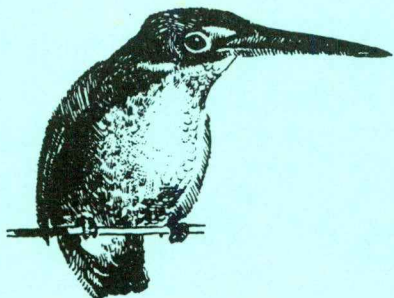


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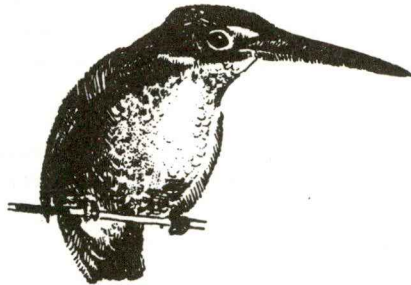
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AUSTRALIAN BIRDS



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NOTES ON THE NESTING BEHAVIOUR OF THE YELLOW-RUMPED THORNBILL IN THE MUDGEE DISTRICT N.K. KURTZ

ABSTRACT

Results from 49 nesting attempts of Yellow-rumped Thornbills *Acanthiza chrysorhoa* during the period 1970 - 1979 are given for the Cooyal District near Mudgee. The results are compared with those obtained by Ford (1963) at Bibra Lake on the Swan Coastal Plain, Western Australia.

INTRODUCTION

In the course of recording nests for the R.A.O.U. Nest Record Scheme, details were obtained for 49 nesting attempts of the Yellow-rumped Thornbill during 1970 - 1979, although 41 of these nests were found in the three years 1976 - 1978.

The study area is situated at Cooyal (32 degree 28's 149 degree 44'E), 20 km north-east of Mudgee on an area originally cleared for cultivation, and more recently sown with pasture grasses. The area embraces about ten square kilometres and is based primarily on my 600 ha farm "Balmoral", and adjoining properties. Small clumps of woodland and many isolated trees were left for shade, while roadways and stock reserves retain remnants of the original tree and shrub cover. Stony Creek divides the area and is also the dividing line of two different soil types and some variation in vegetation. The remaining trees and shrubs on the eastern half are dominated by Rough-barked Apple *Angophora floribunda*, with lesser numbers of Yellow Box *Eucalyptus melliodora*, and a few Kurrajongs *Brachychiton populneum*. Introduced species such as Radiata Pine *Pinus radiata*, Peppercorn *Schinus molle*, and Arizona Cypress *Cupressus arizonica* grown in homestead gardens and around outbuildings. Since 1976 vineyards have been established in the area for table grapes and wine.

The western side is slightly undulating rising to an outcrop of granite rock and is more heavily timbered with Rough-barked Apple, several species of eucalypt, Belah *Casuarina*

crystata, Black Cypress Pine *Callitris enderlicheri* and Kurrajong being the dominant trees. Some regeneration, mainly of eucalypts, has occurred since cultivation. The whole study area is grazed by sheep and cattle while the intermittent growing of cereal crops is carried out.

The average rainfall for 1970 - 1979 was 693 mm. Generally the highest falls were recorded in January, and to a lesser extent February. Lighter falls were recorded from March to August, increasing again in September and October, then declining again in November and December. Additional information on the local climatic conditions is provided by Frith *et al* (1977).

STATUS

The Yellow-rumped Thornbill is a common breeding resident in the Mudgee District, occurring throughout in small flocks and family parties. Its status apparently has not changed since Cox and Hamilton (1889) recorded "Eggs in July, and on almost all months through the year for the Mudgee District".

During the period under review, no nests have been found outside July - December but evidence for breeding taking place at other times is indicated by seeing adults feeding fledged young away from the nest between January - June. The breeding season and nest construction for the Yellow-rumped Thornbill at Cooyal, is similar to that described by Ford (*loc. cit.*). Nest building commences late June or early July with the maximum numbers of pairs laying September - October.

NEST SITE SELECTION

Most nests are placed in low bushy saplings, such as clumps of regenerating *casuarinas* or *angophoras*, only a few metres high, or in the drooping branches of the mature trees of the same species. Though the Rough-barked Apple is probably the most common tree in the study area, the Belah is not, but in the eastern half where there are very few Belahs they were regularly used. Radiata Pine was the most common introduced tree used, but Arizona Cypress, Saffron Thistle *Cathamus lanatus*, and grapevines were occasionally used. Details of nest site selection are set out in Table 1.

As found by Ford (1963), the same tree and the same site may be used for several successive years. At least four nests were used in successive seasons and one nest was used three years in succession. The majority of nests were placed between two and four metres above ground, Table II gives details of the height of 47 nests.

I disagree with Ford (1963:189) and Hindwood (1947) that the construction of the topmost open-cup nest is due to the persistence of the male bird's building impulses while the female is incubating. This may be so with the construction of a number of domes on the nest similar to the one used for egg-laying with concealed entrances. However, because the top nest is a cup-shaped structure, does not resemble the laying chamber, and is a characteristic of most nests (although to varying degrees), it probably serves another purpose. It is unlikely that any birds, even with strong building impulses would construct two different types of nest structures unless for special reasons. I believe that one reason could be to protect the nest by attracting attention of predators away from the actual nesting chamber. The other reason is that although the top cup-shaped structure resembles a nest to us, it may not appear so to Thornbills. Nests I have seen being built have had some of the top cup-shape nest constructed in the early stages, giving the impression that the dome nest is suspended from that point and as the nests become larger more material is added to the suspension.

COLONIAL NESTING

Colonial nesting as described by Immelman (1967) for the White-winged Triller *Lalage seurerii* was recorded from 1976 - 1978 in and near a small clump of eucalypts and casuarinas surrounded by grassland. Four Thornbill nests were found in close proximity, with no one nest being more than 100 m from the most distant one. All four nests were in *casuarinas* (See figure 1) and three contained eggs at the same time. The same sites were used for several years although completely new nests were built each season. It is quite probable that the feeding territories of each pair or group did not greatly overlap but radiated out onto the grassland away from the clump.

INCUBATION AND FLEDGLING PERIODS

The nests were not closely observed, particularly at the end of the nesting period, so as not to cause the young to leave prematurely. I have found if one young bird becomes evicted and leaves the nest, the remainder will follow. Therefore, visits to nests were made generally on a weekly basis. Nevertheless, four nests were watched carefully for incubation periods; three nests gave 19 days and one 18 days which corresponded to the 18-20 days given by Ford (1963). Fledgling periods were more difficult to determine because of premature departure from the nest by the young when disturbed. Of six clutches for which data were complete, two batches of young left prematurely at 15 and 16 days, one at 17 days, two at 19 days and one at 21 days. These findings agree with Ford's estimate of 17-19 days on average.

Two clutches took 34 days from the time the clutch was completed until the time the young birds left the nest. In both cases however, the young in my opinion left the nest prematurely on my approach. Without disturbance, the full time would appear to be about 36 days. The interval between fledging a brood and laying the nest clutch varied from 12 days to 29 days, although in one instance where the previous clutch had failed, the birds relaid eight days later in the same nest.

NESTING SUCCESS

Due to the desire not to prompt fledglings to depart before fulltime, complete data on the nests are not available. However, of the 49 nests, the clutch size was accurately obtained for all but one, but information on the number of young fledged successfully is not as complete. Where it was known that the young in the nest were at least 12 days old, and my next visit to the nest was in excess of ten days, and the nest was not damaged, it was assumed that the young had fledged successfully. For six nests from which three chicks had hatched, the original clutch size was accepted as being three, which is similar to the other nests. Table III gives the clutch size, while Figure II, the number of clutches of eggs commenced each half month. Because my farm duties kept me from searching for all the nests in the study area, the data only relates to the nests located and not necessarily to the true breeding picture each year.

CUCKOO PARASITISM

Cox and Hamilton (1889) like Ford (loc. cit.), recorded eggs of the Shining Bronze-Cuckoo *Chrysoccyx lucidus* (= *Chalcites plagosus*) in nests of the Yellow-rumped Thornbill at Mudgee between 2 November and 9 December. During the period 1970 - 1979 nest parasitism by cuckoos was recorded twice in 1977 when two nests were affected, the cuckoo's eggs were laid about 28 September in the first nest and 6 October in the second nest. Specific identity of the young cuckoos could not be ascertained because of difficulty of identifying the birds in the juvenile plumage but as each cuckoo egg was pinkish with small red spots cuckoos were identified as Horsfield's Bronze-Cuckoo *C. basalis*. In the first nest the young thornbills and the cuckoo hatched about the same time, and the cuckoo apparently ejected them. In the second nest the cuckoo's egg hatched first and the three thornbill eggs were ejected.

TABLE I

Choice of nesting Trees by the Yellow-rumped Thornbill
1970 - 1979

SPECIES	NUMBER OF TREES
<i>Casuarina cristata</i>	15
<i>Angophora floribunda</i>	12
<i>Schinus molle</i>	8
<i>Brachychiton populneum</i>	5
<i>Pinus radiata</i> (Intr.)	4
<i>Eucalyptus meliodora</i>	1
<i>Cupressus arizonica</i> (Intr.)	1
<i>Carthamus lanatus</i> (Intr.)	1
Vineyard	1

TABLE II

Height from ground of 47 nests of Yellow-rumped Thornbill

Below one metre	1
" 1-2 m	11
" 2-3 m	26
" 3-4 m	8
" 4-5 m	2
Over 5 m	1

TABLE III

Variation in clutch size of the Yellow-rumped Thornbill

CLUTCH SIZE	NUMBER OF CLUTCHES
2	7
3	29
4	13

Average clutch 3.12

Fig. II The number of clutches of eggs commenced each half month for the Yellow-rumped Thornbill at Cooyal.

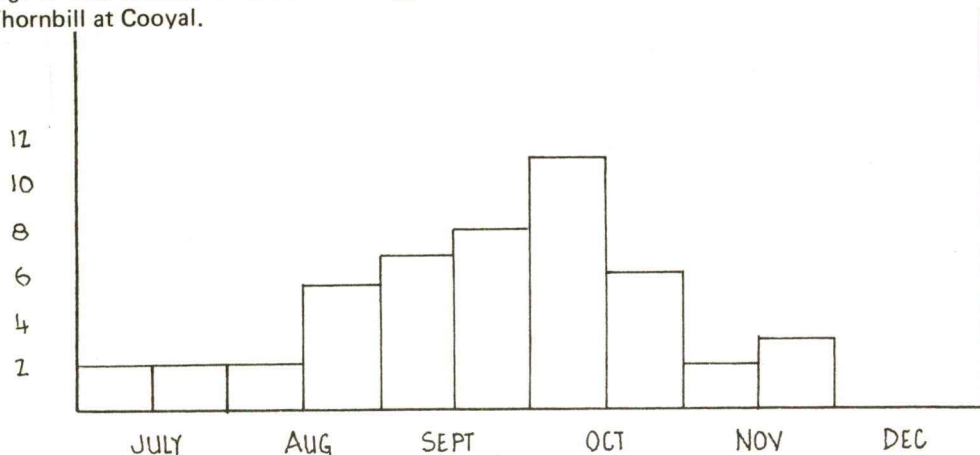
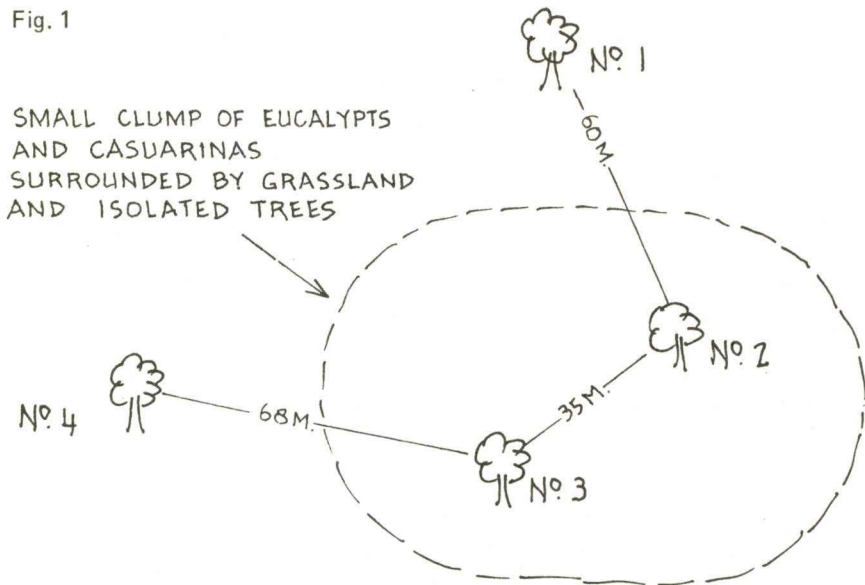


Fig. 1



ACKNOWLEDGEMENTS

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THE TAXONOMY OF THE RAOU "INTERIM LIST OF AUSTRALIAN SONGBIRDS"

RICHARD SCHODDE

SUMMARY

Published criticisms of taxonomic decisions in the RAOU Interim List of Passerines (1975) have often been inadequately researched and have misrepresented a number of cases made in the List. Old and new evidence for keeping the Grey Honeyeater in *Conopophila*, the Painted in *Grantiella*, and the Banded, Black and Pied in *Certhionyx* is reviewed; and the positions of the Ground Cuckoo-shrike in *Coracina*, the Mangrove Robin in *Eopsaltria*, and the hylacolas, Calamanthus, Redthroat and Speckled Warbler in *Sericornis* are reassessed. A consensus of available evidence supports the decisions taken in the Interim List. Further studies, moreover, show that the Australian sittellas and stripe-crowned pardalotes are best treated as respective members of single polytypic species, as was done in the Interim List.

INTRODUCTION

Now that the dust from Noske's (1978) criticisms of the R.A.O.U. Interim List of Australian Songbirds (Schodde 1975) has settled, and Parker (1979) and Ford (1979) have made their own rebuttals, it is time to place the matter in perspective. Noske attempted to show that the changes in the List were sweeping, improperly substantiated, partial and inconsistent. Let us first consider these points.

Concerning changes, every checklist is by its very nature mandated to make taxonomic decisions at family, generic, species and subspecific level, whether the taxa involved have been revised recently or not. Even maintaining the *status quo* represents a decision. Nomenclatural changes follow growing knowledge of relationships; and they inevitably become greater as the period between checklists increases, particularly if that period spans conceptual shifts in the definition of species and genera as happened between 1926 and 1975. For example, Salomonsen's (1976) unsubstantiated revision of the honeyeaters in Peters' Checklist of Birds of the World introduced eleven changes to the genera of the 1926 RAOU Checklist. It affected over 50% of Australian honeyeater genera and 17% of species alone, yet was received with little demur in Australia. In comparison, the Interim List broached *de novo* only fourteen generic changes for all passerines, affecting 14% of genera and less than 3% of species. It also brought in a mere three shifts in specific status, affecting less than 1% of species. In the face of these figures and circumstances, the claim that the Interim List introduced sweeping changes is hardly justified.

There were, of course, many other changes at family, generic and species level over and above those current in Australian literature in 1975. These, however, had already been put forward in the revisions of eminent systematists, e.g., E. Mayr, A. Keast, J.C. Greenway, F. Salomonsen, H.G. Deignan, D. Amadon, G.F. Meise, C.J.O. Harrison, I.C.J. Galbraith, G.M. Storr, and the former RAOU Checklist Committee itself, as Parker (1979) has pointed out. Up until 1975, many of their conclusions had not filtered through because the nomenclature of the 50-year old 1926 RAOU Checklist still held sway.

As for partiality in literature citation, my collaborators and I based the Interim List first from the 1926 Checklist are documented and explained in it with a degree of detail that has been the exception rather than the rule in checklists. Where, for example, is published the justification for combining the genera *Eurostopodus* and *Caprimulgus* in the RAOU Checklist pt. 1 (Condon 1975), or for the use of *Collocalia terraereginae* for the Grey (= White-rumped)

Swiftlet, or for the name *rufa* for the Australian subspecies of the Darter. Non-one seems to have queried the lack of published cases for these untenable decisions.

As for partiality in literature citation, my collaborators and I based the interim List first and foremost on a re-examination of specimen material (skins, eggs) of all Australian taxa, assisted by a re-sifting of the literature (see Interim List, p. 3). The word 're-sifting' was used intentionally to draw attention to the fact that we quoted references that were up-to-date and corroborated by specimen material; others that were out-of-date or misleading were discarded (see below). This constructive and simplifying approach to the literature is entirely appropriate and needs no apology. Early workers in Australia underwent many hardships, and collected or recorded observations in a totally different scientific milieu from today; I greatly admire their achievements, and in no way should it be implied that all earlier workers were unreliable. For example "SE Queensland" as a specimen locality was understandable in earlier times but is unacceptable to the precise needs of modern science. Whether we have assessed the literature wisely will be shown not so much by the alternative opinions about data already published, as by careful revisionary work in the future.

The validity of Noske's criticism lies, in the last analysis, in its proof. Let us examine the evidence for this, taking as examples the genera and species that he himself singled out as mistreated.

GENERA

Noske's view that the Interim List used 'no consistent set of criteria . . . to confer congenerity' misconstrues the generic concept. Genera are groups of species that are defined not by characters but by extent of monophyly. Their purpose is to reflect **degree of relationship** between species - as far as it can be within the constraints of a binomial nomenclature - rather than simple difference and similarity. Moreover, the yardsticks by which genera are defined come from relationships **within** the family to which they belong, **not** from characteristics as they apply in other families (see genera of *Meliphagidae* in Interim List, p. 17). To imply otherwise, as Noske (1975) does is false analogy.

Limitations of space prevented detailed evaluation in the Interim List, but in all cases of generic redefinition, the basic clues to monophyly or polyphyly were outlined as far as they could be from available data. These, for example, were eggs, tongue morphology and metallic plumage in myzomeline honeyeaters (see below), and it behoves any critic to check each of these points before disputing them. The value of such clues lies more in their independence from each other than in their number (*pace* Noske 1978). Each of those given for the Mangrove Robin, for example, point independently to affinity with the yellow robins (*Eopsaltria*). Keast (1958) did not perceive any such connexion, but then the characters from which he took his taxonomic clues - long bill, prominent rectal bristles, and rounded wing and tail - seem to be interconnected with manner of feeding in mangroves. Being adaptive, they are unreliable indicators of relationship.

Pteropodocys vs *Coracina*. By incompletely quoting me, Noske misrepresented my authority for combining *Pteropodocys* with *Coracina*. The case for this was first put forward not by me but by Delacour (1946). Mentioning this, I added supporting comments in the Interim List, and drew attention to affinity between the Ground Cuckoo-shrike and the *Coracina striata* group. While *Coracina* is interpreted broadly to include *Edolisoma* and such extreme forms as *Coracina caeruleogrisea*, *C. longicauda* and *C. tenuirostris* (e.g. Peters and Mayr 1960), it seems inconsistent to exclude *Pteropodocys*.

Lacustroica vs *Conopophila*. Using false analogy, Noske criticises bill form and egg markings as clues for combining the Grey (*Lacustroica*), with the Rufous-banded and Rufous-throat-

ed Honeyeaters (*Conopophila*) in one genus. The fact is that the bills of these three species are similar and silvery-like in form, and have flanged, ephthianura-like narial opercula (*pace* Schodde 1975). Their eggs, furthermore, are all white and closely spotted with chestnut like a swallow's and so differ from those of most other honeyeaters except the myzomelas (see below). Data accumulating since 1975 corroborate a relationship between these honeyeaters. The Grey Honeyeater has twittering contact calls like those of other conopophilas, a tongue of similar structure, and a touch of citrine on fresh remiges (*pace* Schodde 1975); and its juveniles have the same rufous band on the breast as does the adult Rufous-banded Honeyeater. Noske credits me with merging *Lacustroica* in *Conopophila*, but that correctly belongs to Salomonsen (1967).

Trichodere, Grantiella. Noske misinterprets my grounds for keeping the White-streaked and Painted Honeyeaters in the monotypic genera *Trichodere* and *Grantiella*. Instead I used the clues of eggs and plumage coloration for the very opposite reasons that he gave, to show that these species were just as close to honeyeaters outside the genera in which they had recently been placed. As I specifically stated in the Interim List, it was **because** the White-streaked and Painted Honeyeaters had ambivalent affinities that I treated them as monotypic. That situation still pertains. For example, the Painted Honeyeater differs from the grey-plumaged species of *Conopophila* - in which genus it had been placed by Salomonsen (1967) - by its pied plumage with yellow-tipped ear-coverts, pied juvenile plumage, and salmon-pink eggs with fine freckles. Moreover, its pink-based, wedge-shaped bill is unlike that of any other honeyeater, although it is admittedly specially modified for taking mistletoe drupes.

Peneonanthe vs Eopsaltria. In disputing affinity between the Mangrove Robin (formerly monotypic *Peneonanthe*) and yellow robins (*Eopsaltria*), Noske, who did not check specimens, quotes data that are wrong or misleading. Thus the Mangrove Robin **does** have a distinct, if dull, pale wing stripe (*pace* Keast 1958). Indeed, its over-and-under wing pattern is identical to that of other species of *Eopsaltria*. Its fledglings too are mottled and *Eopsaltria*-like. The immature described by Galbraith (1974), which Noske implies may be the norm, is advanced and undergoing post juvenile moult.

As for voice, my own 15 years' experience with the Mangrove Robin across northern Australia and in New Guinea indicates that the calls of Mangrove and yellow robins are of similar type and tone. The whistled piping contact notes of the Eastern Yellow Robin are in the Mangrove Robin a drawn-out whistle of only one or two notes. Both species have a churring alarm call and a strong single or double-note 'chuck' territorial call that seems to be given only by breeding males. And Eastern Yellow Robins do sing, early in the morning during breeding (cf. Noske 1978).

To discredit the clue of the nest by quoting Keast (1958) - 'all robins have a generalized cup-shaped nest' - perpetuates misconception. The nests of Australian flycatcher-robins differ greatly among themselves in their binding, adornment, depth, and positioning. That of the Mangrove Robin is of the same shape as in other yellow robins (or slightly flatter), is perched in similar positions, and is bound and decorated with bark and cobweb in the same way. The basic binding is neither as fine as in the pale yellow robins (*Tregellasia*), nor as coarse and loose as in the *Poecilodryas* robins. Moreover, the eggs of the Mangrove Robin are of the same buffy-green tone with light markings as those of the White-breasted Robin *Eopsaltria georgiana*; those of the genera *Petroica* and *Poecilodryas* are different in tone and have denser and heavier markings.

Overall, the Mangrove Robin, like the White-breasted Robin, is a yellow robin without the yellow. Like all of the group, it has blackish lores under a plain grey crown, and a wash of

grey across the breast. Its pattern of white on the tail is different but found also in the Hooded Robin (*Melanodryas*), one of the closest relatives of *Eopsaltria*. Its shape of wing and tail, though not so much bill (*pace* Keast 1958), differ as well. These, as I have pointed out above and elsewhere (Schodde *et al.*, in press), are nevertheless adaptations to niche and manner of feeding, and so are unreliable indicators of relationship. Taking all of these factors into account, it seems possible that the Mangrove Robin is a north-coastal Australian representative of an early break-up of the genus *Eopsaltria* that gave rise also to the White-breasted Robin in south-western Australia and the yellow Yellow Robins in the east.

Hylacola, *Calamanthus*, *Pyrrholaemus* etc. vs *Sericornis*. In the Interim List I presented the first complete, if brief, generic revision of Australian scrub-wrens, thornbills and gerygones since G.M. Mathews (1921-23). The testing of that arrangement **with new data** remains an urgent task. Reworking of already known data, as some reviewers have, is less helpful, particularly wherever it has been partly misread.

Keast (1978a, b) for example, stressed the lack of a white tail tip and black subterminal tail band as primary characters separating the scrub-wrens (*Sericornis*) generically from the hylacolas, *Calamanthus* and others. Here he overlooked the fact that two main races of the type species of *Sericornis* (*S. frontalis laevigaster* and *S.f. maculatus*) have white-tipped tails and dark subterminal bands. The pattern of the white tip was not considered, yet it seems to provide a still better clue to relationships; all mainland species that I transferred to *Sericornis* in the Interim List have the same broad white tipping extending continuously across both vanes of all rectrices except the central pair.

Keast also felt that streaked plumage kept *Calamanthus* out of the scrub-wrens, notwithstanding that several subspecies of the White-browed Scrub wren are streaked ventrally. Here Short (1976:189) has pointed out that 'simple patterns may vary intraspecifically or between closely related species . . . Patterns of streaking, barring and spotting . . . represent simple patterns that are easily modified'. In the same paper Short treats sexual dimorphism as a pattern that is useful at generic level, especially where its nature is complex. Such patterns, present in the scrub-wrens and their allies but not taken up by Keast, formed part of the basis for the generic groupings that I proposed in the Interim List.

To show that the hylacolas, *Calamanthus*, Redthroat, etc. are not scrub-wrens, Noske picked on the very 'differences' that are least helpful to his case: patterns of plumage, calls, nest-sites and eggs. Patterns of plumage - notably ventral streaking (hylacolas, *Calamanthus*), white brows and malar lines (hylacolas, juvenile *Calamanthus*), and black-and-white signal marks in the **area** of the alula on the wing (Scrub Tit, hylacolas) - suggest that these species are connected to the rest of *Sericornis* through stocks represented today by the White-browed Scrub-wren *S. frontalis*.

The rich, mimicking territorial songs of the hylacolas, Redthroat and *Calamanthus* may also be linked to the rest of *Sericornis* by the more repetitive and simpler chattering song of the White-browed Scrub-wren. Other scrub-wrens have less musical, more twittering songs like thornbills (e.g. Diamond 1972: 219-223). In alarm or warning, moreover, the hylacolas, *Calamanthus*, the Redthroat and Speckled Warbler also give harsh churring rasps resembling those of the White-browed and other scrub-wrens when they are disturbed. Among the thornbills, gerygones and whitefaces, only the Brown Thornbill group has similar alarm notes.

Contra Noske, the nest sites of most 'typical' scrub-wrens in Australia and New Guinea are no more arboreal than those of the Redthroat, *Calamanthus*, and the hylacolas. All usually place their nests in masses of debris among fallen trees, under banks and fallen logs, and in the base of tree trunks and bark, all close to or on the ground. They also build nests of similar

structure, of coarse and loosely woven material and very thickly lined with feathers and plant down. The nests of thornbills and gerygones, by contrast, are consistently arboreal (except the *Acanthiza reguloides* group) and are more finely and compactly woven, and, in gerygone, are even tailed. The most atypical and thornbill-like of the scrub-wren nests is that of the Yellow-throated *Sericornis citreogularis* but no-one recently has suggested that this species should be separated generically.

As for eggs, the family Acanthizidae is split into two main groups. In one, the eggs are white with or without spots and blotches of red-brown. The thornbills, gerygones, Scrub-tit, Australian Fern-wren and Origma belong to this group. In the other, the eggs have a base tone of creamy-pink, are often ringed with darker bands of pigment wash, and are very finely and often densely spotted with browns, so fine and dense as often to appear as a wash (also Meise 1976: 214-215; Parker 1979). All scrubs-wrens, hylacolas, Calamanthus, the Redthroat, Speckled Warbler and Pilotbird have eggs of this type. Those of the Redthroat and Speckled Warbler are darker and more intensely pigmented than those of most scrub-wrens, and those of the hylacolas, differing between species, are approximately intermediate. Parker (l.c.) finds that those of the Australian Fern-wren and Origma, whitish with sparse red-brown spots, lie at the pale end of this series.

To conclude, the independent clues of eggs, nests, songs and plumage patterns (including sexual dimorphism) make, **when considered all together**, a better case than not for considering the hylacolas, Scrub-tit, Calamanthus and Redthroat as monophyletic and congeneric with scrub-wrens. Keast (1978b) excluded them from *Sericornis*, but the principal characters that he used - form and dimensions of body, bill and feet - are closely correlated with foraging zone and too patently adaptive to be trusted as indicators of 'generic' relationship.

There seem to be other grounds as well for including the hylacolas, Scrub-tit and Redthroat, etc. in *Sericornis* (see Schodde 1975; Schodde and McKean 1976). One is 'solitary' behaviour, picked up as an error by Keast (1978a) and Noske (1978), but by which I meant and should have written, permanently territorial behaviour. Neither thornbills (except for the Brown Thornbill superspecies), nor gerygones or weebills hold to the same, tight territories after breeding, and many form loose wandering flocks then. Most, if not all scrub-wrens, however, appear to keep territory throughout the year and for this reason are usually seen only in pairs or in temporary family groups within the territory just after breeding. The hylacolas, Calamanthus, Redthroat and Scrub-tit have a similar social and territorial organization. In view of other characters shared, I doubt these to be convergent.

Correlated with this are contact calls and signal marks on rump and tail. To keep in touch, the social thornbills give twittering contact notes constantly. Such 'conversation' seems less well-developed in the rainforest-inhabiting scrub-wrens, and quite desultory in the White-browed Scrubwren, and its allies: the hylacolas, Calamanthus, Redthroat etc. All of these last species seem to use other signal characters, particularly when disturbed: a broad pale tip to the tail and tail cocking. Despite one or two exceptions, there appears to be a general evolutionary gradient in the scrub-wrens *sensu lato*, from plain, uncocked tails in species of the rainforests to dull-tipped, cocked or uncocked tails in those of the wetter eucalypt forests and heaths (White-browed Scrubwren, Chestnut-rumped Hylacola, south-east subspecies of Calamanthus), and ultimately to brightly white-tipped cocked or flirited tails in those inhabiting more inland scrubs (Redthroat, Shy Hylacola and inland forms of Calamanthus). Here the trends run from wetter denser to drier more open habitats. Parallel trends are found also in the thornbills (*Acanthiza*), but in that genus it is the colour of the rump rather than the tip of the tail that changes and brightens the more obviously.

Noske has rightly pointed out some of the anomalous attributes of the Speckled Warbler. Although it seems to be one of the derivatives of the scrub-wrens, its differences may be sufficiently divergent and deep-seated to warrant retention of *Chthonicola. Origma*, with its sexually monomorphic and posteriorly black plumage, pendant nest and pallid eggs, seems at least equally divergent (cf. Keast 1978b).

Certhionyx vs *Myzomela*. Although omitting to point out that Salomonsen (1967) and not I first dissociated the Black and Banded Honeyeaters from *Myzomela*, Noske correctly drew attention to loose ends in their supposed affinities.

Here the main thrust of his argument was to show that removal of Black and Banded Honeyeaters from *Myzomela* was premature. Nevertheless, if anything is clear about these honeyeaters at this stage, it is that they are **not** myzomelas, and thus retention of a polyphyletic genus is unwarranted. In addition to lacking iridescent red in the plumage, they have neither the myzomeline tongue nor the swallow-like myzomeline eggs. Some species of *Myzomela* do lack metallic red, as Noske mentions, but here he does not take up the crucial point that tongue morphology and egg markings cross-check the relationships of non-iridescent species (Schodde and McKean 1976: 357-358).

In the many tongues and sets of eggs that I have seen, all true Australian and Pacific Island myzomelas are quite uniform. Noske quotes my own statements about general variability in honeyeater tongues against this, but the fact is that the variability does not extend to a basic difference between the myzomelas and other honeyeaters in the depth of furcations at the tip of the tongue. In myzomelas, the central spilt is shallower than the two lateral, not deeper as in other honeyeaters. It creates, as a result, a distinctively rounded, shortly fimbriate brushing surface (Scharnke 1931).

In questioning the similarities between the eggs of Black, Banded and Pied Honeyeaters, Noske relies on references that are inaccurate or inadequate, as Parker (1979) has already pointed out. My own observations were taken first hand from the extensive set in the H.L. White collection in Melbourne and the British Museum (Natural History). Let me re-emphasize, the eggs of the Black and Banded Honeyeaters are alike, having a cream-buff ground colour with a zone of the fine umber markings around the larger end, resembling the eggs of fantails (*Rhipidura*) and in marked contrast to the white to pinkish, red or brown-marked eggs of most other honeyeaters, including *Myzomela*. The eggs of the Pied Honeyeater, although pigmented with similar tones, are marked differently: the whole surface of the cream-buff egg is liberally sprinkled with blackish blotches, rather like those of the Stubble Quail. Parker (1979) finds them altogether atypical of Meliphagidae; my own taxonomic assessment is that egg markings **on their own** should not be relied upon heavily.

On one side, Black and Pied Honeyeaters resemble each other in sexual dimorphism, wing shape and plumage patterns, particularly the brown females. On the other, Black and Banded Honeyeaters are similar in eggs, size, and black-and-white plumage (sexually monomorphic in the Banded - corrected by Schodde and McKean (1976) but not credited by Noske (1978)). Notwithstanding discrepancies in reported nest structure and building, and uncertainties regarding calls and displays (cf. Noske 1978 and Parker 1979), **available** data collectively suggest that these three species are connected reticulately and are more closely inter-related than any one is to other species. This is the rationale for combining them in one genus. Further biological and morphological data, gathered quantitatively and not anecdotally as Noske correctly urges, might in future show that some of the above characteristics are convergent. As it is, I sense from nests, eggs and the sharing of nest duties that the Pied may not be as close to the other

two as it seems at present (cf. Salomonsen 1967). That information, nevertheless, will have to be properly documented before further change can be justified. And even if that happens, it in no way invalidates the principle of making checklist decisions on available data, which underlies the dissociation of Black and Banded Honeyeaters from *Myzomela* in the Interim List.

SPECIES

Noske suggests that I misapplied the taxonomic implications of hybridization established by Short (1969). Ford (1979) has already made appropriate rebuttal, and I need only add that Short himself read a draft of the Interim List and found no serious conceptual errors.

The Sittellas. My combining of all Australian populations under one species followed Mayr (1950) and, based on the polytypic species concept, took account of the facts that the different Australo-Papuan populations replace each other geographically, apparently hybridize wherever they meet, and exhibit similar plumage patterns in different combinations. In these circumstances, the onus rests on showing that the sittellas are different species, not that they are the same. It only needs to be added that Ford's (1980) revision also concluded that there is one species of sittella in Australia. Other recent investigations (Short *et al.*, *in press*) document five-way hybridisation of Queensland sittellas; and (Short and Horne, *in prep.*) virtually identical vocalisations among the Australian sittellas.

The stripe-crowned Pardalotes. Ford (1979) disposed of Noske's claims that there is 'little published evidence to suggest that the Black-headed interbreeds with the Eastern Striated Pardalote'. Noske, in turn, has misrepresented my citation of supporting references in the Interim List: Disney *et al.* (1974) was, in fact, correctly quoted in the context of hybridization 'between *P. melanocephalus* and *P. substriatus* and possibly between *P. melanocephalus* and *P. ornatus*' however to save space in the List's preamble, the mode of citation at that point is not as precise as it could have been.

Further study of these pardalotes by Dr. L.L. Short, Jennifer F.M. Horne and myself corroborates the combining of all stripe-crowned pardalotes in one species. Despite Bell's (1959) observations, there is a broad overlap between the breeding seasons and nesting sites of 'Black-headed', 'Eastern Striated' and 'Red-tipped Pardalotes' in south-eastern Queensland and north-eastern New South Wales between August and October; and 3-way hybridization occurs between these populations.

The territorial calls (songs) commonly held to differ from 'species' to 'species' of 'striped-crowned pardalotes' prove upon analysis to be extremely complex, with great individual differences within a population, and between populations (Short *et al.*, *in prep.*). Supposed differences among the taxa in two-, three- and four-note calls are simplistic, and do not hold, partly due to complexity of the variation and partly because the human ear is imprecise in dealing with notes that one hears. Actual song variation in areas of co-occurrence of "Black-headed", "Eastern Striated" and "Red-tipped" Pardalotes does not correlate with their being separate entities taxonomically. Furthermore intra-population variation found by Short, Horne and myself, well within the breeding ranges of supposedly "pure" populations of one or another form (e.g. in southern South Australia, and in western New South Wales) is as great as, if not greater, than found in mixed (hybrid) populations of north-eastern New South Wales and south-eastern Queensland.

The Little Tree-creeper. Noske misinterprets my comments about ventral pattern and similarities between Little and Red-browed Tree-creepers. What I wrote (Interim List, p. 16) was: 'a reduced pale throat, broad grey-brown breast-band, and evenly and rather finely mottled abdomen' in the Little Tree-creeper 'is closer (in pattern) to the Red-browed group than to

the White-throated'. That is stated accurately. I am also said to have 'suggested that the Little gave rise to both the White-browed and Red-browed', but my actual words were 'in fact the Little may retain characters of a form from which the White-throated and the Red-browed group, with their stronger bills and feet, have been derived'. The meaning here is quite different from that attributed to it by Noske. I am also fully aware of the close relationship between the Red-browed and Brown Tree-creeper superspecies. That is precisely what my term 'erythrogroup' or 'Red-browed group' implied, as a careful reading of the Interim List shows.

CONCLUSIONS

Two conclusions can be drawn from this review of criticisms of the Interim List.

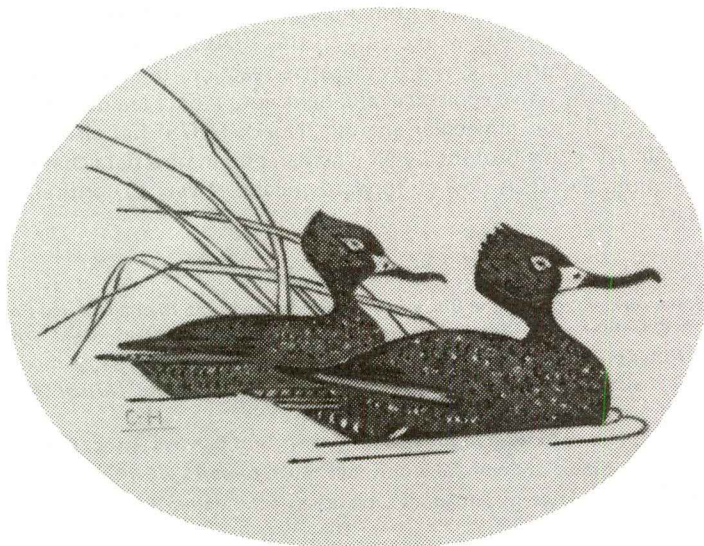
Firstly, the claims of error and misinterpretation of taxonomy in the List are largely unfounded. Indirectly, this strengthens the decisions taken in the List. The List, of course, is not perfect; no checklist ever is, representing no more (nor hopefully less) than the taxonomic understanding of the time. Several misjudged decisions were taken in the Interim List at species level. Examples are the separation of two Australian cat birds and the lumping of the Western and Spotted Bower-birds, the Grey and Mangrove Fantails, and the Western and Little Wattle-birds. Ironically, none of the critics of the List have perceived these shortcomings. Combining the Grey-headed Robin (*Heteromyias*) generically with *Poecilodryas* also may have been premature. Further field work that I have carried out indicates that the Grey-headed Robin has the same contact calls as the yellow robins (*Eopsaltria*) and, with its long legs, exploits a terrestrial foraging niche exploited by none of its relatives. Standing both between and apart from other robin genera, it seems best retained as monotypic *Heteromyias*. The logical alternative would be to combine *Eopsaltria*, *Heteromyias* and *Poecilodryas* generically, and include New Guinean *Peneothello*, *Melanodryas* and *Tregellasis* as well. Such a grouping may seem unwieldy now but those responsible for future checklists may find it realistic and practical (J.L. McKean, pers. comm.).

Secondly, Noske's (1978) - and also McGills's (1976) - criticisms have produced few constructive results and needless doubt about the taxonomy of the Interim List. The systematics of Australian birds has lagged terribly within Australia in the 55 years since the last Checklist and, apart from Keast's important work, only in the 1970's has there been a notable renaissance. This progress merits nurturing, not by negative reaction, but by further studies in which objectively recorded, quantitative ecological and behavioural data are used to complement comparative morphology and even molecular analysis. Noske (1978) has already pointed this out. There is ample room for contributions by all who can obtain new data that may be subjected to analysis and evaluation. So let us now go forward collaboratively to continue the tasks sparked by the Interim List.

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FRECKLED DUCK AT CRANEBROOK GRAVEL PITS JANE MILLER

On 6 November 1980 at 1500 hrs I looked over the high western bank of the biggest of the Cranebrook Gravel Pit lakes located 6 km north of Penrith, New South Wales. At 1500 hrs, this put the sun behind me and visibility on the water was very good. About 10 metres from the edge was a small patch of sand only 7 cm below the surface of the water and roosting on this island were six birds.

Three were clearly Eurasian Coot *Fulica atra*, and the other three were the size of Black Duck *Anas superciliosa* but a different shape and colour. The top of their heads where they were bent over under their wings had a distinct point, and they were a speckled grey-teal colour ALL OVER. After several minutes clear viewing I stood up to disturb them, and they woke up and stretched, moving their wings, before swimming slowly away. The pointed head and different bill-shape (upturned), was then very clear and the total lack of marking on the feathers except for the all-over freckling was very obvious. There was no paler patch under the throat, no mark in the wing, and no colours on the side or tail feathers. I identified the birds as immatures or female Freckled Duck *Stictonetta naevosa*. The three birds then swam slowly away to join the other species further away and even at 200 m or so their silhouette was still clearly different.

Under these good light conditions the birds seemed much paler than any of the illustrations or descriptions of Freckled Duck that I could find, but despite this there could be no doubt of their identity.

Many observers were able, subsequently to see this species at the Cranebrook Gravel Pits during the months that followed this original observation, as well as in the Windsor-Richmond-Wilberforce area. The maximum number as far as can be ascertained was nine at the Portland Ferry Road swamp, near Wilberforce on 11 April 1981 (per favour Athol Colemane). However, totals seen in the Sydney area were much fewer than that reported by Melbourne observers during an irruption at the same time. F.T. Smith (in litt. 21 March 1981) gives a count of 60 Freckled Ducks at the Werribee Sewerage Farm.

The present Sydney record constitutes the fifth known occurrence in the Sydney District, treating of course those of the past months as one County of Cumberland visitation. Those previously are as follows:-

One shot by V.T. Houghton at Tom Ugly's Point, Botany Bay, in April 1889, (A.J. North 1914 *Nest and Eggs of Birds found breeding in Australia and Tasmania*, 4, 89); One at Botany in 1897 (A.J. North 1898 *Handbook Aust. Assoc. Adv. Science*); three at Richmond in May 1958 (K.A. Hindwood and A.R. McGill 1958 *The Birds of Sydney*); and three observed by A. Colemane and W. Longmore at Pitt Town Bottoms on 6 May 1978 (Keith Hindwood Bird Recording Service, per favour E.S. Hoskin).

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CRESTED HAWKS AT CURBAN DAVID JOHNSTON

Curban is a small settlement located on the banks of the Castlereagh River, midway between Gilgandra and Gulargambone. For atlassing purposes, the locality is in the northern portion of the ten minute square reading 31degrees 35'S 140 degrees 35'E.

Whilst observing in an area of box and pine scrub one kilometre north-east of the settlement on 26 February 1981 at 1700 hours, my attention was drawn to a hawk perched in the top of a Narrow-leaved Box *Eucalyptus woolsianna*. A clear view of the bird was had from a distance of 80 m, using 8 x 40 binoculars. The prominently barred breast and obvious crest meant that the bird was easily recognised as a Crested Hawk *Aviceda subcristata*. Being my first observation of this species, I was most impressed with this striking and colourful bird, and a description was therefore taken at the time, as follows:-

The crest and head were leaden grey; the breast off-white with very prominent dark brown bars. The lower breast and upper tail were buff or nankeen, there was a black bar on the end of the tail. Between the buff of the under tail coverts and the black bar, the tail was very white (reference books say that this colour should be "silvery grey", but this was not my impression.). The buff feathers extended half way down the legs, which appeared to be pinkish yellow. The iris was bright yellow and the beak grey. The back was dark grey with the lighter grey of the head and neck forming a distinct line just above the wings.

The hawk was kept under observation for 20 minutes during which time it moved to an adjoining Bimble Box *E. populnea*. From here it flew at a leafy branch and hung upside down flapping away on some thick leaves for a few moments. When it returned to its perch it appeared to have a large stick insect in one of its talons. The insect was then consumed except for its wings which were allowed to float to the ground.

On 9 March 1981, at a point 12 km south from the first sighting, another Crested Hawk was observed. The locality was a 200 m wide strip of both Narrow-leaved and Bimble Box trees between open, cleared country, six kilometres north of Gilgandra. At 1500 hours I observed a hawk fly into a bushy Bimble Box. The colour of the bird was so pale that at first I mistook it for a Brown Goshawk *Accipiter fasciatus*. Returning to the tree 15 minutes later with my binoculars, the bird was able to be observed more closely. The crest was clearly visible although it consisted only of two or three small black feathers. All other colours were much paler than the previous bird although the markings were the same except for the tail which was off-white to light buff, with two irregular brown bars. This bird was kept under observation for some five minutes. The bird was again observed the following day at 1600 hours, one kilometre to the north.

From the description given by H.J. Frith Ed. (1976 Reader's Digest, *Complete Book of Australian Birds*) the first bird was an adult male whereas the second bird was a female because of the pale plumage. There have been no records of Crested Hawks in western New South Wales since 1960. The farthest west that they have been recorded in recent years was at Mullion Creek near Orange in 1971 (M. Heron 1972 *Emu* 73,2). In the most recent review of the Crested Hawk for N.S.W. (Morris, McGill and Holmes 1981 *Handlist of Birds in N.S.W. - In press*) the distribution is given as "Coast, Northern and Central Tablelands, North-west Slopes and Plains, south to about Moruya, west to Moree watercourses, beyond Bundarra. Wellington, Orange, Blue Mountains to the Cordeaux River". These observations of mine extend the range therefore further west than previously recorded.

My thanks are extended to Alan Morris for supplying me with the information on distribution and published records.

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FIELD IDENTIFICATION OF THE MARBLED FROGMOUTH GLENN HOLMES

Estimates of the status of nocturnal birds are likely to be excessively conservative. The southern form *plumiferus* of the Marbled Frogmouth *Podargus ocellatus* is a particularly graphic example. As a result of recent field experience with this species in subtropical rainforests of the Nightcap and Tweed Ranges, I suspect that it is well dispersed in suitable habitat. However, McGill (1978) documented less than ten records for New South Wales, south to the Manning River. Consequently I present the following preliminary notes on calls, appearance and habitat to enable observers to obtain records of this species in other localities.

Calls of the Marbled Frogmouth are diverse and difficult to describe. Descriptions by Roberts and Ingram (1978) were essentially correct but require considerable qualification. One typical call is a succession of approximately ten accelerating notes that may be superficially described as gobbling. It is similar to the terminal portions of the territorial calls of the Pheasant Coucal *Centropus phasianinus* or Rose-crowned Fruit-Dove *Ptilinopus regina*, beginning abruptly and loudly then rapidly decreasing in volume. It is audible for at least 200 to 300 metres. It may be preceded, or occasionally succeeded, by a rapid "woolook-woolook-woolook-woolook" or deliberate notes such as "kook, kook, kook, kook". I speculate that this represents antiphonal calling by the members of a pair because in one instance it clearly concerned two birds about 20 to 50 metres apart. This possibility is supported by the sexual dimorphism of plumage that is apparent in specimens (also see Pizzey 1980). Another typical call consists of "whoor-loop, whoor-loop, . . ." repeated four to six times. Each double note occupies less than one second so that the duration of the resulting phrase is approximately four to six seconds. The phrase is repeated after regular pauses of about ten seconds. This pattern of timing indicates that "whoor-loop" is homologous with "oom" in the corresponding call of the Tawny Frogmouth *P. strigoides*. It has a fugitive tonal quality like the call of the Emerald Dove *Chalcophaps indica* and is scarcely audible beyond 50 metres. At this distance it sounds like "kooor-loo" as described by Roberts and Ingram (1978). A harsh variation "whrrr-rrp" possibly represents the equivalent call given by the opposite sex. It has the tone of certain guttural notes of the Laughing Kookaburra *Dacelo novaeguineae*. Finally, a noise like bill snapping may be discerned immediately after the loud gobbling call ceases.

Calls are most readily heard from about 30 minutes before dawn until at least 20 minutes after diurnal birds have begun calling. This bout of calling probably advertises the roosting position. In favourable circumstances it should then be possible to locate a roosting bird when there is sufficient light.

The Marbled Frogmouth is best distinguished from the Tawny by its proportionately longer tail. It comprises more than half of the total length and is well graduated (pointed). The plumage of the Marbled is much less streaked than the Tawny and is generally brown. Ventrally it may be closely patterned by rectangular white markings. There is a pale superciliary extending about 25 millimetres before and behind the eye, wider at the anterior than posterior. In torchlight the general plumage colour may appear fawn and the superciliary may be quite conspicuous. Size and eye colour are not diagnostic field characters. The Marbled is smaller than a typical Tawny and its eye tends to be more orange.

The southern form of the Marbled Frogmouth probably occurs throughout subtropical rainforests. Records were obtained at Whian Whian State Forest in the Nightcap Range at an altitude of 200 metres in March and December 1980 and January 1981. The habitat is warm subtropical rainforest where common trees include Brush Box *Tristania conferta*, Blue Quandong *Elaeocarpus grandis* and Bangalow Palm *Archontophoenix cunninghamiana*. Records were obtained at Wiangaree State Forest in the Tweed Range at an altitude of 700 metres in

February and April 1980 and January and February 1981. The habitat is cool subtropical rainforest where common trees include Red Carabeen *Geissois benthamii*, Pigeonberry Ash *Cryptocarya erthroxylon* and Soft Corkwood *Ackama paniculata*. Antarctic plant elements in this community suggest that the Frogmouth may extend to temperate rainforests.

I gratefully acknowledge the assistance of David Milledge with observations in Whian Whian State Forest and Chris Corben for discussion concerning calls identified with this species that he had heard at Iron Range and at three localities in south-eastern Queensland.

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AN APPARENT NESTING BY A HYBRID WOODSWALLOW JOHN N.S. TARR

On 14 October 1980 I was atlasing at the Tharbocong slopes (34 degrees 12'S 144 degrees 57'E) near Griffith, New South Wales, when I saw what first appeared to be a male Masked Woodswallow *Artamus personatus*. On closer inspection however, it appeared that the bird had a black throat extending to the upper breast with no white margin (as has the male Masked Woodswallow). In addition, it had small white eyebrows, when compared with those of the female White-browed Woodswallow *A. superciliosus*. Its lower breast and abdomen were white with a faint tinge of chestnut, seen when the light was suitable. The back and tail were blue-grey, and the tail tipped with white. The bill was whitish-blue with a black tip, eyes dark, and legs black. I watched the bird through "Tasco" 7 x 35 Binoculars for about ten minutes until it flew up and joined a flock of White-browed Woodswallows hawking insects fairly high over the tree-tops.

I first saw the bird near the edge of fairly dense clumps of Cypress Pine *Callitris hugelli* on the lower slopes of the hill and near open grazing country with scattered box trees.

I revisited the area again on 24 October 1980 and saw presumably the same bird in the same place. A female White-browed Woodswallow was brooding in a nest on an old White-browed Babbler's *Pomatostamus supersiliosus* nest about six metres high in a slender pine. When flushed she flew to a nearby half-dead box tree, Bimble Box *Eucalyptus populnea* and the first bird (doubtless male) immediately flew to her side and began preening her. The nest was examined with a mirror on a pole on 5 November, and it contained two half-fledged young.

On 12 November the nest was watched between 1055 and 1130 hours during which time the young were fed four times by the male. Again at 1830 hours on the same day a female appeared and fed the young while the male circled overhead, giving alarm calls. On 13 November I took several photos of the male with a small zoom lens. While I was there, both male and female fed the young in the nest.

At 1030 hours on 15 December one young had left the nest and was in a nearby pine tree, the second young was still in the nest. The male was very upset when the young bird was approached closely. I last saw the birds on 17 December when both young were out of the nest in nearby trees and both parent birds were in attendance. The young birds seemed identical with young White-browed Woodswallows of the same age.

I presume the male to be a cross between the two species (Masked and White-browed Woodswallow) on the strength of the intermediate plumage and mating with a White-browed Woodswallow although being closer in appearance to a Masked Woodswallow.

Hybridism in Woodswallows has previously been recorded for the two species under discussion. E.F. Boehn (1974 *S.A. Ornith.* **26**, 167) summarised three previous observations of alleged hybridism viz, a mixed pair prior to 1889 in Queensland; an apparent hybrid at Bellata, N.S.W. in November 1943; and another at Sunderlands S.A. on 8 October 1972.

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CATTLE EGRETS AT DARETON C. SONTER

After receiving information that a pair of Brolga *Grus rubricundus* has been seen between Buronga and Dareton, New South Wales, I decided to investigate the report since this species had not been recorded for many years in the Sunraysia District. As a result of a search on 20 November 1980 the Brolgas were found. Other potential habitats were investigated which subsequently led to the discovery of 15 Cattle Egrets *Ardeola ibis* on a swamp near Dareton. The presence of the Egrets soon overshadowed the importance of the Brolgas.

Attention to the status of the Cattle Egret in Sunraysia was dealt with in a short paper (Sonter 1980 *Aust. Bird Watcher* 8, 6) when a specimen was located in company of cattle near Mildura, Victoria. This was the first known record of the Cattle Egret in Mildura with no further birds being seen since that observation prior to those at Dareton.

The Dareton observation was made on a small irrigated flood pasture cum drainage swamp previously described (Sonter 1980 *Aust. Birds* 15, 1). A number of cattle were feeding in the swamp which had reduced the Cumbungi *Typha sp.* to a stubble as a result of their grazing efforts, and some 15 Cattle Egrets were seen in their company. The Egrets were well dispersed with about one bird per beast but some cattle were in water too deep for the Egrets to wade therein.

Nine Egrets were in full breeding plumage with the remaining six individuals showing no trace of nuptial plumage. I spent 40 minutes watching the birds before returning to the Brolgas at 1125 hrs (Eastern Summer Time).

I again visited the swamp at 1400 hrs the following day but failed to locate the Egrets. However, D. Foley, found the birds roosting in a dead tree some 500 m from the swamp at 1730 hours the same afternoon. They were not seen after the 21 November, nor have there been any further sightings of this species on either side of the Murray River up to March 1981. It is not known how long, or indeed, if the birds had been at the swamp prior to 20 November 1980.

From the above observation, and the previous solitary specimen in Mildura, it would appear that this species does venture into arid areas in search of new breeding or feeding grounds and marks an extension of the known distribution range into inland New South Wales. This is the first record for this species in the far south-west of New South Wales.

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AUSTRALIAN BIRDS

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