

Song Sharing and Repertoire Change as Indicators of Social Structure in the Noisy Scrub-bird

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BSc (Hons)

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Declaration

I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary educational institution.

A handwritten signature in black ink on a light gray rectangular background. The signature reads "Abby N. Berryman" in a cursive, flowing script.

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Date: 2 March 2008

Abstract

The Endangered Noisy Scrub-bird is a small passerine that is seldom seen but often heard in its range on the south coast of Western Australia. The difficulties in observing this cryptic bird mean that little is known about its social system. The loud, conspicuous territorial song of the male provides a convenient, non-intrusive means by which to study this species.

The aim of this project was to investigate the patterns of song sharing and repertoire change in the Noisy Scrub-bird to provide indications of the social structure. It was found that groups of up to ten territorial males shared the same set of about five song types. Song groups were discrete, with members of a song group sharing most, if not all, of their song types. Males from different song groups had no song types in common.

Repertoire change was rapid and, with the exception of one individual, was found in every territorial male studied in the Mt Gardner population. It occurred simultaneously in all members of a song group, with males making the same changes to their shared songs. The source of repertoire change was mainly modification of existing song types with occasional divergence of a single song type into two distinct song types, as well as some innovation providing new song types. The average life of a song type was approximately 6 months. Although some song types persisted for the entire 16 month sampling period, they were continually modified and a year later could no longer be recognised as the same type.

Translocation of eight male scrub-birds to the Porongurup National Park provided an opportunity to combine individuals that initially did not share any

songs. This allowed the process of song group formation to be studied. Within a one to two month period these males altered their songs so that they shared with their new neighbours. There was some evidence that the songs of dominant males were copied. Observation of the population established on Bald Island by translocation confirmed that there were no appreciable long-term effects on the songs of translocated Noisy Scrub-birds. Song group size, repertoire size and levels of song sharing were very similar to those found in the Mt Gardner population.

The striking feature of Noisy Scrub-bird song groupings was their discreteness and cohesiveness even in the presence of continual repertoire change. It is suggested that each song group consists of a dominant male whose songs are more attractive to females and/or effective in territory defence. This dominant male is surrounded by subordinate males that copy his effective songs. Repertoire change can be explained by the dominant male continually making changes to his songs, with the other males copying these changes to retain their mimicked effectiveness. Each song group may in fact represent a dispersed lek. The scenario suggested to explain Noisy Scrub-bird song groupings bears striking similarities to the hotshot hypothesis to explain lek formation whereby males cluster around a successful male.

This study demonstrates the potential of using song to investigate aspects of the social system of a species which is otherwise very difficult to observe. Management of an Endangered species such as the Noisy Scrub-bird will always benefit from increased knowledge about their social system. For example, this study showed that taking males from different song groups for translocation probably has little impact on their success at the new site because of their ability to rapidly alter

their songs to form new song groups. An additional benefit of regularly monitoring the songs of translocated males was that it allowed ongoing identification of individuals, even though their songs were continually changing.

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Table of Contents

Song Sharing and Repertoire Change as Indicators of Social Structure in the Noisy Scrub-bird	i
Declaration	ii
Abstract	iii
Acknowledgements	vi
Table of Contents	viii
List of Figures and Tables	xi
<u>Chapter 1 – Introduction: Song Learning and its Consequences</u>	1
1.1 The uses of song	1
1.2 Song-learning strategies and their consequences	2
1.3 Song in the Noisy Scrub-bird	7
1.4 Aims and structure of the thesis	9
<u>Chapter 2 – Study Subject and General Methods</u>	14
2.1 Study subject	14
2.1.1 <i>History</i>	14
2.1.2 <i>Habitat</i>	18
2.1.3 <i>Description</i>	18
2.1.4 <i>Vocalisations</i>	20
2.2 Study area	24
2.3 Recording of territorial songs	24
2.4 Analysis	26
<u>Chapter 3 – Territoriality and Radio-tracking</u>	29
3.1 Introduction	29
3.2 Methods	30
3.2.1 <i>Mapping of singing locations</i>	30
3.2.2 <i>Radio-tracking</i>	34
3.2.3 <i>Analysis of location data</i>	36
3.3 Results	39
3.3.1 <i>Mapping of singing locations</i>	39
3.3.2 <i>Radio-tracking</i>	43
3.3.3 <i>Comparisons to the annual census</i>	46
3.4 Discussion	48

<u>Chapter 4 – Song Sharing on Mt Gardner</u>	53
4.1 Introduction	53
4.2 Methods	54
4.3 Results	59
4.4 Discussion	73
<u>Chapter 5 – Repertoire Change on Mt Gardner</u>	78
5.1 Introduction	78
5.2 Methods	79
5.2.1 <i>Repertoire change</i>	79
5.2.2 <i>Intensive recordings</i>	82
5.2.3 <i>Variation in repertoire size over time</i>	84
5.2.4 <i>Song rate</i>	84
5.2.5 <i>Song matching</i>	85
5.3 Results	86
5.3.1 <i>Repertoire change</i>	86
5.3.2 <i>Variation in repertoire size over time</i>	95
5.3.3 <i>Song rate</i>	96
5.3.4 <i>Song matching</i>	96
5.3.5 <i>An exception to the rule...</i>	98
5.4 Discussion	100
<u>Chapter 6 – The Effect of Translocation on the songs of the Noisy Scrub-bird</u>	105
6.1 Introduction	105
6.2 Methods	109
6.3 Results	114
6.3.1 <i>Capture site (Mermaid)</i>	114
6.3.2 <i>Aviary</i>	119
6.3.3 <i>Release site (Porongurup National Park)</i>	119
6.4 Discussion	133
6.4.1 <i>Effects of translocation on song characteristics</i>	134
6.4.2 <i>Song convergence</i>	134
6.4.3 <i>Replacement of captured males</i>	138
6.4.4 <i>Summary</i>	139
<u>Chapter 7 – Song Sharing on Bald Island</u>	142
7.1 Introduction	142
7.2 Methods	146
7.3 Results	149
7.4 Discussion	161

<u>Chapter 8 – Overview of Findings and General Methods</u>	164
8.1 Major findings	165
8.2 Comparisons to other species	169
8.3 Predictions of the dominance scenario	173
8.4 Relationship between song and social system	181
8.5 Management implications	185
<u>References</u>	188
<u>Appendix 1 – List of Species Names</u>	199

List of Tables and Figures

Chapter 2 – Study Subject and General Methods

Figure 2.1	Current distribution of the Noisy Scrub-bird	15
Figure 2.2	Historical distribution of the Noisy Scrub-bird	15
Figure 2.3	The location of Two Peoples Bay and the extent of Two Peoples Bay Nature Reserve	17
Figure 2.4	Fire history of Noisy Scrub-bird habitat 2000-2005	17
Figure 2.5	Male Noisy Scrub-bird	19
Figure 2.6	Spectrograms of territorial song and short song	23
Figure 2.7	Territorial song showing its constituent parts	23
Figure 2.8	Song types and intermediates	28

Chapter 3 – Territoriality and Radio-tracking

Figure 3.1	The Tick Flat study area and the locations of the three territories from which male scrub-birds were captured for radio-tracking	33
Figure 3.2	Locations of singing males in the Tick Flat study area in 2005	40
Figure 3.3	Boundaries of the territories present in the Tick Flat Study area in 1994 and 2005	42
Figure 3.4	Locations of MG42 and MG43 during radio-tracking	44
Figure 3.5	All radio-tracking locations representing the home ranges and territories of MG42 and MG43	45
Figure 3.6	Locations of singing males in 2005 showing territory boundaries and a comparison to the annual census	47
Table 3.1	2005 and 1994 survey dates	34
Table 3.2	Number of locations of the singing male in each territory collected in 1994 and 2005	34
Table 3.3	100% territory size and 80% core area of the territories present in the Tick Flat study area in 2005	41
Table 3.4	Territory sizes in hectares in the Tick Flat study area in 1994 and 2005	41
Table 3.5	Home range and territory sizes of MG42 and MG42	43

Chapter 4 – Song Sharing on Mt Gardner

Figure 4.1	Noisy Scrub-bird territories surveyed on Mt Gardner in 2004	56
Figure 4.2	May 2004 song groupings	66
Figure 4.3	July 2004 song groupings	67
Figure 4.4	September 2004 song groupings	68

Figure 4.5	Combined 2004 song groupings	69
Figure 4.6	July 2005 song groupings	70
Figure 4.7	Comparison of July 2004 and July 2005 song groupings	71
Table 4.1	Mt Gardner song sharing May 2004	62
Table 4.2	Mt Gardner song sharing July 2004	63
Table 4.3	Mt Gardner song sharing September 2004	64
Table 4.4	Mt Gardner song sharing July 2005	65
Table 4.5	Summary of song group size, repertoire size and degree of song sharing	72
Table 4.6	Paired comparison of individual repertoire size	73
Table 4.7	Paired comparison of song sharing	73

Chapter 5 – Repertoire Change on Mt Gardner

Figure 5.1	Locations of the ten focal territories on Mt Gardner	80
Figure 5.2	Spectrograms of good and poor quality recordings	83
Figure 5.3	Modification of a song type over 12 months	87
Figure 5.4	Divergence of a song type into two separate song types	88
Figure 5.5	Example of cohesive repertoire change	89
Figure 5.6	Modification of a song type over five weeks	90
Figure 5.7	Song group repertoire size over 16 months	95
Figure 5.8	Song type given by MG38 that remained unchanged for four years	99
Table 5.1	Song type persistence in the Firebreak Valley song group	91
Table 5.2	Song type persistence in the Tick Flat song group	92
Table 5.3	Song type persistence in the Hakea Gully song group	93
Table 5.4	Song type persistence in the Firebreak Saddle song group	94
Table 5.5	Mean song type persistence	95
Table 5.6	Song rate and morphometric measurements	96
Table 5.7	Percentage of songs matched	97
Table 5.8	Incidence of song matching	97
Table 5.9	Least Squares Difference test of song matching	97

Chapter 6 – The Effect of Translocation on the Songs of the Noisy Scrub-bird

Figure 6.1	Location of Mermaid Point and Porongurup National Park	110
Figure 6.2	Location of the net-lines at Mermaid	111
Figure 6.3	Release sites at Porongurup National Park	113
Figure 6.4	Mermaid song groupings	116
Figure 6.5	Pre-capture repertoire of Pele compared to the replacement male	118

Figure 6.6	Pele's pre-capture and post-release song types	124
Figure 6.7	Harry's pre-capture repertoire compared to Pele's post-release Song	125
Figure 6.8	Zizou's pre-capture and post-release song types	126
Figure 6.9	Zizou's post-release repertoire compared to the other birds singing at Millinup Pass	127
Figure 6.10	Post-release repertoires of Zizou and Niko	128
Figure 6.11	Locations and dates of singing at Spearwood Gully	129
Figure 6.12	Locations of singing birds at Millinup Pass	129
Figure 6.13	Convergence of Harry and Pele's songs	130
Figure 6.14	Convergence of Togo and Mendez's songs	131
Figure 6.15	Post-release repertoires of Zizou and Niko	132
Table 6.1	Summary of translocations 1983-2003	107
Table 6.2	Capture and release dates for the eight males translocated	112
Table 6.3	Mermaid song sharing	115
Table 6.4	Song group origin of captured males	117
Table 6.5	Replacement of captured males	119
Table 6.6	Pre and post release repertoire sizes	122

Chapter 7 – Song Sharing on Bald Island

Figure 7.1	Number of singing males present on Bald Island	144
Figure 7.2	Map of Bald Island	147
Figure 7.3	September 2004 song groupings	153
Figure 7.4	August 2005 song groupings	154
Figure 7.5	September 2006 song groupings	155
Figure 7.6	Combined song groupings	156
Table 7.1	Bald Island song sharing September 2004	150
Table 7.2	Bald Island song sharing August 2005	151
Table 7.3	Bald Island song sharing September 2006	152
Table 7.4	Results of the Bald Island sampling sessions	157
Table 7.5	Pair-wise comparison of individual repertoire size	158
Table 7.6	Pair-wise comparison of song sharing	159
Table 7.7	Mean individual repertoire size on Bald Island and Mt Gardner	160
Table 7.8	Mean group repertoire size on Bald Island and Mt Gardner	160
Table 7.9	Mean song group size on Bald Island and Mt Gardner	161
Table 7.10	Mean % song sharing on Bald Island and Mt Gardner	161