

FIRST CONFIRMED NESTING OF THE PINE WARBLER (*DENDROICA PINUS*) IN NEW YORK CITY

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A detailed and substantial written record of the breeding birds of New York City dates back at least to the 1860s. Nineteenth Century naturalists such as E. P. Bicknell, A. Hollick and others compiled notes on summer resident birds of particular parks and other natural areas in each borough (see Bicknell 1878; Hollick 1885; Woodruff and Paine 1886). In the 20th Century, detailed records of the city's breeding birds were made primarily by birders and occasionally by museum scientists (see Griscom 1923; Carleton 1958; Siebenheller 1981). This rich historical record can be compared to species still nesting in New York City (NYC) today in order to understand long-term changes in the diversity of breeding birds of the metropolitan area.

The Pine Warbler (*Dendroica pinus*) is a fairly common nesting species on Long Island in northern Nassau County, as well as much of central and eastern Suffolk County. In this region, these birds prefer mature White (*Pinus strobus*) and especially Pitch (*Pinus rigida*) pines interspersed with oaks (*Quercus spp.*) and other deciduous trees. Pine Warblers also breed just north of the city in Westchester County, and locally across much of upstate New York (Salzman 1998). However, this warbler has not previously been confirmed as a nesting species in NYC.

In the northeastern United States, Pine Warbler distribution and abundance is closely associated with the extent of its preferred habitat-mature pine trees. In New York State from the late 19th Century through the end of the second world war, woodlands increased as farms were abandoned, and large-scale harvesting of trees for lumber diminished significantly. This benefited Pine Warblers. Since the late 1940s, and accelerating after ca. 1970, development for housing, shopping and recreational areas (e.g., ball fields) has greatly affected natural areas, especially in the NYC region. In certain protected places, such as parks and estates in the metropolitan area, specimen pines have matured and now provide appropriate breeding habitat for the Pine Warbler. A comparison of available data from the New York State Breeding Bird Atlas of 1980-1985 vs. 2000-2004 (see the New York State Breeding Bird Atlas 2000), shows more census blocks with probable or confirmed breeding Pine Warblers now in upstate New York, especially the Tug Hill Plateau and western Adirondack foothills, as well as downstate in Westchester County. On Long Island, the 2000-04 census map indicates

that breeders are present in about the same number of blocks as on the 1980-1985 map. However, the actual breeding population of this warbler in the Nassau-Suffolk County pine barrens has probably declined due to habitat loss (Rodewald et al. 1999).

In this paper we report our observations of Pine Warblers during the nesting seasons of 2002 through 2005 at the New York Botanical Garden (NYBG) in Bronx County. We present the first definitive evidence that this species now breeds in NYC, and summarize what is known about the historical and extant nesting warblers (*Parulidae*) of NYC.

METHODS

In 2002-2003 we made observations of Pine Warblers in June and July as part of our study of nesting Cooper's Hawks (*Accipiter cooperii*) at the NYBG in Bronx County (see DeCandido and Allen 2005). In 2004-2005, we focused our efforts on finding an active Pine Warbler nest or other evidence that these birds breed at NYBG (see criteria published in Andrle and Carroll 1988).

The NYBG is a 251 acre park surrounded by four-lane highways, local streets and housing developments. There are two White Pine conifer groves in the park where we did our study: an approximately 50,000 sq. foot grove, and a smaller 14,000 sq. foot grove where Cooper's Hawks nested in 2001-03. The understory in both groves is sparse, primarily consisting of lawn or short (< 6 inches) herbaceous plants.

We estimate that in 2002-03, we spent 2-3 days per week, and approximately 6 hours per visit making observations in the smaller conifer stand. This grove is located opposite the Fordham University entrance of NYBG. Conifers average 75 feet in height, and average ~ 41 feet distant from one another. In 2004-05 we extended our observations to include the larger White Pine grove at the southwest corner of NYBG along Fordham Road. We spent two days per week in June and July, and approximately three hours per visit from 06:30 am until 09:30 am, looking for Pine Warblers. Trees here average 50-75 feet in height and are more closely spaced, at an average of approx. 21 feet apart.

To determine the historical (1870-1990) warbler species that have nested in each of the five boroughs of NYC, we consulted the following sources:

1. **Bronx County:** Bicknell (1878); Eames (1893); Hix (1905); Griscom (1926); Kuerzi. (1926); Kieran (1959).
2. **Brooklyn (Kings Co.):** Wyman (1883); Vietor and Vietor (1908); Eaton (1910); Walsh (1926); Carleton (1958); Carleton (1970).
3. **Manhattan (New York Co.):** Anonymous (1869); Woodruff and Paine (1886); Chapman (1892); Foster (1910); Griscom (1925), Carleton (1947); Carleton (1958); Carleton (1970); Knowler (1984).
4. **Queens Co.:** Eaton (1910); Cruickshank (1942); Yeaton (1992).
5. **Staten Island (Richmond Co.):** Hollick (1885); Eaton (1910) Siebenheller (1981).

We also examined published information that covered the entire city, such as Griscom (1923), Bull (1964), Andrle and Carroll (1988), as well as information about local breeding birds in journals such as the *Kingbird*, *American Birds*, *Audubon* and *Bird-Lore*.

For the extant (modern) period (1991-2005), we consulted published material on local breeding birds, such as Kerlinger and Sanford (1998) and Levine (1998), and on-line sources of information about breeding birds (e.g., New York State Breeding Bird Atlas 2000). We also corresponded with individuals in the metropolitan area who surveyed areas in NYC in which warblers might have nested. We used criteria published in Andrle and Carroll (1988) to confirm breeding for a particular species during this time frame.

Using data compiled from these sources we classified the status of each warbler species we considered to be (or have been) a breeding bird in New York City during four time periods from 1870 to the present: Common (Recorded breeding regularly in four to five boroughs within that time period); Uncommon (Recorded breeding in two to three boroughs within that time period); Rare (Sporadic breeding of one or a few pairs in one borough). If a date (year) follows the status in Table 1, it indicates the time frame (or specific year) when the warbler was last observed nesting in New York City. If no status is indicated (via an empty data field) in Table 1, we could not find any information about the nesting status of the species during that time frame. This absence of evidence likely indicates that the species did not breed in any borough of New York City during that time frame. However, given how few observers published their observations (especially from 1870-1950), we will never completely determine the true historical status of nesting warblers throughout New York City.

RESULTS

In June-July 2001-02, A. Block (pers. comm.) observed male Pine Warblers at NYBG in the area of the smaller White Pine grove, but no conclusive evidence of breeding was detected. In June-July 2002-04, we observed adult male and female Pine Warblers foraging at NYBG, but could not confirm breeding. On 4 July 2005, an adult male Pine Warbler was observed feeding a newly fledged Brown-headed Cowbird (*Molothrus ater*) in the small grove of pines at NYBG. Also, on the same morning in the larger grove, an adult male Pine Warbler was observed feeding a recently fledged Pine Warbler. On 9 July 2005, we observed at least 5 Pine Warblers at NYBG. On 14 July 2005, an adult female was observed feeding two fledgling Brown-headed Cowbirds, while an adult male fed another fledgling cowbird in the same grove of pines. Overall, Pine Warblers spent much more time foraging in the larger conifer grove, consuming numbers of caterpillars.

According to Table 1, Pine Warblers are one of five warbler species that nested in NYC in 2005. Three of these (Yellow Warbler, Common Yellowthroat, and American Redstart) breed in at least three boroughs, and have bred continuously in NYC since the 19th Century. One other species, the Northern Parula (*Parula americana*) nested in Alley Pond Park in Queens County in 2000 (S. Walter, pers. comm.; E. Miller, pers. comm.), but has not bred there since then. Historically, 16 warbler species and one hybrid (Lawrence's Warbler) have nested in NYC since the late 19th Century.

Table 1. Status of nesting warblers (family Parulidae) in New York City 1870-2005.

	1870-1910	1911-1950	1951-1990	1990-2005
Blue-winged Warbler	Common	Uncommon		
Nashville Warbler	Rare			
Northern Parula				Rare (2000)
Yellow Warbler	Common	Common	Common	Common
Chestnut-sided Warbler	Uncommon	Rare	Rare (1950s)	
Pine Warbler				Rare
Prairie Warbler		Rare	Rare (1960)	
Black-and-white Warbler	Uncommon			
American Redstart	Common	Common	Uncommon	Uncommon
Worm-eating Warbler	Uncommon	Rare (1920s)		
Ovenbird	Common	Uncommon	Uncommon (1950s)	
Louisiana Waterthrush	Uncommon	Rare (1917)		
Kentucky Warbler	Uncommon			
Common Yellowthroat	Common	Common	Common	Common
Hooded Warbler	Uncommon	Rare (1920)		
Yellow-breasted Chat	Common	Uncommon	Rare	Rare

In terms of breeding bird diversity, when the historical and modern periods are combined, available data indicate that the Bronx has had the most species of nesting warblers (14), followed by Manhattan (12), Brooklyn and Staten Island (both with 8), and Queens (7). Most warbler species were extirpated as breeders in NYC between 1911 and 1960.

DISCUSSION

New York City encompasses diverse geologic and geographic areas resulting in a diversity of habitats in its five counties. High numbers of bird and plant species occur in an area that is relatively small compared to the rest of New York State. NYC has approximately 60% (1357 of 2250) of the native plant species ever recorded in the state (DeCandido et al. 2004). Since the late 19th Century, 16 of 33 warbler species confirmed breeding in New York State have nested for at least one year in NYC.

This study presents data to confirm the Pine Warbler as a new breeding bird species for NYC. Though Bicknell (cited in Griscom 1926) lists the Pine Warbler as a summer resident ("until 3 July 1890"), he provided no conclusive evidence to confirm it as a breeding species. We believe that Pine Warblers have been nesting at NYBG since at least 2001 because males and/or females have been seen in June-July in each of these years. We estimate that 2-3 pairs nest annually at NYBG. These Pine Warblers were found most often in the two areas of the park with mature, specimen White Pine trees, though we also observed these warblers foraging in nearby deciduous trees such as oaks and planted crabapple.

In both this study and in reports we received about the nesting Northern Parulas in Queens County in 2000, Brown-headed Cowbird fledglings were observed being fed by adult warblers. At NYBG we also observed many newly fledged Brown-headed Cowbirds being fed by Chipping Sparrows (*Spizella passerina*) and Song Sparrows (*Melospiza melodia*).

Our research demonstrates that warblers are unlikely to re-colonize or expand their ranges into heavily urbanized areas, such as NYC. Only three species (Northern Parula, Pine Warbler and Prairie Warbler) have increased as breeders in NYC since 1870, and at least two of these represent isolated events (Table 1). The third, Pine Warbler, might prove truly exceptional if regular breeding continues or expands within the city. Available data from NYC strongly suggest that, although it is possible to maintain and restore a variety of habitats here on a limited scale, it will be very difficult to attract extirpated habitat specialists to return and breed once again. We recommend that priority be placed on protecting and managing habitats that are currently being used by native breeding bird species, especially those, such as the Pine Warblers described here, that are not extreme habitat generalists.

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