

GENERAL NOTES

Further Observations on a Family of Eastern Bluebirds.—In an earlier note I reported on a family of Eastern Bluebirds (*Sialia sialis*) that remained together in southern Michigan during the winter of 1973-74 (Pinkowski, 1974a). The family group consisted of an adult male (hereafter M1), adult female (F1), and a young male (M2) hatched the previous summer. M2 left his parents to rear a spring brood in 1974, but returned to his natal territory that summer and assisted M1 and F1 in rearing their summer brood (Pinkowski, 1975). The present report summarizes unusual aspects of the subsequent behavior of this family. All birds were uniquely color-banded and, with few exceptions, they were censused daily.

In 1974, from August to October, 12 bluebirds occupied the area in which M1 and F1 nested during 1973 and 1974. This group consisted of M1, F1, M2, two juveniles from the spring brood of M1-F1 and two from the spring brood of M2, and five juveniles from the nest in which both M1 and M2 fed. Aggressive behavior within the flock was rare, although occasional chases occurred, especially among the juveniles. Other bluebirds, however, were promptly repelled from the area. In the previous fall up to 18 bluebirds, only five of which were related to M1 and F1, occupied the same area. These results suggest that the number of other individuals tolerated by territorial bluebirds during the nonbreeding period is limited and dependent on the size of the resident family unit.

All 12 bluebirds left the study area as a flock on 22 October and none was observed until the following spring. Arrival dates, i.e., dates of initial sightings, in 1975 were: M1, 23 March; M2, 27 March; F1, 29 March; two males from the brood of five, 31 March; and one female from the brood of five, 1 May. A staggered procession of returning to breeding territories suggests that these birds had not wintered as a flock nearby. Nice (1937) found that nonmigratory Song Sparrows (*Melospiza melodia*) take up territories between late January and mid-February and migrants appear in late February through March. At least 20 other bluebirds were observed in the study area before 23 March, the earliest being 6 March. The inference is that M1, M2, and F1, sedentary in one winter (1973-74), were migratory in another (1974-75).

From 27 March to 6 April 1975 M1, M2, and an unbanded female (F2) that was paired with M1 occupied the territory used by M1 in previous years. No fighting was noted between males, although M2 did not accompany the others on nest site inspections and occasionally fed separately. At 2000 on 30 March I found M1 and M2 roosting in the same nest box that both had used during the previous winter. There appears to be no comparable record of fidelity to a roosting site in bluebirds, and the tolerance of the two males for one another seems exceptional among passerines. On 7 April F2 began nesting; M2 left the area, reared two broods elsewhere, and did not return as he had the previous year.

During the 1975 nesting season F1 and another male (M3) occupied a territory separated from that of M1 by a lake and wooded floodplain 0.3 km away. Five young fledged from the nest of M3-F1 on 27 May, and two young left the nest of M1-F2 on 2 June. All birds were observed on their respective territories on 2-10 June. At 0826 on 12 June, however, M1 was seen on his side of the lake in the company of seven juveniles, including the two from his spring brood and five from the brood of M3-F1. During the following hour M1 fed both groups of young, which intermingled freely and displayed no antagonism toward one another. At least 3 feedings to the M3-F1 brood were recorded, and 9 others were suspected. M1 fed his own young at least 6 times. The juveniles of the M1-F2 brood were younger and hence begged more enthusiastically and did less self-feeding than those of the M3-F1 brood.

M1 fed both family groups on 12-16 June. No other adult birds fed any of the young after 11 June. All seven juveniles stayed in the area occupied by M1 until August. F2 began incubating a second clutch of eggs on 11 June and did not permit the fledglings of either brood near the nest box containing her second brood. F1 was last seen on 10 June, and on 12 June an unbanded female had replaced her on the territory of M3 and a new nest was begun immediately. The new mate of M3 may have driven F1 from the area, because this activity is known to occur among female bluebirds (Pettingill, 1936; Blake, 1954). If F1 entered the territory of M1-F2, perhaps with the juveniles, she also may have been driven from there by F2.

Bluebirds feed the young of other species on occasion (Batts, 1958; Carr and Goin, 1965), and two adult males have been reported feeding at the same nest on three occasions (Wetherbee, 1933; Laskey, 1947; Pinkowski, 1975). Pinkowski (1974b) reported that juvenile bluebirds introduced into the territories of pairs feeding young out of the nest may be accepted and fed by the adults. The behavior of M1 toward the young of F1, however, is unique among bluebirds because M3 did not feed the young after M1 began caring for them, and the young of M3-F1 combined with those of M1-F2 and the two broods remained together thereafter.

Kin selection would normally favor altruistic behavior only among close relatives (Hamilton, 1964). Woolfenden (1975) hypothesized that Florida Scrub Jay (*Aphelocoma c. coerulescens*) helpers may profit as much or more from the existence of younger members of the species, however, and he related this to benefits derived from an increase in group size and a scarcity of breeding territories. Bluebirds also have strict territorial requirements and exist in large groups outside of the breeding period, and a similar line of reasoning may explain observations of apparently altruistic behavior in this species.

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Interactions Between Nesting Birds and Carpenter Ants.—On 24 May 1974, we found an abnormally low Starling (*Sturnus vulgaris*) nest in Blacksburg, Montgomery County, Virginia. The entrance to the nest was five cm above ground level in the base of a black locust (*Robinia pseudoacacia*). The bottom of the nest cavity extended 30 cm below ground level making visual observation of the young impossible. When the nest was discovered the adult Starlings were actively feeding nestlings. Upon returning to feed the young, the adults initially landed about 15 m up in the tree, flew down within 2 m of the nest entrance, then ran on the ground into the nest cavity. While examining the nest on 24 May, we noticed significant activity of carpenter ants (*Camponotus* sp.) at the nest entrance. The nestlings gave loud atypical vocalizations continually, even in the absence of parental or human stimulation. On 25 May the adults were not seen around the nest and no sounds could be heard in the nest cavity. On 27 May