

ARC Centre of Excellence for
Environmental Decisions
The Biodiversity Research Group

Wildlife Nest Boxes

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Dear Sir and Madam

The Biodiversity Research Group is an ecological research group led by Associate Professor Salit Kark at the University of Queensland and based at the Environmental Decisions Group of the University of Queensland (directed by Professor Hugh Possingham). Our group is beginning a research project the project funded by the Australian Research Council focusing on the interactions between native, urban species and invasive cavity nesting birds to provide information on interactions between and information for future management of invasive species, which will ensure the conservation of our native cavity nesting species.



Research Interests

Our research focuses on understanding the patterns and processes shaping biodiversity and their implications for conservation in a changing world. We work at several levels, from the ecosystem and community down to the genetic level, aiming to unveil how the link between these factors shapes biological diversity in space and time. We combine in our research fieldwork, experiments, GIS, remote sensing and molecular techniques.

We are interested especially in these main directions:

1. Biodiversity in human-dominated landscapes: This includes studies on both native and alien species in natural, agricultural and urban environs.
2. Biodiversity along species ranges and ecological gradients.
3. Conservation planning and prioritization at local, regional and global scales.

More information can be found at www.karkgroup.org

Project Abstract

Alien species are often studied within a single-species framework, focusing on the species ecology, distribution and impacts. However, species do not invade a vacuum. The actual outcomes of a species introduction and its impacts often depend on the alien species' interactions with other native and non-native species. In our project, we are developing a spatially explicit database of invasive bird introductions, distribution and impacts across Australia. Using historical information, published books, papers, reports and atlas sources, we generated a spatially explicit, introduction event-based database of introduction records of birds in Australia. This allows us to examine spatial patterns of success and failure of multiple introductions across Australia and across groups, studying spatial and temporal trends. We compare results for Australia with an earlier continental-scale study we led in Europe and the Mediterranean, aiming to disentangling the relative role of climatic, biotic and socioeconomic factors shaping invasion at a continental scale. Outcomes can help policy makers to more effectively mitigate biotic invasion threats, prioritise action and to spatially allocate actions and efforts. As a detailed case study, we are also examining the importance of species interactions in the establishment of the Indian myna and the effect of its interactions with other alien and native urban exploiters.

Project Aim

This study aims to address a major gap in our understanding of invasions by undertaking an examination of the role of interactions between bird species in determining the dynamics and outcomes of biological invasions. The project will integrate data on dispersal, demography, breeding and behavioral interactions into one framework to understand invasion processes. We will study the highly invasive Indian (common) myna, a bird pest from India, as a model system and aim to examine its interactions with other species and how these interactions and its breeding and movement (dispersal) affect its invasion success. This aims to provide information in determining future management of this highly detrimental avian pest, listed as one of the 100 worst invaders of all groups globally.

Monitoring of Boxes

We will be monitoring nest boxes with nest box inspection cameras, which will allow us to remain firmly on the ground. Monitoring boxes in this way is the safest method and the most is not an invasive method of monitoring for the animals.



Figure 3 Type of nest box intended to install



Figure 4 Nest box inspection camera used to monitor boxes

Anticipated Outcome and Benefit

Invasive species pose a major risk to global and Australian native biodiversity. This study provides one of the first attempts to examine how species interactions affect invasion success and dynamics. The outcomes of this analysis, focusing on the highly invasive common myna as a model system, will improve our ability to control animal invasions and deal more effectively with its detrimental impacts on native biodiversity, and especially on other native cavity nesting birds. This project will provide a major breakthrough in our understanding of whether, and how interactions (among aliens and between aliens and native urban exploiters) contribute to slowing down or speeding up an ongoing invasion and how this translates to better management.

Thank you for your taking interest with this project we appreciate your time and look forward to being apart of your community,

Kind Regards,

The Biodiversity Research Group

For more information please email us at: karkgroup1@gmail.com

Key Invasive Bird Species Papers Published from our previous work in other locations in Europe and the Mediterranean:

- PDF copies of these publications can be found at:
<http://biodiversity-group.huji.ac.il/publications.html>

Orchan Y., Chiron F., Shwartz A. and Kark S. 2013. The complex interaction network among multiple invasive bird species in a cavity-nesting community. *Biological Invasions* 15: 429-445

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Shirley, S. and Kark, S. 2006. Amassing efforts against alien invasive species in Europe. *PLoS Biology*, 4: 1311-1313.

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Dearborn, D. and Kark, S. 2010. The motivations for conserving urban biodiversity. *Conservation Biology*, 24: 432-440.