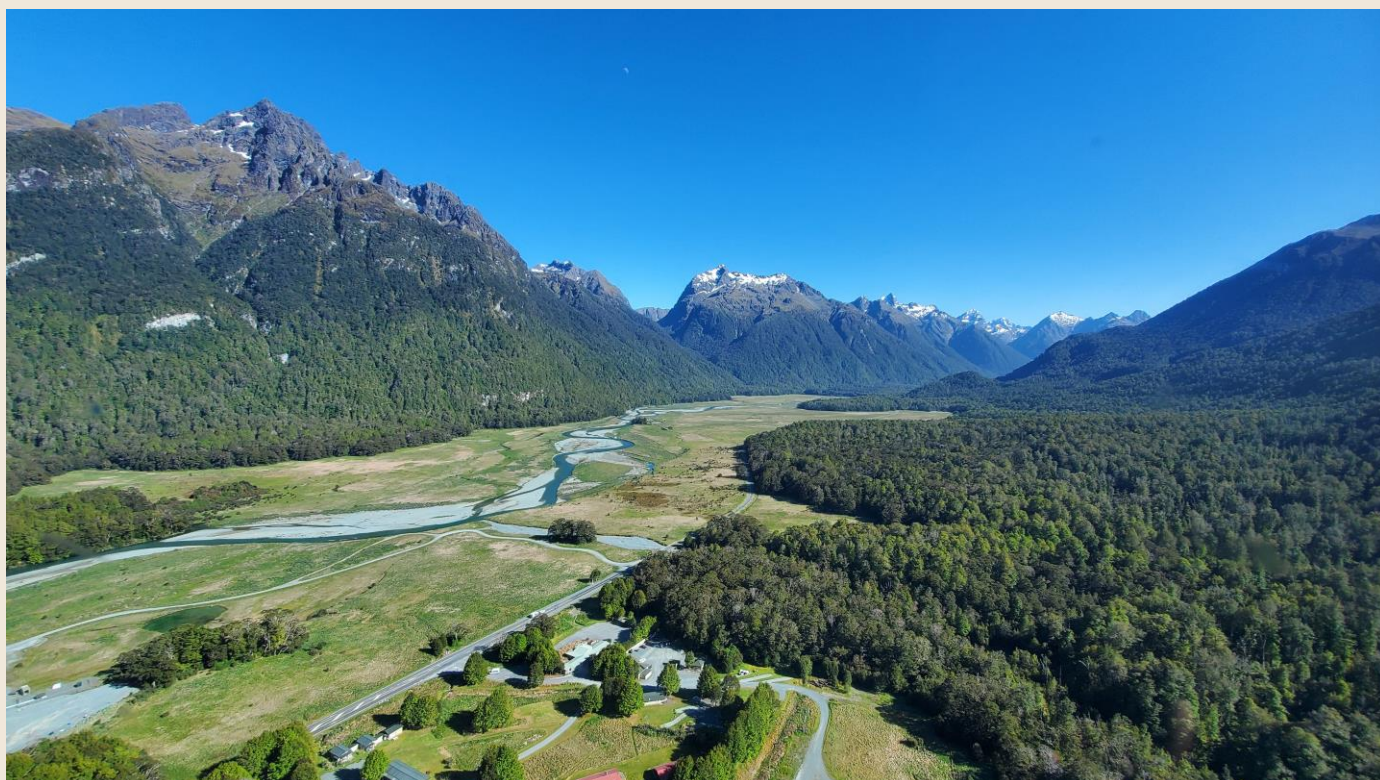


Eglinton Valley Report



2022-2023

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Conservation
Te Papa Atawhai

New Zealand Government

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1 Summary

Responding to an inter-mast increase in rodent numbers in the Eglinton Valley, a 1080 and pindone operation was carried out in February 2023. This successfully dropped rodent tracking from 27% over winter 2022 down to 0.4% post-operation. This aims to provide additional protection from predators over winter. Mohua numbers crashed in 20/21 following the 2019 mast, and this population remains at serious, if not inevitable, risk of extinction with a minimum of only 21 individuals. More positively, most threatened species populations are on the rise in the valley including kaka, short-tailed bats and kakariki. Assessing the success of the pre-winter 1080 operation in protecting long tailed bats and mohua will need to wait until the results of the 2024 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; recently reclassified as recovering. 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 2022 and June 2023.

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. 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 104 stoats were caught in the year from July 2022 through to June 2023, up on 54 in the previous year. 30 weasels were caught during the same period, up on 12 the previous year. No ferrets have been caught since 2020.

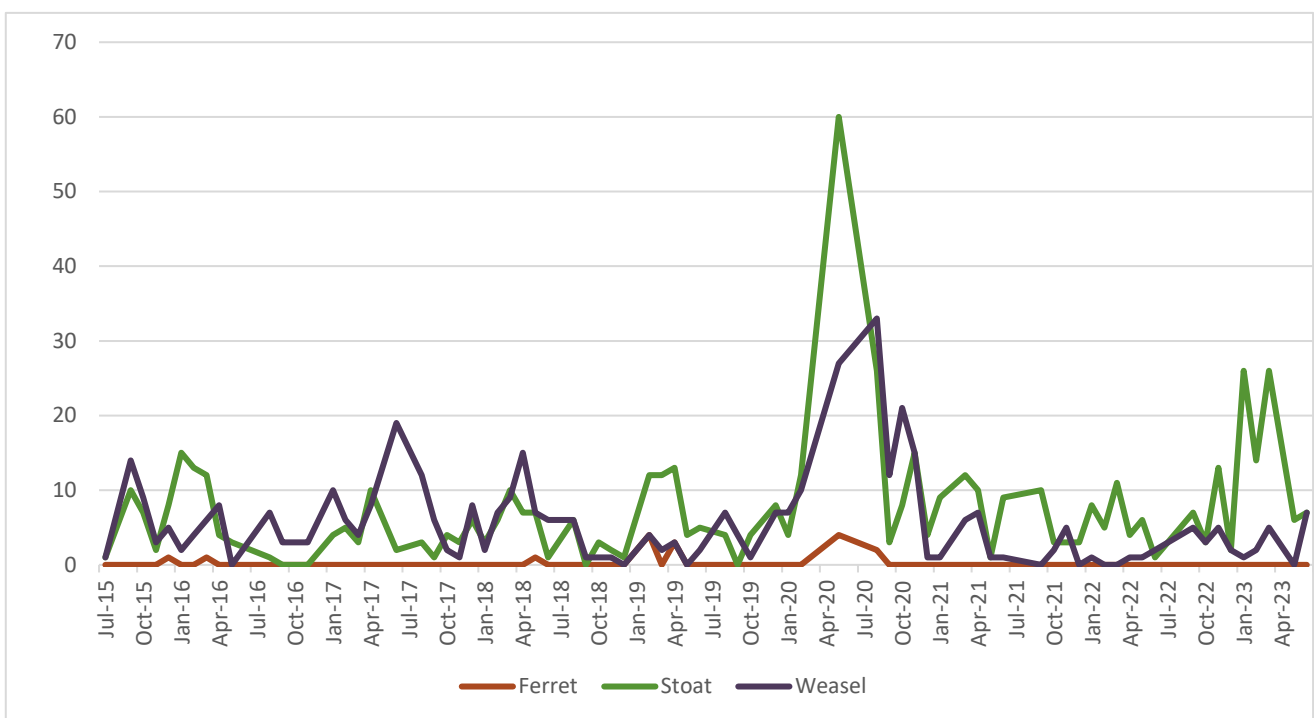


Figure 1. Ferret, stoat, and weasel captures 2015 - 2023.

3.2 Rat Control

The National Predator Control Programme (NPCP) carried out a 1080 operation in the Eglinton Valley in response to an inter-mast increase in rodent numbers. Operating out of the Deer Flat Campground, pre-feed took place on February 9th, and the toxic bait sown on February 17th, 2023. To reduce the number of predators left in the aerial exclusion zone surrounding the road, pindone stations were also deployed. The treatment area was enlarged this season to include river flats and alpine areas with the aim to provide longer lasting protection. Additionally, the operation was undertaken in February to reduce winter predation compared to previous operations taking place in spring in response to mast events.

Prior to the operation, rat tracking averaged 8% at the end of summer 2022 before jumping to 24-27% through winter. After the February 2023 toxin drop, rat tracking was successfully knocked right back down to 0.4% through March and May.

Rats are also the most common catch in the trap network, with 553 being caught this year.

Rodent tracking rates

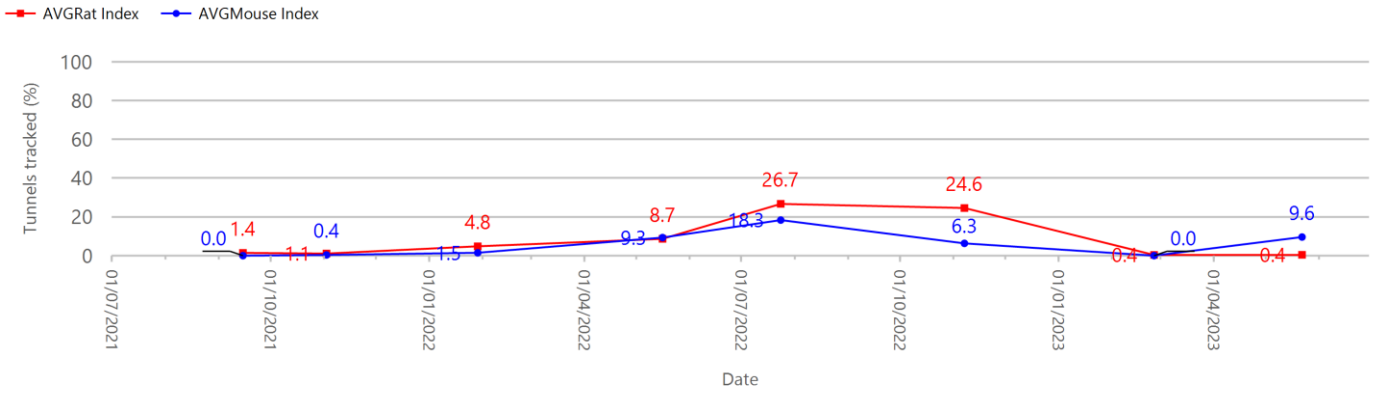


Figure 2. Eglinton Valley rodent tracking rates 2021-2023

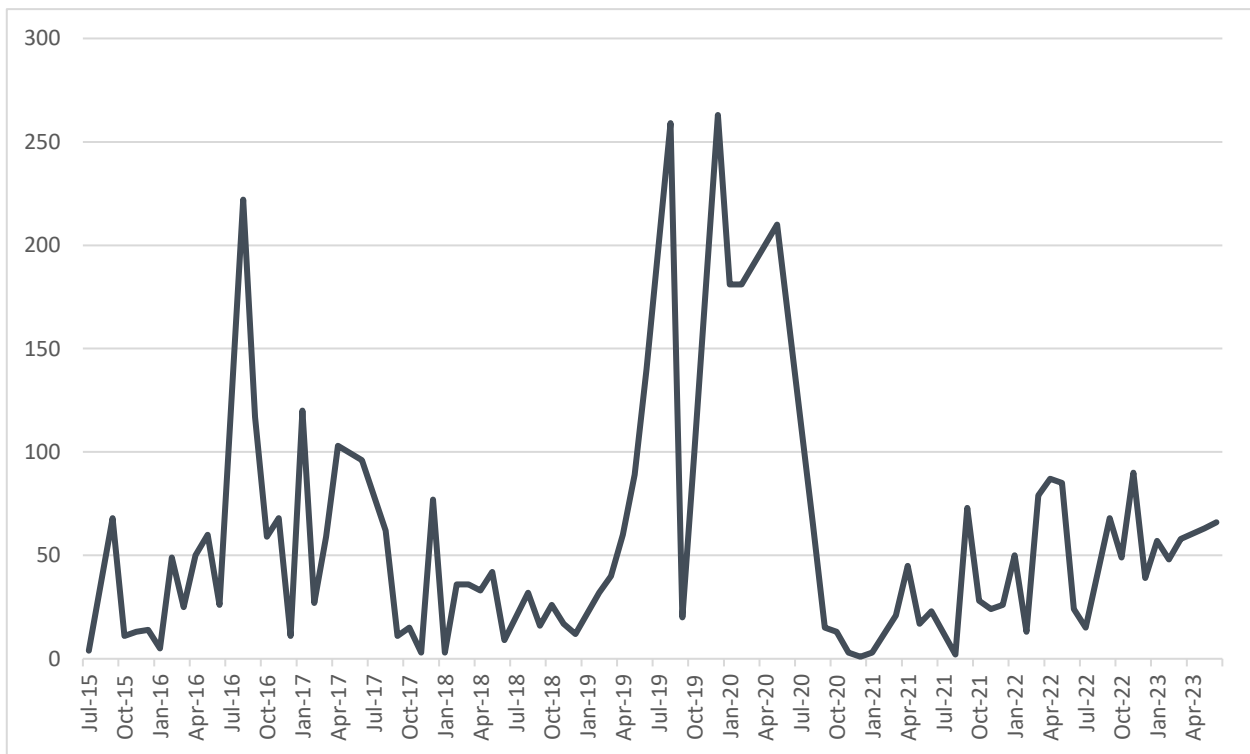
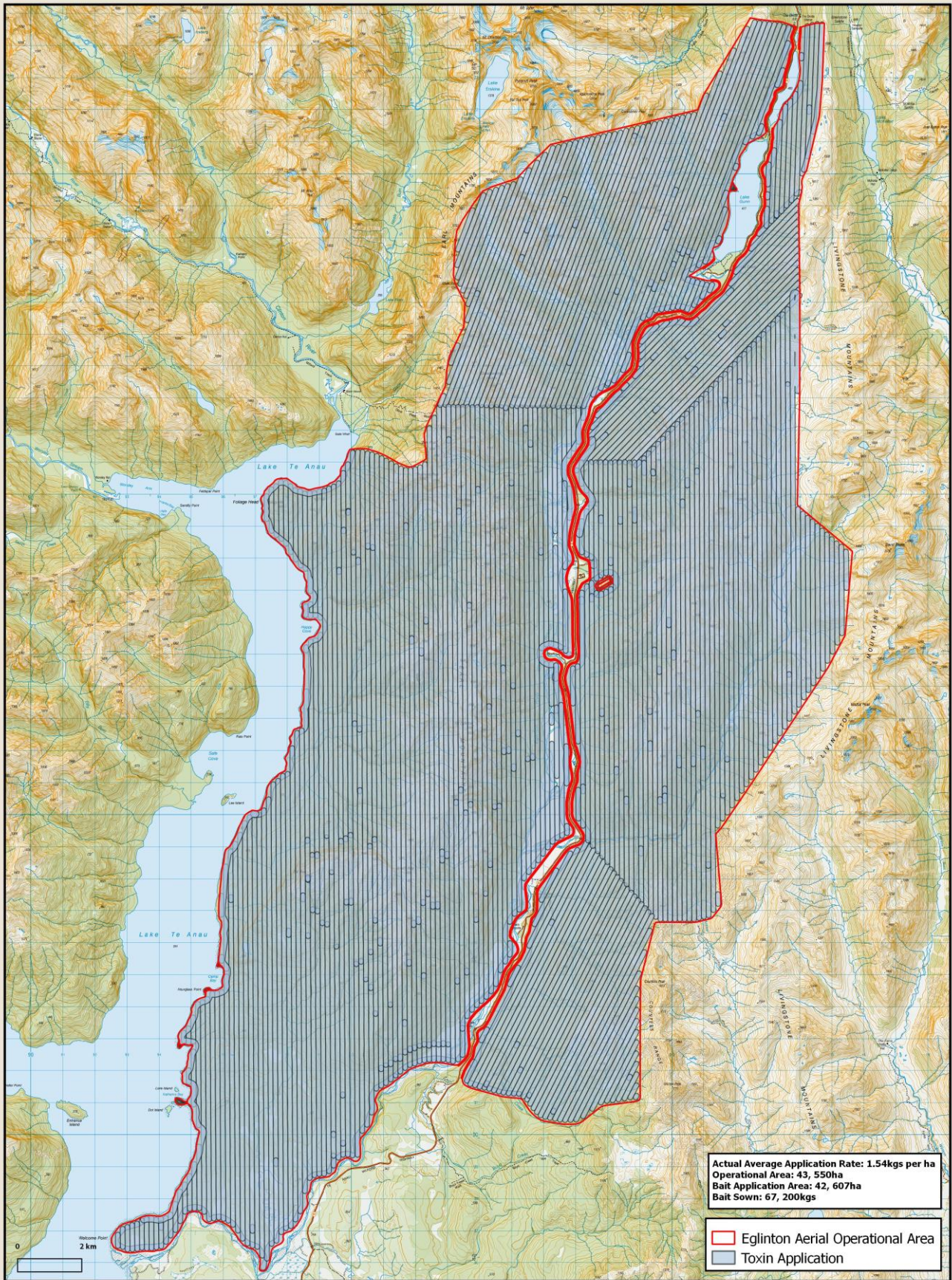


Figure 3. Rat captures 2015 - 2023



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Eglinton Aerial Toxin Operation 16/02/2023

17/02/2023



Figure 4. Eglinton 1080 operation February 2023

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.

2 cats were caught this season – both in cat specific traps. The number of cats caught in stoat traps has gone down over the last few years, which is thought to be due to older traps with larger openings being replaced with newer models. 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.

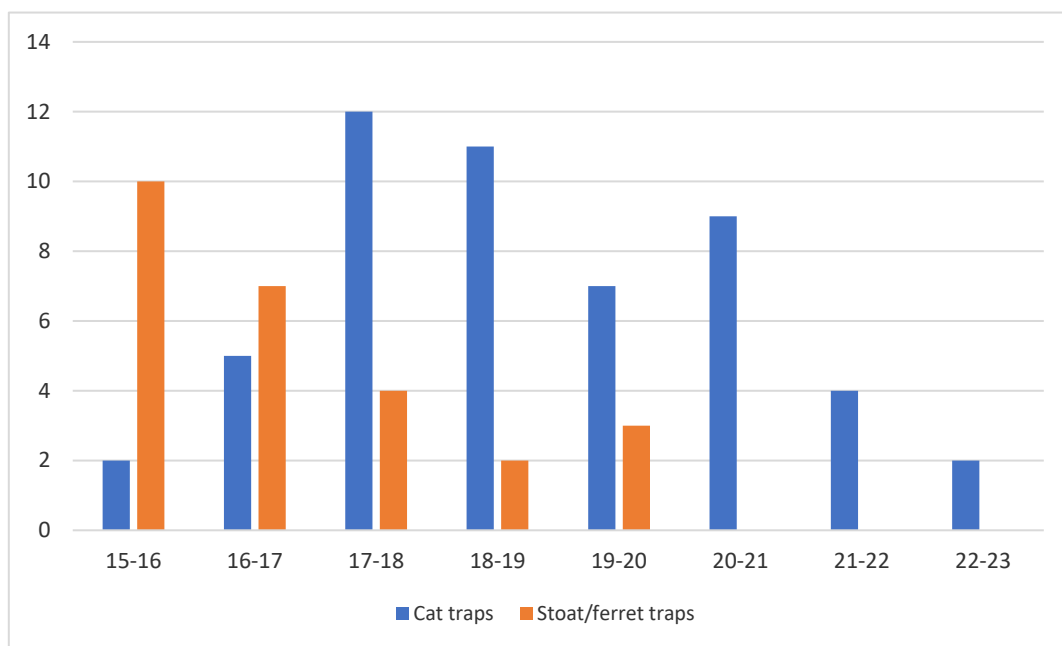


Figure 5. Cat captures in kill traps 2015-2023

4 Monitoring

4.1 Seedfall

Modelling predicts the possibility of a mast event in 2023/24. Seedfall from May 2023 is yet to be confirmed through seed count data.

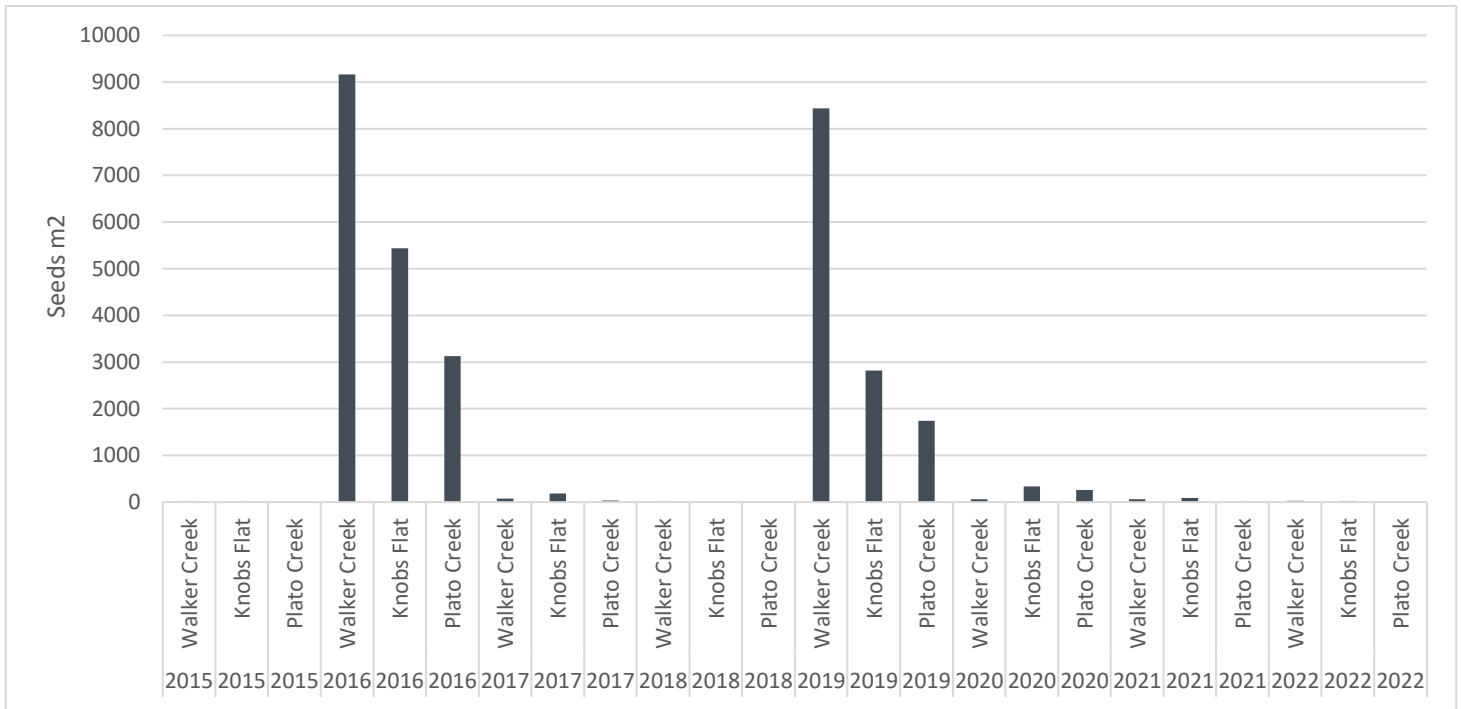


Figure 6. Seedfall data 2015 -2022

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 2021/2022. Survival results from 2022/2023 will need to be confirmed in the next monitoring period. 1379 individually marked bats were recorded this season, with 233 new bats receiving tags. Roost emergence counts continued to be low with the highest count being 1772 bats. See Jackson, Pryde, McLaughlin 2023 for more information.

4.3 Long-tailed Bats

Annual monitoring undertaken by the Biodiversity Group has shown that long-tailed bat survival was reasonable in 2022, between monitoring in summer 2022 and summer 2023. Results for 2023 will be seen after the next season’s monitoring has been completed. See figure 7 for more details.

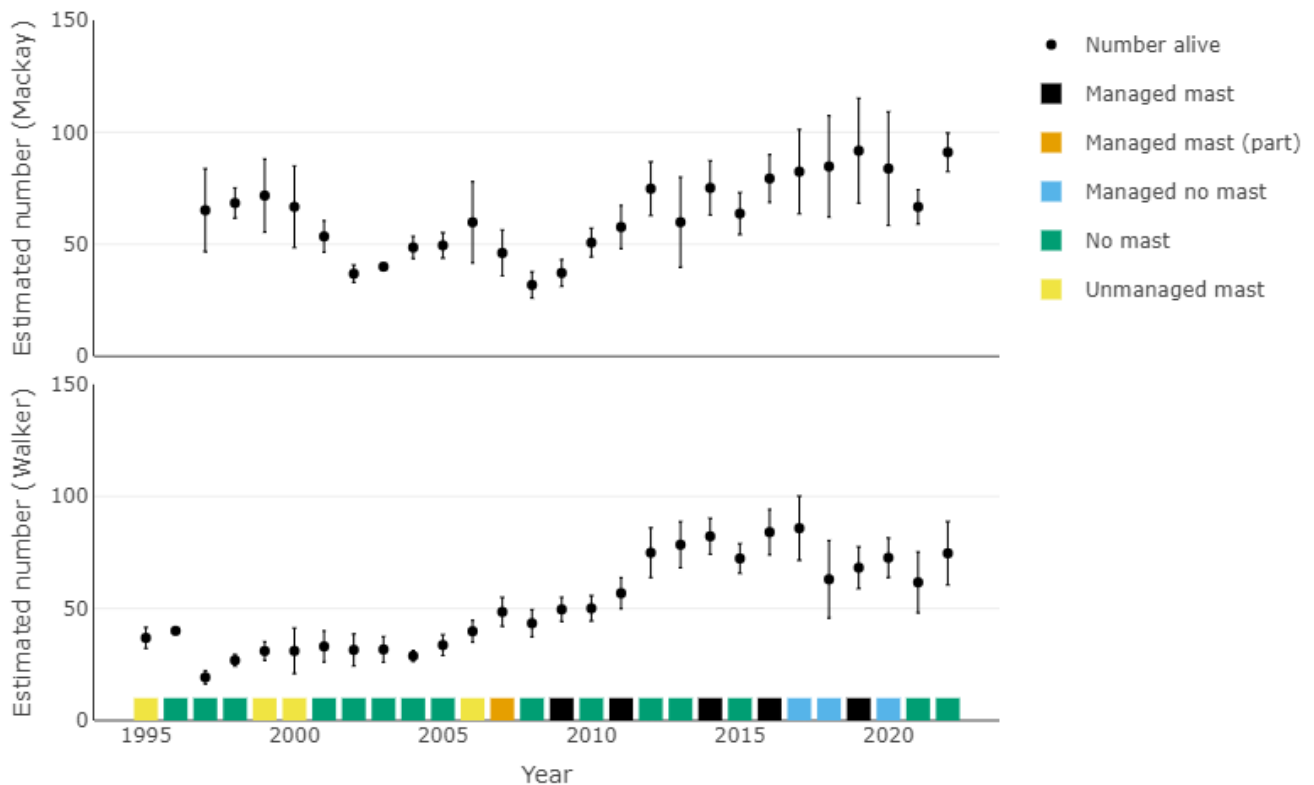


Figure 7. Abundances of adult female long-tailed bats at Walker Creek and Mackay Creek estimated as the minimum number alive using recapture rates. Coloured bars indicate beech mast and predator management in the preceding season. Values are means \pm 95% confidence intervals.

4.4 Mohua

The Biodiversity Group undertake mohua monitoring in the valley and a brief summary is below. More information can be found in Sibling 2023.

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 increased to 25 in 21/22, and now 21 in the last 22/23 season.

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 September 2021, with 4 females and 6 adults being caught giving a ratio of 1:1.5.

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

Figure 8. Kākā captures by sex in the Eglinton Valley from 2019 to 2021

5 Public advocacy

Formerly “Birds, Bats, and Banana Splits”, the annual “Pekapeka and Pudding” community event took place on January 18th, 2023. Two tree traps were set up at an easily accessed bat roost at Mackay Straight, catching 91 bats for the public to check out.

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. This season trialled a new method during an inter-mast rat population increase to begin the operation pre-mast in February 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 when seed falls in autumn. The effectiveness of this new timing on the protection of long-tailed bats and mohua will not be evident until after the 2023/24 monitoring season.

Stoat numbers appear to have increased compared to previous years, represented in the numbers of stoats trapped in the valley this year. Numbers caught spiked over summer as this spring’s young begun to disperse, with high numbers potentially driven by the increased rat population over winter encouraging both higher productivity and lower mortality. A sharp decline then occurred in May captures, likely due to the February 1080 operation decimating their rodent food supplies, as well as eliminating some stoats through secondary poisoning.

Cat control continues to be an issue in the Eglinton, with by-kill (namely Weka) 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, implementing chimney style

traps, lengthening the tunnel covering Twizel traps, and undertaking bait drops with targeted trapping or shooting.

Mohua numbers in the valley remain precarious and at risk of local extinction. With the latest survey only sighting 21 adults, the population is proving slow to recover from the massive decline during 2020, where rat tracking reached 43% before a May (delayed from March by COVID-19) 1080 operation knocked them down. Monitoring during 2023/24 may begin to show whether this year's 1080 operation gave mohua sufficient protection over winter to go into a successful 2023 breeding season.

Without the predicted 2022 mast eventuating, the long-tailed bait population appears to have fared reasonably, but the effects of the February 2023 1080 operation will not become evident until the next 2023/24 monitoring period.

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

- 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.
- Undertake 1080 operations in response to further inter-mast rodent number increases or predicted mast events.
- Continue monitoring mohua and consider what options are available to protect this population from going extinct.
- Upgrade final single set DOC200 line.
- Develop and implement a landscape scale cat control programme.
- Begin a kea monitoring program as part of the national Kea Survey Tool (survey.keadatabase.nz) with field workers collecting kea encounter rate data as they conduct other field work.

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.

9 References

Gillies C.A. & Williams D. 2005. *Using tracking tunnels to monitor rodents and mustelids*. V2.5.1. Department of Conservation, Research & Development Division, Hamilton. OLDDM-118330

Greene, T.C. 2023. *Sex Ratio of Kaka in the Eglinton Valley – 2021 to 2023*. DOCCM-7477813

Jackson R., Pryde M., McLaughlin L., 2023. *Eglinton Valley Lesser Short-tailed Bat Monitoring 2022-2023*. DOCCM-7415262

Jackson R. and Pryde M. 2020. *Short-tailed Bat Monitoring Report Eglinton 2019*. DOCCM-6257400

Jones M. and Bowler S. 2019. *Eglinton Valley end of season report 2018-19*. DOCCM-5472661

Jones M. and Bowler S. 2020. *Eglinton Valley end of season report 2019-20*. DOCCM-6388460

Kelly D., Geldenhuis A., James A., Holland E.P., Plank M.J., Brockie R.E., Cowan P.E., Harper G.A., Lee W.G., Maitland M.J. 2013. *Of mast and mean: differential temperature cue makes mast seeding insensitive to climate change*. Ecology Letters 16: 90-98

Sibler S. 2022. *Eglinton Valley end of season report 2021-22*. DOCCM-6951426

Sibler S. 2023. *Eglinton Valley end of season report 2022-23*. DOCCM-7321503