A NOTE ON THE ADOPTION OF ALIEN YOUNG BY LESSER KESTRELS *Falco naumanni*

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In this note we describe the adoptions of six alien young Lesser Kestrels (*Falco naumanni*) observed in two urban colonies in the southern Spanish province of Sevilla. We inspected 102 nests in 1989 and 89 in 1990, and banded all the nestlings, as well as many adults, with coded PVC rings for further individual recognition. Because each nest was visited at least twice, it was possible to monitor the appearance or disappearance of young. To estimate the age of the young, we used the equation $Y = 10.44 + 0.14X$, where Y is the age of the bird in days and X the length of the 8th primary feather in mm (own obs.). Additionally, we selected some of the nests in one of the colonies (Mairena) for systematic recording of behaviour (copulations, agonistic encounters, feedings). These nests, 7 in 1989 and 5 in 1990, were observed simultaneously with binoculars (8x30) and a telescope (20-60x), from an observatory located 70 m from the colony. Observations lasted from sunrise to sunset, two or three days a week between February and August.

One young bird could have moved from its nest (7S) to the adoptive one (6S) along a narrow ledge connecting them. Its father disappeared when it was 11-14 days old. Afterwards the female continued feeding her offspring, two nestlings at first, but at a very low rate in comparison to the neighbouring nest (6S) (Fig. 1). One of the young died and the other one was subsequently abandoned by its mother. The survivor moved to the adoptive nest when it was 30-32 days old, while its new nestmates were 25-27.

The other five adopted young must have reached their new nests by flying, as these nests were located in crevices high above the ground and were not connected by ledges. Three of them were first seen in the adoptive nest when they were 31, 31 and 26 days old, respectively. According to Bustamante (1990) young Lesser Kestrels begin to fly when they are about 31 days old. The other two alien young had not been banded before being adopted in the colony at Mairena, but they appeared to be older than 30 days when first seen. As we had banded all the nestlings, these two probably came from a different one (there were 6 other colonies in a 10 km radius).

The adult nest-owners and their young never attacked the adopted young. Nevertheless, they sometimes mobbed other fledglings approaching their nests. Of nine observed intrusions of non-adopted young, they were chased away by the resident young five times, and once by the adults. However, the tolerance shown by adult Lesser Kestrels towards alien young is remarkable in comparison with other colonial birds (Pierotti & Murphy 1987).

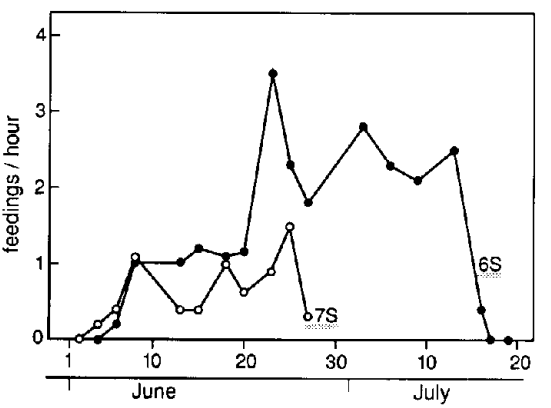

Fig. 1. Variation in the frequency of feedings in two nests of Mairena colony in 1990.
Note: the male of nest '7S' disappeared on 9-12 June. Its older young switched to nest '6S' on 28 June-2 July, whereas the younger died on 16-17 June.

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According to Pierotti & Murphy (1987), adults may be expected to adopt alien young only if this represents a very low cost. For the adult Lesser Kestrels, however, the cost of raising alien young seems to be very high in terms of chick feeding rates. Parents provided the adopted young with a similar amount of food to that received by their own progeny. In nest '6S' in Mairena, with one resident and one adopted young, the alien took 13 out of 24 observed feedings. Some days later, that nest had two foreign fledglings and the resident one. This time, from a total of 20 feedings, the young born in the nest received 8, and the adopted ones 1 and 11 respectively. In nest '2N', also in Mairena, the adopted young took 4 feedings, whereas the resident young got only one in the same period of observation. This phenomenon might be detrimental to the kestrel's own brood, especially in years with poor feeding conditions, such as 1989 and 1990, when breeding success was lower than normal (own obs.).

The tolerance towards alien young could also be due to the large amount of time and energy needed to detect and expel the intruders (Poole 1982). The feeding rate can be considered to be very high in the Lesser Kestrel (see Cramp & Simmons 1980), and the feedings last just a few seconds when the young are almost full grown (own obs.). The unfavourable feeding conditions in 1989 and 1990 probably increased the stress of the adults, leading to errors in parent-offspring recognition and forcing starved young to leave their original nests.

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