

Wilson Bull., 98(2), 1986, pp. 309–311

Nesting trios of Mourning Doves.—During a 4-year study of reproductive behavior of color-marked Mourning Doves (*Zenaida macroura*) at J. Clark Salyer National Wildlife Refuge in northcentral North Dakota, I observed three cases in which two males and a female attended a nest. Doves were marked with uniquely patterned Saflag wing tags or spray paint on the tail and wings. In an attempt to avoid disruption of pair bonds, I did not mark doves on the head (Frankel and Baskett, J. Wildl. Manage. 27:124–127, 1963; Goforth and Baskett, J. Wildl. Manage. 29:543–553, 1965). Although it is possible that the marking techniques disrupted the pairbonds, this seems unlikely because free-living Mourning Doves marked with back tags have been observed to nest normally (Jackson and Baskett, J. Wildl. Manage. 28:293–307, 1964; Mackey, M.S. thesis, The Ohio State Univ., Columbus, Ohio, 1954). All three adults were color marked at one nest (83-2), both males but not the female were marked at another (81), and only one male was marked at the third (83-1). In each case, there was fighting between the males. These were the only nests in my study where more than two adults were noted; there were monogamous pairs at 485 other nests, most of which included at least one color-marked individual.

I observed each of the three nests from a car 20–40 m away. Nest 81 was observed for 2730 min during 18 observation periods and during 22 spot checks (<5 min duration); nest 83-1 for 135 min during two periods and during 38 spot checks; and nest 83-2 for 4880 min during 33 periods and during 41 spot checks.

Nest 81.—On 16 June 1981 I flushed two color-marked males and an unmarked female near an almost completed nest. The first egg was probably laid that night, as all three adults alternately sat on the nest the following day. Male YRO was on the nest when I began observations and remained for 60 min before yielding to male OPO, who incubated for at least 330 min. The female was on the nest at night, as is typical among Mourning Doves (Harris, Morse, and Longley, Am. Midl. Nat. 69:150–172, 1963).

All three birds incubated during the next day: the female for 62 min in late afternoon and again at night, YRO for at least 180 min, and OPO for at least 16 min. In 517 min of observation and during 21 spot checks during the remainder of the incubation period, OPO was not seen on the nest again, although he perched in the nest tree daily, often within 3 m of the nest.

I resumed intensive observations on 2 July, when I first noticed a nestling being fed, and watched birds at the nest for more than 8.5 consecutive hours each day on 2, 3, and 5 July. Again OPO was not seen on the nest although he spent much time in the nest tree and repeatedly approached the nest. Whenever OPO approached, YRO left the nest and flew at OPO until OPO retreated. OPO was usually back in the nest area <1 h after being chased away. The males fought 14 times in 26.2 h of posthatching observation. Fights lasted as long as 10 sec, with the males striking each other with their wings while touching chest-to-chest.

I never saw the female fight with either male. On 18 June the female and OPO engaged in mutual allopreening before she yielded the nest to him. Later, the female pecked at OPO on two occasions when he approached the nest. Once he responded by preening her head, unreciprocated, for 8 min before leaving the area. Mutual allopreening normally takes place between mates (Goodwin, Pigeons and Doves of the World, Cornell Univ. Press, Ithaca, New York, 1983). I never observed allopreening during exchanges at other nests, although Craig (Auk 28:398–407, 1911) noted that allopreening was among the normal activities during nest exchange among captive Mourning Doves.

The nesting attempt failed on 7 July. OPO flushed from near the nest at 06:30. When the

nest was checked at 12:00, no adult was present, and a single nestling (≈ 4 days old) was dead in the nest. The cause of death and whether it had a nestmate are unknown.

The dominant male (YRO) was not seen again. OFO was seen three more times during the summer. Each time he was alone at times of day when males are generally on their nests (Harris et al. 1963).

Nest 83-1.—Only the unbanded male and unmarked female were seen nest-building. The color-marked male (WPP) was first seen in the nest tree on 3 June 1983, the presumed hatching date of the first egg. In 5 of 8 spot checks from 4 to 7 June the unmarked male left the nest to fight with WPP in the nest tree. From 8 to 14 June WPP was not seen during 8 spot checks when either the unmarked male or the female was on the nest.

During both checks on 15 June, WPP was brooding the two large nestlings. One nestling fledged later that day. WPP brooded the other nestling early in the morning and at least twice during the afternoon on 16 June. The second nestling fledged on 17 June. WPP perched next to the empty nest the following morning.

WPP was next seen on 28 June, 5 km from the nest site. He was not seen again until 1984 when he nested 100 m from nest 83-1.

Nest 83-2.—The female at this nest (KW) was banded as an adult in 1982. In May 1983 she abandoned her color-marked mate and two eggs that were near hatching (nest 83-0) and copulated with an unbanded male. This unbanded male may have been involved later at nest 83-2, as neither of the males at nest 83-2 was banded until June 1983. Based on the pattern of sightings of KW and one of the 83-2 males (GH), I suspect that this male was mated to KW during nesting attempts in June and July, although neither GH nor KW was observed on a nest during this interval. The other male (BP) was seen frequently between mid-June and late July. His repeated perch-cooing during these sightings suggests that he was unpaired (cf. Jackson and Baskett 1964).

On 2 August 1983 the female (KW) was flushed off nest 83-2. The next day, GH was seen nearby, walking on a lawn at the rapid pace that males generally use while searching for nest materials. When the nest was next checked on 17 August, GH was sitting on the nest and BP was standing on a branch 0.3 m above the nest. On 19 August BP flew into the nest area when GH departed with the eggshell from the second nestling. Upon his return, GH flew at BP who went to a perch 0.7 m away.

The nest was observed for 79 h from 20 August until 1 September, when the young fledged. Beginning 23 August, BP brooded almost three times as much as GH (1538 vs 540 min) and fed the nestlings >3 times as long (49.5 vs 16 min). Each male was in the area and approached the other while it was on the nest. The males fought 14 times. The longest fight lasted 4 min. This fight, involving hard wing flapping, began when GH approached BP on the nest and ended when GH got on the nest. GH initiated 10 fights and apparently "won" 8 of them (i.e., remained on or got on the nest). The female was not involved in any fights.

A radio transmitter was placed on the back of the oldest fledgling, which was observed for 30 h from 5 to 13 September. The only adult seen during these observations was GH who was in the area 5 of 9 days. He flew toward the radio-equipped fledgling and apparently fed it at least once during this time.

Discussion.—Nesting trios have not been reported previously in Mourning Doves, although Neff (Condor 47:39–40, 1945) reported that a male Mourning Dove provided parental care at a nest of White-winged Doves (*Z. asiatica*) where the male had disappeared. Mourning Doves with fledged young have been observed to feed fledglings that were not their own (Hitchcock and Mirarchi, J. Wildl. Manage. 49:502–504, 1984; pers. obs.), perhaps because of an inability to recognize their own young.

At each nest that I observed, the relationship between the males was competitive, and the female showed no obvious preference for either. At the two nests where intensive

observations were made, both males spent much time at or near the nest, and I could not determine which male was paired with the female. At all three nests, one male appeared to be unpaired either before or after the nesting. I suspect that these males had temporarily joined in the activities of an established pair. The genetic relationships among individuals were unknown.

Acknowledgments.—Observations were made during research supported by the Dayton Natural History Fund, the Buzzard Club Natural History Fund, the Wilkie Fund for Behavior and Evolution, and the James W. Wilkie Fund (all of the Bell Museum of Natural History); the Frank M. Chapman Fund of the American Museum of Natural History; Sigma Xi; a Paul A. Stewart Award from the Wilson Ornithological Society; the Alexander and Lydia Anderson Fund; and the Department of Ecology and Behavioral Biology of the University of Minnesota. I thank J. M. Skiff, S. L. Cohn, J. I. Smith, S. Minkoff, and M. L. Person for their help in making observations. F. Singer, D. Bruggers, B. Eliason, H. B. Tordoff, and two anonymous reviewers made helpful comments on this manuscript.—DAVID E. BLOCKSTEIN, *Dept. Ecology and Behavioral Biology, Bell Museum of Natural History, Univ. Minnesota, Minneapolis, Minnesota 55455. Received 12 Mar. 1985, accepted 20 Sept. 1985.*

Wilson Bull., 98(2), 1986, pp. 311–312

Supernumerary adults feeding Willow Flycatcher fledglings.—The Willow Flycatcher (*Empidonax traillii*) maintains a monogamous mating system in which the female builds the nest and broods the young (Verner and Willson, *Ornithol. Monogr.*, 9:1–76, 1969). The male defends the territory and is the primary provider of food at the nest (King, *Auk* 72: 148–173, 1955). During an intensive ecological study of the Willow Flycatcher in the central Sierra Nevada mountains, Fresno County, California, I observed the previously unreported occurrence of supernumerary adults feeding fledglings.

Individual Willow Flycatchers were captured in mist nets and banded with a unique sequence of four color bands. Each color was assigned a number, resulting in a unique numerical designation for each individual. Early in June 1984, male 0133 paired and mated with female 4110. The relationship between these birds was substantiated by weekly, and at times biweekly, observations throughout the season. Observations during the first week of July suggested nesting, although no nest was found. At 09:40 on 24 July 1984, I observed female 4110 feeding four fledglings. The fledglings were not able to fly more than 15 m, an indication that they had fledged recently.

During subsequent observations, 4110 continued to feed the fledglings. Male 0133 was calling and patrolling territory boundaries and was not observed feeding young. Between 10:40 and 11:00 additional adult Willow Flycatchers and one Dusky Flycatcher (*E. oberholseri*) were observed feeding the fledglings. Dusky Flycatcher 0128 had been banded early in the breeding season and had been noted occasionally at various locations on the study site. Flycatchers 0134 and 0135 had been banded earlier this same day and were believed to be new to the site, and possibly migrants. Flycatchers 0134 and 0135 were considered to be adults based upon complete ossification of the skull and adult wing and culmen length. Furthermore, 0135 exhibited a regressing brood patch indicating that she had recently nested. No aggression was observed between the extra adults and the territory holders.

Two mist nets were subsequently set, one on each side of a large willow (*Salix* sp.), to catch the fledglings. During the 2-h period the nets were open, six adult flycatchers were captured, as well as the four fledglings. The captured included: the female parent 4110;