

THE SUNBIRD

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ANNUAL BIRD COUNT, 1973

QUEENSLAND ORNITHOLOGICAL SOCIETY

The third Annual Bird Count of the Queensland Ornithological Society was held on 18 October, 1973. Weather throughout the area surveyed was mostly fine, warm, and humid, with some thunderstorms in the late afternoon.

The total survey area was contained within a circle of 80km radius centred near Brisbane, identical to that of previous years. This area was divided into ten smaller areas (Fig.1), with a view to retaining this subdivision and travelling similar routes in future years. Data were obtained from only eight of these ten areas during the 1973 Count; no data being obtained for Areas 5 and 6. In future years, as more individuals participate in the Count, surveys of these two areas will provide a better representation of rainforest species from Lamington National Park and Mount Glorious respectively.

A total of 226 species was recorded for the Count. Eighteen species were recorded which had not been noted during the 1972 Bird Count, the most noteworthy of which were Red-winged Parrot and Diamond Firetail. Thirty-three of the species noted in the 1972 Bird Count were not recorded in the 1973 Count; most of these were uncommon or elusive species such as Little Bittern, Marsh-Crake, Oriental Cuckoo, Spotted Quail-thrush, and White-eared Flycatcher, the only surprising omission being Gull-billed Tern. Names of species follow CSIRO (1969), An Index of Australian Bird Names, Divn of Wildlife Res. Tech. Paper No.20.

The teams which participated in the Count are detailed below:

Area 1: C. Harris, G. Leach, J. & H. Noyce, D. Watson
Total species recorded: 107
Species recorded only in Area 1: Brown Hawk, Brolga,
Common Sandpiper, Wandering Tattler, Black-tailed
Godwit, White-cheeked Moneveater.

- Area 2: A. Cameron, M. Hawken, N. Hopkins, E. McCulloch
Total species recorded: 81
- Area 3: H. Belso, K. Bettwieser, A. Greensmith, B. & J. Morgan,
Total species recorded: 115
Species recorded only in Area 3: Pied Oystercatcher,
Large Sand-dotterel, Great Knot.
- Area 4: H. Briggs, P. Dawson, A. Eacott, I. & S. Reynolds
Total species recorded: 147
Species recorded only in Area 4 : White-necked Heron,
Wompoo Pigeon, Topknot Pigeon, Red-winged Parrot,
Barn Owl, Noisy Pitta, Southern Chowchilla, Brown
Warbler, Spectacled Flycatcher, Rufous Shrike-thrush.
- Area 7: D. Perkins, G. Roberts
Total species recorded: 112
Species recorded only in Area 7: Nankeen Night Heron, Grass
Whistling Duck, Glossy Black Cockatoo, Shrike-tit.
- Area 8: C. Corben, G. Ingram, D. Miller, A. Smyth
Total species recorded: 121
Species recorded only in Area 8: Great Crested Grebe,
Southern Stone Curlew, Whiskered Tern, Blue-winged
Kookaburra, Ground Cuckoo-shrike, Brown Songlark, Satin
Flycatcher, Little Wood-swallow.
- Area 9: C. & A. Lloyd, T. & M. Thornton
Total species recorded: 133
Species recorded only in Area 9: Australian Pelican, Green-
winged Pigeon, Musk Lorikeet, Eastern Rosella, Red-rumped
Parrot, Little Cuckoo-shrike, Varied Triller, Australian
Ground-thrush, Yellow-throated Scrub-wren, White-eared
Honeyeater, Fuscous Honeyeater, Eastern Spinebill, Bell
Miner, Red Wattle-bird, Diamond Firetail.
- Area 10: W. Jolly, N. McKilligan, E. Potts, J. & R. Walter
Total species recorded: 88
Species recorded only in Area 10: Banded Plover, Indian
Myna.

The most interesting feature of the Count was the comparative rarity of many water birds, as illustrated by the following examples with numbers of individuals observed in the 1973 Bird Count compared with numbers observed in the 1972 Count (in brackets): Australian Pelican 6(115); White-necked Heron 1(31); Straw-necked Ibis 4(306); Glossy Ibis 0(60); Yellow-billed Spoonbill 0(31); White-eyed Duck 10(111); Coot 9(537); Red-kneed Dotterel 0(34); Whiskered Tern 2(69).

There were many other species of water birds for which lesser reductions in numbers were noted; in comparison, the numbers of individuals for most other species tended to show few variations which could be regarded as significant. In spite of the imprecision of the data available there can be little doubt that these reductions are a reflection of the rainfall occurring during 1972 and 1973.

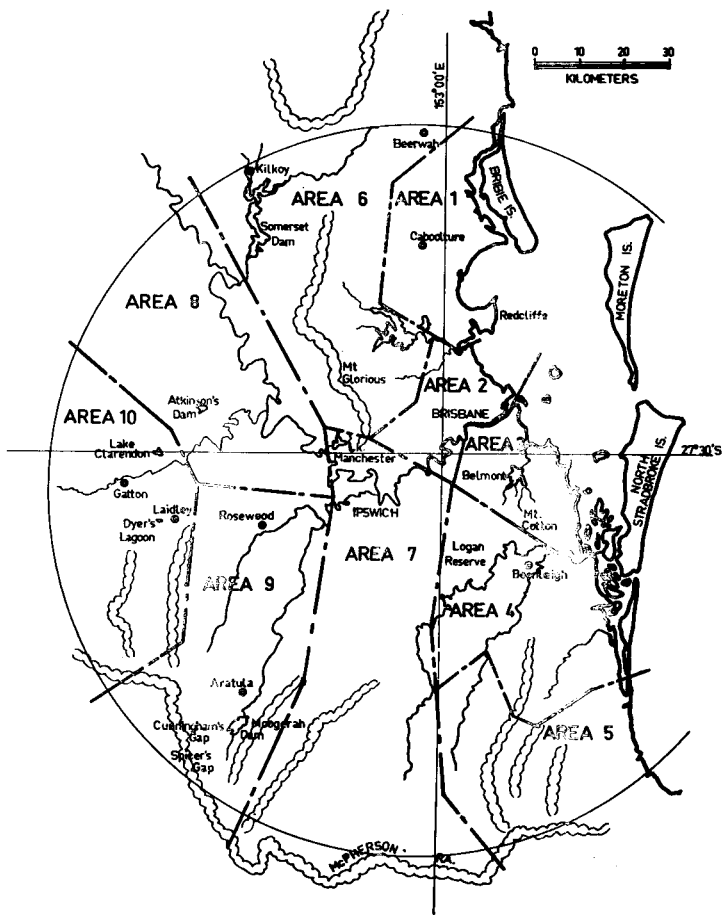


Figure 1. Total survey area and areas covered by individual teams during 1972 Bird Count

During October 1972 there had been a prolonged drought over south-west Queensland, western New South Wales and northern Victoria. The rainfall for the previous twelve months had been from 18 to 75 percent below the annual average over the whole of western Queensland. The previous twelve months rainfall in south-east Queensland and north-east New South Wales had however, been 20 to 40 percent above the annual average, and good spring rains had fallen in south-east Queensland. It is probable that this situation had given rise to concentrations of water birds in the Brisbane area at the time of the 1972 Bird Count. In February, 1973 heavy to flood rains fell over most of Queensland with many record falls in western areas, as well as in New South Wales and Victoria. With additional rains in winter, and with rainfall in excess of 250mm over most of Queensland in September, water supplies were excellent over most of western Queensland by October 1973. This could be expected to lead to dispersion of water birds, resulting in the low numbers recorded in the 1973 Count.

The following list gives details of sightings made in each of the eight areas surveyed during the 1973 Bird Count. Asterisks denote nesting activity.

LIST OF SPECIES

	Area 1	Area 2	Area 3	Area 4	Area 7	Area 8	Area 9	Area 10	Total
Australian Pelican	0	0	0	0	0	0	6	0	6
Darter	0	1	0	0	4	4	14	1	24
Black Cormorant	0	0	28	0	0	9	4	0	41
*Little Black Cormorant	0	3	31	21	1	15	200	35	306
Pied Cormorant	11	0	17	0	0	0	5	1	34
Little Pied Cormorant	1	1	36	8	3	18	1	11	79
Little Grebe	6	18	12	25	1	30	4	89	185
Great Crested Grebe	0	0	0	0	0	3	0	0	3
White-necked Heron	0	0	0	1	0	0	0	0	1
*White-faced Heron	1	5	10	25	6	6	7	2	62
Mangrove Heron	2	0	1	1	0	0	0	0	4
Cattle Egret	1	16	12	113	0	0	5	0	147
White Egret	6	3	1	2	0	2	1	23	38
Little Egret	2	0	0	0	0	1	1	0	4
Plumed Egret	0	13	3	4	2	2	0	0	24
Nankeen Night Heron	0	0	0	0	1	0	0	0	1

LIST OF SPECIES (CTD)	Area	Area	Area	Area	Area	Area	Area	Area	Total
	1	2	3	4	7	8	9	10	
Jabiru	0	3	0	0	2	0	0	0	5
White Ibis	5	5	2	6	0	6	0	1	25
Straw-necked Ibis	0	2	0	0	2	0	0	0	4
Royal Spoonbill	42	40	24	10	0	18	1	8	143
Grass Whistling Duck	0	0	0	0	5	0	0	0	5
*Black Swan	2	7	7	62	7	204	0	89	378
*Black Duck	24	51	10	183	15	66	28	154	531
Grey Teal	2	12	2	6	0	5	6	54	87
*Chestnut Teal	4	7	2	22	0	0	0	0	35
White-eyed Duck	0	4	0	0	0	0	1	5	10
*Wood Duck	0	0	0	2	5	23	42	13	85
*Black-shouldered Kite	2	0	1	1	0	4	5	2	15
Crested Hawk	0	0	1	0	0	1	0	0	2
Red-backed Sea Eagle	1	0	2	3	0	0	0	0	6
*Whistling Eagle	2	0	11	8	1	10	2	3	37
Collared Sparrowhawk	0	0	1	0	0	1	0	0	2
Wedge-tailed Eagle	0	0	0	0	0	0	1	3	4
White-breasted Sea Eagle	0	0	0	2	0	2	0	0	4
Osprey	0	3	0	1	0	0	0	0	4
Nankeen Kestrel	0	1	4	19	8	25	13	13	83
Brown Hawk	1	0	0	0	0	0	0	0	1
*Brush Turkey	0	0	0	1	0	0	2	1	4
Brown Quail	4	0	1	0	5	2	3	0	15
Painted Quail	0	0	2	0	2	0	0	0	4
Brolga	2	0	0	0	0	0	0	0	2
*Dusky Moorhen	0	11	25	16	17	11	2	25	107
*Swamphen	9	16	17	78	51	82	2	51	306
Coot	0	0	5	0	0	0	0	4	9
*Lotus Bird	0	3	7	30	3	6	0	13	62
Pied Oystercatcher	0	0	70	0	0	0	0	0	70
*Spur-winged Plover	15	13	5	38	20	13	8	12	124
Banded Plover	0	0	0	0	0	0	0	1	1
Red-capped Dotterel	1	90	6	11	0	0	0	0	108
Mongolian Sand-dotterel	0	21	35	0	0	0	0	0	56
Large Sand-dotterel	0	0	1	0	0	0	0	0	1
Black-fronted Dotterel	0	5	0	2	6	1	0	2	16
Eastern Golden Plover	2	19	26	0	0	0	0	0	47
Turnstone	2	5	30	0	0	0	0	0	37
Japanese Snipe	1	0	2	26	1	5	2	0	37
Whimbrel	8	7	90	13	0	0	0	0	118
Eastern Curlew	7	2	120	14	0	0	0	0	143
Greenshank	20	0	2	7	0	0	0	0	29

LIST OF SPECIES (CTD)	Area	Area	Area	Area	Area	Area	Area	Area	Total
	1	2	3	4	7	8	9	10	
Common Sandpiper	1	0	0	0	0	0	0	0	1
Grey-tailed Tattler	0	2	8	3	0	0	0	0	13
Wandering Tattler	2	0	0	0	0	0	0	0	2
Terek Sandpiper	3	2	150	12	0	0	0	0	167
Great Knot	0	0	36	0	0	0	0	0	36
Sharp-tailed Sandpiper	200	15	0	34	1	0	0	7	257
Red-necked Stint	100	200	67	0	0	0	0	0	367
Curlew Sandpiper	50	0	40	2	0	0	0	0	92
Black-tailed Godwit	50	0	0	0	0	0	0	0	50
Bar-tailed Godwit	207	48	100	0	0	0	0	0	355
White-headed Stilt	0	4	0	5	5	5	0	3	22
Southern Stone Curlew	0	0	0	0	0	3	0	0	3
Silver Gull	31	20	79	0	0	0	0	0	130
Whiskered Tern	0	0	0	0	0	2	0	0	2
Caspian Tern	1	1	4	0	0	0	0	0	6
Little Tern	5	0	210	0	0	0	0	0	215
Crested Tern	11	0	10	3	0	0	0	0	24
Wompoo Pigeon	0	0	0	4	0	0	0	0	4
Top-knot Pigeon	0	0	0	2	0	0	0	0	2
Domestic Pigeon	5	36	2	8	2	18	3	58	132
Brown Pigeon	0	0	0	10	2	0	0	2	14
Spotted Turtledove	4	34	6	4	1	0	4	0	53
Bar-shouldered Dove	2	1	1	8	6	5	5	4	32
Peaceful Dove	1	0	20	11	16	9	8	2	67
Green-winged Pigeon	0	0	0	0	0	0	1	0	1
Common Bronzewing	0	0	1	2	2	3	1	0	9
Crested Pigeon	1	1	9	23	11	10	14	8	77
Wonga Pigeon	0	0	0	1	8	0	0	0	9
Rainbow Lorikeet	8	2	2	64	17	22	25	2	142
Scaly-breasted Lorikeet	8	5	2	54	94	50	0	17	230
Musk Lorikeet	0	0	0	0	0	0	29	0	29
Little Lorikeet	0	0	0	2	36	34	45	0	117
Glossy Black Cockatoo	0	0	0	0	3	0	0	0	3
Sulphur-crested Cockatoo	0	0	0	0	0	25	37	0	62
Galah	2	4	0	4	0	13	28	2	53
Cockatiel	0	0	0	13	2	4	3	8	30
Red-winged Parrot	0	0	0	1	0	0	0	0	1
*King Parrot	0	0	0	2	0	0	5	0	7
Crimson Rosella	0	0	0	15	0	0	5	1	21
Eastern Rosella	0	0	0	0	0	0	9	0	9
Pale-headed Rosella	7	4	8	32	44	27	7	18	147
Red-rumped Parrot	0	0	0	0	0	0	3	0	3

LIST OF SPECIES (CTD)	Area	Area	Area	Area	Area	Area	Area	Area	Total
	1	2	3	4	7	8	9	10	
Pallid Cuckoo	0	1	1	1	0	0	1	0	4
Brush Cuckoo	2	1	8	3	55	7	0	0	76
Fan-tailed Cuckoo	1	0	0	0	13	2	5	1	22
Horsfield Bronze Cuckoo	1	0	1	1	0	0	0	0	3
Golden Bronze Cuckoo	1	0	1	3	1	0	5	2	13
Little Bronze Cuckoo	0	0	2	2	2	1	0	0	7
Koel	1	2	4	10	30	9	2	2	60
Channel-billed Cuckoo	0	0	0	0	11	2	3	0	16
*Pheasant Coucal	2	1	1	6	26	9	4	2	51
Boobook Owl	0	0	0	0	3	2	0	2	7
*Barn Owl	0	0	0	1	0	0	0	0	1
*Tawny Frogmouth	0	0	0	0	0	1	2	0	3
Owlet Nightjar	0	0	0	0	1	1	0	0	2
White-throated Nightjar	0	0	0	0	3	1	0	0	4
Spine-tailed Swift	4	0	30	2	0	0	0	0	36
Azure Kingfisher	0	0	0	1	1	2	0	0	4
Laughing Kookaburra	5	2	5	30	23	17	14	19	115
Blue-winged Kookaburra	0	0	0	0	0	3	0	0	3
*Forest Kingfisher	4	1	7	1	8	0	0	0	21
*Sacred Kingfisher	4	2	12	31	20	14	18	7	108
Mangrove Kingfisher	3	0	1	7	0	0	0	0	11
*Rainbow Bee-eater	12	4	1	27	46	28	15	0	133
*Dollar-bird	5	5	7	29	29	29	3	2	109
Noisy Pitta	0	0	0	2	0	0	0	0	2
Singing Bushlark	0	0	0	0	2	8	2	0	12
White-backed Swallow	0	0	0	1	2	0	0	5	8
*Welcome Swallow	26	95	30	67	44	14	23	14	313
*Tree Martin	1	22	1	35	24	2	25	0	110
*Fairy Martin	0	16	38	110	28	122	65	10	389
*Australian Pipit	5	2	5	6	2	8	6	5	39
Ground Cuckoo-shrike	0	0	0	0	0	4	0	0	4
*Black-faced Cuckoo-shrike	5	6	3	15	19	19	11	5	83
Little Cuckoo-shrike	0	0	0	0	0	0	1	0	1
Cicada-bird	2	0	6	10	33	5	8	0	64
White-winged Triller	0	0	0	0	0	1	2	0	3
Varied Triller	0	0	0	0	0	0	1	0	1
Australian Ground-thrush	0	0	0	0	0	0	3	0	3
Southern Chowchilla	0	0	0	4	0	0	0	0	4
*Grey-crowned Babbler	0	2	0	9	16	15	8	0	50
*Golden-headed Fantail-warbler	4	7	28	22	49	18	26	4	158
Little Grassbird	1	0	0	1	0	0	0	0	2
Tawny Grassbird	0	0	1	2	0	6	1	0	10

LIST OF SPECIES (CTD)	Area 1	Area 2	Area 3	Area 4	Area 7	Area 8	Area 9	Area 10	Total
Reed Warbler	4	1	12	0	2	0	0	0	19
Brown Songlark	0	0	0	0	0	1	0	0	1
Superb Blue Wren	0	0	0	17	2	3	7	12	41
*Variegated Wren	1	0	12	12	16	0	4	0	45
Red-backed Wren	11	0	1	8	18	11	3	0	52
White-throated Warbler	1	1	2	10	6	5	12	1	38
*Brown Warbler	0	0	0	6	0	0	0	0	6
Buff-breasted (Mangrove) Warbler	25	21	3	12	0	0	0	0	61
Weebill	0	0	0	8	8	7	0	0	23
Striated Thornbill	0	0	0	16	2	0	0	0	18
Little Thornbill	0	0	0	0	0	0	5	6	11
Brown Thornbill	2	0	0	13	9	0	14	3	41
*Buff-rumped Thornbill	0	0	0	7	6	12	0	0	25
Yellow-rumped Thornbill	6	0	0	27	0	3	16	3	55
White-browed Scrub-wren	3	0	2	16	6	1	3	1	32
*Yellow-throated Scrub-wren	0	0	0	0	0	0	1	0	1
Large-billed Scrub-wren	0	0	0	27	10	0	4	0	41
Speckled Warbler	0	0	0	2	0	3	6	0	11
*Jacky Winter	0	0	0	0	7	6	11	0	24
Southern (Northern) Yellow Robin	2	0	2	0	6	1	7	13	31
Pale Yellow Robin	0	0	0	8	0	0	4	0	12
Grey Fantail	7	0	1	5	0	0	14	10	37
Rufous Fantail	0	0	0	1	0	0	10	2	13
*Willie Wagtail	9	11	10	32	19	21	18	10	130
Leaden Flycatcher	2	1	3	4	25	3	0	0	38
Satin Flycatcher	0	0	0	0	1	0	0	0	1
*Restless Flycatcher	0	0	0	4	0	2	9	0	15
Black-faced Flycatcher	0	0	0	1	10	1	2	3	17
Spectacled Flycatcher	0	0	0	2	0	0	0	0	2
Golden Whistler	0	0	0	1	8	0	11	1	21
Rufous Whistler	6	9	12	26	69	13	10	0	145
Grey Shrike-thrush	4	5	2	11	12	5	12	6	57
Rufous Shrike-thrush	0	0	0	3	0	0	0	0	3
Shrike-tit	0	0	0	0	1	0	0	0	1
Eastern Whipbird	0	0	0	20	18	5	17	10	70
*White-headed Sitella	0	0	3	0	0	11	4	0	18
Brown Tree-creeper	0	0	0	0	2	1	0	0	3
White-throated Tree-creeper	0	0	1	5	7	3	10	2	28
Mistletoe-bird	3	0	0	5	11	6	1	0	26
Spotted Pardalote	0	1	0	11	0	0	30	0	42
*Black-headed Pardalote	2	0	5	14	31	15	7	2	76
*Grey-breasted Silveryeye	6	4	12	18	28	9	2	0	79

LIST OF SPECIES (CTD)	Area	Area	Area	Area	Area	Area	Area	Area	Total
	1	2	3	4	7	8	9	10	
Brown Honeyeater	10	0	2	2	22	12	18	0	66
Scarlet Honeyeater	0	0	1	0	9	0	4	0	14
Lewin Honeyeater	10	0	5	23	14	4	24	12	92
Mangrove Honeyeater	1	0	3	2	0	0	0	0	6
Fuscous Honeyeater	0	0	0	0	0	0	6	0	6
Yellow-faced Honeyeater	0	0	3	0	11	6	18	1	39
White-eared Honeyeater	0	0	0	0	0	0	10	0	10
White-naped Honeyeater	0	0	0	0	1	0	2	0	3
White-throated Honeyeater	0	0	6	15	52	24	23	0	120
*Blue-faced Honeyeater	0	0	0	14	0	1	6	0	21
Little Friar-bird	1	0	0	11	32	4	3	2	53
*Noisy Friar-bird	11	0	5	15	2	12	9	3	57
White-cheeked Honeyeater	2	0	0	0	0	0	0	0	2
*Striped Honeyeater	0	0	0	5	0	0	6	3	14
Eastern Spinebill	0	0	0	0	0	0	8	0	8
Bell Miner	0	0	0	0	0	0	50	0	50
Noisy Miner	13	6	8	24	139	45	86	21	342
Little Wattle-bird	1	0	0	2	0	0	0	0	3
Red Wattle-bird	0	0	0	0	0	0	11	0	11
Diamond Firetail	0	0	0	0	0	0	4	0	4
Red-browed Finch	23	0	0	1	14	8	19	1	66
Banded Finch	0	0	6	10	4	14	76	0	110
Zebra Finch	0	0	0	0	0	18	50	3	71
*Chestnut-breasted Finch	2	0	4	4	0	14	4	0	28
*House Sparrow	12	94	105	47	18	15	30	81	402
*Starling	8	43	12	73	145	171	40	97	589
Indian Myna	0	0	0	0	0	0	0	6	6
Olive-backed Oriole	1	0	5	7	34	3	3	1	54
*Southern Figbird	4	1	4	8	24	34	5	0	80
Spangled Drongo	0	0	0	1	0	0	1	0	2
*Magpie Lark	5	24	20	62	46	28	29	46	260
White-breasted Wood-swallow	5	6	0	3	0	0	0	0	14
*Dusky Wood-swallow	0	0	0	0	0	1	8	0	9
*Little Wood-swallow	0	0	0	0	0	2	0	0	2
*Pied Currawong	0	0	0	16	2	3	10	7	38
*Pied Butcher-bird	3	8	7	23	16	16	11	3	87
Grey Butcher-bird	2	3	1	2	12	5	6	2	33
*Black-backed Magpie	10	25	6	118	50	48	16	17	290
Catbird	0	0	0	5	0	0	4	2	11
Satin Bower-bird	0	0	0	9	0	0	7	0	16
Paradise Rifle-bird	0	0	0	2	0	0	2	0	4
*Australian Crow	7	10	20	54	51	71	39	30	282

SOME OBSERVATIONS OF THE GREAT BOWER-BIRD

NANCY HOPKINS

SUMMARY

Comments are made on the bowers, display and mimicry of the Great Bower-bird. Bowers are rebuilt annually, but they may be re-sited, especially after interference. The choice of ornaments seems to be governed chiefly by colour with a strong preference for gleaming white or off-white objects. Flowers are seldom used. Display similar to that occurring at a bower in the presence of a female, takes place in winter away from any bower. At this time, presumably before pair formation, several birds are involved. Two forms of mimicry have been observed; a sustained soliloquy by a solitary male, and a provocative display sometimes used for distraction purposes.

While living in Townsville (19°15'S, 146°48'E), I watched the Great Bower-bird *Chlamydera nuchalis* at many of its bowers, particularly those in my own garden.

This bird is confined to northern Australia. It is slightly larger and paler than the better known Spotted Bower-bird *C. maculata*. The lilac nuchal crest is raised only when the bird is excited, usually during courtship and then only briefly. When folded it is normally covered by the grey-brown feathers, but is sometimes discernible as a thin line.

THE BOWER

The construction of the bower has been described by the late Professor A.J. Marshall (1954) and other writers. Sedgwick (1946) mentions roofed-over bowers in the Northern Territory. These also occurred at Ebagoolah (14°19'S, 143°16'E), in the Cape York Peninsula, where I spent my childhood, but not near Townsville, though one described by Warham (1962) seems to be an attempt in this direction. Most bowers of this species are sturdily built and can be transported intact. Mrs. R. Smith (pers. comm.), formerly of Mataranka (14°55'S, 133°04'E), in the Northern Territory, had one carried from the bush into her garden, where the bird continued to use it. She described another comparatively frail bower in this garden, which was

constructed from the central stems of leaves of the Poinciana *Delonix regia*.

Normally a fresh playground is built every year after the wet season, but during the year it may be abandoned or demolished, and its treasures moved to a new bower built close at hand. One bird built six bowers in less than two years. One had been too much exposed by photographers, another by a grass fire which destroyed nearby growth. The explanation was usually less obvious. The bowers were usually neglected in late summer, but in most cases a few green fruits indicated occasional visits, so it seems that the bower is not entirely deserted until a new one is commenced.

My main area of observation was swamp-bound and inaccessible early in the year when building began. I found bowers well established, from May onward. Elsewhere, an old bower in use in March was replaced in April. Activity at the playgrounds reaches its peak in October. Most bowers are well concealed in thickets or under drooping trees or bushes, such as the chinee apple *Zizyphus mauritiana* around Townsville, but there are exceptions. In the Townsville Sports Ground, one bird transferred from a huge clump of *Bougainvillea* which had become too dense to the token shelter of a straggling *Allamanda* at a corner of the grandstand, and was in use well into the football season. I found another at Airlie Beach near Proserpine (20°55'S, 148°34'E), among scattered mangroves growing on the actual beach. It was under a tiny tree which gave little shade, but was screened from view with surprising effect by a few bare branches of a dead fallen tree. It stood on a natural bed of small shells, but contained few shells as ornaments.

Birds have a strong preference for white and off-white objects to decorate the bower, including silver, green and lilac objects in that order of preference. There appear to be no preferences for particular shapes and textures, in collections which range from heavy pebbles to limp rags. Gleaming objects predominate in the central mass, but dull near-white objects find much favour, for instance, scraps of greyish concrete and dingy wilted elastic. The silvery young leaves of *Melaleuca leucodendron* are popular. Mrs. R. Smith (pers.comm.) saw only white and green ornaments in bowers in the Northern Territory.

Small green fruits, including tiny lemons are much used, but yellowing fruits are discarded. Marshall (1954) states that green manufactured articles are not used, but pale green glass often appears and is always retrieved when a new bower is built. Also I have two records of green china fragments. Previously (1953) I described as unusual the presence of red ornaments at a certain playground. This was the first of many playgrounds, of different birds, found on the Townsville Town Common and adjacent areas, all of which had red objects usually, but not

invariably, outside the bower. In addition to glass, plastic and cellophane I have noted scraps of red wool and cloth, but oddly enough have never seen similar items in green. I had thought the red phase a local development, having heard of no other instance except that mentioned by Warham (1962), which referred to playgrounds in my area. Marshall (1954) referred to the removal by the bird of red articles placed near a bower. However, the Airlie Beach bower had red playthings including a bright red plastic tube-cap, with which the bird toyed repeatedly. The red articles in these playgrounds were artificial. The bowers of my pre-plastic childhood held little artificial litter, but neither did they contain red berries, which were sometimes available. These bush playgrounds, unmarred by rubbish, were very attractive, with masses of snowy snail shells, small bleached bones, pieces of quartz from round the mines and some pieces of metal, glass and china and small fruits.

In the Townsville bowers, most of the solid objects were massed at the ends of the bower, with a smaller quantity within the walls. Generally, articles of the same kind and colour were grouped together, this zoning being much more pronounced in some cases than in others. The lighter litter, such as paper, cloth, and cellophane was scattered untidily at the sides, but not discarded or ignored. At all of these playgrounds horse dung was scattered among the outside litter. I had concluded that the rounded shape must be the attraction, but at the playground in the Sports Ground, where no horses grazed, I found rough broken pieces of hard cow dung, obviously filched from the gardener's heap. Sedgwick (1946) mentioned kangaroo dung in Northern Territory bowers.

Flowers were not often used. Occasionally a magenta *Bougainvillea* appeared, even though there were often masses nearby. An orchid stealing incident which I reported (1947) seems to have been a rare occurrence, but I am told birds frequently tear off white orchid roots. In another bower, the flowers were creamy globular inflorescences, possibly *Leichhardtia* flowers, superficially not unlike small fruits. Perhaps the Dutchman's Pipe *Aristolochia* flowers used elsewhere were in the same category. While other nearby flowers were ignored, these appeared regularly, brought from the vine while the oval pipe-bowl was an unfaded pale green. I suspect that this was the attraction, rather than the dark corolla.

On a few occasions I saw a bower-bird apparently eating a large flower, and a neighbour reported this also. Usually it was a purplish *Bauhinia*, once a red *Hibiscus*. At no time did I actually see it swallowed but it was chewed to a mass within the beak. So elusive were the bird's movements that I could not see whether the chewed-up pulp was carried away, but I have wondered whether it was used for painting the bower.

Only once have I seen painting in progress. It was an early morning in October, when the birds become so engrossed in their bowers that watchers may be ignored. The bird arrived with something inside his beak and having entered the bower began moving his open beak up and down the twigs. His "paint brush" was not visible at this stage, nor was there any obvious result from his effort, but on a later inspection the lower part of the inner walls were stained a deeper shade than the upper portion. This was also noticed in other bowers.

DISPLAY

I did not observe very much display at the bower, more often than not finding the male alone. He would be very busy repairing the walls and re-arranging ornaments, often calling with a harsh scolding note. When a female was near he would strut or even rush through the bower, often shaking ornaments vigorously or throwing them about. The same kind of behaviour sometimes occurred during winter in my own garden. I have noted courtship away from the bower several times in January. This involved a pair of birds only.

From May to July there were interactions between several birds, sometimes up to seven individuals. A friend described a male bird of a group capering madly round and round a circular garden bed. In Mataranka when the Mulberries *Morus* sp. were ripe the birds played regularly round and round the mulberry tree, tossing fallen leaves and mulberries about. At our place they would be in and out of a straggling hedge of *Acalypha* and *Hibiscus*, with spectators on the fence or footpath. The performing male would strut with open beak, stiff-arched neck, slightly raised tail and drooping wings, picking up objects displaying them to a female, or throwing them about. An extract from my notes reads: "July 1, 7 am., 5 or more bower-birds, female on gate, male strutting on footpath, picked up and seemed to offer crumpled ball of purple paper from chocolate block. Various calls from background, occasional queer scream. Another male flew down, scolded harshly, first male flew away. Second considered purple paper, came inside, picked up and seemed to offer first a yellow, then a dead brown leaf ... foraged in hedge near female. Others flew here and there, called from fences. Female sat quietly, when interest waned preened herself". At other times there were offerings of fern berries and display with beans from a *Poinciana pulcherrima*, and twice a male selected twigs (withered central leaf stems) from this tree and placed them carefully on the ground. One day after some leaf-offerings and antics through the hedges, two birds, one thought to be a female, played in turn with round bits of horse dung which had been mulched around the shrubs. These performances always dissolved in anti-climax, the groups gradually dispersing.

VOICE AND MIMICRY

The Great Bower-bird is an excellent mimic and has deceived me on many occasions. There are few data on times and situations for mimicry according to Marshall (1954). I have heard brief whisper mimicry near a bower during early morning visits, and sporadic and more aggressive outbursts from various sites at various hours. A sustained session seemingly performed for the bird's own entertainment, largely in whisper song, usually took place around noon or in early afternoon under a leafy canopy. Such a performance usually included the bird's own display calls, described in my notes as a "grinding noise, deep not loud", "soft shirring notes" and "metallic clicking". The last, which is very common, is made with hardly any movement of throat and beak. In our garden a dense mass of *Bougainvillea* which had grown over a fig tree formed a chosen retreat, preferred to mango trees *Mangifera indica* near the house. Snatches of mimicry from the mango trees may often have been directed at the cats. Single catcalls from these trees were so frequent that I thought this might be a natural call, but I did not hear it in the bush. Cats and hawks were favourite subjects. It seems to me that the birds tend to mimic their natural enemies.

The bower-birds sometimes used mimicry for distraction purposes. Once on the Townsville Town Common I came upon a bower-bird indulging in a session of mimicry and display calls in a small *Melaleuca* tree beside a wayside pool; a most un-typical site. I was intent on other birds but as I loitered by the pool the performance was intensified, forcing my attention. With eyes fixed on me the bird produced the most varied recital of mimicry I had ever heard. It was becoming late, but whenever, during a lull, I turned to go, it was the signal for a fresh and frantic outburst. My movement was always towards the pool, and there I eventually found a fledgeling bower-bird marooned in a *Parkinsonia* bush growing in the water.

Another day, calls like those of a Wedge-tailed Eagle *Aquila audax* came surprisingly from the eucalypt trees opposite my home. Wedge-tails were rare in this area, but recently a pair had been passing over frequently. This time the caller proved to be a bower-bird, moving from tree to tree as it called, followed by a pair of excited Black-backed Magpies *Gymnorhina tibicen*. I suspected the bower-birds to be nesting in a locality not far distant but too awkward to investigate. Now one of them appeared to be drawing the magpies away in the opposite direction, using a variety of hawk calls.

There appeared to be an aggressive element also in performances which took place occasionally at our bird bath. Approaching through a mulberry tree, perched on the edge of the bath, or even while splashing in it, the bird would utter scolding and

clicking sounds, cat-calls and that of the Whistling Eagle *Haliastur sphenurus*. The nuchal crest was sometimes visible at these times. No females were seen near, but there were usually other birds around, often interested in the bath.

The concerts of the bower-bird are always topical incorporating sounds recently heard. Kite calls were made during the lengthy invasion of thousands of Fork-tailed Kites *Milvus migrans* in the early fifties but faded out after the kites disappeared. These kites are common winter visitors, but do not call much then. When our cat had kittens we would hear her soft maternal mewings, and when the neighbourhood's tomcats had been rampaging into the daylight hours, every snarl and wail would be reproduced later in the *Bougainvillea*. It was immediately after the Wedge-tailed Eagle had been about that its call was mimicked.

Besides the much-mocked cats and hawks, I have heard undoubted imitations of Australian Crow *Corvus orru*, Olive-backed Oriole *Oriolus sagittatus*, Yellow Honeyeater *Meliphaga flava*, White-gaped Honeyeater *M. unicolor*, and Blue-faced Honeyeater *Entomyia cyanotis*, Rainbow Lorikeet *Trichoglossus haematodus*, Sulphur-crested Cockatoo *Cacatua galerita*, and quieter notes of the Blue-winged Kookaburra *Dacelo leachi*. More dubious efforts included dogs and fowls, but I have not detected mimicry of human voices or mechanical sounds although this is reported by Chisholm (1965).

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GREY SWIFTLETS IN THE TULLY RIVER GORGE AND CHILLAGOE CAVES

L. PECOTICH

INTRODUCTION

Grey swiftlets *Collocalia francica* are common in a number of areas on the mainland of North Queensland (Seton, 1965; Bravery, 1970; Gill, 1970). The first breeding colony known in Australia appears to be that on Dunk Island. This colony was apparently discovered by a Mr. Broadbent in 1908 (Chisholm, 1936). Nesting also occurs on Bedarra Island (Chisholm, 1966(a); Busst, 1956) but the first mainland colony was evidently found at Finch Hatton near Eungella in 1953 (Wheeler, 1959; see also Chisholm, 1966(b) and Robertson, 1962). Since then colonies have been reported from Cairns (Cassels, 1961), Tully River Gorge (Pecotich and Collins, 1966; Griffin, 1969) and Chillagoe Caves (Anon., 1969). These localities are shown in Figure 1.

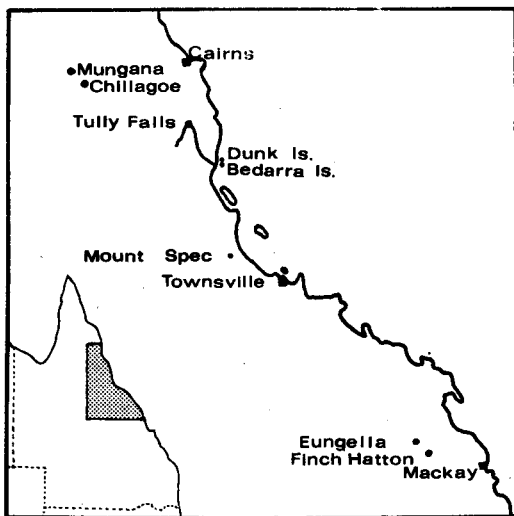


Figure 1. Map showing the location of Grey Swiftlet colonies in north-eastern Queensland.

I have observed these birds on several occasions in Tully River Gorge, Mt. Spec, Cairns and Chillagoe Caves. The present note arises from observations made of the colonies in Tully River Gorge and Chillagoe Caves during the various breeding seasons.

TULLY RIVER GORGE SWIFTLETS

Breeding colonies of Grey Swiftlets in the Tully River Gorge, are located about 43 km from the east coast. Three colonies were observed, all being located between the Kareeya Power Station and the Tully Falls (Fig. 2). These colonies were mentioned by Griffin in 1969. Binns (1954) made a general remark about swiftlets at Tully Falls, and Pecotich and Collins (1966) described the First Cave colony.

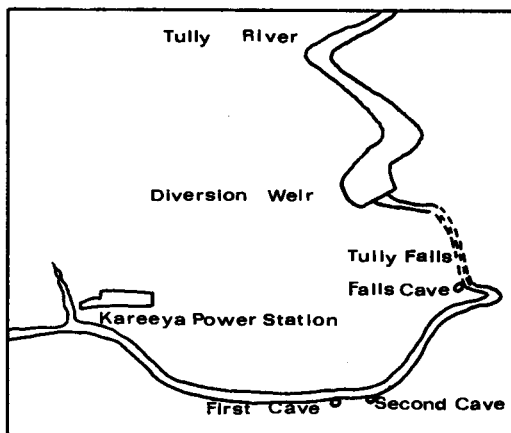


Figure 2. Map of the Tully River Gorge.

The caves in which these colonies are nesting are well sheltered depositions of rhyolitic boulders found at heights of two to twelve metres from the granitic river bed which is about 425 metres above sea level. Fewer than fifty metres from the caves are pools of fresh, running water and tropical rainforest. The First and Second Caves are well hidden among boulders and

steep rugged interlocking spurs, and are therefore not visible from distances exceeding 40 metres. The third cave is near the base of the Tully Falls. This cave can be readily seen from several, now-abandoned, tourist lookouts. It is accessible to experienced rock climbers. The First Cave is about 12 metres long, the Second about 3 metres and the Falls Cave about 21 metres.

There are about 500, 35 and 500 nests in the First, Second and Falls caves respectively. The distances from cave entrances to the nearest nests range from one to eight metres. Swiftlets have probably been nesting in the area for a long time because guano on the floors of the First and Falls caves is more than 50 cm thick.

THE NESTS

The nests in the caves are invariably built on concave walls. In the First and the Second caves they are joined together in clusters of up to 40 nests while in the Falls Cave they are scattered along a rock surface and are rarely joined to other nests. It seems that availability of suitable rock surface might be a factor influencing the distribution of nests. In the Falls Cave there is much more of this than there is in the other two caves, so the nests there are built greater distances away from one another.

In the First and Second caves the nests are composed largely of glutaneous secretions, from the birds' salivary glands, mixed mostly with small quantities of feathers and tropical moss. The nests in the Falls cave vary in composition from those constructed as above to nests largely composed of grass material and small amounts of glutaneous substance and feathers.

Thirty nests from the First and the Falls caves were studied and the following mean interior measurements noted:

Length	: 56mm
Width	: 45.5mm
Depth to shallowest rim	: 3mm
Thickness of sides	: 2.5mm

Sketches of nests are shown in Figure 3. The mean weight of thirteen nests found on the cave floors was 12.9 grams. It is interesting to note that the two Finch Hatton Colony nests reported by Wheeler (1959) appear to have been slightly smaller but deeper than those found in Tully River Gorge. More than 95% of the nests observed from early October to mid January contained an egg or a chick each. The chicks varied in their stages of development from those recently hatched to birds almost ready to fly. Six eggs were studied. Their mean measurements were 21.5mm x 13.5mm, these being identical to those

of the egg from Finch Hatton Gorge noted by Wheeler in 1959. The mean weight of the eggs was 1.85 grams.

Ecto-parasitic flies identified (T. Woodward) as *Myophthiria* species, were found in nests and on birds in all three colonies. Many of these flies were found living in the nests during the winters of 1965, 1966 and 1967 while the birds were away, presumably north of the Equator. Many of the nests observed were used during several breeding seasons.

BEHAVIOUR IN AND AROUND THE CAVES

These swiftlets tend to exhibit a variety of behaviour patterns in and around their nesting caves. They usually leave their nests and cave walls with a clumsy jump then flutter and glide away. While in the air outside the cave they often fly and glide like other swifts. However, while catching insects their flight resembles that of a bat. Usually, only a few birds leave the cave then many of the remaining birds follow together. They leave their caves at dawn and remain outside, on the wing, for about half an hour. This is followed by a short (about ten minute) rest in the cave. The birds tend to repeat this practice throughout the day. At dusk they return to the cave where they sleep until dawn. After returning to the cave most birds tend to hover then settle on nests or on walls, some birds tend to fly directly to nests, while some temporarily cling to walls then settle on nests. They tend to follow a one-way flight pattern in so far as most of them tend to leave the cave together and return together. On no occasion was a bird observed leaving a cave while other birds were entering it.

The swiftlets' clicking sound noted by Griffin (1958), was heard inside all caves and apparently is used for echo-location purposes. A very loud warbling sound was occasionally made by a single bird in each cave. There were no obvious indications of the function of this sound.

CHILLAGOE CAVES SWIFTLETS

In 1967, two colonies of Grey Swiftlets were discovered by a member of the Chillagoe Caving Club (Anon., 1969). Since then more swiftlet colonies have been discovered. I observed one of the larger colonies which is found in a large limestone cave about 150 km from the east coast. For over 30 km around the cave is a relatively dry, open forest environment. The cave is close to the "Royal Arch", one of few significant landmarks in that part of Chillagoe. It is so dark inside the cave that, without artificial light, no member of the author's party could see anything at all other than a very slight "sign of light" about 30 m away.

In 1972 and 1973 there were in the cave 122 and 118 nests respectively. These were more than 40 m from the nearest cave entrance and more than 5 m from the cave floor. The presence of a thick layer of guano on the cave floor suggests that swiftlets have nested there for more than ten years. There are many clusters of dark marks on the grey cave walls indicating where nests had been. The only animals, other than swiftlets, found living in the cave were cockroaches.

The nests observed were built in a single, almost circular, cluster on a smooth concave wall. They were spaced 5 to 15 cm from one another. The nests observed in 1972 were not there in 1973. The only obvious remaining evidence of these was a number of dark marks on the cave wall and some brown dust and particles of grass on the floor below.

Each of the nests observed in 1973 was built several centimetres away from the marks where the nests observed in 1972 were built. They were cup-shaped and measured 55 mm long, 45 mm wide and 35 mm deep. Unlike most of the Tully River Gorge nests, these were very frail structures largely composed of Kangaroo grass *Themeda australis* and small quantities of glutinous matter and feathers. Their walls were about 2 mm thick (Fig. 3).

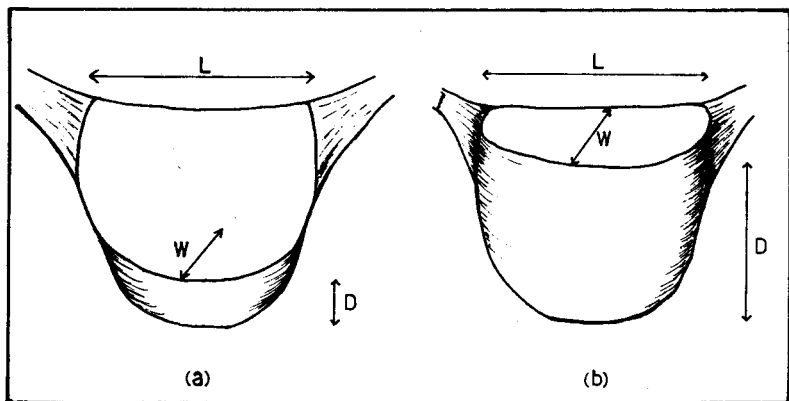


Figure 3. Sketch of nests from Falls Cave (a) and Chillagoe Cave (b) made from photographs to show length (L), width (W) and depth (D) measurements as given in the text.

The birds showed considerable regularity in some of their cave behaviour patterns. After entering the cave they tended to make a loud clicking sound then settle, in pairs, on the walls of their nests, usually hanging up vertically. If a nest was empty or an egg was in it, one of the birds would, after a while, settle on it. In all other respects, these birds tended to exhibit the same characteristics as the Tully River Gorge swiftlets.

DISCUSSION

The results of observations made in two separate areas show how colonies of the same species have modified some aspects of their nesting behaviour as a result of the differing quality of the physical resources in each area. The examples studied are found in areas of contrasting physiography, climate and vegetation. There are undoubtedly many more areas with nesting colonies of Grey Swiftlets. For example, several members of the Chillagoe Caving Club report (pers. comm.) that there are large colonies of these birds in the Chillagoe, Mungana area. A study of further nesting colonies may give a better picture of the way in which cave structure and surrounding vegetation influence nest construction and possibly swiftlet speciation.

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NOTES ON THE BREEDING BEHAVIOUR OF THE SOUTHERN CHOWCHILLA

G.R. BERULDSEN

INTRODUCTION

In the course of spending pre-dawn hours in the dense forest cladding the higher levels of the ranges to the west of Brisbane in pursuit of Owls, I frequently met Southern Chowchillas *Orthonyx temminckii* and took the opportunity to observe their early morning calling and territorial habits and displays. The period of observation was April to July 1973, the months immediately prior to nesting. A few comments are made from the previous year's observations.

CALLS

I found Chowchillas feeding at the very first light, but because of darkness I could not tell if they began earlier. As other species began calling they continued to feed, always male and female in very close proximity, often less than a metre or two apart. After first light but before sunrise one Chowchilla commenced to call and within seconds every male within hearing ceased feeding, stretched up and commenced calling. Their loud piercing calls almost drowned out the calls of all other species for perhaps ten minutes. Only the male ceased feeding; the female continuing to feed. At the end of this period of calling the male recommenced feeding but gradually ceased calling during the next five or ten minutes, except for soft contact calls between male and female when they were close to each other. If they had eggs or young in a nest, often just before sunrise the female would suddenly cease feeding and depart, hopping and flying directly to the nest to immediately enter to incubate or brood.

In the morning the Yellow Robin *Eopsaltria australis* and Pale Yellow Robin *Tregellasia capito* usually called first, followed by Lewin Honeyeater *Meliphaga lewinii*, Green Catbird *Ailuroedus crassirostris*, scrub-wrens *Sericornis* spp., warblers *Gerygone* spp. and others. Most species other than the Black Cockatoos *Calyptorhynchus* spp. are calling by the time the Chowchillas start to call. Southern Chowchillas call little during the day but do call frequently for a short period just before last light. They are usually the last species to call other than the Yellow Robin.

At approximately 1000 on 30 June 1973 I entered a rainforest gully and played a short segment of a tape recording of the early morning territorial calls of a Chowchilla in an effort

to ascertain if any of this species were in the vicinity. By coincidence I had apparently selected a spot on the boundary of two territories. Two pairs arrived simultaneously from opposite directions and immediately began calling. The opposing cock birds alternatively stood upright calling loudly or dashed about hopping up onto sticks and logs. Calling was continuous, very loud and excited. At times the cock birds flew at each other and came into physical contact. The females continued foraging but joined in the calling. Occasionally one of the females approached too close to the territory border and was immediately attacked by the opposing male, who in turn was attacked with physical contact by the mate of the female under attack. The displaying continued for five minutes or more before beginning to tail off. When it was almost over I turned on the tape recorder and caused a further frenzy of activity. A cock bird actually flew at and struck the tape recorder hanging over my shoulder. Finally both pairs withdrew into their respective territories. Neither pair were nesting although both cock birds were feeding their respective mates.

BREEDING SEASON HABITS

Although I found the species easy to approach, providing I was cautious and quiet, I had considerable difficulty locating specific pairs within their territories during the day, despite the fact that I knew each territory well. Generally it was a case of stumbling onto them for they seldom called during the day. At times I located them by hearing their scratching on the forest floor, but as often as not the scratching led me to Eastern Whipbirds *Psophodes olivaceus* or Brush Turkeys *Alectura lathamii*. At one nest I located in June 1972 the hen, apparently undisturbed by my presence nearby, fed two young. I saw only the hen visit the nest with food, however the cock bird frequently gave her food to take to the nest. While I watched, food was collected from an area some twelve metres distant and taken directly to the nest. The female visited the nest approximately every 30-45 seconds. The young then were probably nearly ready to leave the nest and in fact were out with their parents a week later. They were foraging for themselves, as well as being fed by the female. On that occasion I thought that the cock bird may have fed a youngster directly but I could not be sure. Earlier that morning I had located another nest containing two newly hatched young with the hen brooding. I did not see these young fed although I thought that the cock bird may have called the hen off the nest several times and given her food.

During the week commencing 18 June 1973 I located two nests under construction but by 25 June construction on both nests had ceased probably due to the dry conditions prevailing in the forest. Each nest was left about three quarters complete. At the beginning of July light rain showers commenced to fall

and torrential rains fell on the night of 5 July. Rain accompanied by winds of cyclonic force, continued through to the morning of 8 July. On the morning of 11 July I entered the forest to find heavy damage to the flora. The floor of the forest was carpeted with leaves, twigs, branches and limbs from tall trees and many large trees had toppled to the forest floor. Both nests observed being built before the storm contained eggs, one with two and the other with one. The latter nest held two eggs on 15 July and a hen *Chowchilla* was incubating. Despite the saturated surroundings and strongly running creeks, both nests were dry and undamaged. The moss roof probably shed the rain and the high base of sticks on which the nest is built kept out the ground moisture.

CONSERVATION

This bird is restricted to a small portion of the continent of Australia and within this area is confined to a very restricted habitat. In this habitat the species is relatively abundant but will only remain this way if sufficient areas are left undisturbed. If the rainforests of north-east New South Wales and south-east Queensland were lost as a habitat there is no doubt that this species would also be lost.

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FURTHER NOTES ON THE BLACK-BELLIED STORM-PETREL

GREG ROBERTS

Roberts (1973) erroneously states that Storr (1973) fails to include the Black-bellied Storm-Petrel *Fregatta tropica* in his List of Queensland Birds. Storr does in fact list the species as Gould Storm-Petrel *Oceanites tropicus*. His inclusion of the species is based upon two published accounts.

Godman (1910) states:

"In the British Museum are specimens of the Black-bellied Storm-Petrel from Port Essington and the coast of Queensland from our collection".

Unfortunately no further information is given and the exact localities and dates for these reported specimens are not known.

Alexander (1922) comments:

"There is a mounted specimen of this species in the Queensland Museum labelled South-East Queensland".

However, as Alexander points out, there were no particulars given and it is questionable as to whether the specimen was even collected in that area. It is possible that the label was intended only to indicate its probable distribution in Queensland. Mr Don Vernon of the Museum advises (pers.comm.) that the specimen is no longer existent and was probably lost decades ago.

I wish to thank Shane Parker for indicating Storr's inclusion of *F. tropica* and Glen Ingram for obtaining the references.

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SPIDER WEB GROUNDS CUCKOO SHRIKE

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On 11 February 1973 at about 0940 hours while inspecting cattle on the family farm at Reserve Creek near Murwillumbah, attention was drawn to some birds on the ground under a Blueberry Ash *Elaeocarpus obovatus*. On approaching them some Pied Butcher-birds *Craicticus nigrogularis* and two Black-faced Cuckoo-shrikes *Coracina novaehollandiae* flew off leaving one Cuckoo-shrike on the ground. My first thought that it was a young bird prematurely out of the nest proved incorrect as this bird clearly showed the black adult markings on the head. Nevertheless the bird could not fly. One wing was disabled and at first appeared to be broken. Closer inspection showed that it was tangled in stout spider web. All the flight quills of its right wing and the two outer tail feathers on that side, together with some of the softer under feathers were firmly held by the spider webbing. As it struggled on the ground to free itself some of the soft feathers were pulled out and these trailed from the wing as the bird blundered along. The bird was caught by hand and the sticky spider web removed. During this operation some sharp snaps were given to the hands untangling the web. When released the bird flew to the top of a tree where it sat panting for a while before starting to preen itself. When last seen twenty minutes later it was still preening busily.

It was considered unusual for a bird of this size to be made helpless by spider web. The web was judged to be that of the large orb web or Garden Spider *Araneus productus*. We have had two previous local experiences with birds in spider webs. The first was a male Red-backed Wren *Malurus melanocephalus* which was dead when found. The second was a Welcome Swallow *Hirundo neoxena* but in this case the bird was alive and able to be disentangled and released. In these two latter cases the spiders concerned were thought to be *Nephelia maculata*.

FURTHER OBSERVATIONS OF BULLERS SHEARWATER IN QUEENSLAND

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On 30 January 1974, we carried out a beach-walk and sea-watch from Point Lookout, North Stradbroke Island. Five days previously, tropical cyclone Wanda hit south-east Queensland, bringing strong winds and torrential rain lasting for three days. On this day however, the weather was fine, warm and calm, and the seas were rough in the morning but quietened down later in the day. The sea-watch was conducted from 1130 to 1500 from the main headland of Point Lookout, and throughout this period there was a clearly defined interface between the murky brown inshore waters, and the cleaner waters further out. Large numbers of Wedge-tailed Shearwaters *Puffinus pacificus*, Common, Crested and Little Terns *Sterna hirundo*, *S. bergii* and *S. sinensis* and Common Noddies *Anous stolidus* were feeding along the interface. Smaller numbers of Fluttering Shearwaters *Puffinus gavia*, Caspian and Lesser Crested Terns *Sterna caspia* and *S. bengalensis*, and White-capped Noddies *Anous minutus* were also present.

Shortly after 1130, three Bullers Shearwater *Puffinus bulleri* were located feeding with Wedge-tailed Shearwaters and Common Noddies. We watched them discontinuously over a period of two hours. The upperparts were blackish with the back and inner wings a contrasting greyish shade. In all lights this contrast was apparent, and the upperparts appeared much paler than in the Wedge-tailed Shearwater. Better views revealed the dark M-shaped pattern across the wings. Like most dark coloured sea-birds, the Bullers Shearwater appeared much browner under strong sunlight. The underparts were white with the primaries and secondaries distinctly darker. Diagnosis from similar species is discussed by Greensmith (1973).

In general size and shape, the Bullers Shearwater resembled Wedge-tailed Shearwater. However, the wings appeared slightly broader and less pointed, and were usually held with the leading edge straighter. Their flight was even more leisurely with less frequent wing beats, than *P. pacificus*. Occasionally, the neck seemed particularly elongated, a character indicated by Buller (reported in Serventy, *et al.*, 1971). When floating on the water *P. bulleri* appeared quite dark and was difficult to separate from *pacificus*, except for occasional flashes of white from the undersurface.

The only previously published record of Bullers Shearwater in Queensland was by Greensmith (1973), in which seven birds were observed on 24 March 1973, at the same locality as the present sighting.

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