Science for Saving Species

Research findings factsheet

Project 3.2.6



Does culling noisy miners have conservation benefits for small woodland birds? Evidence from 45 removals

In brief

Noisy miners are native Australian honeyeaters that form colonies and aggressively displace other woodland birds from areas they occupy. Habitat clearing, fragmentation, and degradation has created more suitable habitat for noisy miners. Their impacts are greatest on smaller-bodied woodland birds, including some Critically Endangered species. As such, overabundance of noisy miners is listed as a Key Threatening Process nationally, and in both New South Wales and Victoria.

Lethal methods to control noisy miners have been trialled



intermittently over the past three decades, but with varying success. We aimed to determine which methods or ecological conditions led to successful noisy miner removals, in terms of both reducing noisy miner density and increasing the diversity and abundance of small woodland birds.

We collated data from 45 noisy miner removals and found that no single factor predicted success. We also found that, contrary to expectations, noisy miner density did not always need to be reduced below a critical threshold previously identified as important in unmanaged situations by Thomson et al., (2015) to benefit small woodland birds. Even when removals were not successful in substantially reducing noisy miner density, small birds often still benefited. These results are significant for conservation managers, recovery teams and policy-makers considering a national threat abatement plan. Further removals must involve careful monitoring and reporting to help clarify conditions under which noisy miners can be effectively suppressed, or their behaviour disrupted, so that other woodland bird populations can recover.

Background

The noisy miner (Manorina *melanocephala*) is a native Australian honeyeater that lives in colonies, and aggressively displaces many woodland bird species from the habitat it occupies. Following habitat clearing, fragmentation and landuse change (e.g., livestock grazing), vegetation structure and complexity of woodland and forests have been simplified and the proportion of edge habitat has increased. Noisy miners generally prefer eucalypt woodland, particularly where woodland is more structurally open, or along the edges of denser woodlands.

Noisy miners exclude from their territories most small woodland bird species, which are an important component of the woodland bird community. This community has been described as likely to meet the criteria for listing as a nationally threatened ecological community. The loss of smaller-bodied species diminishes the ecological functions of woodland areas, rendering them more homogenous.

The noisy miner has been recorded directly interfering with Critically Endangered woodland bird species, including the regent honeyeater (*Anthochaera phrygia*) and swift parrot (*Lathamus discolor*). These impacts led to the listing of overabundant noisy miners as a Key Threatening Process





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Background (continued)

under Australia's Environmental Protection and Biodiversity Conservation Act 1999. They are also listed separately as threatening processes under both the New South Wales' Threatened Species Conservation Act 1995 and Victoria's Flora and Fauna Guarantee Act 1988.

Methods to reduce the impacts of noisy miners have included indirect approaches, such as increasing the complexity of habitat, and direct removal of birds. Translocation of noisy miners is considered unsuccessful as translocated birds do not readily assimilate into resident populations in relocation sites and travel great distances to return to capture sites.

Lethal control of noisy miners has been trialled intermittently in a series of small- to large-scale interventions over the past three decades in Queensland, New South Wales and Victoria. The outcomes of these noisy miner removals have varied substantially, and many outcomes have never been published. This limits our ability to identify whether the approach can be effective. To ensure cost-effective and ethical conservation management of noisy miners for woodland bird community conservation, it is essential to identify the circumstances under which lethal control methods are successful.

Research aims

We aimed to identify the ecological and methodological factors contributing to a successful noisy miner removal. Success was measured in terms of (1) reduced noisy miner density and (2) increased richness or abundance of small woodland birds.



Figure 1. Map of official noisy miner removals across southeast Australia. The area shaded in dark grey shows the distribution of noisy miners across Australia. (BirdLife International and Handbook of the Birds of the World (2016) Bird species distribution maps of the world. Version 6.0. Available from http://datazone.birdlife.org/species/requestdis).

What we did

Researchers from a number of Australian universities, museums and non-government conservation organisations contributed to this project. Through coordination with authors of published noisy miner removal studies, and phone surveys with individuals involved in removals on private property, we compiled data describing 45 noisy miner removals in temperate and subtropical woodlands of eastern Australia.

To ensure a good understanding of the conditions under which removals were conducted, we collected information about noisy miner densities before and after the removal, the number of noisy miners removed from the site, and the diversity and abundance of small birds at the site before and after the removal. We also measured collated habitat information such as vegetation density, as well as whether or not shrubs were present at the site. Further, we recorded details on the method of removal, such as how many individual culls were conducted at a treatment site and over what period of time.

We analysed these data to identify whether any methods of removal or ecological characteristics at the removal site explained the likelihood of significantly reducing noisy miner density and/or benefiting small woodland birds.

Key findings

Despite analysis of all known noisy miner removal events, there was no consistent predictor of success in reducing noisy miner density at a site. Previous research had found that noisy miners caused severe impacts on small woodland birds above a threshold density of 0.6 miners/ha. However, our analysis showed that noisy miner removals did not have to result in population reductions below this threshold to be beneficial. We found more small birds in sites where noisy miner density was reduced by at least 50%, even though that was rarely enough to decrease density to below this threshold.

This finding highlights the importance of monitoring not only the intermediate target of a conservation intervention, in this case noisy miners, but also the species that we ultimately seek to benefit, in this case small woodland birds.

Noisy miners have a complex social structure which is essential to their highly effective cooperative exclusion of other woodland birds. These sophisticated social bonds may have been disrupted by the removals, reducing their capacity to effectively exclude small birds. Noisy miner removal events may cause remaining or recolonising noisy miners to focus on behaviours associated with colony reformation rather than aggressive exclusion.

The noisy miner removals we assessed were conducted under

a variety of ecological conditions and using different methods, and sometimes had different conservation objectives. This made it difficult to directly compare studies, especially for those removals that were not done within a research framework and so were not meticulously recorded and published. Further removals should include careful monitoring and reporting so that we can continue to add to this dataset and perform more robust analyses. These would help to clarify the conditions under which noisy miners can be effectively suppressed, or their behaviour disrupted, to make the recovery of other woodland bird populations more likely.



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Implications and recommendations

Our findings will be most significant for conservation managers seeking to reduce the pressure of noisy miner overabundance on threatened woodland birds. These results will also be useful for policymakers tasked with drafting threat abatement plans or advices for overabundant noisy miners.

While our findings were not conclusive about what circumstances (e.g. ecological; removal methodology) allow for effective suppression of noisy miner density, they did reveal that removing noisy miners can, in some instances, benefit woodland birds. In particular, noisy miner removal could be important for targeted conservation efforts where an immediate reduction to threatening processes is required, such as for Critically Endangered species like the regent honeyeater. Removal may also complement restoration efforts, to boost their effectiveness in the short-term.

Effective monitoring before and after further removals is imperative to ensure we collate as much information as is available to continue to assess the effectiveness of noisy miner removals. This will ensure that the time and money invested in removal actions are ecologically justified, and that there is sufficient evidence of benefits to woodland birds to be considered ethically justified. Further, there is a need to expand trials of removal designs to identify what works most reliably. Current work examining the genetic relationships of recolonising noisy miners following removals will help improve understanding of why some sites are rapidly recolonised, and others are not.



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Cited material

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Further Information

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