

GENERAL NOTES

Observations on Gnatcatcher range extension.—For the past half-century the increasingly frequent occurrence of the Blue-gray Gnatcatcher (*Poliophtila caerulea*) in areas north of the Mason-Dixon Line has been reported as being of special interest. For example, Saunders (Auk, 67: 255: 1950) reports the species nesting in Connecticut and states that it suddenly became common in the spring of 1947. Baillie and Harrington (Trans. Roy. Can. Inst., 21, Pt. 2: 233–234, 1937) cite numerous breeding records for Ontario. Schorger (Auk, 67: 394, 1950) reports the collection of one of “a pair” (believed to be breeding residents) in Sawyer County, Wisconsin in 1949. I have spent many hours, since 1947, studying the Blue-gray Gnatcatcher in various parts of eastern United States and Cuba, and have been intrigued by its distributional patterns. In the North all reports and my own observations indicate that gnatcatchers occur along wooded rivers, creeks, or other bodies of water. In the South the species is not thus confined. Further, some northern stream sites which appear perfectly suitable have few or no birds, while others support comparatively many.

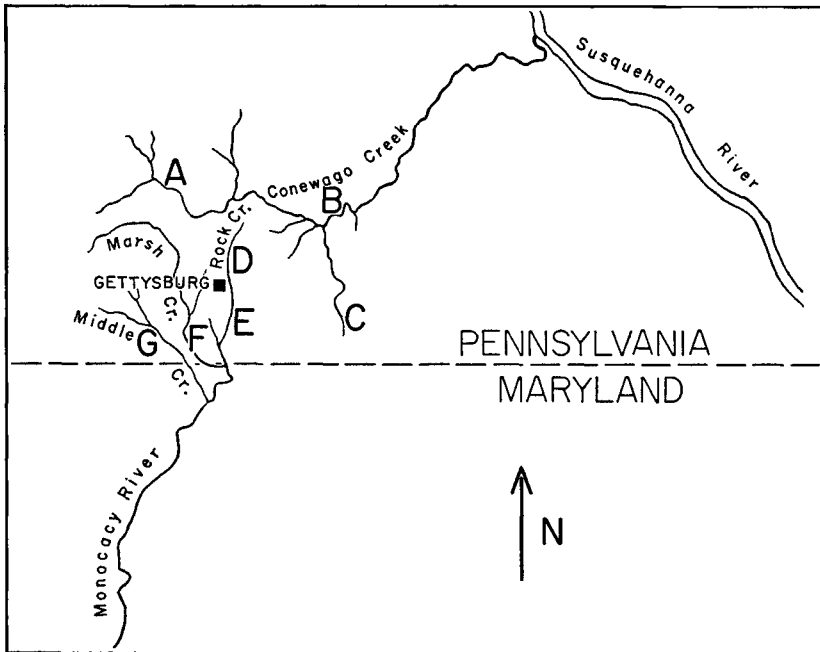


FIGURE 1. Parts of the Susquehanna and Potomac river drainage systems showing the location of areas A-G on which gnatcatcher censuses were taken.

A linear census taken along tributaries of two drainage systems in Adams County, Pennsylvania, has yielded some interesting data, which I believe may help explain some of the puzzling distributional aspects in the North. The census covered a period of three years, 1951–1953, and was taken in seven localities within 14 miles of Gettysburg (Figure 1), each presenting what I believe to be adequate ecological

requirements. All counts were confined to a period from May 1 to June 15. The census was accomplished by walking along the creeks and noting the number and location of calling birds. Two or three counts were made each season, and only the largest was used. No special effort was made to locate all nests, although a sufficient number was located to justify considering calling birds as breeding birds. Only one pair was assumed to occupy an immediate area. Generally about 500 to 600 yards separated the closer nests. In one instance, on Area F in 1953, two nests were situated about 75 yards apart but on opposite sides of a widened portion of Marsh Creek. The possibility that a pair might be counted twice while carrying nesting materials from one nest site to another was minimized, for, although gnatcatchers frequently do tear down one nest to use in building another, the second site is rarely more than 25 to 50 yards from the first.

The results of the census are summarized in Table 1. In the Susquehanna drainage system, three counts were made, on the Conewago Creek and its South Branch tributary, on areas totalling approximately 6.6 miles in length. One plot, Area C, extends well south of two of the areas on the Potomac drainage system. In three years only four pairs of gnatcatchers were counted here. Four areas, two on Rock Creek, one on Marsh Creek, and one on Middle Creek, were examined for two or three years. These creeks empty into the Monocacy River, a major tributary of the Potomac drainage system. The three-year cumulative total on the 7.3 miles censused here was 69 pairs. The year 1953 saw a major increase over 1951 and 1952 in the Blue-gray Gnatcatcher population in this area. A few spot checks made in 1954 indicated no appreciable change over 1953. During 1953 and 1954 I noted a number of gnatcatchers in areas up to three miles from the nearest creek, in open woodlands.

The major difference between the two drainage systems in this area is that Conewago Creek drains to the northeast into the Susquehanna, whereas the tributaries of the Monocacy River drain generally southward into the Potomac. It is my hypothesis that Blue-gray Gnatcatchers migrate northward principally along the

TABLE 1

SUMMARY OF RESULTS OF CENSUS OF BLUE-GRAY GNATCATCHERS ON SEVEN AREAS ON TWO DRAINAGE SYSTEMS IN ADAMS COUNTY, PENNSYLVANIA, IN 1951, 1952, 1953

Area	Drainage system	Length of area (miles)	Gnatcatchers (pairs)		
			1951	1952	1953
A	Susquehanna	2.0	0	0	0
B	Susquehanna	2.1	0	0	1
C	Susquehanna	2.5	0	1	2
D	Potomac	1.0	—	1	4
E	Potomac	1.2	1	2	5
F	Potomac	3.0	9	9	23
G	Potomac	2.1	—	4	11

major rivers and their tributaries. A few may bridge the higher lands from one system to another. However, they do not reverse their northward direction to follow a tributary which would lead them southward. This would explain their more common occurrence along waterways in the northern portion of their range, and their non-occurrence along some streams. These conclusions would imply some sensory ability (perhaps the "astronomical analyser" of Kramer [Ibis, 94: 265-285, 1952] and other European authors) on the part of this species to orient

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.*