

The Impact of the Noisy Miner *Manorina melanocephala* on avian diversity and insect-induced dieback in eucalypt remnants

Merilyn Grey – Final PhD presentation

The presence of the Noisy Miner *Manorina melanocephala*, an aggressive Australian honeyeater, compromises the conservation value of small, degraded woodland remnants in south-eastern Australia. Noisy Miners dominate remnants and exclude small, insectivorous birds. This could further exacerbate insect-mediated dieback, contributing to the deterioration of remnants.

When the abundance of Noisy Miners was reduced at four remnants by experimental removal, the diversity and abundance of insectivorous and nectarivorous birds increased at three of the four sites (relative to matching control sites). These results, together with those from three earlier Noisy Miner removal experiments, demonstrate that Noisy Miners affect avian diversity and abundance by aggressive exclusion of other bird species. After Noisy Miner abundance was reduced increased populations of small insectivorous and nectarivorous birds used the remnants. In five out of seven experiments Noisy Miners did not reinvade the remnants during the ensuing twelve months.

The influx of small birds had the potential to reduce insect infestations and assist in the recovery of dieback-affected trees. I monitored eucalypts in two vegetation types (Grey Box *Eucalyptus microcarpa* and Mugga Ironbark *E. sideroxylon*) at the leaf and tree scale at remnants dominated by Noisy Miners and at remnants from which they had been removed in order to assess any cascading effect of Noisy Miner domination.

Three-quarters of the eucalypt trees remained in poor to average condition throughout the 3½ - year monitoring period and there was no detectable change to “tree health” at the scale of the tree at either Grey Box or Ironbark remnants without Noisy Miners. Also, there was no detectable difference to insect damage to leaves from Ironbark trees at remnants without Noisy Miners when compared to remnants dominated by them. However, where Grey Box was the dominant canopy tree, there was a significantly more rapid decrease in insect herbivory in experimental remnants from which Noisy Miners had been removed than at control sites.

Drought has been linked to inciting or predisposing eucalypts to stress and increased levels of herbivory, but this study appears to be the first to suggest the potential predictive value of the Southern Oscillation Index to forecast a relationship between eucalypt herbivory, tree health and El Niño-Southern Oscillation events.