

BASIC PROCESSING OF MT LOFTY RANGES BIRD RECORDS FROM STRINGYBARK WOODLAND HABITAT: YEAR 2001 SURVEY

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ABSTRACT

As a part on the on-going bird survey of the Mt Lofty Ranges in South Australia, 10 observers sampled 92 sites in 50 patches of stringybark woodland during the spring and summer of 2001-2002. Each patch contained one or more 2 ha sites that were visited for three 20 min periods on different days. This is an abridged version of the reports on the previous yearly published in the SAOA Journal. Its purpose is to place the results of basic processing of the records in the public forum for further use. Three lists summarise the data; one categorises the records by species, another by site and the third by sample. The report is only available on the Web.

INTRODUCTION

During spring and summer of 2001-2002, the third year of the long-term bird survey of the Mt Lofty Ranges in South Australia, we covered the stringybark and gum woodland habitats. This report gives the results of basic processing of the records from the stringybark woodland habitat. Previous reports are Possingham, M. L., Field, S. A., Possingham, H. P. 2004 (the SB99-00 survey), Possingham, M. L., Field, S. A. and Possingham, H. P. 2006 (the SB00-01 survey) both on the stringybark woodland habitat and Possingham, M. L. and Possingham, H. P. 2008 (the GUM00-01 survey) on the gum woodland habitat. More recent versions of these reports are available from the Web Site. This report follows on from these earlier surveys and places the records and basic analysis on the Web for access by other users.

This survey is referred to as the GUM002-03 survey and it uses a reduced version of the survey design used for the previous 1999 and 2000 surveys, ie only three independent 20 min samples were used for each site.

Three tables are the result of processing the basic records.

- Table 1 reduces all the records of bird numbers categorised by species and sample ignoring the sites, this is termed a species list.
- Table 2 reduces all the records of species counts categorised by site and sample ignoring the actual species names, this is termed a site list.
- Table 3 lists the on-site bird numbers categorised by species and the three independent samples of each of the 92 sites, this is termed a sample list.

METHODS

From the 19th of October 2001 to the 19th of January 2002, ten observers visited 92 sites in 50 patches of stringybark woodland. Figure 1 in the SB00-01 survey report indicates the location of the sites and Table 2 in this report gives the coordinates. Birds were recorded for three 20 min periods on different days by different observers in the 5 hours following sunrise using an unstructured plan for the 276 visits. The three 20 min visits to each site are termed Sessions 1, 2 and 3 with each Session having one Pass (ie a visit) each termed a sample. This somewhat cumbersome naming system is used to retain consistency with the previous surveys.

The reports on the SB99-00 and SB00-01 surveys give: definitions of patch and site, the techniques used to record the on-site, overhead-transient and off-site observations, how to avoid duplicate records, and the methods of extracting species sightings and number of birds recorded during a sample for subsequent analysis. The Record Sheets and recording procedure were the same as used for the previous surveys.

RESULTS

The ten observers completed 276 Record Sheets and contributed 92 hours observation time plus much more travelling time. The observations resulted in 2930 on-site, 2090 off-site and 346 overhead-transient entries on the Record Sheets. The number of on-site, overhead transient and off-site birds of each species that were observed and any breeding activity together with other survey parameters. eg site, time and date, were entered into a *Microsoft Access 2000* database at the Nature Conservation Society of S.A.. A copy of this database in *Access 97* format is available from the Web site.

Table 1 Basic Issue A. All birds recorded for all three samples of all 92 stringybark sites: Year 2001 survey. The data given are for on-site records, except where denoted as overhead transients or off-site. The Total Sightings for Session 1 is obtained by adding the sightings for the three Samples, so the maximum is 276 (92x3). Note that one sighting of a species during a single 20 minute sample of a 2 ha site means that one or more single birds or several groups of birds were recorded. The probability of recording a species P_{re} is the total on-site sightings for the three independent samples (Session 1, Samples 1, 2 and 3) divided by the number of samples (276). The species marked #, ## and ### indicate species commonly, uncommonly and rarely recorded respectively; values of P_{re} equal to 0.60 and 0.13 are used for these divisions. Of the 12 species recorded not occupying a site, five (marked +) are water birds, four (+++) are bush birds that could have been recorded on-site. The remaining three species (++++) could be considered as vagrant in this habitat.

COMMON NAME		On-Site Birds				Totals			Probability of recording	Density (Birds/ha)
		Sample 1	Sample 2	Sample 3	Total sightings	On-Site birds	Overhead birds	Off-site birds		
Stubble Quail	###			1	1	1			0.004	0.0018
Australian Wood Duck	\$	1			1	1		2	0.004	0.0018
Pacific Black Duck	+							1		
Little Pied Cormorant	+						1			
Australian Pelican	+						7			
Australian White Ibis	+						1	10		
Brown Goshawk	###	1		1	2	2	1		0.007	0.0036
Collared Sparrowhawk	###	1			1	1			0.004	0.0018
Wedge-tailed Eagle	###		1		1	1	1	2	0.004	0.0018
Painted Button-quail	###	1	2		3	3		1	0.011	0.0054
Masked Lapwing	+							1		
Spotted Turtle-Dove	++++							1		
Common Bronzewing	##	27	13	24	45	64	2	41	0.163	0.1159
Brush Bronzewing	###	1	2	8	7	11		9	0.025	0.0199
Yellow-tailed Black-Cockatoo	##	40	46	35	47	121	75	172	0.170	0.2192
Galah	###	19	36	34	32	89	127	164	0.116	0.1612
Little Corella	###		1		1	1	3	22	0.004	0.0018
Sulphur-crested Cockatoo	###	13	10	18	18	41	29	146	0.065	0.0743
Rainbow Lorikeet	##	61	61	69	48	191	355	543	0.174	0.3460
Musk Lorikeet	###	4	5	5	4	14	48	20	0.014	0.0254
Purple-crowned	###	13		11	6	24	49	29	0.022	0.0435
Crimson Rosella	#	326	342	337	204	1005	72	489	0.736	1.8080
Eastern Rosella	###	1			1	1			0.004	0.0018
Red-rumped Parrot	###	2			1	2	2		0.004	0.0036

Elegant Parrot	###	12	15	7	11	34	19	7	0.040	0.0616
Fan-tailed Cuckoo	###	9	8	3	19	20		51	0.069	0.0362
Horsfield's Bronze-Cuckoo	###	8	4	5	15	17		15	0.054	0.0308
Shining Bronze-Cuckoo	###	9	8	2	16	19	1	19	0.058	0.0344
Laughing Kookaburra	###	4	6	18	13	28	1	86	0.047	0.0507
Sacred Kingfisher	###	9	2	7	14	18		20	0.051	0.0326
Rainbow Bee-eater	+++							2		
White-throated Treecreeper	#	101	145	156	186	402	1	384	0.674	0.7283
Superb Fairy-wren	#	346	332	440	200	1118		206	0.725	2.0254
Southern Emu-wren	###	2	3		2	5			0.007	0.0091
Spotted Pardalote	###	17	19	18	26	54		9	0.094	0.0978
Striated Pardalote	##	147	151	148	140	446		186	0.507	0.8188
White-browed Scrubwren	##	149	190	208	150	547		110	0.543	0.9909
Chestnut-rumped Heathwren	###	2	8	3	7	13			0.025	0.0236
Weebill	###		2	6	6	8		3	0.022	0.0145
Brown Thornbill	##	146	198	178	153	522		27	0.554	0.9420
Buff-rumped Thornbill	###	32	23	44	25	99		26	0.091	0.1793
Yellow Thornbill	###	8	19	1	7	28			0.025	0.0507
Striated Thornbill	#	416	546	506	193	1468		192	0.699	2.6522
Red Wattlebird	##	27	21	43	44	91	5	151	0.159	0.1649
Little Wattlebird	+++							1		
Yellow-faced Honeyeater	##	128	157	168	135	453	26	420	0.489	0.8207
White-plumed Honeyeater	###	2			1	2			0.004	0.0036
Brown-headed Honeyeater	###	4	18	28	22	50	1	16	0.080	0.0906
White-naped Honeyeater	###	30	29	35	27	94	3	32	0.098	0.1703
Crescent Honeyeater	##	64	44	88	82	196	4	155	0.297	0.3551
New Holland Honeyeater	##	85	60	101	44	246	3	130	0.159	0.4457
Eastern Spinebill	##	22	34	27	52	83		61	0.188	0.1504
Scarlet Robin	##	35	18	38	52	91		33	0.188	0.1649
Varied Sittella	###	7	30	7	8	44		3	0.029	0.0797
Crested Shrike-tit	###	1			1	1			0.004	0.0018
Golden Whistler	##	63	87	78	117	228		186	0.424	0.4130
Rufous Whistler	###	5	7	7	14	19		38	0.051	0.0344
Grey Shrike-thrush	##	58	58	72	119	188		341	0.431	0.3406
Magpie-lark	###			1	1	1		15	0.004	0.0018
Grey Fantail	#	140	176	168	201	484		234	0.728	0.8696
Black-faced Cuckoo-shrike	###	15	10	13	30	38	11	29	0.109	0.0688
Dusky Woodswallow	###		1		1	1			0.004	0.0018
White-backed Magpie	###	17	12	31	24	60	8	544	0.087	0.1087
Grey Currawong	##	44	42	67	90	153	6	271	0.326	0.2772
Little Raven	###	17	12	3	18	32	27	232	0.065	0.0580
White-winged Chough	++++							4		
Skylark	++++							2		
Red-browed Finch	###	24	23	37	25	84		33	0.091	0.1522
Beautiful Firetail	###	2			1	2			0.004	0.0036

European Goldfinch	###	8	3	7	10	18	17	19	0.036	0.0326
Mistletoebird	###	2	3	5	7	10		4	0.025	0.0181
Welcome Swallow	+++						3			
Tree Martin	###		2		1	2	3		0.004	0.0036
Brown Songlark	++++							1		
Silvereye	##	138	131	175	100	444	66	120	0.362	0.8043
Bassian Thrush	###	2		1	2	3			0.007	0.0054
Common Blackbird	##	62	33	53	82	148		244	0.297	0.2681
Common Starling	###	1	4	3	5	8		6	0.018	0.0145
Species Counts	79	59	54	53	66	66	33	62	66	

Table 2. Species counts for all three of all 92 stringybark sites:Year 2001 survey.

Areas are in ha, CP = Conservation Park, RP = Recreation Park, OHT = Overhead Transient.

Note: Totals ignore duplicate species records from the three samples.

Patch-Site Data				Site Coords AGD66		Sample			Average On-Site	Totals		
No	Name	SB Area	Tot Area	North	East	1	2	3		On-Site	OHT	Off-Site
701	Deep Creek	1154.62	2574.54	605681	24889	10	11	6	9.00	16	4	15
6902	Hindmarsh Falls	11.33	34.55	607520	28061	7	11	11	10.00	18	7	25
7101	HazKett Rd	85.86	85.86	608083	28100	10	10	13	11.00	19	3	14
9801	Belair CP, Site 1	825.58	1511.34	612335	28780	7	6	9	7.33	13	4	19
9802	Belair CP, Site 2			612347	28751	8	10	9	9.00	12	5	10
9803	Belair CP, Site 3			612296	28787	13	8	5	8.67	16	4	11
10502	El Carim, Ironbark, Site 2			611957	28842	13	6	10	9.67	18	0	14
11301	Cleland Site 1			612864	29058	18	15	15	16.0	26	2	16
11302	Cleland Site 2			612847	29040	6	15	15	12.33	21	2	21
11303	Cleland Site 3			612833	29068	17	18	14	16.33	27	1	19
11304	Cleland Site 4			612722	29095	10	13	15	12.67	23	3	21
11305	Cleland Site 5			612785	29035	11	12	9	10.67	19	5	17
11306	Cleland Site 6			612792	29014	9	10	14	11.00	21	5	20
11307	Cleland Site 7			612727	29036	11	5	8	8.00	18	3	15
11308	Cleland Site 8			612746	29019	14	12	11	12.33	21	2	18
11309	Cleland Site 9			612695	28998	16	4	7	9.00	19	3	11
11310	Cleland Site 10			612598	29012	5	3	9	5.67	13	2	12
11311	Cleland Site 11			612581	29018	9	12	11	10.67	17	1	18
11312	Cleland Site 12	1024.75	1355.48	612579	28991	7	6	11	8.00	14	1	15
11313	Cleland Site 13			612536	28975	16	4	15	11.67	19	4	19
11314	Cleland Site 14			612590	28955	11	10	11	10.67	20	2	23
11601	Morialta CP	1686.46	4110.74	613531	29197	8	11	15	11.33	18	1	16
12001	Loftia Park, Site 1	466.36	478.37	612092	29059	10	8	11	9.67	16	3	11
12002	Loftia Park, Site 2			612085	29113	11	9	6	8.67	16	1	14
12003	Loftia Park, Site 3			612107	29002	3	8	9	6.67	14	3	12
12801	Horsnell's Gully CP	534.72	995.81	613169	29259	12	10	19	13.67	22	2	14
13002	Nth Mt Magnificent, Site 2	100.36	100.36	609384	29219	11	7	11	9.67	17	3	12
13501	Stone Reserve, Heathfield	11.8	11.8	612096	29266	11	10	15	12.00	21	6	12
13602	Mt Bold Reservoir Site 2			611161	29255	9	7	8	8.00	14	0	8
13610	Mt Bold Reservoir Site 10			611224	29299	7	5	6	6.00	12	2	12
13612	Mt Bold Reservoir Site 12			611204	29332	12	10	8	10.00	18	2	13
13615	Mt Bold Reservoir Site 15			611192	29382	13	18	7	12.67	21	6	22
13619	Mt Bold Reservoir Site 19			611136	29351	16	6	13	11.67	25	3	15

13620	Mt Bold Reservoir Site 20			611477	29242	8	11	3	7.33	16	2	31
13621	Mt Bold Reservoir Site 21			611499	29039	9	11	12	10.67	19	1	12
13622	Mt Bold Reservoir Site 22			611335	29027	18	13	15	15.33	23	1	10
14301	Cox's Scrub Site 1			608768	29498	15	10	6	10.33	25	8	21
14304	Cox's Scrub Site 4			608649	29435	11	8	5	8.00	17	6	10
14308	Cox's Scrub Site 8			608643	29341	10	8	10	9.33	18	7	15
14310	Cox's Scrub Site 10			608708	29220	9	13	6	9.33	19	4	9
14312	Cox's Scrub Site 12			608739	29275	7	12	5	8.00	14	5	10
14318	Cox's Scrub Site 18			608712	29328	9	11	3	7.67	16	4	9
16001	Rangeview Rd, Carey Gully	3.8	3.8	612769	29519	14	11	17	13.67	24	3	21
16202	Norris Hill, Aldgate, Site 2	148.56	162.19	612150	29541	11	6	15	10.67	18	4	7
16501	1282 Greenhill Rd, Carey Gully	6.4	6.4	612838	29582	11	12	18	13.67	22	3	14
16801	Chapel Hill Diggings, Echunga	44.55	44.55	611551	29627	11	10	16	12.33	20	4	15
17004	Mylor CP, Site 4	66.52	66.52	611996	29630	12	4	9	8.33	14	5	25
17005	Mylor CP Site 5			612027	29627	10	8	10	9.33	20	6	29
17603	Wotton Scrub, Site 3	153.55	153.55	612587	29704	13	15	20	16.00	31	7	29
17604	Wotton Scrub, Site 4			612614	29704	12	10	19	13.67	22	4	24
18203	Filsell Hill, Deviation Rd, Forest Range, Site 3	555.78	697.76	613011	29871	9	15	13	12.33	18	3	19
18204	Filsell Hill Site 4			612985	29861	12	13	10	11.67	19	0	19
18205	Filsell Hill Site 5			612871	29824	6	10	12	9.33	18	3	22
18206	Filsell Hill Site 6			612819	29821	10	14	13	12.33	18	4	19
19101	Wicks Reserve, Forest Range Site 1	51.34	51.34	613193	30032	14	14	18	15.33	25	4	18
21101	Willis Rd, Flaxley	24.17	24.17	610926	30327	11	9	11	10.33	18	1	4
96201	Heysen Tunnel			612581	28857	9	10	16	11.67	21	6	22
96301	Howard Creek Site 1			613943	30836	13	11	17	13.67	23	1	20
96302	Howard Creek Site 2			613959	30885	14	15	24	17.67	26	2	20
96401	Warren CP Site 1			615460	30826	9	2	6	5.67	16	6	19
96402	Warren CP Site 2			615479	30858	14	7	12	11.00	21	7	19
96501	Hale CP Site 1			615960	30859	7	4	11	7.33	15	2	15
96502	Hale CP Site 2			615934	30868	11	10	8	9.67	18	3	16
96601	Uralba			609557	28239	11	4	9	8.00	17	3	15
96701	Christmas Hill Rd Site 1			609744	28928	13	8	9	10.00	16	2	14
96702	Christmas Hill Rd Site 2			609708	29004	6	14	6	8.67	16	2	15
96901	Acklands Hill Rd Site 1			611900	28610	4	3	7	4.67	11	1	7
96902	Acklands Hill Rd Site 2			611870	28605	9	2	13	8.00	16	2	13
97001	Wirra Birra Sanctuary			612068	28879	10	10	2	7.33	15	3	10
97101	Mangiri Park			612490	28908	13	13	16	14.00	22	1	17
97201	Bushland Park, Site 1		151.86	613784	30622	11	11	16	12.67	18	0	11
97202	Bushland Park Site 2		151.86	613798	30582	10	10	16	12.00	19	1	15
97301	Waterfall Creek	25.09	25.09	606351	25739	9	11	14	11.33	20	5	13

97401	Springs Rd	50.57	50.57	606286	25376	7	9	11	9.00	16	7	11
97501	Range Rd	79.63	82.45	605998	25279	4	5	8	5.67	11	4	13
97601	Second Valley Forest	10.98	10.98	606044	25091	4	4	12	6.67	15	5	15
97703	Spring Mt West	289.6	437.17	607448	27526	8	6	11	8.33	12	0	13
97801	Mylor Parklands	94.3	100.49	612010	29535	9	10	8	9.00	17	2	23
97901	Hender Reserve	29.86	29.86	612249	29120	11	13	14	12.67	21	5	26
98001	Kanangra	4.85	4.85	607310	27769	13	15	10	12.67	19	3	13
98101	Scott Ck CP	143.84	30.63	611532	28745	8	13	14	11.67	19	2	16
98201	Totness RP	42.53	42.53	611815	30221	17	10	6	11.00	20	4	22
98301	Mt George CP	125	125	612474	29497	10	16	14	13.33	21	5	11
98401	Lenswood Recreation Park	20.44	20.44	613374	30127	19	14	24	19.00	29	0	11
98701	Sugarloaf Hill, Myponga	39.5	43.7	607213	26823	8	10	4	7.33	14	3	11
98801	Gully Rd, Carey Gully	11.1	11.1	612849	29497	14	12	14	13.33	17	1	12
99001	Twin Oaks	7.05	7.05	607614	27660	17	12	16	15.00	24	3	26
99501	Stock Rd, Longwood	14.78	14.78	611976	29334	12	9	16	12.33	21	6	24
99601	Heysen Trail, Myponga Rd	25.64	25.64	607930	27500	3	9	9	7.00	13	1	7
99801	Kyeema CP, Site 1	250	250	609450	29060	20	12	11	14.33	25	2	15
99802	Kyeema CP, Site 2			609615	28876	6	6	10	7.33	14	5	15
99901	Spring Mt CP East, Site 1	121.37	121.37	607406	27632	8	12	10	10.00	18	3	14
Average Species Count						10.6	9.8	11.4	10.6	18.6	3.8	15.9
SD of Species Count						3.6	3.6	4.5	2.9	4.0	2.0	5.4
90% CI of Species Count						±6.0	±6.0	±7.5	±4.8	±6.7	±3.2	±9.0
SD of Average Species Count						0.38	0.38	0.47	0.17	0.42	0.20	0.56
90% CI of Average Species Count						±0.62	±0.62	±0.78	±0.29	±0.70	±0.34	±0.94

Species List

Table 1 summarises the records for all species from the three samples of the 92 sites; scientific names for these species may be obtained from Christides and Boles (1994); a copy of this information appears in SAOA (1996). The table shows the:

- total number of birds for each species recorded on-site, off-site and overhead-transient;
- number of birds for each of the three samples,
- total number of species sighted for the three samples combined;
- probability of recording and the density of on-site species.

(Note that, in this table, the Total Sightings for the Session is the sum over the three samples. So a species could be sighted a maximum of 276 times (92 sites x 3 samples).

Of the 78 species recorded overall, 66 were recorded on-site, 33 as overhead transients and 62 off-site. Twelve species were recorded as not occupying a site; five of these (marked + in Table 1) were obviously associated with a nearby wetland or grassland. Another four (marked +++) are bush-birds that could have been recorded on-site, ie utilising a 2 ha site of the stringybark woodland habitat. The remaining three species (marked +++) were recorded off-site at a very low frequency and could be considered as vagrant in this habitat. An additional species, marked \$, although recorded as occupying a site, is a wetland species and is not considered in any analysis. Five introduced species were recorded; they are Spotted Turtle-Dove *Streptopelia chinensis*, Skylark *Alauda arvensis*, European Goldfinch *Carduelis carduelis*, Common Blackbird *Turdus merula* and Common Starling *Sturnus vulgaris*.

The probability of recording a species in a 2 ha site during a 20 minute sample, P_{re} (last column of Table 1) has been computed directly from the number of sightings for each of the 66 on-site species from the three samples. It is computed from the total number of sightings of these 66 species divided by the total number of samples, ie 276. See the SB99-00 survey report for a discussion of the precision of P_{re} . These three samples are independent in that they are by different observers on different days and at different times past sunrise. Bird density is computed from the total on-site birds recorded divided by the total area surveyed ie 552 ha (276x2).

On the basis of P_{re} , we divided the 66 species into three groups: those commonly recorded, those uncommonly recorded and those rarely recorded. The five species marked # in Table 1, are those commonly recorded in this habitat; they were sighted more than 165 times, $P_{re} > 0.6$, during the 276 visits.

At the other end of the scale, are the 43 species with sightings less than 36, $P_{re} < 0.13$, that are rarely recorded; they are marked with ### in Table 1. The remaining 17 species, marked with ## are uncommonly recorded with sightings between 36 and 165.

Site List

Table 2 shows how the number of species counted during the three samples vary in space and time. For the three samples combined, Wotton Scrub (Site17603) and Lenswood Recreation Park (Site 98401) gave the highest number of on-site species with 31 and 29 respectively. Range Rd (Site 97501) and Acklands Hill Road (Site 96901) gave the least with 11. Other sites with low counts are Belair CP, Site 2 (9802), Mt Bold Reservoir Site 10 (83610) and Spring Mt West (97703), all with 12.

. As well as the species count in the bulk of the table, a statistical analysis over the sites is provided.

Sample List

Table 3 gives the bird numbers recorded for each species and each of the three 20 min samples of each Site. Table 3a gives the results for on-site records, 3b for overhead transient records and 3c for off-site records. The table includes, for each species, the number of sightings, the number of birds, the probability of recording and the density (density for the off-site records is omitted) as well as the species sightings for each sample. Survey parameters such as site name and location, data and time, weather and observer are included. This table represents the most detailed presentation of the on-site records from the survey and is only available as an Excel spreadsheet on this Web site.

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