What is happening to the woodland birds of the Mount Lofty Ranges?

The native woodlands that once covered the Mount Lofty Ranges landscape have been reduced to a tenth of their former extent. This dramatic loss of habitat has devastating implications for the many native birds that depend on it for survival.

The Mount Lofty Ranges Woodland Bird Monitoring Program provides a way to observe and understand the changes happening now across the landscape. With this information we have the best chance of taking action to reduce the decline of woodland birds in the region.

Woodland birds in the Mount Lofty Ranges

If we learn, we can act

The Mount Lofty Ranges of South Australia are nationally recognised for their ecological significance. They support a remote island of native woodland with endemic subspecies that is separated by hundreds of kilometres from similar habitat in south-eastern Australia.

Not only have we lost vast areas of woodland habitat in the Mount Lofty Ranges, but the health of the remaining patches is under increasing threat from introduced species, unsustainable use and the impacts of climate change.

The rapid and dramatic loss of woodlands has devastating implications for the native birds and other animals that depend on this habitat for survival.

Our best chance to ensure that this woodland wildlife is not lost forever is to understand the changes that are occurring and use this knowledge to protect and restore the region's natural habitats. 'The Mount Lofty Ranges is like a canary in a coal mine for Australia's woodland landscapes—what happens here is an early warning for Australia's other landscapes', said Professor Hugh Possingham from the University of Queensland, who instigated the monitoring program 12 years ago.

A world-class program for monitoring

'The Mount Lofty Ranges Woodland Bird Monitoring Program is the first long-term study in Australia that is able to tell which birds are becoming more or less common in the landscape over an entire region', said Professor Possingham.

The monitoring program design and methods for data analysis were developed by a large research project undertaken by the University of Queensland, supported by the Australian Research Council (ARC) and Commonwealth Environmental Research Facility funds (www.aeda.edu.au). 'The innovative monitoring design and analysis has overcome many of the challenges for measuring long-term trends', said Dr Scott Field who managed the program in the early years.

Monitoring data is collected annually by a team of expert and volunteer ornithologists currently funded by the Mount Lofty Ranges NRM Board and co-ordinated by the Nature Conservation Society of South Australia (NCSSA). It is subject to a rigorous quality assurance process before being added to a central database. Monitoring data has been collected every year since 1999.

Habitat condition information is also collected at monitoring sites and can be used to further our understanding of habitat quality and its influence on woodland birds.

The program already has many achievements

- The monitoring program shows which birds are becoming more common and less common in Mount Lofty Ranges woodlands.
- More than 15 scientific papers have already used the data.
- The research has led to improved monitoring methods in other natural resource management programs. For example, it has made it possible to improve methods for monitoring feral animals on Eyre Peninsula, and it has informed the development of a method to analyse information from informal bird surveys.
- The data is publicly accessible from <www.uq.edu.au/spatialecology/birds>.

The monitoring program comprehensively covers the Mount Lofty Ranges

The Mount Lofty Ranges Woodland Bird Monitoring Program collects information from more than 150 sites located on both public and private land. Monitoring sites have been selected to sample a range of Gum and Stringybark woodlands and remnant vegetation patch sizes.

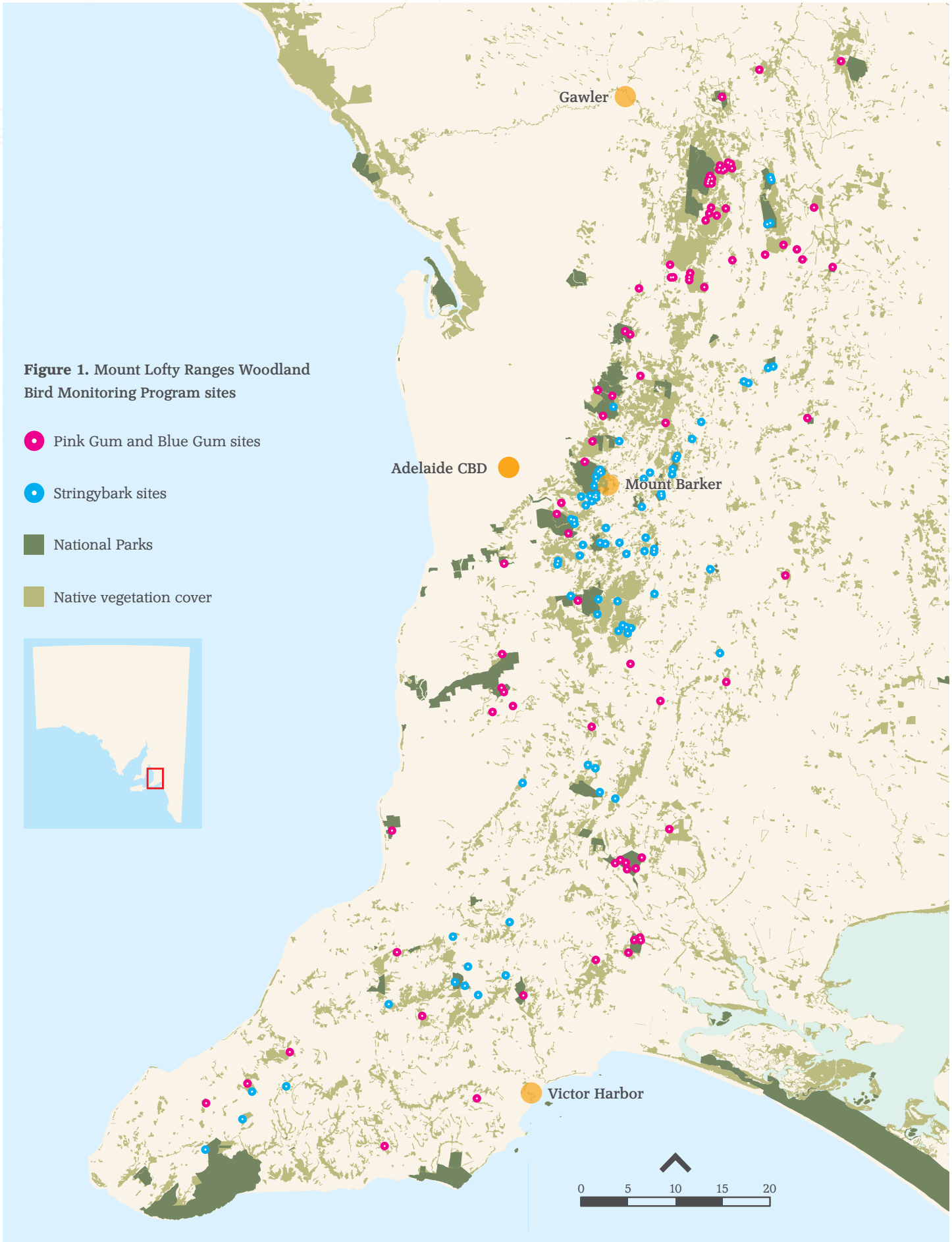
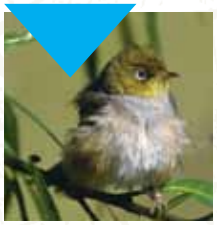


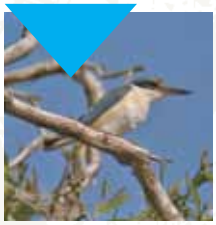
Figure 1. Mount Lofty Ranges Woodland Bird Monitoring Program sites

Some birds are increasing, some are decreasing



Decreasing
Silvereye

Increasing
Rainbow Lorikeet



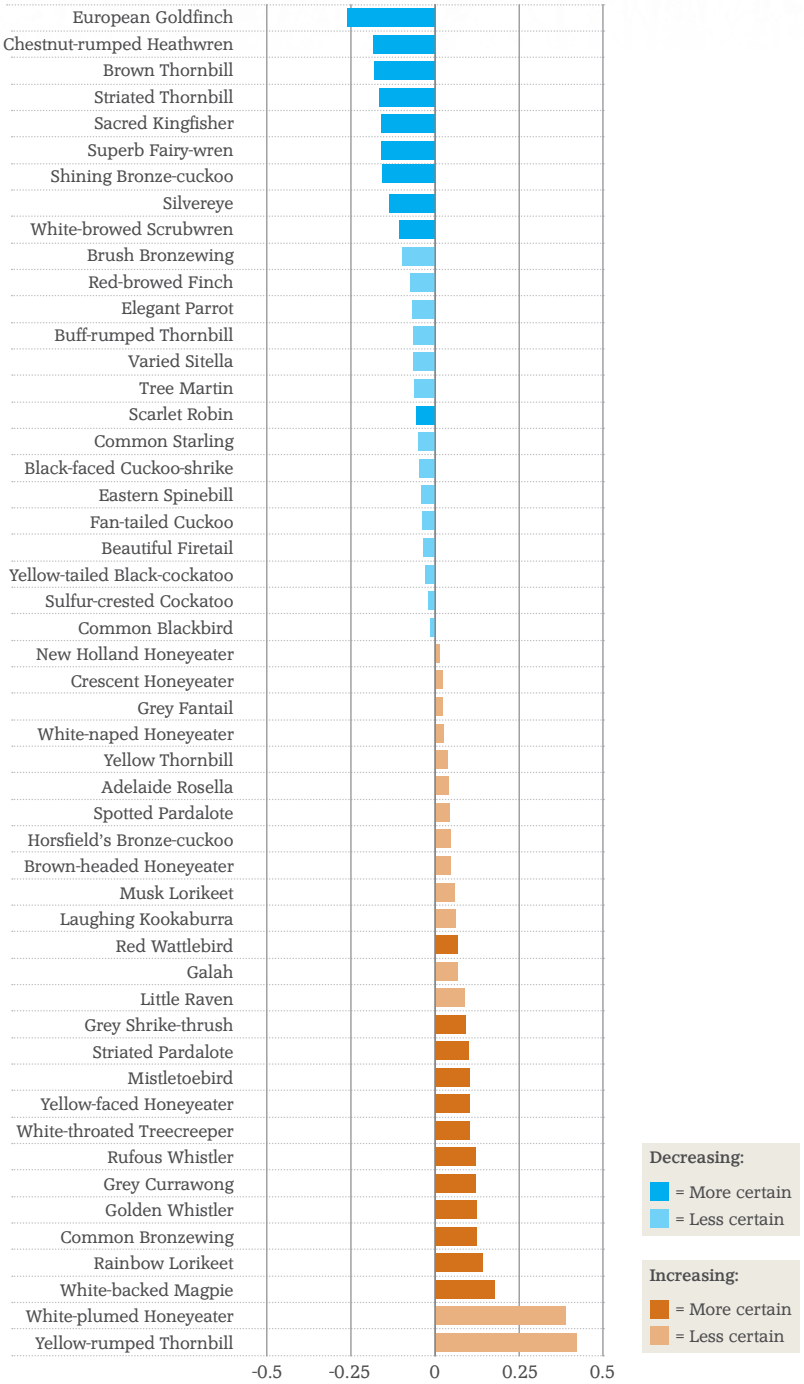
Decreasing
Sacred Kingfisher

Increasing
Common Bronzewing

Figure 2 indicates how numbers of different bird species have changed over time in Stringybark Woodlands of the Mount Lofty Ranges. The birds in the upper section are decreasing, whereas those below are increasing. Dark bars indicate that we are reasonably certain that there has been a change over time.

'When we analyse the data we see that some birds are clearly becoming more common, while many familiar birds are becoming less common. Some of the birds becoming less common are favourites such as the Superb Fairy-wren, Brown Thornbill, Scarlet Robin, Eastern Spinebill and other small birds that eat insects and need healthy woodland understorey to thrive. Species like the Beautiful Firetail may soon disappear from the region' said Dr Judit Szabo, who has spent several years analysing the data using advanced statistical tools.

Figure 2. Average annual change in the chance of seeing a bird



Superb Fairy-wren

Magpie

Have you seen a Fairy-wren?

We are lucky to have Superb Fairy-wrens on the edge of the city of Adelaide. But these very recognisable birds are not as common as they once were. Dr Tim Milne, project manager for the NCSSA explains that 'It seems unthinkable to suggest that your grandchildren will not be able to find a Superb Fairy-wren, but this data suggests it is conceivable. If this trend persists we will need to do detailed research on the ecology of species like this to determine the threats that are causing the decline and act to abate those threats'. 'Apart from being pretty and playing a role in healthy woodlands, Fairy-wrens contribute to our economy' said Dr Milne. 'They are a great recreational and tourist attraction. Fairy-wrens also help control insect pests in lawns and ovals, and countless postcards, photographs and paintings feature this remarkable bird'.

'The monitoring program is helping us understand what is happening to our birds, what is causing declines and what we can do about it.'

'A close encounter with a Superb Fairy-wren in a camping ground can often be the most memorable experience for foreign visitors to our shore. This is a bird we must keep, and we need it to be common.'

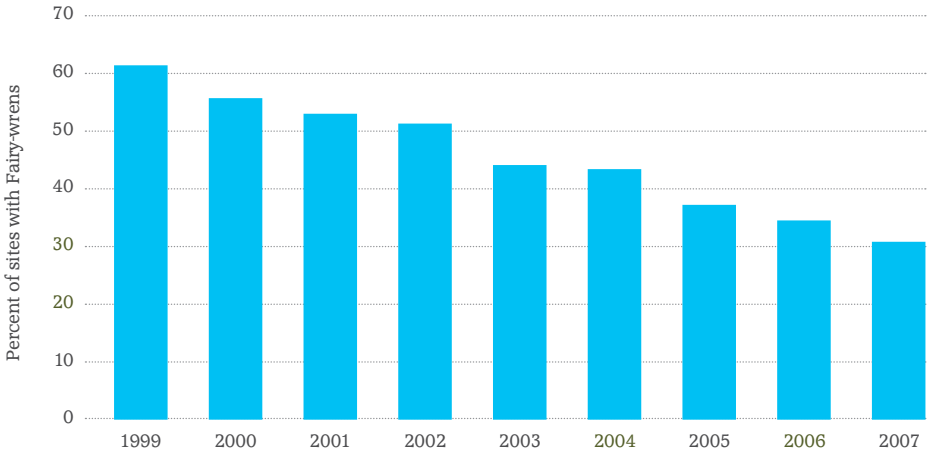
More Magpies ... so what?

'Magpies are one of the most familiar and loved examples of wildlife for many Australians. We love their morning song and we feed them in our backyards', said Professor Possingham. 'However, Magpies are aggressive to other birds and even raid their nests. The increase in number of Magpies in the Mount Lofty Ranges is likely the result of loss of habitat for other bird species and the conversion of woodland to farmland.'

Figure 3 shows that Superb Fairy-wren numbers have been declining each year for the last decade in Stringybark Woodlands.

Some aggressive birds are becoming more common. These include the Magpie (see Magpie inset), Little Raven and Common Bronzewing. The colourful Rainbow Lorikeet is also becoming more common and competing for nesting sites in tree hollows with other species such as the Musk Lorikeet. The monitoring program can help us track and undertake conservation planning for changes like these.

Figure 3. Decline in numbers of the Superb Fairy-wren in Stringybark Woodland



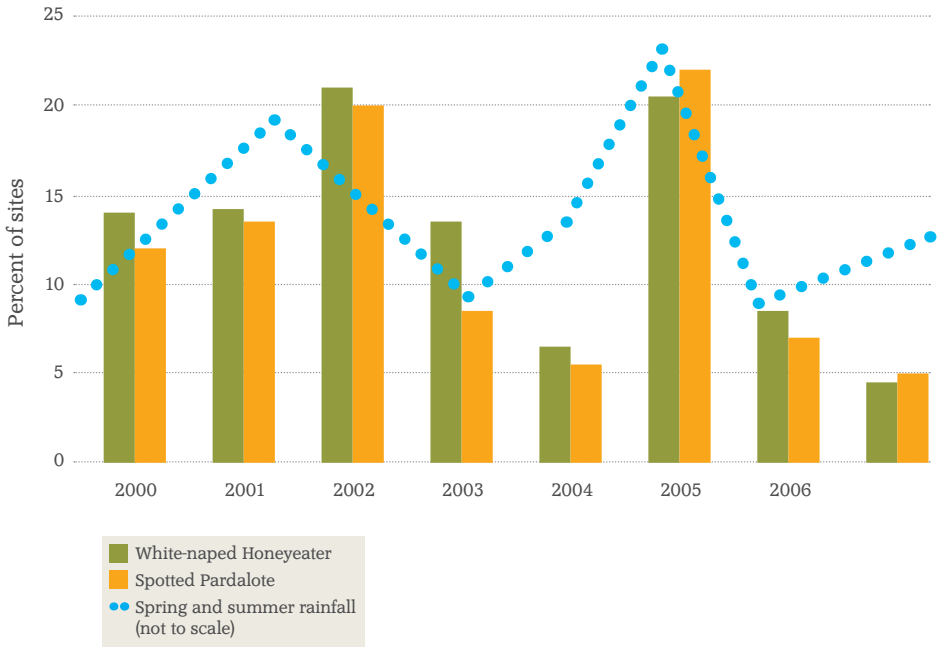
We will better understand the impacts of climate change

White-naped Honeyeater

What is the future for our birds?

The monitoring program is helping us to understand how climate change is affecting the birds of the Mount Lofty Ranges. Sacred Kingfishers are more common after years with good rainfall, while Spotted Pardalotes and White-naped Honeyeaters are more common following good spring and summer rainfall (see figure 4). Knowledge of the abundance of our birds and how they change over time will help us to help the birds adapt in a changing climate.

Figure 4. Birds as indicators of climate change



Small birds that feed in the shrub layer are feeling the pinch, while some large aggressive birds are becoming more common. Many bird watchers have suspected this is happening, but the Mount Lofty Ranges Woodland Bird Monitoring Program provides strong evidence of these changes.

Some birds may be becoming less common as a result of past habitat destruction. 'Now that we have 10 years of baseline monitoring data, we will be able to see whether efforts to control weeds and foxes and to revegetate some cleared areas is helping some of the birds to recover', said Dr Milne. 'The results of monitoring can also be used to influence government policies and laws to protect our native species.'

The birds of the Mount Lofty Ranges are also a barometer for what is happening in other regions. As the monitoring program develops, it will provide useful information for conservation in other parts of South Australia and across the rest of southern Australia.

What monitoring should we do in the future?

Woodlands in the Belair National Park

'Ten years of good data provides a solid baseline for measuring future changes in bird numbers. Some rare birds will require monitoring to continue for more years just to establish a baseline for their numbers,' said Professor Possingham.

The Mount Lofty Ranges Woodland Bird Monitoring Program becomes more powerful the longer it continues. 'With more years of data we will be able to detect smaller changes in bird numbers and a greater range of environmental influences on more bird species', said Dr Szabo. Some questions the monitoring will help us answer in the future are:

- Why are small birds decreasing, and what can we do about it?
- Can the effects of past changes to the landscape be repaired? Are revegetation, weed and fox control programs a good investment?
- What is climate change doing to our bird species?
- What are the priorities for protecting and restoring our woodlands?

To answer these questions the Nature Conservation Society of South Australia is establishing habitat monitoring to complement the bird monitoring program. The data collection and analysis, and the goodwill developed over a decade, continue through a strong partnership between the Nature Conservation Society of South Australia and the University of Queensland with support from the Adelaide and Mount Lofty Ranges NRM Board and the South Australian Department of Environment and Natural Resources.

Woodlands, people and birds in the Mount Lofty Ranges

- A unique collection of colourful birds live in these ranges. Many birds, like the enigmatic Mount Lofty Ranges Southern Emu-wren, are found only in this area because it is an isolated area of hilly country with high rainfall.
- Around 90% of the woodlands in the Mount Lofty Ranges have been cleared, severely changed, or broken up into small patches, and most of this has happened in the last 60 years.
- We know that many birds disappear when more than 70% of the woodland is destroyed. Bird diversity can rapidly decline if 90% of the habitat is destroyed.
- Curiously, animals do not disappear the instant their habitat is destroyed. Instead, they tend to hang around in ever-decreasing numbers for many years. This time-lag is known as the 'extinction debt'. We are seeing a decrease in some woodland birds now because of extinction debt from past land clearing.
- The vegetation at all the bird survey sites is being assessed, as part of an integrated monitoring program being run by the Nature Conservation Society of South Australia. The integrated monitoring will help us understand whether habitat restoration and management programs are reversing any of the extinction debt.

Summary

Willie Wagtail

The Mount Lofty Ranges Woodland Bird Monitoring Program is an essential part of conservation management for the region and has been built on quality scientific research, using standard, repeated and thorough methods to collect important data. Local experts do the bird monitoring and help ensure the program is a cost-effective way of keeping watch over what is happening to the birds of the region.

So far the project has established excellent baseline information on the large range of bird species found in Stringybark and Gum Woodlands in the Mount Lofty Ranges. The results of monitoring for the past 11 years show that some large generalist bird species are becoming more common, while many smaller birds are becoming less common.

Ongoing monitoring will be important to help determine why bird numbers are changing and how we should focus future work to prevent the undesirable loss of species.

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Scientific Papers and Data Download
The Ecology Centre
The University of Queensland
http://uq.edu.au/spatialecology/mlr-birddata-66440

Photos provided by Brian Furby, Jeremy Robertson, Craig Gillespie (who also produced the map), Jane Burford and Judith Szabo.

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