MEASUREMENTS OF THE LITTLE CORELLA FROM KUNUNURRA, WA

The Little Corella *Cacatua sanguinea* is widely distributed on mainland Australia and is common throughout much of its range (Cayley 1973; Forshaw 1969; Serventy and Whittell 1967). In the East Kimberley region it is abundant and flocks estimated at between 60,000 to 70,000 birds have been observed at Wyndham. Large flocks have been seen on the Ord Irrigation Area near Kununurra where preliminary studies have been made of its biology as part of studies on pests and potential pests of irrigated grain crops (Beeton 1970; Carrick 1956).

No critical studies have been published on the measurements of these birds, although Forshaw presents the ranges and means of measurements from eleven adult males and ten adult females and the means indicate that both sexes are the same size. Reader's Digest (1976) says that the sexes are alike but does not indicate if this refers to size as well as colour. Cayley indiactes that females are usually slightly smaller than males but gives no measurements. Forshaw also gives measurements of a representative male from Broome, West Kimberley region, WA, and a female from Innamincka, SA. These measurements show that the female is smaller than the male but, because they come from widely separated localities the difference may be due to a difference between populations.

In February 1976 thirty-nine Little Corellas were collected from a flock of over 2,000 feeding on the edge of Kununurra town-site in East Kimberley, WA. An analysis of the measurements from these specimens is presented to show the difference in size between the sexes. The measurements are then compared with measurements taken from skins in the Western Australian Museum (WAM).

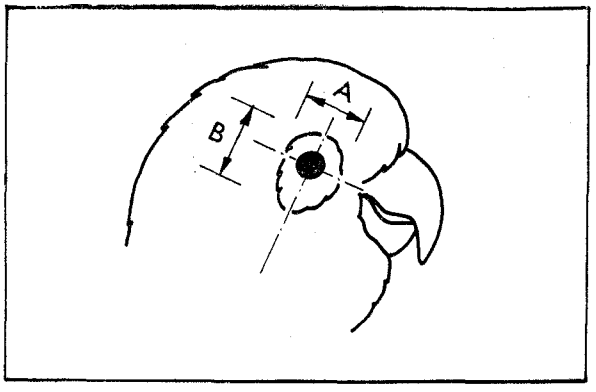

Figure 1. Outline of head of Little Corella showing lines along which width (A) and length (B) of naked periophthalmic ring were measured.

From each specimen from Kununurra the following measurements were taken: weight, length of folded left wing, length of exposed culmen, width of culmen, length of left tarsus and length of tail from cloaca to end of the longest rectrix. The width and length of the naked periophthalmic ring were also measured along the axes shown in Figure 1. The diameter of the periophthalmic ring was taken to be the mean of these two measurements. The contents of the crop of each specimen were washed, dried, weighed and identified where possible. The specimens were sexed by examination of the gonads. All were made into study skins; these are at present stored at CSIRO, Division of Wildlife Research, Helena Valley, WA, and are available for examination.

The sample comprised twenty-two males and seventeen females and the mean and range of measurements for the seven characters are given in Table I. The sexes have not been further divided into age classes because there are, at present, no criteria for ageing Corellas from superficial examination of the gonads. A graphical representation of the

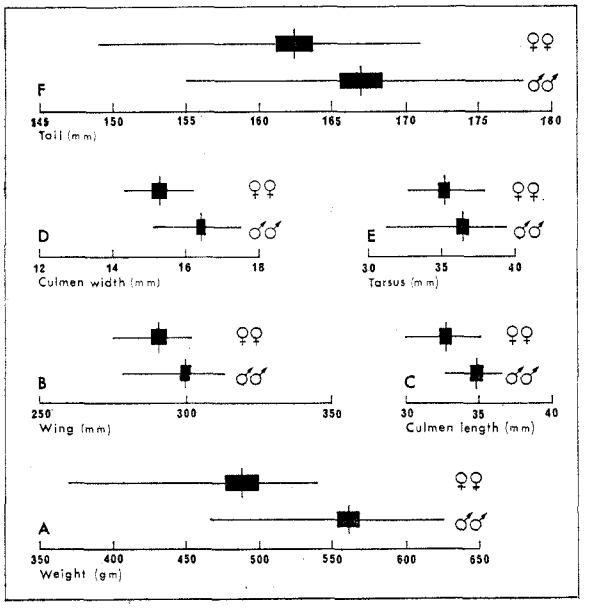

Figure 2. Ranges of: weight A; lengths of wing B; exposed culmen C; width of culmen D; length of tarsus E; length of tail F; for male and female Little Corellas from Kununurra, WA. Vertical lines, means; horizontal lines, ranges; solid rectangles, standard error.

TABLE I

Measurements (mm) of Little Corellas collected at Kununurra, WA.

	Males (22) Mean (Range)	Females (17) Mean (Range)	Comparison of means between sexes Variances	S	t (degress of freedom)	Significance
Weight (g)	562.2 (466–626)	487.8 (370–540)	Equal	40.47	$t_{37} = 5.70$	$0.001 > P$
Wing	299.9 (278–313)	290.5 (275–302)	Equal	8.69	$t_{37} = 3.35$	$0.001 > P$
Culmen length	34.8 (32.7–36.5)	32.7 (29.9–35.1)	Equal	1.39	$t_{36} = 4.60$	$0.001 > P$
Culmen width	16.4 (15.1–17.5)	15.3 (14.3–16.2)	Equal	0.63	$t_{36} = 5.32$	$0.001 > P$
Tarsus	36.3 (31.2–39.4)	35.1 (32.6–37.9)	Equal	1.61	$t_{37} = 2.31$	$0.05 > P > 0.02$
Tail	167.0 (155–178)	162.4 (149–171)	Equal	5.73	$t_{37} = 2.49$	$0.02 > P > 0.01$
Diameter Periophth. ring	22.6 19.5–25.5)	20.8 (18.3–23.0)	Equal	1.46	$t_{37} = 3.87$	$0.001 > P$

TABLE II

Measurements (mm) of Pilbara-Gascoyne males compared with males from Kununurra.

	Kununurra males (22) Mean (Range)	Pilbara–Gascoyne males (9) Mean (Range)	Comparison of means between Kununurra and Pilbara-Gascoyne males Variances	S	t or d	Significance
Wing	299.9 (278–313)	263.9 (258–274)	Equal	8.50	$t_{20} = 10.71$	$0.001 > P$
Culmen length	34.8 (32.7–36.5)	31.2 (29.7–32.5)	Equal	1.14	$t_{29} = 7.98$	$0.001 > P$
Culmen width	16.4 (15.1–17.5)	15.6 (14.9–16.1)	Not Equal	—	$d_{28} = 4.12$	$0.001 > P$

characters, except for diameter of periophthalmic ring, is given in Figure 2.

For each character a test was carried out to determine if the variances for each class were equal. Where this was so a *t*-test was carried out to determine whether there was any difference between the means. Where the variances were not equal, a modified *t*-test was used. Males were significantly heavier and larger in all the characters than females.

WAM had thirty specimens of Little Corella available for measurement and of these twenty-seven were from Western Australia. Nine were not sexed and the remainder were collected from the Kimberley region (5 males, 3 females) and the Pilbara and Gascoyne regions as far south as Minilya, 120 kilometres north of Carnarvon (8 males, 4 females). The nine males from Pilbara–Gascoyne have been analysed together and compared with males from Kununurra. The comparisons for length of wing and length and width of culmen are shown in Table II. The Pilbara–Gascoyne males were significantly smaller than the Kununurra males in all three characters. Unfortunately there were no specimens available from the southern extreme of their range in Western Australia so that it is not known if birds from there are smaller than the Pilbara–Gascoyne birds.

Forshaw (1969) and Reader's Digest (1976) state that in immature birds the naked periophthalmic ring is less extensive under the eye than in adults. Because the specimens from Kununurra were not subdivided into age classes this has not been verified but males did have slightly more extensive periophthalmic rings than females, as is indicated by the larger diameter shown in Table I.

A complete description of the specimens collected at Kununurra is:

Males: general body plumage white; lores salmon-pink; feathers on the crown white with bases salmon-pink; cheek-patch very pale yellow with bases of feathers salmon-pink; throat white with the bases of feathers salmon-pink; undersides of the flight-feathers have extensive patches of yellow through them as do undersides of rectrices, except for the two central ones, which are all white; naked periophthalmic ring powder-blue with a more extensive

area under the eye; bill horn coloured; iris dark brown and legs grey.

Females: appear the same as males.

This description differs from that given by Forshaw in that the cheek patch is very pale yellow and the two central rectrices are all white.

Eleven of the specimens had empty crops. The rest contained up to 19.7 grams of material, when dried. Most had been feeding on rice or grain sorghum. Four other species of plant were identified in the crops by their seeds: barnyard millet *Echinochloa crusgalli*, *Triantheme triquetra*, *Cloeme viscosa* and hogweed *Boerhavia diffusa*.

The measurements of these specimens of Little Corellas show that there is a difference in size of the sexes and that there is a difference in size between populations from two different areas. Further collections will be necessary to examine the differences between populations throughout the range of the species. This difference in size between populations may have confused matters in the south-west of Western Australia where both the Little Corella and the Long-billed Corella *Cacatua tenuirostris* occur. Any attempt to look at the distribution of Little Corella ought to try to clear up the confusion regarding the specific status of these two Corellas.

I wish to thank Mr G. Bell of the Agriculture Protection Board for his help in collecting and despatching material from Kununurra.

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STARLING ROOST-SITE SELECTION: PREFERENCE FOR PALM TREES

By design or accident human activity has resulted in the colonization of most of the world's temperate areas by the European Starling *Sturnus vulgaris*. Probably throughout its range the species gathers at night into large roosts and the function of such roosts and roosting behaviour have received considerable attention (e.g., Brodie 1976; Jumber 1956; Odum and Pitelka 1939). While examining behaviour at Starling roosts in Santa Clara County, California, I noted that three of the five roosts I located were in palm trees. The apparent preference for palms might have been due to improved heat conservation within the enclosed crowns of such trees but it was not possible to obtain a suitable demonstration that the apparent preference was real.

An opportunity to demonstrate such a preference occurred on the nights of 9 and 12 August 1974, at Narromine, NSW, where a flock of 750–1,000 Starlings roosted in a row of ornamental trees. The trees included nine of a single unidentified deciduous species, then leafless, six broad-leaved Queensland Lacebark Trees *Brachychiton discolor*, and six Date Palms *Phoenix* sp. The distribution of Starlings within the row of trees was noted during arrival and departure, by observing the roost at night with flashlight and from the distribution of excreta under the trees. Table I gives the location and species of trees, estimated height, diameter of crown and occupancy.

Birds arriving in the evening landed in all three types of trees but shifted out of the leafless into the broad-leafed or palm trees. On 9 August all birds spent the night in five of the palm trees but on 12 August groups of about ten and thirty birds were still in the broad-leafed trees at dark. They were not there in the morning, however. If the nine leafless trees were unsuitable for roosting and if only those trees in which birds were known to have passed the nights are considered, the use of five of six palm trees and none of six broad-leafed trees shows a significant difference (Fisher Exact Probability, two-tailed $= 0.031$).

From below, both palm and broad-leafed trees had nearly perfect canopies, the former being more compact and spherical. Because air temperatures at night were cool (< 8 °C on both nights), it is reasonable to assume that birds would choose a tree in which heat conservation would be facilitated. The dispersion of available perches in the two types of trees may prove different and it may be that within palms one can achieve a greater roosting density. Microclimatic studies might reveal whether the down-curving leaves of palms actually provide better