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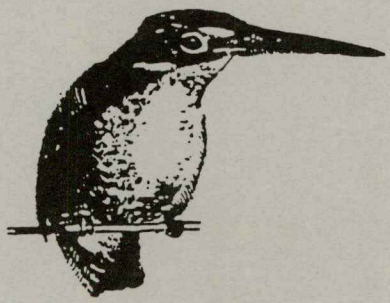

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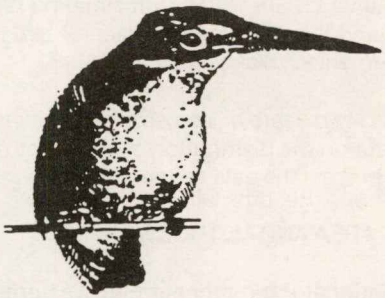

Volume 22, No 3-4 August 1989

A TWO YEAR AVIFAUNISTIC SURVEY IN KINCHEGA NATIONAL PARK, WESTERN NEW SOUTH WALES

KLAUS HENLE

ABSTRACT

150 species of birds (74 sedentary, 14 probably sedentary, 5 possibly sedentary, 1 sedentary but later exterminated, 30 rare vagrant, 6 migratory and 20 nomadic or partially nomadic species) were observed during a two year survey in Kinchega National Park, western New South Wales. Only a few, mainly sedentary, species were confined to just one habitat. The structurally more complex woodlands supported more species than the less complex, more open scrubland habitats. Breeding was only observed from late autumn to early or (exceptionally) late spring. Areas distant from water may be deserted by most birds in hot and dry summers. The number of bird species within one habitat is not obviously correlated to the number of species of any other vertebrate within the same habitat.

INTRODUCTION

Previous studies of vertebrate assemblages of desert systems in North America, South Africa and Western Australia are summarized by Pianka (1986). He concluded that Australian deserts are exceptionally rich in reptiles, rich in insectivorous mammals and moderately rich in birds. He suggested that bird and lizard diversity are positively correlated. However, Fyfe (1985) argues for a negative correlation between birds and lizard/small mammal diversity in Australian deserts. Too few surveys of sufficient duration are published for arid zone vertebrates in general, and birds in particular, to draw sound generalizations. Indeed, Pianka's vertebrate surveys in nine

habitats in central Western Australia (Pianka 1969, Pianka & Pianka 1970) and Brooker's surveys in four habitats of the northern Nullarbor (Brooker 1977; Brooker & Wombey 1978; Brooker *et al.* 1979) remain the only published suchlike studies in the arid zone of Australia. Additionally, an environmental assessment study of short duration (less than one week per study site), which included a survey of all vertebrate groups, was carried out in a large number of habitats in the Nullarbor (McKenzie & Robinson 1987). I am not aware of any other published long term avifaunal survey in Australia's arid zone but adaptations of birds to Australian desert conditions are reviewed by Keast (1959, 1981), Immelmann (1963), Serventy (1971) and Davies (1976; 1982; 1984; 1986) and the general distribution of birds throughout the interior of Australia is reasonably well documented (Blaker *et al.*, 1984).

During two years of intensive field work in Kinchega National Park I had the opportunity to collect data on the distribution of all terrestrial vertebrates within most major habitats in the park. Here I present the data on the avifauna.

THE STUDY AREA AND METHODS

Kinchega National Park in central far-western NSW receives a seasonal low rainfall (yearly average 236 mm). In the two years during the study temperatures ranged from a low of -4°C to a maximum of 28°C in winter and a 10-46°C in summer. Rainfall was average during the study period but both late summer/autumn periods were very dry and both springs were relatively wet (table 1). The summer of 1986 was extremely hot. Otherwise temperatures followed roughly the long term average (fig. 1). For more details of the climate in Kinchega see Robertson *et al.* (1987).

Permanent water is available in the form of the Darling River bordering the park in the east and of the two regulated Lakes Menindee and Cawndilla (fig. 2), but both lakes may dry out exceptionally (Evenleigh, pers. comm.). Extensive flooding in 1983 filled all the billabongs and the ephemeral Lake Emu. During the study period water levels dropped considerably in all water bodies except in the Darling; Lake Emu and all billabongs dried out completely.

Ornithological observations were made in six different habitats:

L: Lakes and their foreshores. Large parts of all lakes are fringed by flooded dead Black Box *Eucalyptus largiflorens* and River Red Gum *E. camaldulensis*. The major parts of the foreshores are predominantly covered by Blue Rod *Morgania florabunda* and Tree Tobacco *Nicotiana glauca* but several pockets of bushes and trees (mainly Black Box and Prickly Wattle *Acacia victoriae*) are present as well.

G: Red Gum Gallery Forests along the Darling River with a more or less closed canopy.

B: Open Black Box Woodland on heavy-textured cracking clay bordering billabongs, an artificial channel and parts of the lakes.

F: Open floodplains with a variety of mainly chenopod scrubs and bare clay pans. Some Black Box trees are found on slightly raised soils within the floodplains.

M: Blue Bush Steppe (*Maireana spp.*), occasionally with acacias and with pockets of Belah *Casuarina stricta* especially in the southwestern part of the park. Canegrass *Zygochloa paradoxa* is intermingled with Blue Bush on the lunettes round the lakes.

D: Hopbush *Dodonaea attenuata* on red sand dunes with hardly any ground cover.

More detailed descriptions of the vegetation of the park are provided by Robertson *et al.* (1987).

Casual observations were made during one week each in January, July and August 1985. From September 1985 till May 1987 each second month was spent in Kinchega. Daily and nightly observations were made in Hopbush and Black Box study plots. All other habitats were surveyed at least once per week for several hours but usually more frequently.

As no absolute population estimates can be made in such surveys four categories of relative abundance have been used:

Uncommon	(UC):	<10 individuals observed per day
Common	(C):	10-100 individuals observed per day
Very Common	(VC):	100-1000 individuals observed per day
Extremely Common	(EC):	>1000 individuals observed per day

The status for each species is described by:

Occasional	(O):	Not observed each month
Regular	(R):	At least one observation made per month

SYSTEMATIC LIST

The systematic list follows Pizzey (1985) which was used as principal identification guide. Birds rare or unusual for the region were additionally checked with Slater (1970, 1974) and palearctic migrants with Heinzel *et al.* (1972).

Dromaius novaehollandiae Emu R, C in all habitats but most abundant in Blue Bush Steppe; regular migrations to water places in the morning or late afternoon observed from late spring to early autumn. One nest with eight eggs found in July 1986 on the foreshore of Lake Cawndilla, approximately one metre above the water level.

Podiceps cristatus Great Crested Grebe R, C in L. Numbers steadily increased towards winter, approaching 100 in winter and thereafter decreasing again. Few specimens observed in summer.

Podiceps poliocephalus Hoary-headed Grebe R, C-VC in L. Absent from late spring to early autumn.

Podiceps novaehollandiae Little Grebe R, C in L. Absent from late spring to early autumn.

Pelecanus conspicillatus Australian Pelican R, VC in L, O, UC in G. Increased mortality occurred in July 1986, when 12 recently dead specimens were found along 500 m of beach at the south-eastern side of Lake Menindee.

Anhinga melanogaster Darter O, UC in L and G, but mainly seen on lakes.

Phalacrocorax varius Pied Cormorant R, VC in L, R, UC in G; large breeding colony in Lake Menindee (estimated at 1000 pairs in 1974 (Blaker *et al.* 1984)).

Phalacrocorax melanoleucos Little Pied Cormorant R, VC in L, O, UC in G.

Phalacrocorax carbo Great Cormorant R, VC-EC in L R, C in G. The breeding colony in Lake Menindee was estimated as 40 000 pairs in 1974 (Blaker *et al.* 1984)

Phalacrocorax sulcirostris Little Black Cormorant R, VC-EC in L, R, UC-C in G.

Ardea pacifica Pacific Heron R, UC in L O, UC in G.

Ardea novaehollandiae White-faced Heron R, UC in L, G.

Egretta alba Great Egret R, UC in L, G.

Egretta garzetta Little Egret One specimen 18 January 1986 near Lake Menindee regulator in drowned Red Gum forest.

Egretta intermedia Plumed Egret One specimen foraging together with two Great Egrets at Lake Cawndilla near the regulator on 29 March 1987; some possible observations in summer-autumn 1986.

Nycticorax caledonicus Nankeen Night-heron C at Emu Lake in September 1986; most disappeared with the drying up of the lake, thereafter O, UC in L and G.

Botaurus poiciloptilus Brown Bittern One seen 10 March 1987 between Lignum *Muehlenbeckia cunninghamii* stands in Emu Lake.

Plegadis falcinellus Glossy Ibis One in Black Box regeneration on westside of Lake Menindee on 17 July 1986.

Threskiornis aethiopica Sacred Ibis O, UC in L.

Threskiornis spinicollis Straw-necked Ibis O, UC in G; nomadic groups of up to 150 specimens rested occasionally at Lake Menindee for a few days before moving on.

Platalea regia Royal Spoonbill R, UC-C in L; usually not segregated from *P. flavipes*.

Platalea flavipes Yellow-billed Spoonbill R, C-VC in L. R, UC-C in G.

Cygnus atratus Black Swan R, VC in L; breeding in 1986/7 (Charlie, pers. comm.).

Tadorna tadornoides Chestnut-breasted Shelduck R, C-VC in L; steady increase in number from maximally 10 observed in September 1985 to approximately 250 in May 1987.

Anas superciliosa Pacific Black Duck R, C-VC in L; O, UC in G.

Anas gibberifrons Grey Teal R, VC-EC ion L, O, UC in G, F. Female with 5 chicks observed on Lake Menindee in September 1986.

Anas rhynchotis Blue-winged Shoveler O, UC-C in L.

Malacorhynchus membranaceus Pink-eared Duck O, UC-VC in L; several hundred individuals regularly observed from March to May 1987 on Lake Menindee.

Chenonetta jubata Maned Duck R, VC in L, G, C in F.

Elanus notatus Black-shouldered Kite One specimen hunting near Kinchega Station from 18-23 September 1985.

Milvus migrans Black Kite R, UC-C in all habitats; regular movements of up to 15 specimens at the same time around sunset from Menindee (rubbish tip?) to roosts in flooded Eucalyptus in Lake Menindee. One individual captured a brown snake (*Pseudonaja sp.*) near Lake Menindee.

Lophoictinia isura Square-tailed Kite Two seen near Kinchega Station 3 September 1986 and one over Old Homestead 21 November 1986.

Hamirostra melanosternum Black-breasted Kite One hunting near Kinchega Station 7 March 1987

Haliastur sphenurus Whistling Kite R, UC-C in all habitats; one nest found at Lake Cawndilla, breeding (?)

Accipiter fasciatus Brown Goshawk One seen over Blue Bush Steppe north of Kinchega Station on 17 September 1986.

Accipiter cirrhocephalus Collared Sparrowhawk One at Old Homestead on 19 November 1986.

Aquila audax Wedge-tailed Eagle R, UC-C in M, D, B; breeding in 1985 (Robertson, pers. comm.).

Hieraaetus morphnoides Little Eagle R, UC in all habitats: one pair breeding in early spring 1986 near the Darling River.

Circus assimilis Spotted Harrier One seen near Old Homestead 9 September 1986.

Circus aeruginosus Swamp Harrier O, UC in F, G, B, L.

Falco subniger Black Falcon O, UC in M, L.

Falco peregrinus Peregrine Falcon O, UC in B, F, G; one pair possibly breeding at the Darling River late spring 1986.

Falco longipennis Little Falcon One seen hunting near Kinchega station 11 November 1985 and again 18 November 1986.

Falco hypoleucos Grey Falcon One seen near Old Homestead 19 September 1987.

Falco berigora Brown Falcon One seen over Blue Bush Steppe east of Lake Cawndilla 27 September 1985.

Falco cenchroides Nankeen Kestrel O, UC in F, M, B.

Turnix velox Little Buttonquail One seen in open Black Box woodland near Kinchega Station 10 March 1987.

Gallinula ventralis Black-tailed Native-hen EC in F, L, G throughout 1985 and early 1986, thereafter steadily decreasing with drying up of overflow lakes and billabongs; very rare to absent from November 1986 to May 1987.

Gallinula tenebrosa Dusky Moorhen Approximately ten seen near Lake Menindee regulator on 25 September 1985.

Fulica atra Coot R, VC-EC in L; increasing in 1987 when up to 5000 were estimated in one small section of Lake Menindee.

Ardeotis australis Australian Bustard One seen during the last week of July 1986 in Blue Bush/Belah Steppe.

Vanellus miles Masked Lapwing R, UC-C in L; G, UC in F.

Erythrogonys cinctus Red-kneed Dotterel R, UC-C in L.

Charadrius mongolus Mongolian Sandplover One seen on recently emerged mudflats at Lake Menindee 28 May 1987; 3-5 seen same place 30 May 1987.

Charadrius ruficapillus Red-capped Dotterel O, C in L; but approx. 250 seen on mudflats at Lake Menindee in the second half of May 1987.

Charadrius melanops Black-fronted Dotterel O, C in L, G.

Himantopus himantopus Pied Stilt Five seen at Lake Menindee 28 January 1986.

Recurvirostra novaehollandiae Red-necked Avocet 12 seen at Lake Cawndilla near regulator 11 May 1987.

Tringa hypoleucos Common Sandpiper Two seen at or near Horsepaddock Billabong during September 1986; one individual on mudflats at Lake Menindee 30 May 1987.

Tringa nebularia Greenshank O, UC in F.

Calidris canutus Knot One in prenuptial moult on mudflats at Lake Menindee 30 May 1987.

Calidris ruficollis Red-necked Stint Approximately 100 (10 in breeding plumage) on mudflats at Lake Menindee in last week of September 1987.

Calidris alba Sanderling One seen with seven *Charadrius melanops* at Lake Cawndilla 29 March 1987.

Larus novaehollandiae Silver Gull R, C-VC in L.

Chlidonias hybrida Whiskered Tern O, C-VC in L, but only until winter 1986, thereafter no observations.

Hydroprogne caspia Caspian Tern R, C-VC in L, numbers increasing in 1987.

Columba livia Domestic Pigeon One seen at the west side of Lake Menindee on 23 July 1986.

Geopelia striata Peaceful Dove R, C in G; R, UC in B.

Phaps chalcoptera Common Bronzewing O, UC in M, G, B, F, D.

Ocyphaps lophotes Crested Pigeon R, C-VC in all habitats.

Cacatua roseicapilla Galah R, VC in all habitats, but large flocks predominantly in Blue Bush Steppe and Black Box woodland, here occasionally extremely common.

Cacatua sanguinea Little Corella R, VC in L, G; possibly breeding at the Darling River in November 1986.

Cacatua leadbeateri Pink Cockatoo O, UC-C in all habitats.

Cacatua galerita Sulphur-crested Cockatoo Two seen at the south-western border of the park 28 January 1985.

Nymphicus hollandicus Cockatiel O, UC-C in M, B.

Melopsittacus undulatus Budgerigar A flock of 100-150 in Blue Bush Steppe with few Belahs, observed daily from 24-29 January 1985.

Platycercus flaveolus Yellow Rosella R, UC-C in G.

Barnardius barnardi Mallee Ringneck R, C-VC in B, G, F; frequently seen eating berries of *Enchylaena tomentosa*, numbers decreased in the main Black Box woodland study site with the end of fruiting in *E. tomentosa* towards summer; courtship and collection of twigs observed at the interface of Black Box and Red Gum woodland in September 1986.

Psephotus haematonotus Red-rumped Parrot R, VC in F, B; O, C in G.

Psephotus varius Mulga Parrot R, VC in F, B, but more frequently observed on floodplains with few scattered Black Box trees.

Northiella haematogaster Bluebonnet R, Vc in F, B; R, C in D; O, UC in M.

Ninox novaeseelandiae Boobook Owl R, UC-C in B; R, UC in G.

Ninox connivens Barking Owl Occasionally 1-2 heard in B.

Tyto alba Barn Owl Two individuals (one seen, one heard) in Black Box woodland near Kinchega Station 11 May 1987.

Podargus strigoides Tawny Frogmouth R, UC in B, G; often seen hunting flying insects attracted by the spotlight or by permanent lights attached to trees.

Aegotheles cristatus Owlet-nightjar O, UC in B, M, D, F; only rarely seen hunting insects attracted by the spotlight or permanent lights attached to trees.

Caprimulgus argus Spotted Nightjar O, UC in G, D, B.

Dacelo gigas Laughing Kookaburra O, UC in G, B; several successful (?) hunting attempts on lizards (*Morethia boulengeri*) observed.

Halcyon pyrrhopygia Red-backed Kingfisher One at Lake Cawndilla regulator 29 November 1986.

Halcyon sancta Sacred Kingfisher R, UC-C in G; O, UC in L; one captured a skink (*Ctenotus regius*?) near Lake Menindee regulator.

Merops ornatus Rainbow Bee-eater R, C in L, G; O, UC in B.

Mirafra javanica Singing Bushlark Three seen in chenopod scrubs at the western park boundary on 17 July 1986.

Cheramoeca leucosternum White-backed Swallow O, C in M, L.

Hirundo neoxena Welcome Swallow R, C-VC in all habitats; approximately 20 pairs breeding each year in huts at Kinchega Station; large flocks of up to 500 gathered occasionally for hunting at Lake Menindee near the regulator during late autumn and early winter.

Cecropis nigricans Tree Martin R, VC-EC in L, G; O, c in B: a breeding colony of more than 50 pairs were found on dead flooded trees in the Horsepaddock Billabong in September 1986.

Cecropis ariel Fairy Martin R, UC-c in B, D, L; one (successful?) brood in a hut at the Kinchega Station in September 1986.

Anthus novaeseelandiae Richard's Pipit R, UC-C in M< O, UC in L.

Coracina novaehollandiae Black-faced Cuckooshrike R, C in F, B.

Coracina papuensis White-bellied Cuckooshrike O, UC in F, B, D.

Coracina maxima Ground Cuckooshrike 20-25 seen in Blue Bush Steppe with a few Belahs in the southwest corner of the park 23 July 1986.

Lalage sueurii White-winged Triller O, UC in L, F, M.

Petroica goodenovii Red-capped Robin R, C in B; R, UC-C in D, M; at least two pairs bred successfully each winter in Black Box woodland near the Kinchega Station.

Pachycephala inornata Gilbert's Whistler One female in Black Box woodland near Kinchega Station 17 May 1987.

Pachycephala pectoralis Golden Whistler Five seen near the Old Homestead in Black Box woodland 7 July 1985.

Pachycephala rufiventris Rufous Whistler Common in R, B in July and September of both years (seen daily); O, UC in G, B, D at other times of the year.

Colluricincla harmonica Grey Shrike-thrush R, C in G.

Rhipidura fuliginosa Grey Fantail O, UC-C, but most likely sedentary in dense Black Box regeneration at the eastside of Morton Bolka Swamp, an area only occasionally surveyed.

Rhipidura leucophrys Willie-wagtail R, C-VC in all habitats, but least common in Blue Bush Steppe and on floodplains.

Psophodes cristatus Wedgebill O, C in M, D.

Pomatostomus superciliosus White-browed Babbler R, C-VC in M, D, L; O, UC in B; but at least 500 individuals recorded all over the park in the last week of July 1986.

Pomatostomus ruficeps Chestnut-crowned Babbler O, C in M, D, but VC in Blue Bush Steppe in the last week of July 1986.

Acrocephalus stentoreus Clamorous Reedwarbler EC in Emu Lake before drying up in early 1986; VC at the Horsepaddock Billabong in stands of lignum till drying up at the end of 1986; only one further observation in reeds below Lake Menindee regulator.

Malurus lamberti Varigated Fairywren R, C-VC in L, G, F, D, B; O, UC-C in M.

Malurus leucopterus White-winged Fairywren R, C-VC in M; O, UC-C in D; many observations of fairywrens were of females or males in eclipse only without definite identification, but calling groups and males in breeding plumage suggested that most of the observations made in Blue Bush Steppe were of this species; although both wrens show clear differences in habitat preferences, there is no complete segregation and on rare occasions mixed groups were found in Blue Bush Steppe near pockets of woods along the shorelines of the lakes.

Smicrornis brevirostris Weebill R, C-VC in all habitats but with a preference for Black Box woodland; very common in the main Black Box woodland study site from late autumn to early spring but rare to absent at other times - possibly because of the large distance to the next source of water; in July 1986 two nests were completely finished in this study site but the species was abundant within the same month; breeding colonies in dense Black Box regenerations at the west side of Lake Cawndilla and near the Morton Bolka Swamp; several dozen nests were found woven in the outer foliage of young Black Box in Study Site 1; 5-4 m height; breeding started in late autumn and peaked in mid-winter.

Gerygone fusca Western Warbler One seen near the Old Homestead 25 May 1986.

Acanthiza pusilla apicalis Broad-tailed Thornbill O, UC in B, F.

Acanthiza uropygialis Chestnut-rumped Thornbill R, C-VC in B, R, C in D, M; in the main Black Box study site most common from late autumn to late spring, some birds may move closer to permanent water during summer.

Acanthiza chrysoorhoa Yellow-rumped Thornbill R, C-VC in B, D; R, C in M, G; often in mixed flocks with *A. uropygialis* and *Aphelocephala leucopsis*; breeding in Black Box woodland and on Hopbush Dune in both years from late autumn through winter; one pair reared two chicks.

Aphelocephala leucopsis Southern Whiteface R, VC in M, B, F, R, C in D; breeding from late autumn through winter in Black Box woodland and on Hopbush dune, one nest in a hollow branch of a Black Box at approximately 2 m height was used in both years; nest domed with grasses and lined with own and collected feathers.

Climacteris picumnus Brown Treecreeper R, C-VC in G, B.

Anthochaera carunculata Red Wattlebird O, UC in G; one immature bird seen in January 1987.

Acanthagenys rufogularis Spiny-cheeked Honeyeater R, C in all habitats.

Plectorhyncha lanceolata Striped Honeyeater Two seen in Black Box regeneration at Cawndilla Creek 9 July 1985.

Philemon citreogularis Little Friarbird O, UC in G.

Manorina flavigula Yellow-throated Miner R, VC-EC in all habitats, but with a clear preference for Black Box woodland; most common passerine in the park, perhaps together with *Lichenostomus penicillatus*; often observed trying to catch small birds (Weebills and thornbills) in flight; frequently searching for arthropods on the underside of Black Box leaves.

Lichenostomus virescens Singing Honeyeater R, C in L; O, UC in D.

Lichenostomus penicillatus White-plumed Honeyeater R, EC in G; O, Uc-C in B, L; by far the most common bird in the Red Gum Gallery forests along the Darling and its billabongs, a conservative estimate of its abundance is an average of 100 birds per 500 m of river; breeding from late autumn to early (late?) spring in Red Gum gallery forests; absent in the main Black Box woodland study site till May 1987, when at least two pairs established territories there.

Phylidonyris albifrons White-fronted Honeyeater Three seen in Black Box regeneration at Cawndilla Creek 9 July 1985.

Ephthianura tricolor Crimson Chat 12 seen on open chenopod scrub steppe at the western boundary of the park 26 September 1987.

Ephthianura albifrons White-fronted Chat O, C in m, F, L, but most frequently in M.

Dicaeum hirundinaceum Mistletoebird R, Uc-C in G, B, M, D; courtship observed in winter.

Pardalotus rubricatus Red-browed Pardalote Five seen in dense bush at Lake Menindee near regulator on 15 January 1986.

Pardalotus striatus Striated Pardalote R, C-VC in B, R, C, in D, G; noticeably decreasing in numbers in the main Black Box study site during both summers; breeding from late autumn through winter in Black Box woodland and one pair in an old Fairy Martin nest in a shed near Kinchega Station; males established territories already in March in 1987, but not until May in 1987.

Passer domesticus House Sparrow One male and three females resident at Kinchega Station from September to November 1985; nesting attempted; all were shot in November; one female passing through Kinchega Station in May 1987.

Poephila guttata Zebra Finch O, C in all habitats.

Sturnus vulgaris Common Starling O, C in all habitats.

Artamus leucorhynchus White-breasted Woodswallow R, C-VC in L, M; R, UC-C in B, F; one pair feeding two juveniles in Black Box on floodplain in September 1986.

Artamus personatus Masked Woodswallow O, C-VC in M, F, B; southwards movements of up to 100 individuals observed in September.

Artamus superciliosus White-browed Woodswallow O, C-VC in M; southwards movements of flocks up to 100 individuals observed in September.

Artamus cinereus Black-faced Woodswallow O, in M; southwards movements of flocks up to 100 individuals observed in September.

Grallina cyanoleuca Magpielark R, C-VC in all habitats, but with a slight preference for the shoreline of lakes; one captured a large skink *Ctenotus regius*.

Struthidea cinerea Apostlebird R, C-VC in all habitats.

Corcorax melanorhamphos White-winged Chough R, C-VC in all habitats, but slightly less common than Apostlebird.

Cracticus torquatus Grey Butcherbird O, UC in F, B.

Cracticus nigrogularis Pied Butcherbird R, UC-C in all habitats; breeding in River Red Gum gallery forests and Black Box woodland in spring; two pairs raised each two young; frequently observed hunting for large insects and skinks (*Morethia boulengeri*).

Gymnorhina tibicen Australian Magpie R, C-VC in all habitats but predominantly in Blue Bush Steppe and on floodplains.

Corvus coronoides Australian Raven R, C-VC all over the park, no clear habitat preference noticeable; sometimes in flocks up to 25 individuals, possibly occasionally more, but because of difficulties of identifying corvids in the field most observations not assigned to species unless birds called frequently.

Corvus mellori Little Raven R, C-VC in all habitats; one flock of 50-100 birds frequently resting at Lake Menindee; sometimes mixed flocks with Australian Ravens and Little Crows, which usually was an indication of large carrion somewhere nearby.

Corvus bennetti Little Crow R, C-VC in all habitats; seems to be the least common of the three ravens, but many observed ravens were not assigned to species due to identification problems in the field.

RESULTS AND DISCUSSION

150 species were recorded. Of these, 74 species were regularly seen and are certainly sedentary; 14 further uncommon species or species restricted to small parts within the park were not seen regularly but are likely residents; 1 species (*Passer domesticus*) was sedentary but was exterminated; 5 species were observed irregularly and may be sedentary or vagrant; 30 species are rare vagrants, 6 are migratory, 14 nomadic and 6 mainly nomadic but with a resident population in the park. All six migratory species are waders; four are restricted to the lakes, one to the floodplains and one was found in several habitats (table 2). Ten of the nomadic species are waterfowl or wetland species and ten (three parrots and seven passerines) were predominatly found in Blue Bush Steppe, but, except for Budgerigars, also in other habitats, usually drinking at the shorelines of the lakes.

To survive in Kinchega, sedentary species have to cope with long periods of low rainfall and excessive heat. The importance of access to water is shown by the aggregation of many species at artificial water sources, the lakes or the river for drinking. A partly covered water tank at the station was regularly visited by Australian Ravens, Australian Magpies, Magpie-larks, Yellow-throated Miners and Crested Pigeons. Small passerines seldom used this source but frequented billabongs, the lakes or the river. These birds are the main reason for the high number of species the lakes and their foreshores share with other habitats (table 2).

Proximity of open water allowed most species to remain in their preferred habitats. Nevertheless, sometimes the climatic conditions exceed the tolerable limits for most species. This could clearly be seen in March 1986 when, after a practically rainless summer, daily maximum temperatures still averaged 36.5^{o}C and frequently exceeded 40^{o}C. Most species almost completely deserted the main study areas in Black Box woodland and on Hopbush dune - all at approximately 2 km distance from the next permanent open water source. Only *Ocyphaps lophotes*, *Hirundo neoxena*, *Manorina flavigula*, *Grallina cyanoleuca*, *Gymnorhina tibicen*, *Struthidea cinerea* and *Corvus coronoides* were still regularly seen in these areas. All of them used the water tank of the nearby station for drinking. All species, which deserted the main study sites, were still observed in the gallery forests along the Darling and in dense pockets of bushes or woodland along the lakes but even there their activity and numbers were markedly reduced. Contrary to 1986 the summer 1987 was rather mild but as dry as in the previous year. In 1987 all species remained in the main study areas although their numbers were considerably reduced.

Breeding, confirmed mainly for passerines, started in May, peaked in July and finished in most species before November. As in both years the late summer/autumn period was very dry and the winter/spring period received above average rainfall, it is not clear whether the winter breeding is a regular feature to avoid excessive heat or was purely a response to the high prevailing food availability for insectivorous birds (Henle, in prep.). In the Nullarbor some passerines also breed in autumn, while others breed during dry conditions or having long breeding seasons after heavy rains (Brooker *et al.* 1979).

As in Western Australia (Pianka & Pianka 1970) and in the Nullarbor (Brooker *et al.* 1979) only a small number of nomadic species were found in Kinchega. The percentage of sedentary species is slightly higher in Kinchega (49%) than in the Nullarbor (39%). This and the slightly

Table 1: Annual and seasonal rainfall at Menindee (1km NE of Kinchega for the period 1883-1984 (from Robertson et al. 1987) and at Kinchega during the study period.

	Spring (Sep-Nov)	Summer (Dec-Feb)	Autumn (Mar-May)	Winter (Jun-Aug)	Year (Range)
Menindee	61	62	57	59	236 (52-739)
Kinchega1985/6	66.5	29.5	36	59.8	191.7
Kinchega1986/7	89	74.8	43	60.3	267.2

TABLE 2: Number of bird species observed in six habitats, exclusive of rare vagrants; second number:migratory species only; third number:nomadic species only.

Category	Lake	Red Gum	Black Box	Flood-plain	Maireana	Dodonaea-dune
confined	16, 4, 7	4, 0, 0	2, 0, 0	0, 1, 0	3, 0, 3	0, 0, 0
shared	53, 1, 5	56,1, 3	57,0, 4	42,1, 3	43,1, 3	37,0, 4

Table 3: Number of species in several different vertebrate taxa observed in six habitats in Kinchega (sources:present paper & Henle [in prep])

Area*	Birds	Lizards	All Reptiles	Small Mammals (exclude bats)	Small Mammals (include bats)
L	69	3	7	1	2+
R	60	6	9	1	4+
B	59	14	21	4(-5)	8+
F	43	3	3	2	3+
M	46	20	25	3	4+
D	37	12	14	2(-3)	4+

*:see text for description of areas.

higher total number of birds observed in Kinchega (150 versus 135) may be explained by the more intensive observations, which increase the likelihood for rare birds to be seen and for uncommon birds found to be sedentary. In all three arid regions the numbers of species confined to (or at least observed only in) one habitat are small except for species associated with the lakes in Kinchega. In contrast, lizard assemblies in Piankas' study sites (Pianka 1969) and in Kinchega (Henle, in prep.) include more habitat specialists.

The number of species reported for the Nullarbor habitats and for Kinchega are surprisingly similar. In the present study 59-60 species were found in woodland habitats, and 37-46 in the open, less complex structured steppe like habitats (table 2), while Brooker *et al.* (1979) list 57-60 and 34-45 species for equivalent habitats. But the Western Australian desert habitats examined by Pianka & Pianka (1970), are less rich with 29-36 species in desert woodland and scrub habitats and 15-19 species in treeless steppe habitats. These comparisons partly sustain Fyfe's (1985) claim brought forward without supporting data, that structurally more complex habitats should favour birds, but also show that further factors must contribute to the relatively depauperate avifauna in the Western Australian desert systems.

Pianka (1969) suggested that in Australian desert habitats bird and lizard species increase with habitat complexity but lizards do so faster than birds, contrary to the situation in North American desert systems. While this relation holds true for his study plots the situation is quite different in Kinchega where lizard and bird diversities show no obvious correlation (table 3). There is also no clear correlation between the number of small mammal and bird species in Kinchega. Clearly, many more intensive surveys are necessary before any general conclusions about habitat and species diversity and about interactions or correlations between different vertebrate groups can be drawn.

ACKNOWLEDGEMENTS

My thanks are due to the New South Wales National Parks and Wildlife Service staff for their hospitality at Kinchega and for their encouragement throughout this study. I also wish to thank Dr S. Ambrose, Department of Zoology, Australian National University, for helpful comments on an earlier draft of this paper.

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NESTING OF THE WONGA PIGEON *Leucosarcia melanoluca* -CORRECTIONS AND ADDITIONS

S. MARCHANT

Further observations at the two nests of the Wonga Pigeon *Leucosarcia melanoleuca* in 1987 showed that some remarks made by Marchant (1987) were wrong and enable me now to give a more comprehensive account of the nesting cycle. Both nests were in the Mogo State Forest at Mulbrook Road, Moruya (35° 56'S, 150° 06'E), a description of which has been given already (Marchant 1979). All times are given as Eastern Standard.

Nest A was on a horizontal fork of an upper flat branch of a casuarina, about 15 m high - a site that had also been used in 1986 for an unsuccessful nest. I could view it clearly with 8x50 and 10x50 binoculars from 30-50 m, from below eye level, but could not see the ground round the base of the tree. Thus, I could not see the approach of relieving birds, which is usually or even invariably made on the ground. Nest B, probably a replacement after the loss of nest A and about 120 m distant from it, was in the tri-fork of a sloping trunk of a stringy-bark *Eucalyptus mullerana*, 20 m in height. It was clearly in view from eye-level at 40 m, as was also a good part of the ground round the tree. Here I could often see the approach of the relieving bird, which is what allows me to correct with confidence previous mistaken interpretations.

INCUBATION AND NESTLING PERIODS

Nest A. I noted on 15 September that the old nest had almost disappeared and that there was no rebuilding. At 17:00 hrs on 23 September an adult was sitting on the new nest. At relief at 07:10 hrs on 9 October, the relieved bird flew away with two half shells, dropping them almost at once. At 08:02 hrs on 10 October, it flew off again carrying egg-shells and later I found one half about 120 m away. The nest was unaccountably destroyed between 08:10 and 13:05 hrs on 16 October. One dead squab was on the ground.

Nest B. At 17:20 hrs on 29 October I found the nest with an adult sitting. At 06:57 hrs on 13 November, the relieved bird flew away with egg-shells and at 16:05 hrs on 14 November also did so. At 07:00 hrs on December, after a gale force wind all night, the nest was empty but I found both young,uninjured and able to fly 20+ m, on the ground nearby; they seemed no less immature than other recently fledged squabs that I have seen previously. I had feared that the young had been blown out of the nest prematurely but, after having seen them, doubted whether this can have happened.

This means that building of nests, new or replacement, takes no more than 8-12 days and probably several days less; that laying is at an interval of about 24 hrs; that incubation starts with the laying of the first egg; that hatching is asynchronic at an interval of 24-36 hrs; and that the incubation period is at least 17-18 days and the nestling period 18-19 days, depending on which egg or chick is considered. There is no previous adequate determination of these periods except that of Frith (1982) who quotes B.E. Triggs for a nestling period of 26-27 days. Such a large discrepancy is inexplicable except by error.

RELIEF AT THE NEST

Table 1 gives details of when relief took place. In the mornings they were between 06:16 and 08:12 hrs with a median of 07:01-02 hrs but one was exceptionally late (09:08 hrs) and previously (Marchant 1987) I recorded one very early (05:35 hrs). In the afternoons they were between 15:02 and 17:30 hrs with a median of 16:02-03 hrs. Judged by the medians, the time of morning reliefs stayed about the same before and after hatching but in the afternoons they generally became about half an hour earlier (16:30 v.15:54 hrs). Also, before mid-October (*i.e.*, in Nest A with rather few records) reliefs were generally 20-30 minutes later than afterwards (*i.e.*, in Nest B), perhaps being related to earlier sunrise and increasing length of daylight.

I had only one record (30 October) of the relieving bird flying to the nesting tree from any distance (50+ m). Otherwise it always walked to within about 10 m of the nesting tree and then flew up, usually entirely silently with no sound of wing-beats, sometimes almost directly to the nest but usually to a perch 3-5 m below. From there it fluttered or hopped by two or three stages to a branch just above the nest. The relieved bird then usually left quickly and silently and the relief stepped at once onto the nest, leaving the eggs or young uncovered for barely a minute. Occasionally the relieved bird was reluctant to fly away and the two birds were at the nest together for up to 10 minutes. The only occasions when the nest was left unattended were on 30 November and 1 December, the last two days before fledging, when the relieved bird left 23 and 4 minutes respectively before the relief arrived.

In the morning I did not see the relieving bird until it suddenly flew up into the nesting tree, except once. However, it had probably been walking about in the ground vegetation nearby for some time because I usually saw it fly into the area or walk across open places within 50 m of the nest up to an hour before the relief. Once it had flown up into the tree, relief was accomplished in 1-5 minutes. On the day when the first egg hatched in Nest B, the relieving bird came to the nest, waited nine minutes, while its mate poked about in the nest, and then flew away; it was soon back, waited for another five minutes and left; finally it came back and settled at once as soon as its mate had left with the egg-shell.

In the afternoon, relief was rather more protracted, though this may have been because I could usually see the relieving bird on the ground close by the nesting tree before it flew up. On most occasions relief was accomplished in 2-8 minutes but on eight occasions ranged from 16 to 60 minutes. During one of these long performances there was a third bird in the area, which may have caused the delay. This bird had flown into the nesting tree with noisy wing-beats in contrast to the silent flights of the breeding pair, had sat and walked from perch to perch within 5 m of the nest for 31 minutes and had then flown away. While it was near the nest the sitting bird had kept its tail towards it, raised in the cryptic pose (see below), but otherwise had shown no interest in it. During the 60-min delay the relieving bird was evidently alarmed by something because it adopted the cryptic pose for a while on the ground but I could see nothing that might have frightened it. On 2 and 28 November, when I witnessed no relief, the relieving bird came to the nest and flew away without disturbing its mate. This puzzled me because, if it was the female coming for its nightly stint (see below), it must either have returned much later (after 18:45 hrs)

TABLE 1: Times (EST) of reliefs in morning and afternoon at two nests of the Wonga Pigeon in 1987, with stints of attendance by male and female. NW= no watch; ? = no relief during watch; H1 and H2 =hatching of first and second egg.

		Male		Female	
		Relief	Stints	Relief	Stints
Nest	A				
Sep	23				
		NW	--	NW	--
	24	"	--	"	--
	25	"	--	17:00	--
	26	"	--	17:11	--
	27	09:08	--	?	15h57m
	28	07:17	9h05m	16:22	14h43m
	29	07:05	8h33m	15:38	15h46m
	30	07:24	9h32m	16:56	--
Oct	1	NW	--	NW	--
	2	07:33	8h50m	16:23	--
	3-8	NW	--	NW	--
H1	9	07:10	--	?	--
H2	10	08:02	8h13m	16:15	15h55m
	11	08:10	--	?	--
	12	06:53	--	?	--
	13	06:46	8h28m	15:14	16h14m
	14	07:45	--	?	--
	15	07:52	7h31m	15:23	16h45m
	16	08:08	lost		

		Male		Female	
		Relief	Stints	Relief	Stints
	Nest	B			
Oct	29	?	--	?	--
	30	?	--	17:10	13h35m
	31	06:45	10h40m	17:25	13h26m
Nov	1	06:51	10h22m	17:13	13h59m
	2	07:12	--	?	--
	3	08:06	9h14m	17:20	13h33m
	4	06:53	10h37m	17:30	13h50m
	5	07:20	--	?	--
	6	07:55	8h35m	16:30	13h59m
	7	06:29	--	?	--
	8	NW	--	?	--
	9	08:12	--	?	--
	10	NW	--	15:59	--
	11	?	--	?	--
	12	06:16	9h20m	15:36	15h21m
H1	13	06:57	9h00m	15:57	14h48m
	14	06:45	9h20m	H2 16:05	14h35m
	15	06:40	--	?	--
	16	06:30	8h32m	15:02	15h51m
	17	06:53	8h52m	15:45	15h27m
	18	07:12	8h01m	15:13	15h42m
	19	06:55	9h31m	16:26	15h05m
	20	07:31	8h23m	15:54	15h07m
	21	07:01	10h21m	17:22	13h40m
	22	07:02	8h09m	15:11	16h31m
	23	07:42	8h20m	16:02	15h25m
	24	07:27	8h49m	16:16	14h46m
	25	07:02	8h46m	15:48	15h31m
	26	07:19	8h23m	15:24	15h42m
	27	07:30	7h57m	15:27	16h38m
	28	08:05	--	?	--
	29	06:23	9h40m	16:03	15h28m
	30	07:31	9h14m	16:45	14h13m
Dec	1	06:58	--	?	--
	2	Fledged			

than usual or put the change-over routine out of phase, unless of course there had been a relief before I started to watch at 16:00 and 17:00 hrs and the visitor on both occasions was the male.

STINTS OF ATTENDANCE AT NESTS

As already reported (Marchant 1987), the afternoon relief is usually accompanied or heralded by persistent advertisement calling from near the nest, whereas in the morning there is usually little or, if there are some long bursts or series, they sound far from the nest and may not be given by a member of the pair. On the strength of what Frith (1982) said, I assumed that the male gave the persistent calls, often in bouts of up to 250 individual hoots. At Nest B, it was quite certain that he did so on the nest in the afternoon, often when there was no sign of the female nearby. However, the only indication of calling that he gave was a slight movement of the tail with each hoot; his bill was closed and I could see no pulsation of his throat.

Thus, from the data in Table 2, attendance by the pair was as follows.

Nest A			
Male	Range	Average	Combined Average
Pre-hatch	8h33m-9h32m	9h00m	
			8h36m
Post-hatch	7h31m-8h28m	8h04m	
Female			
Pre-hatch	14h43m-15h57m	15h29m	
			15h56m
Post-hatch	15h55m-16h24m	16h24m	
Nest B			
Male			
Pre-hatch	8h35m-10h40m	9h41m	
			9h09m
Post-hatch	7h57m-10h21m	8h49m	
Female			
Pre-hatch	13h26m-15h21m	14h04m	
			14h16m
Post-hatch	13h40m-16h38m	15h19m	

The evidence from Nest A was poor but serves to support that from Nest B, which shows that the male's attendance is generally for about 9 hours and the females for about 15 (37.5 v 62.5%) and that the male's share decreases by about an hour on average after hatching while the female's increases by that amount.

Persistent calling at the time of the afternoon relief was maintained throughout the incubation period. After the first egg hatched it was much reduced and became little more than the volume associated with the morning relief, usually only a few short low bursts as the female approached. It was certainly only on one or two occasions that the female also called and then only a brief burst or two of 5-7 hoots when at or very near the nest.

CRYPTIC POSE

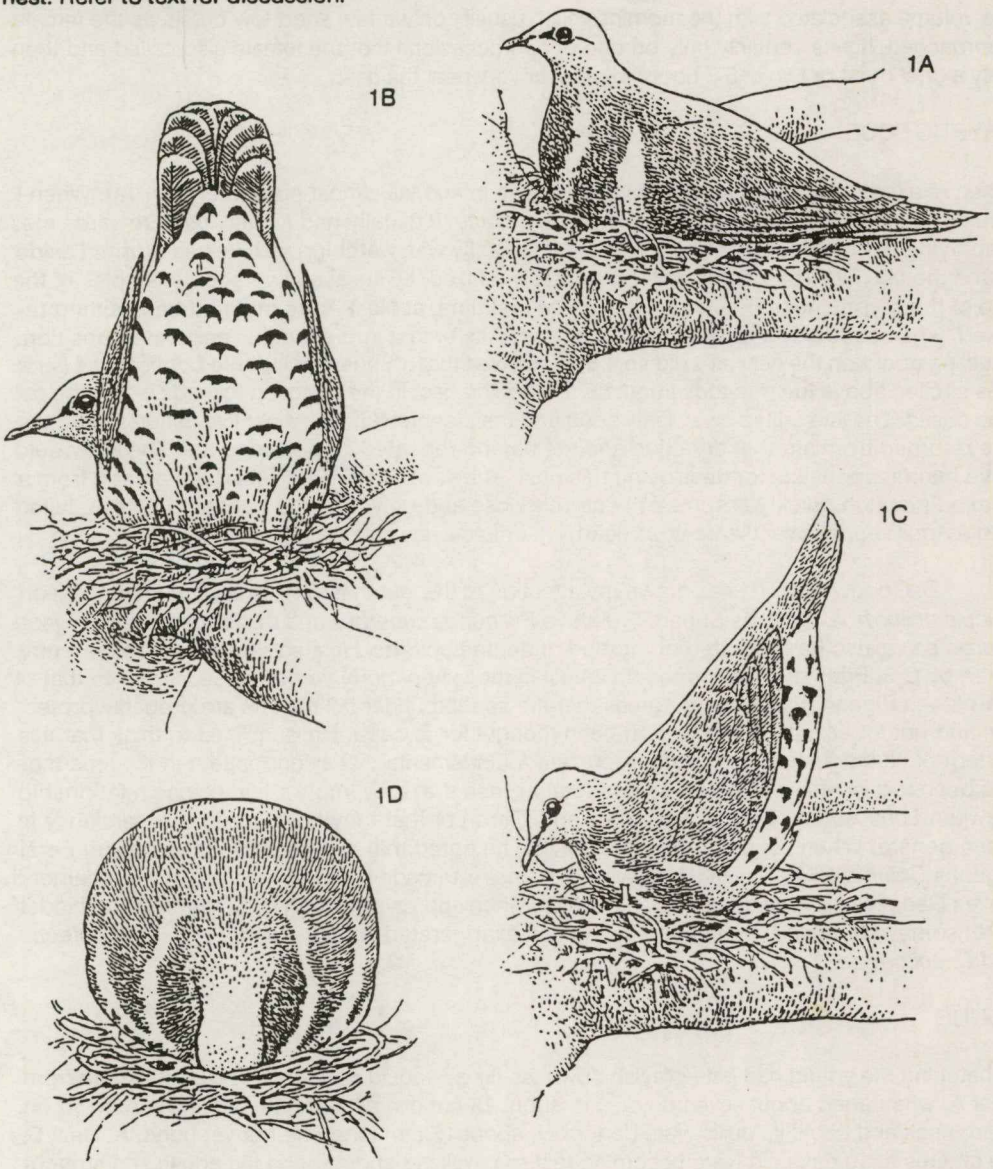
When relaxed, the sitting bird held its head drawn in and tail almost horizontal (Fig. 1a). When I could first see it as I approached my watching place, it usually had its tail raised towards me, displaying the mottled undertail coverts, and usually was watching with its head turned aside round the tail (Fig. 1b). After a while, it gradually relaxed. I witnessed two good examples of the use of the cryptic pose (Fig. 1c and 1d). The first time, at Nest A the bird had been sitting relaxed, when suddenly it raised its tail and bowed its breast into a most exaggerated position, shuffling about on the nest as it did so. I then realised that a Square-tailed Kite *Lophoictinia isura* was circling above the tree-tops about 50 m from the nest in the direction towards which the tail was raised. The kite drifted away fairly soon and the pigeon relaxed. About five minutes later, the kite returned from another direction and the pigeon repeated its performance. The kite could have been responsible for destroying this nest. The second time, at Nest B the pigeon from a relaxed position quickly assumed the cryptic pose and only then did I notice a Wedge-tailed Eagle *Aquila audax* over the treetops nearby. It drifted away and the pigeon relaxed.

D. Goodwin (*in litt.*) has drawn my attention to the fact that the Torresian Imperial-Pigeon *Ducula spilorrhoa*, the male Superb Fruitdove *Ptilinopus superbus* and the African Green Pigeon *Treron calva* also have spotted or mottled under tail-coverts. He also sent me a transparency, taken by C.B. Frith, of *D. spilorrhoa* on a nest in the tail-up, body vertical pose, similar to that of the Wonga Pigeon (Fig. 1C). He agrees that the spotted under tail-coverts are probably protective and not for sexual display as had been thought for *T. calva*. He is inclined to think that this pattern of plumage and the posture represent a fundamental behaviour pattern in pigeons that has been lost or altered in most species rather than that they imply a fairly close relationship between *Leucosarcia*, *Ducula*, *Ptilinopus* and *Treron* or that they have arisen independently in these genera. When keeping birds in captivity, he noted that rather timid individuals of Feral Pigeons *Columba livia*, Speckled Pigeons *C. guineae*, turtledoves *Streptopelia spp.* and Diamond Doves *Geopelia cuneata* crouched on the nest, when approached, with head lowered and hinder parts somewhat raised, though not in such an exaggerated fashion as that of *L. melanoleuca* and *D. spilorrhoa*.

YOUNG

At hatching,the young had pale greyish down, as far as I could make out. The dead squab from Nest A, when aged about seven days, was about 13 cm overall and had pale greyish down on head, neck and back; its quills were dark grey, about 15 mm long and not yet burst. At Nest B, the squabs at 10 days old were becoming restless, walking about round the adults and stretching their wings. They appeared well feathered and of the same colour as the adults on the upperparts. When they were small and until about half grown, it was hard to determine how often

Figure 1. Cryptic pose of Wonga Pigeon at nest. Refer to text for discussion.



they were fed because the adult was continually poking down under its breast and the young could hardly be seen, particularly if the adult was facing away from me. If it was facing me, however, I was struck by its grotesque and even menacing appearance (fig. 1D) when its head was well tucked down and the white stripes on either side of its neck curled up. This had a distinctly aposematic or threatening look about it that could make a predator hesitate before attacking the bird when in its most defenceless position. Perhaps this explains a pattern of plumage that otherwise has seemed to me to be pointless.

From about ten days old, the squabs were not brooded continuously. They spent more and more time sitting alongside or in front of the adult, stretching and flapping their wings. Bouts of feeding were less frequent than earlier and I recorded them mostly soon after or before the relief. I was then also able to see that they were fed by incomplete regurgitation with much gulping and pushing about by the adult. Apparently both squabs were fed at the same time, one on either side of the adult.

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OBITUARY

PATRICK ALBERT BOURKE, 1915-1988

Pat Bourke grew up on country properties in the Bathurst district where he developed a lively interest in birds that stayed with him throughout his life.

After gaining his Leaving Certificate and training as a teacher, Pat was appointed to Bugaldie, a one-teacher school near Coonabarabran. His first contribution to The Emu was published in 1939; in the same year he enlisted in the A.I.F. and was attached to the Intelligence Corps. After service in the Middle East and in the Pacific he was stationed on the Atherton Tableland in 1943. Here he met up with A.F. Austin and their association led to the publication (posthumously in the case of Austin) of a major paper on a previously unstudied region: "The Atherton Tablelands and its Avifauna" (Emu 47:87-116).

Pat resumed his teaching career after the war: his progress is marked by the succession of his pupils in the annual Gould League competitions. He was an active co-operative contributor to Gould League Notes (an Editors dream, in fact) with articles illustrated by his own superb photographs or accomplished line drawings. His work was acknowledged by the gold medal award of Honorary Life Member of the League.

Pat contributed numerous articles to a variety of publications over a period of 50 years. Twenty-eight articles, many of them illustrated, were published in the Emu. He joined the New South Wales Field Ornithologists Club when it started in 1966, and his articles were published in Australian Birds 6:40, 6:55, 11:19 and 20:48. His major ornithological work was his book "Elementary Bird Study", a text book on scientific bird study. Although reprinted 20 years later it is now unfortunately out of print.

Pat's contribution to Australian ornithology was recognized in 1983 by the award of the Order of Australia. During his retirement at Maitland from 1975 he took an active part in the movement to have Kooragang Island dedicated a Nature Reserve, and in the establishment of the Shortland Wetland Reserve.

Paddy Bourke passed away at his home on 26 November 1988. His friends will remember him as a quiet, courteous man with an encyclopaedic knowledge of birds. We will miss his low-key sense of humour and his rigorous approach to ornithology: our sympathy goes out to his widow Iona and daughter Kerry.

P.E. Roberts

LONG-BILLED CORELLAS FEEDING IN RICE CROPS IN THE RIVERINA REGION OF NEW SOUTH WALES

W.B. EMISON AND C.M. BEARDSELL

Recent studies of the Long-billed Corella *Cacatua tenuirostris* in Victoria (Temby and Emison, 1986. Aust. Wildl. Res. 13:57-63) and in South Australia (Emison and Beardsell, 1985. S. Aust. Ornithol. 29:197-205) have shown that its major foods are (1) the corms of Onion Grass *Romulea spp*, which are usually obtained from pastures, and (2) cereal grains, which are taken from either germinating or mature crops or from stubbles.

Between June 1979 and December 1984 data were also obtained on the food sources (e.g. pastures, cereal crops) where flocks of Long-billed Corellas were seen feeding in New South Wales. These sightings were made in the Riverina, mainly on the flood plains of the upper Edward and Wakool Rivers (to the east of a north-south line drawn through Moulamein) and along the Murray River from Barham to Millewa State Forest.

Information on the food sources where corellas were seen feeding in the Riverina were gathered by ourselves (data on about 13 000 birds) and by local naturalists Philip Maher, Peter Disher and Evan Thomas (data on about 11 000 birds). Analyses of these data showed that the basic food sources of the corellas in the Riverina were similar to those in Victoria and South Australia in that 57% of the Riverina birds were feeding in pastures, 41% in cereal crops, and 2%

in other crops. However, when the types of cereal crops in which the birds were seen feeding were analysed there was a marked difference between those being used by the Riverina birds and those being used in Victoria and South Australia.

Of all the Long-billed Corellas seen feeding in cereal crops in the Riverina more than half (52%) were in rice crops while the remainder were in oats (31%) and wheat (17%). In contrast, of all the corellas seen feeding in cereal crops in Victoria and South Australia most were in oats (83% and 72% respectively) with considerably fewer birds in wheat (16% and 18% respectively). There were no rice crops in the Victorian and South Australian areas where most of our studies were conducted.

Thus, it appears that in areas where rice crops are grown and where Onion Grass is present the main food requirements for the Long-billed Corella are satisfied. This may have implications for the future of this corella because it is presently expanding its range.

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NESTING OF THE WHITE-BELLIED CUCKOOSHRIKE *Coracina papuensis*

S. MARCHANT

It is perhaps a measure of our ignorance of the nesting of the White-bellied Cuckooshrike *Coracina papuensis* that at the end of the 1986-87 breeding season, after almost 25 years of the Scheme, there were only 18 nest record cards for the species. North (1904) and Campbell (1900) have almost nothing to say about the breeding of this species, beyond a description of nest-site, nest and eggs, in contrast to their usual detailed and informative accounts. I can find no other useful information in the literature.

This lack of knowledge is not surprising because in my experience the birds are rather hard to distinguish from Black-faced Cuckooshrikes *C. novaehollandiae* except by voice, tend to be rather silent, and nest inaccessibly high in woodland and forest, though the height probably depends on the general height of the trees in their habitat; the eight nest-records for Northern Territory, Queensland and Western Australia give heights of nests as 4-7 m, whereas eight from

New South Wales and Victoria were all 8-20 m high. I have known five nests at Moruya, NSW, since 1982, two of which in 1987 I could follow closely from start of building to failure and success. Both were inaccessibly high but could be viewed clearly with 8x50 binoculars from below eye-level at 30-50 m distance. The following notes summarize my observations, mostly at these two nests.

I found the first nest (A) on 7 September, perhaps 1-2 days after building started. Incubation started on 17 September and the nest was destroyed on the night of 22-23 September, possibly by an owl; fragments of it with some contour feathers and a broken egg were on the ground. It had been on a horizontal fork of a slender branch of a small angophora tree near its extremity and about 20 m high. The adults were easily distinguished: one had a full black mask; the other, a black mask with a whitish chin. On 6 October what appeared to be the same pair had just started to build another nest (B) about 200 m from the first, again on a horizontal fork of a curving branch of a eucalyptus tree, two-thirds out from its centre, again about 20 m high. Incubation started on 13 October; hatching occurred on 2-3 November and the last young left the nest about 09:00 hrs on 25 November. At both nests, building with no sign of serious incubation on one day was followed by continuous incubation on the next; I therefore think that laying started before building finished, as suggested for *C. novaehollandiae* (Marchant 1985a) and that incubation started with the laying of the last egg, on 17 September in Nest A and on 13 October in Nest B. If so, the incubation period in B was 21-22 days. Only two young were ever seen and the clutch-size was probably two. With the last young leaving on 25 November, the nestling period was 22 days approximately. This is in line with the periods shown by other species of *Coracina* (Marchant 1979, 1985a).

BUILDING

Both adults built about equally, coming to the nest singly or together. At Nest A building went on for at least 10 days before incubation started; at Nest B, for at least seven days. At A, however, building occurred in bursts of activity interspersed with periods when the birds disappeared. On two days I had to wait 80-90 minutes before seeing them at all and on every day there were periods of 15-30 minutes with no activity, though on the last two days before incubation, activity was continuous through watches of 73 and 66 minutes. Building visits were made every 9-10 minutes on average throughout all my watches (580 minutes). At B, building was more continuous without spells of inactivity. Visits were made every six minutes on average (watches = 300 min.). The faster building of Nest B suggests that the same pair was building a second nest.

For the most part, the birds were silent while building, collecting material out of sight, a good 50 m from the nest. I noticed a bird collect a thin twig from near the nest on only three occasions. As often as not, no material was to be seen when the birds came to the nest; doubtless they were then carrying cobwebs, which they wiped round the nest and its supports, often reaching well over to the underside of the branch on one side, while depressing the tail and raising the rump feathers on the other. I noticed no exaggerated gaping, which might have suggested the use of saliva, but when visible material was brought, it was held well back in the gape and not towards the tip of the bill, as was noticed for *C. novaehollandiae* (Marchant 1985a).

Both nests were in an area colonised by Yellow-tufted Honeyeaters *Lichenostomus melanops*. During building, on five occasions I noticed 1-3 honeyeaters come to the nests while the cuckooshrikes were away, poke about in them and apparently remove material.

INCUBATION

Both adults (K = full black mask; W = white chin) shared incubation as follows:

	Watch	K	W	Unattended (min)
Nest A	1016	525 (52%)	350 (34%)	41 (14%)
Nest B	550	333 (60.5%)	206 (37.5%)	11 (2%)

Completed stints of incubation were:

	n	Range	Average
K			
Nest A	12	4-42	21.8 (mins)
Nest B	8	3-83	25
W			
Nest A	13	2-57	20
Nest B	5	4-24	12. 5

Thus, the share was approximately 60(K)-40(W), K perhaps being the female. The watch at Nest A was entirely in the first six days, whereas at Nest B it was mostly (75%) in the last five days. So, as incubation proceeded, K apparently lengthened its stints and W shortened them.

Usually one bird stayed on the nest till the other arrived at or near it, so that it was unattended only for short periods (n=2, range 1-11 mins, av. 3.2 mins). There were two exceptionally long absences (34 and 44 mins) on the third and fifth days of incubation at Nest A, which account for half the total absences and which I have excluded above. There was no ostensible reason for them. I have also excluded brief absences when Australian Ravens *Corvus coronoides* passed near. A pair of these birds had a nest up the valley and single birds were constantly flying to and fro. Whenever one passed within 50 m, the sitting cuckooshrike left the nest and either waited quietly a few centimetres from it or flew to a nearby tree and returned as soon as the danger had passed. Yet the cuckooshrikes were quite indifferent to me when I walked below or near the nest.

If the nest is as flat as North (1904) and Campbell (1900) say, it would probably not protect the eggs in high winds such as often occur in spring at Moruya. Therefore it is probably dangerous for the incubating bird to leave the nest unattended for long periods and close attendance has perhaps evolved as a safeguard, as with the Crested Shriketit *Falcunculus frontatus* (Marchant 1985a).

NESTLING PERIOD

Both adults fed the chicks, almost equally (K 22 v. W 20 times) during 661 minutes of watch throughout the period, averaging once every 15-16 minutes; at each visit only one young was fed. I exclude 223 minutes of watch on days 14 and 15 when the chicks were not fed at all. A loose flock of more than 20 ravens were foraging for cicadas all through the treetops right round the nest on those days and probably kept the adults away from the nest.

The chicks appeared to be clad in greyish white down when hatched. The adults swallowed the faecal sacs, even catching them in the air if they fell over the side of the nest. For the first five days the adults brooded the chicks almost continuously (172 mins *ex* 181); by the eleventh to thirteenth day they were guarding them rather than brooding, often merely sitting alongside the nest, for about 60% of the time (114 *ex* 193); after the fifteenth day they hardly brooded or guarded them at all (7 *ex* 65 on Day 17).

CONCLUSION

As would be expected, these observations confirm that the breeding habits of *C. papuensis* are similar to those of other sexually monomorphic cuckooshrikes (*e.g.*, *C. novaehollandiae*, Marchant 1985a). However, because I found that these two species are not easily distinguished in the field, it is worth noting those general field characteristics that separate the species and that could probably be confirmed by quantified observations, which I could not make. As said above, the absolutely diagnostic characteristic of *papuensis* is its 'kissik' or 'quizeek' call (Pizzey 1980). The black facial mask varies so much in *papuensis* that it was unreliable for recognition, even though *papuensis* is smaller with a shorter tail and seemed rather more ashy grey above than the silvery grey of *novaehollandiae*, but the distinction was hard to make unless two were seen together for comparison. Like *novaehollandiae*, *papuensis* indulged in aerial chases or displays with neighbouring pairs, when four or more birds flew about over and above the treetops, sometimes perching and displacing each other, with much liquid 'chereer' calling (Pizzey 1980) but the 'chereer' of *papuensis* sounded more highly pitched and more tinny, a matter that could probably be proved with sound recording. On perching, *papuensis* shuffled its wings in the manner characteristic of *novaehollandiae* but, it seemed, less often, more briefly and less emphatically, sometimes half opening both wings at the same time. When feeding, *papuensis* perched and foraged right among the outer leaves of the canopies of eucalyptus trees, whereas *novaehollandiae* tended to perch more on the larger and barer branches of the tree and flew from them to catch its prey among the leafy parts. Like *novaehollandiae*, *papuensis* is absent from woodlands at Moruya, where I worked, from January-February to August-September or occurs rarely during that period, so I assume that it is quite strictly migratory.

I thank Dr K. Fitzherbert for help with references.

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A JUVENILE FAN-TAILED CUCKOO FED BY TWO DIFFERENT SPECIES OF SMALL BIRD

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On Sunday 15 February 1987 at about 16:30 hrs, Kevin Hatton, Linda Hatton and I were walking along Lady Carrington Drive in Royal National Park, NSW, when I made the following observation.

Our attention was drawn to a young Fan-tailed Cuckoo *Cuculus pyrrhophanus* by its persistent, loud, high-pitched call. Its plumage was generally brown with buff edges to the feathers on the upperparts. It was perched on a branch about one metre from the ground. Suddenly a Grey Fantail *Rhipidura fuliginosa* appeared, its bill crammed with food. The volume of the cuckoo's call increased as the fantail approached to feed it. After being fed, the cuckoo immediately resumed calling and about three minutes later a different species of bird flew in and fed it. It happened so quickly that I did not confirm the identification, but I suspected it was a White-browed Scrubwren *Sericornis frontalis*. The cuckoo then flew about 10 metres where it landed on a branch just a few centimetres from the ground. Its calling continued unabated and after another three or four minutes my suspicions were confirmed when a White-browed Scrubwren approached and fed it.

Since I have not researched the literature I do not know how common this behaviour is. I presume that the persistent, worrying call of the young cuckoo prompted the feeding reaction in the fantail and the scrubwren. Which of the two species was the foster parent remains unknown.

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BUSH STONE-CURLEWS: RECOLLECTIONS OF THEIR OCCURRENCE AT PRESTON, NEW SOUTH WALES

DARIEL LARKINS

Robin Bigg's account of the Bush Stone-curlew *Burhinus magnirostris* at Glossodia, near Sydney, NSW (Bigg 1988), includes a record from the Keith Hindwood Bird Recording Service of the species at Prestons, near Liverpool, NSW, in 1949.

My family's old home "Bernera" was in the vicinity of Prestons. The original grant to Donald McLeod in 1829 extended from the present Bernera Road back to Cabramatta Creek, and from the old Bernera Road, now Hoxton Park Road, to the old Hume Highway, now Camden Valley Way. Thus the curve of Cabramatta Creek served as a major boundary of the 1000-acre grant.

Just before World War II this was for the most part grazing land, with some orchards nearby, as well as free-range poultry farms. As typical on the Cumberland Plain, the original forest had been slowly cleared and stumped from the earliest days of European settlement. Thus Emma Macpherson of "Bernera", in her description of early Sydney, commented on the disappearance of the native forests (Macpherson 1860).

At Prestons as late as 1950 there were unstocked paddocks with substantial regrowth of understory, principally Blackthorn *Bursaria spinosa*. A significant part of the old Church and School Lands Estate, known as the Common, was uncleared. One might have expected this habitat to have supported Speckled Warblers *Chthonicola sagittata*, as it did Flame Robins *Petroica phoenicea* to my recollection.

Local remnant and regrowth forest included Grey Box *Eucalyptus moluccana* and Forest Red Gum *Eucalyptus tereticornis*. Spotted Gum *Eucalyptus maculata* probably once grew on the ridges, and ironbarks had been abundant,but as a valuable commercial timber this was cut out very early, among other things being used in the construction of "Bernera" homestead in the late 1850s. Timber unsuitable for building or for post-and-rail fencing was cut for firewood and taken by horse and dray to the railway line at Glenfield for transport to the bakers' ovens of Sydney.

Wood cutting continued as late as World War II, when the Army monopolised supplies for the military camps at Liverpool and Ingleburn.

The banks of Cabramatta Creek were stabilised by She-oak *Casurina cunninghamiana*, with a fringing scrub cover of Blackthorn and wattles. In my family it was well known that "curlews" (that is, Bush Stone-curlews) lived along the creek flats, which at that time were cleared grazing paddocks with a few trees. In late winter and early spring these birds were very vocal, the calls carrying well through the frosty night air. From our northern verandah about 400m from the nearest part of the creek, the birds could be heard wailing on the flat. Often there were a number of birds involved along the length of the creek, when the wails rose to a prolonged

sobbing, the like of which Emma Macpherson (1860) might have had in mind when, overlanding to the Gwydir, she wrote of the bird whose cry was "pathos impossible to describe".

Curlews also occupied The Thirty Acre, until about 1950 uncleared and unfenced flood-prone land at the junction of Cabramatta Creek and Hoxton Park Road. It was eerie to alight here from the late bus out of Liverpool in winter and walk home through the bush while the stone-curlews were calling nearby.

Mrs Terry Fitzpatrick (?formerly Newcombe) of Liverpool told me about 15 years ago that her father had been the overseer of a section of the water channel running from Cataract Dam to Prospect. The family had lived in a cottage just beyond the crest of Carne's Hill where the Bringelly Road crossed the water race. Stone-curlews came into the poultry yards there and fed on grain with the fowls, as I believe they did back along the old Hume Highway at Prestons.

The decline of the Bush Stone-curlew around Prestons coincided with the closer settlement of the paddocks after World War II, when the laying of long-awaited water mains resulted in grazing and orchard land being subdivided into market gardens. Poultry farming was soon to be converted to the battery system.

When my family left the district in 1985, stone-curlews had not been heard for many years. As fire and grazing, foxes, hunters, dogs and cats had long been present, we believe changed land use led to the extinction of the Bush Stone-curlew at Prestons and elsewhere on the Cumberland Plain.

Considering its survival for over 150 years of European settlement, it appears the species originally inhabited the dry sclerophyll forest of the Cumberland Plain, the habitat slowly changing to grassland with some trees and scrub cover after European settlement.

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SOME NOTABLE RECORDS FROM COCOPARRA NATIONAL PARK, NSW

BRENDAN J. LEPSCHI

Cocoparra National Park and Fauna Reserve together cover some 13 000 hectares of open woodland approximately 25 km north-east of Griffith, New South Wales. The park is situated in an area where many birds of the arid interior approach the eastern edge of their range and meet with other species bordering on the western limit of their distributions.

As a result, the park has a large and varied avifauna, some 148 species having been recorded since 1968 (see Cocoparra National Park and Nature Reserve; a checklist of birds. National Parks and Wildlife Service, 1979). From 5-7 October 1986 22 members of the Canberra Ornithologists group enjoyed a visit to the area and identified over 100 species, including five new to the area. This information is presented below.

Great Cormorant *Phalacrocorax carbo* Four birds were seen flying over the park on the morning of 6 October; this would constitute a new record for the area, although it is unlikely that the birds were attracted to any of the dams in the park and were probably in transit from one of the larger bodies of water near Griffith.

Spotted Harrier *Circus assimilis* An immature bird was seen flying over lightly wooded grassland near Woolshed Creek on the afternoon of 6 October. This is the first record of the species from the area.

Australian Hobby *Falco longipennis* An adult bird was seen by a number of observers pursuing a small honeyeater near the campsite at Woolshed Flat early on 6 October; this species has not previously been recorded from the area.

Little Cuckooshrike *Coracina papuensis* Around midday on 6 October a single bird of the dark morph was seen and heard calling as it flew over the campsite. This is a new record for the park.

Inland Thornbill *Acanthiza apicalis* This species appears on the park list on the basis of several unconfirmed reports. We saw several birds of this species, mainly around the campsite; they were distinguished from the more common Chestnut-rumped Thornbill *Acanthiza uropygialis* by their streaked breasts and red-brown eyes.

Painted Honeyeater *Grantiella picta* In the early morning of 6 October a single bird of this species was seen by two observers foraging in a eucalypt heavily infested with mistletoe. This species is recorded only sporadically from the park.

Black Honeyeater *Certhionyx nigra* Another highly nomadic bird, this species was last recorded in the park some ten years ago. During our visit the species was unusually common, with large numbers seen as single birds or small flocks. Substantial numbers were also reported at nearby Ardlethan by a member of our party.

Spotted Pardalote *Pardalotus punctatus* This species had, until the groups's visit, not been recorded from the area but the closely-related Yellow-rumped Pardalote *P. xanthopygus* had been observed irregularly. During our stay in the park a few sightings were made of the former species and on a number of occasions its clear piping calls were heard in thicker stands of forest. The salient features distinguishing this species from the Yellow-rumped Pardalote were the red-brown rather than yellow rump and a distinct white eyebrow.

In addition, a number of species showed signs of breeding activity: Brown Goshawk *Accipiter fasciatus* - a pair incubating in a eucalypt by a small dam; Red-capped Robin *Petroica goodenovii*, a pair building a nest in a blackened stump close to a pair of Chestnut-rumped Thornbills;

Jacky Winter *Microeca leucophaea*, a pair incubating in a dead eucalypt; Splendid Fairywren *Malurus splendens*, a nest with three eggs in a dry creek bed; Chestnut-rumped Thornbill, a pair nesting between a fold of bark in a burnt-out stump; and White-winged Chough *Corcorax melanorhamphos*, a nest containing approximately six nestlings.

The records outlined herein bring the park's total number of species to 152; 153 if we are to included the sighting of the Great Cormorant.

ACKNOWLEDGEMENTS

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MAGPIE GEESE IN CENTENNIAL PARK, SYDNEY, NSW.

R.T. KINGSFORD

The Magpie Goose *Anseranas semipalmata* is usually considered a bird of tropical northern Australia, although until the early twentieth century it ranged southward into New South Wales (Frith & Davies, 1961. CSIRO Wildl. Res. 6:91-141; see also Clancy, 1985. Aust. Birds 19:41-45 for a review of recent reports and status in New South Wales). Recent sightings in the Sydney region are probably of escaped birds: Magpie Geese fly between the Botanic Gardens and Taronga Zoo in Sydney (Blakers *et al.* 1984. The Atlas of Australian Birds. Melbourne Univ. Press: Melbourne). This note reports the regular occurrence of Magpie Geese in another part of Sydney: Centennial Park.

In September 1987, I saw three Magpie Geese perched on a stand of papyrus *Papyrus cyperus* in the middle of the park. Enquiries revealed that the three birds were a male and two females (one banded), which had been hatched in 1982 or 1983 at Taronga Zoo.

I visited the park again on 20 December 1987 and found the three birds feeding on the bulbs of waterlillies *Nymphaea sp.* in a pond well covered with this plant. Magpie Geese predominantly feed on grass blades and seeds although they also dig for bulbs (Frith & Davies, *loc. cit.*). While feeding, they buried their heads and necks deep in the mud, pausing, with head out, only for a few seconds. The legs were often bent, possibly allowing deeper penetration. Over a three week period, they cleared an area about 25 x 2 metres in extent. Feeding was confined to two areas of shallow water.

A pair of the birds nested on one of the most southerly ponds, along Alison Road, in the middle of January 1988, but the nest was later washed away by heavy rain, and one of the three birds was found dead on the same pond. The birds renested about the middle of March in reeds on a small island in the same pond. By the middle of April, the pair was again feeding but there was no sign of any young.

The birds have probably been resident in the park since September 1987 because staff at Taronga Zoo have not seen them since this time. There are large areas of waterlillies in the park which may provide sufficient food for the geese. A small population could be supported by the park and this can only be desirable, as it adds to the diversity of waterfowl already resident.

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A WHITE-RUMPED SANDPIPER AT WINDANG, NEW SOUTH WALES

LINDSAY E. SMITH and CHRIS CHAFER

On 31 October 1984 at 17:30 hrs one of us (Smith) was at the entrance to Lake Illawarra at Windang, NSW, after heavy storms had battered the area. The weather was clearing with sunny periods during the time of observation. On a small sandbar on the southern side of the entrance channel a small wader was observed with a group of Bar-tailed Godwits *Limosa lapponica*. After ten minutes observation with a 20x spotting scope the bird could not be identified and field notes were taken.

The bird was approximately 50 metres away in excellent light, the sun behind the observer. It was standing in water up to its knees and appeared to be approximately one third the size of a Bar-tailed Godwit. It was long-winged and of slender appearance. The bill was short and straight, similar in structure to that of a Red Knot *Calidris canutus*, and appeared wholly black. The eye was dark, with no discernible eye ring. The forehead was brownish, but this colour did not extend onto the crown, which was grey. A small dark area extended behind the eye and there was a darker patch near the ear coverts. The throat was white. The breast was streaked and mottled grey-brown, these markings almost forming a complete breast band. The upperparts appeared uniformly greyish, and the underparts were white with some grey feathering along the flanks below the closed wings. The legs appeared black.

At 18:10 hrs the birds were disturbed by dogs. Upon rising the bird did not call. In flight it showed a slight wing bar on an otherwise dark wing. Its wing coverts appeared lighter than the primaries. The rump was conspicuously white against a brownish back and tail band, which was darker in the centre. The legs did not extend beyond the tail.

After watching the group of birds descend beyond Windang Bridge, Chafer was contacted, and we agreed on a rendezvous. On Smith's arrival at the rendezvous he noticed a group of waders which included Grey-tailed Tattlers *Tringa brevipes*, Bar-tailed Godwits, Red Knots, Lesser Golden Plovers *Pluvialis dominica*, and Greenshanks *Tringa nebularia*. When about 100 metres from the flock a group of about thirty Red Knots took to the air. In this group was the bird in question, easily discernible by its white rump and smaller size. However, when Chafer arrived the bird could not be located.

On 9 November 1984 at 16:00 hrs Chafer located a similar wader in a muddy pool of water adjacent to the car park on the southern side of the entrance channel to Lake Illawarra. Chafer realized immediately that it was the bird observed by Smith nine days earlier. Also in the pool were six Red-capped Plovers *Charadrius ruficapillus*. This bird was larger than the Red-capped Plovers and, using a 20X spotting scope, Chafer took the following notes.

The general shape and plumage was as described by Smith. The bird fed by shallow probing in short grass and muddy pool edges, then walking a few steps and repeating the process. Often when probing the bird would crane up on its toes and stretch its neck, giving it a long-necked appearance. After fifteen minutes of observation Chafer decided to put the bird up. In flight Chafer noticed the indistinct wing bar, the white rump, brown tail band and the fact that the feet did not extend past the tail. It did not call and quickly flew to the other side of the entrance in typical zigzag *Calidris* fashion. The bird could not be located again despite an intensive search.

After comparing our notes with available literature we concluded that the bird was a White-rumped Sandpiper *Calidris fuscicollis* and thus represents the second record for New South Wales (Morris, McGill & Holmes, 1981. A Handlist of birds in New South Wales. NSWFOC: Sydney) and the first record for the County of Camden (Gibson, 1977. Aust. Birds 11:41-80).

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THE FIRST RECORD OF THE PINK-FOOTED SHEARWATER *Puffinus creatopus* IN AUSTRALIAN WATERS

ALAN McBRIDE

On 22 March 1986 on board the charter vessel Sandra K, a group of observers were approximately 21 km east of Wollongong, NSW, over 70 fathoms of water when a "black and white" shearwater was seen on the horizon. At first taken for a possible Fluttering Shearwater *Puffinus gavia*, it became evident as it came closer that it was far too big to be that species, and its identi-

ty was uncertain. The bird approached to within, initially, about 300 metres of the boat, and settled on the water, whereupon we manouevered the Sandra K to a position alongside it. We then photographed and studied it at close range for some considerable time.

DESCRIPTION

Upperwings and back uniform grey-brown, the crown being dark brown with a grey tinge. Chin, throat, sides of face to a line from the gape extending below the eye and down the side of the neck to the breast and belly, white. Sides of breast, vicinity of the axillaries and downwards onto the flanks, dusky brown, the feathers quite worn, producing a mottled, blotchy appearance; the region around the eye looked a little blotchy also. Underwings mainly whitish down the centre, apart from the axillaries, the marginal and lesser coverts, the outer six or so primaries, and tips of all flight feathers, which were dusky brown. The whitish underwing was prominent at a considerable distance, as were the white underparts. Legs and feet pink. Undertail and undertail coverts dusky brown. Bill pale yellowish pink colour, with a dark tip on both mandibles, though one observer (D. Fischer) described the bill as more pinkish than pale yellow.

Apart from extensive white in the plumage, the bird resembled a Flesh-footed Shearwater *Puffinus carneipes* in size, build and general appearance (though a steep forehead was noted), but the upperparts were greyer in shade, and it differed somewhat in jizz, looking slightly bigger and bulkier, and flying somewhat more slowly; it also appeared to sit higher on the water.

According to Harrison (1983. Seabirds: an identification guide. Croom Helm: Beckenham, UK), the "combination of greyish-brown upperparts, white underparts, mottled underwings and dark tipped pinkish bill" -- all features displayed by our bird -- are diagnostic of this species, though he cautions against possible confusion with the pale morph of the Wedge-tailed Shearwater *P. pacificus*. However, observers present had extensive field experience with Wedge-tailed Shearwater, which has an extremely distinctive flight style and jizz, is distinctly smaller, more lightly built, and has a dark, more slender bill than the bird we studied. There were several Wedge-tailed Shearwaters and Flesh-footed Shearwaters in the vicinity for immediate comparison during our observations.

This appears to be the first record of the Pink-footed Shearwater in Australasian waters.

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A LITTLE STINT AT COMERONG ISLAND

C.J. CHAFER

On 7 April 1984, D. Fischer and I were conducting a wader survey of the lower Shoalhaven River estuary east of Nowra, NSW. While looking through a flock of Red-necked Stints *Calidris ruficollis* on the northern side of Comerong Island I came across a stint that looked slightly different. I immediately suspected that it was a Little Stint *C. minuta* and began to take detailed field notes. Fischer was some distance away when the bird was noticed and was able to observe the bird only briefly.

DESCRIPTION

Size and shape similar to that of *C. ruficollis*, but appearing slightly hump-backed. Bill and legs black, the bill slightly longer than that of *ruficollis*. Crown brownish, streaked darker, the streaks continuing down the nape. Eyebrow white, large, and extending well beyond the eye. Overall facial pattern different to that of the other stints. Throat white. A band of pale rufous, streaked darker, extended across the breast. Feathers of mantle dark, a conspicuous white V extending from near the shoulders to the lower back. The scapulars and coverts near the white V were dark, edged rufous and white, but became gradually paler downward toward the primaries. Primaries black, edged rufous and white, extending slightly beyond the tail. In flight, the rump appeared black with large white borders; a faint wingbar extended along the wing. The bird did not call.

Foraging consisted of rapid shallow thrusts into the sand. This was done in quick, short, jerky walks, then stop and repeat. The bird fed near, but not with, the other stints and was chased when it approached them too closely. After several minutes of observation the whole flock took off and split up for no apparent reason. Despite vigorous searching we were unable to relocate the bird.

I returned the next day with L.E. Smith. However, weather conditions had deteriorated to rain squalls and strong southerly winds, and we were unable to relocate the bird.

DISCUSSION

I was able to observe the bird for approximately four minutes under perfect lighting conditions, using 8x30 binoculars and a x20 spotting scope at a distance of approximately thirty meters. Fischer was able to view the bird for about one minute.

Direct comparison was possible with *C. ruficollis* in various stages of breeding plumage throughout the observation period: the bird stood out from the other stints because of the conspicuous white V on its mantle, and its larger supercilium, white throat, pale rufous breast, different facial pattern and brighter upperparts.

Upon returning home we consulted Prater *et al.* (1977) and Curry *et al.* (1983). Both of these references contained descriptions of birds with features similar to our bird. Later I showed my field notes to a visiting German ornithologist, Bjorn Tupay, who agreed with our identification. Two recent Australian field guides (Simpson & Day 1984 and Slater *et al.* 1986) also call attention to some of the field marks we noted, especially the white throat, white V on the mantle, and relatively pale breast band; these features are also stressed by Hayman *et al.* (1986).

It is interesting to note that, like our bird, the Western Australian birds were observed in April among Red-necked Stints; and also that the colour of the breast band is variously described in the literature as "orange-chestnut" (Prater *et al.* 1977), "brown" (Curry *et al.* 1983), "orange" (Simpson & Day 1984); "buff or grey" (Slater *et al.* 1986) and "rufous, more orangey than *C. ruficollis*, not brick red" (Haymen *et al.* 1986).

I therefore conclude that the bird was a Little Stint *Calidris minuta*, probably moulting into breeding plumage. This would appear to be the first record for this species in New South Wales (Morris, McGill & Holmes 1981).

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COX'S SANDPIPER AT STOCKTON, NEWCASTLE

ALLAN O. RICHARDS

On 26 January 1988, Martin Moss and I observed a bird resembling a Cox's Sandpiper *Calidris paramelanotus* feeding on the tidal mud flats on the western side of the northern approaches to Stockton Bridge, Newcastle. The bird was first observed at a distance of 50m feeding with a group of Curlew Sandpipers *C. ferruginea*. It was immediately noticeable as different by its dark olive legs, streaked breast and crown and a browner appearance. The bird was watched for some minutes using a Bushnell x25 telescope, it then moved, was subsequently re-located and watched for a further four minutes, before it flew off towards a distant part of the tidal flats.

The following features were noted:

Size: about the same size and shape of the Curlew Sandpiper. Bill: was black, long and down-curved. It was comparable in size, shape and colour to that of a Curlew Sandpiper. Head and Neck: very pale and finely streaked darker. Crown: very pale and streaked black or a very dark colour, but not as finely streaked as the head and neck. Eyestripe: present, very pale or white, extending from the bill back beyond the eye. Breast: pale buff, darkly streaked. Upperparts: cryotid with a brown appearance. Underparts: white. Legs: dull olive-green, and about the same length as those of a Curlew Sandpiper. Summary: the bird looked like a Curlew Sandpiper in all ways except in the colouration of the plumage and legs, The light conditions were excellent as it was a fine, sunny day with the sun shining onto the bird from behind me. Unfortunately, the rump pattern of the bird was not observed.

I was not carrying a field guide at the time but consulted Hayman, Marchant & Prater (1986), on returning to my vehicle. All the features noted were consistent with those of a Cox's Sandpiper. The following birds were dismissed for the reasons stated:

Pectoral Sandpiper *C. melanotus* and Sharp-tailed Sandpiper *C. acuminata* because the bill was too long, black and down-curved, also the lack of a distinctive rufous crown. Dunlin *C. alpina* because the legs were dull olive-green and not black. My bird had extensive fine streakings on the head and neck and lacked a distinctive crown or black belly. Curlew Sandpiper because of the colour of the legs and the brownish appearance.

Further reference to Slater *et al.*(1986 *The Slater Field Guide To Australian Birds, Sydney: Rigby Publishers)* and Lindsey, Ed. (1987 *Shorebirds of Australia, Sydney: Angus & Robertson Publishers)*, confirmed my identification of the bird as a Cox's Sandpiper.

This observation of Cox's Sandpiper may be the first record for New South Wales, in view of the uncertain identity of a similar bird recorded at Stockton in 1981. This bird, captured on 21 March 1981 was described by Lane *et al.* (1981. *Corella* 5:114-115) as most probably a hybrid between a Curlew Sandpiper and a Sharp-tailed Sandpiper, but subsequently doubt has been thrown on its identity and Cox (1987, *South Aust. Ornithol.* 30:85-97) considers it to be a hybrid between a Curlew Sandpiper and a Pectoral Sandpiper.

This bird stayed in the area for several weeks and was last sighted about mid-February.

I wish to thank Alan K. Morris for his assistance in the preparation of this report.

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Contributors are requested to observe the following points when submitting articles and notes for publication.

1. Species, names, and the order in which they occur are to be in accordance with "Handlist of Birds in New South Wales". A.K.Morris, A.R.McGill and G.Holmes 1981 Dubbo: NSWFOC.

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REFERENCES

Finch, B.W. & M.D.Bruce. 1974. The status of the Blue Petrel in Australian waters Aust. Birds 9:32-35

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