Operational summary report for the Eglinton Valley 2015-16

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Department of Conservation
Te Papa Atawhai

Overview

The Department of Conservation undertakes continuous stoat and cat control; and periodic rat and possum control when required within the Eglinton Valley to protect a range of threatened species.

This report summarises the animal pest control and result monitoring carried out in the Eglinton Valley between September 2015 and September 2016[1]. Pest species that were targeted for control during the 2015/16 season included stoats, rats, possums and cats. Outcome monitoring and translocations are not covered herein. Note that this is the first summary report produced since the 2012/13 annual report DOCDM-1222347, so there is a gap in the timeline.

In brief, two mohua translocations took place in the Eglinton during 2015/16. A transfer of 79 mohua from Anchor Island to Kiosk Creek on 14-15 October 2015, and a further 101 from Anchor on the 17-18 October 2016. Long-term species monitoring, including short-tailed and long-tailed bats, was ongoing during 2015-16. For details pertaining to species monitoring and management, please refer to the End of season report (Tier 1) DOC-2752046 and Short tailed bat report 2016 - DOC-2774024.

Stoat control has been carried out in the Eglinton Valley in its current form continuously since 1998, and traps have been checked and rebaited four-six weekly (up to 9 times per annum). The stoat trap network was expanded and intensified from 365 traps in 2014/15 to 420 in August 2016 with 55 additional tunnels deployed between Marian Corner and Monkey Creek[2] by Shinji Kameyama (DOC) (see map - Appendix 1).

Rodent and mustelid abundance is monitored using standard tracking tunnel methods, and is typically carried out quarterly each year. Seedfall monitoring is reported nationally, with sampling points set up in February and results collected in May. These results are reported herein.

Following the 2016 beech masting event, an aerial 1080 operation was undertaken in the Eglinton Valley on 14 October 2016 targeting rats, stoats and possums. The ground control bait station grid was not activated.

Stoat Control

The network in the Eglinton Valley is comprised of mostly double-set stainless DOC 150/200 traps, and a few lines of old style single-set DOC 200 traps (True right line, Mistake Creek and part of the Valley floor). The servicing of the stoat traps was tendered out to different trapping contractors over the period covered by September 2015-16. Mainly Fauna Ltd (Iris Broeksma) completed nine trap checks between June 2015 and June 2016, servicing 365 traps. Huntsman Ltd (Ben Crouchley) recently secured the contract for July 2016 to July 2017. Ben has completed two trap checks to date, servicing a total of 420 traps (incl the additional 55 traps on the MM line). He has replaced the roadside traps from Deer flat to the entrance of the National Park, and plans to replace the DOC 200 single sets on the True right by December 2016. Further funding is needed to replace single sets along Mistake Creek and the remaining Valley floor.

Excluding the 55 new traps on the MM line, a total of 73 stoats and 624 rats were caught in the existing 365 traps between September 2015-16 (Figure 1). One stoat and 45 rats were caught on the

[1] Some data is from the months of August 2015 or August 2016 rather than September.

[2] Refer to this as the MM line.

MM line during Ben Crouchley's August and September 2016 checks. Refer to Appendix 2 for the monthly capture breakdown.

The total stoat capture of 73 for 15/16 was less than expected for a typical mast year, which usually totals >150 stoats (Appendix 3, Figure 1+2 from Hill 2011% 2013). This is probably due to the effect of secondary poisoning on stoats from the aerial 1080 operation in November 2014, as past managed mast years have used 1st generation anticoagulants in bait stations over a limited area, which would have limited effect on stoat abundance. There appears to be an increase in total weasel numbers in comparison to previous years, with 60 captured this year [In comparison to 2011/12 and 2012/13, where 4 and 19 weasels were caught respectively (Hill, 2012 & 2013)]. The increase in weasel abundance has been reported at multiple sites in the South Island which were treated with aerial 1080 as a response to rodent irruptions in 2014. Weight sensitivity adjustment to stoat traps (calibrating to 80g) also occurred in the 2014/15 year which also may have causes increased weasel capture rates due to traps previously not being sensitive enough to catch weasels encountering traps. The monthly capture breakdown is presented in Figure 1.

The total yearly rat capture of 624 was higher than a typical year and as expected in a mast year, where annual rat captures are generally >500 (Appendix 3, Figure 1+3). It is clear that rodent levels in the Eglinton rose rapidly in response to the increased amount of beech seedfall in 2016. The monthly capture breakdown is presented in Figure 1.

It is expected that rat and stoat catch rates will decline in response to the recent 1080 application, with subsequent catches markedly reduced for remaining trap checks in 2016 and early 2017. By applying 1080 prior

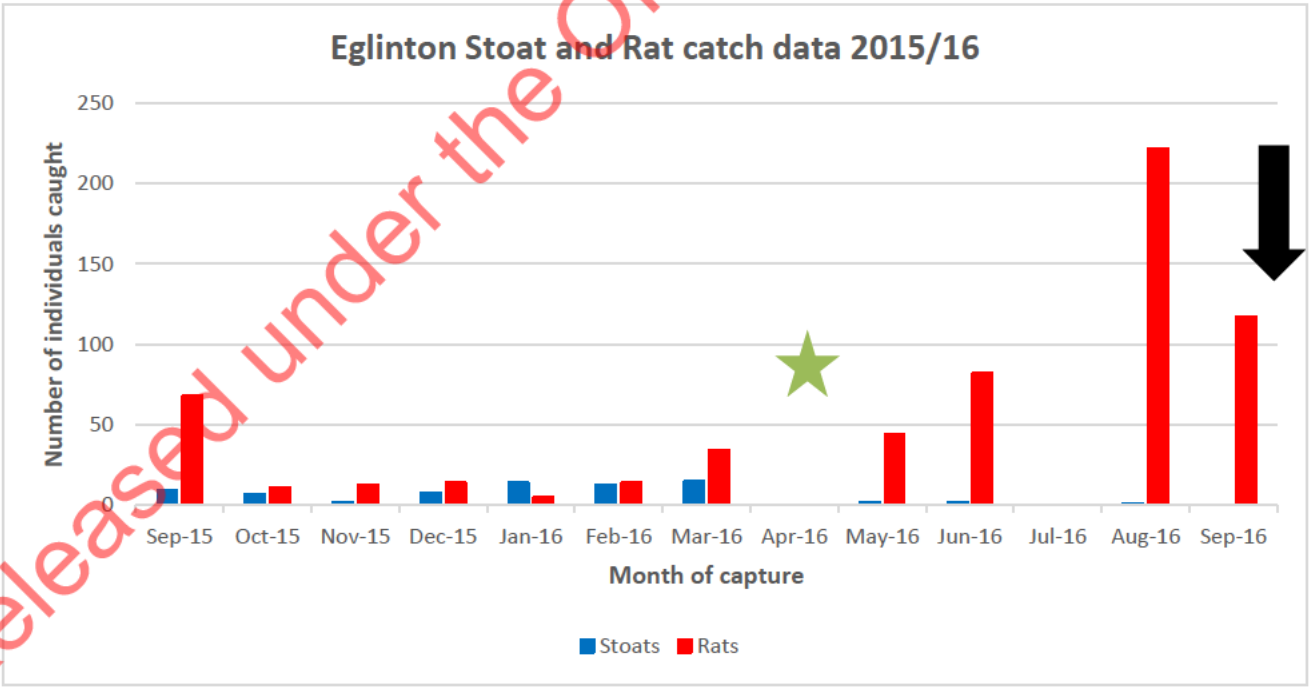


Figure 1: Eglinton stoat and rat catch data for 2015-16 (excluding new MM line). Black arrow shows timing of the aerial 1080 operation. Green star indicates beech masting. Note: Trapping was not conducted in April 16.

Cat Control

The density of feral cats and the effect they are having on local native wildlife is largely unknown. 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 have also been captured in stoat trap tunnels as non-target by-catch since the trapping programme began.

This season was the fifth year cats have been targeted with cat specific traps, with traps spread between the National Park boundary and Cascade Creek, in areas where cat sign had previously been reported (refer to map - Appendix 1). DOC Te Anau receives frequent reports of cat sightings in the Eglinton, both from staff and the public, with some sighting multiple cats at one location (i.e. Knobs Flat).

There are currently 33 cat traps in the Eglinton Valley. Three styles of kill-traps are currently used: 9 x double conibear traps, 12 x Timms traps and 12 x SA2 traps. These designs are considered current Best Practise options and have passed NAWAC tests for cats. All traps were baited with fresh rabbit meat. However, SA2s use an additional lure of peanut butter and cat biscuits at the entrance of the trap. Traps were checked 10 times during the 2015/16 season and the results are presented in Table 1.

Table 1 – Cat trap results, captures from September 2015-2016

	Target	Non-targets			
Cat traps	**Cat**	**Stoat**	**Rat**	**Possum**	**Hedgehog**
SA2 (n=12)	0	0	0	2	0
Timms Cat Trap (n=12)	0	0	0	1	0
Conibear doubles (n=9)	2	1	1	0	1
DOC traps	**Cat**	**Stoat**	**Rat**	**Possum**	**Hedgehog**
DOC 150/200 (n=365)	11	73	624	2	9
TOTAL	**13**	**74**	**625**	**5**	**10**

Although two cats were caught in cat traps, DOC150/200 traps are clearly more effective at catching cats. This suggests that they are perhaps less attractive than simple run through tunnels. Despite cat traps being reported to work well in other parts of the country (i.e. Coromandel), it is evident that these traps are not achieving significant results in Fiordland.

DOC Te Anau staff have commenced a draft review of cat management at a local level (led by James Reardon), but are awaiting national guidance and further funding to progress management and trial other methods in the area. This has been highlighted by previous site leads (Hill 2011 &2013) but to date there has been no further action in exploring alternatives such as leg hold trapping, using cat detection dogs and the use of PAPP in the future.

Considering the latest application of aerial 1080, we expect to see a decline in the number of cats in the Eglinton in the following year, as a result of secondary poisoning. However, without being able to establish the size of the problem, specifically, population density and dynamics, we can only rely on sightings and trap catches as indicators at present.

Evidently, this is an area of pest control that needs further attention and should be considered a priority.

Seedfall monitoring

Monitoring the amount of beech seed that falls in autumn is a useful way to predict probable trends in rodent and stoat populations for the following season. A high level of beech seeding was recorded in autumn 2016, in comparison with 2015, a non-mast year (Table 2). The seed fall density was variable between the monitored sites, with more seed produced in the southern parts of the valley compared with the northern end. At a level above 2000 seeds per m2, the level of seeding in the Eglinton was considered sufficient to drive a rodent irruption.

Table 2 – Total seeds per m2 for each line, February to May, for 2015 and 2016

	Walker Creek		Knobs Flat		Plato Creek		Eglinton	
	May 15	May 16	May 15	May 16	May 15	May 16	May 15	May 16
Red beech	2	2262	0	669	0	581	50	390
Mountain beech	0	88	0	111	0	127	8	811
Silver beech	0	0	2	334	0	62	3	8
Total	**2**	**2350**	**2**	**1114**	**0**	**770**	**61**	**1209**

Rodent and stoat monitoring data

Monitoring of rodents and mustelids is carried out using a network of tracking tunnel lines following the standard protocol of lines of ten tunnels 50 metres apart described by Gillies & Williams (2005). The tracking tunnel network sample design was changed in 2016 to move to a consistent sample design being used nationally for the collection and interpretation of rodent and stoat data. Four sets of 'ridge to river' runs (each set containing 5 lines of 10 tracking tunnels) were established – which provides data that can be analysed to assess rodent growth along altitudinal sequences. The new network also eliminates potential bias from treatment voids in the managed area that could potentially skew analyses. The rat tracking tunnel lines were monitored four times as planned during the 2015/16 season. 14 night stoat surveys on these tracking tunnels were also instigated (three checks – pre-operation, pre cohort, and post-cohort).

Rat tracking remained at zero through the whole year, until after the mast when the tracking rate reached the threshold target of XXXX%. Stoat tracking remained at zero throughout the year.

Table 3 - Average tracking rates (%) for monitoring lines run during 2015-2016

	Rodent monitoring			Stoat monitoring	
Date	**# rodent lines run**	**Rat**	**Mice**	**% of stoat lines tracked (n=10)**	**Stoat**
August 2015	28	0	15	-	-
November 2015	31	0	2	-	-
February 2016	28	0	1	-	-
May 2016	18	0	2	0	0
August 2016	josh	josh	josh	0	0

**no mustelids detected during rodent monitoring surveys for any of the dates listed*

Rat and Possum Control: aerial 1080

The level of beech seeding recorded during autumn 2016 was sufficient to drive an increase in rodent numbers and an aerial 1080 operation took place in the Eglinton on 14-15 October 2016. The outcome and result monitoring data are pending and the relative success of the operation will be determined once the data has been analysed.

Plans for 2016/17

Continue

- **stoat and cat trapping (including maintenance)**
  Trap checks will be carried out by Ben Crouchley from Huntsman Ltd and at least 9 trap rounds will be made by 1 July 2017.
- **beech seed monitoring**, between February and May annually .
  This will be carried out by Iris Broeksma from Mainly Fauna Ltd and managed by George Ledgard, Senior Ranger, Te Anau.
- **rodent and stoat monitoring**, using tracking tunnels quarterly.
  This will be carried out by Iris Broeksma from Mainly Fauna Ltd and managed by George Ledgard, Senior Ranger, Te Anau.

Action

- **Single set trap replacements**
  Trap replacements for True Right single sets planned for completion by Dec 2016. If funding/trap boxes are available for replacing remaining single sets at Mistake and/or Valley floor, these will be replaced early in 2017. Site lead to liaise with Ben Crouchley from Huntsman ltd.

- **Real Journeys $10K Sponsorship for Kaka Protection – adding additional trapping to the network**
  -Site lead to liaise with Lindsay Wilson in regard to how this $10K is to be spent before July 2017.
  -Determine if there are expectations around "Interpretive panels" as outlined in the original bid.
  -Initial thoughts are to extend current true right line to Smithy Creek.

  <u>Options to spend $10K include but are not limited to:</u>

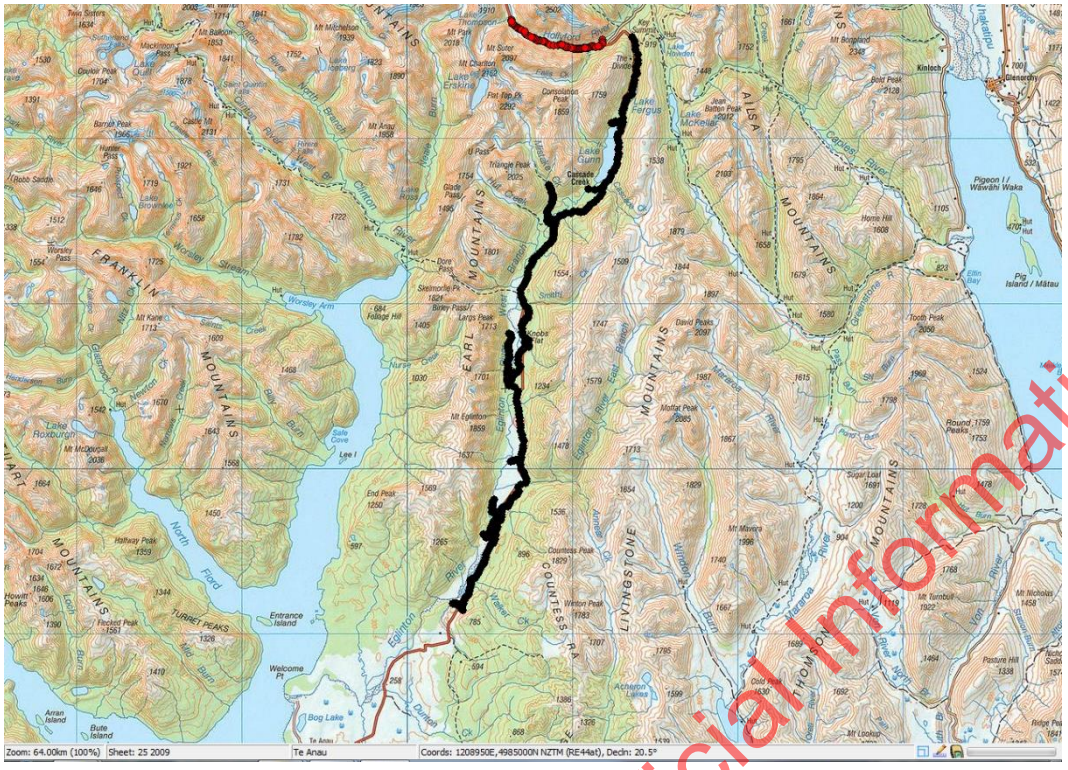
  Note: $10K will purchase 65 DOC200 double sets at $155 ex GST per unit.

  - $10K for DOC 200 double sets **excluding trap layout**. Traps laid out in the next financial year and Real Journeys to cover layout costs and trap checking for 2017/18 PLUS further extension of the network.
  - $10K for DOC 200 double sets **including trap layout**. No trap checking in Year 1. Real Journeys to cover trap checking for 2017/18 PLUS further extension of the network.
  - $10K for DOC 200 double sets **including trap layout and first trap check**. Traps laid out and checked in year 1, but fewer traps on the ground. Real Journeys to cover trap checking for 2017/18 PLUS further extension of the network.

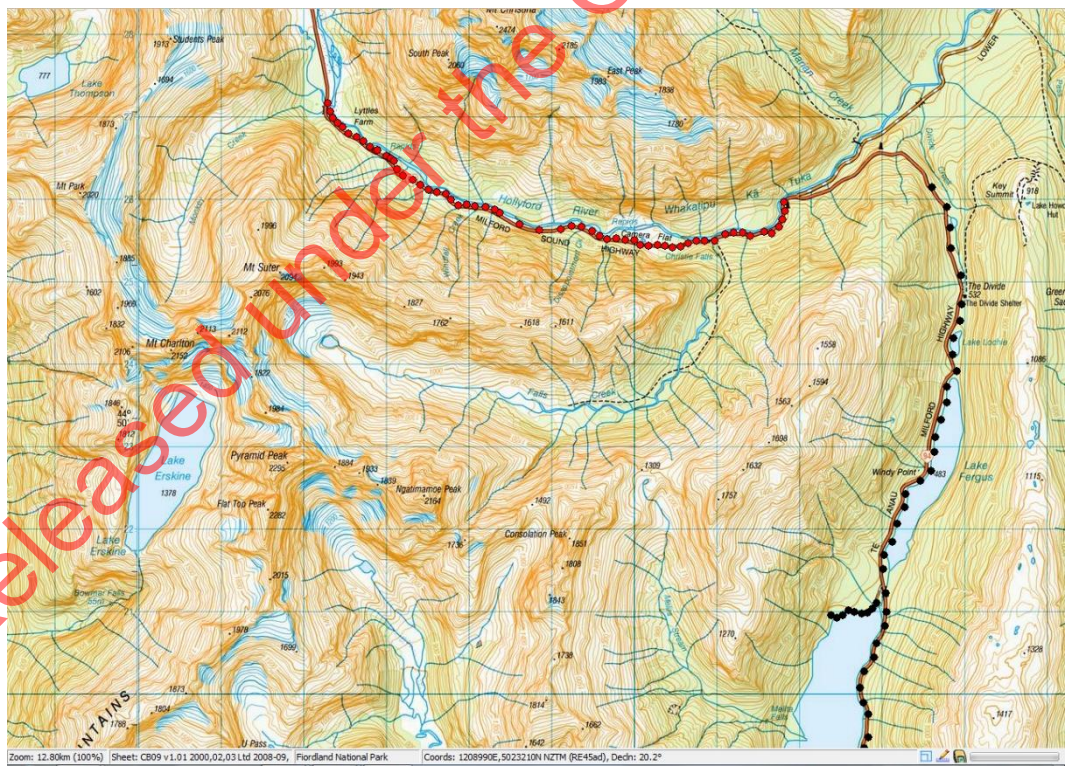
Investigate

- **cat control**
  including targeted, periodic leghold trapping, cat detection dog use, and other techniques such as PAPP operations (i.e. review status). Liaise with James Reardon, Science Advisor, Threats and herpetology, Te Anau, at jreardon@doc.govt.nz, DDI +64 3 249 0255, Mobile [redacted]
- **increased weasel numbers**
  explore implications of increased weasel numbers on local native wildlife

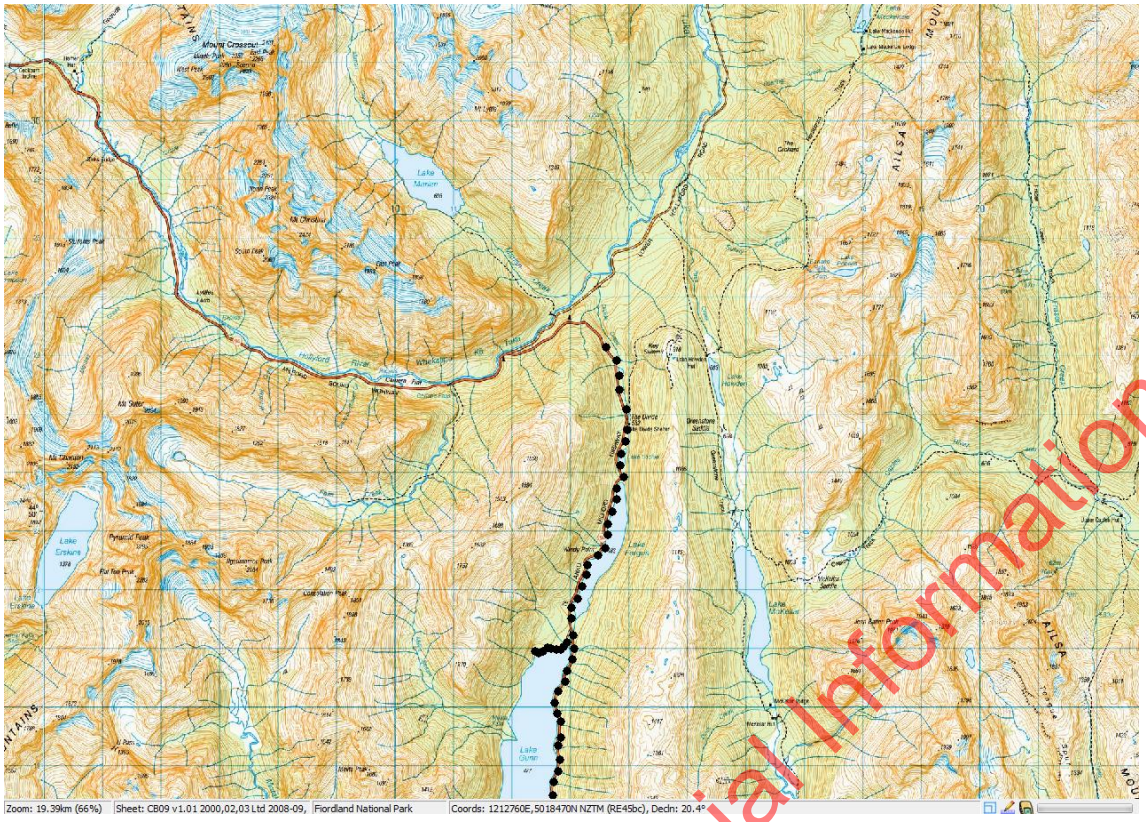
APPENDIX 1 - MAPS



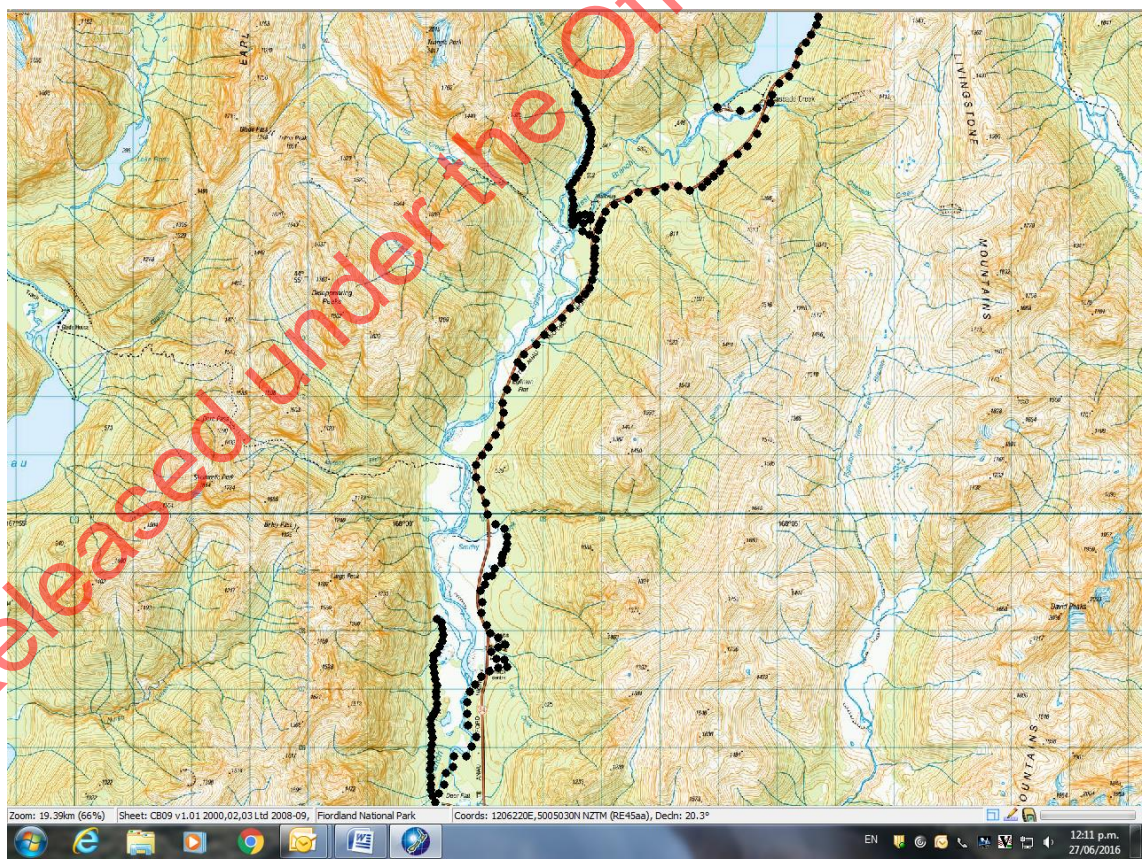
Overview map: Existing Eglinton Valley Stoat Traps (n=365, black dots) and new MM line – Marian Cnr to Monkey Creek (n=55, red dots)



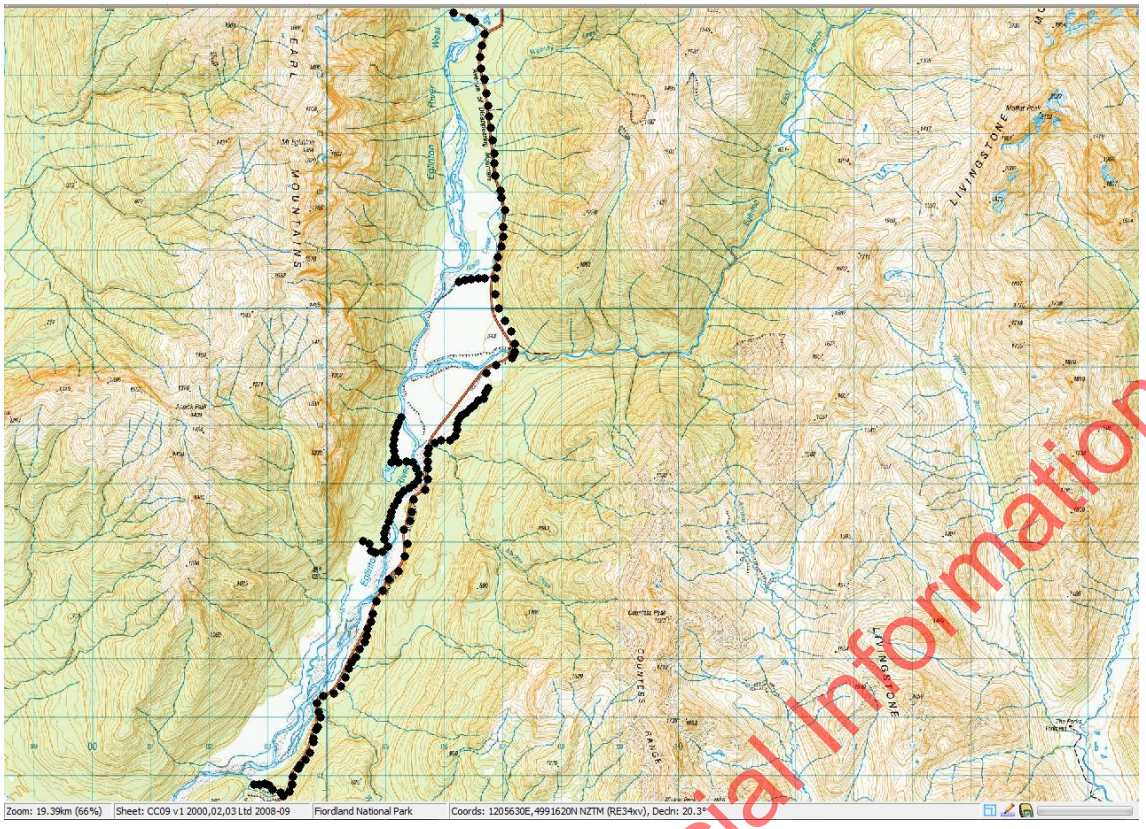
Zoomed - MM line, Marian Cnr to Monkey Creek (n=55, red dots)



Zoomed - Map A of Northern Eglinton Valley Stoat Traps (black dots)



Zoomed - Map B of Middle Eglinton Valley Stoat Traps (black dots)



Zoomed - Map C of Lower Eglinton Valley Stoat Traps (black dots)

Map D of Eglinton Valley Cat Traps (n = 33) (red dots) and DOC 250 Ferret traps (n = 8) (navy dots)

APPENDIX 2 – KILL TRAPPING RESULTS

Trap capture results 2015/16 (n=365, excl new MM line)	STOAT	RAT	WEASEL	CAT		
Sep-15	9	68	14			
Oct-15	7	11	9			
Nov-15	2	13	3			
Dec-15	8	14	5			
Jan-16	14	5	2			
Feb-16	13	14	4			
Mar-16	15	34	9			
May-16	2	44	4			
Jun-16	2	82	0			
Aug-16	1	222	7			
Sep-16	0	117	3			
Total	**73**	**624**	**60**			

Trap capture results MM line 2016 (n=55 new traps deployed Aug-16)	STOAT	RAT	MOUSE
Aug-16	1	36	2
Sept-16	0	9	0
TOTAL	**1**	**45**	**2**

APPENDIX 3 – From Hill 2011 & 2013

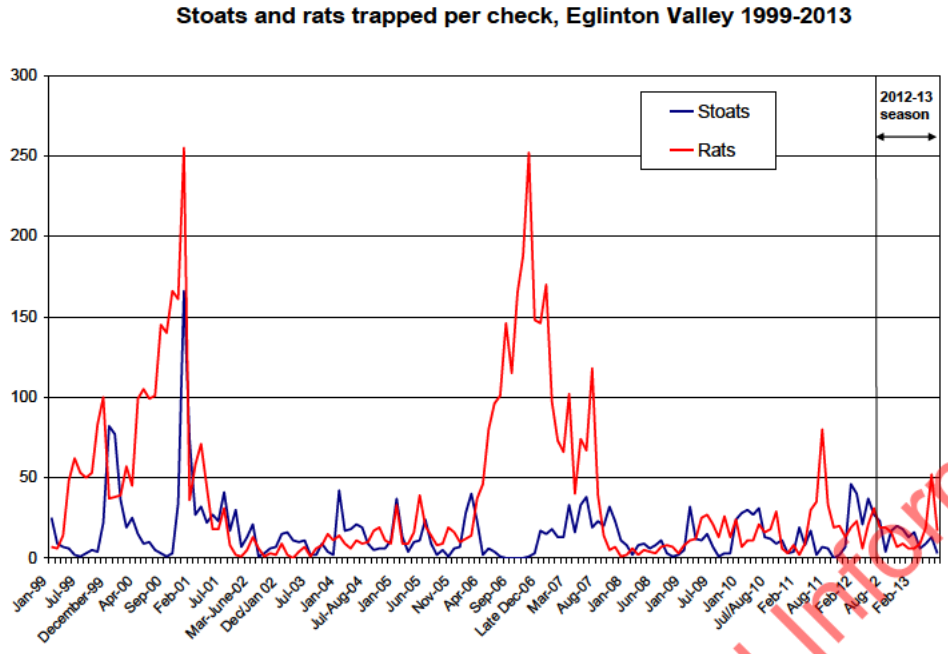


Figure 1- Total stoat and rat captures per check, 1999-2013.

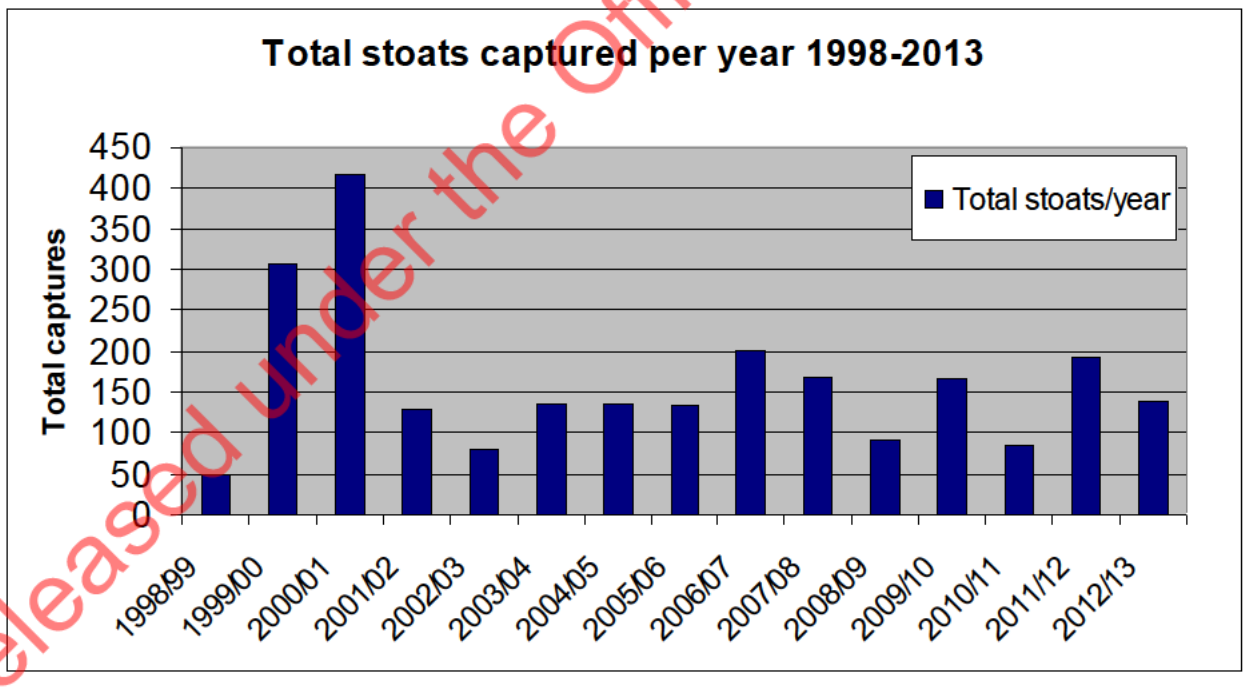


Figure 2- Total annual stoat captures (July-June), 1998-2013.

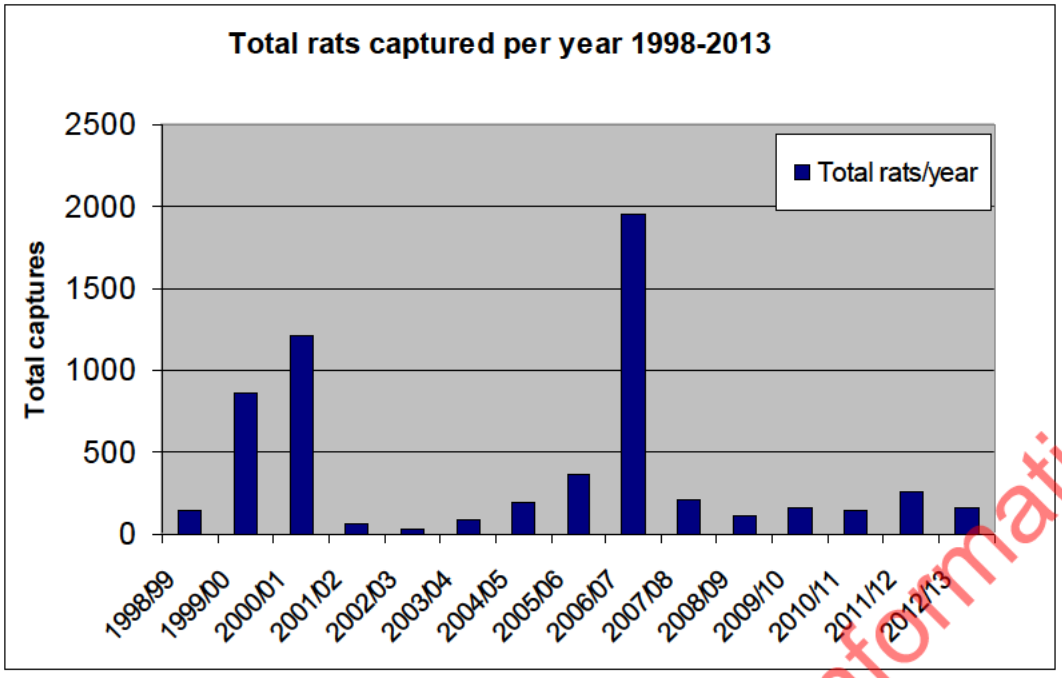


Figure 3- Total annual rat captures (July-June), 1998-2013.

Eglinton Valley Report

2023-2024

David Sagar

Department of 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.

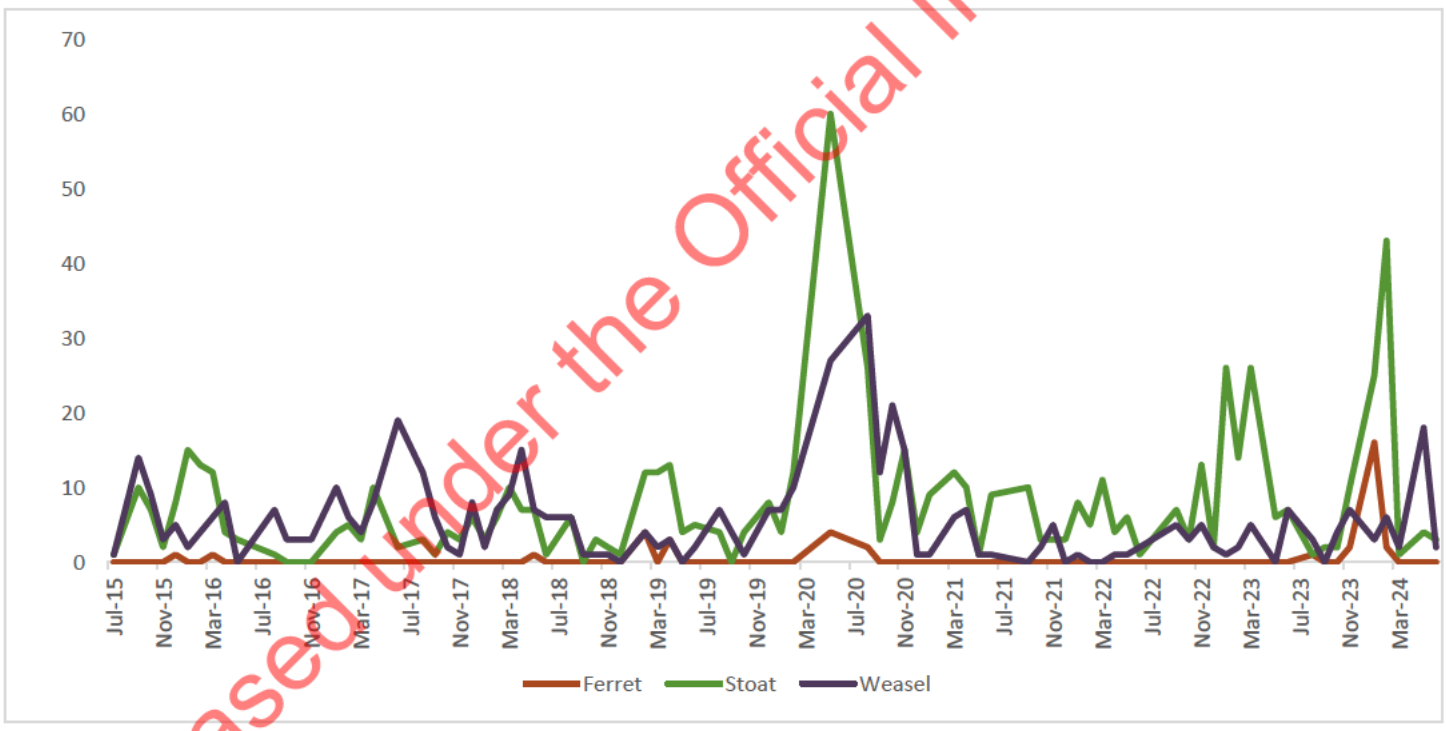

Figure 1. Ferret, stoat, and weasel captures 2015 - 2024.

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 29th 2024, with the toxic bait sown on

February 11th, 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 13th, refilled as required on February 20th and 27th, then all bait stations were emptied of toxin on May 14th. 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.

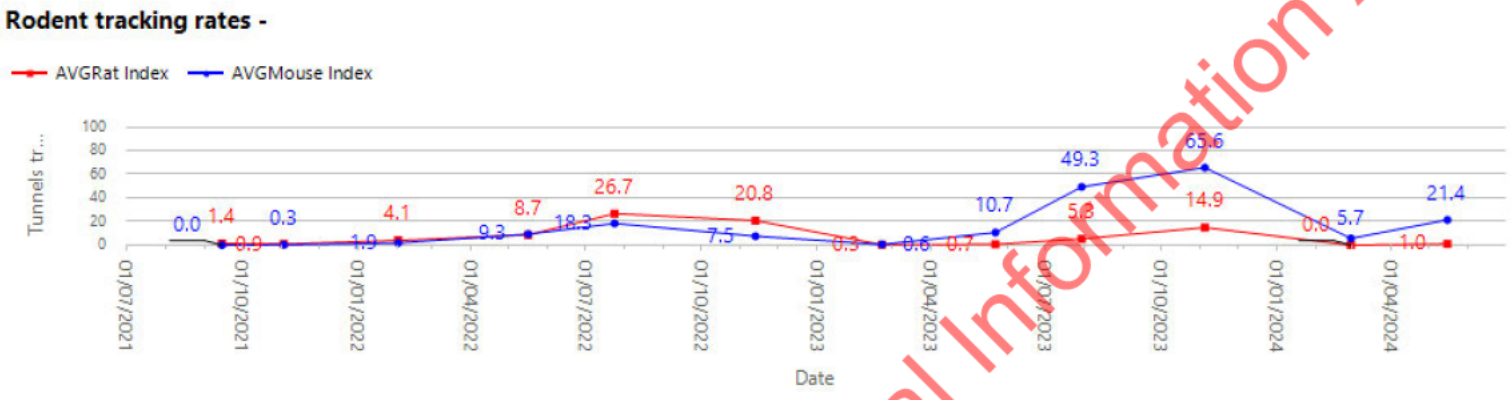

Figure 2. Eglinton Valley rodent tracking rates 2021-2024

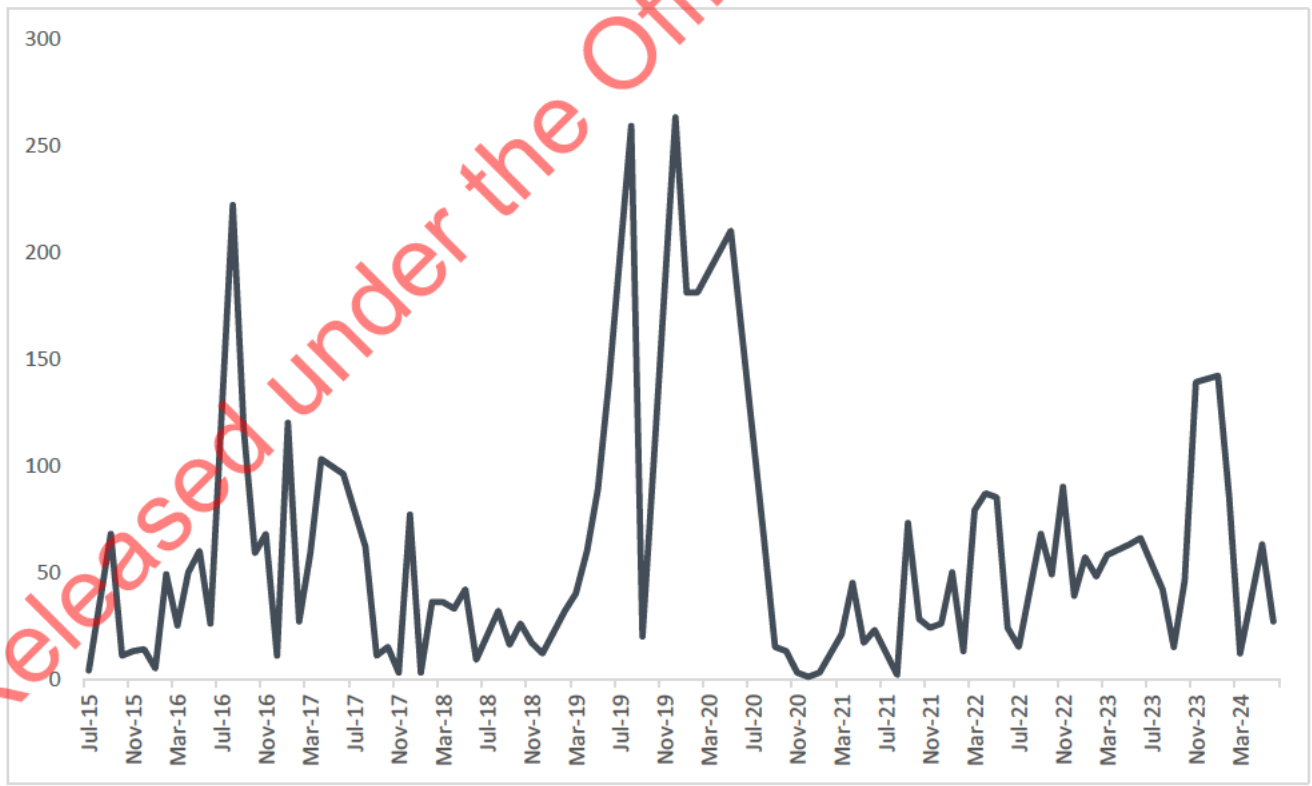

Figure 3. Rat captures 2015 - 2024

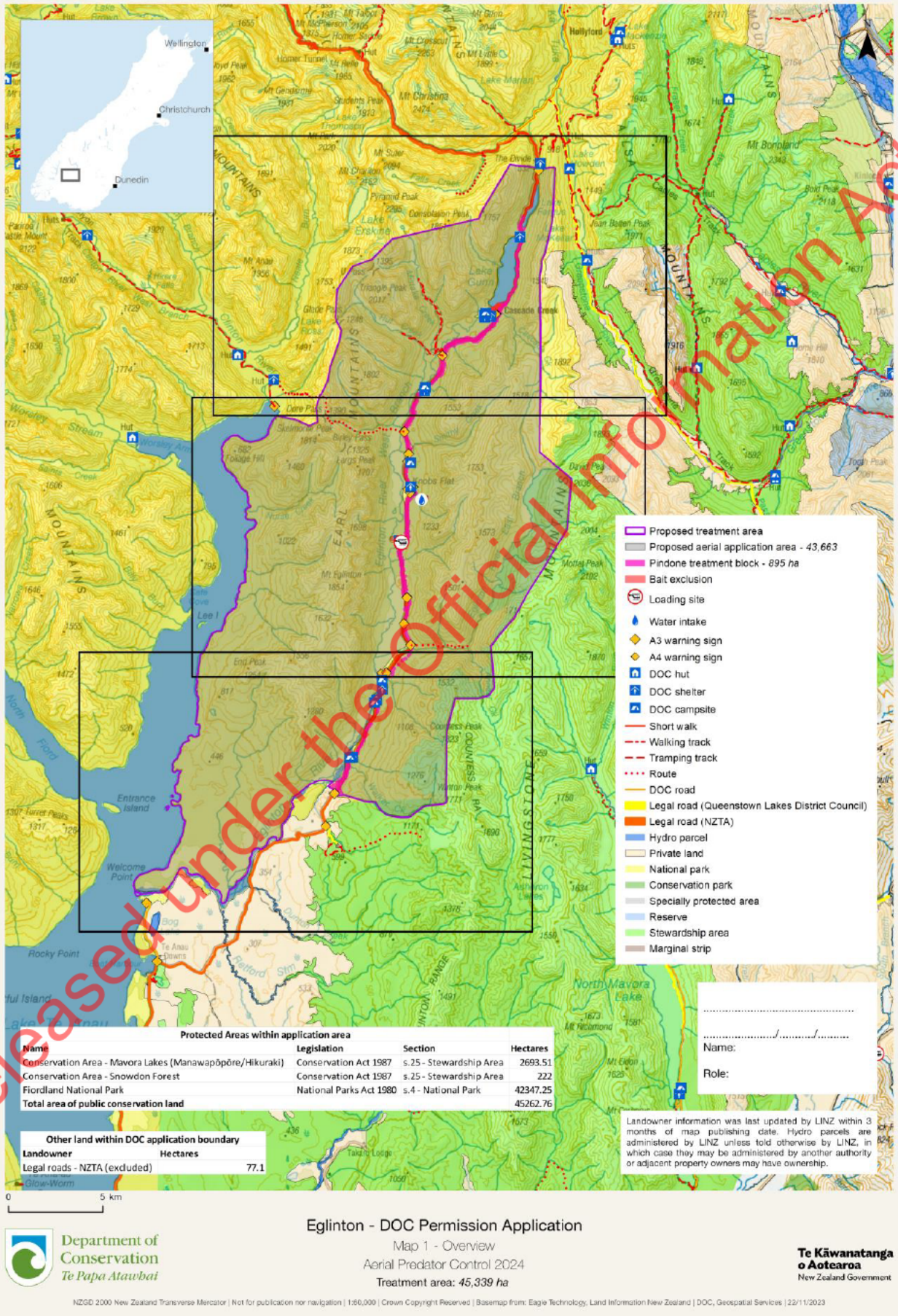

Figure 4. Eglinton 1080 and pindone operation February 2024

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.

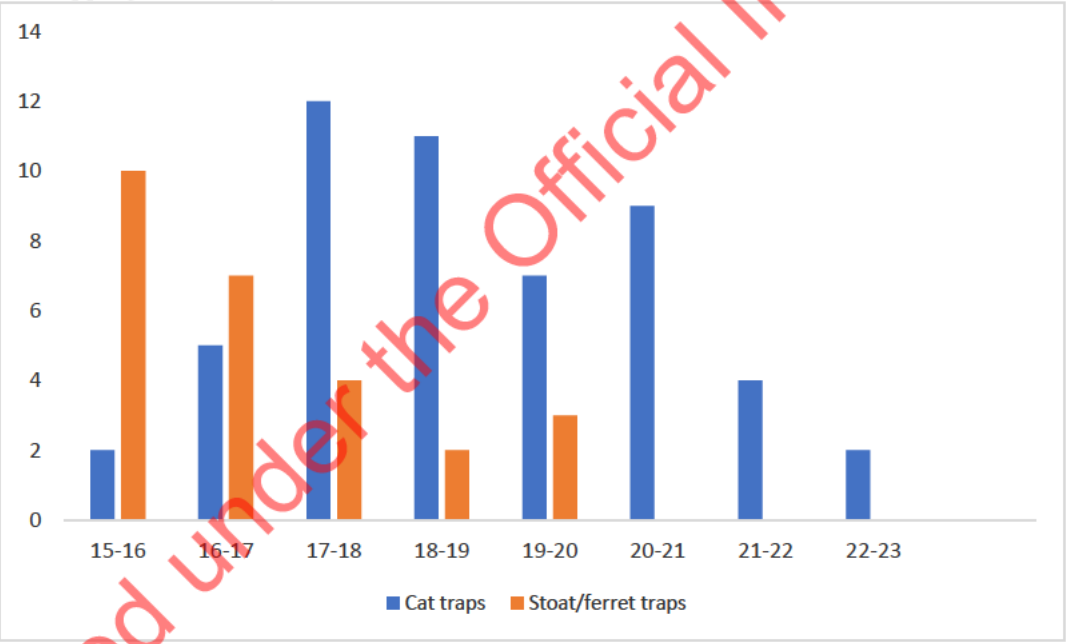

Figure 5. Cat captures in kill traps 2015-2024

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.

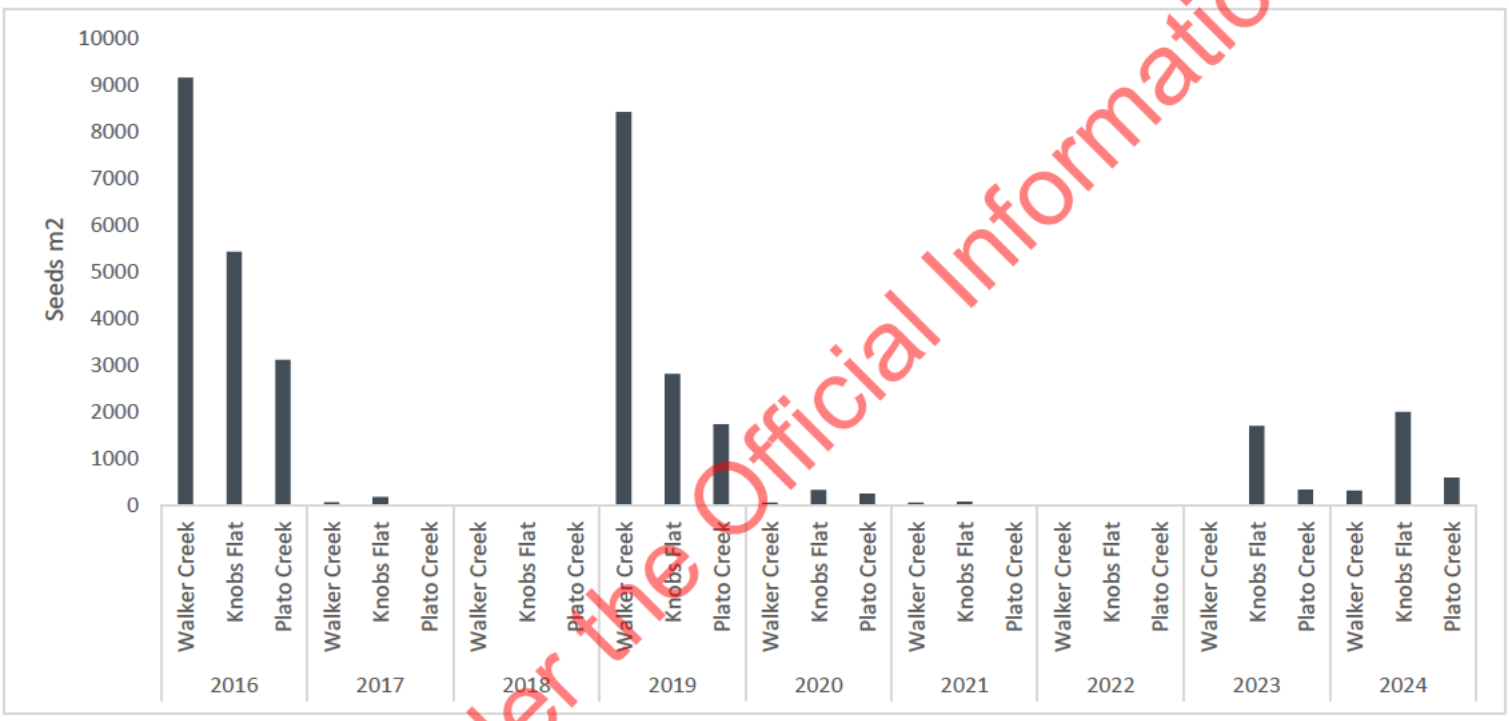

Figure 6. Seedfall data 2016 -2024

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.

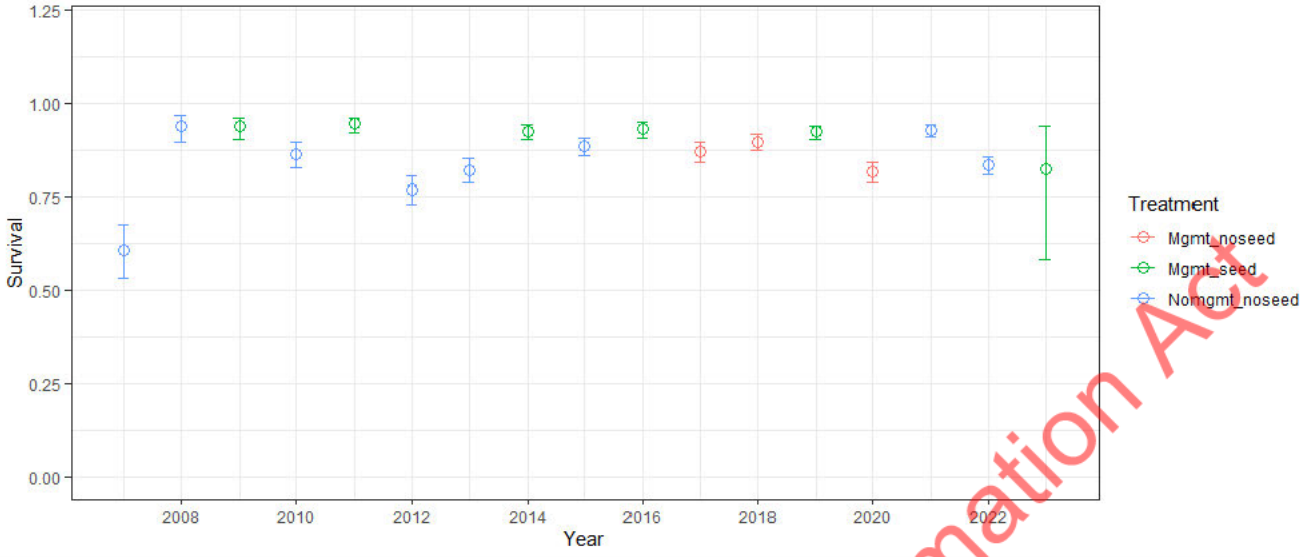

Figure 7. Annual survival of adult females with 95% confidence intervals. Note "Year" is referring to survival throughout that year. i.e. monitoring data from Jan 2022 correlates with survival in 20/21.

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.

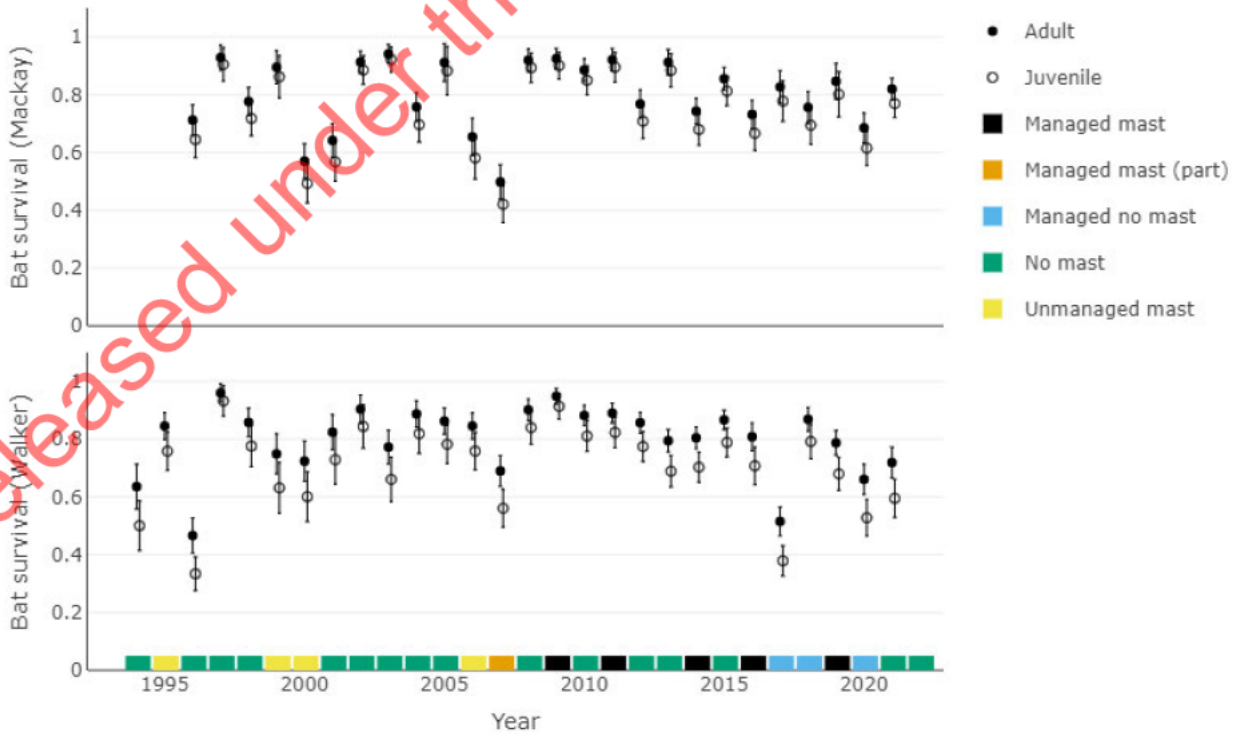

Figure 8. Survival of adult and juvenile female long-tailed bats at Walker Creek and Mackay Creek calculated using RMark. Coloured bars indicate beech mast and predator management in the preceding season. Values are means ± 95% confidence intervals.

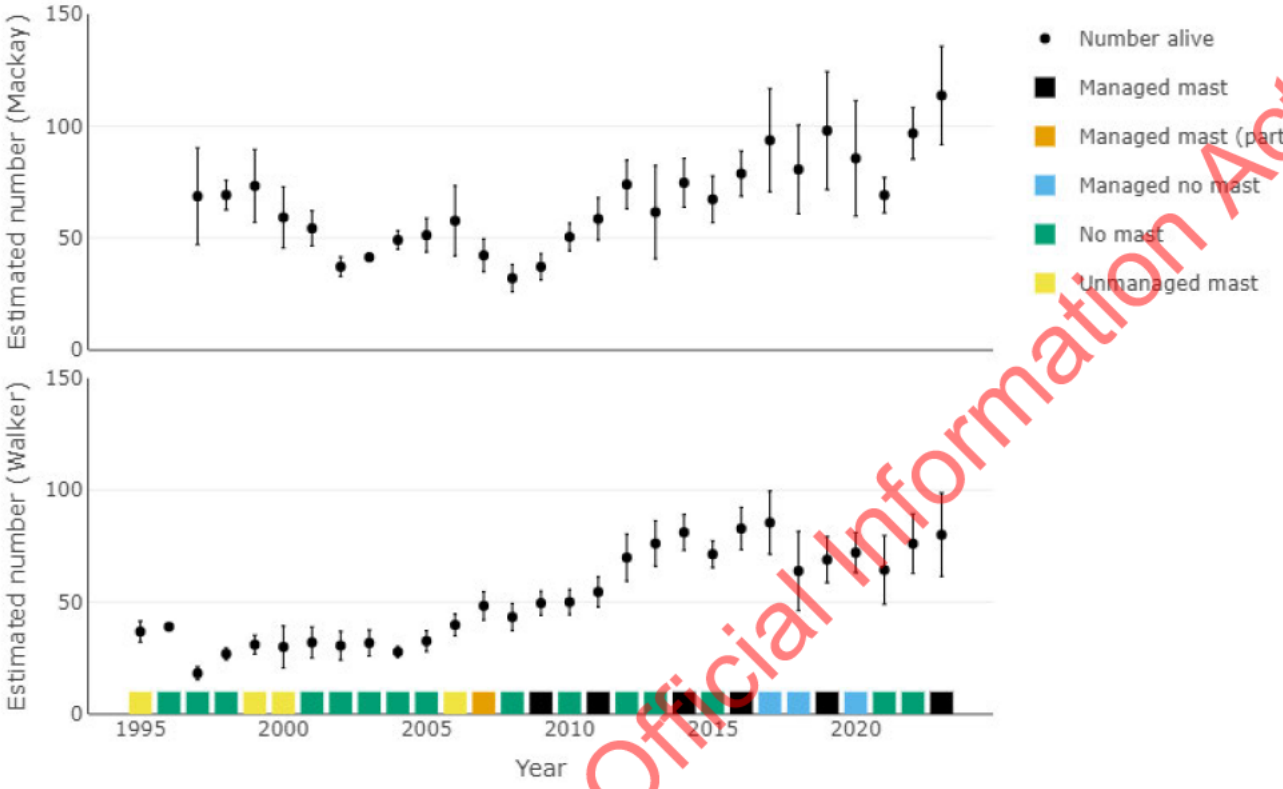

Figure 9. Abundances of adult female long-tailed bats at Walker Creek and Mackay Creek estimated as the minimum number alive using recapture rates. Coloured bars indicate beech mast and predator management in the preceding season. Values are means ± 95% confidence intervals.

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 Sibler 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 16th 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

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