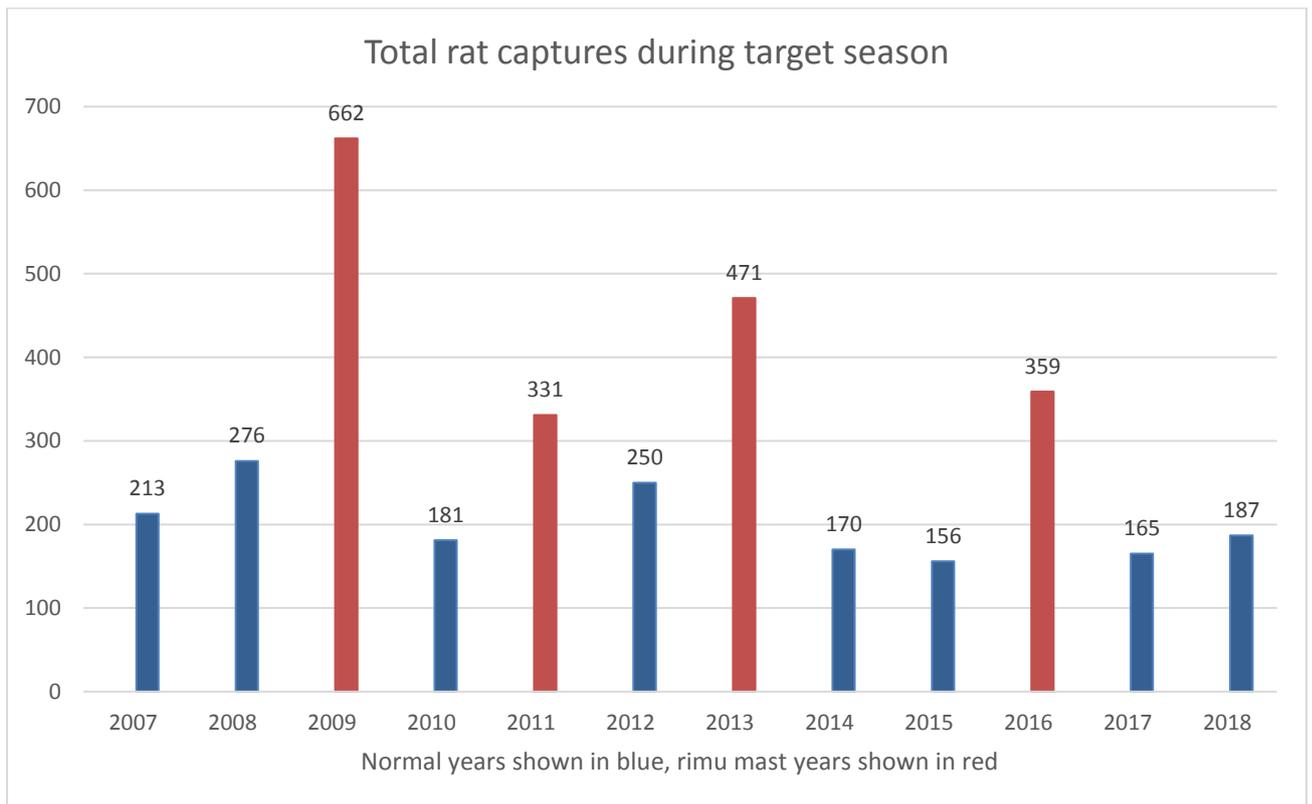
2018 results

A total of 10 rechecks were completed by 6 teams from August 2018 through to late January 2019. Some teams completed multiple rechecks during a single trip.

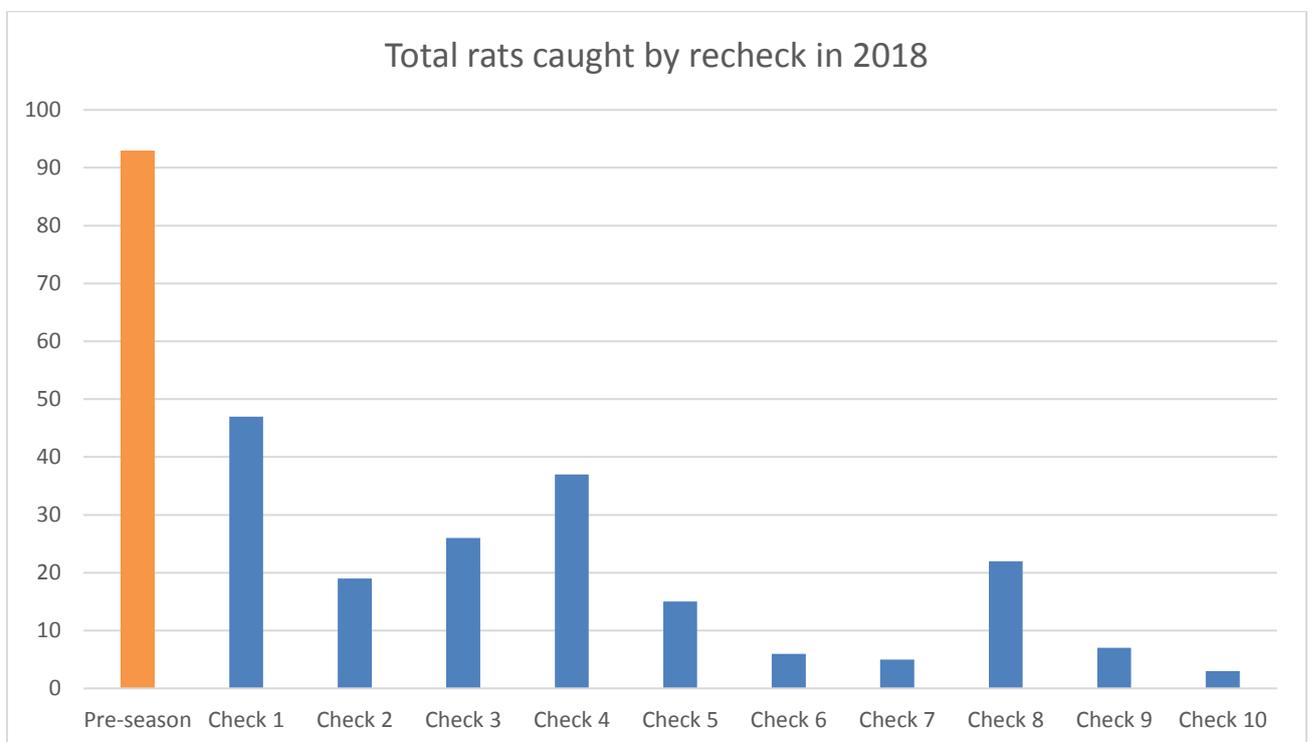
93 “pre season” rats were found caught in traps that were set in December 2017 during the first trap checking round. A total of 187 rats were caught during the 2018 target season taking the total to 280 rats for the year.

The target season total has been plotted on the graph below against the season totals over the course of the project. 2018 appears to have been an average year which we'd expect in the absence of increased podocarp fruiting.





The 2018 target season followed a similar pattern to previous years whereby rats caught for a given amount of trapping effort was high at the start before falling in check 2 and then followed by a small resurgence prior to falling to low levels towards December.

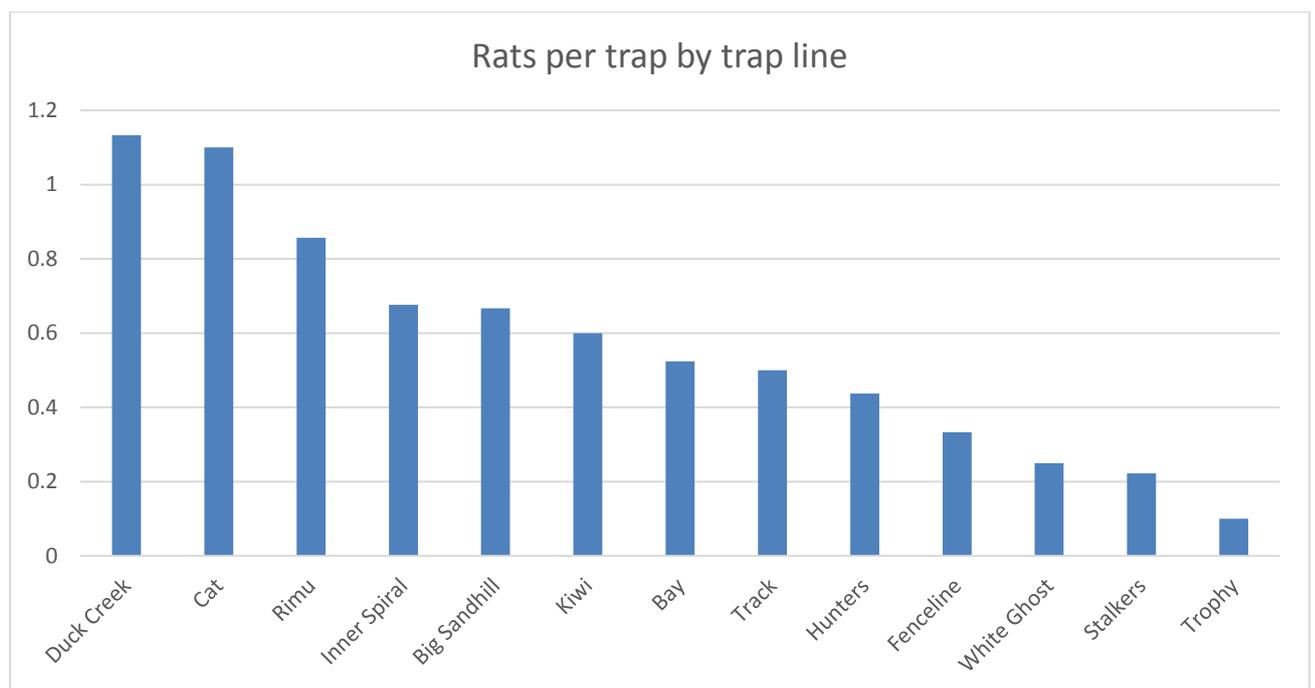


Approximately 3090 trap checks were run through the season which means that the overall catch rate for 2018 is 6.05%. This figure is more comparable between years as it recognises that increased trapping effort generally increases rat capture rates (to a point before it ultimately saturates and you run out of rats).

It's important to note that the interval between rechecks can affect the capture rates for any given recheck. Longer gaps between rechecks will mean that active traps have been out for more trap nights and so the next recheck is likely to find that more rats have been caught.

2017 had a catch rate of 6%, as did 2015 and so this confirms our view that 2018 was an average year for rats at Mason Bay.

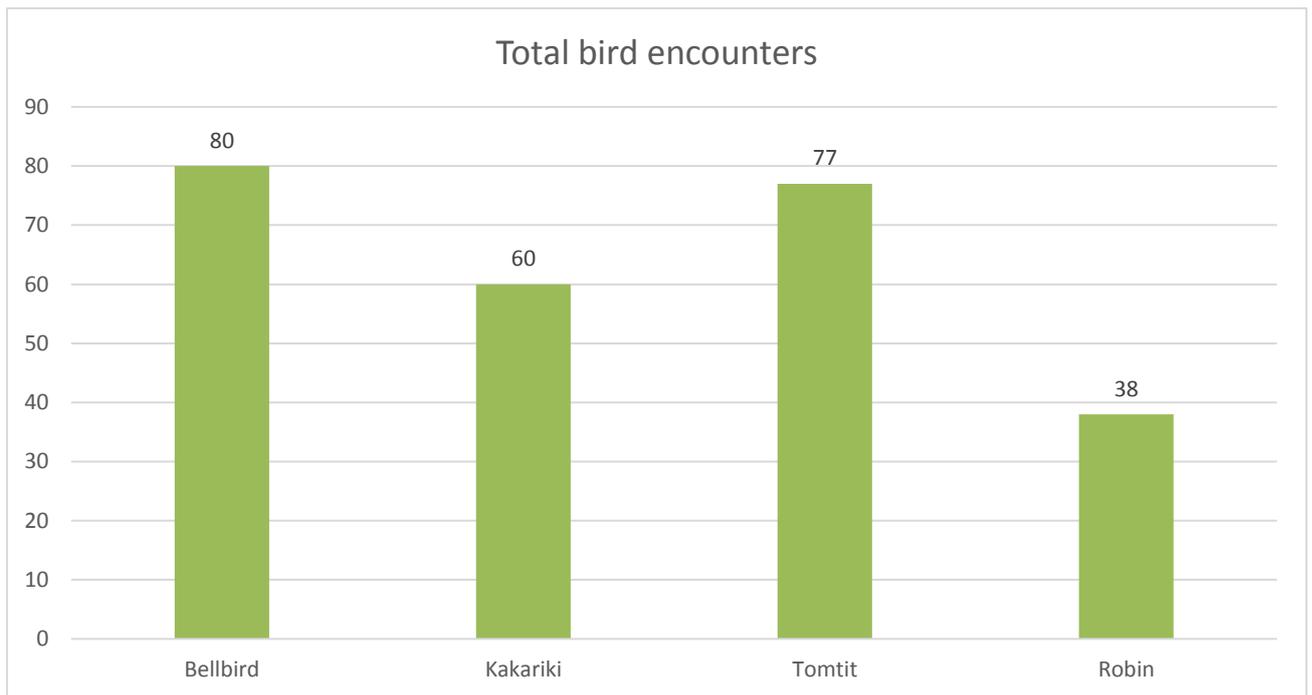
Season rat capture per trip has been broken down by line on the following graph. This season saw traps on Cat, Duck Creek and Rimu trap lines catching the most rats overall. When compared with the last two years, we see that the busiest trap lines vary from year to year and there is no clear pattern favouring any one trap line in particular. The most that any single trap caught was 3 rats.



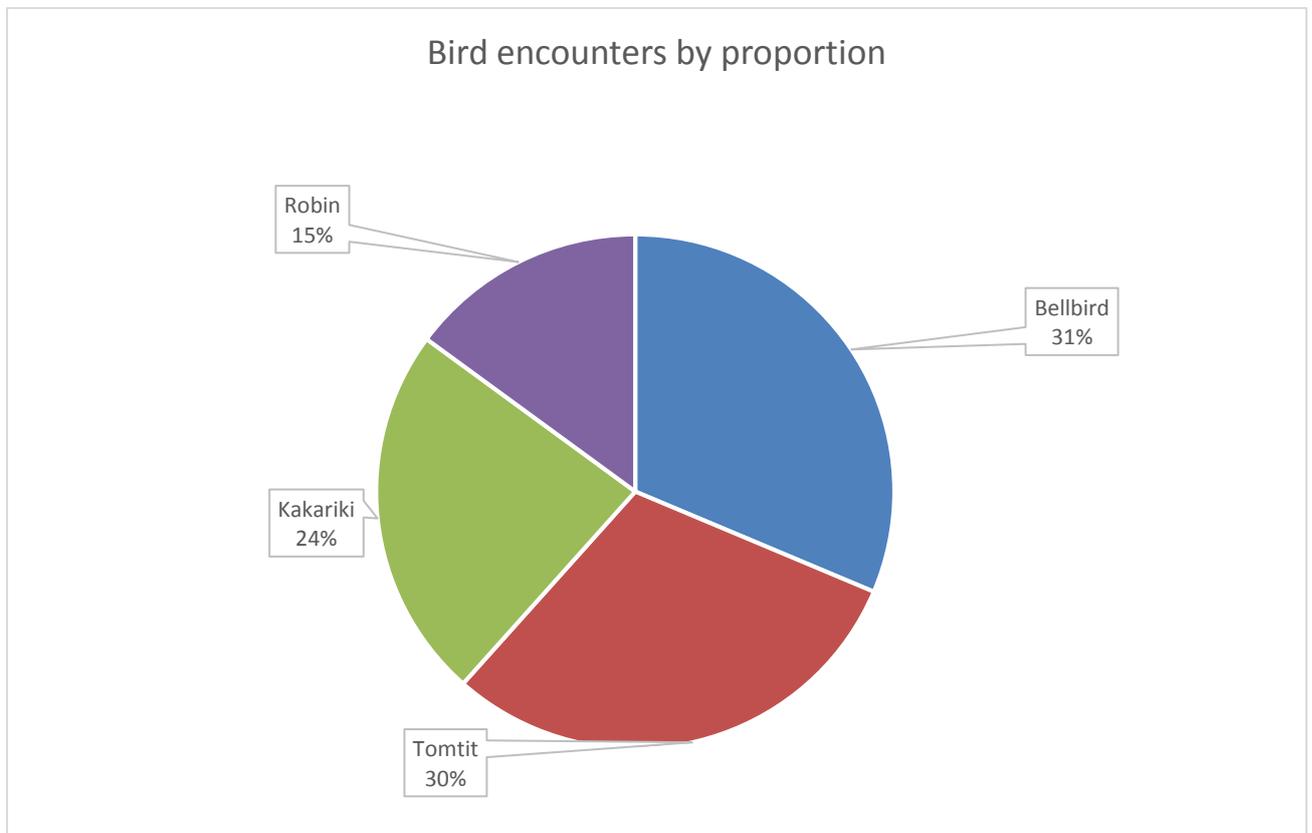
A total of 370 live capture cage trap-nights were completed and successfully caught 4 cats. 61 cat kill trap-nights were completed with no cats caught. Additionally, 2 cats were shot taking the season total to 6 cats.



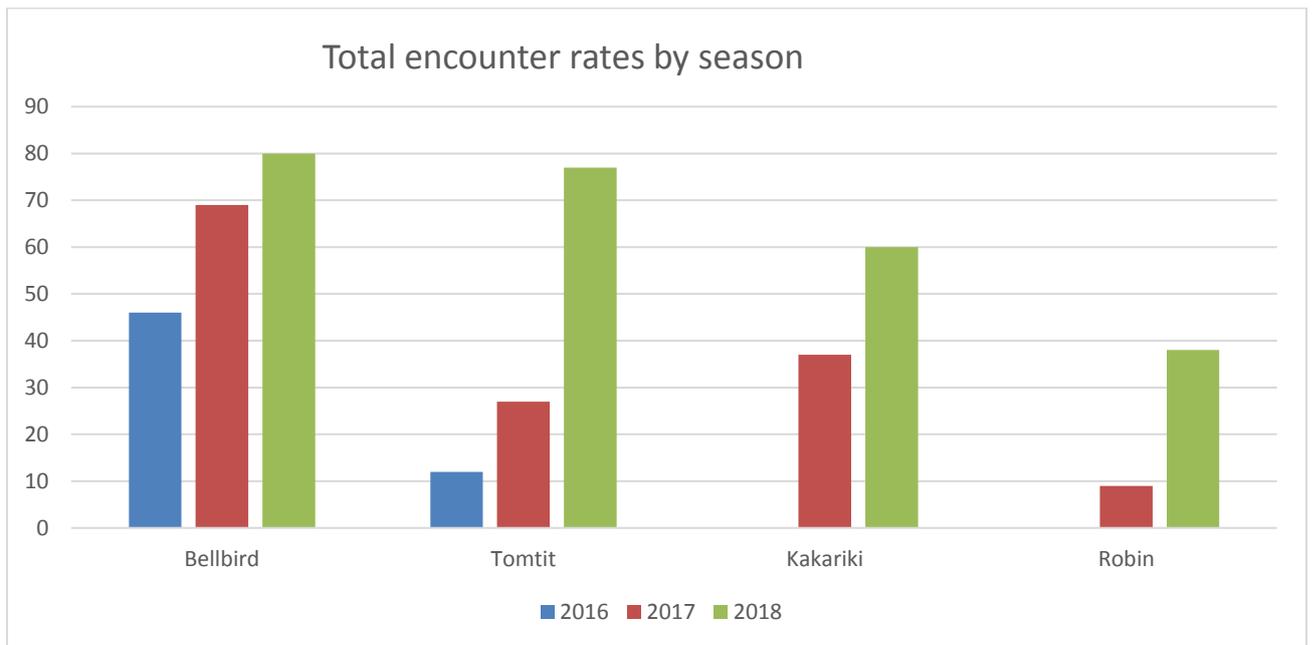
Plenty of native bird encounters were recorded with high numbers of tui reported in particular but aren't included here as they're not one of the four indicator species.



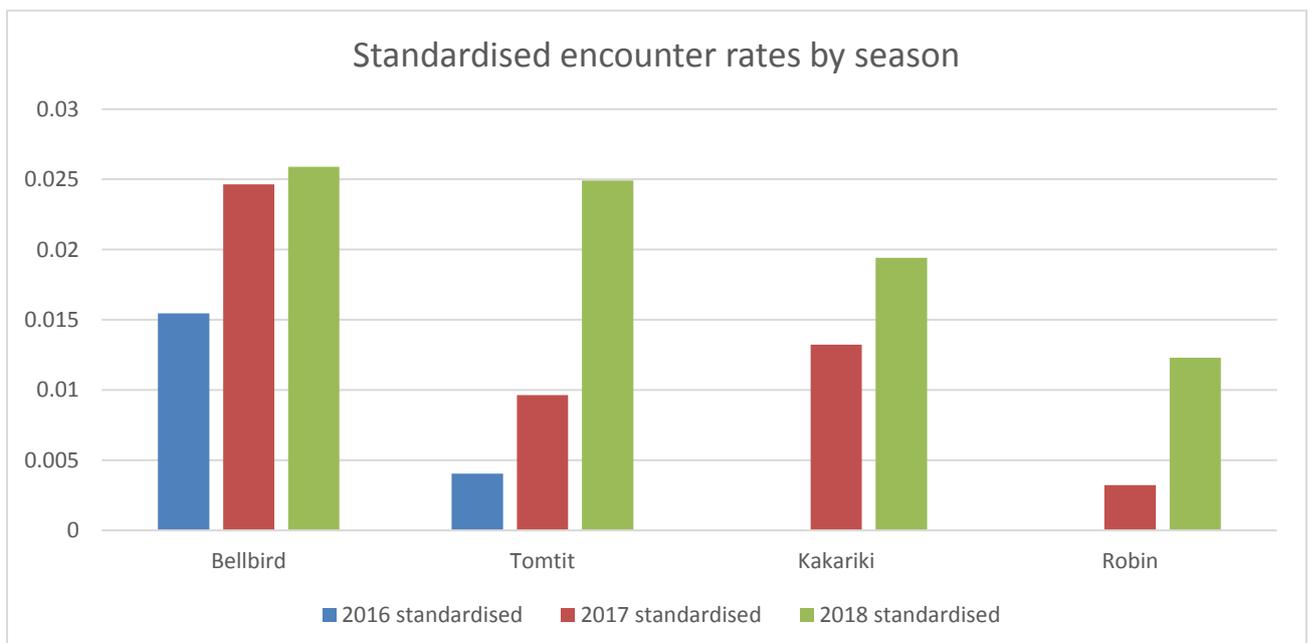
This data is shown as a proportion on the pie graph below.



This is shown in the next graph in context with the previous two seasons.



As with the rat capture data, we need to standardise this to account for the amount of time people were out recording bird encounters so that we can get a more comparable view of the data between years. To do this, we have divided species totals for each year by the number of trap rechecks in that year as this is a good estimate of distance walked. Of course, the slower a trap line is completed the more likely it is that the trapper will encounter a greater number of birds. Weather conditions also play a large role in how many birds are seen or heard on a given trap line check. The standardised graph looks very similar to the raw data and this is likely due to the number of trap rechecks being roughly similar, ranging from 2799 to 3090 (roughly a 10% variability).



Average encounter rates appear to follow an increasing trend for each of the four indicator species.

Discussion points

Rimu masting

As predicted, podocarp species are undergoing another masting year with the early part of 2019 showing larger than average fruiting in species such as rimu and miro. It is likely that the August to December 2019 trapping effort will record another spike in rat numbers, following what appears to be a relatively predictable pattern at Mason Bay.

Data sheets

A big thank you to John de Lury for digitising the trapping and bird monitoring records via Excel. This made the analysis and reporting much quicker and reduced the likelihood of transcription errors.

Please remember to fill out the total trap nights for cage and kill traps so that we can compare how well the various traps are doing. Start and finish times can also really help calibrate the bird encounter data by allowing for the effect of slower going resulting in more bird sightings.

Conclusion

The NZDA have completed another successful year of predator control at Mason Bay during a period where our native birds are particularly vulnerable to the effects of rats, possums and cats.

There is some very encouraging trends developing with native bird encounters which is very rewarding.

We'd like to thank the hard work of the NZDA members and their continued enthusiasm for protecting the conservation values. We look forward to another season of good results and an all-important knock down of predators following a mast year.

We would like to make special thanks to Invercargill Hunting & Fishing for the generous financial support of the 2018 efforts.



We would like to thank the DOC Community Fund for co-funding this project to assist with transportation costs.

