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The Yellow-billed Shrike *Corvinella corvina*: an abnormal host of the Yellow-billed Cuckoo *Cuculus gularis*

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The recorded number of host species parasitised by the Yellow-billed Cuckoo *Cuculus gularis* are few. Friedmann (1967) lists 10 possible species, but Payne & Payne (1967) and Jensen & Jensen (1969) reduce this to 6 (*Dicrurus adsimilis*, *Turdoides jardineii*, *T. libonyanus*, *Pycnonotus barbatus*, *Lanius collaris*, *Passer diffusus*) for which there is, in their opinion, unambiguous data that nest parasitism occurs. To this list can now be added the Yellow-billed Shrike *Corvinella corvina*, albeit an apparently abnormal host.

During a 5-year study of the cooperative breeding behaviour of this shrike at Legon, Ghana (5° 38' N, 0° 11' W) only one case of nest parasitism was discovered in over 160 shrike nests that were found. The nest belonged to a group of 9 shrikes, and the intention was to use it to study the feeding rates of nestlings and the individual contributions made by the shrikes, 6 of which were colour ringed. The nest was not, therefore, visited after the clutch size was known (5 eggs completed on 25 April) until the expected hatching dates (12/13 May). During 10 hours of observations on 15 May from a hide placed 20 m away from the nest there was no unusual behaviour to suggest that anything was amiss. The mean feeding rate of 5.1 feeds/hr was not unexpected for a nest that possibly contained a brood of 3 or 4 shrikes a few days old, and all members of the group participated in feeding. The next observations from the hide were on 23 May and 30 minutes elapsed before I realised that a well feathered *C. gularis* nestling was the sole occupier of the nest. My field description of the nestling agreed with that of Tarboton (1975), and the identification is certain in my mind. The cuckoos *Clamator levaillantii* and *Chrysococcyx caprins* also breed at Legon, but their nestlings cannot be confused with that of *C. gularis* (Jensen & Jensen 1969). Further periods were spent observing the cuckoo on 25 and 26 May. By this time the bird filled the nest, uttered calls quite unlike a shrike's of the same age, and crouched in the

nest quivering its wings when being fed rather than moving excitedly towards the incoming bird with the food, as do nestling shrikes. Although I never saw the cuckoo at close quarters, only observing it through binoculars (8×44), I am confident, judging from its behaviour on 26 May, that it did not starve to death in the nest. What eventually became of it is not known; it was not in the nest on 28 May, and it was never seen again. There is a possibility that it left the nest prematurely due to the hostility of the helper shrikes (see later). Unfortunately the incubation period of the cuckoo's egg is not known accurately enough (11–17 days—Tarboton 1975) to exclude the possibility that it was fully fledged when it left the nest (fledgling period 22 days—Tarboton 1975). Either way it is reasonable to conclude that it was abandoned after it left the nest, for on 28 May the shrikes continued to visit the nest and the female called from it; by 7 June the shrikes were visiting a new nest. As a young Yellow-billed Cuckoo is thought to be dependent on its foster parents long after it leaves the nest (Friedmann 1948: 59), it is assumed that it did not survive.

The behaviour of the group of shrikes at this nest, particularly that of the breeding female, was markedly different from that at a normal nest (Grimes in prep.). While incubating and brooding, most females call and beg in much the same manner as dependent fledglings, and in response other members of the group visit the nest and usually bring food. When the female is brooding, all food brought for the nestlings is first given to her, and she then feeds the young. The constancy of brooding (expressed as a percentage and defined as the proportion of the time spent brooding, or quasi-brooding in the case of the cuckoo) is normally initially the same as the constancy of incubation (Fig. 1) (Skutch 1976). The value of brooding for a nest with young shrikes becomes zero on about the 8th or 9th day, the young remaining in the nest for a further 10 days. In marked contrast to such normal behaviour, the female remained for long periods on the nest for the whole time the cuckoo was in it, and long after it was necessary to brood it. The time on the nest increased rather than decreased (Fig. 1), and throughout her extended stay on the nest the female persistently called and begged.

During 14 hours of observations on 23, 25 and 26 May, 136 visits to the nest were made by various members of the group. On 51 (37%) of these no food was brought. On 32 visits (23%) the food brought was not given to the cuckoo but either eaten by the shrike bringing it or by the brooding female. Of the 53 recorded feeds given to the cuckoo, 38 (72%) were via the breeding female. Marked hostility was shown by several helper shrikes towards the cuckoo while the breeding female was away from the nest; it was pecked and gripped about the bill and legs, and harsh alarm calls and threat displays were frequent. Such hostility, and inefficiency or reluctance by helpers in the group to feed young in the nest never occurred at nests with young shrikes. These observations suggest that the cuckoo would have had little food had it not been for the persistent begging and calling of the female shrike. Because of this and the marked difference between the behaviour of the helpers to the cuckoo and their behaviour to young of their own species, it seems reasonable to conclude that the nest parasitism was abnormal. Of the known hosts of the cuckoo, two (*Turdoides jardineii* and *Pycnonotus barbatus*) breed at Legon but their breeding has not been studied; other potential hosts at Legon are *T. plebejus* and *Passer griseus*.

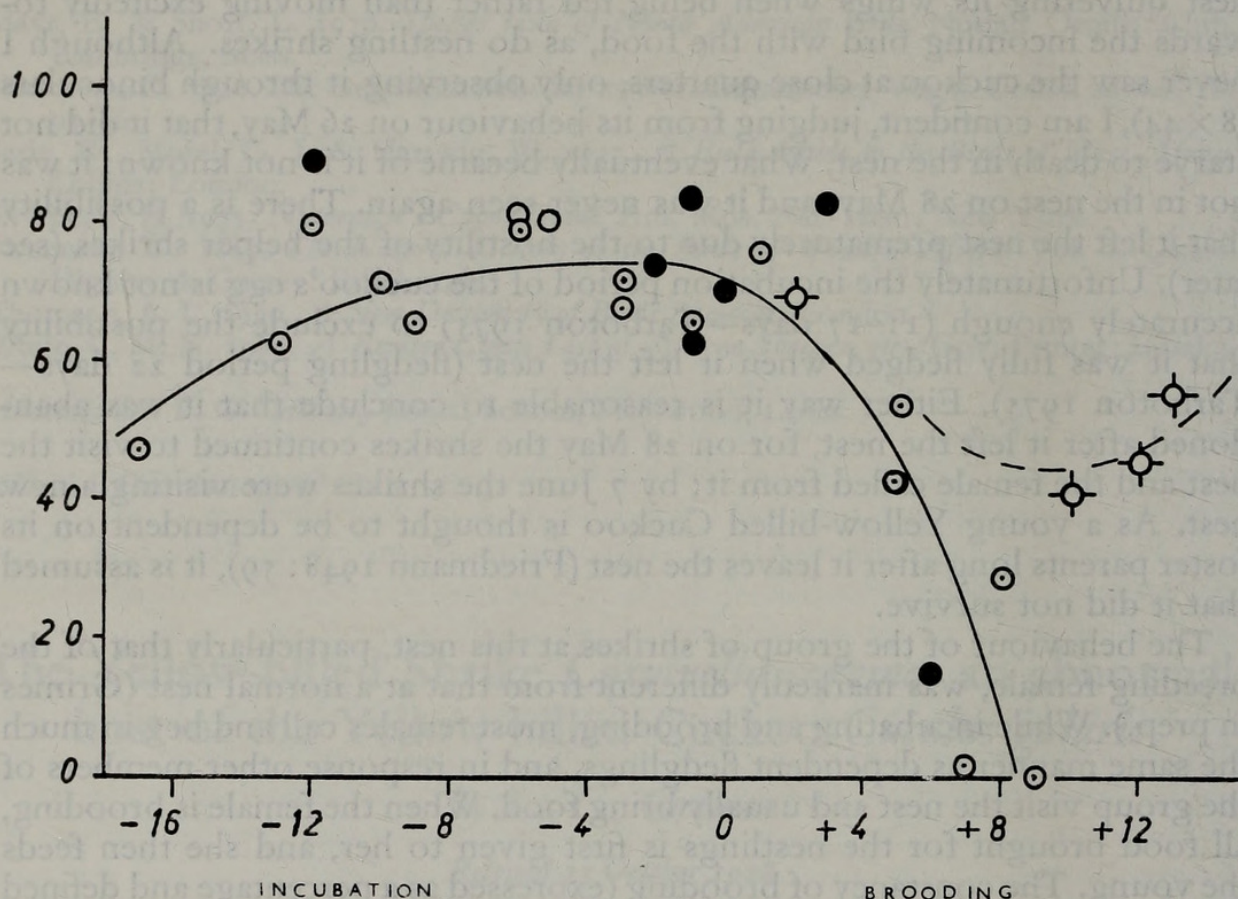


Fig. 1. The constancy of incubation and brooding recorded at three (○, ◐, ●) normal nests of *Corvinella corvina* and at one (+) nest parasitised by the cuckoo *Cuculus gularis*. The time is in days relative to the hatching (day zero) of the shrike's eggs.

Although what is known of the Yellow-billed Cuckoo does not suggest that there is marked development of host mimicry, and the cuckoo's egg was not seen, it is of interest that one of the known types of egg laid by the cuckoo (Pitman 1957, Tarboton 1975), described as being very pale pink with spots of mauve and russet, is not dissimilar to the egg of the shrike.

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