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Additional Records of Fall and Winter Nesting by Killdeer in Southern United States

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ABSTRACT.—We report on successful nesting attempts in fall by Killdeer (*Charadrius vociferus*) in southern Mississippi in November, 1987 and in central Arkansas in October, 1998, and a winter nesting attempt in South Carolina in December, 1998. The first nest was found 1 year before previously reported fall nestings in the Southeast and 1 month earlier in the season. The second is the most northern and western fall nesting site in the South, and the third is the latest reported nesting attempt in the southern United States. Taken together with 3 other reported successful fall nests in Mississippi and South Carolina, Killdeer would appear to be the only fall breeding shorebird in North America and, based on those 6 widely-scattered observations over the last 11 years, should now be considered a rare fall and winter breeder across the southern United States. Received 24 Nov. 1998, accepted 31 March 1999.

Although an anomalous report of breeding in November exists from Michigan in 1982 (Tessen 1983), Jackson and coworkers (1995) were the first to document fall and winter breeding by Killdeer (*Charadrius vociferus*)

in the southeastern United States, reporting 1 set of chicks and adults on 16 November and another set on 11 December 1988 in Okibbeha Co., Mississippi. Subsequently, Post (1996) reported 3 downy young, apparently 1–2 days old, taken to a veterinarian in Berkeley Co., South Carolina on 13 November 1995. Here we report on two more successful fall nesting attempts by Killdeer in the south: one from Mississippi that is earlier than observations by Jackson and coworkers (1995), and one from central Arkansas, the most northern and western fall nesting site yet reported in the South. We also document a mid-December winter nesting attempt in South Carolina, which is the latest nesting activity yet reported.

On 7 November 1987, W.M.D. found and photographed a pair of adults with one chick, which appeared to be several days old, at the wastewater treatment plant lagoon in Wave-land, Hancock Co., coastal Mississippi. The race-track shaped lagoon was surrounded by a 4.5–9.2 m raised strip of excavated soil, which varied from well-grassed to almost bare areas, one of which was evidently chosen for nesting by the Killdeer.

On 5 October 1998, T.E.K. and his wife discovered a nest with four eggs located in a stone area on the barrier of the parking lot at the Veterans Administration Hospital in Little Rock, Pulaski Co., Arkansas. During daily observations, two birds were usually present and the female was observed incubating during the day. They found two chicks on 26 October and a third on 28 October. The nest was aban-

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done with one egg remaining on 29 October. Subsequent analysis determined that the egg was fertile, but did not hatch.

On 5 December 1998, R.W.C. found a Killdeer nest containing four eggs in North Charleston, Charleston Co., South Carolina. The nest was a shallow depression located on an approximately 0.2 ha lawn covered with short (2–3 cm) grass. The nest was about 10 m from a frequently traveled road in a U.S. Post Office complex. He made repeated visits to the site, and found adults incubating daily during 5–15 December. On 16 December, after arrival of a cold front on the coast, no Killdeer were seen in the area, and Chinn concluded that the adults had abandoned the nest. On 17 December at 15:00 EST, W.P. checked the area, and finding no Killdeer, collected the four eggs (ChM # 1998.11.50a–d), which were intact but cold. The heaviest egg weighed 11.7 g; the lightest, 10.8 g. Dimensions of the longest egg were 40.2 × 25.6 mm; the shortest, 37.9 × 26.5 mm. No egg had a discernible embryo, although the contents of all appeared to be fresh.

Killdeer would appear to be the only fall nesting shorebird in North America. There are apparently no records of Killdeer breeding in Mexico (P. Escalante, A. T. Peterson, pers. comm.), and no evidence of breeding later than July in southern California based on clutches in the collection at the Western Foundation of Vertebrate Zoology (M. Marin, pers. comm.). However, based on breeding records from October, February, May, and August, Robertson (1962) concluded that Killdeer breed throughout the year in the Caribbean. Schardien (1981) determined that Killdeer have year-round territories in Mississippi and copulations have been observed during winter months (Jackson and Jackson, in press). Thus, those six widely scattered records of breeding over the last 11 years would suggest that the Killdeer should now be considered a rare fall and winter breeder in southern United States.

Incidental fall breeding in temperate regions has been documented for a wide variety of birds (e.g., Orians 1960), but repeated fall (or winter) breeding seems to be triggered by either an appropriate stimulus appearing naturally, e.g., green cones stimulating breeding in Pinyon Jays (*Gymnorhinus cyanocephalus*; Ligon 1978), or an appropri-

ate stimulus occurring during the wrong season, e.g., Tricolored Blackbirds (*Agelaius tricolor*) breeding in fall in response to flooding of rice fields (Orians 1960). Those recent observations of fall breeding by Killdeer could be due to a combination of events, including more birdwatchers being active during fall and early winter in areas of the South than in previous times. However, the most likely explanation is the unusually warm years that have occurred over the last decade or so (Mann et al. 1998). Jackson and coworkers (1995) noted that their observations followed a summer drought and mild fall weather, which is similar to the situation in Arkansas during 1998. The period from May through September of 1998 was the hottest on record at Little Rock, with 18 days above 37.8° C, 59 days above 35° C, and 111 days above 32.2° C and below average rainfall (National Weather Service, North Little Rock, Arkansas). Warm fall weather may be extending the breeding season into fall, and even winter, months, but there are apparently few, if any, breeding attempts reported for late August and September. More likely, extended warm fall weather stimulates Killdeer to resume breeding, as they typically are very early spring breeders in the south [e.g., nests found in February of 1999 in Louisiana (W. M. D.)].

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Wild Turkeys (*Meleagris gallopavo*) Renest After Successful Hatch

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ABSTRACT.—Wild Turkey (*Meleagris gallopavo*) hens frequently renest after disturbance on the nest, especially while laying or early during the incubation period. However, no record exists of Wild Turkey hens renesting after a successful hatch. We document three Wild Turkey hens that renested after having hatched a brood. None of the renests were successful. *Received 2 Dec. 1998, accepted 6 March 1999.*

Nesting success of Wild Turkeys (*Meleagris gallopavo*) varies widely across their range and is influenced by many factors (Vangilder 1992). A successful nest generally is defined as one in which at least one poult hatches. Researchers have documented many instances of Wild Turkey hens renesting after their initial nest was disturbed or depredated (Everette et al. 1980, Williams et al. 1980, Vangilder et al. 1987), most often while laying or during early incubation (Williams et al. 1976). Causes for nest failure and subsequent renesting include nest destruction by predators (Speake 1980, Vander-Haegen et al. 1988), severe weather (Roberts and Porter 1998, Kimmel and Zwank 1985), and disturbance by researchers (Still and Baumann 1990). Renesting after a successful nest was not thought to

occur. In his *Book of the Wild Turkey*, Williams (1981:53) stated, “No example is known of a hen nesting again in the same year after her brood hatched, and there has been no reported case of a turkey hatching two broods in one year.” Below, we document three cases of hens renesting after having successfully nested but with early loss of broods.

In 1983, while working in southern Alabama, J.H.E. found a Wild Turkey hen that renested three times after hatching a brood that did not survive more than two days. This particular hen hatched all 11 eggs in her initial clutch after a normal incubation period (28 days). On the day after hatching, five of the poults were found dead in the nest from unknown causes. The hen had no poults with her two days after hatching, and the fate of the remaining six poults was never determined. Twenty-five days after hatching, the hen renested. This nest was disturbed by investigators, which prompted the hen to abandon that nest and eventually renest two more times. None of the renests was successful.

In the southern Appalachians of North Carolina, C.A.H. monitored two wild turkey hens that renested after hatching clutches of 11 and 14 eggs. These nests were initiated in early April of 1996, and incubated 29 and 27 days. Both broods were killed within five days. One hen initiated a second nest 17 days after her initial clutch hatched. This renest contained nine eggs that were incubated 65 days, 37 days beyond the normal 28-day incubation period. Subsequently, this nest was abandoned, and the eggs were determined to be infertile.

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