MT LOFTY RANGES BIRD SURVEY DATABASES: 1999 – 2007

DATABASE USER NOTES

Ver F 07-04-08

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General

This long-term survey of the birds in the Mt Lofty Ranges (MLR) has taken place over a number of years with data being collected each year during spring and summer. The data are initially entered into an *MS Access 2000* database that has increased in size over the years as the survey progressed; this is termed the Main Database. The latest version of this database is stored on computers located at the Nature Conservation Society of SA and University of Queensland at www.ecology.uq.edu.au.

The Main Database may be used to analyse the data, but for many purposes a smaller database is preferable, so that processing time is reduced and record selection for analysis is simplified. For this reason, the data has been sub-divided into several databases that are sub-sets of the Main Database containing all a years work in two or three habitats, termed Yearly Sub Databases, they are only available from the author. Habitat Sub-Databases contain the data from a year's survey in one habitat. Reports on the analysis of a years survey in one habitat and the Habitat Sub Database are available from the SAOA Journal or www.ecology.uq.edu.au as they are completed.

These User Notes contain a description of database structure and details how the Main Database has been divided into Yearly Sub-Databases and Habitat Sub-Databases. The databases are available in Access 97 only. As more data on these surveys becomes available, the databases and this document will be updated.

Database Structure

A relational structure of the data tables planned so that storage requirements were reduced; queries will be needed to recombine the data needed for different studies. Appendix 1 describes the five tables used in the earlier Main Databases although the structure has been changed from a strict relational form in a few instances. Appendix 1A describes the structure used in the recently published databases. Appendix 2 describes changes the fields in the Sub-Database and Habitat Sub-Database tables to facilitate analysis.

Recording Field Data

Bird observations are recorded on pre-printed sheets, see Appendix 3 which shows a later version of the Record Sheet used for the 2005-2006 survey and later. Before the data is entered into the database, a Sheet Number, a Session Number and Pass Number (see Appendix 1 and 2) are allocated to each record sheet and recorded in tblSheet of the databases. Each Session is a recording visit to a Site and each Pass a recording period of 20 minutes made during a Session. The first two surveys had one or more Passes during a Session; the latter ones had one Pass during a Session.

Several methods were used to record bird numbers; either the data for three consecutive Passes, Pass 1, 2 and 3, were entered on the same Record Sheet, in columns 'a', 'b' and 'c' (see Appendix 3), or on three separate sheets, either in the 'a', 'b' and 'c' columns or all three in the 'a' column. Note the Database Field Name for the data in columns 'a', 'b' or 'c' are NumberPass1, NumberPass2 and NumberPass3. These different data layouts are normalised in the Sub-Databases by storing all bird numbers in column 'a', 'b' or 'c' in one field named "NumberofBirds". However, some of the early versions of the Main Databases retain the columns 'a', 'b' and 'c'.

The first two surveys used a field "Estimate1hour" where the observer could estimate number of species that were using the site in a 1 hour period.

The field "AllObs" is the sum of the fields "NumberofBirds" (ie On-Site), "OverheadTrans" and "OutofSite" (ie Off-Site) records and would normally be non-zero. However "Estimate1hour" records were often on a data record with no On-Site, OHT or Off-Site data leaving a zero in the "AllObs" field. Be aware of these complications when using the data from the first two surveys, ie "Sheet" less than 1351.

Note that not all Sites were surveyed each year; tblPatch indicates which Sites were surveyed.

Data Checking

During field recording and entry of data into the database, errors may occur. Several checking processes have been developed to remove some of these errors. Errors in species identification, recording on the Record Sheet and errors in data entry of species, of course, can not checked electronically, but has been done by inspection and knowledge of the species likely to be recorded in the MLR. The data checking is concerned with the number of record sheets for each Pass and each Site, the numbering of the record

sheets (Session and Pass numbers), the dates that the sites were sampled and the lack of records from a Site or Pass.

The Main Database and Yearly Sub-Databases

The Main database contains the records for all the yearly surveys and will naturally increase over the years, only the most recent one is stored on the Web. The following table gives the major parameters that may be useful in separating data for a yearly survey from a Main database. Alternatively, the earlier versions of the Main Database and Yearly Sub-Databases are available from M Possingham. Note that for each yearly survey, the start/end Date may not be the Date of the first/last Sheet and the difference in Sheet Numbers will not be the number of sheets since some Sheet Numbers may not have been used eg Sheets 1 to 9 and 43, 44 have been deleted. The main database will be updated, as data on further surveys become available. Later versions of the Main Database, ie that containing the 2005-2006 Survey and thereafter, use a modified layout of the data tables, see Appendix1A.

Main Database Parameters

Survey	Start		End		No of Sheets	No of Bird Records
	Date	Sheet No	Date	Sheet No		
99-00	08-11-1999	10	24-02-2000	353	342	4939
99-01	08-11-1999	10	22-12-2000	1350	1323	20204
99-02	08-11-1999	10	19-01-2002	1864	1815	28263
99-03	08-11-1999	10	03-01-2003	2341	2292	35817
99-04	08-11-1999	10	31-12-2003	2678	2784	43015
99-05	08-11-1999	10	09-01-2005	3298	3358	49632
99-06	08-11-1999	10	28-01-2006	3812	3847	56533
99-07	08-11-1999	10	28-12-2006	4301	4251	62781
99-08	08-11-1999	10	25-01-2008	4790	4740	68964

To select the data for yearly surveys, habitats or samples from the main database it is easier to use a field in tblSheet termed Sess-PasssSeq (a sequential number [(Session+n)*10+Pass], n=0, 4, 7, 10, 13 etc) given in the following table. To select the data for each habitat use the StType field combined with Sess-PassSeq and to select a sample (Pass), use StTtype and Patch-Site combined with Sess-PassSeq. StType indicates the type of woodland and is 1 for Stringybark, 2 for Gum, 3 for Other (ie spare) and 4 for Grey Box.

Yearly Survey	Session	Pass	Sess-PassSeq
99-00 n = 0	1, 2, 3	1	11, 21, 31,
	4	1 to 6	41, 42 43, 44, 45, 46
00-01 n = 4	1	1, 2, 3	51, 52, 53
	2	1, 2, 3	61, 62, 63
	3	1, 2, 3	71, 72, 73
01-02, n = 7	1, 2, 3	1	81, 91,101
02-03, n = 10	1, 2, 3	1	111, 121, 131
03-04, n = 13	1, 2, 3	1	141, 151, 161
04-05, n =16	1, 2, 3	1	171, 181, 191
05-06, n = 19	1, 2, 3	1	201, 211, 221
06-07, n = 22	1, 2, 3	1	231, 241, 251
07-08, n = 25	1, 2, 3	1	261, 271, 281

The yearly Sub-Databases contain the data for a single yearly survey.

Yearly Sub Database Parameters

Survey	First		Last		No of Sheets	No of Bird Records
	Date	Sheet No	Date	Sheet No		
99-00	08-11-1999	10	24-02-2000	353	342	4941
00-01	25-08-2000	354	22-12-2000	1350	981	15269
01-02	06-09-2001	1351	19-01-2002	1864	492	8058

02-03	04-09-2002	1865	03-01-2003	3402	492	7906
03-04	09-09-2003	2342	31-12-2003	2833	492	7198
04-05	02-09-2004	2834	09-01-2005	3307	474	6618
05-06	02-09-2005	3308	28-01-2006	3812	489	6903
06-07	01-09-2006	3813	28-12-2006	4301	489	5888
07-08	10-09-2007	4302	25-01-2008	4790	489	6182

Notes:

1 There has been some discussion about the habitat for Sites 1, 4, 8, 10, 12 and 18 in Patch 143 (Cox's Scrub). TblPatch in the Main Database designates this patch as stringybark. However these 6 sites are shown in tblSheet of the Main database with a habitat designation depending on the survey year as shown in following table. Patch 143 was not surveyed during Years 99-00 and 00-01. The user should choose how to use the data and make appropriate changes to his copy of tblSheet and tblBirds in the Main-database and/or the Sub-databases. The Sheet Numbers in the table are the earliest and last values, note that for most yearly surveys, the Sheet numbers are not contiguous.

Habitats and Sheet Numbers for Patch 143

Survey Year	Patch 143 Habitat	StType	Sheet Numbers
01-02	SB (Stringybark)	1	1705 to 1710 1801 to 1812
02-03	Gum (PG-BG)	2	2055 to 2072
03-04	SB (Stringybark)	1	2681 to 2698
04-05	Gum (PG-BG)	2	3000 to 3005 3225 to 3236
05-06	Gum (PG-BG)	2	3674 to 3679, 3322 to 3327, 3664 to 3669.
06-07	Gum (PG-BG)	2	3903 to 3908 3977 to 3982 4072 to 4074 4259 to 4261
07-08	SB (Stringybark)	1	4309 to 4314 4386 to 4388 4393 to 4398 4523 to 4525

2 Patch 700, included in all surveys after 02-03, is Grey Box (GB) woodland, StType = 4. The data remains in the Main database and the Sub-databases, but is not included in the SB and GUM Habitat Sub-databases. So the total Sheet count for the Main and Sub databases will be 3 larger than that for the SB and GUM Sub-databases combined.

3 Not all sites are surveyed each year, even sites in the same patch, see Patch 105 El Carim, and Patch 176, Wotton Scrub.

The Habitat Sub-Databases

The following table gives the dates and records sizes that define the yearly surveys for different habitats, ie Stringybark (SB), Pink-gum/Blue-gum (PG-BG or GUM) or Grey Box (GB). Note that the start and end parameters (Date and Sheet No) may not be consistent, ie the sheet with the lowest number may not have been on the earliest day. Also the difference between the first and last Sheet numbers will not be the number of sheets since some sheet numbers are missing, eg Sheets1 to 9 and 43, 44 have been deleted as they were initial trial recordings.

Habitat Sub Databases

Survey	Earliest Date	Last Date	Lowest Sheet No	Highest Sheet No	No of Sheets	No of Sites	No of Bird Records
SB99–00	08/11/99	24/02/00	10	353	342	38	4944
GUM00-01	25/08/00	22/12/00	354	1350	549	61	9208

SB00-01	05/11/00	19/12/00	834	1304	432	48	6061
GUM01-02	06-09-01	09-01-02	1351	1864	216	72	3845
SB01-02	19-10-01	19-01-02	1530	1826	276	92	4212
GUM02-03	04-09-02	20-11-02	1865	2096	243	81	4200
GB02-03	05-11-02	13-12-02	2271	2273	3	1	53
SB02-03	09-09-02	03-01-03	1927	2341	246	82	3885
GUM03-04	09-09-03	31-12-03	2342	2680	225	75	3334
GB03-04	30-09-03	30-11-03	2443	2445	3	1	43
SB03-04	27-09-03	28-12-03	2515	2833	264	88	3864
GB04-05	20-09-04	15-11-04	2994	3179	3	1	55
GUM04-05	02-09-04	08-01-05	2854	3240	228	76	3295
SB04-05	07-10-04	09-01-05	2834	3307	243	81	3267
GUM05-06	02-09-05	17-01-06	3321	3812	240	80	3862
GB05-06	10-10-05	11-11-05	3547	3560	3	1	39
SB05-06	15-09-05	28-01-06	3308	3780	246	82	3000
GUM06-07	01-09-06	28-12-06	3813	4433	240	80	3007
GB06-07	04-09-06	28-09-06	3938	4195	3	1	42
SB06-07	01-10-06	28-12-06	3820	4288	246	82	2839
GUM07-08	10-09-07	12-02-07	4302	4790	222	74	3011
GB07-08	22-09-07	17-11-07	4356	4706	3	1	48
SB07-08	16-09-07	25-01-08	4309	4788	264	88	3123

The 1999–2000 Survey
This survey covered one 2 ha site in 38 patches of Stringybark woodland from 08-11-1999 to 14-02-2000. The sites were sampled 9 nine times consisting of three 20 minute samples on separate days and six consecutive 20 minute samples on the same day. For the purpose of isolating groups of samples for analysis, each visit to a site is termed a Session and each sample a Pass. The plan was for Sessions 1, 2 and 3, Pass 1, to constitute the “short survey” and session 4, passes 1 to 6 the “long survey”. For some sites in the 1999–2000 survey, this plan was not achieved as Session 2 or 3 may indicate the long survey. Using Survey Type to distinguish between the short and long surveys, this situation may be retrieved. These errors have been corrected in the Sub Database for SB99-00 survey.

The 2000–2001 Survey
This survey covered one or more 2 ha sites in 37 patches of Stringybark woodland and 45 patches of Pink Gum/Blue Gum woodland from 25-08-2000 to 19-12-2000. There were 48 Stringybark sites and 61 Gum sites. The sites were sampled 9 times consisting of three 1 h samples, each consisting of 3 consecutive 20 minute periods. Sessions 1, 2 and 3 each had Passes 1, 2 and 3. This survey introduced five sites in Patch 152 (Scott CP, gum woodland). Inserting the records for Patch 152 into the Main database after those for later surveys, introduced a gap in the Sheet numbers from 1137 to 1304.

The 2001–2002 Survey
This survey covered one or more 2 ha sites in 51 patches (including Patch 143) of stringybark woodland and 49 patches of gum woodland from 06-09-2001 to 19-01-2002. There were 92 stringybark sites and 72 gum woodland sites. Each site was sampled three times on separate days, Sessions 1, 2 and 3 each having one sample, Pass 1. See previous comment under Main Databases on Patch 143

The 2002–2003 Survey
This survey covered one or more 2 ha sites in 48 patches of stringybark woodland and 50 patches of gum woodland from 04-09-02 to 03-01-03. There were 88 stringybark sites and 81 gum sites. Note that Patch 143 (Cox’s Scrub) is included in the analysis of both SB and GUM habitats. This is contrary to the Table above that states how Patch 143 is included in the yearly habitat surveys.
Each site was sampled three times on separate days, Sessions 1, 2 and 3 each had one pass, Pass 1. Patch 700 (3 sheets, 2271, 2272, 2273) is not included in either the GUM or SB Sub-databases, it is a Grey Box site, StType = 4. Data for Patch 152 (Scott CP), gum woodland) was inserted after those for later surveys. See previous comment under Main databases on Patch 143.

The 2003–2004 Survey
This survey covered one or more 2 ha sites in 49 patches of stringybark woodland and 48 patches of gum woodland from 04-09-2003 to 31-12-2003. There were 88 stringybark sites and 75 gum sites. Note that Patch 143 (Cox’s Scrub) is included in the analysis of the GUM habitat and not the SB habitat.

Each site was sampled three times on separate days, Sessions 1, 2 and 3 each had one session, Pass 1. Patch 700 (3 sheets, 2443, 2444, 2445) is not included in either the GUM or SB Sub-databases, it is a Grey Box site. See previous comment under Main Databases on Patch 143.

The 2004–2005 Survey
This survey covered one or more 2 ha sites in 47 patches of stringybark woodland and 50 patches of gum woodland from 02-09-04 to 09-01-05. There were 81 stringybark sites and 76 gum sites. Each site was sampled three times on separate days, Sessions 1, 2 and 3 each had one sample, Pass 1. See previous comment under Main Databases on Patch 143. Patch 152 was surveyed. Patch 700 (3 sheets, 2994, 2995, 3179) is not included in either the GUM or SB Sub-databases, it is a Grey Box site, StType = 4.

The 2005–2006 Survey
This survey covered one or more 2 ha sites in 48 patches of stringybark woodland and 50 patches of gum woodland from 02-09-05 to 28-01-06. There were 82 stringybark sites and 80 gum sites. Each site was sampled three times on separate days, Sessions 1, 2 and 3 each had one sample, Pass 1. There was 1 Grey Box site, Patch 700, StType = 4, with the data recorded in Sheets 3547, 3549, 3560, the data is not included in either the gum or stringybark Sub databases. See previous comment under Main Databases on Patch 143. Site 4 in Patch 152 was not surveyed and will not surveyed in future years.

The 2006–2007 Survey
This survey covered one or more 2 ha sites in 48 patches of stringybark woodland and 50 patches of gum woodland from 01-09-06 to 28-12-06. There were 82 stringybark sites and 80 gum sites. The 80 gum sites are not the same as those for the 05-09 survey; one Parra Wirra Site 4, (P-S 54804) from 05-06 was not used and another (Parra Wirra Site 13, P-S 54813) was new. Each site was sampled three times on separate days, Sessions 1, 2 and 3 each had one sample, Pass 1. There was 1 Grey Box site, Patch 700, StType = 4, with the data recorded in Sheets 3881, 3938, 4195; the data is not included in either the gum or stringybark Sub databases. See previous comment under Main Databases on Patch 143.

The 2007–2008 Survey
This survey covered one or more 2 ha sites in 49 patches of stringybark woodland and 49 patches of gum woodland from 10-09-07 to 25-01-08. There were 88 stringybark sites and 74 gum sites. The changes in these numbers is caused by the 6 sites in Patch 143 were classed as stringybark rather than gum. Each site was sampled three times on separate days, Sessions 1, 2 and 3 each had one sample, Pass 1. There was 1 Grey Box site, Patch 700, StType = 4, with the data recorded in Sheets 4356, 4371 and 4706; the data is not included in either the gum or stringybark Sub databases

Changes in the Main database to form the Sub databases and Habitat Databases
The records in tblBirds, tblSheet relevant to each year and habitat of the survey are copied from the Main Database to the Sub Databases using Date as the criterion. Habitat databases are created using Date and SvType as criteria. The tables are renamed to indicate the period and habitat of the survey, eg tblBirdsSB99-00. TblPatch has fields added to adequately define the Patches and Sites relevant to yearly surveys.
The Session and Pass numbers for each survey are initially recorded starting with Session 1 and Pass 1. This causes difficulties in the combined analysis of the data from several surveys. For this reason, two new fields Sess-Pass and Sess-PassSeq are added to tblSheet in the habitat Databases and are used to select blocks of records in the one survey or in several surveys.
Data analysis is also facilitated by moving the number of birds recorded to a single field, “NumberofBirds” in tblBirds and deleting the fields NumberPass1, NumberPass2 and NumberPass3.
Several more fields are added to facilitate analysis and some are delete deleted from tblBirds. Patch Name, SB Area, Total Area are deleted as they are in tblPatch. Fields All-Obs and Survey are added.

APPENDIX 1

Tables for earlier databases

The Main Database divides the data into the following 5 related tables. This database contains all the records in one file.

tblBrdRef	Records info needed to convert “Abbr” to “BirdCode” and bird common/scientific name
tblBirds	Records all data on the birds observed
tblSheet	Records all heading data on the record sheets
tblPatch	Records all data on the patches
tblObservers	Records all data on the observers

tblBrdRef

FIELD	DESCRIPTION	FORMAT	CHECKS AND LINKS
Com Abbr	Abbreviation for common name.	Text (6).	
Sc Abbr	Scientific Abbreviation.	Text (8).	
Common Name	Common name of species.	Text (30).	
Scien Name	Scientific name of species.	Text (40).	
Family	Family Name.	Text (40).	
Family Code	A numeric code in family order.	Integer.	
Bird Code	A numeric code in species order (uses C&B order).	Integer.	Linked to BirdCode in tblBirds.
Old Ref No	A previously used bird code.	Integer.	

tblBirds

FIELD	DESCRIPTION	FORMAT	CHECKS AND LINKS
Ref	A sequential ref No.	AutoNumber	None
Sheet	A Reference No given to each data sheet; must be unique.	Integer	Done in frmDataEntry. Linked to Sheet in tblBirds.
Abbr	Abbreviation for each species.	Text (6)	Inserted by database.
BirdCode	A ref No for each species.	Integer	<5000. Linked to Bird Code in tblBrdRef
NumberPass1	Entry in col “a”..	Integer	<100 or Is Null.
NumberPass2	Entry in col “b”.	Integer	<100 or Is Null.
NumberPass3	Entry in col “c”.	Integer	<100 or Is Null.
Estimate1hr	Entry in “1hr”.	Integer	<100 or Is Null.
Breeding	Entry in “Breed”.	Text (2)	B1, B2, B3, B4, B5 or Is Null.
OverheadTrans	Entry in “flyo” . May be overhead transient or overhead foraging	Integer	<100 or Is Null.
OutofSite	Entry in “out”, ie records beyond the site boundary.	Integer	<100 or Is Null.
Notes	Any comments on record.	Text (20)	None

Note that, in most cases, columns "b" and "c" of the Record Sheets are not used and all the bird numbers are entered in column "a", renamed as “NumberOfBirds”. When this occurs in later versions of the Main database, fields “NumbersPass2” and “NumbersPass3” are omitted and all observations are in field “NumberOfBirds”.

TblSheet

FIELD	DESCRIPTION	FORMAT	CHECKS AND LINKS
Sheet	Sheet No.	Integer.	No dupliates allowed. Linked to Sheet in tblBirds.
StType	Study Type	Integer	Habitat type, Stringybark (1), Pink Gum-Blue Gum (2), Other (3), Grey box(4)
Session	Session No.	Integer.	None
Pass	Pass No	Integer	None
Sess-PassSeq	A combination of Session and Pass to give unique code for each Sample of a yearly survey. See main text.	Integer	None
Patch	Patch No.	Integer.	See frmSheetEntry. Possible link to Patch in tblPatch.
Site	Site No	Integer.	None
Patch-Site	Combination of Patch No and Site No. Use Patch No as prefix to a two digit Site No. Site 1 in Patch 1 is 101.	Long Integer	See frmSheetEntry. Posssible link to Patch-Site in tblPatch.

Observer 1	Main Observer Code, eg three letters.	Text (3)	See frmSheetEntry. Possible link to ObsCode in tblObservers.
Observer 2	Support Observer Code, eg three letters.	Text (3)	See frmSheetEntry. Possiblel link to ObsCode in tblObservers.
Sv Type	Survey Type (2hr,1hr or 20min)	Integer	Linked to tblSvType
Date	Date of count.	Date-Time.	None
Start Time	Start time.	Date-Time.	None
End Time	End time.	Date-Time.	None
Temp	Cold, Cool, Mild, Warm, Hot.	Text (4)	Linked to tblTemp. Only Cold, Cool, Mild, Warm, Hot or Missing.
Cloud	Percentage cover	Text (3)	<100
Wind	Calm, Light, Medium, Strong.	Text (6)	Linked to tblWind. Only Calm, Light, Medium, Strong or Missing.
Precip	Nil, Light, Medium, Heavy.	Text (6)	Linked to tblPrecip. Only Nil, Light, Medium, Heavy or Missing.

Fields Patch and Site may be omitted in later versions of the main database.

TblPatch

FIELD	DESCRIPTION	FORMAT	CHECKS
Patch	Patch No.	Integer.	Linked to Patch in tbSheet.
Site No	Site No in this Patch	Integer	Linked to Site No in tblSheet
PatchSite	Combination of Patch No and Site No. Use Patch No as prefix to a two digit Site No. Site 1 in Patch 1 is 101	Integer	Linked to Patch-Site in tblSheet
Name	Patch name.	Text (100)	
Map	Map name.	Text (20)	
Total Area	Patch area in ha.	Single	
SB Area	Area of Habita in ha.	Single	
North	Patch Northings.	Text (50)	AGD66
East	Patch Eastings.	Text (50)	AGD66
Datum	GPS Datum		AG66 is used in this database
Survey 99-00	Y if used in 99-00 Survey	Text (2)	
Survey 00-01	Y if used in 00-01 Survey	Text (2)	
Survey 01-02	Y if used in 01-02 Survey	Text (2)	
Survey 02-03	Y if used in 02-03 Survey	Text (2)	
Survey 03-04	Y if used in 03-04- Survey	Text (2)	
Survey 04-05	Y if used in 04-05 Survey	Text (2)	
Survey 05-06	Y if used in 05-06 Survey	Text (2)	
Survey 06-07	Y if used in 06-07 Survey	Text (2)	
Survey 07-08	Y if used in 07-08 Survey	Text (2)	

TblObservers

FIELD	DESCRIPTION	FORMAT	CHECKS
IDObs	Ref number for Observer	Integer	
ObsCode	Observer Code. Link #5.	Text (3).	
First name		Text (20).	
Last name		Text (20).	

See Appendix 1A for tblBreed, tblCloud, tblPrecip, tblTemp and tblWind.

APPENDIX 1A

Tables for later main databases.

tblBirds

FIELD	DESCRIPTION	FORMAT	CHECKS AND LINKS
Sheet	A Reference No given to each data sheet; must be unique.	Integer	Done in frmDataEntry. Linked to Sheet in tblBirds.
Abbr	Abbreviation for each species.	Text (6)	Inserted by database.
BirdCode	A ref No for each species.	Integer	<5000. Linked to Bird Code in tblBrdRef
NumberofBirdds	Entry in col "a"..	Integer	<100 or Is Null.
Estimate1hr	Entry in "1hr".	Integer	<100 or Is Null.
IDBreed	Breeding ID	Integer	1 to 5 or Is Null. Linked to tblBreed
OverheadTrans	Entry in "flyo" . May be overhead transient or overhead foraging	Integer	<100 or Is Null.
OutofSite	Entry in "out", ie records beyond the site boundary.	Integer	<100 or Is Null.
AllObs	All Observations. Total Obs for NumberofBirds, OverheadTrans and OutofSite.	Integer	None
Notes	Any comments on record.	Text (20)	None

tblSheet

FIELD	DESCRIPTION	FORMAT	CHECKS AND LINKS
Sheet	Sheet No.	Integer.	No dupliates allowed. Linked to Sheet in tblBirds.
StType	Study Type	Integer	Habitat type, Stringybark (1), Pink Gum-Blue Gum (2), Other (3), Grey box(4)
Session	Session No.	Integer.	None
Pass	Pass No	Integer	None
Sess-PasSeq	A combination of Session No and Pass No to give unique code for each Sample of a yearly survey. See main text.	Interger	None
Patch	Patch No.	Integer.	See frmSheetEntry. Possible link to Patch in tblPatch.
Site	Site No	Integer.	None
PatchSite	Combination of Patch No and Site No. Use Patch No as prefix to a two digit Site No. Site 1 in Patch 1 is 101.	Long Integer	See frmSheetEntry. Posssible link to Patch-Site in tblPatch.
Observer 1	Main Observer Code, eg three letters.	Text (3)	See frmSheetEntry. Possible link to ObsCode in tblObservers.
Observer 2	Support Observer Code, eg three	Text (3)	See frmSheetEntry.

	letters.		Possiblel link to ObsCode in tblObservers.
Sv Type	Survey Type (2hr,1hr or 20min)	Integer	Linked to tblSvType
Date	Date of samplet.	Date-Time.	None
Start Time	Start time of sample.	Date-Time.	None
End Time	End time of sample.	Date-Time.	None
IDTemp	ID Temp	Integer	Linked to tblTemp.
IDCloud	ID Cloud	Integer	Linked to tblCloud.
IDWind	ID Wind	Integer	Linked to tblWind.
IDPrecip	ID Precip	Integer	Linked to tblPrecip.

Fields Patch and Site may be omitted in later databases..

tblPatch

Same as in tblPatch in Appendix 1

tblBreed

IDBreed	Breed
Null	No Record
1	Mating
2	Nest
3	Nest with eggs
4	Nest with chicks
5	Fledglings

tblTemp

IDTemp	Field1	Temp
1	Cold	<=10
2	Cool	11-15
3	Mild	16-20
4	Warm	21-30
5	Hot	>30
6		Not Recorded

tblCloud

IDCloud	Cloud
1	1-10%
2	11-20%
3	21-30%
4	31-40%
5	41-50%
6	51-60%
7	61-70%
8	71-80%
9	81-90%
10	91-100%
11	Not Recorded

tblBreed

IDBreed	Breed
	No Record
1	Mating
2	Nest
3	Nest with eggs
4	Nest with chicks
5	Fledglings

tblPrecip

IDPrecip	Precip
1	Nil
2	Light
3	Medium
4	Heavy
5	Not Recorded

tblStType

IDStType	StCode	StType
1	SB	Stringybark
2	PG-BG	PinkGum-BlueGum
3	OTH	Other
4	GB	Greybox

APPENDIX 2

Tables for Habitat Databases

tblBrdRef	Records info to convert “Abbr” to “BirdCode” and bird common/scientific name
tblBirds	Records all data on the birds observed
tblSheet	Records all heading data on the record sheets
tblPatch	Records all data on the patches
tblObservers	Records all data on the observers

tblBrdRef

FIELD	DESCRIPTION	FORMAT	CHECKS
Com Abbr	Abbreviation for common name.	Text (6).	
Sc Abbr	Scientific Abbreviation.	Text (8).	
Common Name	Common name of species.	Text (30).	
Scien Name	Scientific name of species.	Text (40).	
Family	Family Name.	Text (40).	
Family Code	A numeric code in family order.	Integer.	
Bird Code	A numeric code for each species (uses C&B order). Link #1.	Integer.	
Old Ref No	A previously used bird code.	Integer.	

tblBirds

FIELD	DESCRIPTION	FORMAT	CHECKS
Ref	A sequential ref No.	AutoNumber	None
Sheet	A Reference No given to each data sheet; must be unique. Link #2.	Integer	Done in frmDataEntry.
Abbr	Abbreviation for each species.	Text (6)	Inserted by database.
BirdCode	A ref No for each species. Link #1.	Integer	<5000.
NumberofBirds	Entry in col “a” on record sheet, ie on-site records.	Integer	<100 or Is Null.
Estimate1hr	Entry in “1hr”.	Integer	<100 or Is Null.
Breeding	Entry in “Breed”.	Text (2)	B1, B2, B3, B4, B5 or Is Null.
OverheadTrans	Entry in “flyo” . Overhead transient only. oOverhead foraging recorded as on-ssite.	Integer	<100 or Is Null.
OutofSite	Entry in “out”, ie records beyond the site boundary.	Integer	<100 or Is Null.
AllObs	Sum of “NumberofBirds”, “OverheadTrans”, “OutofSite”	Integer	Nill.
Notes	Any comments on record.	Text (20)	None
Survey	Survey Name, eg SB99-00	Text (8)	

tblSheet

FIELD	DESCRIPTION	FORMAT	CHECKS
Sheet	Sheet No. Link #2.	Integer.	No dupliates allowed.
StType	Study Type	Integer	Habitat type, Stringybark (1), Pink Gum-Blue Gum (2), Other (3), Grey box(4)
Session	Session No.	Integer.	None
Pass	Pass No	Integer	None
Sess-Pass	Combination of Session and Pass within one yearly survey Session 1, Pass 1 is 11.	Integer	See Appendix 4.
Sess-PassSeq	Combination of Session and Pass,	Integer	

	continuos over many yearly surveys.		
Patch	Patch No. Link #3	Integer.	See frmSheetEntry
Site	Site No	Integer.	None
Patch-Site	Combination of Patch and Site. Use Patch No as prefix to a two digit Site No. Site 1 in Patch 1 is 101. Link #4.	Long Integer	See frmSheetEntry.
Observer 1	Main Observer Code, eg three letters. Link #5	Text (3)	See frmSheetEntry.
Observer 2	Support Observer Code, eg three letters.	Text (3)	See frmSheetEntry.
Sv Type	Survey Type (2hr or 20min)	Integer	Linked to tblSvType
Date	Date of visit	Date-Time.	None
Start Time	Start time.	Date-Time.	None
End Time	End time.	Date-Time.	None
Temp	Cold, Cool, Mild, Warm, Hot.	Text (4)	Linked to tblTemp. Only Cold, Cool, Mild, Warm, Hot or Missing.
Cloud	Percentage cover	Text (3)	<100
Wind	Calm, Light, Medium, Strong.	Text (6)	Linked to tblWind. Only Calm, Light, Medium, Strong or Missing.
Precip	Nil, Light, Medium, Heavy.	Text (6)	Linked to tblPrecip. Only Nil, Light, Medium, Heavy or Missing.

TblPatch

FIELD	DESCRIPTION	FORMAT	CHECKS
Patch	Patch No. Link #3.	Integer.	
Site No	Site No in this Patch	Integer	
Patch-Site	Combination of Patch & Site No	Long Integer	
Name	Patch name.	Text (100)	
Map	Map name.	Text (20)	
Region	Region name	Text (50)	
Study Type	Habitat	Text (10)	
Total Area	Patch area in ha.	Single	
SB Area	Area of Habitat	Single	
North	Patch Northings.	Long Integer	
East	Patch Eastings.	Long Integer	
Datum	GPS Datum	Text (8)	
Survey99-00	Indicates use in survey, Y or blank	Text (1)	
Survey00-01	Indicates use in survey, Y or blank	Text (1)	
Survey01-02	Indicates use in survey, Y or blank	Text (1)	
Survey02-03	Indicates use in survey, Y or blank	Text (1)	
Survey03-04	Indicates use in survey, Y or blank	Text (1)	
Survey04-05	Indicates use in survey, Y or blank	Text (1)	
Survey 05-06	Indicates use in survey, Y or blank	Text (1)	

TblObservers

FIELD	DESCRIPTION	FORMAT	CHECKS
IDObs	Obs Reference Number. Link #5		
ObsCode	Observer Code.	Text (3).	
First name		Text (20).	
Last name		Text (20).	

See Appendix 1A for tables tblBreed, tblCloud, tblPrecip, tblTemp, tblWind, tblStType.

APPENDIX 3
RECORD SHEET FOR MOUNT LOFTY RANGES BIRD SURVEY

20 Minute, 2 Hectare Count

Site No/Name		Temp		Time Start	
Observer ID		Cloud		Time Finished	
Site ID		Wind		Date	
		Precip			

Comm Abbr	Common Name	In	O/H	Out	Brd
ADROS	Adelaide Rosella				
OWNJ	Australian Owlet-Nightjar				
WHTH	Bassian Thrush				
BEFT	Beautiful Firetail				
BCHE	Black-chinned Honeyeater				
BFCS	Black-faced Cuckoo-shrike				
BRGH	Brown Goshawk				
BRSL	Brown Songlark				
BRTB	Brown Thornbill				
BRTC	Brown Treecreeper				
BHHE	Brown-headed Honeyeater				
BRBW	Brush Bronzewing				
BUTB	Buff-rumped Thornbill				
CRHW	Chestnut-rumped Heathwren				
COSH	Collared Sparrowhawk				
BLBI	Common Blackbird				
COBW	Common Bronzewing				
STAR	Common Starling				
CRHE	Crescent Honeyeater				
CRPI	Crested Pigeon				
CRST	Crested Shrike-tit				
DIFT	Diamond Firetail				
DUWS	Dusky Woodswallow				
EAROS	Eastern Rosella				
EASB	Eastern Spinebill				
ELPA	Elegant Parrot				
GOFI	European Goldfinch				
FTCU	Fan-tailed Cuckoo				
GALA	Galah				
GOWH	Golden Whistler				
GRCU	Grey Currawong				
GRFT	Grey Fantail				
GRST	Grey Shrike-thrush				
HORO	Hooded Robin				
HBCU	Horsfield's Bronze-Cuckoo				
JAWI	Jacky Winter				
LAKO	Laughing Kookaburra				
LICOR	Little Corella				
LIRA	Little Raven				
LIWB	Little Wattlebird				
MALA	Magpie-lark				
MIBI	Mistletoebird				
MULO	Musk Lorikeet				
NHHE	New Holland Honeyeater				
NOMI	Noisy Miner				
PBQU	Painted Button-quail				

Com Abbr	Common Name	In	O/H	Out	Brd
PACU	Pallid Cuckoo				
PEDO	Peaceful Dove				
PCLO	Purple-crowned Lorikeet				
RABE	Rainbow Bee-eater				
RALO	Rainbow Lorikeet				
REWB	Red Wattlebird				
RBFI	Red-browed Finch				
RCRO	Red-capped Robin				
RRPA	Red-rumped Parrot				
REFC	Restless Flycatcher				
RODO	Rock Dove				
RUSL	Rufous Songlark				
RUWH	Rufous Whistler				
SAKF	Sacred Kingfisher				
SCRO	Scarlet Robin				
SBCU	Shining Bronze-Cuckoo				
SILV	Silvereye				
BOOW	Southern Boobook				
SOEW	Southern Emu-wren				
SPPD	Spotted Pardalote				
SPTD	Spotted Turtle-Dove				
STPD	Striated Pardalote				
STTB	Striated Thornbill				
SCCO	Sulphur-crested Cockatoo				
SUFW	Superb Fairy-wren				
TCHE	Tawny-crowned Honeyeater				
TAFM	Tawny Frogmouth				
TRMA	Tree Martin				
VASI	Varied Sittella				
WTEA	Wedge-tailed Eagle				
WEBI	Weebill				
WESW	Welcome Swallow				
WHKI	Whistling Kite				
WBMA	White-backed Magpie				
WBBA	White-browed Babbler				
WBSW	White-browed Scrubwren				
WNHE	White-naped Honeyeater				
WPHE	White-plumed Honeyeater				
WTTC	White-throated Treecreeper				
WWCH	White-winged Chough				
WWTR	White-winged Triller				
WIWT	Willie Wagtail				
YETB	Yellow Thornbill				
YFHE	Yellow-faced Honeyeater				
YRTB	Yellow-rumped Thornbill				
YTBCO	Yellow-tailed Black-Cockatoo				

NOTES

Breeding: B1=Mating, B2=Nest, B3=Nest with Eggs, B4= Nest with Chicks, B5=Fledglings.

Wind=Calm, Light, Medium; Strong: **Precip**=Nil, Light, Medium, Heavy

Cloud=0%, 20%, 40%, etc: **Estimate Temperature**; <10, 11-15, 16-20, 21-30, >30

**Please remember that if the wind is too strong to hear the birds or for rain above a drizzle, to postpone the survey if possible.

APPENDIX 4

Data checking is done on the Main Databases after the tables for the Sub-Databases are formed and

- Patch-Site, Sess-Pass and Sess-PassSeq numbers are added to tblSheet, and
- NumberPass2 and NumberPass3 are deleted from tblbirds and NumberPass1 is renamed as NumberofBirds.
- Tables tblBirds and tblSheet the year of the survey added to the title, eg tblBirdsSB01-02 refers to the stringybark data from the year 2001, possibly extending into 2001.

The queries listed below use these tables to check the data.

- To check Patch-Site, Sess-Pass and Sess-PassSeq; use query qselCheckSumP-S&S-P.
  The query uses tblSheetSB01-02 to compute the sum of these numbers which is compared with that expected and an error displayed for each site if not correct. The expected numbers will be different depending on the survey design and must be computed by the user.
- To check Sum of Data; use query qselCheckforZeroObs.
  First add AllObs to tblBirds by forming NumberofBirds+OverheadTrans+OutofSite. The query uses tblBirdsSB01-02 to check if the sum of fields NumberofBirds, OverheadTrans and OutofSite in each record is null. If the sum is null a “0” an output is displayed. If the check is successful, AllObs and Survey are added to tblBirds
- To check that there no double entries of species into each sheet of data use qsel??????. (Sometimes Striated Thornbill and Striated Pardalote are incorrectly entered or some records are entered twice.)
- To check that the sheet count is correct, use qselCheckforZeroObs
- To be continued