WESTERN AUSTRALIAN WILDLIFE RESEARCH CENTRE

Duck Banding Programme

Interim Report : Data File Preparation and Summary

Report prepared for : Western Australian Wildlife Research Centre
Ocean Reef Road, Woodvale WA
(Dr. Stuart Halse)

By : D.A. Diepeveen
I.R. James
Statistical Consulting Group
University of Western Australia

July 1987

Statistical Consulting Group

WESTERN AUSTRALIAN WILDLIFE RESEARCH CENTRE

Duck Banding Programme

Interim Report : Data file preparation and summary

CONTENTS:

	Page
1. Introduction	1
2. Data Correction and Recodes	1
3. Summary Tables	4
3.1 One-way frequency tables	4
Age	4
Sex	5
Species	5
Weight	5
Plumage	5
How obtained	6
Day of capture	6
Month of capture	6
Year of capture	7
Season of capture	7
Station	7
3.2 Cross tabulated frequency tables	8
Recapture by sex	8
Recapture by species	8
Sex by species	8
Species by weight	9
Species by station	9
Species by season	10

Duck Banding Data File

1. INTRODUCTION

This interim report briefly summarises progress on data correction and modification procedures for the Wildlife Research duck banding data file, which initially consisted of 41,176 records.

Comprehensive data checking procedures have been implemented to detect inconsistencies and duplications in the file, and all of these have been investigated in conjunction with the WA Wildlife Research Centre and corrected as far as possible. This process has been time consuming, but has led, with additional modifications to the original coded values, to a clean data file which will enable efficient further analyses.

No detailed analyses are presented in the present report, but we include in §3 frequency tabulations of the main variables of interest and selected cross tabulations of some of them. Other cross tabulations and detailed analyses, such as survival analyses, which are underway, will be reported separately as they are completed. In §2 we briefly outline the modifications found to be necessary or desirable.

2. DATA CORRECTION AND RECODES

The data file originally provided consisted of 41176 records of banded ducks with coding as described in the document "Duck Banding Programme : Coding and Computing System Documentation". The records included recapture data from 1953 to 1985. Information on approximately 60 further ducks was added to the file subsequently.

Initial investigation of the data indicated many cases of inconsistencies (eg apparent sex changes between recaptures) and considerable duplication in the records. In addition, for the purposes of analysis it is desirable to accumulate all information on a single duck together in a single location rather than have information scattered throughout the file. The strategy adopted was to identify all records belonging to a particular duck, rearrange the file so that they formed consecutive records, then to check for consistency of codes

within records and across records. Where modifications were needed, the following conventions were adopted (after discussion with Wildlife Research). Note that in the subsequent discussion the term "recapture" will be used to denote both recaptures (ie. live captures and releases) and recoveries (ie. dead birds).

(i) Where information was available at one capture but missing subsequently, the original information was assumed, where appropriate.

(ii) Certain codes not listed in the documentation were modified in the following way -

WEIGHT - codes of 9999 and 0 were both taken as "missing".

SEX - codes of 0, 6 and 9 were changed to "no sex" (ie.unknown). If the sex coding changed from banding to recapture or between recaptures, the most frequent code was adopted. If there were only two such recordings and they differed, the sex was regarded as unknown if not obtainable from other information.

AGE - if age changed from adult to younger in a subsequent recapture, the adult code was assumed.

MBAND - in the event of inconsistencies in the banding numbers, the mono band (MBAND) number was assumed to be correct and the titanium band (TBAND) changed accordingly.

Some 3000 plus records required manual modification to remove inconsistencies or to add relevant information.

New variables were created from the data in order to facilitate ready access of records from the file and to aid future analyses. They were

IDENT - a variable to distinguish whether or not a duck was recaptured subsequent to banding. A code of 0 was assigned to records of ducks with no subsequent recapture/recovery, 1 to the first record of a subsequently recaptured duck and 2 to the recapture/recovery records.

REP - the number of the record subsequent to the initial banding (repeats).

DAYBAND - the number of days since the initial banding. This is zero for initial records of ducks or for records of ducks recaptured on the same day.

In addition, for ease of tabulation and subsequent analyses, a file containing recodes has also been constructed. The recodes are given in the following table.

TABLE 1. RECODES

new code	old code	description
NSPEC	SPECIES	
1	1	Black Duck
2	2	Grey Teal
3	5	Aust Shelduck
0	rest	all other ducks combined
SEASON	MONTH	
1	12,1,2	summer
2	3,4,5	autumn
3	6,7,8	winter
4	9,10,11	spring
NAGE	AGE	
1	0	duckling
2	1-2	juvenile
3	3	sub-adult (mountain duck)
4	4-5	adult
0	6	unknown
NSEX	SEX	
1	1-4,7	male
2	5	female
0	0,6,9	unknown
NWEIGHT	WEIGHT	
1	1-8	0.01 - 0.25 Kg
2	9-17	0.26 - 0.50 Kg
3	18-26	0.51 - 0.75 Kg
4	27-35	0.76 - 1.00 Kg
5	36-44	1.01 - 1.25 Kg
6	45-52	1.26 - 1.50 Kg
7	53+	> 1.50 Kg
0	0,9999	unknown

TABLE 1 (Cont.)

new code	old code	description
NPLUM	PLUMAGE	
1	0	not in moult
2	1	body in moult
3	2	moulting - new primaries
4	3	moulting - new tail
5	4-8	down (ducklings)
0	9	unknown

After all corrections, additions and removal of duplications, the clean file now consists of 40,351 records on 33,114 ducks, 5,880 of whom have at least 1 recapture record. Of these, 4900 have one recapture, 717 have 2 recaptures, 187 have 3 recaptures, 51 have 4 recaptures, 18 have 5 recaptures, 1 has 6 recaptures, 3 have 7 recaptures, 2 have 8 recaptures, and 1 has 10 recaptures.

3. SUMMARY TABLES

The following tables summarize frequencies in the various categories for the main variables as they relate to the first capture only. Detailed analyses relating to recaptures and to changes of variables over time are not included here. Section 3.1 presents one-way tabulations, while selected cross-tabulations are given in §3.2. Other tables of frequencies, means etc. can be readily produced as required.

3.1 One-way frequency tables

Table 3.1.1. FREQUENCY TABLE FOR NAGE (age code)

age unknown	duck-ling	juven-ile	sub-adult (M.duck)	adult	TOTAL
9407	189	8159	21	15338	33114

Table 3.1.2. FREQUENCY TABLE FOR NSEX (sex code)

sex			
unstated	males	females	TOTAL
9433	13200	10481	33114

Table 3.1.3. FREQUENCY TABLE FOR NSPEC (species code)

Black duck	Grey teal	Mountain duck	Others	TOTAL
26149	5571	656	738	33114

Table 3.1.4. FREQUENCY TABLE FOR NWEIGHT (weight in kgs)

miss	≤0.25	≤0.50	≤0.75	≤1.00	≤1.25	≤1.50	>1.50	TOTAL
9607	72	3125	844	10766	8480	206	16	33114

Table 3.1.5. FREQUENCY TABLE FOR NPLUM (plumage code)

no info	not in moult	body in moult	new primaries	new tail	downy	TOTAL
9500	10307	2497	355	10402	53	33114

Table 3.1.6. FREQUENCY TABLE FOR OBTAIN (how obtained code)

trap & caged	no info	trap & release	net & release	snare & release	sight obs	trap & rel e/wh	caged & release	TOTAL
6	41	29171	3221	1	13	659	2	33114

Table 3.1.7. FREQUENCY TABLE FOR DD (day of first capture)

0	1	2	3	4	5	6	7	8	9
20	955	1244	1169	1154	1502	1163	1245	1194	1038

10	11	12	13	14	15	16	17	18	19
1446	1016	1317	1416	1039	1126	1402	894	903	834

20	21	22	23	24	25	26	27	28	29
1175	1098	815	1080	738	893	875	1241	1197	874

30	31	TOTAL
752	299	33114

Table 3.1.8. FREQUENCY TABLE FOR MM (month of first capture)

Jan	Feb	Mar	Apr	May	Jun	Sep	Oct	Nov	Dec	TOTAL
7018	5846	7501	4272	1210	81	53	208	1476	5449	33114

Table 3.1.9. FREQUENCY TABLE FOR YY (year of first capture)

1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
131	929	1038	301	1039	1052	1252	363	56	1032

1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
1113	54	875	63	44	740	1133	1976	3557	3865

1972	1973	1974	1975	1976	TOTAL
4097	2696	2246	2690	772	33114

Table 3.1.10. FREQUENCY TABLE FOR SEASON (of first capture)

summer	autumn	winter	spring	TOTAL
18313	12983	81	1737	33114

Table 3.1.11. FREQUENCY TABLE FOR STATION (locality of banding)

Other/ miss*	Moora	Metro Area	Shenton Park	Woodan- illing	Alder- syde	Yanchep	Lara (Vic)
9386	8851	2849	2844	8909	156	102	15

Joanna (Vic)	L.Charm (Vic)	TOTAL
1	1	33114

*not recorded prior to 1967

3.2 Cross tabulated frequency tables

Table 3.2.1. FREQUENCY TABLE OF RECAPTURE BY SEX

	sex unstated	males	females	TOTAL
not rec	8176	10562	8496	27234
rec	1257	2638	1985	5880
TOTAL	9433	13200	10481	33114

Table 3.2.2. FREQUENCY TABLE OF RECAPTURE BY SPECIES

	Others	Black duck	Grey teal	Mountain duck	TOTAL
not rec	630	21552	4535	517	27234
rec	108	4597	1036	139	5880
TOTAL	738	26149	5571	656	33114

Table 3.2.3. FREQUENCY TABLE OF SEX BY SPECIES

	Others	Black duck	Grey teal	Mountain duck	TOTAL
sex miss	421	6538	2160	314	9433
males	147	11017	1902	134	13200
females	170	8594	1509	208	10481
TOTAL	738	26149	5571	656	33114

Table 3.2.4. FREQUENCY TABLE OF SPECIES BY WEIGHT

	Kg.							
	miss	≤0.25	≤0.50	≤0.75	≤1.00	≤1.25	≤1.50	>1.50	TOTAL
others	399	5	89	89	148	7	1	0	738
B.duck	6703	3	33	436	10523	8311	137	3	26149
G.teal	2190	64	3002	315	0	0	0	0	5571
M.duck	315	0	1	4	95	162	68	11	656
TOTAL	9607	72	3125	844	10766	8480	206	14	33114

Table 3.2.5. FREQUENCY TABLE OF SPECIES BY STATION

	Other/ u/k	Moora	Metro Area	Shenton Park	Woodan- illing	Alder- syde	Yanchep
others	393	300	23	4	18	0	0
B.duck	6531	5191	2826	2839	8652	8	102
G.teal	2147	3055	0	1	203	148	0
M.duck	315	305	0	0	36	0	0
TOTAL	9386	8851	2849	2844	8909	156	102

	Lara (Vic)	Joanna (Vic)	L.Charm (Vic)	TOTAL
others	0	0	0	738
B.duck	0	0	0	26149
G.teal	15	1	1	5571
M.duck	0	0	0	656
TOTAL	15	1	1	33114

Table 3.2.6. FREQUENCY TABLE OF SPECIES BY SEASON

	summer	autumn	winter	spring	TOTAL
others	311	301	2	124	738
B.duck	14078	11343	76	652	26149
G.teal	3579	1127	3	862	5571
M.duck	345	212	0	99	656
TOTAL	18313	12983	81	1737	33114