

SHORT NOTE

Yellowhead (*Mohoua ochrocephala*) survey in the Eglinton Valley, November 1992

The Eglinton Valley in Fiordland National Park (Figure 1A) contains one of the largest remaining Yellowhead (*Mohoua ochrocephala*) populations. It has been recognised as a key population for the conservation of the species and the Department of Conservation's Yellowhead Recovery Plan identifies regular monitoring as essential for its future management (O'Donnell 1993). This survey aimed to document the distribution of Yellowheads within the Eglinton Valley and test a 'quick and easy' monitoring methodology which, if suitable, could be repeated at regular intervals.

The survey was primarily designed to monitor Yellowheads, but Kaka (*Nestor meridionalis*), Yellow-crowned Parakeet (*Cyanoramphus auriceps*) and Robin (*Petroica australis*) were also surveyed and information on bird and forest type relationships was collected. These extra tasks were well within the capabilities of our surveyors and took little extra effort.

At the time of the survey Yellowhead numbers in the valley were relatively low but increasing after suffering declines during stoat plagues in the summers of 1987 and 1990 (Elliott and O'Donnell 1988 and unpublished data).

The survey was carried out between 23 and 27 November 1992. The units used for surveying were the 1000 yard (914m) grid squares on the Eglinton and Hollyford sheets of the NZMS series 1 maps. Only 94 grid squares (7860ha) on the Eglinton Valley floor were surveyed because earlier work had shown that few Yellowheads were on the valley's steep sides, and because limitations of time and personnel made a survey of the whole valley impractical.

For each square visited, we kept a list of all bird species seen and heard, and at about half way along the route through each square, we made a five-minute bird count (Dawson and Bull 1975) and recorded the dominant canopy tree. We confined our survey to fine days as Yellowheads are more difficult to detect in rain or windy conditions. To reduce the effect of diurnal variation in Yellowhead conspicuousness we carried out our surveys only between 09:00 and 17:00, thus avoiding early morning and evening peaks of singing activity. Similar methods have been used for other surveys of Yellowheads (Elliott 1992).

Our survey team consisted of 6 people who differed in their abilities to recognise the calls of forest birds. To reduce this problem, we initially worked in pairs, each of which included one experienced ornithologist.

We examined relationships between vegetation and bird distribution using χ^2 tests of association. Each five-minute bird count was classified by the presence or absence of each of the 4 bird species, and by the dominant tree species at the site. Some tree species were recorded infrequently and for the purpose of this analysis forests were classified only as either red beech (*Nothofagus fusca*) or 'other' forest. The level of significance was set at $P = 0.10$.

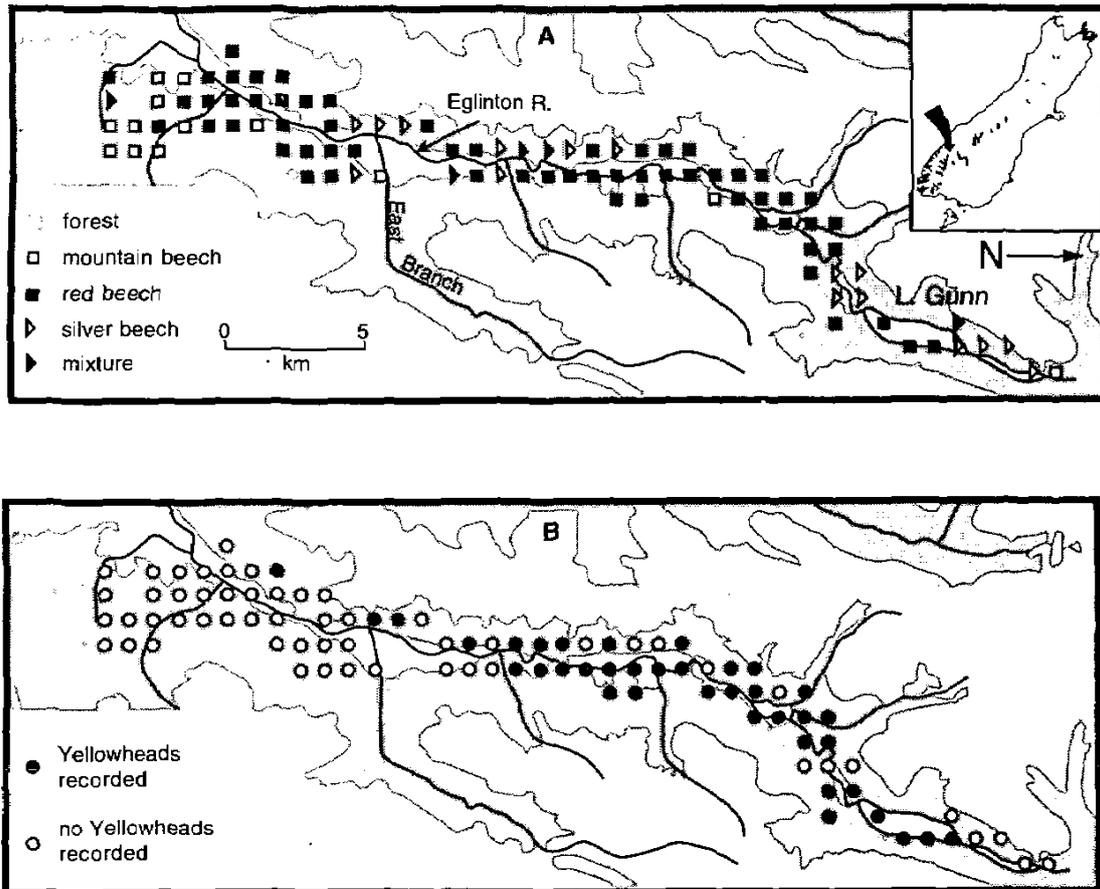


FIGURE 1 – (A) Dominant forest tree species at 94 sites on the Eglinton Valley floor. (B) Results of the grid survey on the floor of the Eglinton Valley, November 1992: Yellowheads.

Three southern beech species were the only dominant trees recorded in our survey: red beech, silver beech (*N. menziesii*), and mountain beech (*N. solandri* var. *cliffortoides*). The dominant canopy tree changed gradually up the valley (Figure 1). In the lower reaches the forest was dominated by mountain beech, with a little red beech. In the middle reaches the forest was dominated red beech, with some silver beech and very little mountain beech. The upper reaches of the valley were dominated by silver beech. This change parallels the increasing rainfall and altitude up the valley.

Yellowheads were found in small groups of 1-3 in 38 grid squares in the middle and upper reaches of the valley (Figure 2). They were absent from the extensive area of relatively flat forest on the eastern side of the valley below the East Branch. We recorded Yellowheads in 20 bird counts with an average 0.36 Yellowheads in the 94 counts. There was no significant association between the presence/absence of Yellowheads in the five-minute bird counts and the dominant forest tree ($\chi^2 = 0.57$, d.f. = 1, $P = 0.45$).

Robins were found in pairs in the lower and middle reaches of the valley, but were absent from around and upstream of Lake Gunn (Figure 2A). They were recorded in 52 grid squares, and 20 bird counts with an average of 0.31 Robins per count in the 94 counts. Robins were significantly more often

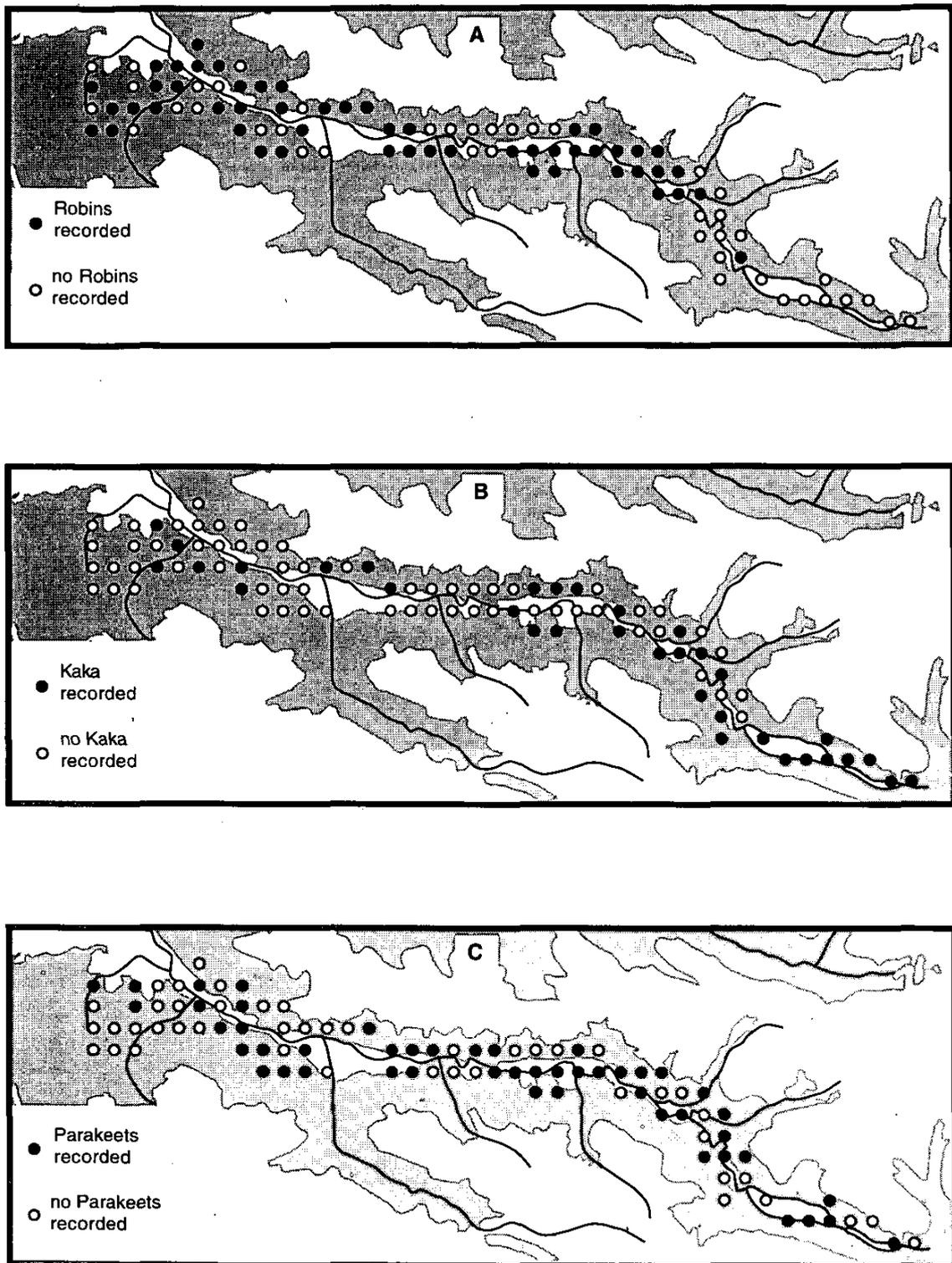


FIGURE 2 – Results of the grid survey on the floor of the Eglinton Valley, November 1992: (A) Robins, (B) Kaka and (C) Yellow-crowned parakeet.

recorded in bird counts in red beech dominated forest than other forests ($\chi^2 = 3.23$, d.f. = 1, $P = 0.07$).

Kaka were found singly and in small groups in 34 grid squares scattered throughout the valley (Figure 2B), but slightly more regularly in the upper valley where they were seen feeding on abundant *Fuchsia excorticata* flowers. They were recorded in only 11 bird counts with an average of 0.15 Kaka per count in the 94 counts. There was no significant association between Kaka presence/absence in bird counts and the dominant forest tree ($\chi^2 = 0.004$, d.f. = 1, $P = 0.95$).

Parakeets were encountered in ones and twos in 49 grid squares throughout the valley (Figure 2C). They were recorded in 21 bird counts with an average of 0.37 Parakeets per count in the 94 counts. Parakeets were significantly more often recorded in bird counts in red beech dominated forest than other forests ($\chi^2 = 3.82$, d.f. = 1, $P = 0.05$).

Yellowheads have been intensively studied in two grid squares in the middle of the valley and we knew there were at least 29 birds present at the time of our survey (unpublished data), yet our survey recorded only 6 birds. Male Yellowheads are much noisier and more conspicuous than females (pers. obs.). However, even assuming that half the 29 birds present were males, and that we detected only males in our survey, we found less than 50% of them. Given this rate of detection, it is likely that we would have recorded at least one Yellowhead in grid squares that supported 5 or more pairs of birds, but we will have recorded no Yellowheads in some squares that contained only one or two pairs. It follows that repeated surveys like ours will only be able to reliably assess changes in the distribution of dense Yellowhead populations, but not sparse ones.

The five-minute bird counts we undertook were probably not a useful measure of Yellowhead abundance. Bird counts vary considerably with time of day, weather conditions and between observers (Dawson 1981), and we did insufficient counts to control for any of these factors. However, bird counts force observers to stop and listen, and many species were detected during the bird counts, but not while walking through the squares.

The absence of Yellowheads from the eastern parts of the lower Eglinton Valley is intriguing. This part of the valley has more mountain beech than most other parts of the valley and Elliott (1992) has shown that Yellowheads 'avoid' mountain beech. Our sample size is too small to detect avoidance of mountain beech, but in any case Yellowheads were also absent from many squares in the lower valley that were dominated by red beech.

The absence of Robins from the upper Eglinton is also intriguing, but explained by the Robin's apparent preference for red beech dominated forest which is uncommon in the upper valley. In Waitutu forest in western Southland Elliott and Ogle (1985) found that Robins appeared to have a strong preference for forests growing on fertile sites. Such a preference does not appear to influence the distribution of Robins in the Eglinton Valley since they were relatively common in the less fertile south-eastern parts of the valley (Grindley 1958).

The high mobility of Kaka and Parakeets means that it is difficult to detect small scale patterns in their distribution. Furthermore these species are not territorial and migrate seasonally. None-the-less Parakeets seemed more common in the tall red beech forest in the middle of the valley, and Kaka were most frequently encountered in the upper valley where they were seen feeding on *Fuchsia* which is more common there than elsewhere.

Although the Yellowhead population in the Eglinton Valley is lower than it was only a few years ago it is still one of the three largest recognised in the Department of Conservation's Yellowhead Recovery Plan (O'Donnell 1993). Given the importance of these places to the future survival of Yellowheads, it is appropriate that surveys at least as comprehensive as ours be carried out regularly in order to detect further changes in Yellowhead distribution.

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