

## **Additional Notes on Bachman's Warbler**

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In the spring of 2000 and 2001 sightings of Bachman's Warbler (*Vermivora bachmanii*) were reported from the Congaree Swamp National Monument in Richland County, South Carolina. In response to these reports a search for the bird was made in the spring of 2002 under the aegis of the U.S. Fish and Wildlife Service (Watson and Koches 2003). The fact that these reported sightings were some hundred miles west of the known range of this species cast immediate doubt on the likely success of any search. In fact no observations were made; yet the question of the habitat requirements of this species remains at the center of the debate about the status of North America's rarest songbird.

In the mid-1970's renewed attention was given Bachman's Warbler with the primary focus on habitat determination for this critically endangered species. Since no authenticated sightings have been made since the early 1960's (Sprunt and Chamberlain 1970; Forsythe 1991), most work centered on the publications of Arthur T. Wayne. The discovery of additional source material now allows the revision of recent ideas concerning the habitat requirements of this species and provides new insight into the credibility of its chief researcher.

The habitat of Bachman's Warbler has long been regarded as heavily forested bottomland swamp (Chapman 1907; Wayne 1910; Sprunt and Chamberlain 1949; Griscom and Sprunt 1957; Chamberlain 1974). This concept was challenged by the hypothesis that Bachman's Warbler actually displayed a preference for early successional stages of vegetation (Hamel 1976; Urbston, Mudge and Lewis 1976; Marshall, Zeedyk and Evenden 1976; Hooper and Hamel 1977). Much of this new hypothesis as well as the more traditional view is based on the interpretation of the work of Arthur T. Wayne, who rediscovered the bird in South Carolina in 1901. Wayne's familiarity with this species is reflected both in his published works and in field notes which include descriptions of general and breeding habitat. His frequent references to primeval swamps, heavy hardwood timber, and deep cypress swamps have been labeled unclear and generally misleading (Urbston, Mudge, and Lewis 1976; Hamel and Hooper 1977). Since Wayne made no quantitative statements in his publications on Bachman's Warbler habitat, a reappraisal of this elusive species and its habitat based on Wayne's correspondence with contemporary ornithologists over a 26 year span, as well as other period source material, now seems appropriate.

The picture of Bachman's habitat is commonly drawn from numerous Wayne references to an area north of Charleston and 14 miles northeast of Porcher's Bluff on Fairlawn Plantation. Wayne's comments on the habitat in the area of his concentration contain mention of a very swampy situation that

was both heavily wooded and endowed with a thick understory (Wayne 1905, 1910). This has caused confusion when coupled with Wayne's admission that the area had originally been a rice field. The historical accuracy of this statement has been borne out however, and a better picture of the forest in this area has now come to light.

The last rice crop grown on Fairlawn Plantation was recorded in 1859 when 24,000 lbs. were harvested (U.S. Census 1860). Surprisingly, a crop of this size would require a cultivated area of only 6.4 to 15.4 acres (Gray 1958). Assuming that production could have continued undocumented until 1865 due to the Civil War, trees in the abandoned rice fields at the time of Wayne's initial discovery would have been between 36 and 41 years old.

The soil in the abandoned rice fields is primarily Santee clay loam, a very poorly drained hydric soil with an average depth of 0 to 1.5 feet to the water table (Miller 1971). This soil type is suited for the growth of wetland hardwood trees including bald cypress (*Taxodium distichum*), loblolly pine (*Pinus taeda*), sweet-gum (*Liquidambar styraciflua*), water tupelo (*Nyssa aquatica*), water oak (*Quercus nigra*), swamp tupelo (*Nyssa biflora*) and spruce pine (*Pinus glabra*) (Ellerbe 1974). With a growing season in excess of 280 days, species such as sweet-gum, water oak and loblolly pine, under such fertile conditions can be expected to display rapid growth in excess of 70 feet in height (Miller 1971; U.S. Department of Agriculture 1965).

It is not difficult under these conditions to understand how Arthur Wayne wrote of "a dense forest, which in places precluded the sunlight at noon" (Wayne 1906). Those who accompanied Wayne on his searches also support such statements. In 1908 Francis Weston wrote of finding the bird "feeding on the flowers of sweet gums in high trees in swamp" (Weston 1908). Alexander Sprunt, Jr. wrote that nearby Penney Dam, a rice reserve adjacent to the area where the warbler was found, also on Fairlawn Plantation, was in large trees in 1922. As late as 1928-1929, Mrs. Essie Gregorie, another companion of Wayne and 37 years old at the time, remembered the "old rice fields in large trees in dark swamp" (Sprunt 1922; Gregorie 1979). It is clear that while Wayne and his proteges were not working in virgin timber, they were finding this rare species in an advanced, vigorous forest.

The question of habitat is further clarified by Wayne's statement that "...I never expect to see another specimen as the great swamp in which I found it breeding has been deforested by a lumbering company." (Basset 1941). Although this statement was made in 1930, Wayne also wrote as early as 1917 that "All the pine timber in I'on Swamp and the entire region adjacent to it, 9000 acres, has been completely cut out!!" (Wayne 1917). Supporting these observations is an agreement to lumber Fairlawn Plantation made in 1902. Under the terms of this agreement "All timber of every kind...ten inches in stump diameter and upwards...(will be cut)...for a period of thirty years...(Charleston County Register of Mesne Conveyance 1902). The inescapable conclusion drawn from this evidence is that Bachman's Warbler is highly sensitive to forest reduction.

Other types of habitat disturbance have also been recorded, although apparently with little effect. In the spring of 1918, Wayne found the swamp without water and later consumed by fire. Both of these events had no observable adverse impact on the bird. Similarly Wayne's personal activity, which included daily investigation and occasional collecting, suggests the bird's scarce, local distribution was itself an important factor (Wayne 1911).

There is no question that Bachman's Warbler has always been a rare species in South Carolina. As early as 1906 Wayne called it "excessively rare" and by 1912 he wrote, "I have known since the spring of 1910 that the birds are getting very rare" (Wayne 1906, 1912). Relentless in his pursuit, Wayne was afield daily during the breeding season and his frustration surfaced when he wrote that he had been "living at the place, but I doubt if I will ever find another nest as the area is unlimited and everywhere is suitable ..." (Wayne 1906). Wayne addressed the question of abundance on several occasions, but he believed the population was limited to only a few birds, perhaps only four or five pairs (Wayne 1911).

The unexplained cyclical disappearance of Bachman's Warbler was also noted by Wayne in 1912, when he wrote that the birds had "forsaken the swamp where I first found them in 1904, and I never expect to take another, as I covered the swamp critically with Dr. Bishop and went into new places where I had never explored before" (Wayne 1912). This mystery led to the conclusion that "Bachman's Warbler is an ancient species and is fast dying out" (Wayne 1912).

Compounding the problems of scarcity and habitat were those of location and identification. Wayne made numerous notes of the speed and energy of the bird, writing, "These birds are very hard to detect ...in fact I cannot recall a bird that moves as rapidly as Bachman's Warbler does in the breeding season" (Wayne 1905a, 1905b).

Even the birds Wayne did locate proved on occasion to be still more mysterious. One was singing the song of a Prothonotary Warbler (*Protonotaria citrea*) when he collected it, and others were in confusing plumages (Wayne 1907). Several individuals of both sexes were brighter than the Prothonotary Warbler (Wayne 1892a, 1892b). The females showed tremendous variability ranging from very pale specimens, compared by Wayne to the female Lucy's Warbler (*Vermivora luciae*), to individuals as bright as the adult male (Wayne 1892a, 1893, 1905b). Still other females were collected in partial male plumage with spotted or black throats (Wayne 1893). As if these variations were not sufficiently confusing, Wayne also collected "two females which are precisely like the adult male" (Wayne 1892a).

When considering the complexities surrounding Bachman's Warbler, both in Wayne's time and today, there are still those who will question Wayne's motives and his accuracy in recording what he saw. To those who knew him, this was unthinkable, particularly since Wayne went to great lengths to insist on accuracy and honesty among his contemporaries. Characteristically he wrote to a fellow ornithologist, "you never told a truer

sentence in your life when you say: 'No one can lie about Nature and get away with it.' This is fine and I shall remember it forever for it is the truth...I could not go to bed and sleep if I knew I had told a falsehood." (Wayne 1917). As for Wayne's conservation ethic, Alexander Sprunt wrote, "Often have I seen him stand and survey the stump of what had been a gigantic pine and say sorrowfully, "There is the work of God Almighty for a hundred years undone by two (men) with a cross-cut saw in twenty minutes." (Sprunt 1931).

In summary, it appears that the traditional view of Bachman's Warbler habitat is essentially correct and this species is indeed highly sensitive to forest reduction. Additionally, it is clear that the bird has always been rare and extremely local in distribution. Given the difficulties in detection and identification, reasonable hope remains that Bachman's Warbler may not be extinct. Additionally, while no quantitative data on this species were collected around the turn of the century, Arthur Wayne and his contemporaries did report what they found with typical Victorian thoroughness, making them preminent ornithologists of their day.

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