

itself with respect to north-south direction. Topographic features would not prevent a reversal in direction.—GEORGE E. GRUBE, *State Teachers College, Lock Haven, Pennsylvania.*

**Incubation Period of the Sora Rail.**—I have previously listed (Wilson Bull., 47: 79–80, 1935) several records of incubation periods of the Sora Rail (*Porzana carolina*) as 16 and 17 days, with the possibility that some required two to three days longer. These periods were: (1) May 15 to 31, 1920, or 16 days; (2) May 17 to June 3, 1930, or 17 days; (3) May 12 (last egg laid) to May 27, 1934, when 4 eggs were hatched (5 eggs still unhatched), or a period of at least 17 to 18 days. Several other nests were found where incubation periods were also checked and published (Auk, 57: 157, 161, 1940). In one nest the last egg was laid on May 25, 1935 and hatched on June 9, 15 days later. The period in another nest was from May 17 to June 5, 1938, or 19 days. In another, it was from May 28 to June 12, 1938, when the last eggs were deserted; incubation began on May 23, when the eighth egg was laid. This egg required 19 days to hatch.

During May, 1948, I had the good fortune to find 4 other nests. The first was discovered on May 15, with a full complement of 10 eggs. On June 3 at 5 A.M. all 10 eggs were hatched, giving an incubation period of at least 19 days. On May 22, the eggs averaged 7.96 grams in weight and  $30.34 (29-31.4) \times 23.07 (22.3-23.6)$  mm. in size.

In the second nest there were 4 eggs on May 15, and the tenth egg was laid May 21. On June 3 at 5 A.M. there was 1 young; at 7 A.M., 2 young; at 8 P.M., 4 young. On June 5 at 2 P.M. there were 7 young; on June 6 at 9:30 A.M., 8 young; and the same on June 8 at 7:30 A.M. Two eggs did not hatch. Incubation required at least 17 or 18 days. On May 22, the eggs averaged 8.84 grams in weight and measured  $30.99 (29.9-31.7) \times 23.26 (23-23.7)$  mm.

In the third nest, found on May 15, the eighth egg was laid May 16. On June 3 this nest contained 6 young, 1 egg and 1 infertile egg. The eighth egg hatched June 4, with an incubation period of 19 days. The 8 eggs averaged 7.9 grams in weight and  $32.65 (31.5-34) \times 22.83 (22-24.1)$  mm. in measurements.

In the fourth nest, found on May 15, 1948, at 5 P.M. with 5 eggs, there were 8 eggs on May 17 at 7 P.M. Ten eggs were laid. On June 3 there was 1 young at both 5 and 7 A.M., and 4 young at 8 P.M. On June 5 at 2 P.M. there were 6 young. This female deserted the other 4 eggs because of my visits. However, the sixth egg required 20 days to hatch. The 10 eggs averaged 8.58 grams in weight and  $31.02 (28.7-32.5) \times 23.12 (21.7-24.6)$  mm. in size.

Thus for the four nests, incubation required a period of 18 to 20 days. These nests were in a small marsh only a few acres in size, in Convis Township, Calhoun County, Michigan. The Sora Rail begins incubating her eggs several days prior to the completion of the set; thus they hatch over a period of several days.

The Virginia Rail (*Rallus limicola*) does not begin incubation until the next to the last or last egg is laid. In two nests that I watched in 1935, the eggs hatched 20 days after the last one was laid (Auk, 54: 467–470, 1937). On April 19, 1945, along the west shore of Ackley Lake, Convis Township, Calhoun County, Michigan, I found another nest with 4 eggs. On April 22 there were 7 eggs; on April 26, 9. E. M. Brigham, Jr., visited this nest on May 13 and found the eggs hatching. If we assume that the ninth egg was laid about April 24 and that it hatched May 14, the incubation period would have been 20 days at this nest also.—LAWRENCE H. WALKINSHAW, *1703 Wolverine-Federal Tower, Battle Creek, Michigan.*