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MORRISTOWN NHP • ROOSEVELT-VANDERBILT NHS • SAINT-GAUDENS NHS • SAUGUS IRON WORKS NHS • SARATOGA NHP • WEIR FARM NHS

Spring Bird Monitoring by Sight and Song

Annual volunteer landbird survey results for Minute Man NHP

Background

The Northeast Temperate Network (NETN) monitors a variety of natural resource indicators, called vital signs, for 12 parks in the northeast and the Appalachian National Scenic Trail. Breeding birds are one of these vital signs because they are a reliable indicator of ecological integrity and a high profile taxonomic group. 2014 was the 9th year of continual landbird monitoring in the forests of Minute Man NHP and many other network parks. NETN and the Vermont Center for Ecostudies accomplished this only with the invaluable help of volunteer birders who crawled out of bed at ungodly early hours, endured hordes of biting mosquitoes and black flies, and contributed their time, efforts, and expert birding skills.

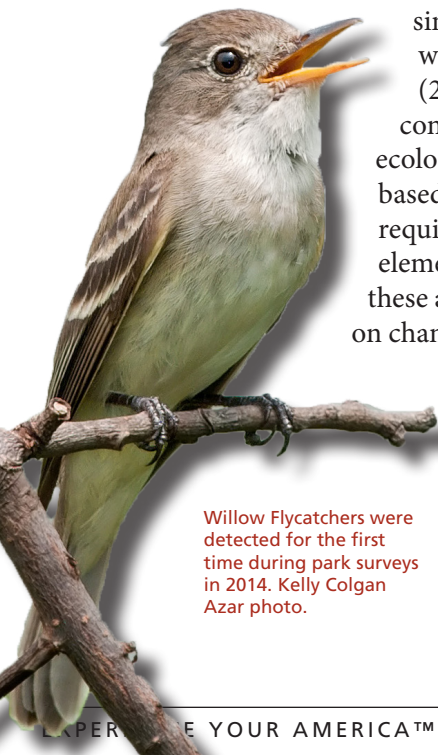
On a broad scale, all 13 NETN parks are located within the temperate deciduous forest biome. At a more refined level, the parks range across four Bird Conservation Regions (BCR) with this park lying in the Southern New England/Mid-Atlantic Coast BCR. BCRs, developed by the North American Bird Conservation Initiative, are ecologically defined areas that provide a consistent framework for bird conservation across North America. Each BCR has its own unique list of “priority” species ranked by conservation importance according to a standardized set of criteria.

Methods

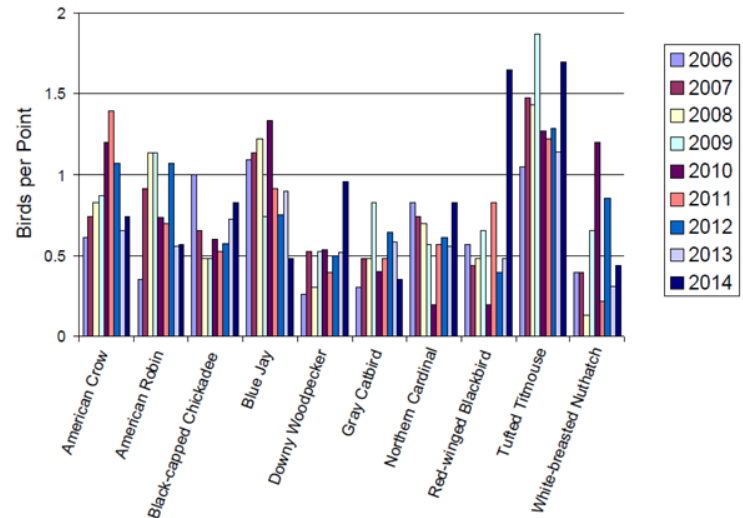
The recently published 2014 Landbird report includes an assessment of the ecological integrity of the forest breeding bird community at each park. For this report, instead of combining

data from all survey years into a single assessment for the park, they were split into two time periods (2006-2010 and 2011-2014) to compare changes over time. The ecological integrity assessments are based on groups of bird species that require similar habitat, food, or other elements for their survival. Over time, these assessments will help to shed light on changes in a broad landscape context and indicate the direction that breeding bird habitat may be going (from “highly disturbed” to “pristine”).

The forest avian ecological integrity assessment consists of 13 guilds in three ecological integrity categories, with each guild being broadly



Willow Flycatchers were detected for the first time during park surveys in 2014. Kelly Colgan Azar photo.



Most commonly detected species in the park's forests and grasslands.

categorized as “specialist” or “generalist.” A specialist is a bird species with very specific habitat needs, or one that has a low rate of population growth. If there are a relatively wide variety of specialist guilds in a park, this indicates a high-integrity habitat condition usually associated with large areas of mature forest. On the other hand, a dominance of generalist species indicates a low-integrity condition. The integrity categories are compositional (indicating species diversity), functional (highlighting ecological processes), and structural (related to the presence of important physical elements, such as tree snags and a shrub layer).

For forest breeding birds, a rank of *Good*, *Caution*, or *Significant Concern* is assigned based on species richness thresholds and ranks. “Good” represents acceptable or desired conditions; “Caution” suggests a problem may exist; “Significant concern” indicates undesired conditions that may be in need of management actions. Project organizers recognize that the assessment is based on ecological criteria, and that especially at historical parks, management goals may not always seek to attain “ecological integrity.” A management assessment could be developed by those parks and NETN scientists that would reflect progress towards avian and ecological management goals. For more information about the avian ecological integrity assessment, as well as project methodologies, sampling scheme, etc., see the Breeding Landbird Monitoring Protocol available on NETN’s website.

Three study sites were established at Minute Man NHP. Two of these sites consist of eight point count stations each, and one consists of seven point count stations. The three study sites were established in 2006 and surveyed annually, with the exception of Miriam’s Corner which was not surveyed in 2010. At the request of park staff, a new “grassland” survey site consisting of six point

Alder Flycatcher	Hermit Thrush
American Crow	House Finch
American Goldfinch	House Sparrow
American Redstart	House Wren
American Robin	Indigo Bunting
Baltimore Oriole	Killdeer
Barn Swallow	Mourning Dove
Belted Kingfisher	Northern Cardinal
Black-billed Cuckoo	Northern Flicker
Black-capped Chickadee	Northern Mockingbird
Blue Jay	Ovenbird
Blue-gray Gnatcatcher	Pileated Woodpecker
Blue-winged Warbler	Pine Warbler
Brown-headed Cowbird	Red-bellied Woodpecker
Carolina Wren	Red-eyed Vireo
Cedar Waxwing	Red-tailed Hawk
Chimney Swift	Red-winged Blackbird
Chipping Sparrow	Rose-breasted Grosbeak
Common Grackle	Scarlet Tanager
Common Yellowthroat	Sharp-shinned Hawk
Downy Woodpecker	Song Sparrow
Eastern Bluebird	Swamp Sparrow
Eastern Kingbird	Tufted Titmouse
Eastern Phoebe	Veery
Eastern Wood-Pewee	Warbling Vireo
European Starlings	White-breasted Nuthatch
Fish Crow	Wild Turkey
Gray Catbird	Willow Flycatcher
Great Blue Heron	Wood Thrush
Great Crested Flycatcher	Yellow Warbler
Hairy Woodpecker	Yellow-billed Cuckoo

Species observed during initial counts in the park's forests and grasslands since 2006.

counts was established in 2012. Although this site does not appear to support habitat for grassland obligate species (birds that require relatively treeless areas for most or all parts of their breeding cycles), it does provide open, park-like habitat dominated by grasses with a few scattered, mature trees. Volunteer birders visit each of these point count stations at least once per year between late May and June, and record the species of each bird as well as the time and distance away when they were first detected.

Results and Findings

During 2014 surveys, observers detected a total of 438 birds representing 43 species, including two species (Pileated Woodpecker and Willow Flycatcher) not previously encountered during park surveys. A total of 66 species, including a Green Heron detected during a repeat survey in 2011, have been recorded over the 9 years of monitoring.

Average relative abundance during the first site survey across all 9 years was 13.14 birds per point. In 2014, relative abundance increased to a record high 15.22 birds per point from 2013, while species richness (n=41) decreased slightly. Of the 10 most commonly detected species across all years, the relative abundances of just two (Blue Jay and Grey Catbird) decreased compared to 2013, while the relative abundances of half were above the 9-year average and half below. A total of six species of regional or USA/Canada conservation concern were detected during 2014, including four species that were detected in all years (Eastern Wood-Pewee, Wood Thrush, Scarlet Tanager, and Rose-breasted Grosbeak). A list of species, their relative abundances, and other summary statistics for the first survey of each point are provided in the full report.

The combined (all forest sites) forest avian ecological integrity assessment comparing the first 5 years of surveys (2006-2010) to the last 4 years (2011-2014), resulted in changes to just three categories, two of which declined. Although the proportion of Bark Probers detected improved from "Caution" to "Good," this result was overshadowed by the declines in the proportion of both High Canopy Foragers and Forest-ground Nesters, both of which dropped from "Caution" to "Significant Concern." Overall, the majority of integrity elements are dominated by "Caution" and "Significant Concern" ratings, which is not unexpected given the urbanized and highly fragmented landscape of the park and surrounding area. The assessment has also been calculated for each site (with all survey years combined), and these results are provided in the full report.

The grassland avian ecological integrity assessment showed five of the six guilds rating "Significant Concern" and one "Caution." However, this assessment is only based on two years of data, and therefore is unreliable. The ratings may improve as more data are collected, although the small extent and fragmented nature of the grassland habitat in the park is not expected to support grassland obligate species, which is what this integrity assessment was designed to detect.

More Information

To get a "bird's eye" view of all the park's monitoring sites, visit the Google Earth Park Maps web page (accessible through the leftmost suite of menu choices on NETN's homepage), which also contains bird monitoring routes, Avian Ecological Integrity Assessments and species detection frequencies for all participating NETN park units.

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Full Report online at:
<https://irma.nps.gov/App/Reference/Profile/2220973>

NETN Breeding Landbird Webpage
<http://go.nps.gov/netn-birds>



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