

## DOES THE CRESTED SHRIKE-TIT EXHIBIT EXTENDED PARENTAL CARE?

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The scant data on post-fledging care by Australian passerines suggest that relatively long periods of parental care are common among the old endemic Corvid assemblage (Russell 2000). During 1978 and 1982 I observed behaviour among two groups of Crested Shrike-tits *Falcunculus frontatus* which suggested that this species may be another example of an 'old endemic' with prolonged parental care. Most closely related to the whistlers (*Pachycephala*), the Shrike-tit lives in pairs or groups of up to five individuals, which may occasionally breed cooperatively (Howe and Noske 1980). The species is sexually-dichromatic, the throat of males being black and that of females, olive-green. The throat of juveniles is creamy-yellow (Chisholm 1915), but no information is available on the age at which this changes to adult colours.

While observing foraging behaviour of a group of four Shrike-tits (three male, one female) at Swan Vale (29°47'S, 151°28'E), 100 kilometres north-west of Armidale, New South Wales, I observed one or two adult males feeding another male twice on 9 May 1978, and again (nine times) on 8 August. On both occasions the recipient bird had the black throat of adult males, yet quivered its wings continuously before and after being fed, behaviour which is typical of begging juveniles. Similar behaviour was observed at Stringybark Hill (30°29'S, 151°41'E; 2 kilometres north of Armidale) where a group of four birds, containing a colour-banded male, was watched. On both 18 and 24 June 1982, an unbanded male was fed by the colour-banded male, which was known to have bred in previous years. The unbanded bird wing-quivered and begged almost continuously when within 2 metres of the other, as did one female whilst accompanied by the other female. The wing-quivering female was not seen with the males. The same group, minus one of the females, was observed again on 4 August 1982, and although no allo-feeding was seen, the unbanded male was observed wing-quivering when within 1 metre of the colour-banded male.

Although the breeding season of the Shrike-tit is said to be August or September to January (e.g. Boles 1988), available data suggest that egg-laying in south-eastern Australia occurs mainly in three months. Using breeding records for the species in the Birds Australia Nest Record Scheme up to 1998, months of egg laying were extrapolated from dates of fledging, nestlings, or eggs, using the maximum incubation and nestling periods of 19 and 17 days, respectively, given by Marchant (1985). In cases where the month of laying was uncertain (i.e. eggs were apparently laid towards the end of one month or the beginning of the next), one-half of the clutch was assigned

to each of the two months concerned. Of the 55 clutches containing sufficient information to estimate months of egg laying, 44 per cent were laid in November, and another 50 per cent in the preceding and following months combined (Fig. 1). In addition to these clutches, there were 11 records of nest-building of which nine pertained to the same three months, the remaining two in September. Over half (57%) of the 55 clutches were observed in New South Wales, 22 per cent were in Victoria, 13 per cent in Western Australia, and the remainder from three other states and territories. These data are insufficient to enable statistically sound comparisons, but there does not appear to be any seasonal differences between states.

Given the above laying months and the maximum incubation and nestling periods determined by Marchant (1985), most newly-fledged shrike-tits could be expected to be encountered from December through February. The above observations of allofeeding took place three months (May) and six months (August) after the last expected month for fledglings. Thus assuming the recipient at Swan Vale in August was a yearling, parental care in this species might last three, and possibly as long as six, months.

Chisholm (1915) reported "as late as mid-May, . . . a sober-coloured young shrike-tit . . . following a male parent . . . , meanwhile tremulously fluttering its wings", and surmised that it was the result of a late brood. However he never observed nesting beyond December and there are no reports of multi-broodedness in this species (e.g. Beruldsen 1980). Brandwood (Nest Record sheet 27) stated that a bird which had fledged from a nest in Annangrove, New South Wales, at the end of November 1989, was still with its parents in July 1990, but neglected to present supporting evidence.

Russell (2000) showed that the period of juvenile dependence of tropical and Southern Hemisphere passerines (median, 31.5 days) was longer than that of Northern Hemisphere temperate passerines (median, 15.5 days). The time to independence was more than 60 days for about 20 per cent of passerine species of the tropics and the southern continents. Fogden (1972) reported parental care for up to six months in several insectivorous birds of equatorial rainforests in Borneo, and argued that such prolonged periods provided the opportunity for young birds to learn the skills necessary for finding cryptic and generally scarce food. Among Australian birds the White-winged Chough *Corcorax melanorhamphus* shows an exceptionally long period of parental care (6.5 months) which has been attributed to the need for young to perfect

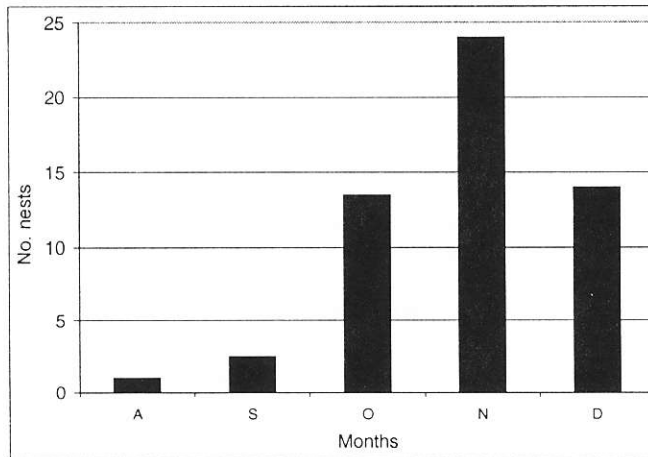


Figure 1. Estimated egg-laying dates of Crested Shrike-tits in southern Australia ( $n = 55$ ).

their specialized ground-foraging technique (Heinsohn 1991). Extended parental care of 9–11 weeks has been recorded in two other bark-foraging birds, the Red-browed Treecreeper *Climacteris erythropis* and the Varied Sittella *Daphaenositta chrysoptera* (Noske 1991, 1998).

The Crested Shrike-tit is one of many Australian bark-foraging birds that exhibit sexual differences in foraging behaviour, a characteristic that has been related to the relative scarcity of food on bark (Noske, 1986, 1998). In the Armidale region male shrike-tits foraged mostly on bark, while females foraged frequently in the foliage (Noske 2003). Ligon (1970) implied that the long period (five or more months) of juvenile dependency in the North American bark-foraging Red-cockaded Woodpecker *Picoides borealis* allowed the young to learn their sex-specific foraging roles, though he did not offer a mechanism.

In summary it seems likely that the Crested Shrike-tit cares for its young for at least three months, and possibly up to six months, which is an exceptionally long period of parental care. This is consistent with the longer periods of post-fledging care in species that breed cooperatively

(Langen 2000), and in Corvids generally (Russell 2000). Howe and Noske (1980) observed two groups of three adults feeding fledglings or juveniles in the study area (Armidale region), suggesting that this species may occasionally breed co-operatively. However, more observations are clearly required, ideally of colour-banded birds, to determine the length of time over which parents provide care, as well as the period of juvenile dependency.

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## REFERENCES

- Beruldsen, G. (1980). 'A Field Guide to Nest and Eggs of Australian Birds.' (Rigby: Adelaide.)
- Boles, W. E. (1988). 'The Robins and Flycatchers of Australia.' National Photographic Index of Australian Wildlife. (Angus and Robertson: North Ryde, New South Wales.)
- Chisholm, A. H. (1915). Notes on the Yellow-bellied Shrike-tit, *Falcunculus frontatus*. *Emu* **15**: 78–85.
- Fogden, M. P. L. (1972) The seasonality and population dynamics of equatorial forest birds in Sarawak. *Ibis* **114**: 307–343.
- Heinsohn, R. G. (1991). Slow learning of foraging skills and extended parental care in cooperative breeding White-winged Choughs. *Amer. Nat.* **137**: 864–881.
- Howe, R. W. and Noske, R. A. (1980). Cooperative feeding of fledglings by Crested Shrike-tits. *Emu* **80**: 40.
- Langen, T. A. (2000). Prolonged offspring dependence and cooperative breeding in birds. *Behav. Ecol.* **11**: 367–377.
- Ligon, J. D. (1970). Behaviour and breeding biology of the Red-cockaded Woodpecker. *Auk* **87**: 255–278.
- Marchant, S. (1985). Nesting notes on the Crested Shrike-tit. *Aust. Birds* **20**: 18–22.
- Noske, R. A. (1986). Intersexual niche segregation among three bark-foraging birds of eucalypt forests. *Aust. J. Ecol.* **11**: 255–267.
- Noske, R. A. (1991). A demographic comparison of cooperatively-breeding and non-cooperatively-breeding treecreepers (Climacteridae). *Emu* **91**: 73–86.
- Noske, R. A. (1998). Social organisation and nesting biology of the cooperatively-breeding Varied Sittella *Daphaenositta chrysoptera* in north-eastern New South Wales. *Emu* **98**: 85–96.
- Noske, R. A. (2003). Sexual differences in the foraging behaviour of Crested Shrike-tits *Falcunculus frontatus* in winter. *Emu* **103**: 271–277.
- Russell, E. M. (2000). Avian life histories: is extended parental care the southern secret? *Emu* **100**: 377–399.