

Bird species at risk

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When a bird species disappears, its function as a pollinator goes too.

In Australia, birds are the prime pollinators (a role held by insects in Europe and North America), so their absence poses threats to entire functioning ecosystems, with obvious implications for everything from fire risk to flooding.

Unfortunately, bird species are disappearing at an alarming rate from woodlands throughout Australia (about one fifth are considered threatened) and, for reasons not yet explained, from South Australia's Mount Lofty Ranges in particular.

"The National Action Plan for Australian Birds released in 2000 identified the Mount Lofty Ranges as having one of the highest number of declining birds per area for all of Australia," said Flinders biologist Dr Sonia Kleindorfer.

"Seventy-one species are recognised as threatened, declining or locally extinct, and that is a major concern."

The decline has been well documented by detailed survey work over the past 20 years (mostly by Dr David Paton's team at the University of Adelaide), but there are still large gaps in the understanding of the basic behavioural ecology of the birds, some of which Dr Kleindorfer's current research hopes to fill.

In particular, she said, researchers lack a picture of "nesting success" - the survival rate of newborns and the ability of a species to avoid predators and parasites.

She said that because southern hemisphere birds have slow life histories with long lives and delayed onset of reproduction - these factors become especially important.

"The brown thornbill, for example, can live for 15 years in the wild," she said.

"In such situations, if you don't understand nesting success you can have a total population crash over 20 years, because they're not reproducing, but you'll only discover that when they've died out.

"Species surveys on abundance need to be complemented by information on recruitment."

Dr Kleindorfer and a research team began that process in 2004, carrying out extensive searches for seven species over two breeding seasons in three areas of the Mount Lofty Ranges. Nest locations were recorded using a handheld GPS system, and the nesting outcome of each closely tracked.

The findings showed high levels of predation - some 80 per cent of the nests were lost to predators - but also suggested annual cycles.

"We will need to continue this work for about 10 years to get a really clear picture," she said. The second stage includes filming the activity around nests, over periods of a week at a time, using small wireless cameras linked to data loggers.

Meanwhile, data generated so far is being shared with a Flinders colleague, conservation biologist Dr Mark Lethbridge, who is trying to take a bigger picture view through habitat modelling.

"We are working very much at the micro level, looking no more than 10 metres around each nest, while Mark is looking at the landscape level," Dr Kleindorfer said.

"We provide the GPS coordinates and other relevant data and he takes this information and looks at interactions with other animals he's monitoring, particularly koalas and foxes.

"With the satellite images he can look at the levels of defoliation - that's how good the satellite images are these days - and he can map them onto bird distributions, and where nesting was successful and where it wasn't."

The "hand over" of GPS coordinates happens via the Department of Environment and Heritage (DEH), which provides funding and logistical support to both projects and now formally collaborates with Dr Kleindorfer, through an ARC Linkage grant, on one specific aspect of her work.

Research into the prevalence of ticks, a major avian parasite, on birds in the Mount Lofty Ranges and on Kangaroo Island have revealed distinct geographic distribution; they are in some areas but not others. That is of particular interest to DEH, which is planning to create a number of vegetation corridors in South Australia under its NatureLinks program.

"By linking currently separate areas of vegetation and different habitats we could potentially be creating corridors that could become parasite transmission pathways," Dr Kleindorfer said.

"So before they do it, they want to understand better the distribution of parasites and the implications.

"To do good conservation management, you need to be informed of the baseline conditions. You need good science."

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