

# Murchison Mountains Lesser Short-tailed Bat Survey 2018

## *Summary*

A new population of southern lesser short-tailed bats has been found in the Etrick Burn, Murchison Mountains, Fiordland. This has been detected using acoustic recorders and came as a response to an incidental sighting from a recorder deployed as part of the Save Our Iconic Kiwi. This is a hugely significant find for the southern short-tailed bats as a whole, and is now the third known population in existence.

## *Objectives*

- Investigate the short-tailed bat (STB) recording found on the Save Our Iconic Kiwi (SOIK) acoustic recorder
- Find out if this recording was a lone/chance recording or signals the presence of a permanent STB colony
- Narrow down the area a colony was inhabiting in order to lay the groundwork for future monitoring and predator protection

## *Background*

The southern lesser short tailed bat (*Mystacina tuberculata tuberculata*) was previously thought to still be remaining in only two locations, Whenua Hou/Codfish Island and the Eglinton Valley, Fiordland. This is an unnatural state due to the extinction of other populations and left the Eglinton Valley as the only surviving mainland population. Bats in New Zealand are vulnerable to introduced predators (rats, stoats, feral cats, possums) throughout the year and short tailed bats are only known to have stable or increasing populations where intensive predator control occurs, such as the Eglinton Valley, or where they are present on predator free islands, such as Whenua Hou. Further, having limited populations makes species more vulnerable to disease and other stochastic events.

New Zealand bats are hard to detect due to their nocturnal nature and small size, particularly short-tailed bats which spend most of their time foraging deep inside the forest and only emerge when it is well dark. This results in large holes in our knowledge of where bats reside which are difficult to fill and conventionally take huge amounts of time and resource. The invention of acoustic recorders that pick-up bat echolocation frequencies has made survey far more feasible and is greatly adding to our knowledge from widescale projects such as Tier 1 and individual projects focussed on bats. There is however no encompassing project aiming to survey New Zealand comprehensively for bat presence and projects are still greatly limited by time and resources.

As part of the Save Our Iconic Kiwi (SOIK) programme 160 acoustic recorders were put out over a large area of Fiordland as part of project to monitor kiwi abundance throughout the park. In an effort to increase knowledge of bat presence these recorders were also set to record bats in the hours after kiwi data was collected. This resulted in over 300,00 recordings that needed to be analysed, organised by the biodiversity group and done by two individuals.

One recorder located in the Ettrick Burn, Murchison Mountains, picked up 9 short tailed bat passes. This is an area where short-tailed bats had not previously been recorded and is 40km from the known Eglinton population. The Murchison Mountains is a special takahe protection area with a very large stoat trapping network, however it has never had any form of rat control.

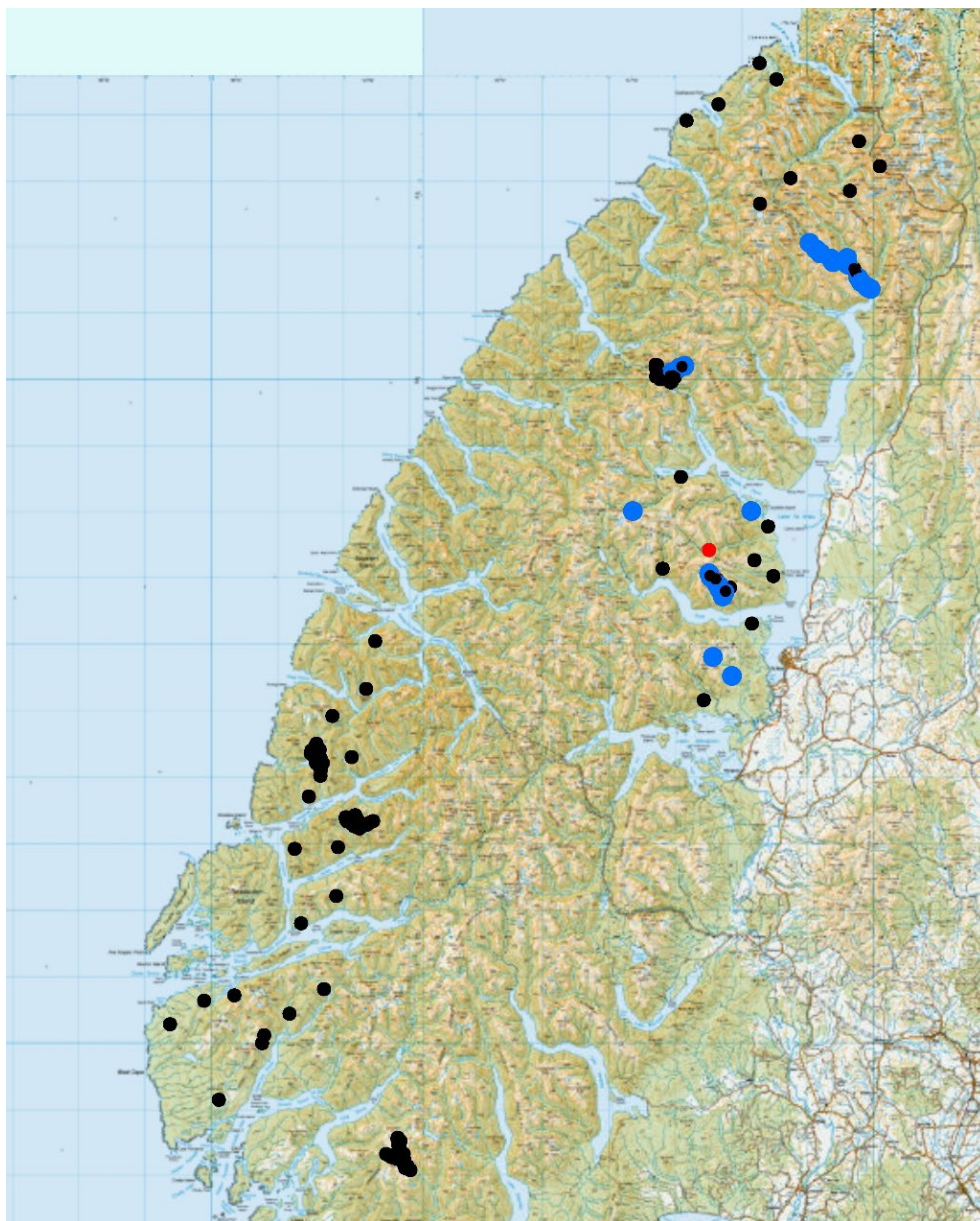


Figure 1. 2018 SOIK recorders. Black - no bat passes, blue - long-tailed bat, red - short-tailed bat

## *Follow up survey*

111 recorders were deployed for a period of 8-14 nights in the area around the initial SOIK recording during November and December 2018. This resulted in over 100,00 recordings which were analysed by the Te Anau team.



Figure 2. 2018 follow up recorders

When analysed over 2000 STB recordings were identified. These were centred on the mid Ettrick Burn with numbers of passes quickly reduced further out. High STB passes generally corresponded to the area of mature red beech in the Ettrick. No STB recordings were identified from the adjacent Snag Burn.

This defined pattern of bat passes combined with the large number of passes is evidence that there is a population residing in the valley rather than another scenario such as a lone bat passing through the area.

Additional to the STB passes a large number of long-tailed bat passes were also identified. Over 6000 passes were identified, centred both in the Ettrick Burn and Snag Burn. This suggests that the area holds significant numbers of LTB that would also benefit from further predator control.

## *Recommendations*

- Start monitoring the population to gain knowledge of numbers, population trend and history by catching and marking.
- Advocate for rat control in the area
- If unable to undertake comprehensive monitoring repeat the acoustic survey in the Etrick Burn in the coming years as a possible method of monitoring population trend.

## *Thanks*

A big thankyou to all the team who analysed recorder data, Tom, Dave, Wazza, Hamish and Sanjay, pain staking work. And to Moira for organising the analysis of the SOIK data.

To the SOIK programme for enabling the original bat find and for the acoustic recorders loan.

*Appendix 1. Acoustic Recorder Data.* [DOC-5632591](#)

ID	Recordings	Unassigned	Long Tail	Short Tail	Possible ST	Possible LT	Both	Non-bat	Unknown	Processed By
EL1	281	0	0	0	0	2	0	279	0	Hamish Edwards
EL2	1075	339	2	0	0	0	0	734	0	Warren Simpson
EL3	216	0	9	3	0	0	0	204	0	Hamish Edwards
EL4	165	1	0	0	0	0	0	164	0	Warren Simpson
EL5	372	0	2	1	0	1	0	368	0	Hamish Edwards
EL6	641	3	0	10	0	0	0	628	0	Warren Simpson
EL7	1686	753	0	0	0	0	0	933	0	Hamish Edwards
EL8	3621	3034	1	0	1	0	0	585	0	Warren Simpson
EL9	281	0	1	8	2	0	0	270	0	Hamish Edwards
EL10	477	3	0	5	0	0	0	469	0	Warren Simpson
EL11	427	0	1	2	0	0	0	424	0	Hamish Edwards
EL12	608	0	1	23	2	0	0	582	0	Warren Simpson
EL13	0									
EL14	59	0	0	0	1	0	0	58	0	Warren Simpson
EL15	110	0	28	4	0	11	0	67	0	Hamish Edwards
EL16	738	0	33	6	0	0	0	698	1	Warren Simpson
EL17	231	0	22	1	0	5	0	203	0	Hamish Edwards
EL18	400	1	1	16	0	0	0	382	0	Warren Simpson
EL19	721	0	8	106	14	1	0	591	1	Hamish Edwards
EL20	848	2	43	13	2	3	0	785	0	Warren Simpson
EU01	2207	0	61	5	0	0	0	2141	0	Bex Jackson
EU02	492	2	13	103	16	0	0	353	0	Warren Simpson

<b>EU03</b>	<b>0</b>										
<b>EU04</b>	<b>1094</b>	<b>3</b>	<b>3</b>	<b>101</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>959</b>	<b>5</b>	<b>Warren Simpson</b>	
<b>EU05</b>	<b>8595</b>	<b>6594</b>	<b>21</b>	<b>48</b>	<b>24</b>	<b>24</b>	<b>0</b>	<b>1884</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU6</b>	<b>918</b>	<b>0</b>	<b>7</b>	<b>113</b>	<b>6</b>	<b>5</b>	<b>0</b>	<b>786</b>	<b>0</b>	<b>Warren Simpson</b>	
<b>EU7</b>	<b>1276</b>	<b>0</b>	<b>29</b>	<b>426</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>809</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU08</b>	<b>535</b>	<b>9</b>	<b>2</b>	<b>74</b>	<b>23</b>	<b>1</b>	<b>0</b>	<b>421</b>	<b>0</b>	<b>Warren Simpson</b>	
<b>EU09</b>	<b>466</b>	<b>1</b>	<b>49</b>	<b>70</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>339</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU10</b>	<b>5698</b>	<b>3355</b>	<b>59</b>	<b>41</b>	<b>6</b>	<b>6</b>	<b>0</b>	<b>2230</b>	<b>1</b>	<b>Warren Simpson</b>	
<b>EU11</b>	<b>3796</b>	<b>0</b>	<b>395</b>	<b>41</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>3354</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU12</b>	<b>1158</b>	<b>1</b>	<b>461</b>	<b>20</b>	<b>8</b>	<b>12</b>	<b>0</b>	<b>655</b>	<b>1</b>	<b>Warren Simpson</b>	
<b>EU13</b>	<b>939</b>	<b>0</b>	<b>82</b>	<b>220</b>	<b>8</b>	<b>12</b>	<b>0</b>	<b>617</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU14</b>	<b>439</b>	<b>2</b>	<b>17</b>	<b>36</b>	<b>15</b>	<b>1</b>	<b>0</b>	<b>367</b>	<b>1</b>	<b>Warren Simpson</b>	
<b>EU15</b>	<b>633</b>	<b>1</b>	<b>73</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>554</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU16</b>	<b>1377</b>	<b>1</b>	<b>829</b>	<b>94</b>	<b>8</b>	<b>35</b>	<b>0</b>	<b>408</b>	<b>2</b>	<b>Warren Simpson</b>	
<b>EU17</b>	<b>1583</b>	<b>0</b>	<b>120</b>	<b>31</b>	<b>10</b>	<b>13</b>	<b>0</b>	<b>1409</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU18</b>	<b>850</b>	<b>1</b>	<b>22</b>	<b>166</b>	<b>38</b>	<b>8</b>	<b>0</b>	<b>615</b>	<b>0</b>	<b>Warren Simpson</b>	
<b>EU19</b>	<b>404</b>	<b>0</b>	<b>4</b>	<b>84</b>	<b>13</b>	<b>1</b>	<b>0</b>	<b>302</b>	<b>0</b>	<b>Bex Jackson</b>	
<b>EU20</b>	<b>636</b>	<b>2</b>	<b>23</b>	<b>20</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>582</b>	<b>3</b>	<b>Warren Simpson</b>	
<b>SN1</b>	<b>1281</b>	<b>0</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>1234</b>	<b>0</b>	<b>Hamish Edwards</b>	
<b>SN2</b>	<b>3146</b>	<b>1855</b>	<b>70</b>	<b>0</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>1190</b>	<b>0</b>	<b>Hamish Edwards</b>	
<b>SN3</b>	<b>1368</b>	<b>323</b>	<b>160</b>	<b>0</b>	<b>0</b>	<b>58</b>	<b>0</b>	<b>827</b>	<b>0</b>	<b>Hamish Edwards</b>	
<b>SN4</b>	<b>1035</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>999</b>	<b>1</b>	<b>Hamish Edwards</b>	
<b>SN5</b>	<b>756</b>	<b>0</b>	<b>137</b>	<b>0</b>	<b>4</b>	<b>31</b>	<b>0</b>	<b>584</b>	<b>0</b>	<b>Hamish Edwards</b>	
<b>SN6</b>	<b>1848</b>	<b>523</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>1230</b>	<b>0</b>	<b>Hamish Edwards</b>	
<b>SN7</b>	<b>767</b>	<b>0</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>657</b>	<b>0</b>	<b>Hamish Edwards</b>	
<b>SN8</b>	<b>1997</b>	<b>1088</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>875</b>	<b>0</b>	<b>Hamish Edwards</b>	
<b>SN9</b>	<b>1741</b>	<b>832</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>860</b>	<b>0</b>	<b>Hamish Edwards</b>	

SN10	539	0	0	0	0	0	0	539	0	Hamish Edwards
SN11	2396	694	419	0	0	102	0	1187	3	Hamish Edwards
SN12	399	0	34	0	0	2	0	363	0	Hamish Edwards
SN13	7298	7133	87	0	0	50	0	27	1	Warren Simpson
SN14										
SN15	2159	655	402	0	2	7	0	1092	1	Warren Simpson
SN16	970	775	24	0	0	0	0	171	0	Bex Jackson
SN17	3249	2139	0	0	0	0	0	1110	0	Warren Simpson
SN18	1421	282	89	0	0	0	0	1049	1	Warren Simpson
SN19	10	1	0	0	0	0	0	9	0	Warren Simpson
SN20	6273	5839	15	0	0	0	0	419	0	Warren Simpson
SN21	1013	376	89	0	0	0	0	548	0	Warren Simpson
SN22	866	0	263	0	0	0	0	603	0	Warren Simpson
SN23	1360	0	879	0	3	4	0	473	0	Sanjay Thakur
SN24	141	0	1	0	0	0	0	140	0	Sanjay Thakur
SN25	710	0	144	0	2	3	0	561	0	Sanjay Thakur
EF01	101	0	3	1	0	0	0	97	0	Bex Jackson
EF02	629	1	0	10	2	0	0	616	0	Bex Jackson
EF03	800	394	0	0	0	0	0	406	0	Bex Jackson
EF04	411	0	0	0	0	0	0	411	0	Bex Jackson
EF05	305	1	0	0	1	0	0	303	0	Bex Jackson
EF06	54	0	0	0	0	0	0	54	0	Bex Jackson
EF07	518	0	1	0	0	102	0	412	3	Bex Jackson
EF08										
EF09	74	2	0	0	0	0	0	72	0	Bex Jackson
EF10	67	1	0	0	0	0	0	66	0	Bex Jackson
EF11	51	1	0	0	0	0	0	50	0	Bex Jackson

EF12	310	2	0	0	0	0	0	0	308	0	Bex Jackson
EF13	32	1	0	0	0	0	0	0	31	0	Bex Jackson
EF14	55	1	0	0	0	0	0	0	54	0	Bex Jackson
EF15	256	1	0	0	0	0	0	0	255	0	Bex Jackson
EF16	30	2	0	0	0	0	0	0	28	0	Bex Jackson
EF17	51	1	0	0	0	0	0	0	50	0	Bex Jackson
EF18	6	1	0	0	0	0	0	0	5	0	Bex Jackson
EF19	106	2	0	0	0	0	0	0	104	0	Bex Jackson
EF20	62	3	0	0	2	11	0	0	46	0	Bex Jackson
EF21	33	1	0	0	0	0	0	0	32	0	Bex Jackson
EF22	22	0	0	0	0	0	0	0	22	0	Bex Jackson
EF23											
EF24	927	1	0	4	0	0	0	0	922	0	Bex Jackson
EF25	127	2	11	1	0	0	0	0	113	0	Bex Jackson
EF26	1	0	0	0	0	0	0	0	1	0	Bex Jackson
EF27	81	0	0	0	0	0	0	0	81	0	Bex Jackson
GW01	17	3	0	0	0	0	0	0	14	0	Bex Jackson
GW02	209	0	0	0	0	0	0	0	209	0	Bex Jackson
GW03	183	0	1	0	0	5	0	0	177	0	Bex Jackson
GW04	103	0	0	0	0	0	0	0	103	0	Bex Jackson
GW05											
GW06	170	0	0	0	0	1	0	0	169	0	Bex Jackson
GW07	881	1	0	0	0	0	0	0	880	0	Bex Jackson
GW08	470	1	0	0	0	2	0	0	467	0	Bex Jackson
GW09	368	0	0	0	0	0	0	0	368	0	Bex Jackson
GW10	2442	0	110	0	0	0	0	0	2332	0	Bex Jackson
GW11	964	1	0	0	0	0	0	0	963	0	Bex Jackson



<b>GW12</b>	<b>2332</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2331</b>	<b>0</b>	<b>Bex Jackson</b>
<b>GW13</b>	<b>946</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>945</b>	<b>0</b>	<b>Bex Jackson</b>
<b>GW14</b>	<b>157</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>155</b>	<b>2</b>	<b>Bex Jackson</b>
<b>GW15</b>	<b>627</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>626</b>	<b>1</b>	<b>Bex Jackson</b>
<b>GW16</b>	<b>900</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>895</b>	<b>0</b>	<b>Bex Jackson</b>
<b>GW17</b>	<b>710</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>705</b>	<b>1</b>	<b>Bex Jackson</b>
<b>GW18</b>	<b>1059</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1059</b>	<b>0</b>	<b>Bex Jackson</b>
<b>GW19</b>	<b>336</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>332</b>	<b>0</b>	<b>Bex Jackson</b>