

to tie them down. I went back in 1 h and the young were 23 m from the nest. I have never been able to find young at a greater distance than this from the nest, nor any young more than 1 day old, consequently, no weights or measurements during the growing stage have been obtained. This is in sharp contrast to young Piping Plovers which I could find almost anytime, up until flight (32 days). Young oystercatchers could also be found readily until flight stage (41 days).

Acknowledgments.—This paper was very kindly updated (1978 data) and revised by Gilbert S. Raynor on behalf of the late LeRoy Wilcox. All inquiries or reprint requests should be directed to him as follows: MR. GILBERT S. RAYNOR, SCHULTZ ROAD, MANORVILLE, LONG ISLAND, NEW YORK 11949.—LEROY WILCOX (deceased), *Oceanic Duck Farm, Speonk, Long Island, New York 11972. Accepted 15 Mar. 1979.*

Wilson Bull., 92(2), 1980, pp. 258–260

Unusual egg deposition in Mourning Doves.—The Mourning Dove (*Zenaida macroura*) is a determinate layer with a genetically controlled clutch-size of 2. Hanson and Kossack (Ill. Dept. Conserv. Tech. Bull. 2, 1963) mentioned no larger clutches in their extensive work, yet Harrison (A Field Guide to Birds' Nests, Houghton Mifflin Co., Boston, 1975) records clutch-size as "2, occasionally 3, rarely 4." Other workers have at times recorded >2-egg clutches, and both Quay (Mourning Dove Studies in North Carolina, Game Div., N.C. Wildl. Res. Comm., 1951) and Moore and Pearson (The Mourning Dove in Alabama, Ala. Coop. Wildl. Res. Unit, 1941) questioned the origin of the additional eggs in the cases they observed, i.e., whether they were produced by 1 or more females. Nice (Auk 39:457–474, 1922) found 3 nests that contained more than the normal clutch, and cited 8 previous reports of 4-egg clutches and 40 of 3-egg clutches.

In a study of nesting ecology and nest-site selection in Mourning Doves on Purdue Wildlife Area (PWA), Tippecanoe Co., Indiana, I examined 106 nests in 1975 and 228 in 1976, most in plots of deciduous shrubs or pine (*Pinus sylvestris*, *P. resinosa* and *P. strobus*). I found several >2-egg clutches and some other instances of abnormal egg deposition in doves that should help explain the origins of extra eggs.

Early March 1976 was exceptionally warm with daytime temperatures often above 15°C and night temperatures about 5°C; several nestings were initiated during this period. Colder weather returned in mid-March with highs just above freezing and lows to -8°C, followed by moderating temperatures in late March with lows only occasionally falling below 0°C. During this period, several intact or freshly broken (not punctured) eggs were found beneath pines many meters from the nearest nest. Although not previously described for Mourning Doves, these layings were apparently adventitious, perhaps resulting from warm weather initiation of follicular development and intervening cold weather having a depressing effect on nest-building and associated behavior. Nesting by doves is delayed in exceptionally cold springs (Hanson and Kossack 1963).

As elsewhere, doves frequently used old nests of other birds on PWA, usually adding some nesting material (McClure, Iowa Agric. Exper. Stat. Res. Bull. 310:355–415, 1943; Hanson and Kossack 1963). In 3 instances, however, single eggs were deposited in nests of other species without addition of nesting material. One of these, an old American Robin (*Turdus migratorius*) nest, was unoccupied when the egg was laid about 29 April 1975. However, the other 2 nests were active at the time of laying. On 17 April 1976, a dove was flushed from a Common Grackle (*Quiscalus quiscula*) nest containing 1 fresh dove egg. The nest was under construction and the egg rested on wet mud and organic matter. The egg was gone

the next day and on 24 April the nest contained 3 grackle eggs. On 9 May 1975, a female Cardinal (*Cardinalis cardinalis*) was flushed from a nest containing 1 Mourning Dove egg and 3 Cardinal eggs, all fresh. No additional eggs were deposited, and the nest was taken by a predator on 13 May. This nest was in a small eastern white pine only 66 cm above ground, much lower than other dove nests found in conifers. Holcomb (Wilson Bull. 79:450–451, 1967) and Nice (1922) also reported dove eggs in nests of other species. Nice's (1922) observations differed from my cases and those of Holcomb (1967) in that the dove was incubating and a pair of dove eggs was present.

I found 4 nests in 1976 that contained 3 eggs (1.8%), a somewhat higher rate than the 0.5% found in other studies (Moore and Pearson 1941, Quay 1951). In the first nest, which was 1.5 m high in a eastern white pine, the adult dove was incubating 2 fresh eggs on 10 April. On 14 April, a third egg appeared in the nest and by 26 April the nest contained 1 egg and 2 two-day-old chicks. The third egg hatched on 28 April but the very small young had disappeared by 2 May. The second nest, about 6 m high in a blue spruce (*Picea pungens*), had obviously been abandoned when found on 12 April. Two eggs had been incubated approximately 6 days but the third was translucent. A third nest, found on 15 June, about 2.5 m high in autumn olive (*Elaeagnus umbellata*), contained 2 eggs incubated about 4 days; an adult was present. On 16 June, this nest was unattended but contained a third translucent egg. The nest still contained 3 eggs on 18 June and was obviously abandoned. The fourth nest was 2 m high in an autumn olive and contained 2 eggs on 15 July. Another egg was added shortly before or after the first 2 hatched, between 23–28 July. The third egg never hatched and had disappeared from the nest by the time the young fledged on 10 August.

Both in these occurrences and in the literature of 3-egg nests, the usual sequence of events has the third egg deposited substantially later than the first 2 (Nice 1922, Moore and Pearson 1941). I believe that all 3-egg nests result from the addition of an egg by a second bird rather than a dove laying a 3-egg clutch. Whitman (The Behavior of Pigeons, Vol. III, Carnegie Inst., Washington, D. C., 1919) and Klinghammer (pers. comm.) found no cases where captive doves laid >2-egg clutches. I think the phenomena of adventitious laying, egg deposition in nests of other species, and apparent 3-egg clutches are all an expression of the same physiological-behavioral complex, with the first 2 helping define the latter.

Egg-laying occurs shortly after nest completion in the Mourning Dove (Moore and Pearson 1941) and there are times that, because of weather circumstances or nest destruction, no nest exists to receive an egg. Faced with this situation, a dove may simply drop the egg; or it may deposit it in the nearest available nest, occasionally that of another species. This latter response is undoubtedly enhanced by frequent use of old nests of conspecifics and other species by doves in normal nesting activities. Egg deposition in dove and non-dove nests is most likely in unattended, abandoned, or old nests, although Swank (Ecology 36:495–505, 1955) found that once incubation has begun, defense by doves of territory near the nest is practically eliminated. It is doubtful that females depositing superfluous eggs ever attempt to incubate these eggs, for lack of prior behavioral interaction between male and female at this "new" site would probably make site fidelity and incubation coordination unlikely.

Since occasionally 3 eggs are laid sufficiently close to allow fledging of 3 young (Nice 1922), nest depositing behavior may have some selective advantage over simply dropping the egg. Balanced against this potential of rarely producing 3 fledgings is the potential disrupting effect of a third (or fourth) egg in the nest. Two of my 4 three-egg clutches were abandoned, confirmed by repeated visits and extended observations. In general, nest abandonment was rare (2.7% for both years combined). I do not know whether the additional egg caused abandonment or whether the nest was abandoned prior to deposition of the third egg. Holcomb (Wilson Bull. 80:105, 1968) found addition of icteric (*Molothrus* and *Agelaius*) eggs to 6 Mourning Dove nests caused no abandonment.

Four-egg nests are apparently even less common than 3-egg nests, although a few have been recorded (Nice 1922, Moore and Pearson 1941). All accounts, including mine, indicate that this is a different phenomenon than that involved in previously discussed observations. On 29 March 1975, I flushed a bird from a nest containing 2 opaque eggs that was 2.25 m high in a red pine. By 15 April an adult evidently had been killed at the nest, but the nest and 2 eggs remained intact. On 26 April a bird was flushed from the same nest which then contained 4 eggs; the 2 newest were about 6 days incubated. All eggs were subsequently taken by a predator. This is undoubtedly the sequence in similar situations where 2 of the 4 eggs were added or a dove was incubating 2 of its own eggs in addition to those of another species in that species' nest (Nice 1922). Although neither has been reported from wild doves, other possible reasons for 4-egg nests include polygyny or female homosexuality. In none of the reported incidences was irregular incubation behavior evident as would probably be the case in either of these instances (Nice 1922).

I am indebted to Mary E. Clawson and Mark E. Obringer for assistance in nest searches. Erich Klinghammer and Charles M. Kirkpatrick made helpful comments on the manuscript for which I am appreciative. This is Journal Paper No. 6986 from Purdue Agricultural Experiment Station.—HARMON P. WEEKS, JR., *Dept. Forestry and Natural Resources, Purdue Univ., West Lafayette, Indiana 47907. Accepted 1 Mar. 1979.*

Wilson Bull., 92(2), 1980, pp. 260–261

Female Sharp-tailed Grouse copulates with Greater Prairie Chicken in Minnesota.—Sharp-tailed Grouse (*Pedioecetes phasianellus*) × Greater Prairie Chicken (*Tyrannuchus cupido pinnatus*) hybrids have been recorded in practically all areas where the 2 species are sympatric (Ammann, The Prairie Grouse of Michigan, Mich. Dept. Conserv., Lansing, Michigan, 1957). We could find no published account of a copulation between the species, although there are at least 5 records in Wisconsin from 1947 through 1960 (Hamerstrom, pers. comm.) of a female sharptail copulating with a prairie chicken. Such a mating was also observed on a lek in Minnesota in 1977 and is reported here.

Observations from blinds were made at leks associated with the 575-ha Pembina Trail Preserve, 24 km southeast of Crookston. The primary lek ("Pembina") under observation had 18, 15 and 19 regular male prairie chickens in 1975, 1976 and 1977, respectively. A sharptail lek, 4.8 km from the Pembina lek, had 10, 11 and 7 males in 1975, 1976 and 1977, respectively. In 1977, a new sharptail lek with 3 males was established 400 m from the Pembina lek.

In the spring of 1975 we observed on the Pembina lek: 1 visit by a displaying hybrid male, several irregular visits by a displaying sharptail male, and a hybrid female copulating with a prairie chicken. In the spring of 1976 a sharptail male defended an exterior territory. In the spring of 1977 a hybrid male defended an exterior territory.

On 20 April 1977, TJK was in a blind on the Pembina lek. From 05:00–06:00 18 male and 4–6 female prairie chickens were present. Three copulations were observed. At 06:25 a prairie chicken and sharptail female walked onto the lek from the direction of the new sharptail lek. Both females came within 15 m of the blind, which allowed good comparative observations. The sharptail was noticeably lighter, had no pinnae, but did have distinct V-barring on the breast and the tail was pointed with white margins. At 06:50 the sharptail female walked directly to a centrally located prairie chicken male, crouched in a receptive posture and the male immediately mounted and copulated. There was little preliminary