Corella, 1986, 10(2): 61-63

MORPHOMETRICS OF BLACK-FACED CUCKOO-SHRIKE *Coracina novaehollandiae* AND WHITE-BELLIED CUCKOO-SHRIKE *Coracina papuensis robusta*

J. W. HARDY

P.O. Box 66. Springwood, NSW 2777

Received 27 January. 1986

INTRODUCTION

Variations in the races within Cuckoo-shrike species has led to difficulties in separating some species. Such variations have been described by a number of authors. Keast (1958) in a description of Australian representatives of the family *Campephagidae* described the plumage variation in several races of the Black-faced Cuckoo-shrike *Coracina novaehollandiae*, Little Cuckoo-shrike *C. robusta* and the Papuan Cuckoo-shrike *C. papuensis*. He also presented measurements of bill, wing and tail length of specimens of these species collected from a number of locations within Australia, to demonstrate size variations. Later Galbraith (1969) using plumage phases, wing and tail length and weight, demonstrated the variation within *C. robusta* and *C. papuensis* with latitude. On the basis of this he then argued that *C. robusta* was a geographic race of *C. papuensis*.

Freeman (1974) described the variation in plumage, weight, and a number of other measurements of *C. novaehollandiae* and *C. papuensis* collected throughout Australia during the 1962-70 Harold Hall expeditions. His results confirmed Galbraith's assertion that *C. robusta* is a geographical race. Since then the two race proposal has been accepted with the Little Cuckoo-shrike *C. papuensis robusta* and the Papuan Cuckoo-shrike *C. papuensis papuensis* being races of the same species under the English name White-bellied Cuckoo-shrike.

In recent years there have been numerous descriptions of *C. novaehollandiae* and *C. papuensis* in the popular literature, enabling them to be easily distinguished in the field by habits and calls. However, the melanistic race *C. p. robusta* in some plumage phases, closely resembles the adult plumage of *C. novaehollandiae* and confusion has occurred in separating the two species in the hand during bird-banding operations. These two species differ considerably in their morphometrics. Using these differences this paper provides a simple means for bird banders to separate the two species when operating in areas where both species may be captured.

METHODS

Measurements were obtained from two sources. Firstly, from the measurements of skins held at The Australian Museum, Sydney, using the methods described by Disney (1974). Secondly, the Australian Bird and Bat Banding Scheme provided data collected by numerous bird banders.

To eliminate as far as possible biases created by geographic variation, data have been used only from birds collected or captured in New South Wales. Specimens measured included all age classes of free-flying birds.

Data for birds which were ostensibly sexed by internal examination in The Australian Museum collection have been shown separately in the results. Morphometrics were compared between the sexes within the two species by univariate t-tests (Snedecor and Cochran, 1980).

RESULTS AND DISCUSSION

Table 1 shows the data collected for *C. novaehollandiae* and Table 2 those for *C. p. robusta*. Morphometrics for the sexed birds are shown separately in these tables, followed by those of all birds (including the sexed sample) measured.

These data, and the morphometrics previously published by Keast (1958), Galbraith (1969) and Freeman (1974) show that there is no overlap between *C. novaehollandiae* and *C. p. robusta* in wing length, wing span or weight. The sample for *C. p. robusta* is too small to make reliable conclusions for body length though it appears that the two species may also be separated on this measurement. Some degree of overlap occurs between the two species in tail, culmen and tarsus lengths.

The data indicates that banders might reasonably assume that free-flying birds (from anywhere within their ranges) with a wing length greater than 180 mm, wing span greater than 520 mm and weight greater than 85 g are Black-faced Cuckoo-shrikes and those with lesser measurements are White-bellied Cuckoo-shrikes.

Keast (1958) stated that males are usually larger than females in wing length in *Campephagidae*, but Keast's data did show overlap between the sexes in the two species discussed here. My own data confirms this overlap and although the numbers of sexed birds in my sample are small, statistical analysis of data for all types of measurements taken in the sample, showed that there is no significant difference between the morphometrics for males and females within either species.

TABLE 1

Morphometrics for the Black-faced Cuckoo-Shrike *Coracina novaehollandiae*.

		Range	Mean	SD	n
Wing (mm)	♂	187-209	196.9	6.7	14
	♀	183-209	193.9	8.9	11
	ABM	181-218	195.3	10.5	73
Wing Span (mm)	♂	529-587	577.8	22.9	9
	♀	530-602	573.8	24.8	8
	ABM	529-628	589.1	20.9	51
Tail (mm)	♂	133-155	144.7	6.9	14
	♀	128-155	143.1	10.1	11
	ABM	104-158	142.1	12.0	50
Length (mm)	♂	311-352	355.5	13.1	10
	♀	297-347	321.6	14.5	9
	ABM	297-352	331.0	15.2	22
Tarsus (mm)	♂	26.2-29.2	28.0	1.1	14
	♀	27.3-29.8	28.1	0.9	11
	ABM	26.2-29.8	28.0	0.9	31
Exposed Culmen (mm)	♂	22.0-24.2	23.0	0.6	14
	♀	21.0-25.8	23.1	1.3	11
	ABM	21.0-25.8	23.0	1.1	31
Total Culmen (mm)	♂	26.2-30.8	28.3	1.3	14
	♀	27.0-31.5	28.7	1.3	11
	ABM	26.1-31.5	28.5	1.3	31
Weight (g)	♂	105-127	119.6	9.5	7
	♀	88.5-130	112.2	12.8	7
	ABM	88.5-157	123.7	12.0	45

ABM = All birds measured.

TABLE 2

Morphometrics for the White-bellied Cuckoo-Shrike *Coracina papuensis robusta*.

		Range	Mean	SD	n
Wing (mm)	♂	160-165	162.5	2.1	4
	♀	152-170	160.4	6.1	9
	ABM	148-175	162.4	6.2	31
Wing Span (mm)	♂	482-496	489.0	9.9	2
	♀	482-503	492.5	14.8	2
	ABM	482-505	491.2	7.4	13
Tail (mm)	♂	126-140	131.5	6.0	4
	♀	118-133	125.9	5.2	9
	ABM	112-140	126.3	6.6	26
Length (mm)	♂	280-290	285.0	7.1	2
	♀	275-292	283.5	12.0	2
	ABM	275-292	284.3	8.1	4
Tarsus (mm)	♂	25.0-26.0	25.6	0.5	3
	♀	23.9-26.2	24.8	0.8	7
	ABM	23.9-26.7	25.3	0.8	17
Exposed Culmen (mm)	♂	18.1-20.5	19.3	1.0	4
	♀	17.5-20.5	19.1	1.0	9
	ABM	16.2-20.5	19.1	1.2	20
Total Culmen (mm)	♂	22.8-25.8	24.4	1.3	4
	♀	22.1-25.0	23.5	1.0	9
	ABM	22.0-26.7	23.8	1.3	20
Weight (g)	♂	70-72	71.0	1.4	2
	♀	67-80	73.5	9.2	2
	ABM	63-80	72.0	5.9	11

ABM = All birds measured.

There appears to be no sexual dimorphism within *C. novaehollandiae*. However, males of *C. p. robusta*, except in first year birds, have a small spot of white feathers at the upper hind rim of the eye. This white spot is clearly visible in all plumage types.

ACKNOWLEDGEMENTS

I wish to thank Dr K. Mullette and Dr L. C. Llewellyn who commented on earlier drafts of this paper and acknowledge the assistance and co-operation of Mr W. Boles of The Australian Museum and Dr K. Lowe, Co-ordinator of the Australian Bird and Bat Banding Schemes, for providing access to Museum specimens and banding data respectively.

REFERENCES

Disney, H. J. (1974). Topography, colour and measurements. *In* Lane S. G. (Ed.), Bird in the Hand, Bird Banders' Association, Australia, Sydney.

Freeman, D. J. (1974). Campephagidae. *In* Hall, B. P., Ed.), Birds of the Harold Hall Australian Expeditions 1962-70, British Museum (Nat. Hist.), London: 148-152.

Galbraith, C. J. (1969). The Papuan and Little Cuckoo-shrike, *Coracina papuensis* and *robusta*, as races of a single species, *Emu* 69: 9-29.

Keast, A. J. (1958). Variation and speciation in the Australian *Campephagidae* (Passeres). *Aust. J. Zool.* 6: 248-247.

Snedecor, G. W., and Cochran, W. G. (1980). Statistical Methods (Seventh Edition), Iowa State University Press.

Corella, 1986, 10(2): 63-64

DECLINING RATES OF CAPTURE OF BIRDS IN MIST-NETS

R. D. WOOLLER

Biological Sciences, Murdoch University, Western Australia 6150

Received 7 June, 1985

INTRODUCTION

It is a common experience of mist-netters that the numbers of birds caught often decrease after mist nets have been operated for several days in the same place. Karr (1981) noted that capture rates became low after the third day of operation when permanent residents learned to avoid the nets; a finding supported by other mist-netters (e.g. Willson and Moriarty 1976). As part of a teaching exercise, the decline in mist-net captures of birds in the understorey of wet sclerophyll forest in south-western Australia was investigated.

METHODS

Mist nets were placed in a continuous line along a straight, overgrown track through essentially homogeneous vegetation in the Big Brook State Forest near Pemberton, South-western Australia. The main trees were karri *Eucalyptus diversicolor* with a few marri *E. callophylla* and an understorey dominated by *Bossiaea laidlawiana, Trymalium spathulatum* and *Casuarina decussata*. Nets were used in sets of ten adjacent 12 m long nets and operated from dawn to dusk on consecutive days. They were erected rapidly and quietly, with minimal disturbance, just prior