Eglinton Valley Monitoring Annual Report

2024 – 2025 season

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Te Kāwanatanga o Aotearoa

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Summary

After the February 2024 aerial 1080 operation, rat tracking in the Eglinton Valley remained close to 0% for much of the 2024/25 season, providing protection for the native species in the area which saw increased survival. Beech masting was not forecast for 2024/25 and did not appear to occur, although seedfall is yet to be counted. However, masting is predicted for 2025/26, and an aerial operation is being planned in response. Mustelid, rat and cat kill trapping in the valley continue to provide year-round protection on the valley floor, although changes need to be made to increase cat captures. Both short and long-tailed bats/pekapeka showed good survival, and the mohua population appears to have increased for the second year in a row. Kārearea were monitored in the valley for the first time this year, finding nests and testing GPS trackers.

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 (DOC) Te Anau district office undertakes the continuous stoat and cat control as well as periodic rat and possum control with the National Predator Control Programme (NPCP) when required to protect this ecosystem. DOC Te Anau also lead the short-tailed bat monitoring project through January. There are several other species monitoring projects in the area as well as long term research being undertaken by the DOC Biodiversity Group. This report summarises the management and monitoring activities in the valley between July 2024 and June 2025. Sections of this report are copied from their respective detailed reports, which are referenced under the section headings.

Predator Control

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 47 stoats were caught in the year from July 2024 through to June 2025, down from 91 in the previous year. 144 weasels were caught during the same period, up on 45 the previous year. 2 ferrets were reported to have been trapped, a much more reasonable number compared to the alleged 21 reported in 2023/24

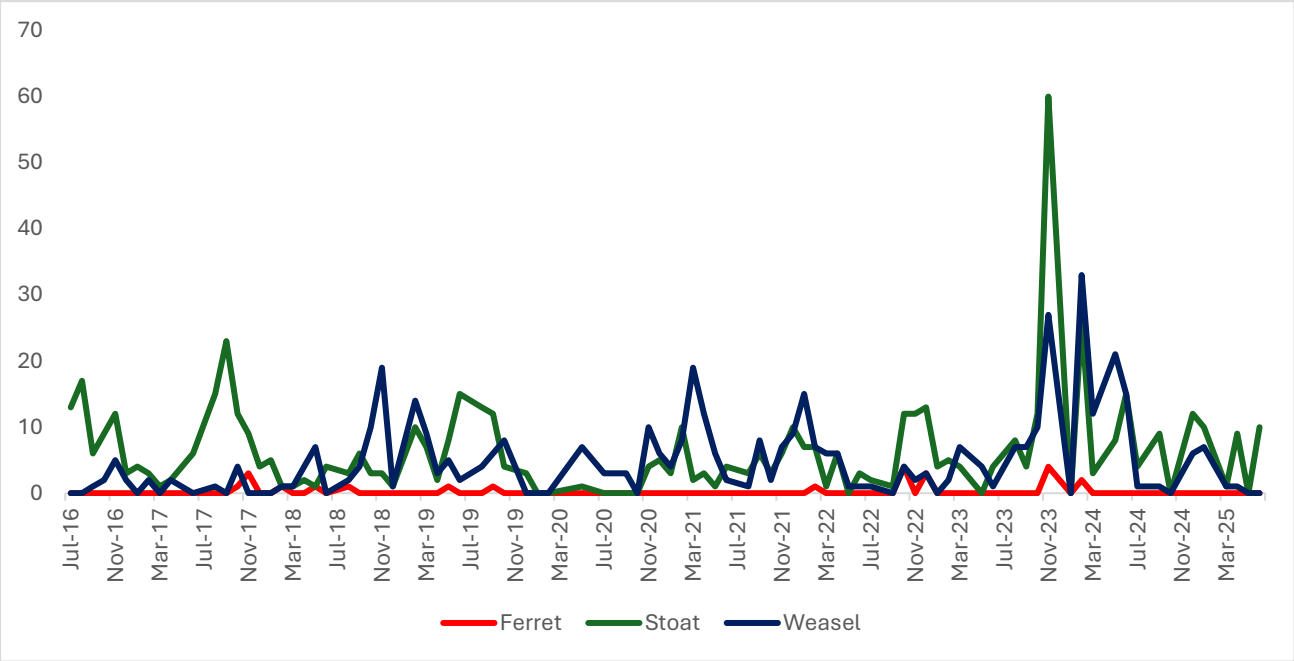

Figure 1. Ferret, stoat, and weasel captures in the Eglinton Valley trap network July 2016 - June 2025

Rat Control

No aerial toxin operations were carried out by the National Predator Control Programme this year, with the last taking place in February 2024 to control rats, which successfully knocked rats down through winter 2024. With both rat tracking increasing in May 2025 and a beech masting event being predicted for 2025/26, an aerial 1080 operation is being planned for next season. Rats are the most common catch in the trap network, with 351 being caught this year, down considerably from 571 the previous year.

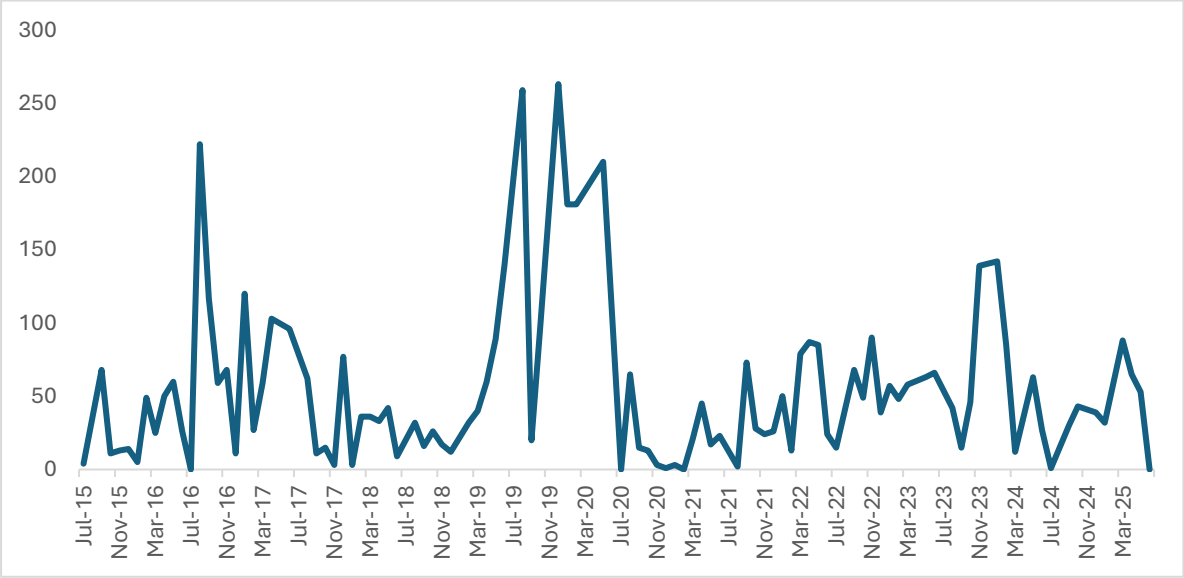

Figure 2. Monthly rat captures in the Eglinton Valley trap network July 2015 - June 2025

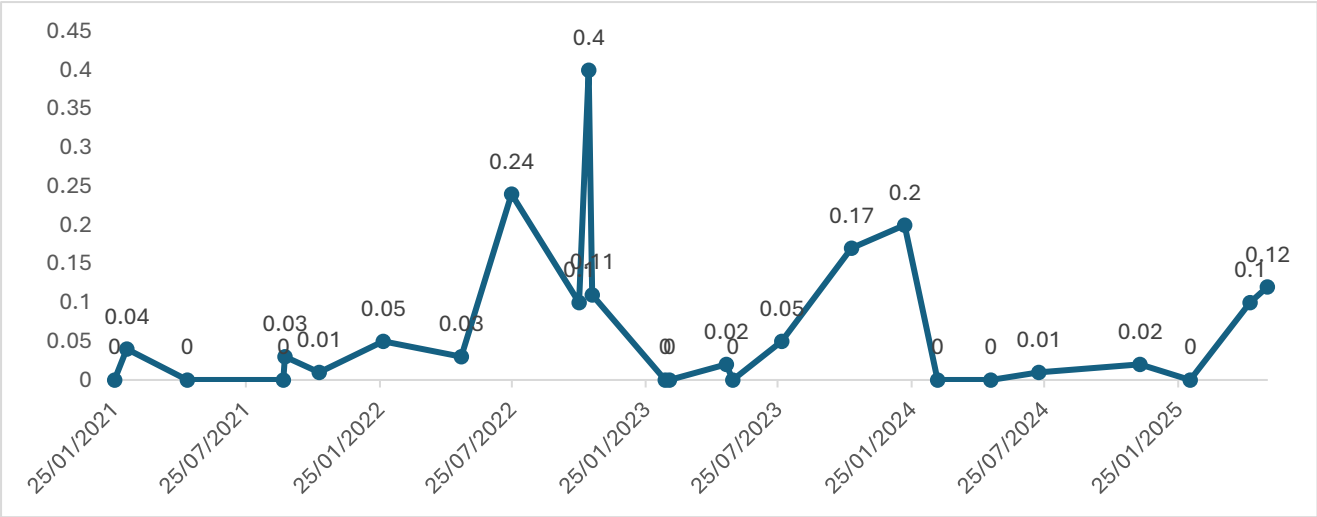

Figure 3. 1-night rat tracking rates in the Eglinton Valley 2021 - 2025

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.

6 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.

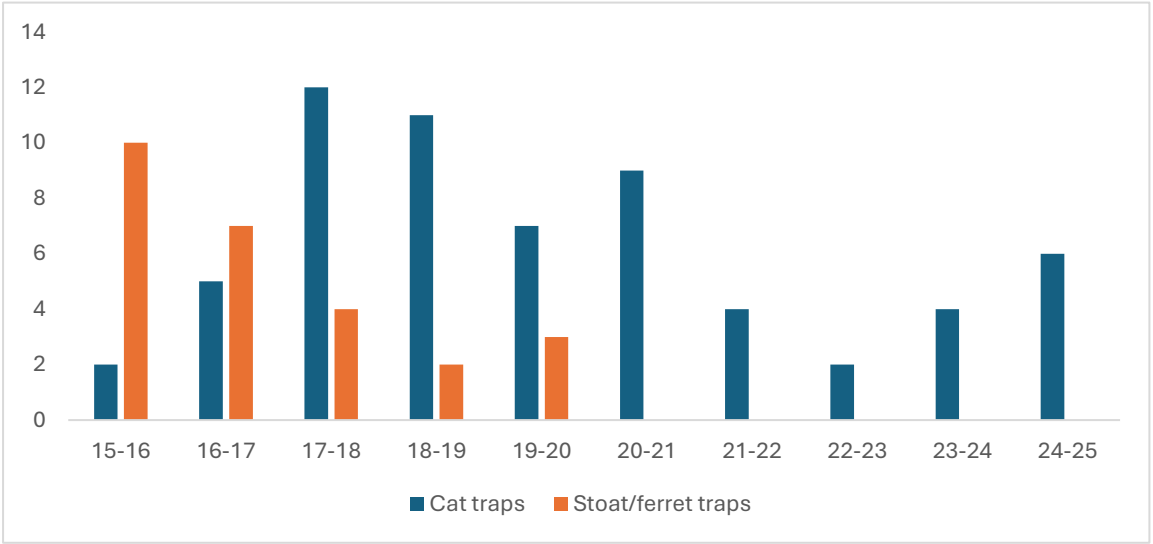

Figure 4. Cat Captures in Eglinton Valley kill trap network 2015 - 2025

Monitoring

Beech Masting and Seedfall

The DeltaT beech seeding prediction for 2024/25 was unlikely for masting in the Eglinton Valley, but masting is being predicted for 2025/26. Seedfall collected during this year is yet to be counted.

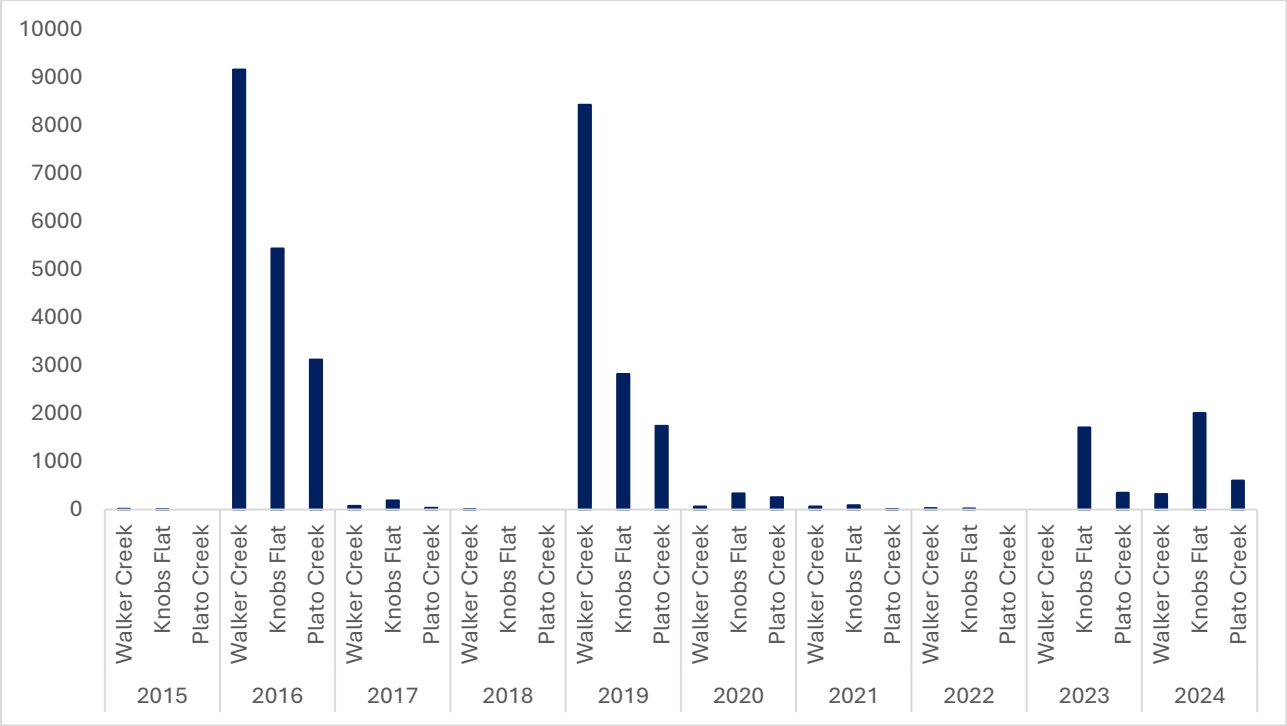

Figure 5. Beech Seedfall at Walker Cree, Knobs Flat, and Plato Creek in the Eglinton Valley 2015 - 2024

Southern lesser short-tailed bat (pekapeka)

(McLaughlin & Pryde, 2025)

The Eglinton Valley southern lesser short-tailed bat population is continuing to recover with good adult female survival of ~82% recorded in 2023/2024. Survival results from 2024/2025 will need to be confirmed in the next monitoring period. 1015 individually marked bats were recorded this season, with a record 364 new bats receiving tags this season. Roost emergence counts increased this year with the highest count being 3251 bats. The overall population trend is still increasing. See McLaughlin, Pryde 2025 for more information.

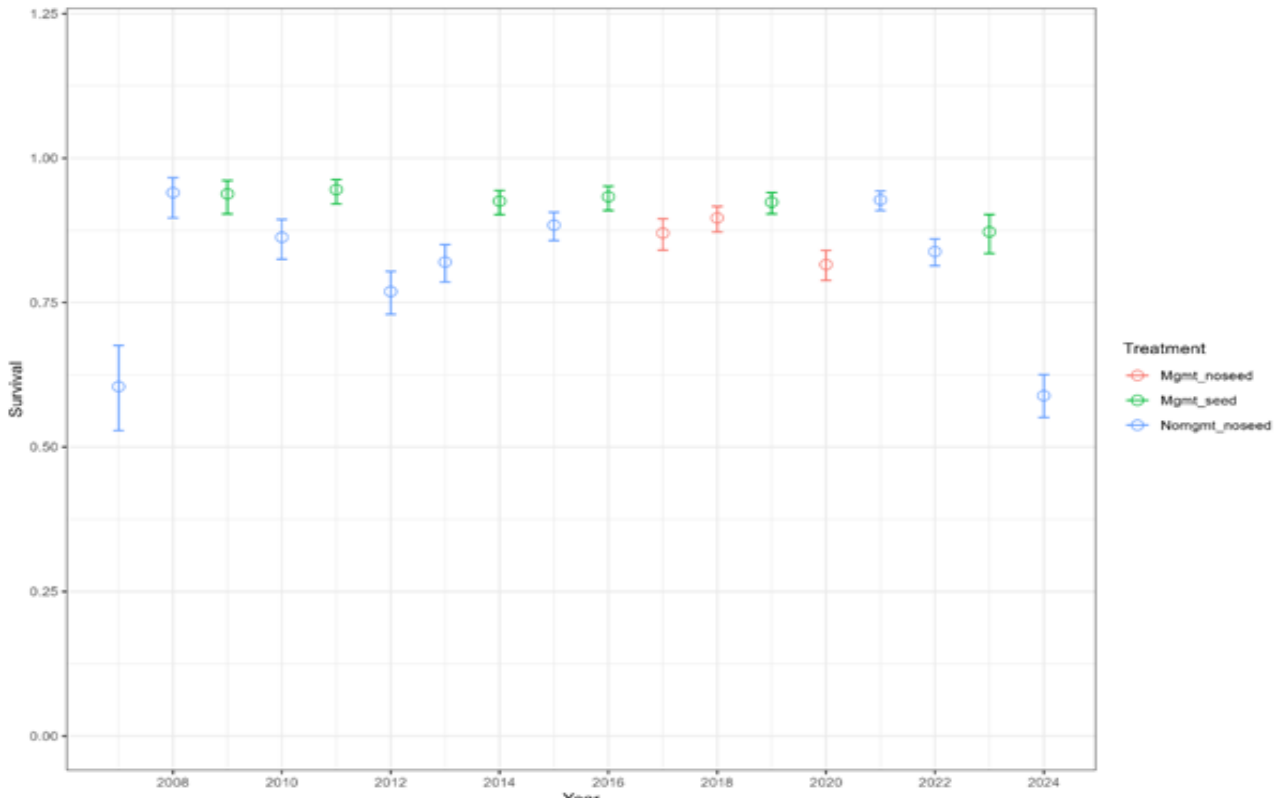

Figure 6. Annual survival of adult females with 95% confidence intervals. Note "Year" is referring to survival throughout that year. I.e. monitoring data from Jan 2022 correlates with survival in 20/21

Long-tailed bat (pekapeka)

(SIBLER, EGLINTON VALLEY RESEARCH CONTRACTORS FIELD SEASON REPORT 2024 2025, 2025)

The annual monitoring undertaken by the Biodiversity Group has shown that long-tailed bat survival was reasonable in 2023/24, at both the Walker and Mackay colonies. Survival for 2024/25 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. Both colonies appeared this season to have splintered into four groups that were spatially segregated but still showed evidence of connectivity. See Sibler 2025 for further details.

Wing morphology tracings were collected for both native bat species to analyse flight speed and manoeuvrability in relation to key morphological parameters such as aspect ratio and wing loading. By comparing their wing morphologies to those of other bat species worldwide, the aim is to classify them as having low, moderate, or high manoeuvrability. This categorization may further inform predictions about their ability to avoid wind turbine rotor blades, as well as provide insights into their habitat use and behavioural adaptations.

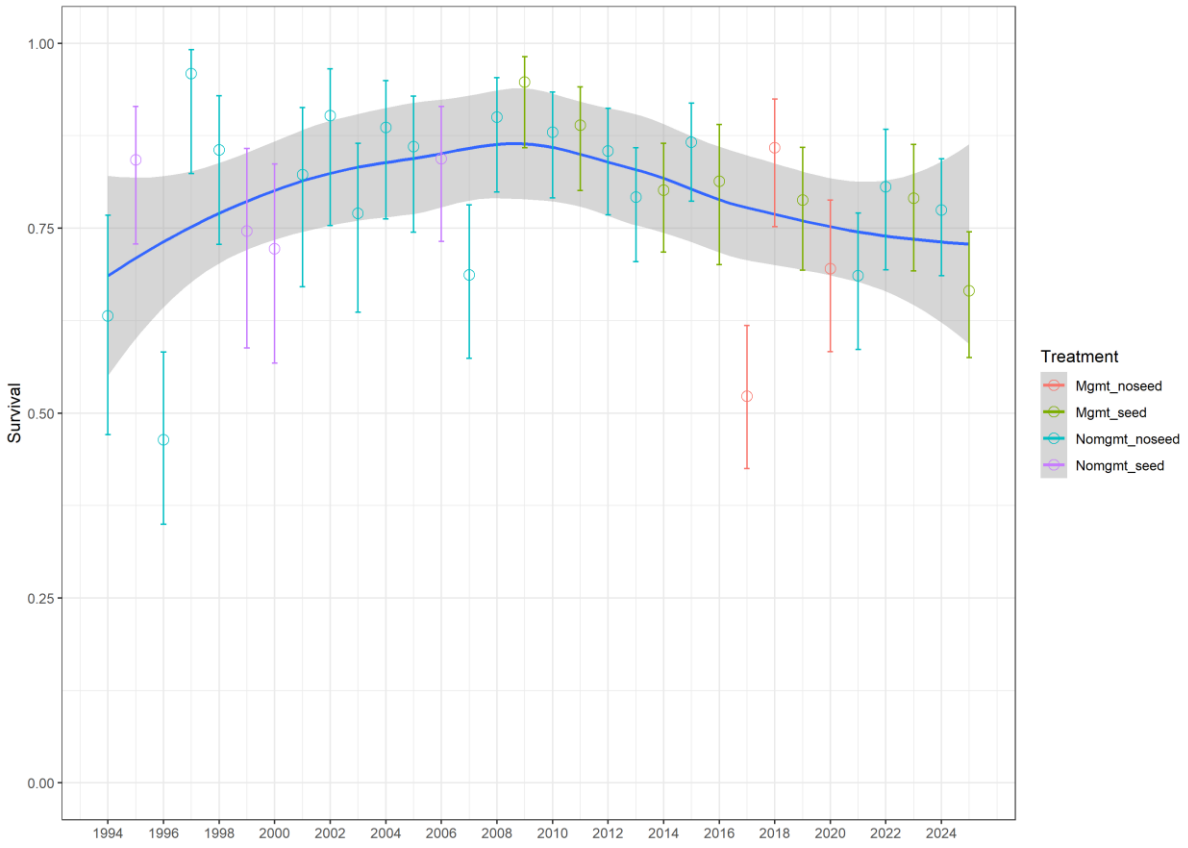

Figure 8. Survival of adult and juvenile female long-tailed bats at Walker Creek calculated using RMark. Values are means ± 95% confidence intervals

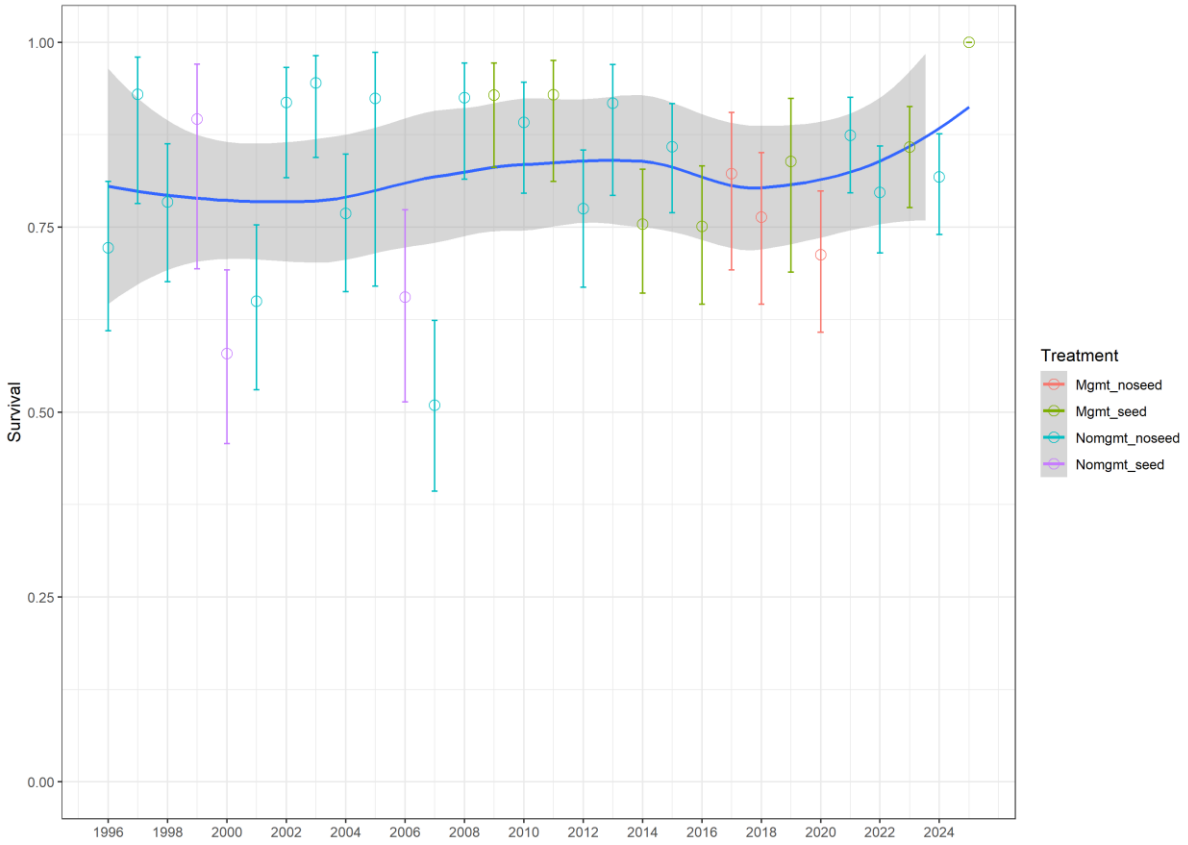

Figure 7. Survival of adult and juvenile female long-tailed bats at Mackay Creek calculated using RMark. Values are means ± 95% confidence intervals.

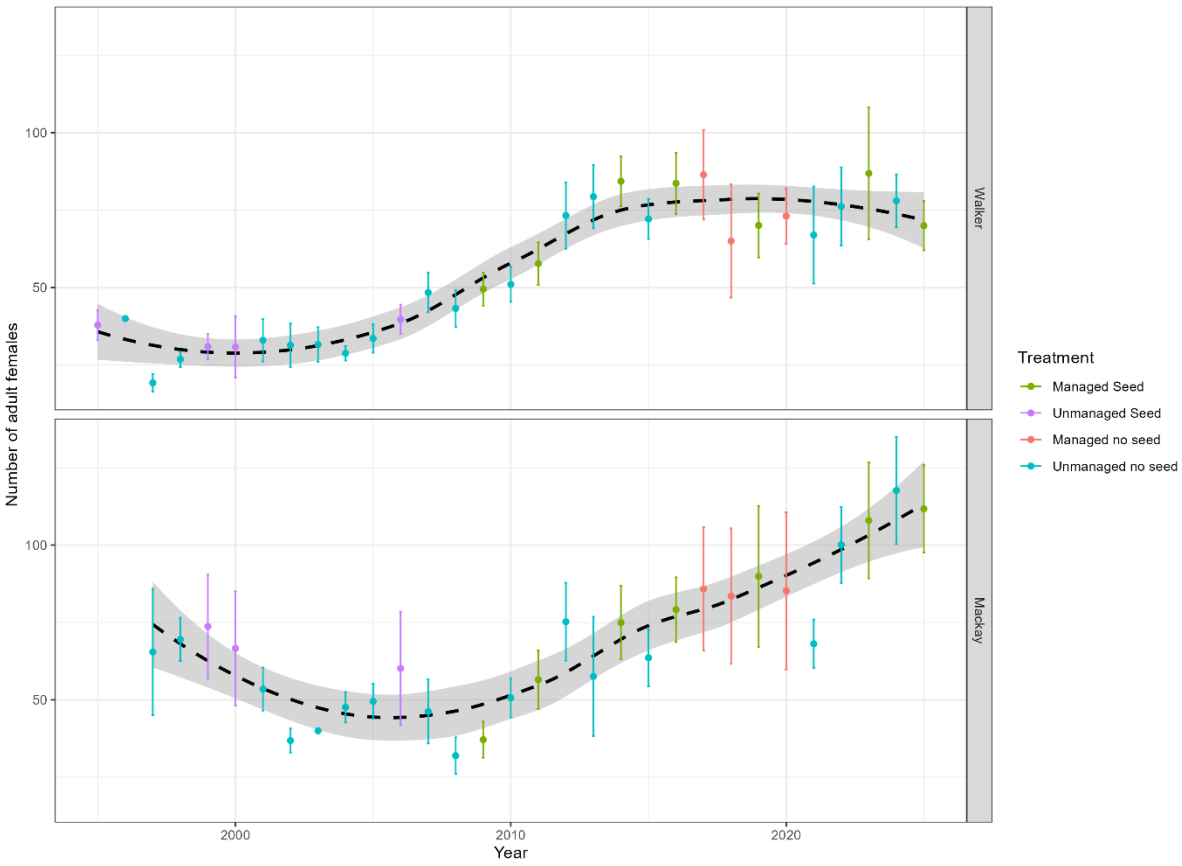

Figure 9. Abundances of adult female long-tailed bats at Walker Creek and Mackay Creek estimated as the minimum number alive using recapture rates. Values are means ± 95% confidence intervals

Mohua

(SIBLER, EGLINTON VALLEY RESEARCH CONTRACTORS FIELD SEASON REPORT 2024 2025, 2025)

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 on 2010, 2015, 2016, and 2017. 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 59 mohua in the valley in 2024/25 (exclusive of this year's juveniles). Future monitoring is needed to confirm the trend of mohua numbers observed this season.

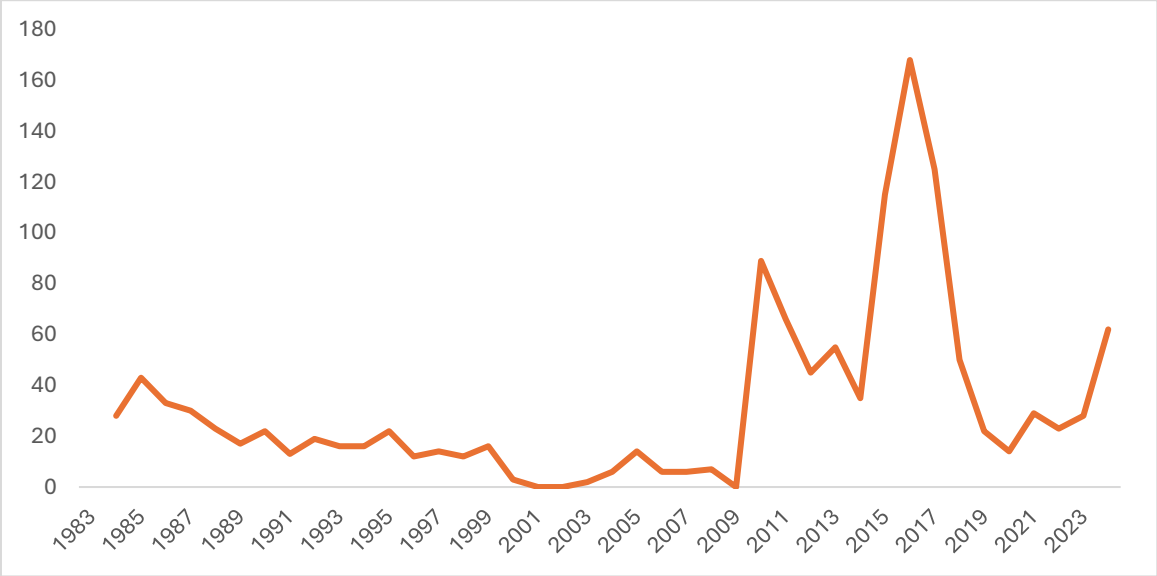

Figure 10. Minimum population estimates of mohua in the Eglinton Valley 1983 - 2024.

Kākā

(Sibler, Eglinton Valley Research Contractors field season report 2024 2025, 2025)

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 2024, although only a single kākā was captured. Kākā activity in the Eglinton Valley during the 2024–2025 season was notably low compared to the previous year. While all tracked individuals were detected, none exhibited clear signs of nesting. The limited number of kākā observed within the valley suggests a temporary shift in distribution, potentially influenced by food availability.

Kārearea

(Sibler, Eglinton Valley Research Contractors field season report 2024 2025, 2025)

As part of a broader study on migratory bird species in the Eglinton Valley, kārearea monitoring was introduced in the 2024 season. Initial observations of falcons, either seen or heard during routine bird surveys, guided targeted searches for nesting sites. These efforts resulted in the discovery of seven areas of interest and the confirmation of three active nests. Between December 7th and 15th 2024, effort was conducted to capture, band, and GPS track falcons within the valley. Mist netting was not successful, but one adult female was caught using a hat lined with capture nooses, designed to snare a bird as they swooped the wearer. This adult female was fitted with an INTERREX 4G 18Plus GPS transmitter, with tracking data managed via the Ecotopia – Druid Technology platform. However, the transmitter failed to transmit data as expected despite cell coverage in the valley. Data was manually retrieved.

Skinks

(Sibler, Eglinton Valley Research Contractors field season report 2024 2025, 2025)

The southern grass skink is a relatively small, cryptic species found in lowland grasslands, where it is highly vulnerable to the impacts of introduced predators. By monitoring the population dynamics and reproductive

success of this species, the Biodiversity Group aim to assess the effectiveness of ongoing predator control efforts and provide insights into the ecological recovery of the area.

Monitoring was conducted using artificial cover objects (ACOs), which provide a safe microhabitat for skinks to shelter under. Eight ACO lines were placed in the Eglinton Valley Flats grassland area. Surveys were carried out to record the frequency of skink sightings and skink reproductive success.

Surveys were conducted twice per month during optimum sampling conditions. Monitoring was undertaken between 12-18 degrees Celsius, preferably on an overcast day without rain between 10am and 6pm. Start and end time, temperature as well as skink numbers and skink babies (<40mm SVL) were documented.

ACOs were deployed in early October 2024, with the first survey conducted on October 22, 2024.

From this point onward, the ACOs were checked at least twice a month, ensuring a consistent data set for the season.

The final survey of the season was conducted on February 18, 2025, with 10 total surveys conducted.

Wetland Birds

(Sibler, Eglinton Valley Research Contractors field season report 2024 2025, 2025)

Wetland bird surveys have been incorporated into the Eglinton Valley research program to broaden the list of species monitored in relation to the effects of pest control. Historically, casual surveys and nocturnal fieldwork during the 1990s documented widespread vocalizations of marsh crakes (Zapornia pusilla) throughout the valley. However, more recent observations indicate a decline in their numbers—a trend also noted for other native species in the valley (O'Donnell, pers. comm. 2024). Previous studies from other parts of New Zealand have linked this decline to predation by introduced mammals. Consequently, long-term monitoring is essential for tracking population trends, even though limited funding had previously constrained such efforts.

The first standardized wetland bird survey in the Eglinton Valley was conducted in 2020 and focused on three species due to their native status, vulnerability, and the role they play in signalling ecosystem health: Marsh Crake, Spotless Crake, and Fernbird. Survey sites were chosen based on the presence of suitable wetland habitat and historical records from the 1990s. Prior to the 2023 season, transect lines were revised and rationalized to improve survey efficiency. This season, 14 distinct transect lines were used, with survey protocols adapted from those used in other regions of New Zealand. In comparison to the last wetland bird survey in 2023, the overall number of birds detected has increased.

Table 1. Wetland bird sightings 2024 - 2025

Site	Area Name	Marsh Crake	Spotless Crake	Fernbird
2	Cascade	0	0	8
4	Upper Eglinton	0	0	1
5	Knobs	0	0	4
7	Goose pond	0	4	9
8	Deer Flat 1	2	4	23
9	Deer Flat 2	22	0	27

10	Deer Flat 3	8	0	28
11	Mirror Lakes 1	2	0	20
12	Mirror Lakes 2	1	0	45
13	Mirror Lakes 3	5	0	37
14	Black Creek	2	0	37
16	Eglinton Lookouts	1	2	4
17	Shag colony	1	5	8
18	Walker cliffs	0	0	0

Braided River Bird Survey

(Sibler, Eglinton Valley Research Contractors field season report 2024 2025, 2025)

A late spring with wet conditions prohibited save river crossings and inhibited the Biodiversity Group from conducting the annual braided river bird survey.

Public Advocacy

Due to staff shortage, the annual “Pekapeka and Pudding” event did not take place.

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 2023 and 2024. 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. The altered timing of the operations appears to have benefitted native species with both short and long-tailed bats, mohua, and wetland birds showing good survivorship and population estimates. With beech masting being predicted for 2025/26 and rat tracking increasing in May 2025, an aerial operation is being planned for next season. The idea is to reduce rat numbers during flowering but before the seed drops so that the rat population starts from a lower point when food becomes plentiful, hopefully preventing the population from exploding during the mast or at the minimum preventing it from increasing to the same degree. A second operation will then be pencilled in for after seed germinates if deemed necessary, to reduce numbers again if they increased enough over winter.

Continuing the pattern from last season, fewer stoats were caught this year (47) compared to last year (91) likely due to secondary poisoning from the aerial toxic operations carried out two years in a row, combined with their rodent food source being decimated by the same operations. Conversely, a large increase in the

number of weasels caught (144 vs 45, Figure 1.) is likely due to lower competition from the decreased stoat population allowing numbers to increase.

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 in some years. 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 be responding positively to the altered aerial toxic operation timings, providing protection for the species over winter. This is the second year in a row with an increasing minimum population estimate. It remains a smaller population at risk of extinction but hope still remains for the population to continue growing.

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 further options are available to protect this population
- 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.

Acknowledgments

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

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