nesting in the two southeast Missouri counties. Nest counts conducted during the first week in June, 1965 through 1969, include a high count of 4,759 nests in 1968, a low count of 3,887 nests in 1967, and an average of 4,218 nests for the five years. Although these counts include other species of herons, their total numbers are insignificant when compared with the number of Little Blue Herons.

Least Bittern (*Ixobrychus exilis*) eggs from southern Louisiana were reported to contain *p,p'*-DDE at levels ranging from 0.15 to 0.42 ppm (Causey and Graves, Wilson Bull., 81:340–341, 1969). These levels are similar to those we found in eggs of Little Blue Herons, which is not surprising since the food habits of the two species are similar.

We thank Glen C. Sanderson, William H. Elder, Helen C. Schultz, William L. Anderson, and Stanley L. Etter for reading this manuscript and offering helpful criticisms.—ROBERT E. GREENBERG, *Illinois Natural History Survey, Urbana, Illinois 61801,* AND PAUL L. HEYE, *Southeast Missouri State College, Cape Girardeau, Missouri 63701, 2 July 1970.*

Nesting record of Mexican Duck (*Anas diazi*) in Texas.—Aldrich and Baer (Wilson Bull., 82:63-73, 1970) have recently reported on the status and speciation of the Mexican Duck (*Anas diazi*). They state that though it has been found in the past along the Rio Grande near El Paso, there are no definite nesting records in Texas. On 18 June 1969, we observed an adult Mexican Duck with six small young along Ash Creek on the Babcock Ranch, 16 miles SSE of Alpine, Brewster County. This locality is approximately 60 miles north of the Rio Grande and 200 miles southeast of El Paso. The following day we saw two adults fly overhead in this vicinity, but did not see the young again.

The three adults were identified by their similarity to a female Mallard (*Anas platyrhynchos*), but differing in having conspicuously darker tails.

The area is primarily grassland with scattered ash trees (*Fraxinus* sp.) along the creek. The stream is perennial with flow during the wetter seasons, primarily late summer and fall. There was some flow at the time this observation was made and water depth was generally less than one-half meter.

On 27 May 1970, Ohlendorf saw an adult duck accompanied by three small young at a small lake 2 miles SW of Balmorhea, Reeves County. These may have been either Mallards or Mexican Ducks, as they could not be identified with certainty. Water here was less than one foot in depth, with some flow into irrigation ditches. Accompanied by Tony Mollhagen and Bill Mealy, Ohlendorf returned to this locality on 6 July 1970. A pair of Mexican Ducks was seen there. Their legs were more reddish than those of Mallards and their tails were darker.

Recent reports by local residents suggest that Mallards also breed in the Trans-Pecos area of Texas. We have ourselves observed paired Mallards throughout the summer.

Contribution No. TA 8495 of the Texas Agricultural Experiment Station.—HARRY M. OHLENDORF AND ROBERT F. PATTON, *Department of Wildlife Science, Texas A&M University, College Station, Texas 77843, 6 May 1970.*

Egg turning by an incubating Wood Duck.—Although it is generally known that birds turn their eggs during incubation, little is known about the actual process. Because of the difficulty in making direct observations of the turning of eggs by a

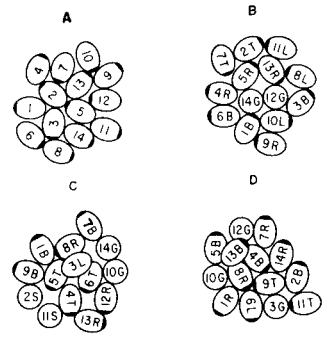

FIG. 1. Maps of Egg Locations and Positions. T:top, B:bottom, R:right-hand side, L:left-hand side, G:great end, S:small end. Maps were made as follows: A, 16:30, 15 May; B, 14:00, 16 May; C, 11:00, 18 May; D, 09:00, 19 May. All Ts were on top in Map A.

wild bird with its head beneath its body, in this study the indirect method was adopted of marking the eggs and later checking their relative positions. The work was done in Ohio during 1956 with a Wood Duck (*Aix sponsa*) clutch of 14 eggs. This relatively large clutch provided opportunities for following the course of movement of individual eggs, such as over the top of the clutch, that would not have been available with small clutches of several eggs.

At the start of the study an automatic recording device, such as was described by Stewart (Bird-Banding, 33:85–89, 1962), was installed on an occupied Wood Duck nesting box, and on the next day the recorder sheet was checked at various intervals until the incubating female was found to be absent from her nest. With India ink, the eggs were then marked with numbers and letters on four "sides" and the two ends. Daily thereafter the recorder sheet below the nesting box was checked at various intervals in an effort to find a time when the female was absent from her nest, and such a time was found on each of five successive days, 15 to 19 May, 1956, except 17 May. Egg locations and positions were then mapped, and the eggs were left unchanged where they had been found.

The successive maps (Fig. 1) of egg locations showed that the eggs seldom remained unchanged from day to day. However, they were sometimes later found with the same "side" on top and with little change of location, as with Egg 7 in the 21.5 hr period between the making of Maps A and B. An egg in such a situation could, of course, have gone through one complete turning cycle and returned to its original position and location, but this can be considered an unlikely eventuality. The eggs, too, were sometimes moved to new locations in the nest but left with the same side up as with Egg 8 in the change from C to D. Then the completion of a full turning cycle seems more probable. Holcomb (Bird-Banding, 40:105–113, 1969) marked the eggs of various species of passerine birds and found that incubating birds turned their eggs in an effort to keep the marks concealed. My Wood Duck eggs were marked on all "sides" and it was thus impossible for the bird to conceal all of the marks by turning them to the down position. Hence, it may be that egg turning was stimulated by the markings so that the eggs were turned more often than they would have been in the

absence of the marks. The seeming failure of one egg to be turned in a 21.5 hr period is thus made increasingly important by this possible tendency to attempt to conceal foreign marks on the eggs, and incubating Wood Ducks seemingly do not normally turn all of their eggs daily.

Eggs sometimes appeared on opposite sides of the clutch on successive days, as with Egg 10 during the 22 hr period between the making of Maps C and D. Also, an occasional egg was left on top of the others, as with Eggs 3 and 13 in Maps C and D, and Egg 13 in Map D was presumably being moved over the top of the clutch from side to side. Presumably eggs thus being moved were sometimes crowded down among the others in the center of the clutch, as with Egg 9 in the change from C to D. Thus, it appeared that one way the incubating Wood Duck turned her eggs was by rolling them from the outside of the clutch toward the center and ultimately all of the way across the clutch or to other positions not directly across the clutch from the starting position. On the other hand, eggs were not invariably moved across the clutch to its opposite side but were simply moved short distances to new positions on the same side of the clutch, as with Egg 7 which remained near its original location throughout the four days of observation.

All of the eggs in this clutch hatched in due time, and the egg turning regimen can thus be assumed to have been normal, or at least satisfactory for hatching.—PAUL A. STEWART, *Entomology Research Division, Agricultural Research Service, USDA, Oxford, North Carolina, 15 March 1970.*

Spruce Grouse attacked by a Northern Shrike.—On 18 October 1969 at 09:30, I saw five Spruce Grouse (*Canachites canadensis*) fly across a graveled road on the Kenai National Moose Range, Kenai Peninsula, Alaska. The birds had flown from a forest edge about 350 yards away, and landed 50 or more yards back from the road, in a moderately dense stand of white spruce (*Picea glauca*) and paper birch (*Betula papyrifera*). They landed in spruce trees and were scattered singly 50 or more yards apart. At 09:35 I located a female sitting in the open on the end of a limb about 15 feet above the ground. Upon seeing me, she became nervous and began clucking loudly, a typical reaction of a Spruce Grouse when approached by man. As I slowly approached to within 30 feet in an attempt to noose her, a Northern Shrike (*Lanius excubitor*) struck the grouse from above. After a brief struggle lasting less than 3 seconds, the shrike flew off and the grouse flew to the ground, where she gave a display normally performed by a hen with young chicks; the tail was fanned vertically, head raised with neck feathers ruffled, wings cupped out from body and drooped to ground, and body feathers fluffed. This display may have been given to increase her apparent size, as a potential prey, and thus discourage the predator. The shrike had already flown off though, and the grouse maintained the display for only 15–20 seconds before also flying away.

I believe the shrike was attracted to the hen by her clucking. In conducting field studies of Spruce Grouse over several years, I have seen Goshawks (*Accipiter gentilis*) appear several times in similar circumstances. Goshawks are also occasionally attracted by the distress call of a grouse chick.

Apparently shrikes rarely attack grouse-sized birds (500–700 g for Spruce Grouse) and White (Wilson Bull., 75:461, 1963) thought his observation of a Northern Shrike attacking a Sharp-tailed Grouse (*Pediocetes phasianellus*) might have been due to "redirected" behavior. A shrike he had been watching had killed a Pine Grosbeak