

Black-throated Green Warbler (nominate and Wayne's)*Setophaga virens* and *S. v. wayneii*

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Photo by Chan Robbins

DESCRIPTION**Taxonomy and Basic Description**

Two forms of the Black-throated Green Warbler are recognized in the SWAP as priority species: the nominate race and the Wayne's race. The more widespread nominate race was described by Gmelin in 1789, and is found in the Blue Ridge Ecoregion of South Carolina, whereas the subspecies known as "Wayne's" is confined to the Coastal Plain.



Photo by J. Durbin, USFWS

Black-throated Green Warbler males of all forms have a black throat with a bright yellow face while the females are duller in color (Morse 1993). The typical size of the nominate race is 11 to 12 cm (4.3-4.7 in.) (Morse 1993). Wayne's Black-throated Green Warbler is slightly smaller with a smaller bill (Morse 1993). Male Wayne's Black-throated Green Warblers also have slightly less extensive black bibs (Dias, pers. comm.). The coloration is olive on the back and crown with yellow on the head (Sauer et al. 2000). Black

streaks are present on the sides while the wings have white bars (Sauer et al. 2000). The male has an additional black throat patch (Sauer et al. 2000). The breeding range, separated from the nominate race by more than 321.8 km (200 mi.) and a 609.6 m (2,000 ft.) elevational difference, consists of a narrow band of Atlantic white cedar (*Chamaecyparis thyoides*) stands, cypress (*Taxodium*) swamps, and other forested wetlands of the Outer Coastal Plain from southern Virginia to South Carolina.

Watts and Paxton (2002) noted that peak singing activity for Wayne's is around the end of April with a notable decrease after mid-May. This corresponds to its early spring arrival, usually the last 7 to 10 days of March in South Carolina.

Status

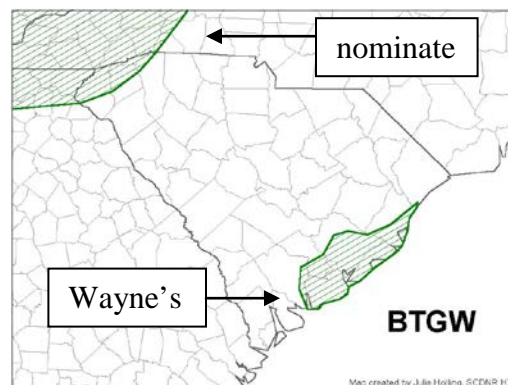
The Wayne's Black-throated Green Warbler is listed as a "species of special concern" by the South Carolina Department of Natural Resources (SCDNR). In addition, it and the nominate race are considered high priority landbirds by Partners in Flight (PIF). Wayne's is locally distributed within a narrow belt of forested wetlands of the Outer Coastal Plain from southern Virginia to

the Edisto River in South Carolina. Even within this narrow range, it is absent from some areas. The South Carolina Heritage Trust Program identifies this warbler as apparently secure (S4) in South Carolina and secure (G5) globally. However, this ranking may need to be re-evaluated to consider the coastal population. The mountain population of the nominate race appears to be secure as well. Huckabee (2001) found this species to be one of the most detected bird species by point count in oak-hickory/cove coverts within the Franklin Gravelly Wildlife Management Area of the Jocassee Gorges. Sixty-nine individuals were detected resulting in a 45% occurrence (Huckabee 2001).

The second-largest colony of Wayne's black-throated blue warblers in SC has dwindled to a few sporadic sightings. Other colonies have disappeared entirely since the mid-to-late 1990's (Dias, pers. comm.). Population levels in the Francis Marion National Forest and other areas that received heavy damage from Hurricane Hugo in 1989 did not begin a steep or noticeable decline until the mid to late 1990's. For example, the population in the drainage between the Wambaw Wilderness and the Little Wambaw Wilderness was South Carolina's second-largest population until 2000. Point counts conducted from mid-March to April of 1998 consistently yielded multiple singing males with a low count of 5 and a high count of 10. Over the past three years, a maximum of one or two singing males has been counted; many surveys failed to identify any birds (Dias pers. comm.).

POPULATION SIZE AND DISTRIBUTION

The nominate race has a wide distribution which extends into Canada. The population is thought to be approximately 3,000 birds in South Carolina (PIF Science Com 2013). However, Wayne's race has one of the most restricted breeding distributions of any warbler in South Carolina or the Southeastern United States. It is rarely found further than 40 to 48 km (25 to 30 miles) inland from the coast. Prior to Hurricane Hugo, the habitat of the Francis Marion National Forest (FMNF) in Berkeley and Charleston Counties could have supported the largest population in South Carolina (Cely, pers. obs.). Even there, it was probably not common, based on 82-point counts conducted in the late 1970's. In these counts, Black-throated Green Warblers ranked 8th out of 12 breeding warblers (Hamel 1981). The Wayne's Black-throated Green Warbler has a spotty, and perhaps clumped, distribution within its limited range in the state. It is not known to occur in Horry County and much of northern Georgetown County.



A population of unknown size and status occurs southwest of Charleston extending up, but not within, the Edisto River floodplain. Black-throated Green Warblers are not known to occur within the ACE Basin west of the Edisto. Population size and trends are unknown, although it is suspected of disappearing or declining from southeastern Virginia and parts of North Carolina (Watts and Paxton 2002) as well as areas devastated by Hurricane Hugo in South Carolina in 1989 (Cely pers. obs.).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

The nominate race is typically found in coniferous stands of white pine/hemlock, but in the Blue Ridge Ecoregion of South Carolina, Huckabee (2001) found an apparent attraction for stage 3 to stage 4 oak-hickory stands that graded into coves that were devoid of hemlocks or white pines. In contrast to the mountain residents, the Wayne's race along the Coastal Plain prefers stands of deciduous or cypress trees.

In coastal South Carolina, Black-throated Green Warblers avoid the big blackwater rivers, except for a stretch of Wambaw Creek near the South Santee River. They remain in areas around the slow-moving headwaters of blackwater creeks and the swamps and swamp borders that feed blackwater rivers and their tributaries. South Carolina colonies sometimes occur in isolated Cypress-Tupelo swamps amidst drier pine-hardwoods habitat.

In southern Virginia and coastal North Carolina, Black-throated Green Warblers are closely associated with Atlantic white cedar. Where cedar is scarce or absent, such as coastal South Carolina, these birds are found primarily in non-alluvial forested wetlands or transitional zones between upland and wetland, where, as a canopy or subcanopy species, it uses blackgum (*Nyssa sylvatica*), laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), bald cypress (*T. distichum*), "wet" loblolly pine (*Pinus taeda*), and red maple (*Acer rubrum*). It is rare to see this species without the presence of pond cypress, sweet gum, and black gum, and they are almost always located near water tupelo (*Nyssa aquatica*) (N. Dias, pers. comm.). Black-throated Green Warblers are sometimes found in small or headwater riparian forests, but most observers suggest an association with forest stands growing in non-alluvial muck swamp. In Virginia and North Carolina, Watts and Paxton (2002) found higher than expected warbler use in survey plots containing loblolly pine, Atlantic white cedar, and bald cypress and less than expected use in those plots with pond pine (*P. serotina*) and hardwoods. This may help to explain the bird's absence in pond pine-dominated Carolina bays in Horry County. Black-throated Green Warblers are not known to occur in large and medium outer coastal plain floodplain forests such as those associated with the Waccamaw, Great Pee Dee, Black, and Santee Rivers.

In the Francis Marion National Forest, Hamel (1981) noted most foraging and behavioral observations occurred between 10 and 17 m (32.8 and 55.7 ft.), similar to that of the pine warbler (*D. pinus*) and yellow-throated warbler (*D. dominica*). More than 50% of behavioral observations were made in laurel oak, blackgum, sweetgum, and water oak (*Q. nigra*). Red maple was used sparingly, and a subjective impression was that the species was found in forest stands with a high site index (Hamel 1981). Male Wayne's Black-throated Green Warblers favor sweet gum trees for singing perches, even with taller cypress or tupelo trees nearby (Dias pers comm.).

CHALLENGES

Based on its very restricted breeding range, apparent decline in parts of this range, and the fact that almost nothing is known about its breeding biology, status, and habitat use, the Wayne's

Black-throated Green Warbler should be considered a high priority landbird species for research and survey efforts in South Carolina.

As a canopy/subcanopy species, short timber rotations may negatively affect the nominate race and subspecies (Cely pers. obs.; Sprunt 1953; Morse 1993). Alterations of hydrology and wetland drainage also pose potential problems. Additionally, Hurricane Hugo opened up many habitats to Brown-headed Cowbirds. The I'On Swamp Road in the Francis Marion National Forest used to have breeding Wayne's warblers without sightings of brown-headed cowbirds. Currently, the opposite is true—Brown-headed Cowbirds are often seen while very few Wayne's warblers are noted. However, effects of nest predation have not been studied in depth. The nominate race in the mountains is also susceptible by Brown-headed Cowbird parasitism (Morse 1993).

Like most Neotropical migrants, the Black-throated Green Warbler is probably area-sensitive and may require thousands of acres of suitable habitat in large blocks to sustain long-term population viability. No information is available on the location(s) of wintering grounds and subsequent habitat use, but the Wayne's race could possibly differ from that of the nominate race.

CONSERVATION ACCOMPLISHMENTS

The Jocasee Gorges property, in its entirety, protects 12,955 (32,000 ac.) of forest, providing large blocks of unbroken forest needed for the nominate race of the Black-throated Blue Warbler. Since the species shows some breeding site fidelity (Morse 1993), the fact that this large tract will be available in perpetuity is comforting.

Current surveys for the Wayne's Black-throated Green Warbler are being coordinated through the Cape Romain Bird Observatory (CRBO) (Dias pers. comm.). These studies have confirmed that Wayne's Black-throated Green Warbler is declining precipitously in South Carolina. Researchers are plotting all known present breeding locations while developing a plant index at each site. The location of suitable habitat on private lands, especially plantations, is being determined. Partnerships with private landowners and managers are being developed to increase surveyed acreage.

Some private lands, especially those with easements or long timber rotations, may offer some protection as well. The protected Francis Marion National Forest probably has the main concentration of the species in South Carolina.

CONSERVATION RECOMMENDATIONS

- Investigate the possible benefits of Streamside Management Zones (SMZs) and buffers to both races of Black-throated Green Warblers, with particular attention to characterization of width, extent, and configuration.
- Complete intensive surveys to locate as many potential breeding populations of both races of Black-throated Green Warblers within the State as possible.

- Support adoption of brown-headed cowbird control measures near identified breeding locations of Wayne's Black-throated Green Warblers in partnership with CRBO and other identified cooperators.
- Conduct in-depth investigations of Wayne's Black-throated Green Warbler breeding biology and habitat use once breeding populations have been identified. Locate nests and determine nesting success and nesting habitat, site fidelity, foraging behavior, and habitat use. At least two such study areas should be established, if possible, for comparative purposes.
- Develop a statistically valid monitoring protocol for Wayne's Black-throated Green Warblers.
- Determine wintering locations, migration corridors, and stopover sites for both races of the Black-throated Green Warblers.
- Issue news releases and information to the general public, constituent groups and conservation organizations. Biologists and researchers should work closely with landowners and the forest products industry to provide management data as it becomes available.
- Establish habitat protection measures for both races of the Black-throated Green Warbler, including easements, Best Management Practices, and acquisition where feasible.

MEASURES OF SUCCESS

After determining habitat use, management guidelines should be provided to landowners and agencies. Adaptive management techniques should be utilized when opportunities arise. The development of a valid monitoring protocol for the Wayne's race will facilitate the periodic evaluation of population health and allow for appropriate corrective measures when declines occur.

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