

# A Description of Black-throated Green Warbler (Wayne's) (*Setophaga virens waynei*) Nests in Coastal North Carolina

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## Abstract

The Black-throated Green Warbler (Wayne's) (*Setophaga virens waynei*), a declining subspecies, breeds along the Coastal Plain of Virginia, North Carolina, and South Carolina. Since being described in 1918, little basic breeding ecology has been documented for this subspecies. Here we describe four nests that we monitored in southeastern North Carolina during the 2020 breeding season. Of the four nests, one was found in a Loblolly Pine (*Pinus taeda*), one in a Pond Pine (*Pinus serotina*), one in a Red Maple (*Acer rubrum*), and one in a large Loblolly Bay (*Gordonia lasianthus*). One nest was successful, two failed, and the last had an unknown fate. More research is needed to further understand the breeding ecology of this declining subspecies.

## Introduction

Understanding a declining species' basic breeding ecology is vital to properly protect and manage for it. The Black-throated Green Warbler (Wayne's) (hereafter, Wayne's Warbler), is a declining Nearctic-Neotropical migratory songbird and a subspecies of the Black-throated Green Warbler (*S. virens*). Its disjunct breeding range occurs along a narrow band of the Atlantic Coastal Plain from southern Virginia to central South Carolina, and is about 400 km east and 1200 m lower in elevation than the nominate race in the Appalachian Mountains (Sprunt 1953, Watts et al 2011; Fig. 1). The Wayne's Warbler arrives and breeds much earlier than the nominate race and is associated with non-alluvial forested wetlands consisting of Bald Cypress (*Taxodium distichum*), Atlantic White Cedar (*Chamaecyparis thyoides*), pines (*Pinus* spp.) and mixed hardwoods such as Loblolly Bay (*Gordonia lasianthus*), Red Maple (*Acer rubrum*), and Tupelo species (*Nyssa* spp.; Sprunt 1953, Cely 2005, Watts et al 2011). These habitats, which were once dominant across the Coastal Plain, have been largely converted into pine plantations, agriculture, and urban areas with only a fraction remaining (Noss et al 2015).

The Wayne's Warbler was first documented by Arthur Wayne in 1909. Outram Bangs described and named it after its discoverer in 1918 (Bangs 1918). Wayne first described the subspecies' nests in 1918 near Mount Pleasant, SC (Wayne 1919). Since 1918, only a handful of nest descriptions have been published (Pitelka 1938) and very little basic breeding research has been conducted. Here we describe four Wayne's Warbler nests located in Bladen Lakes State Forest, NC, and compare these nests to the nominate race.

## Observation

During the 2020 breeding season, March-June, we searched for breeding male Wayne's Warblers for a separate genomics project. Singing males were first detected on 18 March 2020 near Tatum Millpond in Bladen Lakes State Forest (34.726531, -78.543057) in southeast North Carolina. We opportunistically searched for nests using behavioral cues (i.e., male singing, female collecting nesting material, adults carrying food). We located 14 males with territories and were able to find and monitor four active nests from different breeding pairs and recover one nest after the breeding season. Nests A and B were found on 28 April 2020 (Fig. 2) and nests C and D were found on 29 April 2020. All nests contained nestlings. All four nests were placed in different tree species, nest A in a Loblolly Bay, nest B in a Loblolly Pine (*Pinus taeda*), nest C in a Red Maple and nest D in a Pond Pine (*Pinus serotina*; Fig 2). Basic location measurements for nests are listed in Table 1.

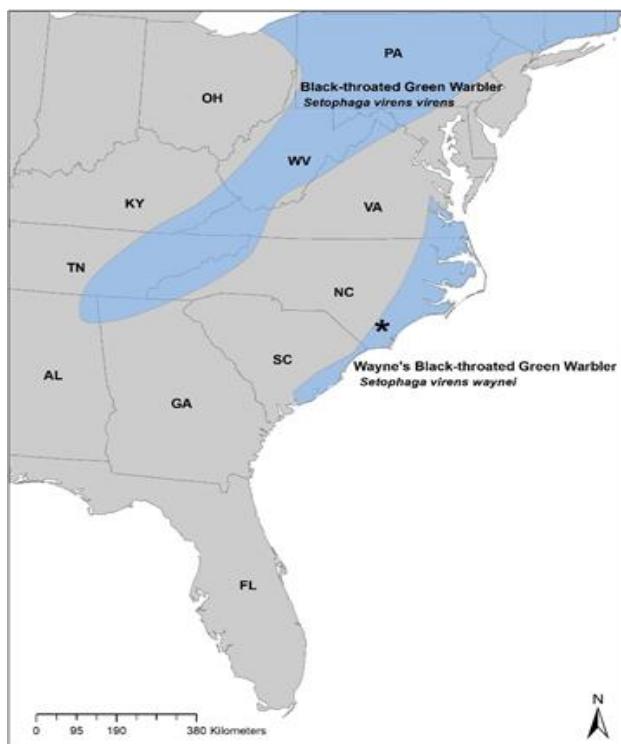


Figure 1. Breeding distribution of the Black-throated Green Warbler (Wayne's) (*Setophaga virens waynei*) and portions of the nominate Black-throated Green Warbler's (*S. v. virens*) range. Map created from IUCN data. The \* indicates the Bladen Lakes State Forest study site.

Comparing the Bladen Lakes State Forest nests with published data, these nest sites were located in similarly described swampy drainages as Wayne's 1918 nests. Wayne's nests were found in a large magnolia (*Magnolia* spp.) and a large Live Oak (*Quercus virginiana*). Those findings along with findings reported here indicate the birds' flexibility for using different tree species for nesting. Additionally, all four of our located nests were placed at or near (within 10 m) canopy gaps. The breeding pairs for which we were unable to locate nests also had multiple canopy gaps present in their territories. Although Wayne did not describe canopy gaps in his description of the nest, Smith and Matthew (1996) noted that *S. v. virens* used canopy gaps more than one would expect by chance.

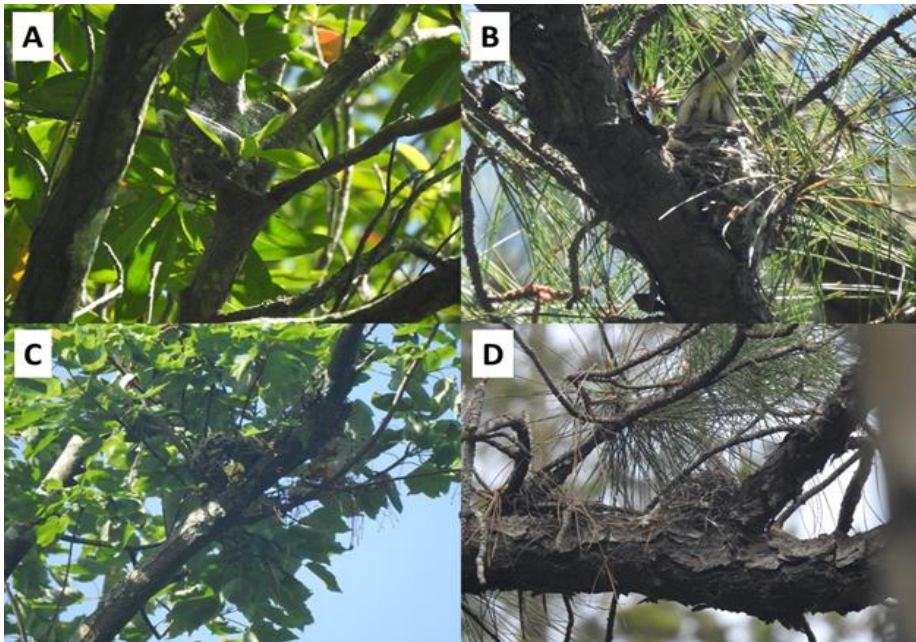


Figure 2. Black-throated Green Warbler (Wayne's) (*Setophaga virens waynei*) nests during the 2020 breeding season in coastal North Carolina. Nests were found respectively in a (A) Loblolly Bay (*Gordonia lasianthus*), (B) Loblolly Pine (*Pinus taeda*), (C) Red Maple (*Acer rubrum*) and (D) Pond Pine (*Pinus serotina*).

We recovered a single nest after the breeding season, which was lined with moss and fine fern threads. The outside was covered with strips of Atlantic White Cedar bark and needles and was held together by silk. The inside diameter is 4.8 cm, outside diameter 7.8 cm, height 5.2 cm, and inside depth 4.8 cm. The weight was 10.13 g. Our nest measurements are similar to those published for *S. v. virens* nests. Pitelka (1938) described two Douglas Lake, MI, Black-throated Green Warbler nests with the inside diameters of 4.5 and 5 cm, outside diameters of 7.8 and 7.5 cm, inside depths of both 3.0 cm, minimum heights of both 3.0 cm, maximum heights of 5.5 and 6.5 cm, and weights

4.92 and 7.85 g.

We encourage further research on Wayne's Warbler across their breeding range to better inform a meaningful management plan for this declining subspecies.

Table 1. Nest data for four Black-throated Green Warbler (Wayne's) nests found in Bladen Lakes State Forest, North Carolina. Refer to Fig. 2 for nest photos.

Nest	Tree Species	Nest Success	Nest Height	Tree Height	Tree Diameter at Breast Height	Elevation Above Sea Level
A	Loblolly Bay	Failed	16.5 m	30.5 m	78.74 cm	31.5 m
B	Loblolly Pine	Successful	15.0 m	23.0 m	33.53 cm	32.4 m
C	Red Maple	Failed	16.0 m	19.0 m	34.80 cm	41.8 m
D	Pond Pine	Undetermined	7.9 m	18.0 m	33.78 cm	28.8 m

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