

**Survey of the Distribution and Abundance of
Mohua, *Mohoua ochrocephala* in the Makarora
Valley, Mount Aspiring National Park**



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Abstract

Twenty four one kilometer (km) grid squares were surveyed for mohua *Mohoua ochrocephala* in the Makarora Valley between 15 October and 29 November 2012. Each grid square survey consisted of one one km walking transect and two five minute bird counts (FMBC). Surveys were conducted along suitable mohua habitat on both sides of the Makarora Valley.

A total of nine mohua were observed in five of the 24 grid squares surveyed. A further two mohua were observed between the transect counts which were within the survey area.

This survey is the first comprehensive valley wide mohua survey that has been undertaken in the Makarora Valley. The information collected provides baseline information on the current abundance and distribution of mohua within the valley.

1 Introduction

The Makarora Valley lies at the head of Lake Wanaka in Mount Aspiring National Park some 65 kilometres north of the township of Wanaka. State Highway 6 follows the Makarora Valley to the Haast Pass which is one of three main alpine crossings routes to the West Coast.

Silver beech dominates the forest canopy in the Makarora Valley from 300m altitude, to the bush line at ~800-900m altitude. There are extensive grassy river flats throughout the valley until the valley rises in altitude some three km before the Haast Pass.

The Makarora Valley lies between two larger managed mohua populations (Operation Ark sites) however little is known about the Makarora population itself. In the north is the Landsborough Valley and to the south east is the Dart / Caples Valleys (O'Donnell 1996). Forest and Bird first took interest in the Makarora mohua population in 1998 with their Mohua Protection Project, and a joint effort between the

Department of Conservation (DOC) and Forest and Bird now maintains 300 predator control stations in the Makarora Valley along SH6 and in the Young Valley. The Mohua Charitable Trust provided funding for the predator control stations to be upgraded in late 2011.

The Mohua Charitable Trust also provided funding to DOC Wanaka for the first mohua distribution survey in the Makarora, Blue and Young River Valleys. The purpose of the 2012 survey was to:

Determine the abundance and distribution of mohua in the Makarora, Blue and Young River Valleys.

2 Methods

The mohua survey was conducted from early October to late November, to coincide with mohua being most conspicuous prior to nesting.

Each one km (1000m) grid square with suitable beech forest habitat was surveyed throughout the Makarora Valley between 15 October and 29 November 2012 (Figure 1). The survey concentrated on 24 grid squares in forested areas between the confluence of the Young and Makarora Rivers upstream to Haast Pass (Figure 1). Surveys were conducted between the hours of 0900 and 1700 as per the methodology in O'Donnell & Elliott (undated) and O'Donnell, Elliott, & Greene (2007).

Some transects were carried out on walking tracks (in part) within the valley when the transect and walking track both travelled in the same direction and through the most suitable habitat. A minimum of 31 minutes, and often longer than one hour, was spent in each square, with the observer walking at a slow pace. A Garmin 60CSx GPS was used to record the start and end points of each transect, five minute bird count stations (FMBC) and the transect route. A standard data sheet was completed in the field for each grid square (Appendix A).

A bird squeaker was used intermittently to aid in the detection of mohua and help determine the mohua numbers. Mohua often respond to a squeaker by coming closer and chattering in response. The bird squeaker 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 would try to observe the birds to determine how many were in the group. All locations where mohua were found were recorded with a GPS waypoint. 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 along the designated transect lines between 0900 hours and 1600 hours.
- Birds were located by listening to male or female song (which is different for each sex), brief soft contact calls and louder 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.

All data was collected by a single observer, Paul van Klink, and survey work was undertaken in fine weather conditions.

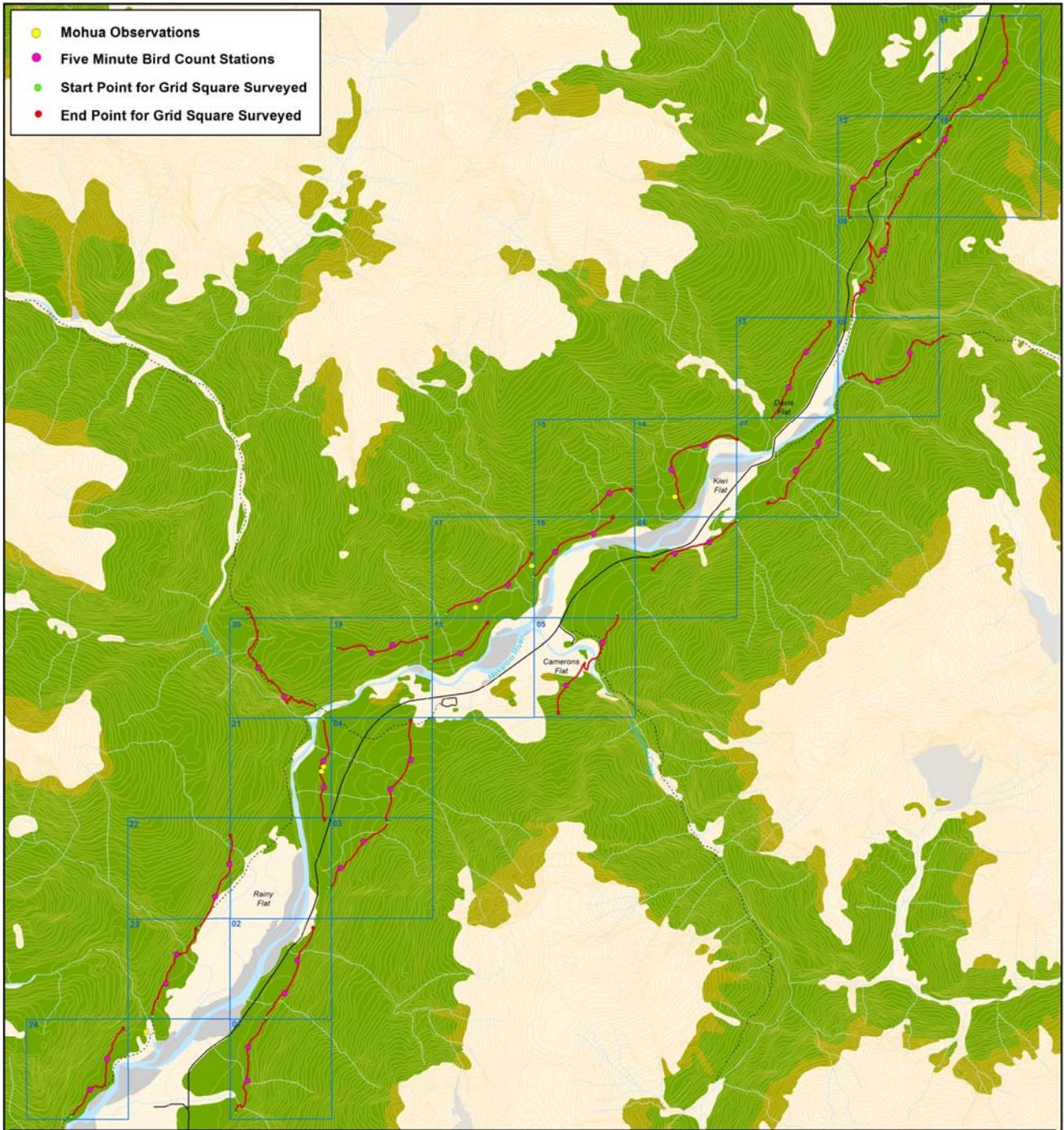


Figure 1. Makarora Valley mohua survey area showing 24 kilometre grid squares (NZMG)
 Start and end points for each grid square surveyed, five minute bird count stations and mohua observations

Two five-minute bird counts (FMBC) were conducted in each grid square. For grid squares that were less than 600 m in length (due to topography / limited mohua habitat) then only one FMBC was conducted. The FMBC stations were a minimum of 250 m apart, and 250 m from the edge of the grid square. All FMBC locations were recorded with a GPS waypoint. A standard data sheet (Appendix B) was completed in the field for each FMBC. Additional details for the FMBC methodology is per Dawson & Bulls (1975) and Hartley & Greene (2007) and as follows:

- The observer stands quietly and immediately records the presence of all individuals detected for 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.
- If mohua were heard in a FMBC, they were followed up once the count was finished, and another GPS waypoint marked where they were found. If mohua were seen during the FMBC, this was noted and the waypoint also became a mohua waypoint.
- In addition to the transect and FMBC survey, any mohua observed when passing through a grid square 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 are reported with 95% confidence intervals.

3 Results

3.1 Walking transects

Twenty four one km grid squares were surveyed in the Makarora Valley between the 15 October and 29 November 2012 (Figure 1).

Three to four grid squares were completed on each full survey day with an average of 103 minutes spent in each grid square. Nine mohua were observed in five of the 24 survey grid squares (Figure 1, Appendix C). Two additional individuals were recorded outside the survey framework (when walking between grid squares) (Appendix D). This gave a total of 11 mohua observed throughout the valley (Figure 1, Table 1).

Table 1. Summary of mohua records from the Makarora Valley survey.

	Grid square transect	All records
# Groups	6	8
# Males	9	11
# Females	0	0
Total # mohua	9	11
Mohua per grid square	0.38	0.46
Total time taken	41:33	

All the bird data collected from the 24 grid squares and FMBC has been entered into an Excel spreadsheet DOCDM- 1136175.

The weather was suitable for all the survey days although there were some very cold clear days on 16, 19 and 23 October.

3.2 Five Minute Bird Counts

A total of 46 five-minute bird counts were completed in the 24 km grid square survey area (Figure 1).

The chaffinch was the most commonly heard bird in the Makarora Valley, with a total of 86 individuals recorded during the 46 FMBC. The bellbird and grey warbler were

the second-most common (64 individuals), followed by rifleman (46), brown creeper (27), red poll (22), tomtit (17) and silvereye (13). The average number of individuals for each species per FMBC is shown in Figure 2. A total of one mohua was recorded in one of the 46 FMBC completed. The average number of mohua recorded per FMBC was 0.22 ± 0.43 .

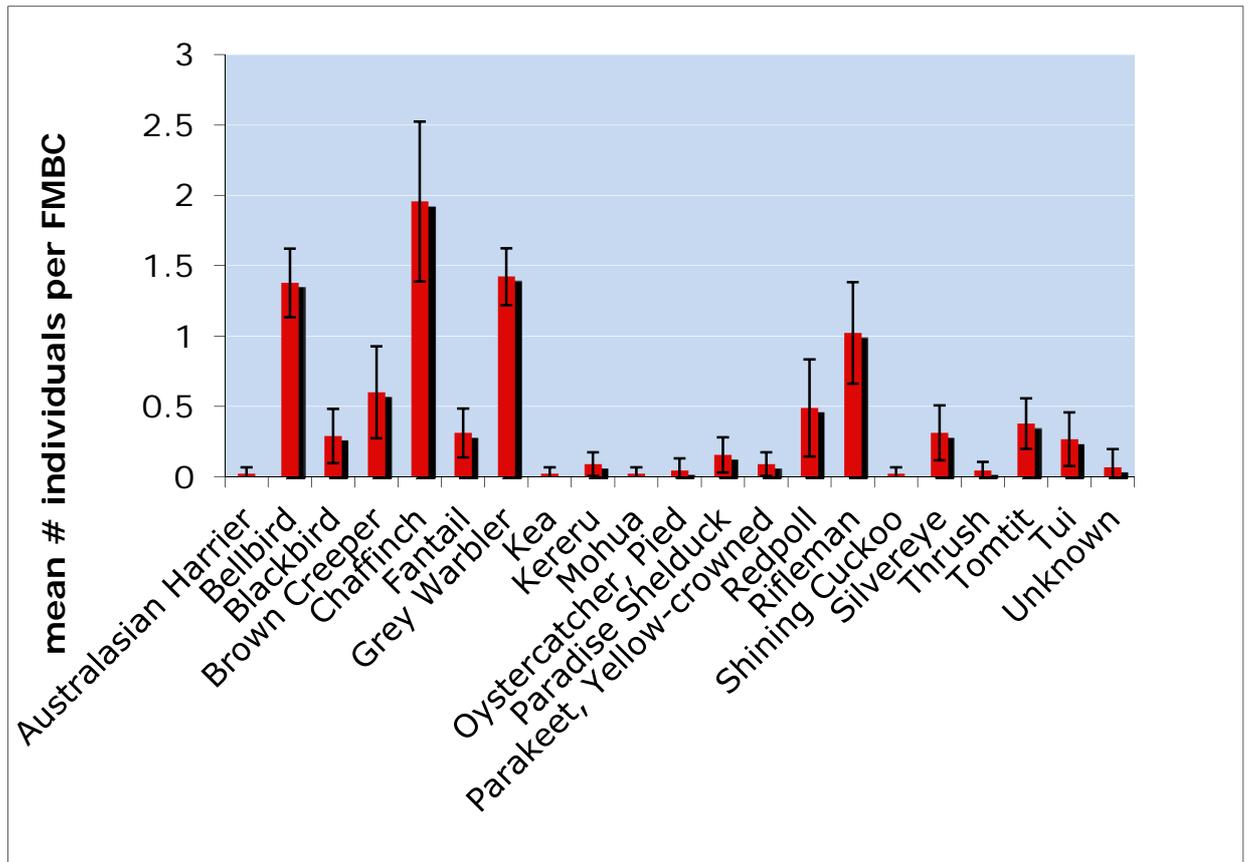


Figure 2. Mean number of birds per five-minute bird count (FMBC) in the Makarora Valley. Bars represent 95% confidence intervals.

4 Discussion

The mohua in the Makarora Valley were inconspicuous during the 2012 survey. The weather in October was very cool with the daytime temperatures on some survey days staying in single figures. Some mohua were heard once or twice and then were not able to be located as they had ceased calling. The survey days completed in the second half of November may have coincided with the end of the territorial phase and the start of mohua nesting. This could have had an effect on the birds' singing rates

during the survey. For these reasons it is likely that there were more mohua in the grid squares than what were recorded during the surveys.

Anecdotal historical mohua records from the Makarora Valley can provide some insight into the apparent decline of mohua within the valley. In 2007 a flock of five mohua were observed at Rainy Flat on the true right of the Makarora Valley between the Blue and Young Rivers (P. Gasson, pers. comm.) and in the same year 10 mohua were seen at the Haast Pass lookout track (G. Newton, pers. comm.). Mohua sightings outside of the survey area also show that mohua are more wide spread than the area in which the survey covered including a flock of eight mohua observed in the head of the Makarora Valley in 2005 (G. Newton, pers. comm.) and several mohua observed in the Cameron Creek area (C. O'Donnell, pers. comm.).

5 Recommendations

Future surveys to map the abundance and distribution of mohua in the Makarora Valley could also include areas where historic mohua records occur including the Levin, Ore and Camerons Valleys and the upper Makarora Valley about the gorge. A long term mohua monitoring program should only be established in these areas if pest control management can be implemented.

If the mohua populations in all the surrounding valleys are significant then consideration should be given to implementing predator control in those areas. As well as standard predator control management a contingency plan for controlling rat populations in years of significant beech mast should be also be implemented (O'Donnell, Roberts, & Lyall 2002).

6 Acknowledgements

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work and data entry. Thanks to Katharina Manno for copies of the Blue and Young mohua survey report and FMBC data analysis.

7 References

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Appendices

Appendix A. 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 C. Mohua records from 24 survey grid squares in the Makarora Valley

Date	Transect	Location	No. of Mohua	Time heard	Waypoint	Comments
23/10/12	11	Haast Pass	1	1316	E1308395, N5109727	One male heard calling, approached and bird seen feeding
13/11/12	12	Haast Pass	2	1104	E1307809, N5109098	At least 2 heard but not seen as birds stopped calling
14/11/12	21	Makarora	2	1156	E1301921, N5102865	Mohua heard, approached and two mohua seen
14/11/12	21	Makarora	2	1206	E1301898, N5102812	Two mohua heard, approached but not seen as birds stopped calling
21/11/12	14	Makarora	1	1312	E1305389, N5105559	One heard calling and then seen
22/11/12	17	Makarora	1	1310	E1303419, N5104446	One mohua heard during 5MBC, approached after count and seen

Appendix D. Additional mohua records collected outside of survey framework

Date	Transect	Location	No. of Mohua	Time heard	Waypoint	Comments
15/11/12	23/24	Makarora	1	1154	E1300170, N5100218	One male heard singing after transect completed between transect 23 and 24 on TL Leven Stream
22/11/12	17	Makarora	1	1410	E1303975, N5104870	One male calling after transect completed. Bird not seen