



ACADIA NP • APPALACHIAN NST • BOSTON HARBOR ISLANDS NRA • MARSH-BILLINGS-ROCKEFELLER NHP • MINUTE MAN NHP
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. 2013 was the 8th 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. BCR's, 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 2013 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 (2006-2008 and 2010-2013) 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

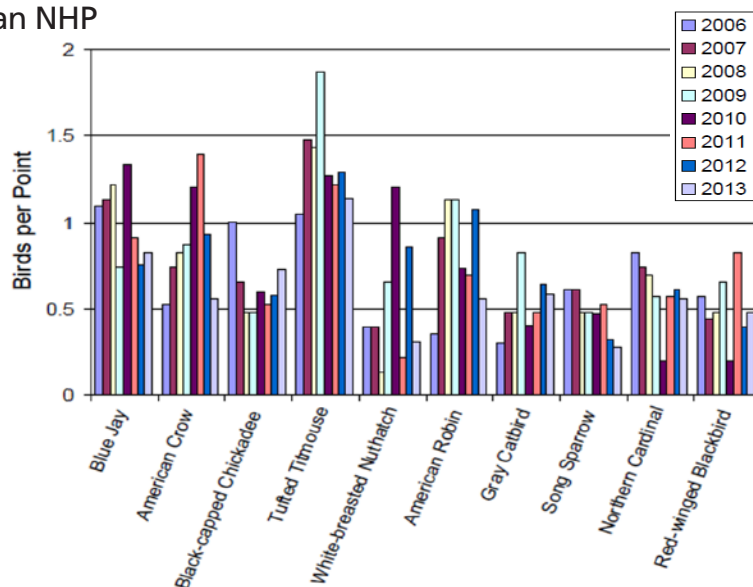
bird habitat may be going (from

"highly disturbed" to "pristine").

The forest avian ecological integrity

assessment consists of 13 guilds

Blue-winged Warbler
Peter Wilton photo.



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

in three ecological integrity categories, with each guild being broadly 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

Alder Flycatcher	Hairy Woodpecker
American Crow	Hermit Thrush
American Goldfinch	House Finch
American Redstart	House Sparrow
American Robin	House Wren
Baltimore Oriole	Indigo Bunting
Barn Swallow	Killdeer
Belted Kingfisher	Mourning Dove
Black-billed Cuckoo	Northern Cardinal
Black-capped Chickadee	Northern Flicker
Blue Jay	Northern Mockingbird
Blue-gray Gnatcatcher	Ovenbird
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	Wood Thrush
Great Blue Heron	Yellow Warbler
Great Crested Flycatcher	Yellow-billed Cuckoo

All 64 species that have been detected in the park's forests and grasslands since 2006.

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 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 2013 surveys, observers detected a total of 431 birds representing 47 species, including a Sharp-shinned Hawk, a species not previously encountered during park surveys, and three species only detected during repeat surveys (Red-tailed Hawk, Hairy

Woodpecker, and House Wren). A total of 64 species have been recorded over the 8 years of monitoring.

Average relative abundance during the first site survey across all 8 years was 12.7 birds per point. In 2013, relative abundance (10.8 birds per point) decreased from 2012, and species richness (44) decreased by one. Of the 10 most commonly detected species across all years, the relative abundances of three (Blue Jay, Black-capped Chickadee, and Red-winged Blackbird) increased compared to 2012, while the relative abundances of two (Black-capped Chickadee and Gray Catbird) were above the 8-year average. A total of eight species of regional or USA/Canada conservation concern were detected during 2013, 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 4 years of park surveys (2006-2009) to the most recent 4 years (2010-2013), resulted in changes to 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.

For grassland avian ecological integrity, five of the six guilds were rated "Significant Concern" and one was rated "Caution." However, this assessment is only based on 2 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 dependent 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/2208494>

NETN Website
<http://science.nature.nps.gov/im/units/NETN/index.cfm>



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