



# Eglinton Valley Report 2017-18



Cover image credit: Hannah Edmonds/DOC

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## Summary

Following high rat numbers through the winter of 2017 a ground control bait station grid was activated in October 2017. Preliminary post operation results suggested a good knock down of rats within the bait station area, however numbers outside the area remained high. Rodent tracking in May 2018 showed the levels of rats had dropped considerably over the whole area. A total of 50 stoats were caught in the year from July 2017 through to June 2018, compared with 25 the previous year. This is likely to have been caused by the increase in rat numbers during the post mast year, despite an aerial 1080 operation controlling the beech mast induced rat spike in 2016.

A fourth mohua translocation to the Eglinton was undertaken in October 2017 with 100 birds released to supplement the existing population. The short-tailed bat population in the valley has continued to increase in size, with the highest ever roost emergence count of 2946 bats being observed this season. Kaka sex ratios have improved in the Eglinton Valley since sustained predator control began with catching in 2017 showing a female to male ratio of 1:1.2 compared with 1:1.8 in 1998-2000.

## Overview

The Eglinton Valley is a high priority site with large tracts of unmodified beech forest stretching up to alpine tussock grassland and herbfields. The area is a refuge for many threatened species including mohua, kaka, black fronted terns, short-tailed and long-tailed bats.

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 animal pest control and monitoring carried out by the Fiordland District Office in the Eglinton Valley between July 2017 and June 2018.

Stoat control has been carried out in the Eglinton Valley since 1998 with traps checked and rebaited every four to six weeks (up to 9 times per annum). The original trap network of 266 traps was expanded in 2008 and further again in 2017 and now comprises 433 DOC150 and DOC200 traps. There are a further 8 DOC250 traps targeting ferrets and 33 cat traps. Rodent abundance is monitored using standard tracking tunnel methods, and is typically carried out quarterly each year. Seedfall monitoring is undertaken annually between February and May.

## Mustelid Control

The trap network in the Eglinton Valley is comprised mainly of double-set stainless DOC 150/200 traps. A few lines of old style single-set DOC 200 traps remain, and these are slowly being upgraded to double-sets. 8 ferret traps were set up 2015/16 along the park boundary and Eglinton flats, but no ferrets have been caught so far.

A total of 50 stoats were caught in the year from July 2017 through to June 2018, compared with 25 the previous year. This is likely to have been caused by the increase in rat numbers during the post last year, despite an aerial 1080 operation controlling the beech mast induced rat spike in 2016. Due to health and safety requirements roadside traps were not checked from July 2017 to December 2017 meaning only 270 out of the 433 traps were checked during this period. Results from the past three years are graphed in Figure 1, below.

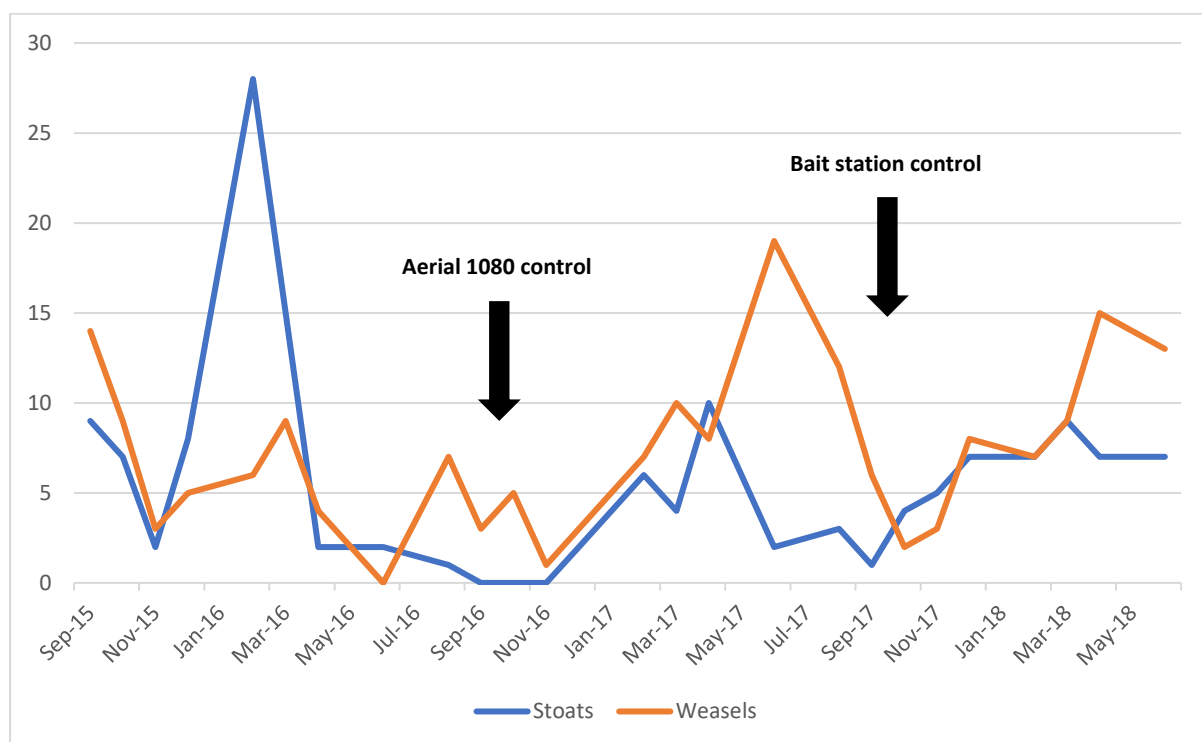


Figure 1: Stoat and weasel captures in the Eglinton Valley 2015-2018

Weasel captures from the past three years are shown in figure 1 above. Anecdotal evidence from this and other 1080 and trapping operation suggests that immediately following 1080 use weasel numbers will increase. The dynamics driving this behaviour is unknown and need further investigation.

### Rat Control

318 rats were caught in stoat traps this year. Rat captures initially declined as expected in the months after the 2016 1080 operation however there was an unexpected spike in rat captures in December 2016 before they dropped off again. In autumn 2017 rat numbers again began to increase which is reflected in tracking tunnel results featured later in this report. Figure 3 shows rat captures from the last two years, note only 270 out of 433 traps were checked for the period July 2017 to December 2017.

Following high rat tracking throughout the winter of 2017 rat control in the form of bait placed in ground bait stations was implemented. A 100m by 100m grid of bait stations over

a 4800ha area is in place in the Eglinton Valley and was baited with Pindone twice before bait was removed in autumn 2018.

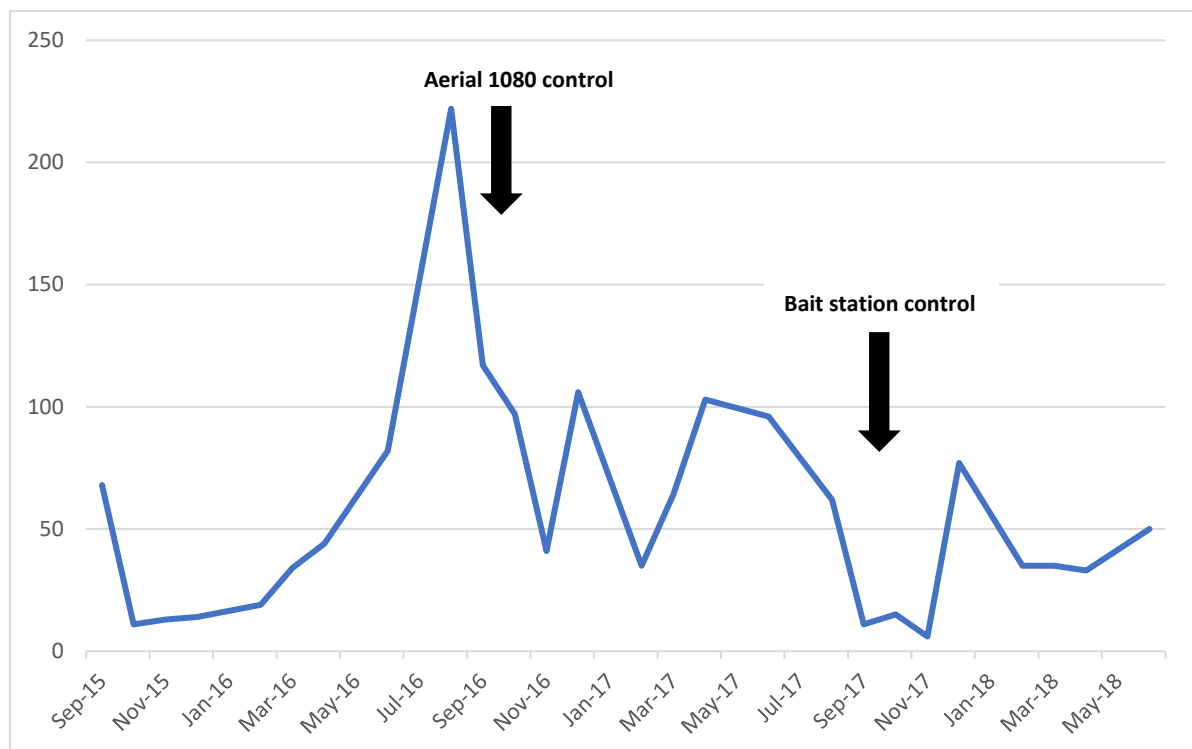


Figure 2: Rat captures in the Eglinton Valley 2015-2018

## Cat Control

The density of feral cats and the effect they are having on local native wildlife continues to be 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 seventh that 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 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. 16 cats were caught during the 2017/18 season, mostly in the specifically designed cat traps. See Figure 3 for a breakdown of captures from the last three years.

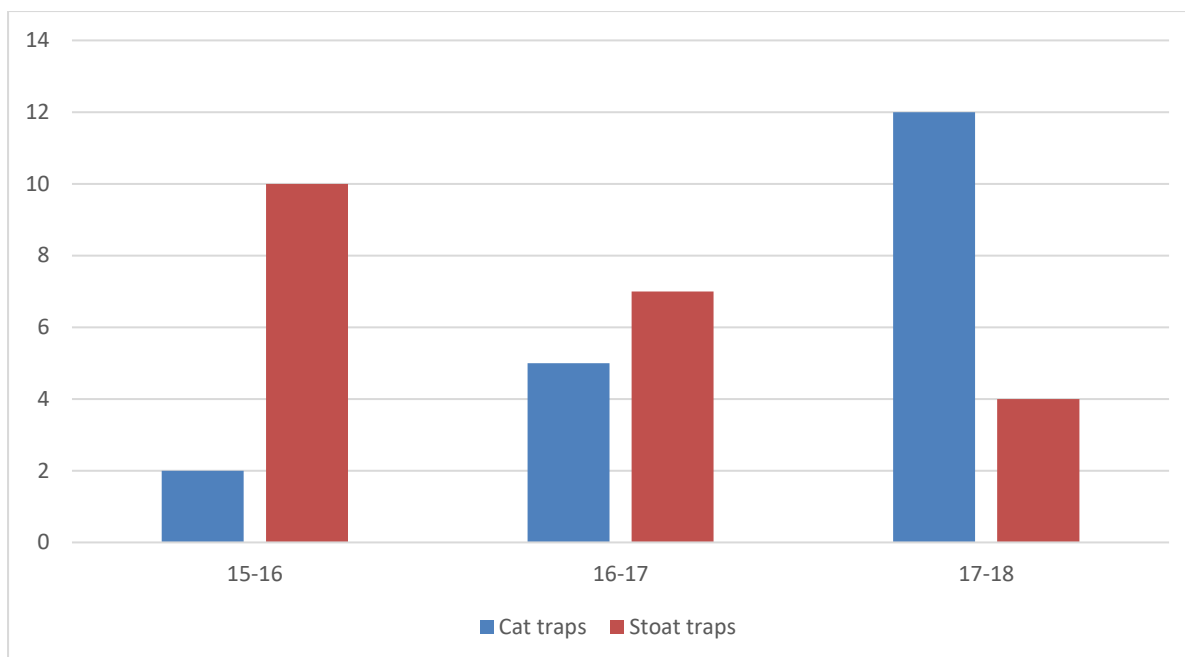


Figure 3: Cat captures in the Eglinton Valley

### 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 and this was a factor in deciding to proceed with an aerial toxin application targeting rats in October 2016. In comparison, this year was similar to 2015 with very little but some viable seed around. Data from the past three years can be seen in Table 2. Results from the 2018 seed collection will be analysed later in the year. Temperature modelling helps predicts beech seed masting in future years (Kelly et al 2013) and currently indicates there will be a high seed set in the autumn of 2019.

Table 1 – Total seeds per m2 for each line, February to May, for 2015, 16 and 17

	Walker Creek			Knobs Flat			Plato Creek			Eglinton		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Red beech	2	2262	13	0	669	55	0	581	10	50	390	11
Mountain beech	0	88	0	0	111	0	0	127	0	8	811	14
Silver beech	0	0	0	2	334	41	0	62	3	3	8	38
<b>Total</b>	<b>2</b>	<b>2350</b>	<b>13</b>	<b>2</b>	<b>1114</b>	<b>96</b>	<b>0</b>	<b>770</b>	<b>13</b>	<b>61</b>	<b>1209</b>	<b>63</b>

### Rodent monitoring data

Monitoring of rodents 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 has had several changes over time and

now has several sets of “ridge to river” lines, valley floor lines and research lines now in the valley. Post-mast a reduced subset of tracking tunnel lines was run however this proved to be insufficient in providing enough data and the decision has been made to consistently use a larger subset of lines in the valley each year.

After an initial knock down of rats due to the 2016 aerial 1080 operation rat numbers started climbing through the summer and remained high throughout the winter of 2017. This was an unexpected response, however may become more common after beech mast/1080 operations. It triggered the running of extra tracking tunnel lines to gain a better idea of rat tracking throughout the valley and with tracking remaining high bait station rat control was undertaken. After the bait station operation commenced rat tracking was low inside the control area though remained high outside the treatment area. Tracking tunnel results from May show rat numbers evening out throughout the whole valley at 4%.

**Table 2 - Average tracking rates (%) for monitoring lines run during 2017-2018 forest lines**

Date	600m or below (inside bait station network)			Above 600m (outside bait station network)			Total	
	# Lines	Rat	Mouse	# Lines	Rat	Mouse	Rat	Mouse
November 2016	12	5	28	11	2	34	4	31
February 2017*	9	9	55	10	2	63	5	59
May 2017	12	43	78	13	15	91	28	85
September 2017**	21	16	6	6	8	5	14	6
October 2017	10	38	4	0	NA	NA	38	4
December 2017	21	0	0	6	7	0	2	0
February 2018	6	2	3	5	26	0	13	2
May 2018	17	4	1	9	4	0	4	1

\* combination of tunnels run late January, Feb and early March

\*\* combination of tunnels run August and September

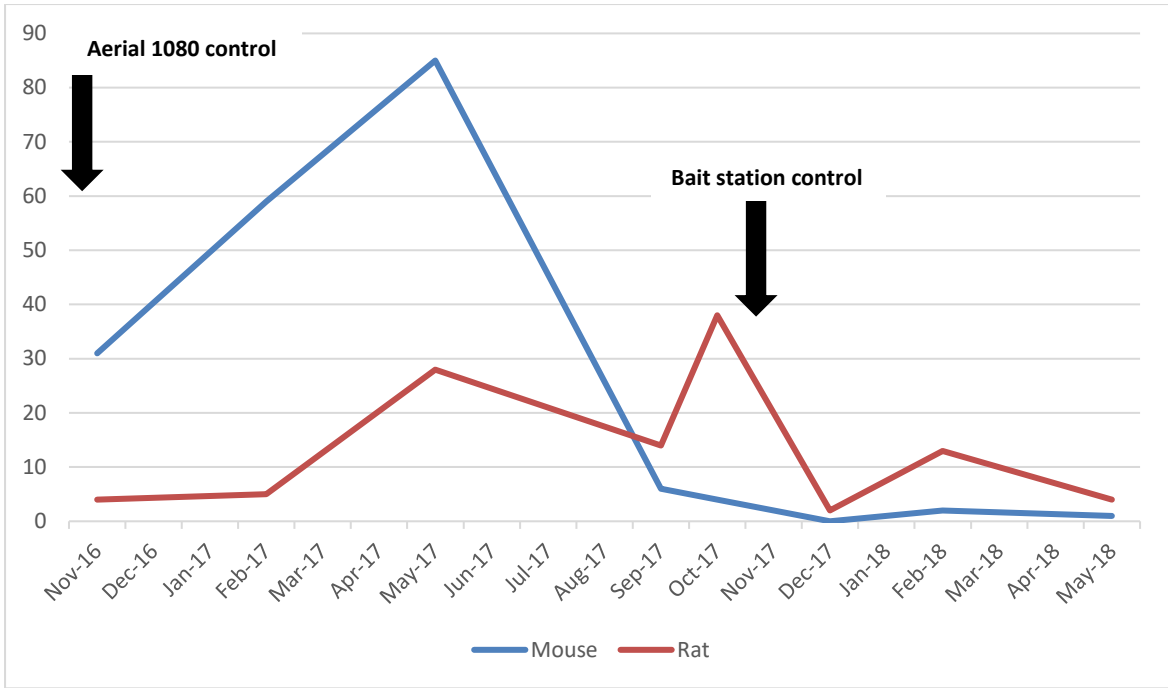


Figure 4: Total rat and mouse tracking in the Eglinton Valley 2017/2018

In figure 5 below differences in rat tracking above and below 600m can clearly be seen. The bait station control area encompasses all tracking tunnel lines 600m or below.

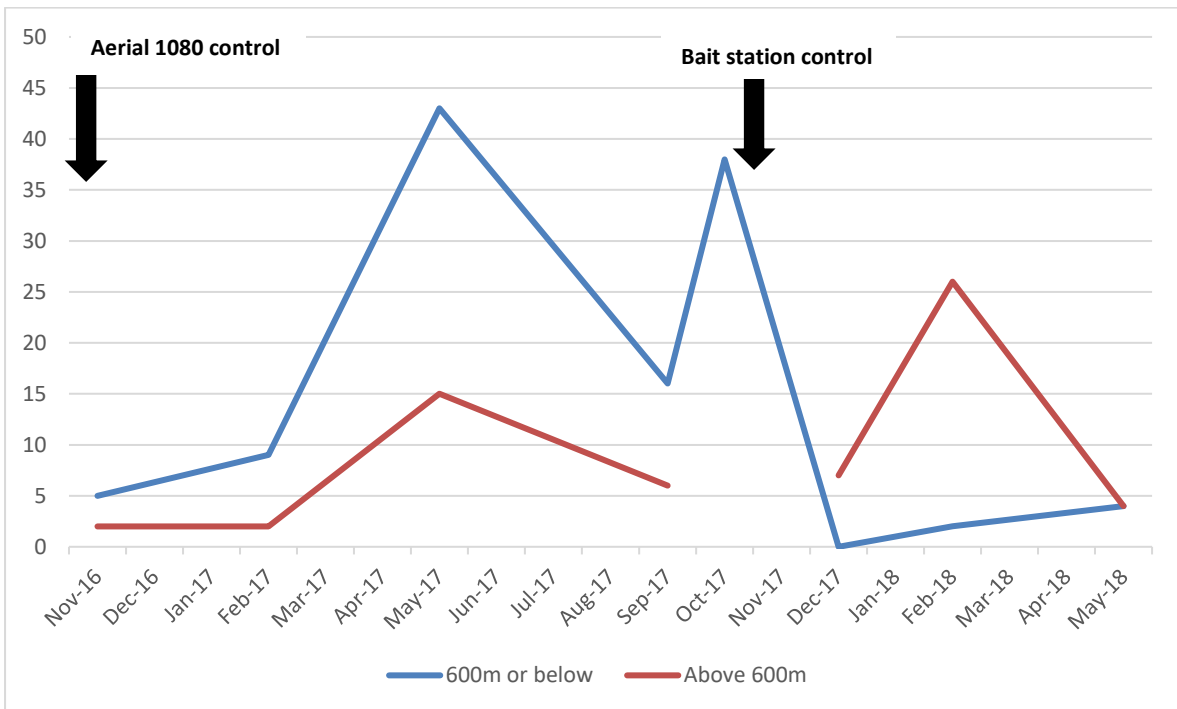


Figure 5: Rat tracking in the Eglinton Valley 2017/18



Figure 6: Mouse tracking in the Eglinton Valley 2017/18

Mouse tracking both below and above 600m followed the same trend with a peak in May 2017 before crashing in the winter and remaining low.

In addition to forest lines, 8 alpine lines were run this year and the results are found in the table below.

Table 3 - Average tracking rates (%) for alpine monitoring lines run during 2016-2017

Date	Eglinton Valley		Boyd Creek	
	Rat	Mouse	Rat	Mouse
January 2017	0	75	0	60
May 2017	0	55	0	40
September 2017	Not Run	Not Run	Not Run	Not Run
December 2017	0	0	0	0
February 2018	0	0	0	2.5
May 2018	0	0	0	0

Boyd Creek is a non-treatment site adjacent to the Eglinton Valley with tracking tunnel lines run by the Biodiversity Group for research. Tracking patterns over the last year were markedly different to the controlled Eglinton.

Table 4 - Average tracking rates (%) for Boyd Creek forest monitoring lines run during 2016-2017

Date	600m or below			Above 600m			Total	
	# Lines	Rat	Mouse	# Lines	Rat	Mouse	Rat	Mice
January 2017	2	15	30	2	0	40	7.5	35
May 2017	2	35	40	2	10	60	22.5	50



August 2017	2	32	0	0	0	10	16	5
December 2017	2	0	0	2	0	0	0	0
February 2018	3	0	0	3	0	0	0	0
May 2018	3	0	0	3	0	0	0	0

## Mohua

The fourth and last mohua release in a trial series of translocations took place in October 2017. 100 birds were caught on Anchor Island over 2 days before being released at Kiosk Creek in the Eglinton Valley. These birds will supplement the small number of residual mohua remaining in the valley as well as mohua from previous translocations and their offspring. Research staff from the Biodiversity Group will continue monitoring these birds in the coming years to understand the dynamics of mainland mohua translocations.

125 adult mohua were found by the research team this year which is up from 97 adults last season. This included a Chalky 2010 bird that had not been seen since its release showing that at least some unseen released birds are surviving in far flung corners of the valley. More than half of birds found this year were unbanded individuals meaning there is a high rate of recruitment into the population. Further information can be found in the Biodiversity Group Eglinton Valley end of season report 2017-18 (Jones 2018).

## Short-tailed bats

Breeding came early to the Eglinton short-tailed bat population, as it did with nearby long-tailed bat populations. This is likely due to the very mild winter and warm spring earlier in the season and meant juveniles were flying early in the year than usual. This may have had an impact on the roost emergence counts which this year produced the highest ever of 2946 bats on the 24/1/2018. This season also had the highest number of tagged individuals recorded of 1169 showing an increasing trend for the short-tailed bat population. More details will be found in the Eglinton Valley Short-tailed Bat Report 2018.

## Kaka

Kaka catching took place in October/November lead by the Biodiversity Group with the aim of keeping 10 females transmitted in the valley. 22 kaka were caught with a female to male ratio of 1:1.2, this compares with 1:1.8 in 1998-2000. No kaka breeding was observed this year (Jones 2018).

## Long-tailed bats

Long-tailed bat monitoring undertaken by the Biodiversity Group ran from the 8<sup>th</sup> of January until the 15<sup>th</sup> of February. Despite the mostly fine weather, this year's capture

was lower than expected with few decent catches and a large number of untrappable roosts. As with other bat populations in Fiordland breeding appeared to have begun a month early causing roost fragmentation also to occur early. This in turn impacted on the catching season, with only low numbers caught at one time.

### **Birds, bats and banana splits**

The annual public event showcasing bird monitoring, bat research and predator control in the valley took place in January with 25 keen individuals attending. Te Anau community and biodiversity rangers together with Biodiversity Group research staff gave talks before the highlight of an outing to a long-tailed bat roost. 25 bats were caught allowing everyone to get up close and have a good look before the bats were released by the public. Everyone thoroughly enjoyed themselves and it would be great to see the frequency of these events increase in the future.

### **Recommendations**

- Consistently use the now selected set of 26 forest tracking tunnel lines that represent the Eglinton Valley ecosystem and give weight to the more productive valley floor. Monitoring should be undertaken at least 4 times per annum and the same set of tunnels should be used in future years. Care should be taken to analyse tracking rates in the productive lower valley to influence predator control decisions.
- Formulate guidelines around maximum allowable tracking rates, threshold values for predator control and predator control methods so that a plan is in place to keep predator numbers low.
- After concerns were raised about disturbance to the black fronted tern colony at Knobs Flat conversations have begun with Milford Road Alliance about putting solutions in place. As per Colin O'Donnell's recommendations gated access to the area is in planning to be undertaken this winter/spring.
- As funding allows continue with the stoat trapping line extensions on the true right of the river. These are Mistake Creek to Lake Gunn, Deer Flat to Eglinton East Branch/Eglinton Confluence and from Totara Flats to Walker Creek Flats.
- Investigate the potential benefits and logistics of having "best practice" stoat trapping over the valley with trap lines no more than 1km apart.
- Cat incidental sightings in the valley are numerous and their presence is a growing concern. Unfortunately, cat control methods over large-scale forest areas have not been well tested and there are no guidelines for such control. Cat trapping data from the Eglinton, though small, does not indicate effective control is being achieved via secondary poisoning through the use of aerial 1080. The Eglinton Valley would suit a landscape scale trapping/poison cat control trial which would benefit the area as well as further develop cat control methods.

Month	District Office	Biodiversity Group
July	Annual report and operational plan, pre-season contractor catch up	
August	Trap check, tracking tunnels, trap up grading	
September	Trap check, contractor audit, kaka catching	Kaka catching
October	Trap check, trap up grading	Kaka catching, various species monitoring
November	Trap check, tracking tunnels	Various species monitoring
December	Contractor catch up	Various species monitoring
January	Trap check, short-tail bat monitoring	Long-tailed bat monitoring, various species monitoring
February	Trap check, tracking tunnels	Long-tailed bat monitoring, various species monitoring
March	Trap check	Various species monitoring
April	Trap check	
May	Trap check, tracking tunnels	
June	End of season contractor catch up, trap maintenance	

Additionally, throughout the year there will be on-going assistance to the battle for our birds coordinators.

## Thanks

Thank you to GO ORANGE for their sponsorship of the latest stoat trapping line, to Ben our contractor who services all the traps and to the many Biodiversity Group and District staff who have worked in the valley. And thank you to all the volunteers who have assisted with various projects in the area.

## 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

Jones, M 2018. *Eglinton Valley end of season report 2017-18*. DOCCM5472661

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., et al. 2013. *Of mast and mean: differential temperature cue makes mast seeding insensitive to climate change*. Ecology Letters 16: 90-98



Appendix 1 -Eglinton Valley stoat traps 2017/18



NZGD 2000 New Zealand Transverse Mercator  
 Not for publication nor navigation  
 1:149,780  
 NZTopo, © Crown  
 Produced by: cbrmingham on 16/11/2017

Eglinton Valley stoat traps

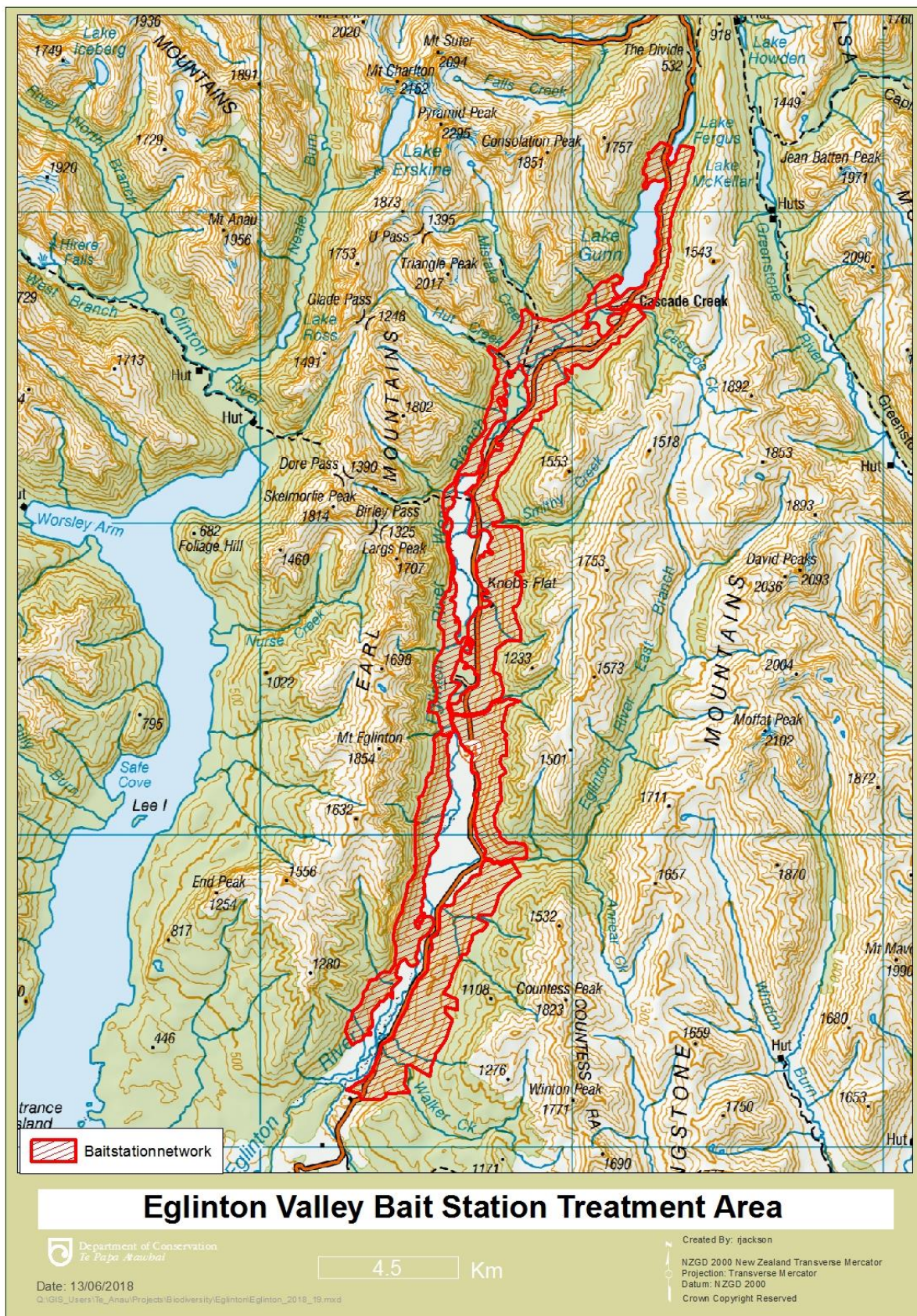
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 New Zealand Government



Appendix 2 – Bait station treatment area 2017





# Appendix 3 – Eglinton Valley Tracking Tunnel Lines

