



ARGOS RESEARCH NOTE: NUMBER 19, NOVEMBER 2006

Birds on kiwifruit orchards

Surveying birds

Biodiversity on New Zealand's farmed landscapes has received very little study, and so a first step in the ARGOS project is describing what biodiversity is present on farms now before we can go on to research how it responds to different habitats, landscapes and farming system practices. As part of this process, we measured bird community composition and relative abundance on ARGOS sheep/beef farms and kiwifruit orchards. The monitoring of birds on farms and orchards is one valuable approach to increase our ecological understanding of production landscapes. Birds can be excellent indicators of wider environmental health, they are generally more familiar to farmers than many other taxa, and they are good tools to measure the progress of sustainable development.

We counted birds on three different farming systems within the kiwifruit sector: Organic Hayward ('Organic'), KiwiGreen Hayward ('Green'), and KiwiGreen Hort 16A ('Gold'). The ARGOS project is evaluating these three farming systems as different pathways to improved sustainability. Birds were surveyed using 'distance sampling' and 'five-minute count methods (these methods are explained in research note 17). Counts were undertaken once at each survey point. Each orchard was surveyed once between 16th November 2004 and 29th January 2005.

Survey sites

Birds were surveyed on ARGOS's kiwifruit orchards. The kiwifruit orchards were arranged in 12 clusters of three orchards, 10 in the Bay of Plenty, one near Kerikeri and one near Nelson. There are no longer any conventional kiwifruit orchards left for comparison, so in each cluster we included one KiwiGreen green, one KiwiGreen Gold and one Organic Green orchard. In this research note, we'll report on the number of birds seen or heard in 277 five-minute counts on 37 kiwifruit orchards (for data on the kiwifruit surveys, see Research Note 17).

Results

On average we recorded over 13 different species on each kiwifruit orchard in the study, with the majority of those species (around 80%) being introduced birds. The most common species, found on most orchards, were blackbirds, song thrushes, magpies, and chaffinches. However, we did find some native birds were common on many orchards, such as bellbirds, fantails, silvereyes and pukekos.

Higher numbers of individual birds were recorded in organic orchards than either green or gold orchards (Figure 1), and each organic orchard had a greater number of species present on it than either green or gold orchards (Figure 2). There was no difference between the farming systems in the proportion of birds that were native

species, although species such as fantails, silvereyes tui and pukeko did tend to occur more often on organic orchards. These results differ from those found in the sheep/beef sector (ARGOS Research Note 18), where there were no differences in the bird communities between the different farming systems. This supports the ARGOS hypothesis that there are more environmental differences between different farming systems in more intensive farming sectors such as kiwifruit.

Many of the participating farmers had a good knowledge of the birds on their farms, particularly the iconic native species such as bellbirds and fantails, and were keenly interested in the results of the surveys.

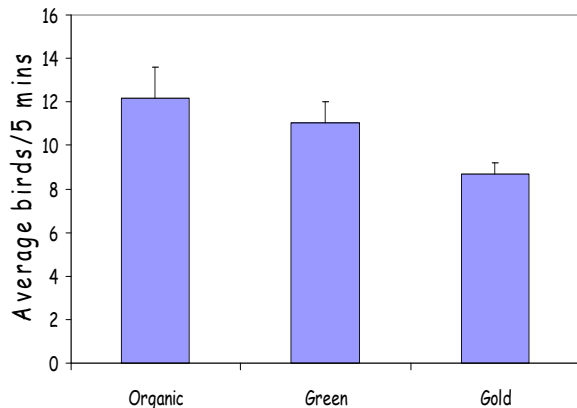


Figure 1: Average number of individual birds per 5 minute survey on ARGOS kiwifruit orchards

Conclusions and further surveys

Our surveys highlighted the abundant and variable bird communities found on New Zealand kiwifruit orchards. Up to a fifth of the birds present on a farm were native species, and many of these were well known to the individual farmers.

It is not clear why there were more individual birds and more species present on organic orchards compared to the two KiwiGreen farming systems. For some species such as greenfinches, chaffinches and yellowhammers, there may be more food available for them on organic orchards. These species feed on plant seeds and small insects on the ground under the vines,

and organic orchards tend to have longer, more diverse vegetation under the vine lines than the other two systems. However, for some species, the composition of the landscape surrounding the orchard is more important than the farming system. For example, tuis and wood pigeons tend to be recorded more often on orchards that have bush gullies or other native trees nearby, while pukekos were more common on orchards with streams or ponds near them.

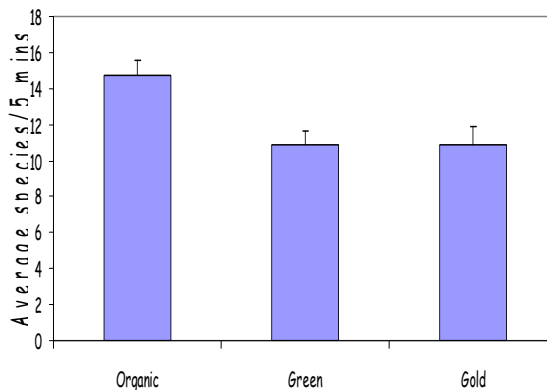


Figure 2: Average number of bird species per 5 minute survey on ARGOS kiwifruit orchards

The bird surveys will be repeated in summer 2006/07, and this information will be used to find sustainable ways that farmers can maintain preferred species (such as wood pigeons or fantails) on their farm, minimize the impacts of pest birds, and maintain market access by demonstrating the environmental performance of their farming operation

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