Nestling Transfer in the Northern Shrike (*Lanius excubitor*)

REUVEN YOSEF AND BERRY PINSHOW
Mitrani Center for Desert Ecology, Jacob Blaustein Institute for Desert Research, and Biology Department, Ben-Gurion University, Sede Boqer Campus 84993, Israel

Parent birds meet predatory threats by attacking the predator, by distracting it from their young, or, less commonly, by transferring the young to an alternative site (Welty 1975). Some birds may respond to human nest disturbance by abandonment (Hamilton and Orians 1965).

Many nonpasserine species have been observed to transfer their altricial young (for examples see Johnsgard and Kear 1968, Welty 1975). Nestling transfer is apparently less common among passerines. To date, the only species reported to transfer its young is the Carolina Chickadee (*Parus carolinensis;* Goertz and Rutherford 1972), although Black-billed Magpies (*Pica pica*) and Pinyon Jays (*Gymnorhinus cyanocephalus*) have been seen moving their eggs (Trost and Webb 1986). We report observations of nestling transfer in the Northern Shrike (*Lanius excubitor*).

The Northern Shrike has a broad holarctic distribution and is found in a wide variety of habitats (Harrison 1982). The species has altricial psilopedic young, and, as in all passerines, nestling growth and development are rapid. Nestlings' eyes open at 4 days, and they are fully feathered when ready to leave the nest at 19–20 days of age (Harrison 1975, Paz 1987).

During a study of Northern Shrikes at Sede Boqer in the central Negev Desert, Israel, we noticed that immediately after we disturbed several nests to colorband the nestlings at the age of 10–13 days, the young from 4 nests disappeared. All were subsequently sighted 2–3 weeks later flying in the territories of their respective parents. Six of the observed nests were situated in saltbush (*Atriplex halimus*); the seventh was in a tamarisk (*Tamarix nilotica*). All nests were 50–120 cm above the ground. The site is a flat loessal plain (see Alkon et al. 1985 for details and climate information), and there were no obvious differences in nest exposure.

After the disappearance of their broods, the parents continued collecting prey items at the same frequency as when feeding nestlings. This suggested that they were still raising young, and after a thorough search we found that the young had moved or been moved to hiding places away from the bushes where the original nests were situated. Sibling nestlings were found sitting together in depressions on the ground under thick undergrowth. These depressions were lined with soft vegetation, but we do not know by whom or when they were made. When disturbed by our approach, the young birds dispersed into the undergrowth; after we moved away they returned to sit together in their depression. The parents continued to feed the young, who left the undergrowth as soon as they could fly short distances.

On two occasions we observed the translocation of nestlings in Northern Shrikes. Upon arrival at one study nest, we found in it only 4 of the 6 nestlings that were there the previous day. By observing the parents, we found the 2 missing young under a nearby saltbush. We removed the 4 nestlings for banding, but replaced only one of the newly banded nestlings.

TABLE 1. Nestling transfer in the Northern Shrike, with age at which transfer took place and distances nestlings were moved from nest to undergrowth. All nests were in saltbushes (*Atriplex halimus*) except No. 6, which was in a tamarisk (*Tamarix nilotica*).

Nest no.	Height above ground (cm)	No. of nestlings	Age at transfer (days)	Distance (m)	Mass at transfer (g)	Comments
1	88	2	18	55	32.2 ± 1.8	Nestlings found in neighboring bush; fledglings seen in study area.
2	100	5	9	?	31.7 ± 2.7	Transfer occurred after snake ate 1 nestling. Surviving fledglings seen in study area.
3	93	2	10	?	27.7 ± 6.3	Fledglings seen in study area.
4	113	5	10	3	41.0 ± 2.9	Nestlings found in neighboring bush; fledglings seen in study area.
5	110	5	13	12	46.5 ± 2.5	Nestlings found under neighboring tamarisk tree, moved again after 48 h.
5	—	5	15	186	Not weighed	Fledglings seen in study area.
6	58	5	9	55	37.9 ± 2.9	Transfer occurred 1 day after a Eurasian Kestrel was seen on the nest bush. Nestlings found under neighboring bush; fledglings seen in study area.
7	110	6	14	11	47.6 ± 1.7	Nestlings found in neighboring bush.

A short while later the female parent flew to the nest and forced the nestling out by prodding it with her beak. The nestling tumbled to the ground, whereupon the female coaxed it (by calling and more prodding) to walk to the same bush, 11 m distant, where the two missing siblings sat. The whole process, from the time the young bird was nudged from the nest until the female left it under the new bush, took 11 min, 37 s. During this period the male perched close by, apparently on guard.

We then replaced simultaneously the other 3 nestlings in the nest. The female soon returned and pushed each nestling, in turn, out of the nest and ushered them sequentially to the second bush. This transfer process took 47 min, 13 s. Only after her 6 nestlings were together did she return to her look-out post. We observed the process of nestling transfer in one other nest where 5 nestlings were moved 13 m. It proceeded as described above.

Nestlings from three other nests were found soon after we assumed transfers had taken place. One nest was raided by a colubrid snake (*Spalerosophis diadema*) that consumed a 9-day-old nestling. Nestlings disappeared from another nest the day after we saw a Eurasian Kestrel (*Falco tinnunculus*) perched on the bush where the nest was situated. Fledglings from two more nests, which we had considered abandoned, were seen flying about their parents' territories (Table 1).

In 13 disturbed nests we documented 5 nestling transfers, and in 2 more cases we suspect that transfer took place. One possible advantage to moving nestlings once the nest has been discovered by a potential predator is that it gives the young a better chance of survival. Therefore, transfer of young is likely to be successful only if it occurs when the young no longer require brooding in a well-insulated nest. We suspect that our disturbance caused a higher than normal number of nestling transfers, but the fact that the phenomenon occurred in 7 of 13 nests observed suggests that it has adaptive value.

This paper is contribution No. 61 of the Mitrani Center for Desert Ecology.

Literature Cited

Alkon, P. U., A. A. Degen, B. Pinshow, & P. J. Shaw. 1985. Phenology, diet, and water turnover rates of Negev desert chukars. J. Arid Environ. 9: 51–61.

Goertz, J. W., & K. Rutherford. 1972. Adult Carolina Chickadee carries young. Wilson Bull. 84: 205–206.

Hamilton, W. J., & G. H. Orians. 1965. Evolution of brood parasitism in birds. Condor 67: 361–382.

Harrison, C. 1975. A field guide to the nests, eggs and nestlings of British and European birds. Glasgow, William Collins & Sons.

———. 1982. An atlas of the birds of the western Palearctic. Princeton, New Jersey, Princeton Univ. Press.

Johnsgard, P. A., & J. Kear. 1968. A review of parental carrying of young by water fowl. Living Bird 1968: 89–102.

Paz, U. 1987. The birds of Israel. New York, Penguin Books.

Trost, C. H., & C. L. Webb. 1986. Egg moving by two species of corvid. Anim. Behav. 34: 294–295.

Welty, J. C. 1975. The life of birds. London, Saunders.

Received 15 September 1987, accepted 19 February 1988.

Polygyny in the Northern Shrike (*Lanius excubitor*) in Israel

Reuven Yosef and Berry Pinshow
Mitrani Center for Desert Ecology, Jacob Blaustein Institute for Desert Research, and Biology Department, Ben-Gurion University, Sede Boqer Campus 84993, Israel

Polygyny is the practice of a male having two or more mates, either simultaneously (harem polygyny) or sequentially (successive polygyny) (Lack 1968). Polygyny has been reported in only one species of true shrike (family Laniinae), the Loggerhead (*Lanius ludovicianus*; Verner and Willson 1969 and references therein), despite extensive studies of breeding behavior in several other species (e.g. Bent 1965, Huhtala et al. 1977, Bassin 1982, Kridelbaugh 1983, Dittami and Knauer 1986, Zack 1986).

In the course of a study of Northern Shrikes (*Lanius excubitor*) at Sede Boqer in the Negev Desert, Israel, we observed two cases of harem polygyny. During the breeding season of 1987 (January–June) 7 pairs of shrikes were observed closely and all individuals were color-banded. Territory boundaries were marked by coordination on a topographical survey map, and areas were measured by planimetry (Table 1).

In Case 1 a pair (male: green band, female: red band) of Northern Shrikes completed building its first nest by 16 January. Five eggs were laid between 26 and 30 January. Incubation by the female began with the laying of the third egg, and 4 nestlings hatched on 11–12 February; two nestlings fledged. On 8 February we observed that a female (blue band), in a territory adjacent to that of the red-banded female, finished