Corella, 1997, 21(4): 119–123

THEFT OF NESTING MATERIAL INVOLVING HONEYEATERS (Meliphagidae)

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Received: 7 April, 1997

Thieving of nesting material in 10 honeyeater species and six other passerines is described, in the Bundarra-Barraba region west of Armidale, New South Wales during a study of Regent Honeyeater's biology in 1995–96. Theft of nesting material was from both active and inactive nests. The contribution of theft to nest parasite transfer (e.g. lice) and to nest failure in Meliphagidae is discussed.

INTRODUCTION

We have observed honeyeaters and other passerines thieving or re-using nesting material in the Bundarra-Barraba region west of Armidale, New South Wales, and have identified three distinct forms of this behaviour:

1. piracy of nesting material, involving the theft of material from the active nest of another species;
2. removal of nesting material from an abandoned nest of another species; and
3. recycling of material from a previous nest by its owners after either failure of a nesting attempt or fledging of young.

The first of these clearly qualifies as parasitism, which is the exploitation by one organism of the resources of another (Campbell and Lack 1985). We have recorded 10 honeyeater species, and six other passerines, in the role of parasite (or, perhaps, kleptoparasite), or as the host or victim of the theft. While theft of nesting material received only a passing mention in the 'piracy' entry by C. J. Barnard in Campbell and Lack (1985), and has not been documented in detailed studies of honeyeater ecology, our observations suggest that it may be widespread among honeyeaters and other birds. Given the obvious potential for disruption of breeding if a nest is damaged, it may be an under-rated cause of nest failure in the Meliphagidae.

METHODS

These observations were made during the course of a comprehensive study of the breeding biology of the Regent Honeyeater *Xanthomyza phrygia* in the Bundarra-Barraba region (Ley and Williams 1992, 1994; Oliver, in press), together with incidental observations in the same area. This region is described by Ley and Williams (1992). We recorded all instances of nesting material theft as they occurred during our observations at Regent Honeyeater nests and elsewhere.

RESULTS

Our records of honeyeater species involved in nesting material piracy, either as host or parasite, plus examples from other sources, are listed in Table 1.

During the 1995–96 breeding season, 3 of 24 Regent Honeyeater nests in our study area were monitored for part of the nest construction phase. Of these three, one was raided for nesting material while at the other two the female collected material from other nests. In October 1995 during 315 minutes of continuous observation at one of these nests under construction, the nest was raided for nesting material twice by a Noisy Friarbird *Philemon corniculatus* and once each by another Regent Honeyeater, a White-plumed Honeyeater *Lichenostomus penicillatus* and a Striated Pardalote *Pardalotus striatus*. During the same period the female Regent Honeyeater took material from other nests on 5 out of 50 (10 per cent) nesting material collection bouts. Four times she removed wool from an abandoned Noisy Friarbird nest and once she

TABLE 1

Nesting material re-use involving honeyeaters. All instances are personal observations unless indicated otherwise.

A. Theft of material from an active nest of another species.

Host	Parasite
Regent Honeyeater *Xanthomyza phrygia*	Regent Honeyeater *X. phrygia* Noisy Friarbird *Philemon corniculatus* Red Wattlebird *Anthocaera carunculata*[1] Fuscous Honeyeater *Lichenostomus fuscus* White-plumed Honeyeater *L. penicillatus* Striated Pardalote *Pardalotus striatus*
Noisy Friarbird *P. corniculatus*	Regent Honeyeater *X. phrygia* White-naped Honeyeater *Melithreptus lunatus*[2] Noisy Friarbird *P. corniculatus*
Fuscous Honeyeater *L. fuscus*	Regent Honeyeater *X. phrygia*
Brown-headed Honeyeater *M. brevirostris*	Black-chinned Honeyeater *M. gularis*
Black-chinned Honeyeater *M. gularis*	Fuscous Honeyeater *L. fuscus*
Eastern Yellow Robin *Eopsaltria australis*	Fuscous Honeyeater *L. fuscus* [3]
White-bellied Cuckoo-shrike *Coracina papuensis*	Yellow-tufted Honeyeater *L. melanops*[4]
White-browed Babbler *Pomatostomus superciliosas*	Singing Honeyeater *L. virescens*[5]

[1]Davis and Recher 1993. [2]Ford pers. comm. [3]Shepherd pers. comm. [4]Marchant 1989. [5]Cale pers. comm.

B. Theft of material from an abandoned nest of another species.

Host	Parasite
Noisy Friarbird *P. corniculatus*	Fuscous Honeyeater *L. fuscus*[1] Olive-backed Oriole *Oriolus sagittatus*
Noisy Miner *Manorina melanocephala*	Regent Honeyeater *X. phrygia*
Honeyeater *Melithreptus* sp.	Regent Honeyeater *X. phrygia*
Superb Fairy-wren *Malurus cyaneus*	Regent Honeyeater *X. phrygia*
Olive-backed Oriole *Oriolus sagittatus*	Regent Honeyeater *X. phrygia* Noisy Friarbird *P. cornicutatus*
Diamond Firetail *Stagonopleura guttata*	Regent Honeyeater *X. phrygia*

[1]Ford pers. comm.

C. Species re-using material from an earlier nesting attempt.

Regent Honeyeater *X. phrygia*
Red Wattlebird *A. carunculata*
Noisy Miner *M. melanocephala*
Noisy Friarbird *P. corniculatus*

took wool from an active Noisy Friarbird nest. The parasite was chased away from the active nest. On the same day another female Regent Honeyeater (band number 041–48927) collected nesting material, including wool, from disused nests of an Olive-backed Oriole *Oriolus sagittatus*, a Noisy Friarbird and a Diamond Firetail *Stagonopleura guttata*. The following day the same bird, which was building its second nest for the season, took material from its first nest and incorporated it into its new nest 30 metres away.

Between October and December 1996, 4 out of 16 Regent Honeyeater nests found in our study area were monitored during the nest construction phase and at two of these nests the females took material from other nests. At one nest, during 385 minutes of observation, the female (band number 041–48983) used re-cycled material 14 times out of 208 (6.7 per cent) collection bouts. Material was taken from an abandoned Superb Fairy-wren *Malurus cyaneus* nest, an abandoned honeyeater *Melithreptus* sp. nest and from an active Noisy Friarbird nest. In the second case the female Regent Honeyeater used an abandoned Noisy Miner *Manorina melanocephala* nest as a source of material three times in 60 minutes. This female was also recycling material from a partly constructed nest 100 metres away; after completing the second nest she abandoned it and recommenced construction of the uncompleted original nest.

Regent Honeyeater nests are constructed principally from bark (pers. obs.). Some of the Regent Honeyeater nesting sites in our study area were in stands of Stringybarks *Eucalyptus caliginosa* or *E. mckieana* which appear to provide plentiful nesting fibre. However, we have seen Regent Honeyeaters and Noisy Friarbirds almost strip Stringybark saplings of their bark but discard most of it on the ground, or expend considerable energy in vigorously detaching a particular piece of material.

In another series of observations, we saw a Brown-headed Honeyeater *Melithreptus brevirostris* collecting strips of bark from a tree trunk and carrying them 20 metres to a partially completed nest 15 metres up in a Caley's Ironbark *E. caleyi*. Thirteen days later a Black-chinned Honeyeater *M. gularis* was collecting bark from the same source to build a nest in the same tree as the Brown-headed Honeyeater, but it was also helping itself to material from the latter's active nest. On the same day, during the Black-chinned Honeyeater's absences, its nest was being used as a source of material by a Fuscous Honeyeater *Lichenostomus fuscus* which was taking the lining material after breaking through the nest wall.

We have recorded both Red Wattlebirds *Anthochaera carunculata* and Regent Honeyeaters using their previous nests as sources of material for a subsequent nesting attempt. Female Noisy Miners sometimes take twigs or grass from a previous nest to use in a new one (Dow 1978), and Noisy Friarbirds also recycle material between nesting attempts (Ford, pers. comm.).

DISCUSSION

Our observations of theft of nesting material suggest that it may be common among honeyeaters. This behaviour may be unusually frequent in the Meliphagidae or may be under-recorded for birds generally.

Some Regent Honeyeater nesting sites lack ready supplies of apparently desirable nesting material. For example, at one nest site the nearest source of wool was several hundred metres away and wool was one of the obvious materials being pirated from active nests and removed from old nests. Considerable time and energy are required to fly long distances for a particular nesting resource and in some cases intra- or interspecific nesting material piracy may be advantageous. Substantially greater amounts of nesting material perhaps could be gathered, and in less time and with the expenditure of less energy, in one trip from raiding a nest rather than gathering the material from original sources. This could in turn reduce the time a pair is away from their nest and thus increase their ability to defend their territory. Similarly, recycling material from an old nest may provide time and energy savings for re-nesting birds. Dow (1978) in discussing nest building by female Noisy Miners suggested that the use of material from the previous nest may reduce searching time for what appeared to be abundant material; in addition the behaviour may assist males in learning the site of a new nest.

These advantages must be weighed against the risks involved in trespassing at a competitor's nest. Given the aggressive nature of breeding

honeyeaters there is a high likelihood of a would-be nesting material kleptoparasite being violently attacked by the nesting birds. We have observed Regent Honeyeaters, Noisy Friarbirds and other honeyeaters violently attacking intruders in their territories. A further risk is that nest parasites such as lice or fly larvae, which can affect the growth rate and survival of nestlings (Poiani 1992), may be transferred with material taken from another nest.

Nesting material theft could dramatically disrupt a nesting attempt and potentially cause nest failure if eggs or young were disturbed, although the Regent Honeyeater nest from which we saw material being taken did fledge young. Based on their observations at two nests near Bundarra, both of which failed, Davis and Recher (1993) suggested that theft of Regent Honeyeater nesting material by other honeyeaters could be a cause of nest failure given that Red Wattlebird and Noisy Friarbird incursions into nest trees may have been attempts at nesting material piracy.

Regent Honeyeaters and some of the other species we have recorded as nesting material thieves are noted for their pugnacity. While some are actual (Chaffer 1944), or potential predators of eggs or nestlings, many passerines are likely to be nesting material kleptoparasites. This may partly explain why Regent Honeyeaters indiscriminately attack (pers. obs.) all intruders in their nest territory. Habitat fragmentation and degradation are environmental problems observable in our study area, the impacts of which include a reduction in resources such as nesting material (Davis and Recher 1993). Because at least some honeyeaters, including Regent Honeyeaters, discard much potential nesting material and sometimes take considerable trouble to collect a particular piece, the birds presumably select pieces of material with specific characteristics (such as size or pliability) to suit the nest. This might imply that the supply of nesting material was limiting. If nesting material was abundant and easily collected the nest construction stage should presumably be short, but Regent Honeyeaters often take over a week to build their nests (Oliver, unpubl. data), which is not unusual among honeyeaters.

Ashton (1987) recorded two examples of nesting material piracy that did not involve honeyeaters, the hosts being Yellow-rumped Thornbills *Acanthiza chrysorrhoa* and Mistletoebirds *Dicaeum hirundinaceum* and the respective parasites were Striated Thornbills *A. lineata* and Silvereyes *Zosterops lateralis*. In each case the robbery was from an active nest. Nesting material piracy also occurs in non-passerines. Cameron (1991) reported nesting material theft at a Victorian colony of Yellow-billed Spoonbills *Platalea flavipes* where material was seemingly in short supply and piracy and fighting over what was available was so rife that there was little progress on any nest. A more extreme case documents colonially breeding American White Ibises *Eudocimus ruber* fighting frequently, and sometimes ferociously, over nesting material in spite of it being abundant. Unattended nests were quickly dismantled by neighbouring pairs and this sometimes resulted in the loss of the eggs (Bildstein 1993).

Finally, Chisholm (1948) tells the story of a Fairy Martin *Hirundo ariel* which stayed behind to steal mud from other nests in its colony when their owners went on mud collecting expeditions. In a macabre but surely apocryphal ending the malefactor was sealed inside a mud nest-become-tomb by its fellows.

Our observations highlight the occurrence and possible consequences of nesting material piracy by and against honeyeaters. This aspect of bird behaviour warrants investigation to determine whether it is increasing in fragmented and degraded habitats. If so, nesting material piracy may be an additional burden impacting on the reproductive success and, therefore, the population viability of declining species such as the Regent Honeyeater.

ACKNOWLEDGMENTS

We thank the Hall family of Cobbadah, on whose property some of these observations were made. Damon Oliver's Ph.D. studies were supervised by Hugh Ford and Harry Recher and were supported by a Murray-Darling Basin Commission scholarship. Stephen Debus, Hugh Ford, David Paton, John Read and two referees commented constructively on a draft.

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LITERATURE REVIEW

Compiled by B. Baker

This section is compiled from journals which are often not available to non-professional ornithologists in Australia. The following criteria are used to select papers for review:

- They relate to species which occur in Australia and its Territories;
- They provide details of techniques and equipment that may be of use in Australia;
- They provide details of studies that may be of general interest to Australian ornithologists.

This Literature Review is a selection taken from the following journals: *Biological Conservation, Emu, Canberra Bird Notes, Wildlife Research, Australian Bird and Banding Scheme, Environment, Safring News, Journal of Field Ornithology, CSIRO, Polar Biology, Wildfowl, Journal of Wildlife Management, Polar Record, Proceedings, Royal Society of London, Behavioural Ecology, Behavioural Ecology and Sociobiology, Journal of Raptor Research, ANCA project FPP 110, In.*

CONSERVATION

The impact of two exotic hollow-nesting birds on two native parrots in savannah and woodland in eastern Australia. Pell, A. S. and Tidemann, C. R. (1997). *Biological Conservation* **79**: 145–153. (Examines factors which could influence the breeding success of native parrots in areas in which substantial populations of the hollow-nesting sturnids, myna *Acridotheres tristis* and starling *Sturnis vulgaris*, are present. The two sturnids were shown to be the dominant users of available nest resources. The myna was successful in most aggressive encounters with starling and two native parrots during the period of nest site selection and occupancy. There was evidence of partitioning of nest resources between species in the different areas and habitats available. The exotic sturnids, particularly the myna, demonstrated the potential to reduce the breeding success of the native parrots studied — eastern rosella, crimson rosella, red-rumped parrot.)

Food of some birds in southern Australia: Additions to Barker and Vestjens, Part 2. Lepschi, B. J. (1997). *Emu* **97**: 84–87.

Observations on the superb parrot within the Canberra district. Davey, C. (1997). *Canberra Bird Notes* **22**: 1–14.

Relationships between hydrological control of River Red Gum wetlands and waterbird breeding. Briggs, S. V., Thornton, S. A. and Lawler, W. G. (1997). *Emu* **97**: 31–42. (Aims to determine relationships between water level control and breeding of waterbirds. Precocial waterbirds (mainly ducks in this study) did not breed at wetlands with highly controlled water regimens. In altricial waterbirds (Pelecaniformes, Ciconiiformes) breeding was not directly related to water level control, but depended on areas of River Red Gums that flooded for at least four months.)

AUSTRALIAN SPECIES

The nesting biology of the Chowchilla *Orthonyx spaldingii* (Orthonychidae). Frith, C. B., Frith, D. W. and Jansen, A. (1997). *Emu* **97**: 18–30. (Peak nesting activity during July–December, and only one egg was laid. Fresh egg weight represented 10.6% of adult female weight. Hatching success 75%, fledging success 67%. Only female incubated, brooded and fed young, although she was often provisioned by one, or rarely two male members of her group. Because no group members other than the female parent provision the nestling/fledgling, chowchillas cannot be considered co-operative breeders although all group members help defend the group territory.)

A survey of the South Australian glossy black-cockatoo *(Calyptorhynchus lathami halmaturinus)* and its habitat. Pepper, J. W. (1997). *Wildlife Research* **24**: 209–223. (Confirms that the population is critically small, and vulnerable to local events such as wildfires. Both habitat quantity and quality are limiting factors for the subspecies.)

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