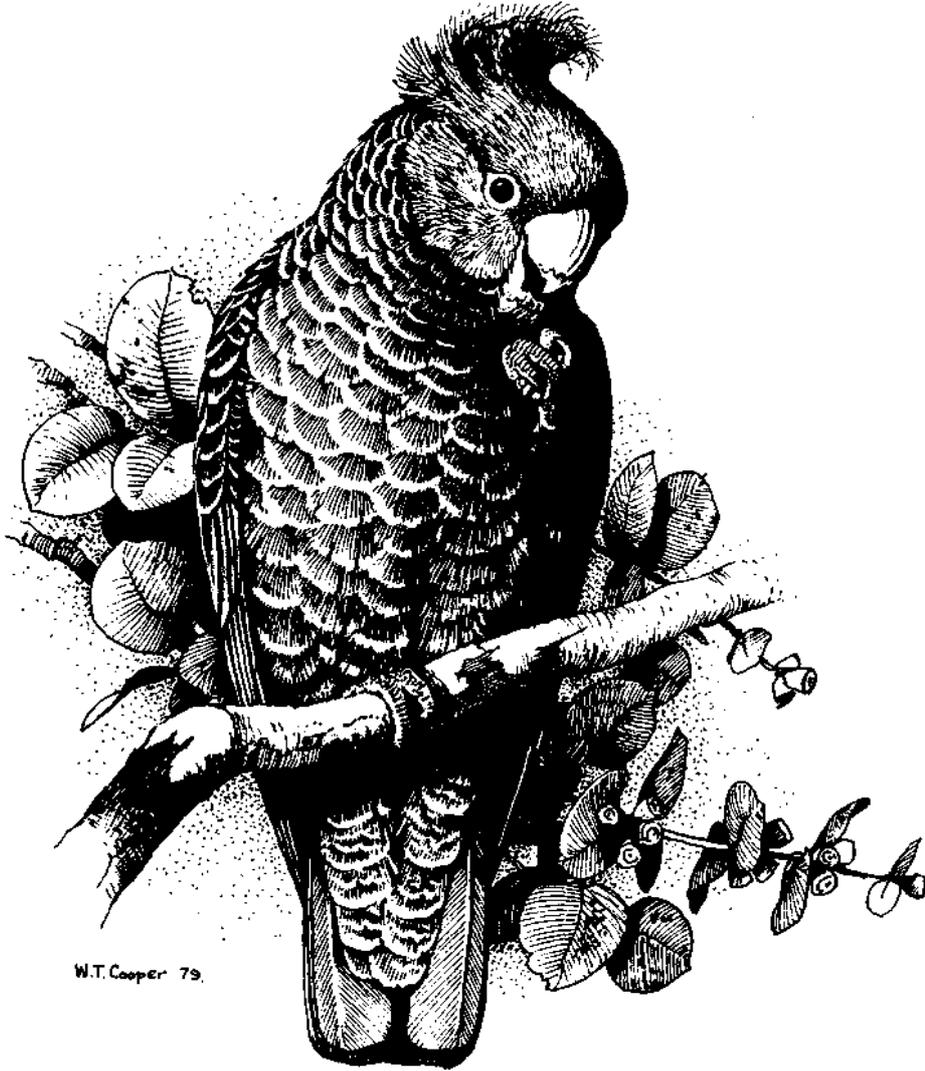


# CANBERRA BIRD NOTES

*Volume 12  
Number 3  
September 1987*

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Registered by Australia Post - publication No NBH 0255



W.T. Cooper 79.

## NOTES ON BILL-SNAPPING IN AUSTRALIAN BIRDS

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Received: 24 December 1986

### INTRODUCTION

The movement by which the two mandibles of a bird are rapidly and audibly brought together is called Bill-snapping. The best source of information on bill-snapping in Australian birds is the Reader's Digest Complete Book of Australian Birds (R.D.): instances of bill-snapping are recorded, *inter alia*, from courtship displays eg. Black-necked Stork (*Xenorhynchus asiaticus*) and some albatrosses (*Diomedea* spp.), in song eg. Little Wattlebird (*Anthochaera chrysoptera*) and during aggressive behaviour eg. Flame Robin (*Petroica phoenicea*). It was as a result of watching frequent bouts of aggression by a pair of Red Wattlebirds (*Anthochaera carunculata*) towards other species that I became interested in bill-snapping, which I heard during almost every chase by these birds. I had never encountered such obvious bill-snapping among European birds so I began watching for and documenting it.

This paper summarises my observations, which supplement those mentioned in R.D. (see Appendix).

OBSERVATIONS: see Table 1, pages 88 and 89.

### *Aggression*

Twelve (or thirteen; see footnote 3, Table 1) species (of six families) bill-snapped whilst pursuing the same or other species from breeding territories.

### *Insect hawking*

Nine species (of three families) were heard bill-snapping whilst hawking for aerial insects.

### *Song*

The Crimson Rosella bill-snapped whilst perched. It wasn't breeding nearby, no other bird was present, and no calls were heard so song may be an inappropriate term.

The Grey Shrike-thrush bill-snapped up to four times just prior to, and sometimes in the middle of, a soft sub-song with a Blackbird (*Turdus merula*) - like quality. The sub-song was just audible at a range of about 30m and lasted no more than about three seconds.

## Copulation

A female (and perhaps a male) Yellow-faced Honeyeater was heard bill-snapping immediately prior to, also during copulation. This was accompanied by the female's wing-flutter display (P. Veerman, pers. comm.).

## DISCUSSION

Whilst the hawking for aerial insects may often be accompanied by bill-snapping and be of universal occurrence in insectivorous birds (although there is no mention of this in eg. Manson-Bahr, 1985), its use in aggression may be of more limited occurrence. Morris (1970) describes what may be bill-snapping, as mandibulation, and noted it in Zebra Finches (*Poephila guttata*) and similar species. In the honeyeaters, a particularly pugnacious and primarily Australian family, bill-snapping is evidently not uncommon. R.D. mentions two species not recorded here, the Graceful Honeyeater (*Meliphaga gracilis*) and the Green-backed Honeyeater (*Glycichaera fallax*), as making "click" calls which may well be bill-snaps since in the latter species, at least, these are uttered when chasing other birds. The only other possible use of bill-snapping in aggression is recorded for the Little Treecreeper (*Climacteris minor*) which utters clicking noises during pair chasing', noises which could also presumably be bill-snaps, and for Flame Robins which 'sometimes ... click or snap their bills while chasing', a feature also observed in this study.

Surprisingly, perhaps, I have yet to hear the species most well-known for its aggression, the Magpie, bill-snapping at humans. Is bill-snapping only directed at other birds in aggression and as such is it a behavioural trait particularly prevalent in the Australian avifauna?

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## APPENDIX

Bill-snapping is either mentioned or inferred; (see Discussion) on the following pages of R.D. (First edition, second revise) (species names are omitted for brevity): 33-4, 37-9, 73, 86, 88, 90-1, 304, 306-8, 358, 453, 461, 475, 494, 541-2.

TABLE 1: OBSERVATIONS ON BILL-SNAPPING IN AUSTRALIAN BIRDS

FAMILY Species	Behaviour	Aggression towards (where applicable)	Date	Location
PSITTACIDAE				
Crimson Rosella <i>Platycercus elegans</i>	'Song'1	-	06/11/85	Lamington N.P. <sup>2</sup> , Qld.
ALCEDINIDAE				
Laughing Kookaburra <i>Dacelo novaeguineae</i>	Aggression	Pied Currawong <i>Strepera graculina</i>	01/11/85	Warrumbungle N.P., N.S.W.
MUSCICAPIDAE				
Flame Robin <i>Petroica phoenicea</i>	Aggression	Flame Robin	14/11/85	Mt. Ginini, A.C.T.
Jacky Winter <i>Microeca leucophaea</i>	Insect hawking		01/11/85	Warrumbungle N.P., N.S.W.
Grey Shrike thrush <i>Colluricincla harmonica</i>	Song		01/08/85	Lyneham, A.C.T.
Black faced Monarch <i>Monarcha melanopsis</i>	Aggression	Black faced Monarch	03/11/85	Gibraltar Range N.P., N.S.W.
Grey Fantail <i>Rhipidura fuliginosa</i>	Insect hawking		10/11/85	Wako N.P., N.S.W.
Willie Wagtail <i>Rhipidura leucophrys</i>	Insect hawking		28/10/85	Nr. Swan Reach, S.A.
MELIPHAGIDAE				
Red Wattlebird <i>Anthochaera carunculata</i>	Aggression	Eastern Rosella <i>Platycercus eximius</i>	24/11/85	Lyneham, A.C.T.
.	"	Red Wattlebird White-eared Honeyeater	20/04/86	
.	.	<i>Lichenostomus leucotis</i>	12/11/85	Kanangra-Boyd N.P., N.S.W.
.	.	House Sparrow <i>Passer domesticus</i>	27/11/85	Lyneham, A.C.T.
.	.	Pied Currawong	03/02/86	

Sept 1987

Little Wattlebird <i>Anthochaera chrysoptera</i>	Aggression	Cicadabird <i>Coracina tenuirostris</i>	08/11/85	Yuraygir N.P., N.S.W.
Noisy Friarbird <i>Philemon corniculatus</i>	Insect hawking	-	13/11/85	National Botanic Gardens. A.C.T.
Noisy Miner <i>Manorina melanocephala</i>	Aggression	Noisy Miner	26/10/85	Hattah-Kulkyne N.P., Vic.
Yellow-faced Honeyeater <sup>3</sup> <i>Lichenostomus chrysops</i>	Aggression	White-naped Honeyeater <sup>3</sup> <i>Melithreptus lunatus</i>	25/12/86	Hr. Brindabella, N.S.W.
"	Insect hawking	-	11/11/85	Wako N.P., N.S.W.
"	Copulation <sup>4</sup>	-	01/01/87	Uriarra Crossing, A.C.T.
Yellow-tufted Honeyeater <sup>3</sup> <i>Lichenostomus melanops</i>	Aggression	White-naped Honeyeater <sup>3</sup>	25/10/85	Grampians, Vic.
White-plumed Honeyeater <i>Lichenostomus penicillatus</i>	Aggression	White-plumed Honeyeater	01/11/85	Warrumbungle N.P., N.S.W.
Brown Honeyeater <i>Lichmera indistincta</i>	Aggression	Little Wattlebird	08/11/85	Yuraygir N.P., N.S.W.
New Holland Honeyeater <i>Phylidonyris novaehollandiae</i>	Insect hawking	-	28/10/85	Adelaide, S.A.
Black Honeyeater <i>Certhionyx niger</i>	Insect hawking	-	31/10/85	Nr. Cobar, N.S.W.
<b>GRALLINIDAE</b>				
Australian Magpie-lark <i>Grallina cyanoleuca</i>	Aggression	Magpie <i>Gymnorhina tibicen</i>	10/09/86	O'Connor, A.C.T.
<b>CRACTICIDAE</b>				
Australian Magpie <i>Gymnorhina tibicen</i>	Aggression	Kookaburra	14/12/86	Kosciusko N.P., N.S.W.
"	"	Sulphur-crested Cockatoo <i>Cacatua galerita</i>	04/06/86	Reid, A.C.T.
"	Insect hawking	-	11/03/81	A.N.U. . A.C.T.
Pied Currawong <i>Strepera graculina</i>	Insect hawking	-	27/04/86	O'Connor, A.C.T.

1 See Observations.

2 N.P., National Park.

3 Which bird was the pursuer and which bird bill-snapped is not known.

4 Observation by P. Veerman.

## FORM AND FUNCTION OF BIRD BONES

*Dr Jerry F. van Tets, CSIRO Division of Wildlife & Rangelands Research, PO Box 84, LYNEHAM ACT 2602*  
*Received: 13 August 1986*

### INTRODUCTION

This paper covers the material included in an address to COG, given 13 August 1986. For the location of the bones discussed below, see the diagram prepared by Frank Knight.

Bones united in a skeleton form an internal framework for body support at rest and during locomotion. The skeletons of birds, many dinosaurs and humans have evolved to facilitate bipedal (two-legged) locomotion, from the skeletons of tetrapod reptiles with quadripedal (four-legged) locomotion. The skeletons of birds have been further modified for flying and in some, subsequently for swimming and diving. These modifications have taken place during at least 150 million years of evolution.

The skeletons of birds reflect both their lifestyle and ancestry. Thus from their bones, by comparison with those of modern birds, it is possible to reconstruct fossil birds, not only in shape, but also in action.

### GENERAL

Bones are light in volant (flying) birds and are heavy in those that dive and some that are flightless. In some birds the lungs and airsac system is connected to air-filled cavities in various long bones. Volant birds grow to a finite size by the time they fledge, and thus establish an optimum wing surface to body weight ratio. Inside the long bones of females extra bone is stored as a reservoir for rapid marshalling of calcium for egg-shell production. This process is blocked by DDT and other polychlorinated biphenyls. Compared with mature bone, growing bone is porous. The bones of chicks are unsculptured with thick shafts and rounded ends. Breakages in fresh bone are oblique and in dry bones are transverse.

### SKULL

Bird skulls have four movable components: mandible, maxilla, cranium and quadrate. The jaws vary greatly in shape to serve a wide range of feeding habits. The maxilla (upper jaw) is connected by a flexible bony hinge (nasofrontal) to the cranium (braincase). The hinged maxilla is easy to observe in caged parrots. In some long-billed waders, there is flexure along the top of a slender maxilla instead of at the hinge. The quadrate via a thin rod (cheek bone) flexes the maxilla. The quadrate also articulates upwards with the cranium and downwards with the mandible (lower jaw).

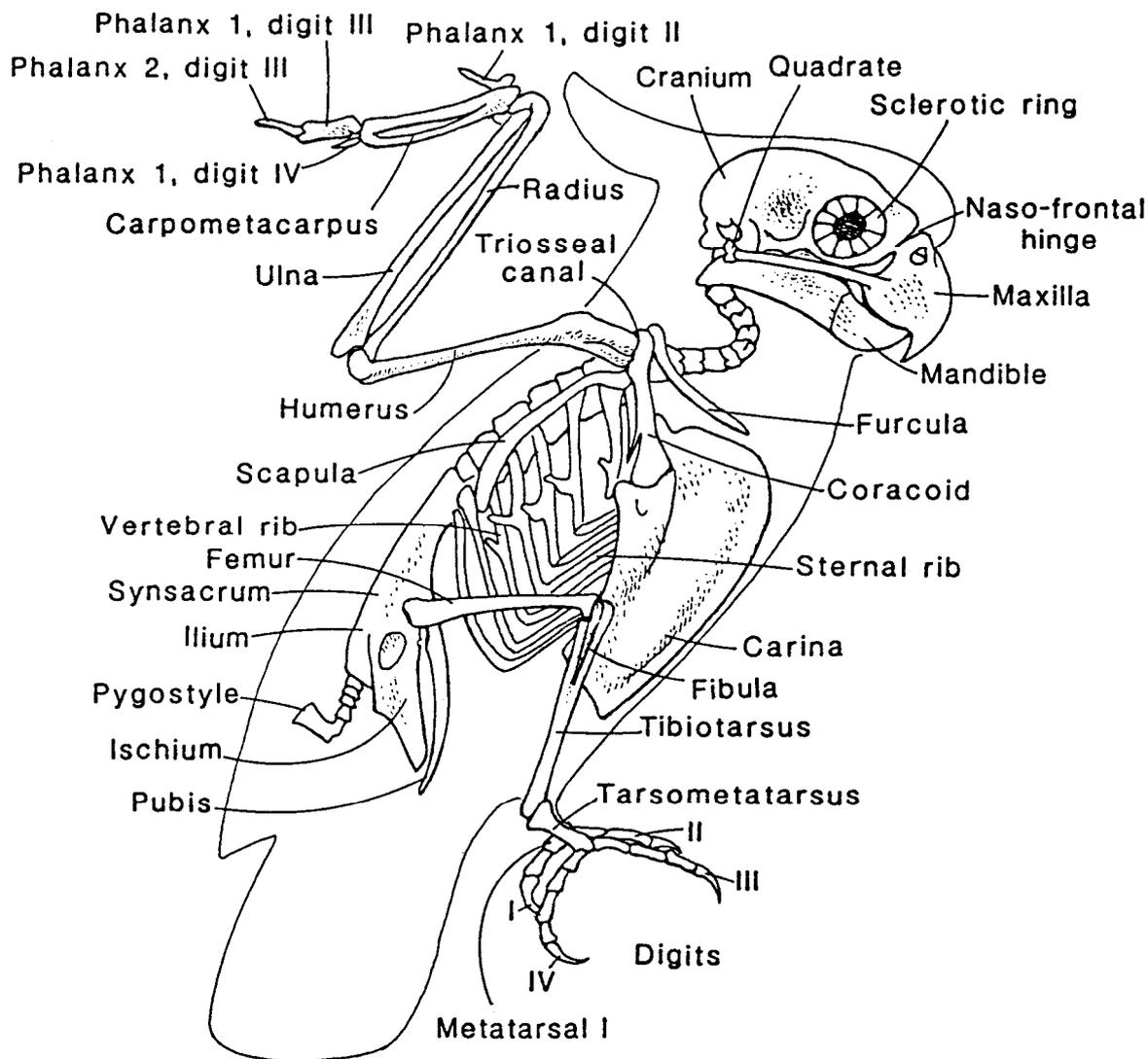


Figure 1: Skeletal Structure of Birds

Modern birds and most fossil birds lack teeth and their jaws, like those of turtles, are covered by horny sheaths. *Archeopteryx* and some Cretaceous birds had ivory teeth, and some Tertiary birds had bony teeth. The horny sheaths of some modern birds have tooth-like serrations and hooks. The surface texture of jaw bones and cranium indicates the extent to which they are covered by horny sheaths and wattles. Under horn the surface is rough to accommodate nerves and blood vessels. It is smooth under skin and is pitted under wattles.

The cranium protects the eyes and the brain. The eyes are further protected by a ring of thin bony plates (the sclerotic ring). The increasing extent of air cavities in the roof of the cranium, is used as an aid to aging birds. The cavities help lighten the skull, thermally insulate the brain, and are thought to aid hearing in the birds including echo-location. The cranium articulates with a single condyle to the vertebral column which has from eight to 23 neck vertebrae, thus permitting a greater degree of head-turning than in mammals, which have two condyles and only seven neck vertebrae.

#### CENTRAL BONES

The trachea (windpipe) is protected by bony rings with a larynx at the top and a syrinx at the bottom. The males of some kinds of ducks have a bulbous enlargement along the trachea called a bulla. Some other kinds of waterbirds have trachea that are very long with one or more loops, that in some are embedded in the breast bone (eg Broilgas).

The spinal nerve cord is protected by vertebrae that form bony rings around it. The vertebral column provides also a flexible support from which the body is suspended. The usual articulation between avian vertebrae is saddle-shaped. In diving birds one or more articulations are ball and socket joints to permit greater movement between pectoral (shoulder) and pelvic (hip) areas. Flat articulations occur between the vertebrae of chicks, and tail vertebrae of adults. Special hinges to facilitate rapid forward movement of the head to capture prey, occur in the neck vertebrae of darters and herons.

The number of neck vertebrae is variable in birds. Neck vertebrae have a pair of canals to protect blood vessels going to the head. In birds that fly with powerful wing beats two or more thoracic (chest) vertebrae are fused into a notarium, a fusion that occurred also in some pterosaurs. The tail vertebrae consist of several unfused vertebrae, and in birds other than *Archeopteryx*, of some fused terminal vertebrae that support the tail feathers and a pair of preen glands.

The pectoral girdle consists of a sternum, a furcula, a pair of coracoids and a pair of scapulae. The wing attachment is where the furcula, coracoid and scapula meet. Between these three bones is the foramen triosium, through which goes the tendon that raises the wing. The furcula (wishbone) is formed by the fusion of a pair of clavicles (collar bones). The furcula acts as a tuning fork-like spring to keep the shoulders apart. The clavicles are not fused in a few kinds of parrots.

A pair of stout coracoids connect the shoulders to the sternum. Mammals don't have coracoids. Coracoids are long and slender in landbirds, short and wide in waterbirds, and trough-like in penguins. The scapulae (shoulder blades) are thin and sword-shaped in most birds, and are broad and leaf-

shaped in penguins. They are positioned longitudinally in birds and were transverse in pterosaurs. In most flightless birds the scapulas are fused to the coracoids and the angle between them is obtuse, instead of sharp as in volant birds.

The sternum (breast bone) is suspended from the thoracic vertebrae by ribs. In most birds, including penguins, the sternum has a keel, which is missing in most flightless birds. The ribs consist of an upper vertebral and a lower sternal part. On the vertebral part of most ribs of almost all birds, except Magpie Geese, is an uncinat process that rests on the rib behind it.

The pelvic girdle consists of lumbar, plus in some, a few thoracic and sacral vertebrae fused into a synsacrum, which is fused to the ilium, ischium and pubis to form a pelvis. The pelvis of birds does not close ventrally as it does in mammals. The pelvis is narrow in rails and in diving birds, and is broad in other birds. It is arched and semicircular in shape in giant flightless birds. The kidneys are embedded in the structure of the synsacrum.

#### FORE-LIMB BONES

The wing bones have been modified from those of a foreleg, possibly via those of a grasping arm, to the framework of a feathered wing. In some they have evolved further to form a flipper for underwater propulsion. In some flightless birds they have been reduced to mere vestiges. In no birds have the wing bones reverted to those of a foreleg.

The relative lengths of wing bones reflect kinds of flight, long for soaring and short for powered flight. In diving birds the wing bones are flat and broad; extremely so in penguins. Some of the flight feathers are attached to bony tubercles on the ulna, and others are attached longitudinally to the finger digits.

The humerus (upper arm) articulates rather loosely, with a great deal of freedom of rotation, with relatively small facets onto the coracoid and scapula. The hinges between the humerus and the ulna and radius (lower arm); and between them and the carpometacarpus (fused hand bones) are more rigid and essentially in a single plane, that of the extended wing. In the flipper-like wings of penguins there is little movement possible between the wing bones.

Broadest of the wing bones is the humerus with large proximal and distal ends. The ulna is bow-shaped and the radius is a slender rod. Peculiar to birds is the carpometacarpus, which superficially resembles a safety-pin. Attached to the carpometacarpus are two or three finger digits and in some a spur with a bony core and a horny sheath. In a few birds the digits end in horn-covered claws (eg. *Archeopteryx* and Hoatzin chicks).

The bend at the middle of the outstretched feathered wing is actually most equivalent to our wrist. Large winged birds, when perched, often give the wrong impression of

having external shoulders. The shoulder is actually internal. So the black patch on the Black-shouldered Kite (for example) is actually on the upper feathers behind the forearm and not on the shoulder at all.

#### HIND-LIMB BONES

The leg bones of birds are very similar to those of some bipedal dinosaurs. The leg bones vary greatly in length according to the requirements of the bird concerned. The leg bones are stout in waterbirds and slender in landbirds.

The femur (thigh) articulates with the pelvis with a simple ball and socket joint. Both the hinges between the femur and the tibiotarsus and attached fibula (lower leg) and the one between the tibiotarsus and tarsometatarsus (fused foot bones) operate in a single vertical plane, in a manner analogous to that between the fore-limb bones. At the joint between the tibiotarsus and the tarsometatarsus there are on both bones, bony bridges and grooves to keep tendons in place. Shaft widths of the femur, tibiotarsus and tarsometatarsus are similar, and in closely related birds their relative lengths are similar. The fibula is a thin splint, that reaches only part way down the tibiotarsus. At the proximal end there is a trochanter on the femur and a cnemial crest on the tibiotarsus, that act as lever arms and are particularly well developed in swimming and diving birds.

The tarsometatarsus is peculiar to birds and a few dinosaurs. It consists mainly of three fused metatarsals, which support toes II, III and IV. A separate small bone metatarsal I supports toe I, the hind toe (hallux), which is vestigial or absent in some birds. Ostriches and some fossil giant birds are two-toed also lacking toe IV. Note that, in most birds, digit IV points forward and is the outer toe. Some bird orders, (such as the one including the cockatoo illustrated) have this toe pointing backwards.

The maximum number of phalanges in the toes of birds are two in toe I, three in toe II, four in toe III and five in toe IV. The terminal phalanx for each digit forms a bony core for a horny claw.

The bend at the middle of the external part of a bird's leg is actually most equivalent to our ankle. The knees of birds (like their shoulders) are hidden within the body and only very rarely can the upper part of the leg be detected in a living bird. So the red on the Red-kneed Dotterel for example, is actually on its ankle.

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STATUS OF THE SINGING BUSHLARK IN THE CANBERRA DISTRICT

Brendan J. Lepschi, 24 Fullwood Street, WESTON ACT 2611

Received: 25 March 1987

INTRODUCTION

The status of the Singing Bushlark (*Mirafra javanica*) is imperfectly understood throughout much of its range. In the Canberra District it is generally regarded as a summer migrant, arriving in September to November and departing in February (COG 1985, Frith 1969). This paper reviews the status of this species in the Canberra District and suggests an alternative interpretation. It also discusses long term trends in its status and provides information on its possible breeding in our region.

METHODS

All relevant literature and COG Records were searched, one unpublished and twenty-eight published records were located (current to December 1986). These are presented in Table 1. Records are classified on a seasonal basis; the season is designated in brackets after the date. Fig. 1 represents all records in graph form, with the number of records plotted against months of the year.

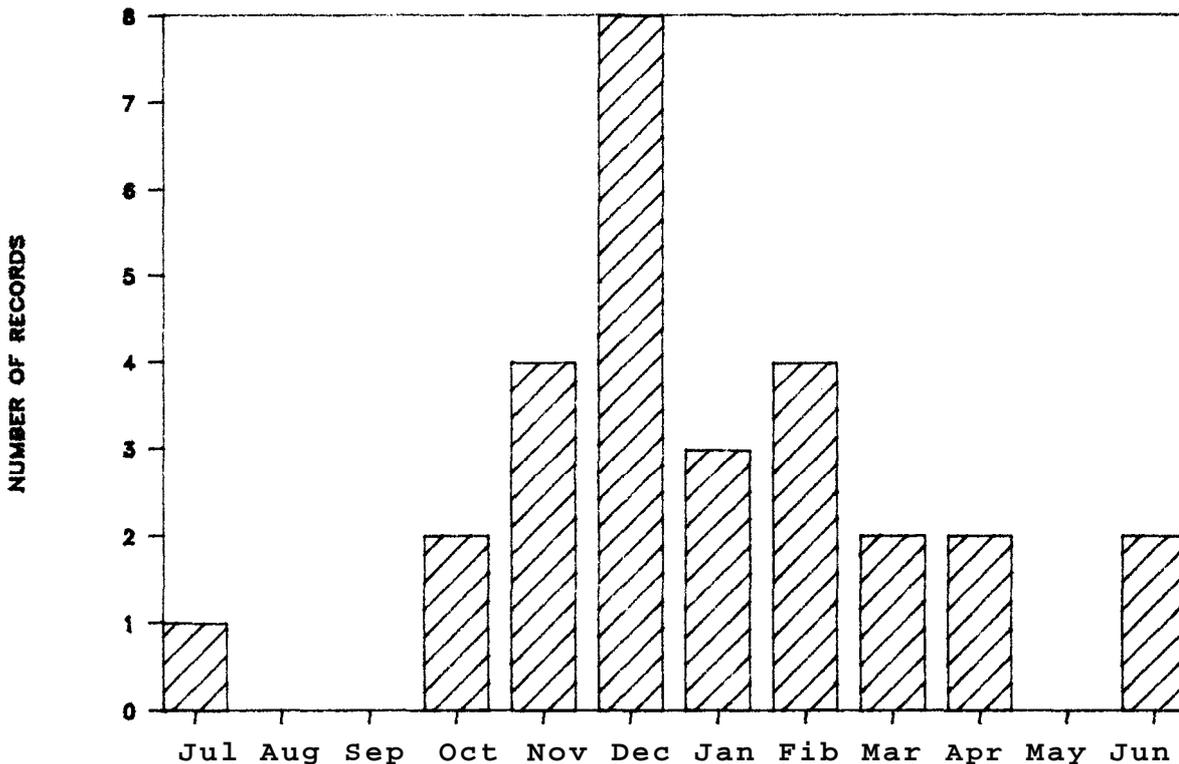


Fig 1. Monthly distribution of Singing Bushlark Records

## RESULTS

There is a distinct peak of numbers of these records in December; this can be attributed to the breeding season, when male birds engage in full song display flights, thereby making themselves more conspicuous. At the beginning, October (?) and the end, January (?) of the breeding season, records are fewer, presumably because of lesser singing activity on the part of the males. The species is generally cryptic at other times. A similar situation also exists among the Songlarks (*Cinchorhamphus* spp.), prior to their migration, also the Skylark (*Alauda arvensis*).

Observations in the autumn to winter period, when this species is supposedly not present in our area, point to a situation where, instead of being totally migratory, this species is perhaps present all year, but because the males are nearly silent in the non-breeding season, the species is then overlooked. Such a pattern was also reported by Blakers et al (1984) who also suggest that the paucity of non-summer records is related to the lack of display flights from the males in that period. They further state 'the differences are similar in all regions and do not suggest large scale seasonal movement'. That such a conclusion was reached through the Australia-wide atlas supports my conclusion because if the species was migratory in the Canberra district, it would be expected that numbers would rise elsewhere in winter, which they don't.

Bell (1983) found significant seasonal changes in behaviour (and consequent conspicuousness) in two species of Thornbill (*Acanthiza*) at Armidale, NSW. He also states that 'observed trends which suggest seasonal change in abundance may often mean nothing of the kind, but instead, changes in conspicuousness resulting from seasonal change in behaviour.' This appears to be the case for this species.

Despite the small number of records, this species does not appear to have undergone any major changes in its numbers. Frith (1969) records it as being present 'in small numbers', and recent observations are consistent with this. At present, the only areas where this species is regularly observed are the Tuggeranong/Village Creek and Lake Bathurst areas, although with the development of Lake Tuggeranong, the former population will probably vanish. It was formerly fairly numerous in the Gungahlin-Mitchell area, but urban development has now occupied much of its former habitat, the last records being in 1977 (see Table 1).

Breeding has yet to be confirmed in our area, although three possible breeding records exist: a group of nine birds, including juveniles at West Lake in February 1966; a juvenile seen at Lyneham in January 1969, and one carrying food at Village Creek in December 1985 (see Table 1).

TABLE 1.

## RECORDS OF THE SINGING BUSHLARK

No.	DATE	LOCATION	OBSERVER	REFERENCE
9	13 Feb 66	'West Lake'	D. Judge	COG Records
(ad + juv)				
-	'Mostly recorded at Gungahlin (Su?) and Lake George'		-	*CBN 1(7),16
1	22 Jan 69	(Su) Lyneham	M. Clayton	@CBN 1(7),16
1	3 Feb 73	(Su) Belconnen	Anon	CBN 2(9),21
1	9 Mar 74	(Au) Bungendore	R. Elvish	CBN 3(3),7
1	20 Jan 77	(Su) Mitchell	D. Wilson	CBN 3(12),12
1	22 Jan 77	(Su) Mitchell	D. Wilson	CBN 3(12),12
1	12 Oct 80	(Sp) Castle Hill	COG	CBN 6(2),71
2	21 Nov 80	(Sp) Smiths Cr	R. G-Smith	CBN 7(1),19
Sev	22 Dec 81	(Su) Uriarra Cr	R. G-Smith	CBN 7(1),19
2+	29 Dec 81	(Su) Tuggeranong Ck	W. Brooke	CBN 8(1),32
15+	9 Feb 82	(Su) Tuggeranong Ck	A. Morrison	CBN 7(3),70
8	18 Apr 82	(Au) Lake Bathurst	WBS	CBN 8(1),32
4	20 Jun 82	(Wi) Lake Bathurst	WBS	CBN 8(1),32
1	-- Oct 83	(Sp) Tuggeranong Ck	J. Holland	CBN 10(4),12
2	-- Feb 84	(Su) Tuggeranong Ck	J. Holland	CBN 10(4),12
4	18 Mar 84	(Au) Tuggeranong Ck	J. Holland	CBN 10(2),66
1	-- Dec 84	(Su) Tuggeranong Ck	J. Holland	CBN 10(4),12
1	19 Apr 85	(Au) Holt	G. Elliot	CBN 12(2),66
1	26 Jun 85	(Wi) Dairy Flat	M. Groves	CBN 12(2),66
1	2 Nov 85	(Sp) Tuggeranong Ck	J. Holland	CBN 12(2),66
1	12 Dec 85	(Su) Tuggeranong Ck	COG	CBN 12(2),66
1	13 Dec 85	(Su) Tuggeranong Ck	J. Holland	CBN 12(2),66
1	14 Dec 85	(Su) Tuggeranong Ck	J. Holland	#CBN 12(2),66
1	15 Dec 85	(Su) Lake Bathurst	H.M. Doyle	CBN 12(2),66
1	16 Dec 85	(Su) Tuggeranong Ck	J. Holland	CBN 12(2),66
1	24 Jul 86	(Wi) Stirling	B. Lepschi	G-g Sep 1986
2	9 Nov 86	(Sp) Tuggeranong Ck	J. Holland	G-g Feb 1987
4	9 Nov 86	(Sp) Village Ck	J. Holland	G-g Feb 1987

## Notes

\* Not included in analysis because no dates were given.

@ 'Lyneham' refers to area where Tennis Centre now stairs, on Ellenborough St (M. Clayton, pers comm).

# Bird observed carrying food.

G-g is *Gang-gang*, newsletter of Canberra Ornithologists Group

R. G-Smith is R. Gregory-Smith.

WBS is Waterbird Survey.

## CONCLUSIONS

Rather than being a strict summer migrant, the Singing Bushlark would appear to be an uncommon year-round resident in our area, with the paucity of records for the autumn and winter period reflecting mainly the cryptic behaviour of the species during these months also possibly contributed to by lesser observer activity.

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### AUTUMN BREEDING OF THE SPECKLED WARBLER

Brendan J. Lepschi, 24 Fullwood Street, WESTON ACT 2611  
Received: 17 April 1987

The Speckled Warbler (*Sericornis sagittatus*) is an uncommon breeding resident in the Canberra District, normally breeding from August to November (COG 1985, *A Field List of the Birds of Canberra and District*, Canberra).

On 10 April 1987, I located an active nest of this species in scrubby woodland within the CSIRO Black Mountain complex. For about a week previously I had regularly observed a pair of Speckled Warblers in woodland around the nest, but due to the time of year, I did not suspect any breeding. The nest itself was a small domed structure of dry grass (mainly Kangaroo Grass *Themeda australis*), in a depression at the base of a eucalypt sapling. Upon examination it was found to contain two or three nestlings. Both adults fed the young with small invertebrates.

While actual breeding data on this species is scarce, the breeding season in our area is recorded as being from August to November (COG, *op cit*). The season may actually extend to February or March. Anon (1976) *Readers Digest Complete Book of Australian Birds*, records the breeding season as September to March. This particular nest would therefore represent a late brood.

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BIRD LIFE IN THE NEARBY NSW HILLS

Angela Braybrooks, Mulliondale, Cavan Rd, via YASS NSW 2582  
Received: 8 May 1987

Each morning I walk through a copse of eucalypts near our hilly NSW property, a kilometre from the Murrumbidgee, near Hall. This is a brief note on breeding and other observations on some of the conspicuous birds of the area.

White-throated Treecreepers (*Climacteris leucophaea*) are residents and the day's earliest risers. During Spring and Summer, others came to the copse for nesting. The first of these was an extended family (seven in all) of White-winged Choughs (*Corcorax melanorhamphos*). They built a mud nest on a horizontal eucalypt branch and until the female was sitting they took no notice of my daily excursions. At this time their behaviour changed, some continued to forage on the ground, others, perched in a tree, would swoop at me many times, shrieking as they did. This continued until the young were fledged, when the attacks diminished, the adults apparently concentrating on caring for their two new young ones. They soon moved to distant parts of their territory.

Before the choughs went, a pair of Brown Goshawks (*Accipiter fasciatus*) began building their nest high up in a nearby tree. They discouraged visitors from the start. They called, alternately and loudly, as I passed each morning. The sitting female would leave the nest, the male was usually near, and both would swoop silently at me then return to their perches and call continually until I had gone. On one occasion the female swooped so low that my hat was knocked off. Interestingly, my husband, riding by on his horse, elicited none of this behaviour. Two birds hatched and grew quickly. Once I saw one of the goshawks bringing a small rabbit to the nest. The parents continued to call and swoop even when the young birds, ready and able to fly, were sitting on a branch near their nest. The parents remained nearby for a few days after the young birds had flown and eventually they left. I heard and saw them in the surrounding hills for a few more weeks.

Presumed breeding visitors were two Leaden Flycatchers (*Myiagra rubecula*). They arrived after the goshawks had hatched and they established themselves on the edge of the copse. Whenever a goshawk perched too near for comfort both flycatchers flew at it many times, appearing to bump into it, the male making his 'frog bird' noise all the time. They always won and the goshawk would move off.

Summer is over, the families have gone and the copse is quieter now. The White-throated Treecreepers never left the copse, but the other residents, Superb Fairy-wrens (*Malurus cyaneus*), and Red-browed Firetails (*Emblema temporalis*) moved away when the goshawks came. They have now returned. A pair of Scarlet Robins (*Petroica multicolor*) came from the ranges letting me know that Winter is approaching.

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FIELD TRIP TO ROTAMAH ISLAND BIRD OBSERVATORY

Mrs Kay Hahne, 5 Gingana Street, ARANDA ACT 2614

Received: 8 April 1987

Ten members of COG had a long weekend outing to the Rotamah Island Bird Observatory in Lake Victoria near Painesville, Victoria from 14-16 March. We all enjoyed the venue, the company, the weather and the very capable and pleasant Isobel Crawford, the resident warden, who provided us with wholesome meals, information, books, tapes **and** guided us on walking tours around the small island. She was assisted by Tony Howard. COG members Murray and Coral Dow are the new wardens at Rotamah.

For such a small place, there was a large variety of habitat - coastal woodland, a few open grassy spots, picnic area and homestead, swamp, small fresh water waterholes, sand dunes, sandy beach and open ocean on one side, and more sheltered water toward the mainland. It isn't just a birdwatchers paradise. There are Common Wombats (*Vombatus ursinus*), Ring-tail Possum (*Pseudocheirus peregrinus*), Eastern Grey Kangaroos (*Macropus giganteus*), lack Wallabies (*Wallabia bicolor*), Foxes (*Vulpes vulpes*), Iog Deer (*Axis procinus*), and bats to name a few mammals found there. It was the birds that interested us the most, ranging in size from Spotted Pardalotes (*Pardalotus punctatus*) to Emus (*Dromaius novaehollandiae*). It is always interesting to go a bit further from home and see different species than those normal around the Canberra region. 76 species were seen in the 3 days by the total group.

Common and entertaining around the old farmhouse where we bunked were Noisy Miners (*Manorina melanocephala*), Crimson Rosellas (*Platycercus elegans*), Australian Magpies (*Gymnorhina tibicen*) and the fast-flying loud-screeching Rainbow Lorikeets (*Trichoglossus haematodus*). A lone Rufous Night Heron (*Nycticorax caledonicus*) was spotted in one of the huge, old pine trees near the farmhouse. The Little Egrets (*Egretta garzetta*) flapped their wings and danced about while the Great Egrets (*E. alba*) were very sedate and practically motionless in comparison. The Pacific Gulls (*Larus pacificus*) looked huge compared to the dainty Silver Gulls (*L. novaehollandiae*). Four kinds of terns are found there - Caspian (*Hydroprogne caspia*), Crested (*Sterna bergii*), Common (*S. hirundo*) and Little (*S. albifrons*). It was nice to note the size difference of the diminutive Little Tern after just seeing a big Caspian with large red beak fly by. Musk Lorikeets (*Glossopsitta concinna*) and Swift Parrots (*Lathamus discolor*) were new to many of us. A flock of 12 Yellow-tailed Black Cockatoos (*Calyptorhynchus funereus*) flew over. White-throated Needletails (*Hirundapus caudacutus*) were busy hawking in wide circles overhead, some of them very low - not far above the treetops. We could note the differences in the raucous calls of the Red and Little Wattlebirds (*Anthochaera carunculata* and *A.*

*chrysoptera*), both abundant and very noisy. and compare the much deeper pitched call of the Forest Raven (*Corvus tasmanicus*) to that of the higher, quavery, trailing-off call of the Australian Raven (*C. coronoides*).

In the sheltered landwards waters there were hundreds of Black Swans (*Cygnus atratus*), many Australian Pelicans (*Pelecanus conspicillatus*); Great, Little Black and Little Pied Cormorants (*Phalacrocorax carbo*, *P. sulcirostris* and *P. melanoleucos*); Pacific Black Duck (*Anas superciliosa*), Chestnut Teal (*A. castanea*) and Australian Shelduck (*Tadorna tadornoides*). The duck hunting season had just started in Victoria and gunshots could be heard occasionally.

Courses on bird identification and behaviour, mammals, plants, nature photography and art may be taken, either as individuals or as groups. For more detailed information on the Bird Observatory and its courses (run by the RAOU in similar fashion in Barren Grounds), refer to D.F. Pfanner's (1981) article at *CBN* 6(1), 44-45.

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#### AN INTERESTING RAPTOR INTERACTION

Tony Ross, 42 Willis Street, EVATT ACT 2617

Received: 10 December 1986

On 1 December 1986 at 1530 hrs, I was driving past Evatt shops when an Australian Hobby (*Falco longipennis*) shot across the road in front of my car. A multi-vehicle accident was narrowly avoided as I jammed the brakes on. This bird was obviously hunting and, as I watched from the side of the road, it made an unsuccessful 45° stoop into some lucky person's front yard, scattering many small birds. As the Hobby gained height, a male Collared Sparrowhawk (*Accipiter cirrhocephalus*) whizzed past and landed in a tree in the same yard. A juvenile Starling (*Sturnus vulgaris*) which had been feeding on the lawn and had not flushed at the Hobby's appearance then attempted to escape, however the Hobby, utilising a distinct height advantage, effortlessly spun and caught it before it had reached roof level.

Comment: The question is, were either or both raptors hoping to exploit the different hunting tactics of the other, to increase their own hunting success? This kind of observation is not uncommon. Another report is by W. Maddeford (1975), 'Goshawk and Little Falcon Hunt Together', (*The Bird Observer*, 523, 47) This suggests that raptors may sometimes benefit from the presence of a competitor as a flushing agent- Ed.

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MORE MAGPIE GEESE NEAR COLLECTOR

Graham Barwell, 10 Lubuma Place, GIRALANG ACT 2617

Received: 24 April 1987

At about a quarter past five in the afternoon on 5 April 1987 I was sitting in a bus travelling south along the Federal Highway just north of Collector. As the bus passed Roses Lagoon, I noticed three Magpie Geese (*Anseranas semipalmata*) standing on the muddy edge of the swamp, immediately adjacent to the Highway. Although I had no binoculars at hand, the birds were readily identified by their large size, goose-shape, reddish bills, black heads, necks and wings and white bodies. Despite seeing these birds only for a brief period as the bus passed the swamp I am confident of the identification. I became very familiar with the species when I lived in North Queensland.

Magpie Geese have been recorded at this location on one other occasion. Wayne Lawler (*CBN 11(3), 108*) saw and photographed five birds there on 31 March 1986 almost exactly a year prior to my sighting. I have since been informed by Malcolm Fyfe that they were there again (still?) in the June 1987 long weekend.

The bird appears to be extremely rare in the Southern Highlands, and indeed is not often recorded in New South Wales. Greg P. Clancy (*1985 Australian Birds 19(3), 41-45*) summarises NSW records, 1900 to Feb 1985 and he shows that, whereas there were few records prior to 1980 there have been a substantial number of sightings since then, resulting from an influx of birds mainly into the northern part of the state with some records from the Hunter, Central-West Plain and Riverina districts. This influx did not extend to the Southern Highlands and the nearest confirmed records in this period were from Griffith in 1984, c 310km WNW of Collector, and Newcastle-Maitland in 1984-85, c 310 km NE of Collector, with unconfirmed records from Gosford and the Hawkesbury River.

Since the bird was not included in the revised edition of *Birds in the Australian High Country* (1984), the 1985 *Field List* or in recent COG annual bird reports I had assumed that Lawler's sighting constituted the first record for the highlands, though not for the Canberra area, as defined on pp. 16-17 of the *Field List*, since the swamp is just outside the area limits. This however, is not the case. Greg Clancy, on page 42 of his article, lists a sighting by A. Coleman and J. Harrison of nine birds in flight at Lake Bathurst, 28 December 1967, and this appears to be the first record of Magpie Geese in both the Southern Highlands and the Canberra area. Thus the records from Roses Lagoon are the second and third for the highlands.

These birds are not derived from Tidbinbilla escapers, as the Tidbinbilla birds have not left there.

WONGA PIGEON DISPLAY - LOVE OR HATE?

David I. Magrath, 29 Gingana Street, ARANDA ACT 2614  
Received: 11 February 1987

In November 1985, at Wonboyn Lake on the far south coast of NSW, I came across two Wonga Pigeons (*Leucosarcia melanoleuca*) on the ground, engaged in an elaborate and energetic display. They were very deliberately pacing to and fro and individually turning in small circles within a metre or so of each other. Occasionally one would tilt its body forward, its breast almost touching the ground and its tail elevated, at the same time uttering the soft cooing sound that had originally caught my attention.

Increasingly as time went by (about 40 min in all), one of the birds would rapidly approach the other, sideways and flail it vigorously with its wings. The accompanying sound was explosively loud, sharp and of a metallic quality. So far as I could tell, only one bird engaged in this slapping, though it was difficult to be sure as the birds were often temporarily obscured by shrubbery and there was no distinguishing features between them.

The birds eventually walked off in opposite directions, one of them uttering two short bursts of the typical 'advertising' call; one of 4 notes, the other of 11.

The bowing posture observed is similar to that described by Frith (1982) who states that it is seldom seen and 'is presented to the female sometimes in the early stages of courtship but its principal use is in threat, as when another Wonga Pigeon comes too close to the displaying bird's nest. Perhaps the use in courtship is only at the period when courting and aggressive tendencies still exist together. In more intense threat, between each bow the threatening bird advances on the intruder with head erect and a purposeful stride, clucking rapidly.'

*Comment:* Frith, (on page 24) describes three separate wing displays (stretching, lifting and raising), performed by Australian pigeons but he makes no mention of this wing-slapping behaviour in that introductory section, nor in the chapter about the Wonga Pigeon. However, within other species' accounts he states that the Senegal Dove (*Streptopelia senegalensis*), Diamond Dove (*Geopelia cuneata*), Crested Pigeon (*Ocyphaps lophotes*), Partridge Pigeon (*Geophaps smithii*) and Spinifex Pigeon (*Geophaps plumifera*) all use this wing slapping behaviour in aggression. By implication other species do too. Clearly, by this report, the Wonga Pigeon is one of them. David would be interested to hear from anyone with further information on this - Ed.

REFERENCE

Frith, H.J. (1982), *Pigeons and Doves of Australia*, Rigby.

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GANG-GANG COCKATOOS FEEDING ON SAWFLY LARVAE

*David I. Magrath, 29 Gingana Street, ARANDA ACT 2614*  
*Received: 11 February 1987*

At 8.00am on November 5, 1984, in the narrow strip of dry sclerophyll bushland adjoining my house in Aranda, my attention was drawn by a series of soft squawks to a female Gang-gang Cockatoo (*Callocephalon fimbriatum*) sitting near the top of a small eucalypt (probably *E. maculosa*, 3m tall). A closer look revealed that the bird was enjoying a tasty breakfast of sawfly larvae (*Perga* sp). She would reach down and with her bill delicately pluck a maggot from the bunch, transfer it to her foot (left or right I do not know - see Prendergast, 1985) and then proceed to carefully remove the entire soft inner parts of the insect, finally letting the empty skin, complete with head, fall to the ground below. This continued until not a single maggot remained.

The larvae of another insect, the cossid moth (*Xyleutes boisduvali*), forms an important item in the diet of the Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*) (Frith 1984). However, the Gang-gang Cockatoo, like the Glossy Black Cockatoo (*Calyptorhynchus magnificus*), feeds primarily on products of plant origin - seeds, nuts, fruit (Frith 1984; Forshaw, 1969) - though it was then reported that its diet also includes insects and their larvae, eg. the larvae of the Emperor Gum Moth (*Artheraea eucalypti*).

*Malcolm Fyfe, 27 Kilby Crescent, WEETANGERA ACT 2614*  
*Received: 27 July 1987*

When I was in my garden on one 1985 afternoon, two Gang-gang Cockatoos alighted near the top of a eucalypt (about 15 metres tall), adjacent to two large clusters of sawfly larvae. Both then proceeded to pull maggots from the clusters with their bills and appeared to consume them, in part, before dropping the remains. The birds continued with this activity until very few maggots were left on the branches. I inspected the maggots remains which lay scattered on the ground. They were so mutilated as to be either dead or close to it. I was not able to determine whether any part of them had actually been consumed.

An article in the local press, about sawfly larvae interested me, particularly the statement that the Black-faced Cuckoo-shrike (*Coracina novaehollandiae*) feeds on them. Despite yearly infestations of sawfly larvae in my garden's eucalypts and regular visits by the Cuckoo-shrike, I have never witnessed any other instance of that or any other bird showing any interest in sawfly larvae. I had assumed that their very strong odour of eucalyptus and their collectively rather unattractive defence posture might have been more than most birds were inclined to take on.

Comment: Lindenmayer (1981) and Forshaw (in his 1981 edition) describe these birds eating sawfly larvae. From these and several similar unpublished observations, it would appear to be quite a regular behaviour. Rather unusual, though related, is Swan's (1977) report of a Gang-gang Cockatoo feeding on a road killed Australian Magpie. Although it could have been eating maggots, it had feathers in its beak. - Ed.

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- Frith, J.J. (1984), *Birds in the Australian High Country*, Angus and Robertson.
- Lindenmayer, B. (1981), 'Gang-gang Cockatoo Eating Sawfly Larvae', *CBN* 6,119.
- Prendergast, H.D.V. (1985), 'Gang-gangs: Left Footed All?', *CBN* 10,91.
- Swan, S. (1977), 'Gang-gang Cockatoo - Meat Eater?', *The Bird Observer* 553/4, 101.

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#### A WHITE GANG-GANG COCKATOO IN THE NAMADGI NATIONAL PARK

Rob Watchorn, Namadgi National Park, ACT Parks & Conservation Service  
Received: 22 April 1987

On 16 March 1987 I was working at Murray Gap on the ACT/NSW border (ACT Nat Map 1:100,000 624 498) with Ranger Alex Carter. It was a fine clear day of about 24°C with a slight breeze. Murray Gap is an open area of approximately 1.5 hectares, with the ground cover being predominately *Poa* tussock. Surrounding the cleared area are the heavily timbered slopes of Mt Murray and Mt Bimberi. The most common eucalypt is the Snow Gum (*Eucalyptus pauciflora*).

As we watched, three normal Gang-gang Cockatoos (*Callocephalon fimbriatum*) plus a fourth white bird of the same size and shape, flew over us and alighted in a Snow Gum. We initially assumed that the white bird was perhaps a Corella that had joined a group of Gang-gangs. However, as we moved closer we observed the female Gang Gang feeding the white bird. As we were not carrying binoculars we could not get a close up of the bird but we were able to approach to within approximately 20 metres. The bird was completely white except for some darker patches around the bill. I believe that these patches were the result of staining from the feeding process. We watched the birds for about 10 minutes before they moved on.

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LOCALISED PLUMAGE ABNORMALITIES IN BLACKBIRDS

A. Doug Ross, 64 Sprent Street, NARRABUNDAH ACT 2604  
Received: 18 May 1987

Blackbirds (*Turdus merula*) began breeding in my part of Narrabundah about 20 years ago. Up to the 1985-86 breeding season, there was nothing remarkable about the young birds that appeared in my garden.

In that season, however, a pair of Blackbirds produced three young that had abnormal plumage. The male of the three was strongly pied, in unadulterated black and white, a partial albino, while the two females of the brood carried light brown to grey patches with occasional white flecks - they were leucistic.

The three young birds stayed in the garden for about six weeks, (the parents not showing during the period), then ceased to appear. I do not know whether they died (were killed) or were driven away.

In the 1986-87 breeding season, four young were produced that displayed what I am informed is a form of schizochroism. From the shoulders back, the birds showed as normal males (though their colouring was less intensively black than normal). Head, neck and breast, however, were light rufous brown flecked with darker browns, while the breast feathers, rather than lying sleekly on the body, were fluffed out and straggling. In this form of schizochroism, it appears the black eumelanin pigmentation is absent from the plumage, only the brown phaelomelanins being present. Feathers that lack the black eumelanins and carry only the browns abrade faster than normally pigmented feathers. The abrasion leads to a failure of the barbules to interlock and so the feathers are not kept properly in place.

Developments in the 1987-88 breeding season will need to be carefully monitored for Bicentenary specials.

Many thanks to Brendan J. Lepschi for technical advice.

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TREE MARTINS' MATING BEHAVIOUR

Kevan Hardacre, Artext, 12/9 Oaks Ave, CREMORNE NSW 2090  
Received: 17 October 1986

Clifford V. Hardacre (my brother) reports from Lightning Ridge in north-western New South Wales on the behaviour of Tree Martins, (*Cecropis nigricans*), (Sep 86). The Tree Martins at the dam are going through a mating ritual every afternoon. They land at the same place on the ground every time and form a circle with the female in the middle. One male runs in and jumps on the female very quickly, then they all leave. This happens every few minutes ... I don't know whether it's the same female or

not. They were attending a nest hollow in an old tree nearby and flew towards it after this activity.

This report is interesting and could suggest that the colony may share partners. Tree Martins can nest in earthen banks but usually they locate a large tree hollow, plaster up the entrance a bit with mud and then build untidy nests of leaves and other plant materials in the recess.

Comment: This report was originally submitted with the title 'Martins Lekking?' and indeed the behaviour makes an interesting contrast to lek behaviour of the Ruff and various other species. Assuming this unusual observation represents the mating system of this particular colony, the author later agreed that interpretations other than the polygamous lek mating system, more likely apply. There are major differences in behaviour and appearance between lek mating species and these martins and the observer clearly could not be sure that one female was mating with more than one male, or vice versa. I suggest that the observation is of a monogamous mating system and may involve group stimulation of individual pairs to copulate, each (or the same) pair taking their turn in the centre. The only other published report of copulation by swallows or martins, I've found is K. Hastwell (1985) 'Tree Martins mating in flight'

*The Australian Bird Watcher*, 11, 64. Has anyone any relevant observations? - Ed.

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BLACK-FACED CUCKOO-SHRIKE ATTEMPTING TO BREED  
IN IMMATURE PLUMAGE

*Brendan J. Lepschi, 24 Fullwood Street, WESTON ACT 2611*  
*Received: 22 December 1986*

In early November 1986, while walking on Oakey Hill Reserve, Lyons, I located a pair of Black-faced Cuckoo-shrikes (*Coracina novaehollandiae*), nest building on a horizontal dead branch on a large Blakely's Red Gum (*Eucalyptus blakelyi*). One bird was still in immature plumage, with faint barring on the head, throat and breast and the black of the facial area restricted to a strip from the bill to the ear-coverts.

Both birds were involved in construction of the nest, which by mid November was nearing completion. However shortly after, for no apparent reason, the birds deserted.

I know of only one other published record of this species breeding in immature plumage; that of a pair at Gumble, NSW in 1973, reported by Stokes (CBN 2(9),15).

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Canberra Bird Notes is published quarterly by the Canberra Ornithologists Group. The membership and subscription rates are: Student (Under 18) \$5.00; Single \$10.00; Family \$13.00 all with one copy of CBN; Institutions \$13.00.

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