

Vocal Mimicry in Spotted Bowerbirds

Taunton Scientific National Park
Dingo
Central Queensland
Australia
August/September 2002

A field study carried out by Fiona Randall from the University of Edinburgh to look for a correlation between bower quality and quality of mimicry within the species.



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James Rennie Bequest and the Weir fund for Field Studies/Barnson Bequest**

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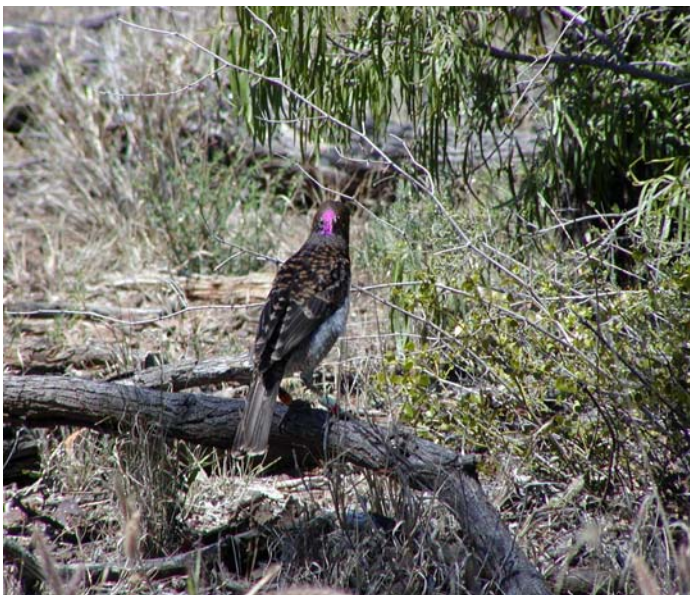
Introduction

Mimicry has been observed in many species of birds but rarely studied and analysed scientifically. The Spotted Bowerbird is a known species that copies the calls of other birds but no published studies have been carried out to see why.

The Study Site and Species

Research was carried out in Taunton National Park, a scientific national park, west of Rockhampton in Northern Queensland, Australia.

Otherwise like any other little brown bird, the Spotted Bowerbird can be distinguished by the cerise “mohican” on the back of the neck. Males and females appear the same and one reason that the males build bowers could be to distinguish them from females in order to attract a mate. They decorate the bower with their favourite coloured objects (mainly green and silver) and perform displays around the bower with their "mohican" spiked. Males compete with each other for bower sites and have regular intruders who they must keep at bay.



The pink mohican.
Colour rings for
identification can also
be seen on the right
leg.

Picture provided by
Rebecca Coe

14 active bower sites on the park were observed. Males are faithful to their bower site from year to year. By calculating the percentage of time each bird spends at a particular bower the bower owner was determined. The owner is defined as the bird that spends 30% or more of the time one or more bird is observed within 10 m of the bower. Each bower owner has a unique combination of 5 colour rings on its legs to allow identification. The bower owners are the focus of the study as they can be reliably found at the bower they constructed.

The Research

The main study is to investigate the function of vocalisation and mimicry in these birds as well as quality and types of mimicry. This is a PhD study carried out by Rebecca Coe who is the project leader. I was part of the project for 6 weeks and was planning to see if there was a correlation between quality of mimicry in the bower owner and the quality of his bower. I chose to investigate this for two main reasons. Firstly mimicry has been shown to correlate with mating success in another species - the satin bowerbird (*Ptilonorhynchus violaceus*). Secondly it has been shown in previous studies of the spotted bowerbird that bower quality influences mating success. We may expect that older males have perfected the art of building bowers and also the art of mimicking other birds. Female bowerbirds may even use the bower and mimicry as a reliable indicator of the age of the male. An older male has shown the ability to survive and may therefore be a good choice as mate.

Collecting data

For the spotted bowerbird, indicators of bower quality include the number of Solanum berries in the avenue. Solanum berries are green tomato-like berries abundant in the park and have been shown in previous studies to be a good predictor of mating success. The overall appearance of the bower is also a good indicator-the males spend a lot of time maintaining the bower and decorating it. In the experiments we looked at number of Solanum berries and other berries at the bower, other decorations and the overall tidiness. This was done by constructing maps of each bower to show the layout. Photographs were also taken.



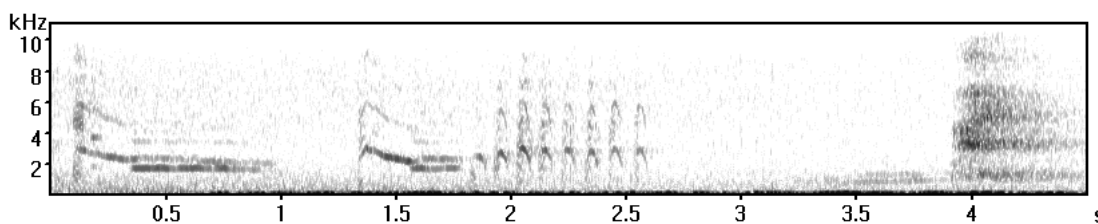
A typical bower with shells and glass at the front and back of the avenue. Berries can be seen in the avenue.

Photograph provided by Rebecca Coe

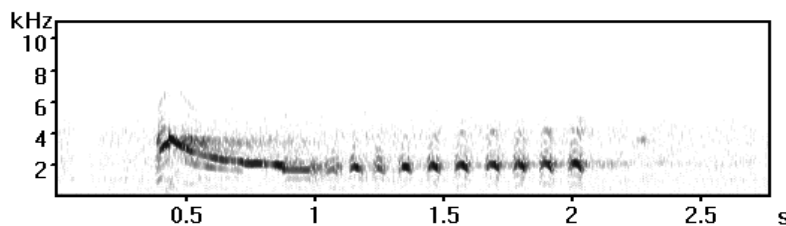
Field observations took place daily between the hours of 7am and 5pm. Two were carried out each day for 2hours 30mins. Bowerbirds present were identified and the time they were at the bower was recorded. Every minute in 5 a general bird song census was taken to make a note of other birds seen or heard in the area. General observations were noted down such as the position of the bowerbirds relative to the bower, raptors in the area, number of bowerbirds at the bower and their interactions.

DAT recordings were made when the birds were present and some sonograms have already been prepared to compare with the birds the bowerbird mimics. An example is shown below. It is intended that the mimetic repertoire (the number of different birds the bowerbird copies) and also the quality of mimicry will be determined for each bower owner.

Mimicry of whistling kite by spotted bowerbird



Whistling kite model



There are distinct similarities between the sonograms of the whistling kite and the mimicry. It is very distinct to hear. The end of the sonogram of the bowerbird is a species-specific call. The difference between the species-specific call and the mimicry can be seen clearly.

Sonogram produced by Rebecca Coe.

Summary

The function of mimicry in the spotted bowerbird is, as yet, unknown but over the study season mimicry by the males increased. The mating season is in November and the fact that mimicry is increasing could suggest that it is used in mate choice. When the bower owners' repertoires are known, the bower quality data will be compared to see if there is any significant correlation.

Acknowledgements

Many thanks to the James Rennie Bequest and the Weir fund for Field Studies/Barnson Bequest from the University of Edinburgh for the funding which allowed this study to take place. Thanks to Rebecca Coe for introducing me to bower birds, for her help and support in collecting my data and for the stunning photographs and sonograms used in the report.