

# Eglinton Valley Report



2023-2024

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Conservation  
*Te Papa Atawhai*

New Zealand Government

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# 1 Summary

Responding to a winter increase in rodent numbers in the Eglinton Valley, a 1080 and pindone operation was carried out in February 2024. This successfully dropped rodent tracking from 14.9% in November 2023 down to 0.0% post-operation. This aims to provide additional protection from predators over winter. Mohua numbers in the valley increased from a minimum number of 21 last season to 32 this year, a positive result however the population remains at severe risk of extinction. Most threatened species populations are on the rise in the valley including kaka, both long and short-tailed bats, and kakariki. Assessing the success of the 2023 and 2024 double pulse 1080 operations in protecting long tailed bats and mohua will need to wait until the results of the 2025 monitoring season.

# 2 Overview

The Eglinton Valley is one of the few extensive lowland areas of mixed southern beech forest in New Zealand. It supports populations of more than 30 threatened plants and animals, some rare plant communities, and has a diverse bird fauna compared to other mainland forests of the South Island. The valley held a relatively large number of mohua until the population crashed following two successive mast-driven rat plagues in 2000 and 2001. Mohua numbers have been boosted by four translocations between 2010 and 2017, without which they would likely have gone locally extinct.

The valley contains two species of endemic bat; the nationally critical long-tailed bat and one of two mainland population of the southern lesser short-tailed bat; classified as threatened – nationally increasing. There is a significant population of nationally endangered black-fronted terns on the Eglinton River, with numbers increasing steadily since valley-wide pest control was initiated. Other bird species such as yellow-crowned kakariki, falcon, kea, kaka, robins and ruru are found in good numbers. Lizard diversity appears low, with only two species recorded, but there has been little search effort to date.

Stoat control has been carried out in the Eglinton Valley since 1998. The original trap network of 266 traps was expanded in 2008, again in 2017, and now comprises 433 DOC 150 and DOC200 traps. Bait station operations have been undertaken since 2006 growing larger over time until they were largely superseded by aerial 1080 operations which started in 2014. Rat abundance is monitored using standard tracking tunnel methods and is typically carried out quarterly each year. Seedfall monitoring is also undertaken annually.

The Department of Conservation undertakes continuous stoat and cat control as well as periodic rat and possum control when required to protect this ecosystem. There are several species monitoring projects in the area as well as long term research being undertaken by the Biodiversity Group, DOC. This report summarises the management activities in the valley between July 2023 and June 2024.

## 3 Predator Control

### 3.1 Mustelid Control

The trap network in the Eglinton Valley is comprised mainly of double-set stainless DOC 150/200 traps. One line of old-style single set DOC200 traps has yet to be upgraded, along the true right of the Eglinton River opposite Mackay and Totara campsites. There are also 8 DOC250 traps for ferrets. These traps provide year-round mustelid protection for much of the valley floor where most kaka, tern, bat and mohua breeding takes place.

A total of 91 stoats were caught in the year from July 2023 through to June 2024, down from 104 in the previous year. 45 weasels were caught during the same period, up on 30 the previous year. 21 ferrets were reported to have been trapped. This is a massive increase considering that none had been caught since 2020. At least one of these was a confirmed ferret, however the rest of the reports should be taken with a grain of salt as they are likely to have been misidentified as it is dubious that 16 of these ferrets were caught in one check along one section of the road.

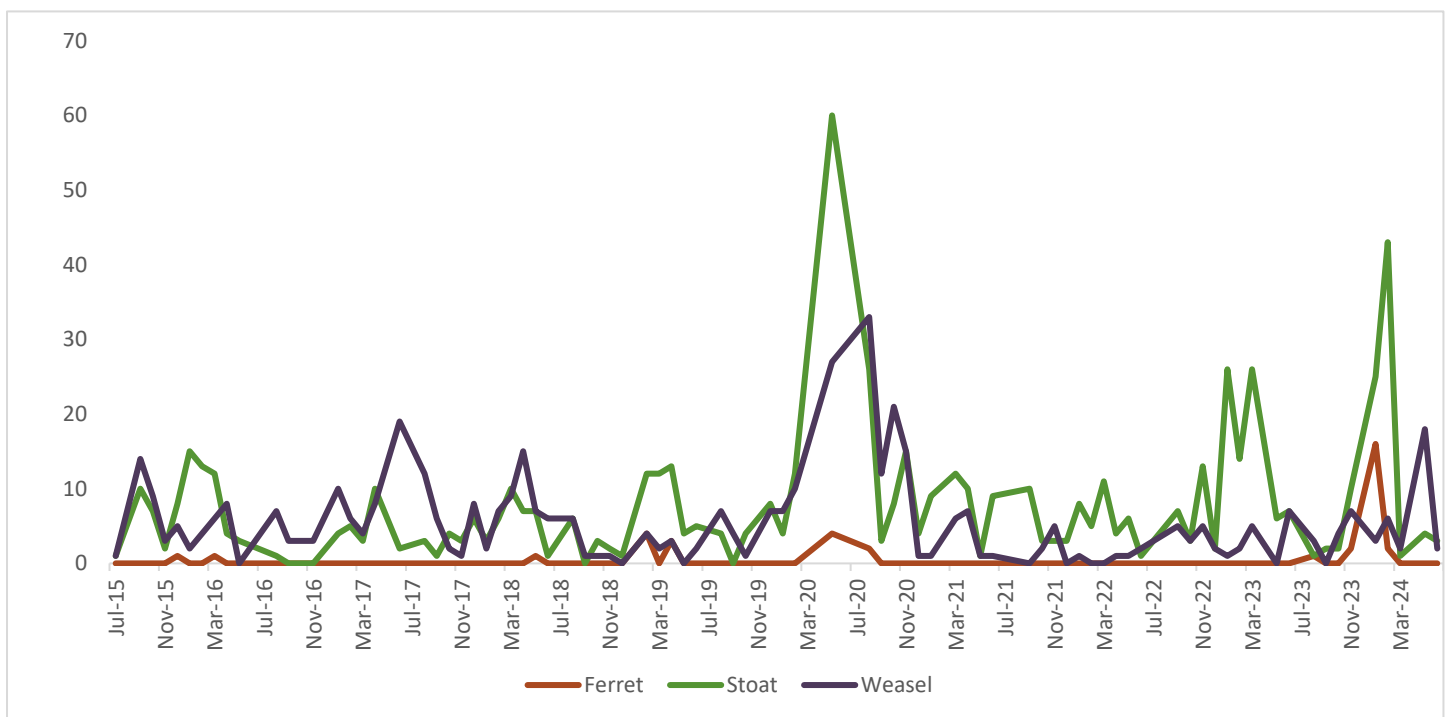


Figure 1. Ferret, stoat, and weasel captures 2015 - 2024.

### 3.2 Rat Control

The National Predator Control Programme (NPCP) carried out a 1080 operation in the Eglinton Valley for the second consecutive year after rat numbers began increasing over winter 2023. Immediately following the 2023 operation, rat tracking dropped to 0.3%, but climbed back up to 5.3% in August, prompting planning another toxin operation to take place in 2024, which was confirmed with the November tracking of 14.9%. Operating out of Deer Flat Campground, pre-feed took place on January 29<sup>th</sup> 2024, with the toxic bait sown on

February 11<sup>th</sup>, 2024. To reduce the number of predators left in the aerial exclusion zone surrounding the road, bait stations were also utilised with pindone. These were initially filled on February 13<sup>th</sup>, refilled as required on February 20<sup>th</sup> and 27<sup>th</sup>, then all bait stations were emptied of toxin on May 14<sup>th</sup>. As with the last year, the operation was undertaken in February to reduce winter predation compared to previous operations taking place in spring in response to mast events.

After the February 2024 toxin drop, rat tracking was successfully knocked right back down to 0.0% post-operation.

Rats are also the most common catch in the trap network, with 571 being caught this year.

### Rodent tracking rates -

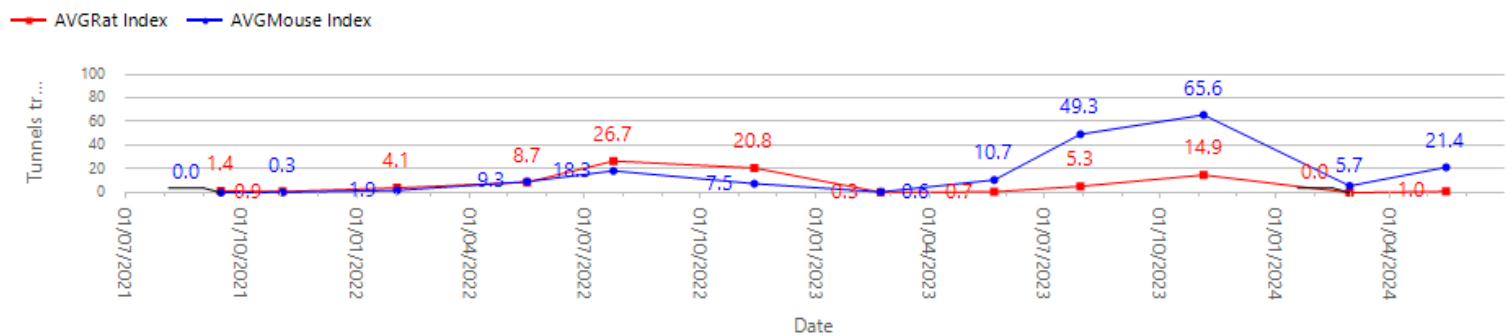


Figure 2. Eglinton Valley rodent tracking rates 2021-2024

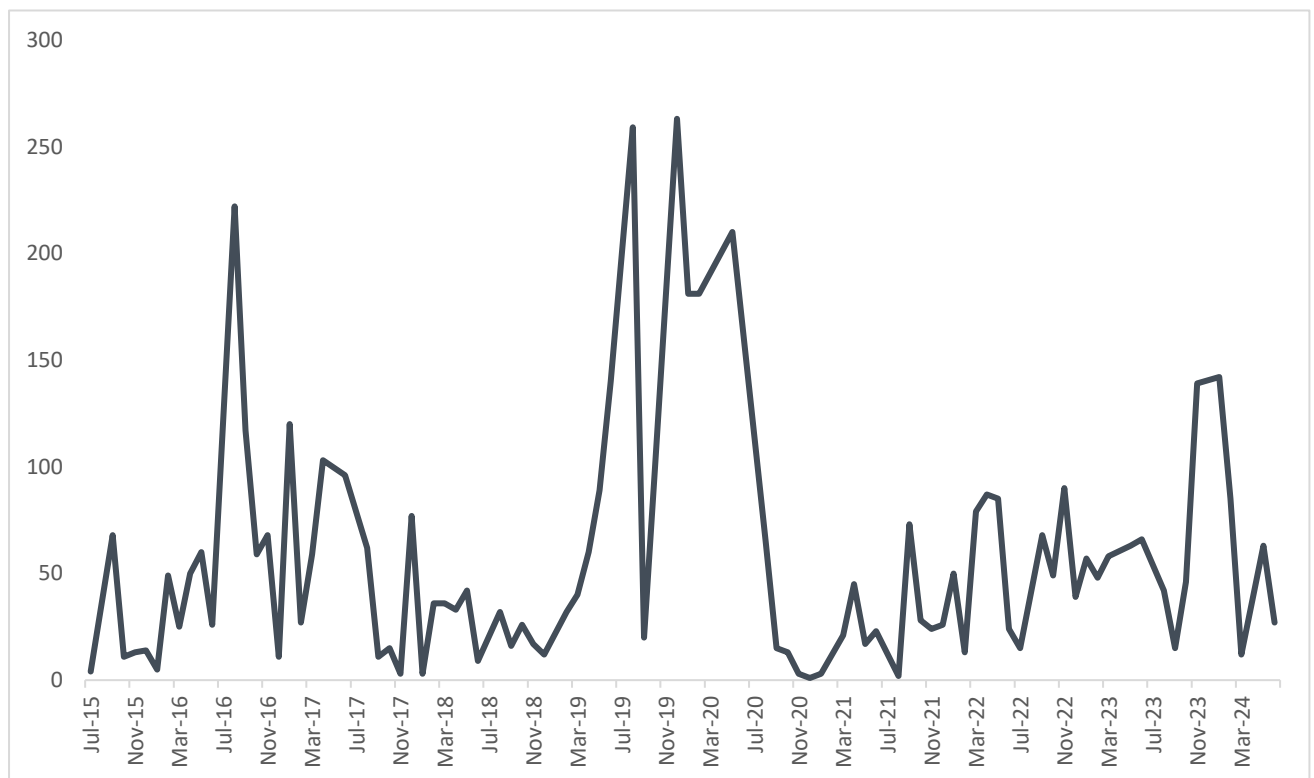
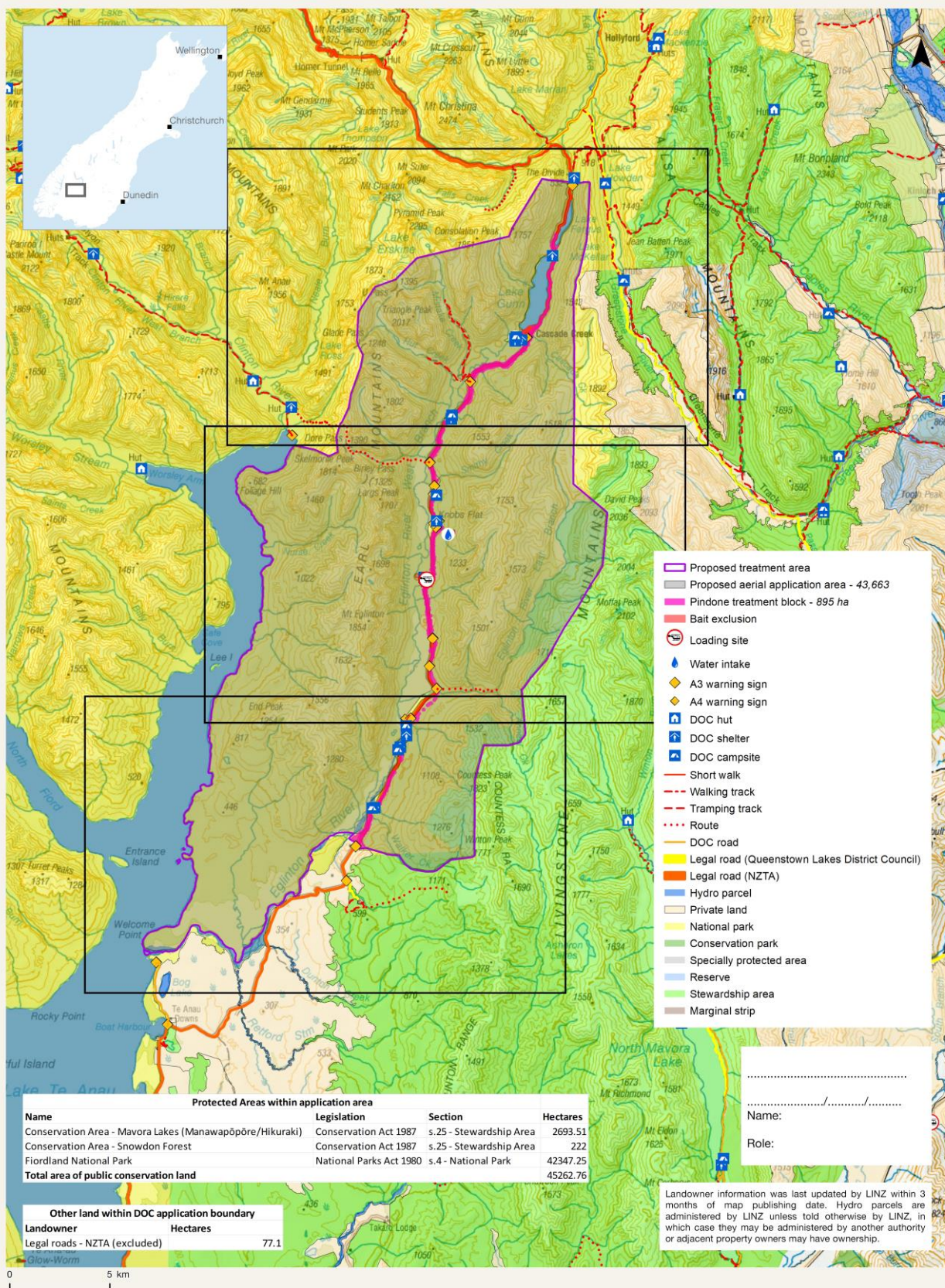


Figure 3. Rat captures 2015 - 2024



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## Eglinton - DOC Permission Application

Map 1 - Overview  
Aerial Predator Control 2024  
Treatment area: 45,339 ha



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Figure 4. Eglinton 1080 and pindone operation February 2024

### 3.3 Cat Control

Feral cats have been present in the Eglinton Valley for several years, and infrequent localised attempts to live capture them in cage traps have been made, with little success. Cats are known to be predators of species such as bats and terns and have the potential to kill many animals in one go, though the exact impact cats are having on threatened species in the valley is unknown. Anecdotally the number of cats in the valley, whilst going through fluctuations, has generally increased over time.

Two types of kill trap make up the 33 cat traps in the valley: double conibear Twizel traps, and Steve Allan SA2 traps. Timm's traps were previously utilised in the valley but removed in an earlier season due to high rates of by-catch. All cat traps are baited with fresh rabbit meat and set continuously. Cats have also been captured in stoat trap tunnels as non-target by-catch since the trapping programme began.

4 cats were caught this season – all in cat specific traps. The number of cats caught in stoat traps has declined over the last few years, which is thought to be due to older traps with larger openings being replaced with newer models featuring side entrances and smaller openings. The total number of cats caught has decreased over the last few years, especially after the removal of Timms traps in the valley. With decreasing catches, cat monitoring and trapping in the valley will be reviewed.

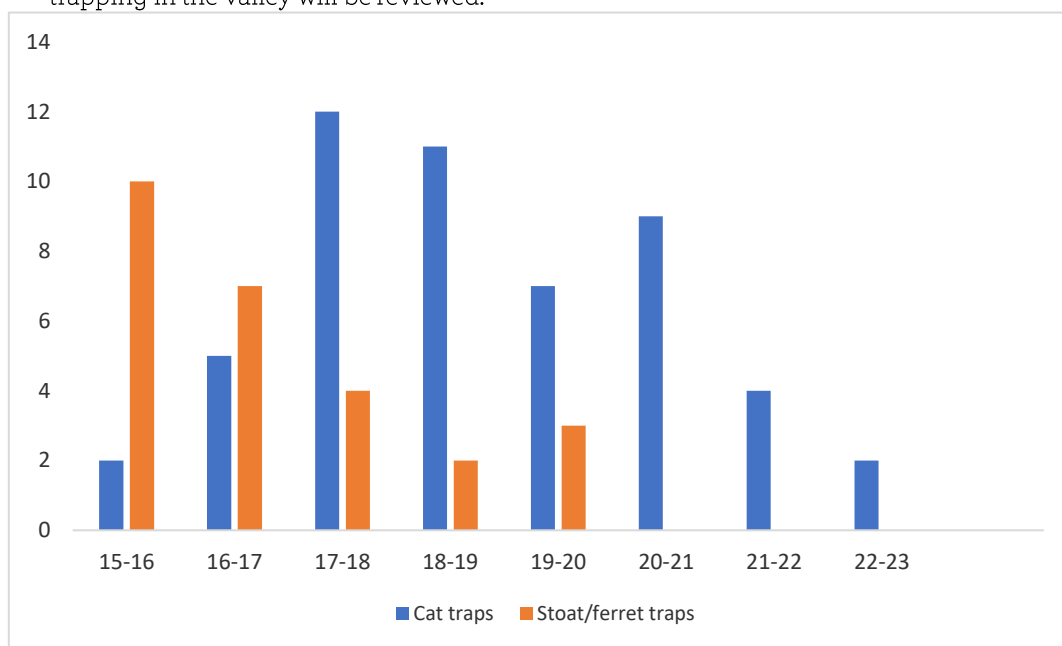


Figure 5. Cat captures in kill traps 2015-2024

## 4 Monitoring

### 4.1 Beech Masting and Seedfall

The DeltaT beech seeding prediction for 2023/24 was for a possible mast in the Eglinton Valley. Seedfall collected in May confirmed that some beech flowering had taken place. The little seedfall in 2022/23 could have influenced the increase in rat tracking over winter which led to the 2024 toxin control operation. Seedfall will continue to be collected from these three sites in February – May each year to confirm masting.

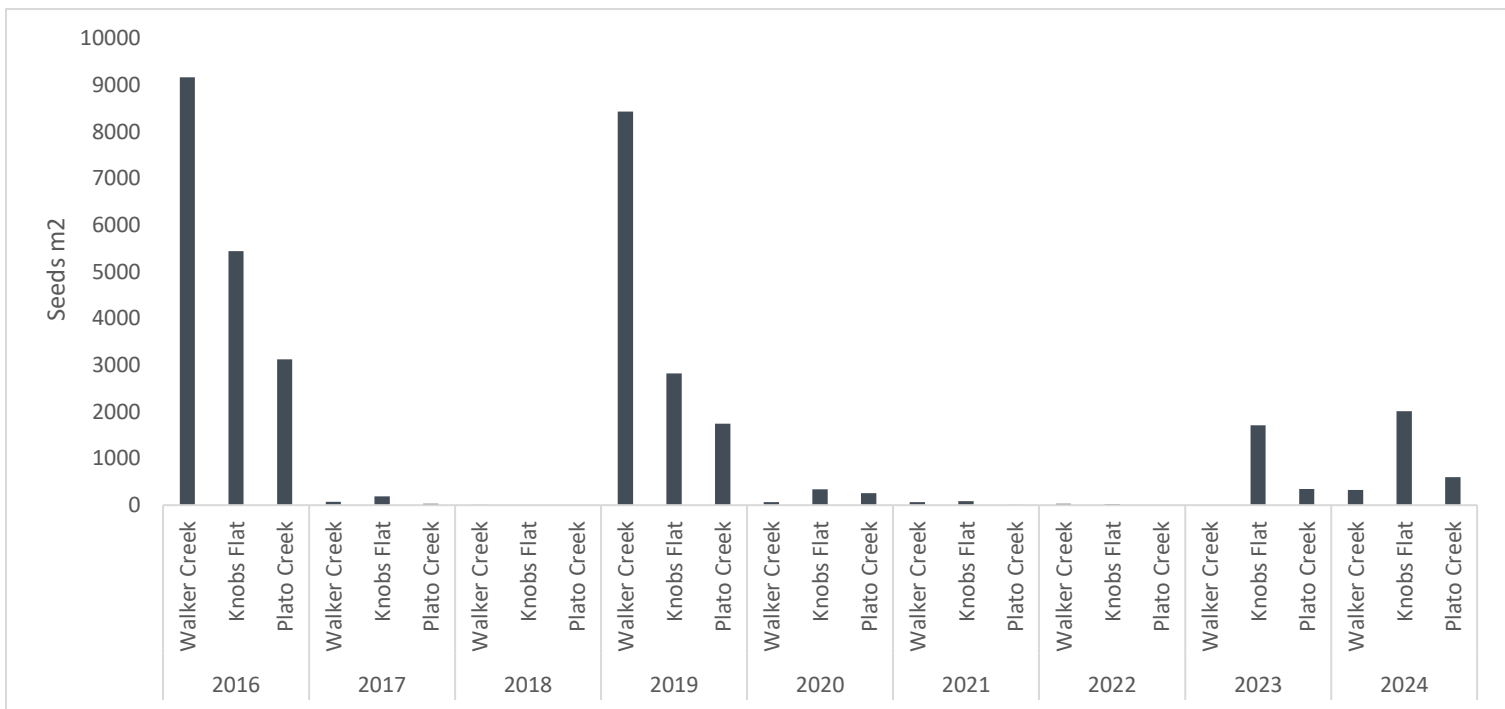


Figure 6. Seedfall data 2016 -2024

### 4.2 Southern Lesser Short-tailed Bats

The Eglinton Valley southern lesser short-tailed bat population is continuing to recover with good adult female survival recorded in 2022/2023 (82%). Survival results from 2023/2024 will need to be confirmed in the next monitoring period. 1151 individually marked bats were recorded this season, with 234 new bats receiving tags. Roost emergence counts continued to be low with the highest count being 2098 bats. The overall population trend is still increasing. See McLaughlin, Pryde 2024 for more information.

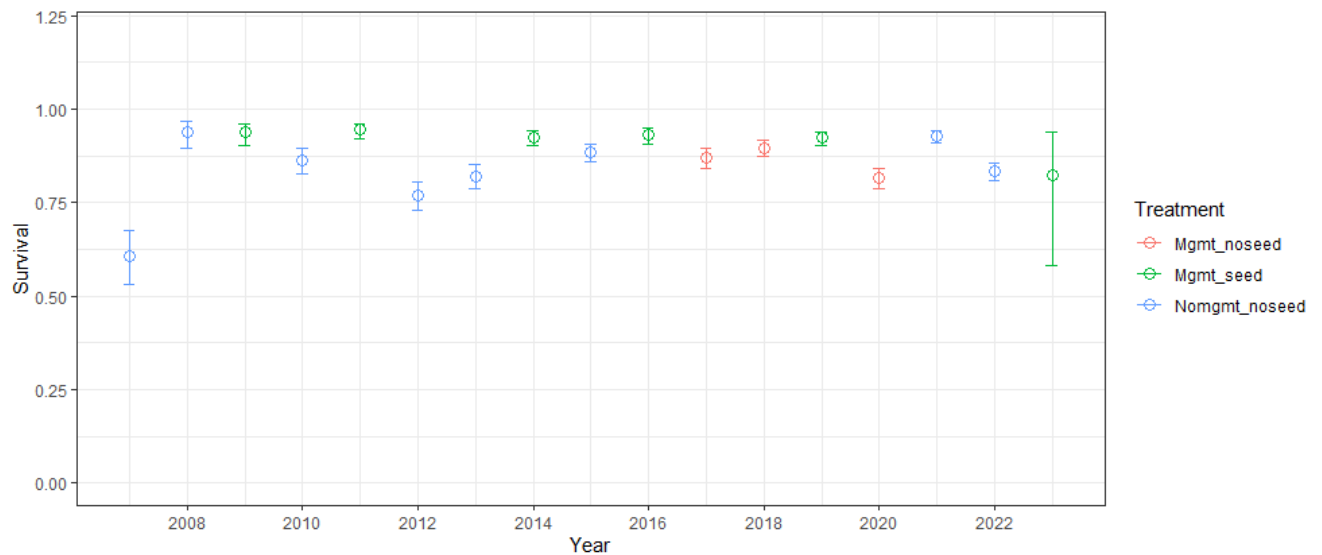


Figure 7. Annual survival of adult females with 95% confidence intervals. Note “Year” is referring to survival throughout that year. i.e. monitoring data from Jan 2022 correlates with survival in 20/21.

### 4.3 Long-tailed Bats

The 2023/24 annual monitoring undertaken by the Biodiversity Group has shown that long-tailed bat survival was reasonable in 2022/23, with 80% and 76% of adults surviving at the Mackay and Walker sites respectively. Juvenile survival is lower, at 73% and 64%. Survival for 2023/24 will be seen after the next season’s monitoring has been completed. The estimate number of bats at both the Walker and Mackay Creek sites continues to trend upwards.

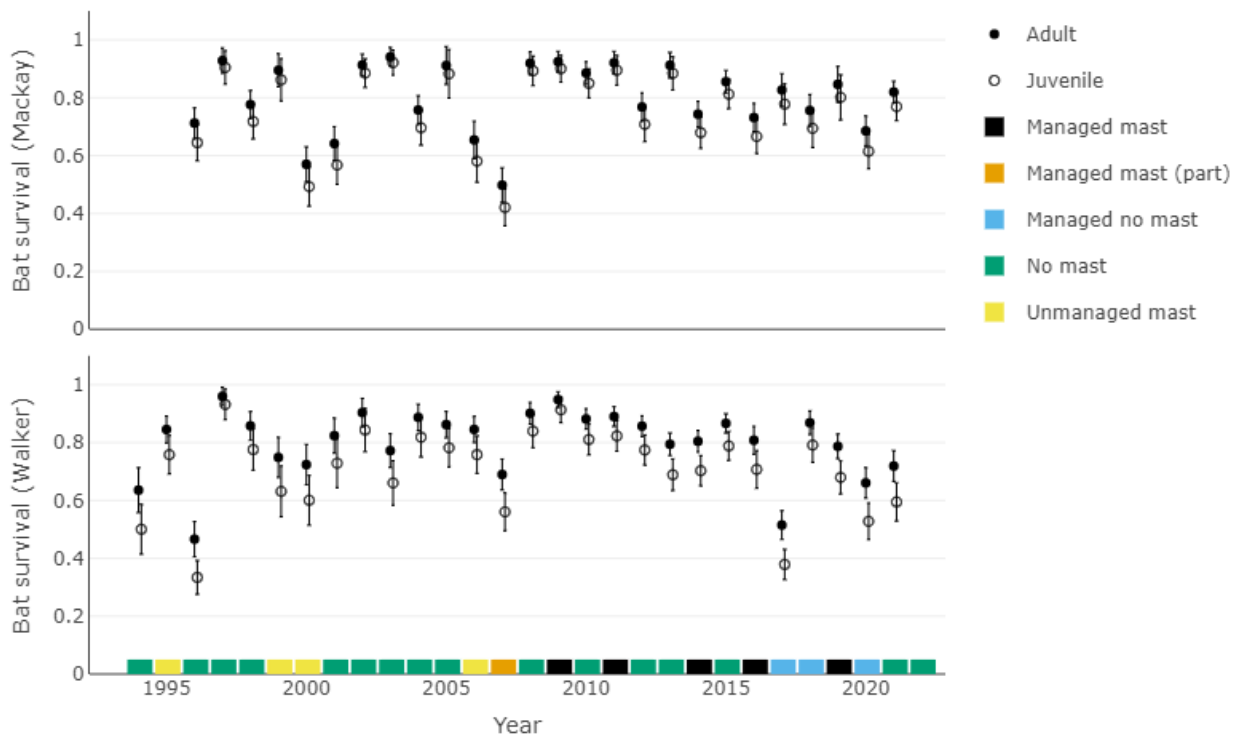


Figure 8. Survival of adult and juvenile female long-tailed bats at Walker Creek and Mackay Creek calculated using RMark. Coloured bars indicate beech mast and predator management in the preceding season. Values are means  $\pm$  95% confidence intervals.

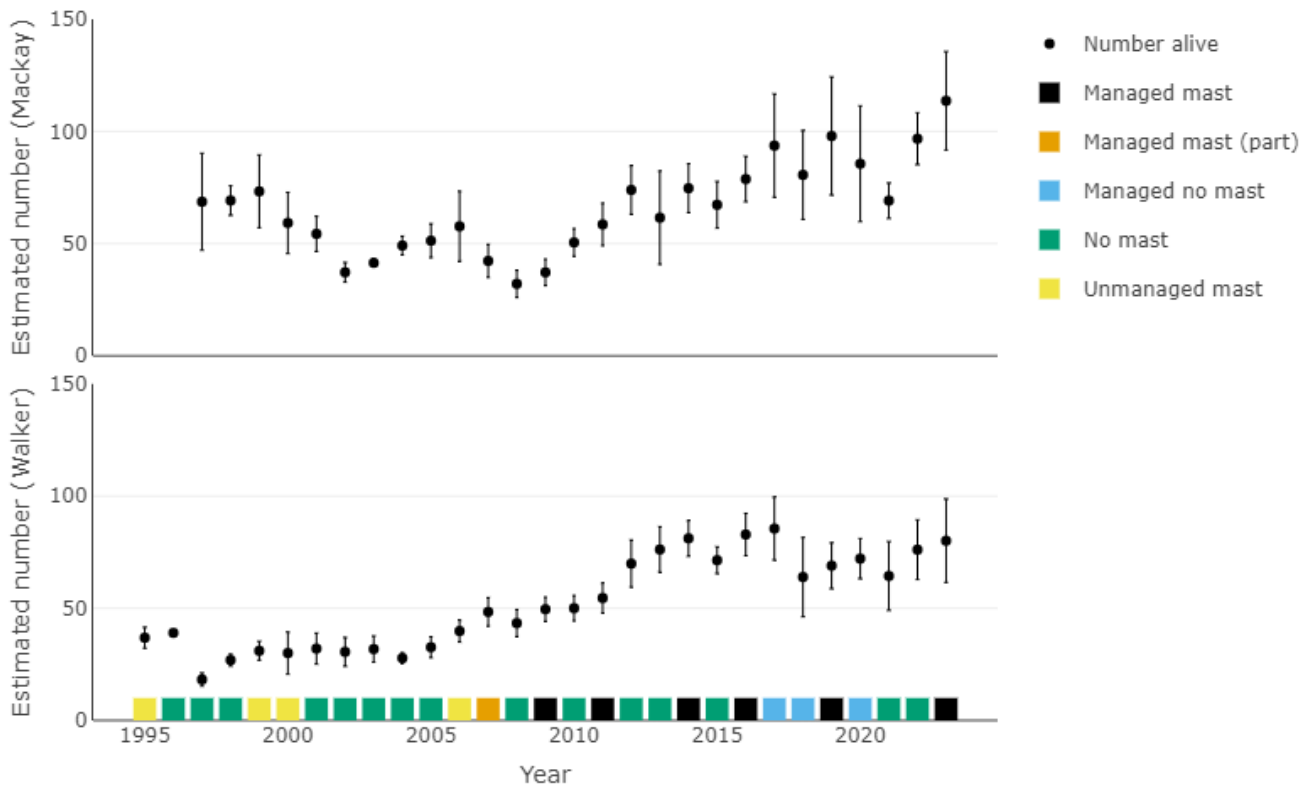


Figure 9. Abundances of adult female long-tailed bats at Walker Creek and Mackay Creek estimated as the minimum number alive using recapture rates. Coloured bars indicate beech mast and predator management in the preceding season. Values are means  $\pm$  95% confidence intervals.

#### 4.4 Mohua

The Biodiversity Group undertake mohua monitoring in the valley. After mohua in the Eglinton Valley almost went extinct following the 1999/2000 double mast predator plague, several translocations have taken place to supplement the remaining population. This is one of the first mainland sites to have mohua translocated to them and has the aim of creating a self-sustaining population in the valley.

Following translocations, the mohua population in the valley appeared to be holding steady. Between summer 18/19 and 19/20 numbers increased slightly from 68 to 77 birds seen in the valley. However, monitoring in 20/21 showed numbers had plummeted, with only 14 birds being found. Since then, minimum numbers have increased, with a minimum estimate of 32 mohua in the valley (exclusive of this year's juveniles). Future monitoring is needed to confirm the trend of mohua numbers observed this season. More information can be found in Sibling 2024.

4.5 Kākā

The kākā population in the Eglinton Valley have been monitored for breeding success and survival since 1998, using VHF radio tags to locate nests. Kākā population status and trends are inaccurate to measure using only counts, as females are heavily predated upon during the nesting period while they are confined to nest cavities. As such, the health of a population is measured by the sex ratio. The last kākā capture session in the Eglinton took place in October 2023, with 8 males, 9 females, and 3 juveniles. This is the first time anywhere in New Zealand that more females than males were captured. Across the last 3 years of captures, the average female to male sex ratio is up to 1:1.3 (F:M). The survival can be corroborated with the apparent breeding success, with one third of birds captured being juveniles (O'Donnell, C 2024)

Kākā Captures 2019-2021			
Location	Females	Males	F:M Ratio
Eglinton 2019 (27 Sep-5 Oct)	28 (11 juv)	38 (15 juv)	1:1.4
Eglinton 2019 (17-19 Oct)	4 (1 juv)	8 (3 juv)	1:2
Eglinton 2021 (18-23 Sep)	4 (0 juv)	6 (0 juv)	1:1.5
Eglinton 2023	9	8	1:1.1

Figure 8. Kākā captures by sex in the Eglinton Valley from 2019 to 2023. 3 juveniles were captured in 2023, but their sex were not noted.

5 Public advocacy

The annual ‘Pekapeka and pudding’ (former “Birds, bats and banana splits”) evening for the public took place on the 16<sup>th</sup> of January 2024. The long-tailed bat team had a successful day trapping but unfortunately no suitable trees for trapping at the roost entrance. Instead, the short-tailed bat team lead the visitors to their roost tree near Earl Mountain Car Park.

6 Discussion

In previous seasons, aerial 1080 operations to control rats and mustelids followed the typical beech forest timing of baiting in spring during mast years when seed begins germinating to knock the high rat numbers down before they give rise to increased stoat populations. Although these proved effective at controlling rats, spring operations in the Eglinton have had increasingly poor outcomes for long-tailed bats and mohua. The last two seasons have trialled a double pulse method to control rats during an inter-mast population increase, with two 1080 operations taking place a year apart in February. This was intended to achieve two goals: provide protection for vulnerable species over winter so they would have a better start entering the spring breeding season, and to ensure rat numbers were starting from a low base if seed falls in autumn. So far the first pulse appears to have been effective, with abundances of mohua and long-tailed bats seeming to increase and the apparent breeding

success and sex ratio of kākā captured. The effectiveness of the double pulse timing will be evident after the results of the 2024/25 monitoring season.

Fewer stoats have been caught this year (91) than 2022/23 (104). This could be attributed to the 1080 operations undertaken last year and this year, which decimated their rodent food source and would have eliminated some stoats through secondary poisoning. Without this competition, it could have led to the apparent increase in the weasel population, which is why a higher number of weasels have been caught especially after the 2024 toxin operation. A considerable spike in stoat captures can be seen in summer before the operation, as this spring's young began to disperse.

Cat control continues to be an issue in the Eglinton, with Weka by-kill in the Twizel traps in particular outweighing the number of cats captured. A rethink of how to undertake cat control in the valley is required to optimise results. Possible options include removing all Twizel traps and replacing with more SA2 traps (ensuring they are set up as per best practice), implementing chimney style traps, lengthening the tunnel covering Twizel traps, or undertaking bait drops with targeted trapping or shooting.

Mohua numbers in the valley appear to have increased from last year (from 21 observed to 32), which could show that the February 2023 1080 operation provided sufficient protection over winter. However, the population remains precarious and at risk of local extinction, proving slow to recover the massive decline it suffered during 2020 before a late 1080 operation delayed by COVID-19 knocked rats back down from tracking at 43%. The 2024/25 season will show whether these two consecutive 1080 operations have contributed to successful breeding seasons after winters with low rat numbers.

Further research is still required to understand the mechanisms driving rat irruptions at these sites. It is unknown how climate change and increased resource availability affect rat populations at these repeat predator control sites (either from removal of meso-competitors possums, or from general increased ecosystem health).

## 7 Recommendations

- DOC Te Anau and the Biodiversity Group to continue monitoring short and long tailed bats in the valley – the information provided by these programmes is critical to our understanding of how to protect these threatened species, at this site and others.
- DOC Te Anau and the National Predator Control Programme to continue undertaking 1080 operations in response to further inter-mast rodent number increases or predicted mast events.
- Biodiversity Group to continue monitoring mohua and consider what options are available to protect this population if no improvement is seen.
- DOC Te Anau to upgrade final single set DOC200 line (True Right of Mackay).
- DOC Te Anau to develop and implement a landscape scale cat control programme.

## 8 Acknowledgements

Big thanks to all the contractors who have undertaken predator control and monitoring in the valley; Mammalian Corrections Unit, Contract Wild Animal Control Limited, Heli Otago, CRS Solutions and Edge Effects, and to the Te Anau biodiversity team.

Thank you to all the Biodiversity Group staff for all the work they undertake in the valley and the National Predator Control Program team for their support.

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