

- Keast, A. (1968). Moulting in birds of the Australian dry country relative to rainfall and breeding. *J. Zool. London* **155**: 185–200.
- Lenz, N. H. G. (1999). Evolutionary ecology of the Regent Bowerbird *Sericulus chrysocephalus*. *Ökologie der Vögel* **22**, Supplement, 1–200.
- Lowe, K. W. (1989). 'The Australian Bird Bander's Manual.' (Australian Bird and Bat Banding Schemes, and, Australian National Parks and Wildlife Service: Canberra.)
- Marchant, S. (1992). A Bird Observatory at Moruya, NSW 1975–84. *Occasional Publication No. 1, Eurobodalla Natural History Society, Moruya.*
- Marchant, S. and Higgins, P. J. (1990). *Handbook of Australian, New Zealand & Antarctic Birds. Volume 1.* (Oxford University Press: Melbourne.)
- Martin, T. E. (1996). Life history evolution in tropical and south temperate birds: what do we really know? *J. Avian Biol.* **27**: 263–272.
- Nicholls, D. G. and Woinarski, J. C. Z. (1988). Longevity of Pied Currawongs at Timbertop, Victoria. *Corella* **12**: 43–47.
- Paton, D. C. (1982). Moulting of New Holland Honeyeaters *Phylidonyris novaehollandiae* (Aves: Meliphagidae), in Victoria. *Aust. Wildlife Res.* **9**: 331–344.
- Rowley, I. and Russell, E. (1991). Demography of passerines in the temperate southern hemisphere. In 'Bird Population Studies.' (C. M. Perrins, J. D. Lebreton and G. J. M. Hirons). Pp. 22–44. (Oxford University Press: Oxford.)
- Schodde, R. and Mason, I. J. (1999). 'The Directory of Australian Birds. Passerines.' (CSIRO Wildlife and Ecology: Canberra.)
- Sibley, C. G. and Ahlquist, J. E. (1990). 'Phylogeny and Classification of Birds. A Study in Molecular Evolution'. (Yale University Press: New Haven.)
- Sindel, S. (1989). Breeding the Regent Bowerbird *Sericulus chrysocephalus*. *Aust. Avicult.* **43**: 149–154.
- Snow, D. W. (1976). The relationship between climate and annual cycles in the Cotingidae. *Ibis* **118**: 366–401.
- Snow, D. W. (1982). 'The Cotingas.' (British Museum (Natural History): London.)
- Snow, D. W. and Lill, A. (1974). Longevity records for some neotropical land birds. *Condor* **76**: 262–267.
- Tracey, J. G. (1982). 'The Vegetation of the Humid Tropical Region of North Queensland. (CSIRO: Melbourne.)
- Vellenga, R. E. (1980). Moults of the Satin Bowerbird *Ptilonorhynchus violaceus*. *Emu* **80**: 49–54.
- Woinarski, J. C. Z. (1985). Breeding biology and life history of small insectivorous birds in Australian forests: response to a stable environment? *Proc. Ecol. Soc. Aust.* **14**: 159–168.
- Yom-Tov, Y. (1987). The reproductive rates of Australian passerines. *Aust. Wildl. Res.* **14**: 319–330.
- Yom-Tov, Y., McCleery, R. and Purchase, D. (1992). The survival rate of Australian passerines. *Ibis* **134**: 374–379.

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NOTES ON INTERACTIONS BETWEEN COMMON KOELS AND THEIR HOSTS

Brood parasitism in birds is a reproductive strategy found in about 100 species world-wide (Davies 2000). These species lay all of their eggs in the nests of other species — the hosts — who provide all the necessary incubation and feeding required by the hatchlings. It is believed that adult obligate brood parasites play no role in the raising of their own young (Johnsgard 1997). In a recent review, however, Lorenzana and Sealy (1998) drew attention to 40 international published accounts of brood parasites apparently observed to be feeding young of their own species. These authors concluded that the data remained insufficient to declare whether this provisioning of young was an adaptive strategy or simply a vestigial behaviour of pre-parasitic parental care (see also Kikkawa and Dwyer 1962).

The Common Koel *Eudynamys scolopacea* is cited by Lorenzana and Sealy (1998) as a species in which adults had apparently been observed feeding or remaining close to chicks (e.g. see Campbell 1900; Chisholm and Cayley 1929). In most cases, however, few details of these claims are provided by the original authors, making further assessments difficult. Furthermore, despite recent work on vocalizations and host-parasite interactions in Koels (e.g. Gosper 1997; Maller and Jones 2001), much remains

to be investigated (Brooker and Brooker 1989). Although largely anecdotal, we provide the following observations of the Common Koel from the Brisbane area as a contribution to increased understanding of this species.

In 1994, the development of a Koel chick was observed in a Noisy Friarbird's *Philemon corniculatus* nest in a suburban garden. Although the familiar 'Cooee' calls of adults Koels were heard frequently throughout the early weeks of the Noisy Friarbird's breeding season (typically September to November in Brisbane), these calls were heard only occasionally while the chick was in the nest. However, many weeks after the fledgling had left the nest (early February) but was still being attended by the foster parents, there was an obvious recurrence in the 'Cooee' calls of adult Common Koels close to the location of the nest. Although other vocalizations of this species time had been heard during this period (indicating that some adults were present in the area), 'Cooee' calls had not been heard in the area for some time. A recent three-year investigation of Koel vocal behaviour has shown this pattern to be typical for the Brisbane area (see Maller and Jones 2001).

Because almost all potential host species have either finished breeding or have large chicks at this time of the year, the function of this spate of calling appeared to be unrelated to the usual apparent functions of such calls: attracting mates or announcing territorial occupation of an area containing suitable host nests (Johnsgard 1997; Davies 2000). Gosper (1997); on the other hand, reported parasitised Magpie-larks *Grallina cyanoleuca* nesting as late as February in northern New South Wales but does not mention any Koels calls being heard. In Brisbane re-nesting by host species at this time appears rare. We wondered,

therefore, whether these calls were produced by the young Koel's biological parents having returned to the vicinity of nests that they had parasitised earlier. If so, these visits may provide the fledglings with an opportunity for auditory imprinting prior to the northward migration (Brooker and Brooker 1994).

Suggestions of such parental interactions in brood parasites remain controversial, mainly because of a lack of observations of individuals of known identity. Possibly, many of these interactions are of adults responding to the food begging calls of an unrelated chick as has been reported for a variety of species (e.g. see Craig and Jamieson 1990). In this context, information obtained by Mr John Evans, an experienced wildlife carer from Brisbane is of relevance here.

In late 1991 Mr Evans cared for a Koel chick which was banded with an ABBBS metal banded prior to its leaving on its northward migration in April 1992. In September 1992 this individual returned to the Evans' houseyard where it readily accepted food and its band could be read. This individual remained within a relatively small area around the houseyard (an area of several hectares) throughout the 1992/93 breeding season and was seen frequently at their feeding table that year. This pattern of arrival, residence and departure by the banded bird was repeated in the following year (1993/94) and by an unbanded male over the following four consecutive seasons (1995–98). Although this latter bird was unmarked, its pronounced tameness suggested strongly that this was the same individual, its band having been lost. Female adult Koels also visited the feeding station in company with this male. Interestingly, the unbanded male was seen regularly during each of these years with two separate females (each with distinctive plumages).

These observations are relevant because relatively little information is available on the movements, territoriality or mating systems of most species of cuckoo (Brooker and Brooker 1994; Davies 2000). In those few species in which intensive radio-tracking has been undertaken, the apparent pattern is of sequential territoriality with dominant individuals defending areas with host nests and mating with the female/s also occupying the same area for several weeks only (Davies 2000). In contrast, Mr Evans' observations suggest that Koels of both sexes may remain within an area throughout the breeding season. If so, this would enable Koel parents to monitor their chicks regularly.

One of the most remarkable features of the relationship between hosts and cuckoos concerns the willingness of the adults to care for the large and often extremely different looking chicks (Davies 2000). Late in 1995, a juvenile Koel, originating from a Magpie-lark's nest, was presented to RN for care. By the following day it was readily begging for, and accepting, food. A few days later, two adult Noisy Friarbirds appeared and became extremely agitated whenever he approached the Koel's enclosure. (The nest of this pair had been destroyed a few days earlier during violent storms). Their behaviour was clearly that of brood defence: close swooping and shrieking alarm calls. Eventually, the Koel's cage top was opened, allowing

access by the friarbirds. The adult friarbirds perched on the edge and one eventually fed the begging bird.

Several days later the chick was placed outdoors and fed in the cage. Its begging calls soon attracted the attention of the Noisy Friarbirds. On this occasion three apparently adult Friarbirds arrived; again they vigorously defended the Koel chick. The cage was again opened to allow access to the youngster by the Friarbirds. The partly fledged Common Koel left the cage and perched in the tree immediately above the cage, persistently calling to be fed. All three adult friarbirds attended the young. The Koel was successfully attended by the Friarbirds thereafter. Although it had moved from the immediate vicinity its calls could be heard regularly in the area and the Friarbirds were always close by. This bird was seen as late as mid March 1996, still in the company of the Friarbirds.

Koels are among the most easily observed of Australian cuckoos yet much remains to be understood of their behaviour and interactions with hosts (see Gosper 1997). We especially encourage further banding of the many young Koels that are rehabilitated each year as a means for enabling long-term observations of known individuals.

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REFERENCES

- Brooker, M. G. and Brooker, L. C. (1989). Cuckoo hosts in Australia. *Aust. Zool. Reviews* 2: 1–67.
- Brooker, M. G. and Brooker, L. C. (1994). Cuckoos. In 'Cuckoos, Nightbirds and Kingfishers of Australia'. (Ed. R. Strahan). (Angus and Robertson: Pymble.)
- Campbell, A. J. (1900). 'Nests and Eggs of Australian Birds.' (Private: Sheffield.)
- Chisholm, A. H. and Cayley, N. W. (1929). The Birds of Port Stephens. *Emu* 28: 243–251.
- Craig, J. L. and Jamieson, I. G. (1990). Pukeko: different approaches and some different answers. In 'Cooperative Breeding in Birds: Log-term Studies of Ecology and Behavior'. (Eds. P. B. Stacey and W. D. Koenig.) (Cambridge University Press, Cambridge.)
- Davies, N. C. (2000). 'Cuckoos, Cowbirds and Other Cheats.' (Poyser: Oxford.)
- Gosper, D. G. (1997). Aspects of breeding of the Common Koel *Eudynamys scolopacea* and one of its biological hosts, the Magpie-lark *Grallina cyanoleuca*. *Aust. Bird Watcher* 17: 11–19.
- Johnsgard, P. A. (1997). 'The Avian Brood Parasites: Deception at the Nest.' (Oxford University Press: Oxford.)
- Kikkawa, J. and Dwyer, P. D. (1962). Who feeds the fledged Pallid Cuckoo? *Emu* 62: 169–171.
- Lorenzana, J. C. and Sealy, S. G. (1998). Adult brood parasites feeding nestlings and fledglings of their own species: a review. *J. Field Ornithol.* 69: 364–375.
- Maller, C. J. and Jones, D. N. (2001). Vocal behaviour of the Common Koel *Eudynamys scolopacea* and implications for mating systems. *Emu* 101.

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