The Australian

BIRD BANDER

A Banding Project in the Brindabella Ranges, Australian Capital Territory

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The establishment of a banding project in the Brindabella Ranges, A.C.T. and the methods used during more than nine years of continuous banding activity in one area are recounted. Banding and recording methods are detailed and a summary of the species banded is given. Future papers will deal with the analysis of the figures for individual species.

Introduction

In April 1961 the Wilson family together with two Americans, Don Lamm and Bill Belton, started a banding project in the Brinabella Ranges, 18 miles west-south-west of Canberra, A.C.T. A visual survey over approximately three years was the original objective of Don Lamm and this commenced in late 1960. A report on the study to mid 1964 was made by Lamm and Wilson (1966).

Now, after nearly ten years and more than 200 visits later, the original team has dispersed, with none of its members any longer taking part in banding activities in the area. One of us (Wilson) was in charge of the team until early 1970 when the other (Horey) took over having served as a "B" bander with the team for some time. The project continues, for the investigations which the original team started are by no means complete and valuable data are still being accumulated.

When the banding project commenced little was known of the type of data that could be accumulated by regular visits to one area. Originally the banding was merely an adjunct to the visual survey, intended to complement the visual data. The broad objectives were to study the occurrence of all species in the area including their migrations and other movements, and to ascertain numbers present on each visit. As time went on, the increasing value of the accumulating banding data became obvious, new objectives were devised and the value of indefinite continuation of the work was realised. On the return of Don Lamm to America in mid 1964, the visual survey was concluded with the exception of a special list for each day. The banding work has continued without interruption.

The value of the banding data is entirely due to the assistance of the very many helpers who have visited the site once, twice or many times during the years and, in particular, to the devoted labours of a much smaller number of banders, most of whom were or are in their early youth. Throughout the banding project the emphasis has been on team work. Thus everyone has contributed to the project and the results are those of the group rather than individual efforts. Indeed continuous work over this long period could not have been done by any one person.

We feel that in many aspects this work may serve as a model for those interested in long term mist-netting activity.

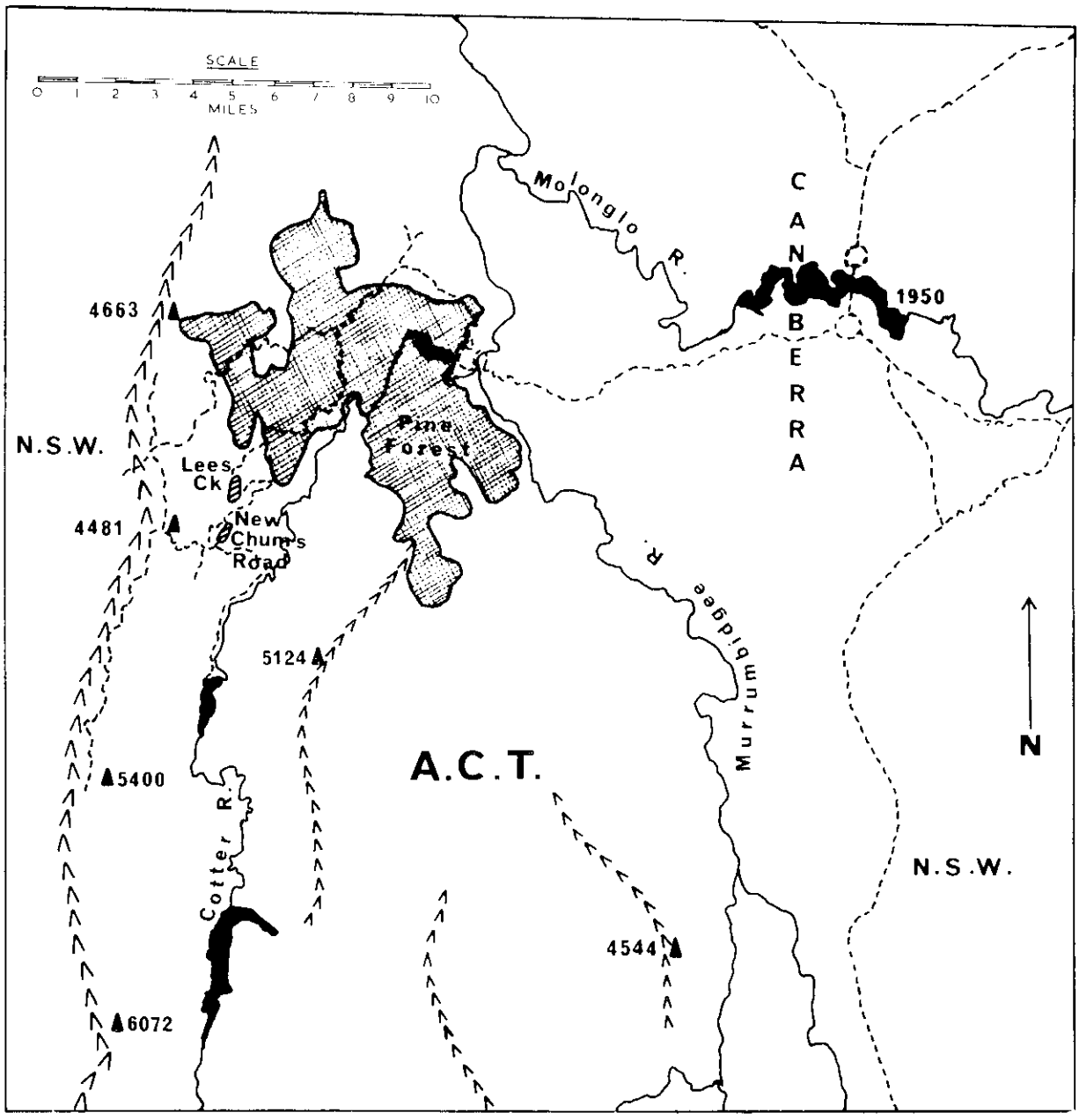
Establishment

At the beginning, two sites were chosen, one at New Chums Road (35° 24′ S. Lat, 148° 50′ E. Long.), a forestry access road that rarely sees any human other than a ranger, and one at Lees Creek (35° 22′ S. Lat., 148° 50′ E. Long.), two miles (by air) nearer to Canberra (Fig. 1). A visual survey was not done at Lees Creek. Both banding stations are in areas of wet sclerophyll forest. Other sites were investigated but did not prove so fruitful, either in the variety of species or total numbers present. Banding was a weekend

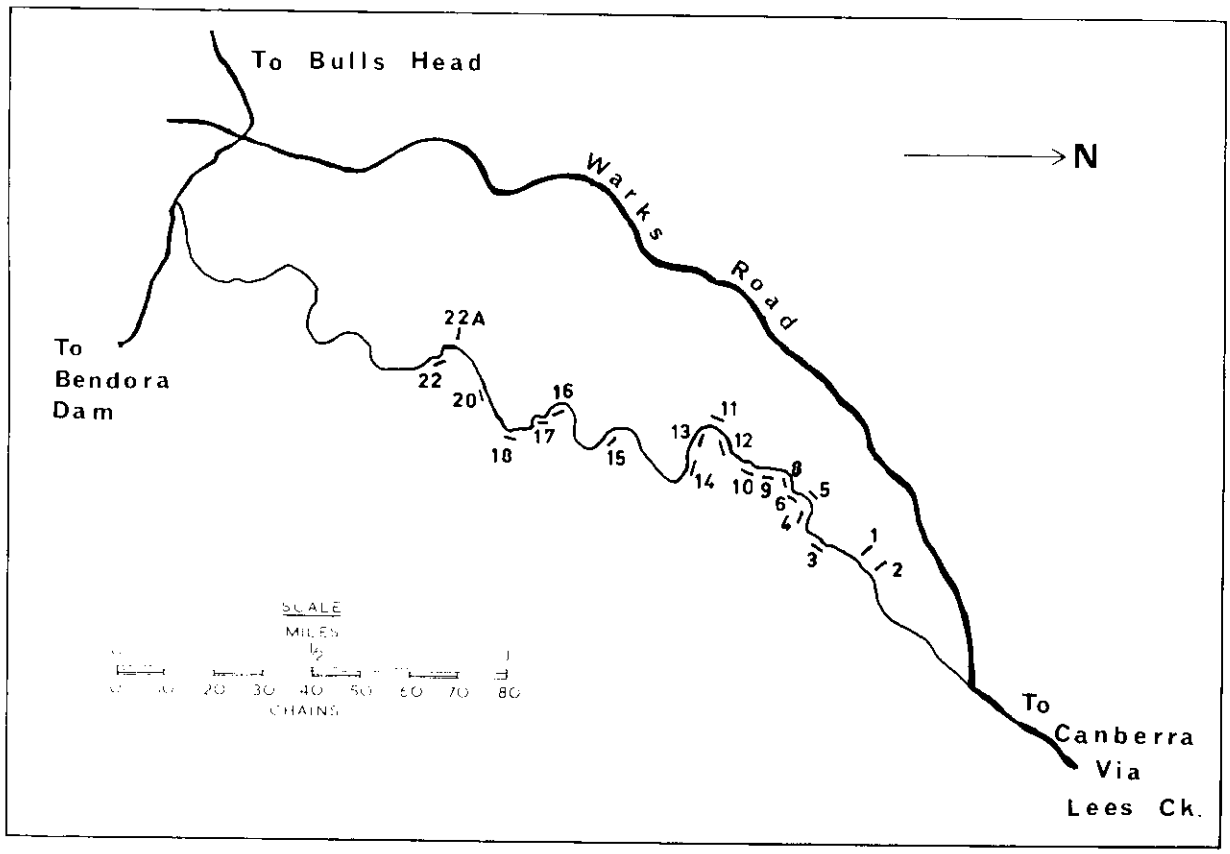
activity carried out on a "family and friends" basis.

In the early days birds were banded and re-trapped in what seemed like profusion. The project was definitely encouraging.

The smaller birds of such an area had never been the subject of intensive study and virtually nothing had been published on the results of regular mist-netting. Thus the team had to learn the hard way and gain experience on identification of difficult juvenile and sexual plumage and on techniques as it went along. Eventually two major aims emerged; firstly, the continuing study of the avifauna of a small patch of wet



• Figure 1. *Location map, A.C.T.*



• Figure 2. *New Chums Road showing net sites.*

sclerophyll forest and, secondly, of a study in depth of one species, the White-browed Scrub-Wren *Sericornis frontalis*. Many minor aims are also involved.

Gradually the potential value of the banding data emerged. The number of nets was increased until 25 were in regular use. An important step was the introduction in October 1963 of numbered net sites. Henceforth the number of the net site was recorded for each bird handled whether newly banded or retrapped. The present net sites are in most cases in the same positions as those originally chosen—see Figure 2.

The environment and vegetation of New Chums Road have been previously described by Lamm and Wilson (1966). The average annual rainfall is about 45 inches, although this varies considerably from year to year. A later paper in this series will discuss this variation in detail when population fluctuations are considered. As New Chums Road is on the eastern slopes of Bulls Head Mountain, Brindabella Range, and is about 1,000 feet below the peak, it is sheltered from the cold winds blowing from the Snowy Mountains to the south and south-west. A little snow falls during most winters, but normally does not lie for long. In the hot months of the summer the tall trees afford shade so that in general there are no extremes of temperature.

At Lees Creek visits are less regular and, although fixed net-sites were adopted, these, at least until recent months, were not numbered so that the actual location in which a bird was caught could not be recorded. The basic reason was that at New Chums Road the nets are along the line of the road while at Lees Creek the area is compact and smaller, covering two arms of a creek and a road. Thus in what follows, the account is of conditions at New Chums Road and the primary emphasis is on the figures gathered there. Lees Creek figures have only been used as reinforcement where the former ones are de-

TABLE 1

Number of visits per year to New Chums Road.

Year	1960/61	1961/2	1962/3	1963/4	1964/5	1965/6	1966/7	1967/8	1968/9	1969/70
Visits	2	13	13	11	16	15	15	12	14	19

ficient, such as in determination of moult or for measurements.

Methods

The procedure adopted from the outset and retained up to the present has been directed towards maintaining operating conditions at a constant level. The aim has been, and is, about 16 visits per year with at least one every month, and, if possible, one visit every three weeks for the period September to April. The actual visits made are shown in Table 1. Each visit is scheduled so that arrival on site is one hour before dawn. This allows sufficient time for all the nets to be erected before any bird movement takes place. The nets are taken down six hours later which permits several complete traverses of the one and a quarter mile long site. The same number of nets is always used and the same size nets always placed at the same net sites.

This is the ideal and, like all ideals, is never quite attained. Table 1 shows the disparity between the ideal of 16 visits per year and those actually made. Similarly, adverse climatic conditions see to it that the desired spacing between visits is not always adhered to. However for such a long term amateur enterprise it is amazing how closely performance has come to the ideal.

It has been argued with some force that all figures of birds banded or retrapped should, in view of these variations in operating conditions, be reduced to a common level so that any one figure can be directly compared with any other. If this were to be done then the most logical relationship would appear to be the number of birds taken per unit area of net, say 1,000 square feet, per hour the nets are in operation. This argument is rejected since it would lead to the unrealistic expression, in fractions or decimals, of the number of birds banded. For example, if one Grey Currawong *Strepera versicolor* is banded in a year this would be expressed as 0.0018 birds per 1,000 square feet of net per hour—a rather meaningless way of expressing a single and simple occurrence. In a future paper it will be contended that comparative figures do not serve any useful purpose in the type of analysis to be undertaken. On the contrary a case will be put forward that the real significance of a banding entry lies in the fact that a particular bird was present at a particular place at a particular time and that the netting of this bird represents either a random or a biased sample of the species population.

All the birds are banded at the net from which they are taken. This obviates the use of carrying bags, reduces the traumatic time of captivity to a minimum and allows each territorial bird to be released on its own territory. Even so a bird released from a net has to be held for some time if all the recording requirements are to be met. The recordings currently made or aimed at are—

(a) weighing, using a Pesola spring balance and a small weighing bag;

(b) wing measurement in millimetres, using the method laid down by the B.T.O. (Cornwallis and Smith, 1960);

(c) tail measurement, but using a steel rule

NEW CHUMS ROAD DATE: 4.7.70

		Species	Wing	Tail	Wt.	Sex	Net	NOTES
030	79302	W-T Treecr.	92	65	26.0	AM	1	Breast, beige wash, 4.052
020	99327	488	55	46	17.0	I	16B	No tail bar, white flecks under eye.
012	38044	475	50	40	10.5	A	13	
020	99328	488	55	47	16.75	AF	10B	No bib. Tail bar (faint) 2 distal feathers only.
012	38045	475	49	45	10.5	A	1	

Notes: 1. Bag. Wt: 4.5 gm
2. Weather: Cold—heavy frost, 1 10th cloud.

● Figure 3. *Format of book used for field recording.*

instead of the dividers as recommended by the B.T.O.;

(d) plumage details;

(e) details of soft parts;

(f) moult details, using CSIRO moult cards;

(g) sexing by plumage or cloacal inspection;

(h) ageing by plumage or skull ossification;

(i) colour details of plumage, using cards of British Standard Specification No. 2660/1955 as comparators; and

(j) wing formula.

Obviously such a check would take far too long on all birds, particularly at the time of heavy spring and summer catches. Thus the inevitable compromise is made and as much is recorded as time allows. Weighing and measuring of certain species only, e.g. Yellow-faced Honeyeaters *Meliphaga chrysops* was started in the autumn of 1968. Plumage details of, for example, Golden Whistlers *Pachycephala pectoralis* where plumage phases can be confusing, was started much earlier. The remaining investigations are of recent origin and records are scanty or even non-existent.

Two field note books are used concurrently, one for new birds and one for retraps. To facilitate recording, each double page is ruled up prior to banding as indicated in Figure 3. A minimum space is left for the species name which is abbreviated or is entered as its RAOU Checklist number, i.e. for a White-browed Scrub-Wren as W.B.S.W. or 488. This leaves a maximum amount of room for notes.

After a visit is completed the day's records are entered on separate master sheets or charts for each species. These sheets have been described by Wilson (1967) and represent the permanent record in its most digestable form. With their aid a summary of the whole project, such as the totals of new birds banded year by year, as in Table 2, can be readily compiled. These charts also enable yearly summaries to be produced giving the up-to-date numbers of survivors year by year. Such a summary has been produced every year since 1966 for private circulation. But these sheets or charts must be supplemented if further analysis is to be easily carried out, particularly of the data according to sub-paragraph (a) to (j) above. This has been done by establishing a separate card of suitable size, 5" x 3", for each individual bird of a species and by duplicating on it all the information recorded in the field notebooks for each appearance of the particular bird. An example of such

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Date	Sex	Net	Wt.	Wing	Tail	Notes
25.i.68	AF	4	—	—	—	
28.ix.68	AM	4	13.5	55	50	
19.x.68	AM	4	14.5	54	50	
22.xi.69	AM	2	—	—	—	
30.v.70	AM	5	14.0	58	—	

Figure 4. *Format of the individual card record.*

a card is shown in Figure 4. For ease of entry the card is headed by the RAOU Checklist number of the species. The serial band number is written in the upper right hand corner and the cards are filed in numerical order irrespective of the series in which a number occurs. The cards are used by flipping through the pack and removing all cards dealing with the subject to be investigated, e.g. weights or plumage. All the available information will then be collected together for easy abstraction of the figures after which the removed cards can be returned to their rightful position in the pack.

Summary of Results

The species which have been banded are shown in Table 2. There are 48 in all and these fall into two well defined groups:

(a) 32 species of more or less rare occurrence, i.e. those in which the total catch of new birds over the nine year period does not exceed 65; and

(b) 16 species of commonly occurring birds, i.e. those in which the total catch of new birds is over 130.

It is the birds in (b) that will be discussed in greater detail in later papers.

Table 2 also shows the total number of birds in each species that have been retrapped for the whole period and the percentage represented by this figure of the total number of new birds banded. It is interesting to note, although not unexpected, that in almost every case the percentage of retrapped birds is higher than that of the Australian Bird-banding Scheme as a whole (Purchase 1970).

Future Papers

As has been pointed out by Rowan (1964) on the only known project of a similar nature, that of Reed in South Africa, one of the main reasons why such projects are not more frequent is "the enormous clerical and arithmetrical labour involved". Not only is the labour great but so also is the presentation of the results. Conse-

TABLE 2

SUMMARY OF BIRDS TRAPPED

SPECIES	New Birds Banded										Retraps		
	1961 /62	1962 /63	1963 /64	1964 /65	1965 /66	1966 /67	1967 /68	1968 /69	1969 /70	Total	Individuals	%	Total Times
Brush Bronzewing *Phaps elegans*					1					1			
Wonga Pigeon *Leucosarcia melanoleuca*	1			1	1				1	4			
Australian Goshawk *Accipiter fasciatus*					1					1			
Crimson Rosella *Platycercus elegans*	2	1	4	1	2	3		4		17	2	10.6	
Owlet-Nightjar *Aegotheles cristata*	1	1	2						1	5	1	20.0	
Laughing Kookaburra *Dacelo gigas*	2					1		1		4			
Fan-tailed Cuckoo *Cacomantis pyrrhophanus*	2	1			1			2	3	9			
Golden Bronze-Cuckoo *Chalcites plagosus*	3	1	1	3	2		3	3	1	17	2	10.6	2
Grey Fantail *Rhipidura fulginosa*	47	27	34	31	26	24	9	16	11	215	22	10.2	32
Rufous Fantail *Rhipidura rufifrons*	14	25	15	22	12	17	15	15	29	164	27	16.5	33
Satin Flycatcher *Myiagra cyanoleuca*									1	1			
Scarlet Robin *Petroica multicolor*					1					1			
Red-capped Robin *Petroica goodenovii*					1		3			4	1	25.0	
Flame Robin *Petroica phoenicea*	24	7	9	4	15	15	21	22	13	130	14	10.8	21
Pink Robin *Petroica rodinogaster*	4	2	2	3	4	1	2		1	19	6	31.5	9
Rose Robin *Petroica rosea*	15	29	17	19	14	13	10	9	13	139	23	16.5	34
Southern Yellow Robin *Eopsaltria australis*	43	54	37	40	42	22	21	23	29	311	96	30.8	162
Golden Whistler *Pachycephala pectoralis*	50	37	36	41	24	12	23	25	39	287	75	26.1	119
Rufous Whistler *Pachycephala rufiventris*	6	1	3	2	2	1	1	4	2	22	3	13.6	3
Olive Whistler *Pachycephala olivacea*	10	5	4	3	8	5		1	6	42	10	23.8	16
Grey Shrike-Thrush *Colluricincla harmonica*	3	9	7		6	3	4	2	6	40	4	10.0	5
Eastern Shrike-Tit *Falcunculus frontatus*	1	1	1	1	2					6	2	33.3	2
Eastern Whipbird *Psophodes olivaceus*	9	2	1	1	1			1	2	17	5	29.4	7
Blackbird *Turdus merula*									2	2	1	50.0	1
Ground Thrush *Oreocincla lunulata*	28	21	17	20	15	14	13	8	15	151	31	20.4	40
Striated Thornbill *Acanthiza lineata*	49	28	54	41	29	20	39	16	37	313	105	33.6	202
Brown Thornbill *Acanthiza pusilla*	106	64	100	95	60	47	82	52	126	732	164	22.4	277
White-browed Scrub-Wren *Sericornis frontalis*	126	93	128	100	82	68	73	56	149	875	309	35.4	850
Pilot-Bird *Pycnoptilous floccosus*	9	14	7	4	3	4	4	6	5	56	13	23.3	20
Superb Blue Wren *Malurus cyaneus*				1						1			
White-throated Tree-creeper *Climacteris leucophaea*	3	2	8	8	4	2	18	2	10	57	21	36.9	27
Red-browed Tree-Creeper *Climacteris erythrops*	4	2	4	1	4		4	1	2	22	8	36.3	14
Spotted Pardalote *Pardalotus punctatus*	6	2	1	10	13	9	11	7	6	65	3	4.6	3
Eastern Silvereye *Zosterops lateralis*	37	36	29	57	46	33	65	61	90	454	70	16.4	91
White-naped Honeyeater *Melithreptus lunatus*	58	32	35	74	22	44	42	32	46	385	50	13.0	73
Brown-headed Honeyeater *Melithreptus brevirostris*	6			11			1		2	20	1	5.0	2
Eastern Spinebill *Acanthorhynchus tenuirostris*	13	19	20	8	22	15	15	16	17	145	22	16.2	35
Yellow-faced Honeyeater *Meliphaga chrysops*	50	36	59	116	43	122	37	58	43	563	66	11.7	98
White-eared Honeyeater *Meliphaga leucotis*	15	13	10	7	12	23	23	6	34	143	12	8.4	15
Yellow-tufted Honeyeater *Meliphaga melanops*			2				1			3			
Crescent Honeyeater *Phylidonyris pyrrhoptera*	15	30	31	30	33	18	24	5	28	214	48	22.5	63

SPECIES	New Birds Banded									Retraps		
	1961 /62	1962 /63	1963 /64	1964 /65	1965 /66	1966 /67	1967 /68	1968 /69	1969 /70	Total	Individuals	%	Total Times
New Holland Honeyeater *Meliornis novaehollandiae*			1	1						2			
Red Wattle-bird *Anthochaera carunculata*						1				1			
Red-browed Finch *Aegintha temporalis*	17	22	6				13	1		59	9	16.3	12
Satin Bower-bird *Ptilonorhynchus violaceus*					1				2	3			
Pied Currawong *Strepera graculina*	1			1		3				5	3	60.0	3
Grey Currawong *Strepera versicolor*									1	1			
Grey Butcher-bird *Cracticus torquatus*			1					1		2			
							TOTALS			5731	1227	21.4	2272
									TOTAL ALL BIRDS				8003

quently this introductory paper will be followed by detailed studies of:

(i) the White-browed Scrub-Wren;

(ii) other resident passerines;

(iii) migratory species;

(iv) population fluctuations; and

(v) other matters such as net shyness.

Each species will be reviewed in relation to its plumage, age, weight and other morphological aspects, territory, density, breeding and so on.

The methods used in subsequent analyses of the figures are all simple statistical techniques, such as determination of standard deviation, significance using the Chi-squared method, simple factorial analysis and so on. Details of all these are to be found in a most readable book by Moroney (1951). There is one exception and that is the test for randomness in trapping developed by Young (1961).

Acknowledgements

Unfortunately it is not possible to acknowledge by name all the many helpers who have contributed to the success of this group project. They are too numerous and include banders, regular helpers and visitors. But mention must be made of Barry Baker who over the years has been a tower of strength. He joined the project in 1964 and has been a regular helper ever since; other than the Wilson family, his has been the longest term assistance of the whole group.

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