

# Makarora Mohua Fixed Transect Survey 2015

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## SUMMARY

The fifth annual Makarora fixed transect mohua survey was completed in November 2015.

Ten fixed transects have been surveyed each year in the Makarora area from 2011 through 2012. Three additional transects were added in the Young Valley in 2013, to bring the total number of transects to 13.

Mohua were detected on 9 of the 13 transects in 2015. The average number of mohua detected per transect was 1.54.

## INTRODUCTION

The Makarora River is located in Mount Aspiring National Park, near the township of Makarora, 65 kilometres north of Wanaka. The Young and Blue rivers feed into the Makarora River 3km upstream from Makarora township. Silver beech dominates the bush canopy in these valleys, from the Makarora River at 300m altitude, to the bushline at ~800-900m altitude.

The Makarora lies between two Operation Ark mohua populations, in the Landsborough River and Dart Caples (O'Donnell 1996), though little is known about the Makarora mohua population itself. The Makarora mohua population is suspected to be small and sparsely distributed among the Young, Blue and Makarora valleys. The Royal Forest and Bird Protection Society first took interest in the Makarora mohua population in 1998 with their Mohua Protection Project, and there are now 300 predator traps along the Haast highway and the Young valley, jointly maintained by DOC and Forest and Bird. Nigel Babbage and the Mohua Charitable Trust provided funding for these traps to be upgraded from Fenn traps to DOC 150s in early 2011.

The Makarora mohua fixed transect survey was established in 2011 to analyse the impact of the predator control program on the local mohua population and to monitor mohua population trends. The fixed transect survey was designed to be completed annually over at least a ten-year period in order to provide insight into population trends.

The Mohua Charitable Trust provided funding to Florence Gaud at DOC Wanaka for mohua distribution surveys in the Blue, Young and Makarora valleys in 2012, and they have funded annual mohua transect surveys in the Makarora valley since 2013.

## METHODS

The fixed transect survey was conducted in early November 2015, to coincide with the territorial phase of the birds, prior to nesting. All data were collected by Kat Manno and Sarah Forder, and work was undertaken in fine weather conditions where possible. Thirteen transects were surveyed in total.

The ten transects surveyed from 2011 were located on tracks easily accessible from the highway near Makarora. Transect 1 was located on the Blue Pools track; transect 2 was on the Blue-Young track, between the Leven and Ore streams; 3 and 4 were just upstream of the Makarora bridge, on the Blue valley track; 5 and 6 were on the Haast Bridle track; 8 was on the Cameron Creek track; 9 was on the Cameron-Blue Pools track, and 10 and 11 were located in the Young valley, near the confluence of the Young and Makarora rivers (Appendix A). Three new transects were set up in the Young River in 2013; transects 12 and 13 were added on the true right side of the North branch of the Young, and transect 14 was just downstream of the Young Forks bridge (Appendix B). All of these fixed transects were established in areas of known mohua territory.

Each transect was surveyed four times between 6 November and 13 November 2015, between the hours of 07:00h and 19:00h. The survey followed the methodology of O'Donnell & Elliott (undated) and O'Donnell, Elliott, & Greene (2007). A minimum of 40 minutes, and sometimes longer than one hour, was spent on each transect, with the observer walking at a very slow pace. A standard data sheet (Appendix C) was completed in the field for each transect.

Squeakers (polystyrene rubbed on the blade of a pocket knife) were used to determine group sizes, since mohua often respond to a squeaker by coming closer and chattering in response. Squeaker use was avoided within 10 minutes of a five-minute bird count, so as to not influence the count.

When mohua were heard or seen, the observer followed the birds to determine how many were in the group, and to try to see them. All mohua locations were recorded with GPS waypoints. The number, sex and age of mohua were recorded whenever possible. Additional details about the mohua distribution survey methodology were as follows:

- The observer walked slowly at 0.8-1.0 km per hour (O'Donnell 1996) along the designated transect lines between 07:00h and 19:00h.
- Birds were located by listening to male or female song (which is different for each sex), brief, soft contact calls and 'louder staccato' 'pneumatic' calls (both sexes).
- When mohua were heard or seen every effort was made to establish how many birds were in each group.
- The observer spent up to 10 minutes establishing contact with a group. If the number of birds was not ascertained in that time, then the transect walk was resumed.
- Each group separately on a field sheet, noting number of birds and number of confirmed males and females in each group.
- Double-counting of birds was minimised by continually monitoring surrounding/adjacent calls of mohua.
- Counts were undertaken in similar (good/fine) weather conditions and with little ambient noise (e.g., wind noise)
- Binoculars were used to aid observations

A five-minute bird count (5MBC) was conducted at each end of each transect, following the methodology of Dawson & Bull (1975) and Hartley & Greene (2007). The 5MBC were at least 200m apart, and at least 100m inside the forest edge. All 5MBC locations were recorded with GPS waypoints and blue triangles. Additional details for the 5MBC methodology were as follows:

- The observer stood quietly and immediately began recording all individuals detected for exactly five minutes. The number of each species of bird observed was recorded. Birds seen and heard added to give the total number of birds detected. No bird was knowingly counted twice within a single count.
- If an individual bird was included in a count from a previous station it was counted again. No birds were assumed to be present without some visual or auditory clue to their presence (e.g. a flock of silvereyes was noted as the number heard calling rather than the number the observer guessed such a frequency of calling would represent). If a bird called in one place and later one of the same species called some distance away, they were taken as two individuals unless there was evidence that the first bird moved to the second place.
- Pre-printed data forms were used for recording observations (Appendix D).

If mohua were heard in a 5MBC, they were followed up once the count was finished, and another GPS waypoint marked where they were found. If mohua were seen during the 5MBC, this was noted, and the waypoint also became a mohua waypoint.

In addition to the survey visits, any mohua detected when passing near a transect enroute to another were recorded. In this way, some mohua that went undetected during the initial survey, were found and recorded. These records were separated out for data analysis.

All means were reported with 95% confidence intervals.

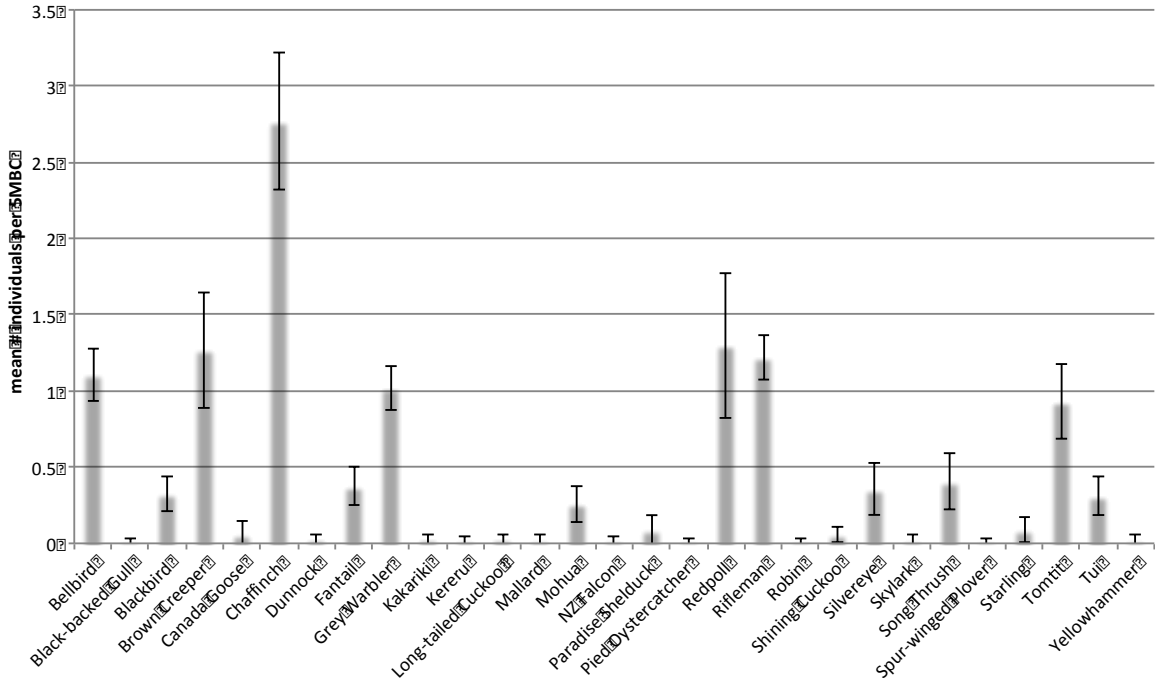
## RESULTS

Four to five squares were completed per person per full survey day, and a total of 104 5-minute bird counts (5MBC) were completed during the survey. Excel spreadsheet DOCDM-850109 contains all data from the 2011-2015 5MBC.

The weather was generally fine on survey days. There were some cool mornings, but the afternoons were warm and dry.

### *Five-minute bird counts*

The chaffinch was the most commonly heard bird, with a total of 288 individuals recorded during the 104 5MBC. The redpoll was the second-most common (135 individuals), followed by brown creeper (132), rifleman (127), bellbird (115) and grey warbler (106). Figure 1 shows the mean number of individuals of each species per 5MBC. Mohua were recorded 27 times, in twenty-five of the 104 5MBC. The average number of mohua recorded per 5MBC was  $0.26 \pm 0.12$ .



**Figure 1.** Mean number of birds per 5-minute bird count (5MBC) in the 2015 survey. Bars represent 95% confidence intervals.

*Mohua survey*

Mohua were recorded 104 times during the 2015 survey (Table 1; Figure 2), but many of these were repeat records of the same individuals. Twenty-four of these mohua (including some double-counted) were detected outside the survey framework in 2015. Excel spreadsheet DOCDM-1320829 contains all data from the 2011-2015 mohua survey transects.

**Table 1.** Number of mohua detected on each visit of each Makarora transect in 2015. Records labeled N/A are mohua which were detected on transects at times outside the survey visits, or at locations between the survey transects.

Visit #	Transect #														N/A	Total
	1	2	3	4	5	6	8	9	10	11	12	13	14			
1	0	0	0	4	3	1	0	0	0	0	3	9	7		27	
2	0	0	0	0	2	3	0	2	0	0	3	5	5		20	
3	0	0	0	2	3	0	0	2	1	0	3	4	5		20	
4	1	0	0	1	3	1	0	1	1	0	0	5	0		13	
N/A	3			1	4			2						14	24	
<b>Total</b>	4	0	0	8	15	5	0	7	2	0	9	23	17	14	104	



**Figure 2.** Locations of mohua groups recorded during the 2015 Makarora fixed transect survey.

The average number of mohua recorded per fixed transect in 2015 was 1.54, which is similar to the average recorded in 2013 (Table 2). The means for 2013 – 2015 are artificially inflated due to the establishment of the additional transects in the relatively densely populated North Young in 2013. When the calculations are repeated using the original ten transects only, the 2015 mean drops to 0.78.

**Table 2.** Mean number of mohua detected on each transect each year from 2011-2015.

Year	Transect #														Average per transect (#1-14)	Average per transect (#1-11 only)	
	1	2	3	4	5	6	8	9	10	11	12	13	14				
2011	6	0	0.25	5.75	2.75	1.75	0.25	1.75	3.25	1.75						2.35	2.35
2012	1	0.33	0.25	3.25	1	0	0.5	0.5	0.75	0						0.76	0.76
2013	1	0	0.25	1.25	4.5	3.25	0	1.25	1	0	1.25	3.75	2.25			1.52	1.25
2014	0.75	0	0	1	3.25	0	0.5	0.5	0	0.75	1	7.00	1.75			1.27	0.68
2015	0.25	0	0	1.75	2.75	1.25	0	1.25	0.5	0	2.25	5.75	4.25			1.54	0.78

## **DISCUSSION**

The mohua population in the Makarora is challenging to monitor, since the birds are widely dispersed and they do not vocalise often. There are a small number of individuals overall, and the territories may be quite large.

Similar numbers of birds were detected in 2013 – 2015, but the distribution of these birds was slightly different. The transects in the upper Bridle track and the North Young have consistently recorded the highest numbers of birds, and the group of mohua that were found at the start of transect #6 in 2013 were vocalising again during the survey in 2015. The Young Forks area was also busy this year, while the transects closer to the Makarora were quiet (Table 2), but there were scattered individuals heard along the Young river track between MOH11 and MOH14 in a walk through the main valley on 11 November. It is too soon to say whether these data are showing a trend; the survey will have to be repeated over the next few years to determine the status of this population.

Special note: a robin was heard this year at the bottom end of the Bridle Track (MOH6F).

## **RECOMMENDATIONS**

There is a critical need to continue mohua monitoring across the south island in the next few years following the recent (2015) and predicted (2016) beech masts. The fixed transect survey should be repeated again in 2016 and on an annual basis thereafter, and the Young and Blue distribution survey undertaken in 2012 should be repeated again in 2017. With regular surveys of this area, we should be able to gain an understanding of the overall status of the Makarora mohua population.

The goals of this mohua monitoring project are to:

- Gain an accurate measure of the mohua population and population trends within the monitoring area and the wider Makarora valley
- Protect the remaining mohua population from further decline and establish more intensive predator control if necessary

2015 survey notes:

- MOH6 transect is actually ~1.7km long. There are blue triangles at the start and end of this transect.
- Blue triangles were replaced this year at many of the 5MBC locations.
- MOH12F (in the north Young) is incorrectly recorded in the GPX file as E1291352 N5102913. The actual position of this 5MBC is E1291462 N5102886.

## **ACKNOWLEDGEMENTS**

Florence Gaud organised the 2015 Makarora survey, Nigel Babbage and the Mohua Charitable Trust provided funding for this project and Graeme Elliott provided guidance with sampling design.

## REFERENCES

Dawson, D.G. & Bull, P.C. (1975) Counting birds in New Zealand forests. *Notornis*, **22**, 101–109.

Hartley, L. & Greene, T. (2007) Indices of relative abundance - Five minute bird counts - Point counts. Inventory and monitoring toolbox, Research & Improvement, Department of Conservation, Christchurch, N.Z.

O'Donnell, C.F.J. (1996) Monitoring mohua (yellowhead) populations in the South Island, New Zealand, 1983–93. *New Zealand Journal of Zoology*, **23**, 221–228.

O'Donnell, C.F.J. & Elliott, G.P. (undated) Fixed transect counts of mohua (yellowhead) in forest. Inventory and monitoring method specification. Research Development & Improvement, Department of Conservation. OLDDM-573015.

O'Donnell, C.F.J., Elliott, G.P. & Greene, T. (2007) Indices of relative abundance - Line transect counts. Inventory and monitoring toolbox, Research & Improvement, Department of Conservation, Christchurch, N.Z.

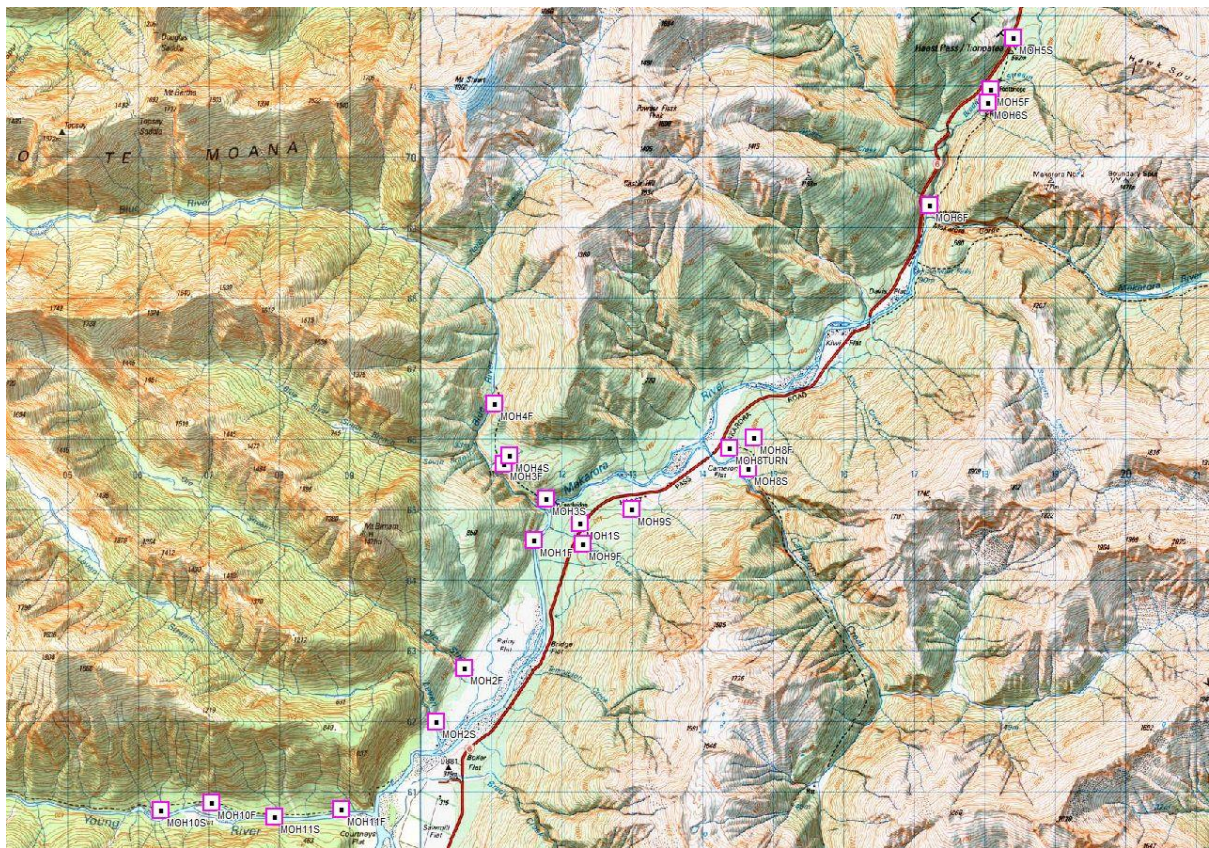
## MAKARORA MOHUA SURVEY REPORTS:

Manno, K. (2012) Mohua survey in the Blue and Young Valleys Nov – Dec 2012. Department of Conservation DOCDM-1136177

Manno, K. (2013) Makarora mohua fixed transect survey report. Department of Conservation DOCDM-1332859

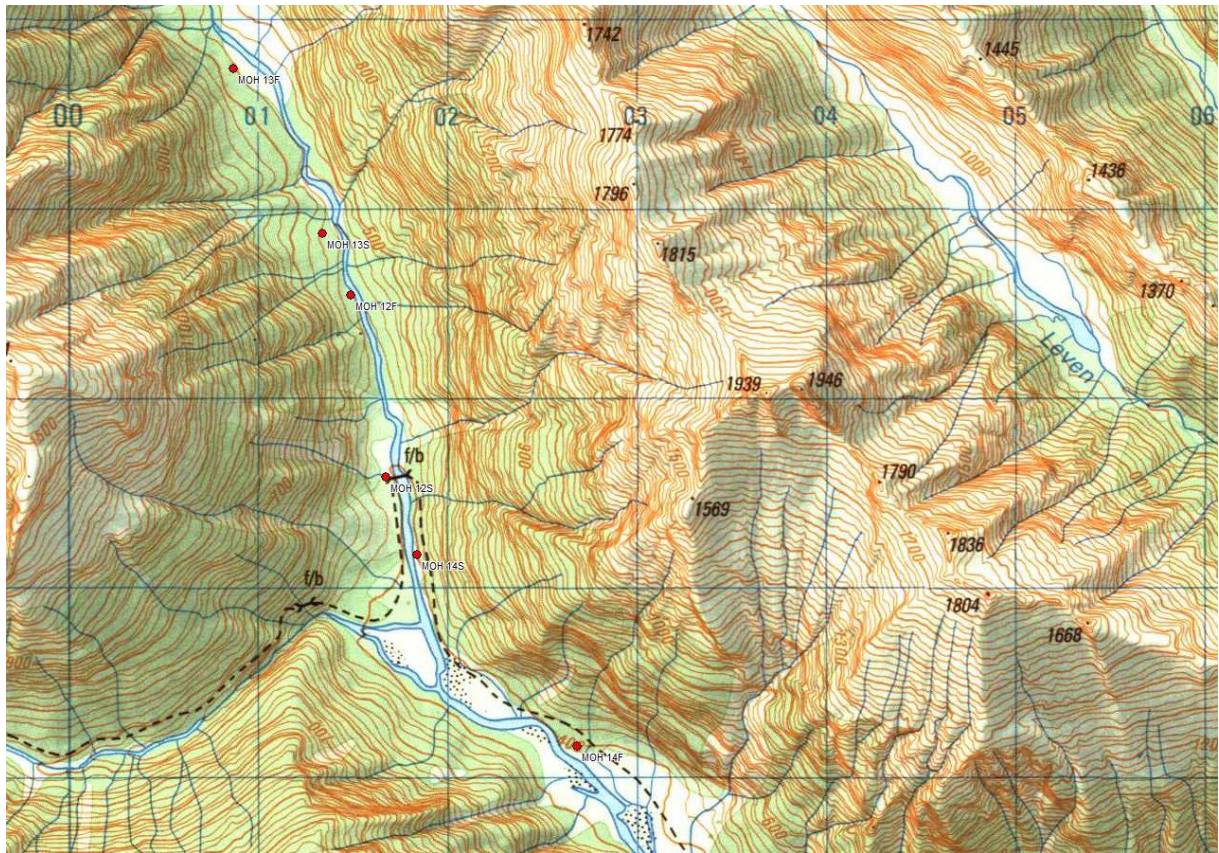
Manno, K. (2014) Makarora fixed transect mohua survey 2014. Department of Conservation DOCDM-1551684

Appendix A. Locations of mohua transects surveyed in the Makarora area since 2011.





Appendix B. Location of the three new transects (MOH12, MOH13, MOH14) added to the Makarora fixed transect survey in 2013.



Appendix C. Mohua survey data sheet

DATA SHEET

MOHUA MONITORING

Date

Observer

Start time

Valley Name

Finish time

Grid Square #

Total time (hrs)

Start square GPS ref

End square GPS ref

Cloud cover

Wind

Temperature

Distance back to transect start (M)	Time heard	# individuals in group	metres to group (off transect)	Way point # or grid ref	Comments

Appendix D. 5MBC data sheet (p.1)

Transect#:	5MBC1 #:	5MBC2 #:
Name		
Date		
Start Time		
Easting		
Northing		
temperature (1-6)		
wind (0-3)		
other noise (0-2)		
sun (minutes)		
precipitation type (N,M,R,H,S)		
precipitation value (0-5)		

Bellbird		
B. Creeper		
Fantail		
G. Warbler		
Kereru		
Mohua		
Rifleman		
Silver Eye		
Tomtit		
Tui		
Blackbird		
Thrush		
Red Poll		
Chaffinch		
Starling		

Transect#:	5MBC1 #:	5MBC2 #:
Name		
Date		
Start Time		
Easting		
Northing		
temperature (1-6)		
wind (0-3)		
other noise (0-2)		
sun (minutes)		
precipitation type (N,M,R,H,S)		
precipitation value (0-5)		

Bellbird		
B. Creeper		
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Silver Eye		
Tomtit		
Tui		
Blackbird		
Thrush		
Red Poll		
Chaffinch		
Starling		

Transect#:	5MBC1 #:	5MBC2 #:
Name		
Date		
Start Time		
Easting		
Northing		
temperature (1-6)		
wind (0-3)		
other noise (0-2)		
sun (minutes)		
precipitation type (N,M,R,H,S)		
precipitation value (0-5)		

Bellbird		
B. Creeper		
Fantail		
G. Warbler		
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Mohua		
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Silver Eye		
Tomtit		
Tui		
Blackbird		
Thrush		
Red Poll		
Chaffinch		
Starling		

Transect#:	5MBC1 #:	5MBC2 #:
Name		
Date		
Start Time		
Easting		
Northing		
temperature (1-6)		
wind (0-3)		
other noise (0-2)		
sun (minutes)		
precipitation type (N,M,R,H,S)		
precipitation value (0-5)		

Bellbird		
B. Creeper		
Fantail		
G. Warbler		
Kereru		
Mohua		
Rifleman		
Silver Eye		
Tomtit		
Tui		
Blackbird		
Thrush		
Red Poll		
Chaffinch		
Starling		

Appendix D. 5MBC data sheet (p.2)

<b>Sun (0-5)</b> Record approximate duration, in minutes, of bright sun on the canopy immediately overhead		
<b>Time</b> 24 hour clock, at the beginning of each count		
<b>Unbounded</b> Counts are unbounded		
<b>Temperature</b>	<b>Wind</b> The average for each five-minute count on a modified Beaufort scale:	
<b>1</b> freezing < 0°C	<b>0</b> Leaves still or move without noise (Beaufort 0 and 1)	
<b>2</b> cold 0-5 °C	<b>1</b> Leaves rustle (Beaufort 2)	
<b>3</b> cool 6-10 °C	<b>2</b> Leaves and branches in constant motion (Beaufort 3 and 4)	
<b>4</b> mild 11-15 °C	<b>3</b> Branches or trees sway (Beaufort 5, 6 and 7)	
<b>5</b> warm 16-22 °C		
<b>6</b> hot > 22 °C		
<b>Other Noise</b> i.e. Other than wind the average for the five minutes	<b>Precipitation type</b> Average for each count	<b>Precipitation value</b>
<b>0</b> not important	N None	0 None
<b>1</b> moderate	M Mist	1 Dripping foliage
<b>2</b> loud	R Rain	2 Drizzle
	H Hail	3 Light
	S Snow	4 Moderate
		5 Heavy

Appendix E. Mohua recorded during fixed transect survey in 2015.

Date	Transect	Visit	No. of mohua	Time heard	Transect search time (hrs)	Location (NZMG)	Comments
6/11/15	MOH1	1	0	NA	64	NA	None
12/11/15	MOH1	2	0	NA	60	NA	None
12/11/15	MOH1	3	0	NA	61	NA	None
13/11/15	MOH1	4	1	10:01am	75	E1302340 N5103133	one male singing and chattering from canopy. No response to squeaker
12/11/15	MOH1	NA	1	9:48am	NA	MOH1S	Heard following bird count. Just made staccato call. Maybe an individual already counted
12/11/15	MOH1	NA	2	4:16pm	NA	MOH1S	Heard after transect completed, one either side of carpark, the same ones heard last time
7/11/15	MOH2	1	0	NA	72	NA	None
7/11/15	MOH2	2	0	NA	57	NA	None
11/11/15	MOH2	3	0	NA	58	NA	None
13/11/15	MOH2	4	0	NA	68	NA	None
8/11/15	MOH3	1	0	NA	68	NA	None
8/11/15	MOH3	2	0	NA	56	NA	None
12/11/15	MOH3	3	0	NA	62	NA	None
12/11/15	MOH3	4	0	NA	64	NA	None
8/11/15	MOH4	1	1	10:00am	62	E1301142 N5104450	1 male chattering at group downhill
8/11/15	MOH4	1	3	10:00am	62	E1301101 N5104371	courtship feeding display in canopy
12/11/15	MOH4	2	0	NA	61	NA	None
13/11/15	MOH4	3	2	12:35pm	50	E1301138 N5104301	one male and one other foraging in canopy
13/11/15	MOH4	4	1	2:29pm	50	E1301114 N5104265	position is approximate. Male sang once, then went quiet
8/11/15	MOH4	NA	1	11:20am	62	E1301020 N5104617	Male in flock of creepers
6/11/15	MOH5	1	1	8:24am	40	E1308292 N5109560	One male chattering at another
6/11/15	MOH5	1	1	8:24am	40	E1308292 N5109545	One male chattering at another
6/11/15	MOH5	1	1	8:53am	40	E1308188 N5109473	One male chattering. No response to squeak
11/11/15	MOH5	2	1	2:04pm	48	E1308199 N5109540	Heard in distance, didn't come closer, same call as closer 1, & seemed to call in response.
11/11/15	MOH5	2	1	2:02pm	47	E1308197 N5109538	Repeating 2 calls and staccato; not coming to squeaks
12/11/15	MOH5	3	1	10:36am	52	E1308374 N5109618	One bird chattering from canopy
12/11/15	MOH5	3	2	10:46am	52	E1308305 N5109660	Two mohua (one male, one female/juv) foraging and chattering
12/11/15	MOH5	4	1	3:58pm	45	E1308321 N5109493	one adult male foraging and chattering in canopy
12/11/15	MOH5	4	2	4:13pm	45	E1308267 N5109610	one male singing in canopy - no response to squeak. Bird flew off to join a 2nd after 5min
8/11/15	MOH5	NA	3	2:40pm	NA	E1308208 N5109711	Foraging @ bridle track carpark
12/11/15	MOH5	NA	1	4:34pm	45	E1308334 N5109691	Solitary male singing
6/11/15	MOH6	1	1	10:10am	68	E1307696 N5108856	Male chattering down at river
11/11/15	MOH6	2	3	1:20pm	1.11	E1307841 N5108806	Not coming into squeaker, just making contact calls. Came to tree right beside small bridge
12/11/15	MOH6	3	0	NA	67	NA	None
12/11/15	MOH6	4	1	2:41pm	88	E1307672 N5108824	Male singing downhill of track
6/11/15	MOH8	1	0	NA	61	NA	None

Date	Transect	Visit	No. of mohua	Time heard	Transect search time (hrs)	Location (NZMG)	Comments
8/11/15	MOH8	2	0	NA	51	NA	None
11/11/15	MOH8	3	0	NA	47	NA	None
12/11/15	MOH8	4	0	NA	58	NA	None
6/11/15	MOH9	1	0	NA	69	NA	None
12/11/15	MOH9	2	2	9:05am	57	E1302392 N5103121	Stacatto contact calls, moved away, didn't come to squeaker. Bellbird chasing 2-3 mohua
12/11/15	MOH9	3	2	5:50pm	60	E1302376 N5103134	male and female/juv
13/11/15	MOH9	4	1	4:19pm	50	E1302391 N5103131	male singing
8/11/15	MOH9	NA	2	5:50pm	NA	E1302324 N5103244	2 birds foraging low and chattering
7/11/15	MOH10	1	0	NA	52	NA	None
7/11/15	MOH10	2	0	NA	58	NA	None
11/11/15	MOH10	3	1	1:14pm	42	E1296425 N5099144	one male singing
13/11/15	MOH10	4	1	12:50pm	60	E1296523 N5099149	Brown creeper-like call; came to squeaker, sat making the same song for some time
7/11/15	MOH11	1	0	NA	62	NA	None
7/11/15	MOH11	2	0	NA	66	NA	None
11/11/15	MOH11	3	0	NA	58	NA	None
13/11/15	MOH11	4	0	NA	64	NA	None
9/11/15	MOH12	1	1	11:06am	35	E1291553 N5101887	one bird foraging in canopy
9/11/15	MOH12	1	2	11:20am	35	E1291604 N5102403	two birds - one is brown (female/juv). Chattering.
9/11/15	MOH12	2	1	5:14pm	56	E1291669 N5102355	One male singing and chattering across river
9/11/15	MOH12	2	1	5:35pm	56	E1291525 N5101893	one male singing in same place as this morning
9/11/15	MOH12	2	1	5:44pm	56	E1291764 N5101955	male singing across river
10/11/15	MOH12	3	1	7:11am	63	E1291776 N5101925	one male singing across river
10/11/15	MOH12	3	1	7:45am	63	E1291656 N5102415	one male singing across river
10/11/15	MOH12	3	1	8:06am	63	E1291626 N5102585	one male singing across river
10/11/15	MOH12	4	0	NA	53	NA	None
9/11/15	MOH13	1	3	12:36pm	40	E1291276 N5103171	three mohua chattering and foraging together
9/11/15	MOH13	1	1	12:56pm	40	E1291145 N5103345	one mohua chattering in canopy. No response to squeaker
9/11/15	MOH13	1	2	1:09pm	40	E1291137 N5103462	male singing in canopy. 2nd bird flew in and chattered in response to squeaker
9/11/15	MOH13	1	2	1:25pm	40	E1291045 N5103790	At least 2 individuals foraging in canopy
9/11/15	MOH13	1	1	1:45pm	40	E1290847 N5104017	one male in a group of brown creepers
9/11/15	MOH13	2	1	2:35pm	55	E1290834 N5103773	one male singing and chattering
9/11/15	MOH13	2	2	2:55pm	55	E1291086 N5103578	two males singing at each other in canopy.
9/11/15	MOH13	2	1	3:37pm	55	E1291222 N5103180	one male singing and chattering in canopy
9/11/15	MOH13	2	1	3:45pm	55	E1291288 N5103189	male counter-singing with above male (15:37)
10/11/15	MOH13	3	1	9:24am	50	E1291296 N5103187	one male singing from canopy. No response to squeaker
10/11/15	MOH13	3	1	10:01am	50	E1291052 N5103728	male counter. Singing with neighbour
10/11/15	MOH13	3	2	10:09am	50	E1291070 N5103830	two mohua singing and chattering in canopy
10/11/15	MOH13	4	1	11:26am	70	E1291040 N5103810	One male singing in canopy
10/11/15	MOH13	4	2	11:48am	70	E1291123 N5103522	two birds chattering and singing
10/11/15	MOH13	4	2	12:44pm	70	E1291206 N5103258	heard a mohua singing a brown creeper song; second mohua flew in to squeak, chattering

Date	Transect	Visit	No. of mohua	Time heard	Transect search time (hrs)	Location (NZMG)	Comments
10/11/15	MOH14	1	3	3:06pm	55	E1291831 N5101540	one male singing. Three birds came down low to squeaker
10/11/15	MOH14	1	1	4:01pm	55	E1292124 N5100610	one male singing across river
10/11/15	MOH14	1	3	4:17pm	55	E1292644 N5100516	3 birds foraging low and singing
7/11/15	NA	NA	3	3:00pm	66	E1297805 N5099017	2 male and 1 female/juv seen on young track between MOH10 and MOH11
9/11/15	NA	NA	1	12:25pm	40	E1291357 N5103195	male seen enroute to MOH13S
10/11/15	NA	NA	2	9:10am	50	E1291252 N5103184	two mohua singing in canopy
11/11/15	NA	NA	1	10:42am	NA	E1292799 N5100457	one male singing at bush edge
11/11/15	NA	NA	1	10:54am	NA	E1292876 N5099986	one male singing across river
11/11/15	NA	NA	1	11:06am	NA	E1293362 N5099796	one male singing from canopy
11/11/15	NA	NA	3	11:36am	NA	E1294194 N5099321	at least three mohua foraging in canopy
11/11/15	NA	NA	2	12:00pm	NA	E1295088 N5099144	2 birds: one male and one female/juv