



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

The Temperate Times

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Overview of 8 Years of Bird and Forest Monitoring Data Show Changes for Better and Worse

The close of the 2013 field season marked a bit of a milestone for two of NETN's natural resource monitoring programs. Both the forest health and the breeding landbird programs now have 8 consecutive years of monitoring data in many of the network's parks. Much of the frustration experienced during the beginning stages of long-term monitoring programs for both the parks and public alike stems from the fact that no real conclusions or deep analysis of park health can be drawn from the limited amount of data generated by the fledgling programs. And while 8 years of monitoring data is still a relatively small sample size, it does at the very least offer a nice even number to split in half (compare first 4 years with latest 4 years) to get an overall idea of possible trends in park health.

An Ecological Integrity Scorecard was created for forest health by NETN scientists to help interpret forest conditions. The scorecard crunches a wide swath of data and compares current conditions to their "natural" or historical range of variation. NETN recognizes that "ecological integrity" may not necessarily be the primary goal of all network parks - particularly at parks founded to preserve and interpret historic battlefields, works

Eight years, cont. page 2.

Coastal Bird Monitoring Update for the Boston Harbor Islands

A strong cohort of talented and dedicated volunteers continued to contribute invaluable birding skills to the coastal bird monitoring program this spring and summer in and amongst the Boston Harbor Islands. The park area includes 34 islands and peninsulas situated within the greater Boston shoreline, and is listed as a Massachusetts Important Bird Area that provides habitat for a significant number of colonial-nesting waterbirds, including Least and Common Terns, which are both listed as species of special concern in the state.

Project leader Carol Lynn Trocki provided frequent updates about the trials and tribulations of bird monitoring in the Islands that were posted on NETN's Facebook page throughout the season. Her last post summed up just how valuable the volunteers are:

"Thanks to all of the marvelous volunteers who participated this season and in seasons past. I sincerely admire your individual and collective skills, your efforts, and your willingness to contribute to the generation of knowledge about waterbirds using the Boston Harbor Islands. Even more than that, I appreciate your good humor and camaraderie. I feel very fortunate to have the opportunity to work with each of you."

Coastal birds, cont. page 4.



SCA intern Sophia Basswerner and star volunteer Dave Mallen help to monitor coastal birds at Boston Harbor Islands NRA. Carol Lynn Trocki photo.

Park	Structural Stage Distribution	CWD Ratio	Snag Abundance	Invasive Exotic Plants	Tree Condition/ Forest Pests	Tree Regeneration	Deer Browse Indicator Species	Tree Growth and Mortality	Soil Ca:Al	Soil C:N
ACAD	Caution	Caution	Caution	Good			Good	Good	Caution	Good
MABI	Caution	Caution	Sign. Conc.	Caution			Good	Caution	Good	Sign. Conc.
MIMA	Good	Sign. Conc.	Caution	Sign. Conc.			Good	Good	Caution	Sign. Conc.
MORR	Good	Caution	Sign. Conc.	Sign. Conc.			Caution	Caution	Good	Sign. Conc.
ROVA ELRO/HOFR	Good	Good	Caution	Caution			Caution	Caution	Good	Sign. Conc.
VAMA	Good	Good	Caution	Sign. Conc.			Caution	Caution	Good	Caution
SAGA	Caution	Caution	Caution	Caution			Good	Caution	Sign. Conc.	Sign. Conc.
SARA	Caution	Caution	Caution	Caution			Caution	Caution	Good	Sign. Conc.
WEFA	Good	Caution	Caution	Sign. Conc.			Caution	Caution	Caution	Sign. Conc.

The Ecological Integrity Scorecard helps parks to get a quick snapshot of overall forest conditions and see how they compare with other regional parks.

Eight years, from page 1.

of art, or cultural events. Even so, being able to compare the condition of park resources to ecological integrity benchmarks is valuable because it provides a deeper understanding of park conditions, as well as a consistent baseline to assess management goals. For forest breeding birds, ecological integrity is based on a collection of bird behaviors and traits broken down into “guilds” (groups of species that require similar habitat, food, or other elements for survival - see page 6 for details). The presence of a variety of specialist guilds indicates high-integrity habitat conditions, while having mostly generalist guilds indicates low-integrity conditions.

For forest health and breeding birds, a rank of Good, Caution, or Significant Concern is assigned to several health indicators. “Good” means acceptable or desired conditions are present, “Caution” indicates a problem may exist, and “Significant concern” warns of undesired conditions that may be in need of management action.

To get all the nitty-gritty details of the analysis, download the latest forest health and breeding landbird reports from our website. Resource Briefs are also available for downloading on each park’s own NETN web page. Keep reading below for brief synopses of report findings including the 4 year comparisons when possible, beginning with forest health.

Structural Stage Distribution

A variety of forest structural stages is important for maintaining a full complement of native species that depend upon specific forest types (old growth, clearings, pole-sized trees, etc.). Before European settlers wrought massive changes to the Northeast, the northern hardwood and spruce-fir forests of the region were mostly in late-successional and old-growth stages of forest succession. Several cycles of logging and land-clearing created major disruptions in the natural processes and usual forms of disturbances, resulting in forests of today that are much younger and structurally and compositionally different from what Native Americans and the earliest settlers would have recognized as typical regional woodlands.

Park management actions continue to influence forest make-up and structure today. In the future, disturbances resulting from global climate change and outbreaks of exotic pests and pathogens will play increasingly greater roles in forest health and make-up.

Comparisons between monitoring cycles (2006-2009 and 2010-2013) revealed some interesting findings. In every network park, one or more plots moved into a later successional category, and this was most distinct for Marsh-Billings-Rockefeller NHP (MABI) and Weir Farm NHS (WEFA). While this is not a reason to draw sweeping conclusions, the amount of change in only 4 years of monitoring was surprising. Careful review of the data revealed that in most cases, the change from Pole to Mature or Mature to Late-succession was the result of only one or two trees in a plot reaching the next largest size category in the second cycle. There were also very few examples of plots moving into earlier successional categories so these changes are likely real.

Coarse Woody Debris and Snag Abundance

Dead wood, in the form of fallen coarse woody debris (CWD) and standing dead trees (snags), is an important structural feature of forests that provides habitat for many kinds of life forms, including mammals, birds, fungi, amphibians, and insects. In addition, live trees toppled by strong wind events contribute to forest soil turnover when the roots pull up copious amounts of dirt with them and create important microhabitats for tree seedlings, lichens, mosses, and even bird nesting sites. Land management practices can either reduce the quantity or quality of these features, or maintain and enhance snags and CWD.

Minute Man NHP (MIMA) continues to have the lowest CWD volume and ratio of all NETN parks, and landed in the Significant Concern rating category. On the other end of the spectrum, the parks of the Roosevelt-Vanderbilt NHS (ROVA) had the highest CWD volume and ratio and rated Good. All other parks in the Network rated Caution, and all except



Morristown NHP bore the brunt of damage for all Network parks from Hurricane Sandy. It may look messy for a few years, but wind thrown trees like this one will go a long way towards improving important CWD habitat. Kate Miller photo.

Acadia had the same rating in both cycles. The CWD rating in Acadia has alternated between Good and Caution over the last few years, mostly because the CWD ratio is so close to the separating line that distinguishes Good from Caution. Considering that CWD volume does not differ significantly between cycles, Acadia's change from Good to Caution is more likely due to sample variability than any significant change on the ground.

Hurricane Sandy changed the physical appearance of several parks. It also altered the CWD outlook for at least one of the Network's parks, as the storm will likely cause CWD volume to increase in Morristown NHP (MORR). At the time monitoring took place in 2013, many of the downed trees in the park were, to borrow a phrase from the Princess Bride, only "mostly dead", which is to say "slightly alive". Therefore, they were counted as live trees and not CWD. Most of those trees will likely be dead in the next monitoring cycle, and as long as management actions do not reduce the abundance or size of CWD, improvements to CWD volume will likely be significant.

All parks were rated Caution or Significant Concern for snag abundance in cycle 2, mostly because of their lack of larger-sized snags. As the region's forests mature, snag quality and abundance are expected to improve in most parks.

In MABI, snag abundance and CWD volume may continue to be lower than levels indicative of high ecological integrity, as this is a common issue in forests managed for timber production. Adapting forest management approaches to encourage more snag and CWD retention may be necessary to improve these important structural components.

Eight years, cont. page 6.

The Only Things They Have to Fear Are: Invasive Species and Climate Change. ROVA gets a Veg Map.

Another NETN park has a completed vegetation map and report. As part of the National Park Service's National Vegetation Inventory Program (NVIP) the parks of the Roosevelt-Vanderbilt National Historic Sites (ROVA) have had their vegetation classified and mapped. 147 representative classification plots were sampled throughout the 2,029 acre project area and 360 vascular plant species were identified. Five New York Natural Heritage Program (NYNHP) natural communities established within ROVA represent significant occurrences from a statewide perspective. These include hemlock-northern hardwood forest spanning 183 acres, diverse oak-tulip tree forest (some of which may be old-growth), two vernal pool complexes in good ecological condition, red-cedar rocky summit, and freshwater tidal marsh with excellent species diversity.

The final, beefy, 370-page report is chock-full of detailed information and includes vegetation association descriptions, the field key to vegetation associations, description of the map classes and photo-signatures, and project methods and results. To view the report in full, and all other project deliverables (including maps, aerial photography, and field data) go to NETN's Roosevelt-Vanderbilt Park page and scroll down to the Park Baseline Inventories section. Once there, look for the Vegetation Inventory section and click on the Vegetation Map Products hyperlink. This article will highlight only a few of the full report's findings.

This project provides the most detailed study to date of the distribution and diversity of park vegetation, and showcases the exceptional floristic diversity of the Hudson River corridor, adjacent uplands, and managed lands. It is hoped that it helps the three park units to better understand their vegetation resources, allow them to make more informed management decisions, and serve as a baseline for future research. The study also provides a valuable resource for park interpretive staff to educate visitors about plant communities and the diverse ecological processes affecting their development and change.

ROVA veg, cont. page 5.



The relatively rare Red-cedar Rocky Summit vegetation community found at the Home of Franklin D. Roosevelt NHS.

Time Does Fly - Monitoring in Time Lapse

NETN monitoring crews spend many long hours in the field gathering data for all the various monitoring programs that the Network has going on. If only there were a way for folks to experience what it takes to get the information needed for the rocky intertidal, forest health, water quality and other NETN programs without having to spend the 6 to 8 hours with the crews in the field.

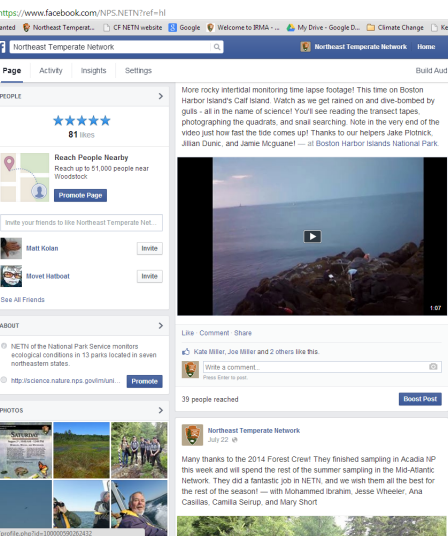


Time lapse cameras crunch 6 hours of field work into one minute film clips.

Enter: time lapse photography. By setting up a time lapse camera in strategic locations at monitoring sites, NETN is able to share with the world the ins-and-outs of a day in the field, all in

30-second to 1-minute long time-lapse films. Watch the rocky intertidal crew chase and in turn be chased by the lowering and rising tide in the Boston Harbor Islands, the forest crew gather rare community data in Acadia National Park while enduring torrential downpours, and other monitoring efforts.

In order to view any and all of these clips, all one must do is to go to NETN's Facebook site (www.facebook.com/nps.netn) and click on the play-button for each clip. While there, you may as well "like" NETN in order to keep abreast of all of the monitoring programs and events throughout the year. *TT*



Screenshot of NETN's Facebook page with time lapse videos. 'Like' us to keep up with all the network-wide goings-on.

Coastal birds, from page 1.

To read more of this post, other coastal bird monitoring updates, and to keep up with NETN news be sure to "like" NETN on Facebook (see link on back page). Below find a brief summary of the results from the recently published report for Boston Harbor Islands 2013 field season.

Terns

Mass Audubon staff observed a Least Tern colony containing 72 pairs on Lovells Island in mid-June, and also reported a large congregation of gulls had formed off that same island a month later, presumably pursuing bait fish. The tern colony was abandoned shortly thereafter with evidence of gull predation on eggs and numerous gull tracks seen throughout the colony site. Twenty young are believed to have fledged from the colony prior to this incident. During a visit to the Spinnaker Island platform in early June, 147 adult Common Terns were observed attending the colony. No terns were detected nesting on Snake or Rainsford Islands in 2013.

Spotted Sandpipers

Spotted Sandpipers were not surveyed in 2013, although one territorial pair was detected on Snake Island in early June. Individual Spotted Sandpipers were also observed on Calf, Little Calf, Little Brewster, and Middle Brewster Islands during July boat surveys.

Common Eiders

The high count for eider ducklings was 266 observed on June 5th, with 231 observed several weeks later. In previous years, major declines were evident during the month of June, suggesting that juvenile survival was unusually favorable this year. Similar numbers of female eider were detected in the area during both surveys in 2013, which lends additional credibility to this theory. In general, Common Eider experience high annual adult survival rates (over 80% in several studies), but also a highly variable degree of reproductive success in any given year and years of "near disaster" are not uncommon. In a stable population, low survival of young is compensated for by their comparatively long average life span for birds (5 to 6 years). The number of ducklings observed in 2013 was within the range generally observed in the park in recent years.

Cormorants and Gulls

Ground-based surveys of nesting gulls were conducted on Great Brewster,

Gallops, and Hangman Islands. In addition, ground-based surveys of nesting gulls and cormorants were conducted in conjunction with wading bird surveys on Sheep and Sarah Islands.



A Common Tern takes a moment to rest on a buoy off of Hull Island. Carol Trock photo.

A boat-based survey of gulls and cormorants was conducted in the Outer Harbor Islands on May 28th. The mean total numbers of nests observed were 983 Double-crested Cormorant nests, 107 Great Black-backed Gull nests, and 379 Herring Gull nests. Boat-based surveys of incubating cormorants and gulls are safe and efficient to conduct, but produce highly variable results due to differences in observers and survey conditions. Because of several competing survey priorities in 2013, there was only a single survey that took place rather late in the season when many eggs had hatched. Nests are easiest to identify during the peak of incubation when a single adult is a near constant presence at each nest. Once eggs hatch it becomes much more difficult to estimate nests, which may help explain the wide range of variability in the numbers observed.

Ground-based nest surveys for gulls and cormorants are more precise than boat-based methods, but require considerably more effort, are not feasible using volunteers at cliff-based colony sites, and cause much greater disturbance to nesting individuals. Ground-based surveys were conducted on islands where colony sites were accessible and where colonies have historically been sampled this way. When compared to prior state-wide surveys conducted in 1994-5 and 2006, it appears that Herring Gulls have declined significantly park-wide, while Great Black-

backed Gulls are fairly stable. Double-crested Cormorants have increased significantly on Sheep and Sarah since the counts of the mid-90s. A more in depth trend analysis of existing data is planned for the report on the 2014 field season, which should shed more light on emerging trends for these species.

Wading Birds

Wading bird colonies on Sarah and Sheep Islands were comprehensively surveyed in 2013. Compared to numbers observed in 2009, it appears that Black-crowned Night Herons and Snowy Egrets have declined significantly on Sarah, but increased somewhat on Sheep. Disturbance is always a concern for this group of species. Surveys on Sarah Island, the largest colony in the park, were carried out by two teams of experienced observers under ideal weather conditions at the height of incubation in mid-May. No evidence of extreme stress, such as overheated young, branching older young, or harassment by predators was observed.

American Oystercatchers and Willets

A combination of boat-based and ground-based surveys detected a total of 20 American Oystercatcher pairs on 11 islands, though only one pair is known to have successfully fledged chicks. Three pairs of territorial Willets were detected on Snake Island in early June, but no nests were located and only a limited survey effort was conducted due to disturbance concerns.^{TT}

ROVA veg, from page 3.

The vegetation patterns within ROVA are influenced by many physical and biological factors that interact in time and space. Climate (precipitation and temperature) influences vegetation in the entire inventory area and region. Topography, geology, soils, and precipitation events interact to influence the chemical composition and amount of surface and groundwater that feeds seeps, wetlands, and streams in the park. The park's impressive diversity is mainly a result of the geologic history of the region (especially the effects of the most recent glaciation), its location along the Hudson River within a temperate climate, a diverse topography (including moderately steep slopes, rolling hills, and basin wetlands), and its setting within a suburban landscape with associated historical and ongoing land use practices.

ROVA supports several vegetation associations with biodiversity significance at the state and sometimes even the global level. While there are no large examples of globally rare associations, there are small patches of several U.S. National Vegetation Classification (USNVC) associations that are considered rare, including: Red-cedar Rocky Summit, Central Appalachian Hemlock - Chestnut Oak Forest, Red Maple Blackgum Basin Swamp, and Eastern Woodland Vernal Pool.

Although the oak-tulip tree forest community is found throughout all park units at ROVA, a small, moderately diverse, 52-acre stand that sits on a west-facing slope along the east side of the Hudson River at Vanderbilt Mansion NHS is of particular note, and was determined to be a statewide significant occurrence for this community type. The northern portion of this forest stand may even be old-growth (it contains approximately two dozen very mature trees of impressive girth with diameters around 1 meter). The forest stand is almost completely surrounded by either cultural communities or very disturbed natural communities. The integrity of this stand could be enhanced by restoration of the disturbed natural communities which currently serve as a buffer for the mature forest stand.

ROVA veg, cont. page 9.

One Goodbye and Two Hello's for NETN Interns

NETN said goodbye to Water Quality Monitoring intern Hali Roy in early August. She was a great asset for the Network and really stepped up when she was needed most at the end of last season when there was a scramble to get all the sites done in a competent and timely fashion. She will be missed for her good humor, grab-the-bull-by-the-horns work ethic, and Flow Tracker prowess. NETN wishes her the best of luck in whatever career she decides to pursue.



Liza at work in Blow-me-down Pond at Saint-Gaudens NHS.

Luckily, before Hali sailed on she was able to help train an equally competent SCA intern in the personage of Liza McElroy. Liza has a degree in Environmental Science, and also possesses a copious amount of artistic ability. She has been able to funnel some of that creative energy into work as a science illustrator, an occupation that kept her involved in the world of science as well as allowing

for the honing of her artistic talent. She comes to NETN by way of Seward, Alaska where she was as an intern for the Alaska SeaLife Center's exhibits department, and painted a stunning 36-foot long mural on the exterior wall of the building in 2012. After several years of illustration, she decided to get back into "practical" science and joined NETN's water quality monitoring team. She hopes her SCA internship will sharpen her skills with data collection and management, surveying, and problem solving, as well as provide her with a better understanding of the ecological dynamics of streams and ponds in the Northeast.

NETN was also able to secure the services of another skilled intern for the forest monitoring crew. He hails from almost the opposite side of the globe from Alaska. Mohammed Ibrahim was born in the Swiss capital of Bern and grew up speaking German (though his skills at speaking English are very impressive). After achieving a BS in Environmental Science, he started a masters program specializing in forest and landscape monitoring.



Mohammed also helped out in other NETN programs like rocky intertidal and freshwater marsh monitoring.

As part of his Master's Degree, he was required to complete several months of practical work experience. Because of his fondness for travel and exploring other countries, he jumped at the chance to work for the U.S. National Park Service when he saw it advertised on his university's website. As part of a dual Network forest health monitoring internship, Mohammed was with NETN from May through the beginning of August, and is now working in Virginia with the Mid-Atlantic Network and will be through early October. He is really enjoying his time in the northeastern U.S. and says he is learning a lot during his internship. NETN is very lucky to have both Mohammed and Liza join our team for this summer and fall. Their skills, talents, and personalities have already helped to make this another successful year of monitoring.^{TT}

Snag abundance ratings for MIMA, Saratoga NHP (SARA), and WEFA improved from Significant Concern in cycle 1 to Caution in cycle 2. While not statistically significant, these improved ratings were all the result of a slight increase in larger diameter snags.

Tree Regeneration

The tree seedlings and saplings on the forest floor of today will be the forest canopy structure and composition of tomorrow. Tree regeneration can be affected by a variety of factors, including invasive species, acid deposition, and climate change. Another relatively recent and highly destructive impact on seedling establishment, growth, and composition is selective browsing by a historically high population of white-tailed deer in parts of the Midwest and Northeast U.S. Significant impacts on forest tree regeneration are associated with deer densities more than 8.5 deer per km², well above pre-settlement estimates of 3 to 4 per km² in the northeastern U.S.

The stocking index used by NETN quantifies whether current seedling numbers are sufficient to restock a mid-Atlantic hardwood forest stand. This index awards and sums points for native tree seedlings by size class found within designated sites in monitoring plots.

A stocking index of less than 25 is considered too low for adequate regeneration and is the assessment point that distinguishes Caution from Significant Concern for MORR, ROVA, and WEFA. Data in MORR continue to indicate severe deer impacts and inadequate regeneration. In cycle 2, only one plot was rated Good for regeneration in the park. Not surprisingly, that plot is located in a deer enclosure that prevents the animals from getting in. MORR also had the lowest seedling densities and the highest average deer browse index in all of NETN. Seedling densities were especially low in Successional stands in the park.

In WEFA, all plots were either rated Caution or Significant Concern, seedling densities were low, and average deer browse index high, suggesting that impacts from deer overabundance are likely also occurring there.

In MABI, MIMA, SAGA, and SARA, a high percentage of plots were rated Caution due to negative seedling ratios. The average deer browse index was fairly low in MABI, MIMA, and SAGA, and other factors such as stand development and/or invasive species (particularly in MIMA) may be behind these numbers. The average seedling ratio in MIMA changed from a negative ratio in cycle 1 to a positive ratio in cycle 2. Some of the change

may be because the forest crew only sampled one microplot per plot in 2006 and two in the second go-round since one was found to not be enough to characterize regeneration in a plot. As with all long-term studies, it will help to have more regeneration data to better understand what is really going on.

While overall seedling densities in SARA were the highest in the network, short seedlings made up the bulk of the trees, and deer browse pressure was moderate indicating that some negative impacts to tree regeneration may be occurring in the park. The average stocking

index for SARA's Forest category showed a considerable increase in cycle 2, but it only includes 7 plots and the large increase was primarily due to just one of these plots. Shortly before this particular plot was established in 2008, a prescribed fire in a nearby field partially spread into the understory. The regeneration data and photopoints taken in the plot in 2008 and again in 2012 indicate vigorous growth in understory woody species after the fire.

Forests across all subunits and successional stages in Acadia showed sufficient levels of regeneration, but patterns of

 InFocus		What is a Bird Guild?
		NETN assesses the health of a given park's bird community using a guild-
based avian integrity scorecard consisting of 13 guilds in eight guild categories. Simple, right? While at first sounding confusing, bird guilds are a relatively simple concept. A guild is a group of species in a bird community that utilize the same set of resources in a similar manner. For example, birds that hunt and peck for insects in the crevices of tree bark (Bark Probers) make-up a guild, birds that build their nest amongst the leaf-litter of the forest floor (Ground Nesters) another, and so on. Members of guilds often differ in their precise food and/or habitat requirements, thus reducing the potential for competition among them when resources become limited. In any given area, the membership species of a guild can change through the year as migrants come and go.		tolerances or one that has a slow rate of population increase. Specialists indicate a high-integrity condition. Conversely, generalist guilds are more indicative of a low-integrity condition. For example, the Nest Placement guilds relate directly to the availability of appropriate nesting spots and materials (a structural element). Therefore, breeding landbirds that only nest in the forest canopy (specialists) indicate a high integrity condition because they are largely restricted to mature forests native to the region, while shrub nesters (generalists) will likely find good nesting substrate in regenerating forests, agricultural hedgerows, and suburban areas. Functional elements of the ecosystem reflect food-chain organization. Insectivores are limited to areas of high insect availability (specialists), while omnivores can exploit a range of food resources found throughout varied habitats (generalists). Ecosystem composition reflects organization influenced by factors other than structure and function. For example, species in the nest predator/brood parasite guild can affect the abundance and distribution of other species. NETN puts nest predators and brood parasites into the generalist category since they are relatively indiscriminate in their exploitation of other species as sources of food or surrogate parents, while many single-brooded species (specialists) are restricted to large habitat patches that are relatively free from nest predators and brood parasites.
Guilds were selected to reflect different aspects of each species' life history traits and therefore a single species may belong to several guilds simultaneously, including both "specialist" and "generalist" guilds. For NETN, individual guilds have been broadly categorized as either specialist or generalist based on each guild's relationship to specific elements of ecosystem structure, function, and composition . A specialist can be a species with a narrow range of habitat		

regeneration reflect those of earlier stages of forest succession. Therefore, all units in the park were rated Good for the stocking index, and Caution for the sapling:small seedling ratio. As the park's forests mature and move towards more uneven-aged stands, NETN expects the sapling:seedling density ratios across subunits to approach the ratio observed in old-growth and late-successional stands.

Breeding Bird Monitoring Results

Acadia National Park

The combined ecological integrity assessment (EIA) comparing the first 3 years (2007-2009) to the latest 4 years showed that nine guild categories had no changes, while four improved. Three guilds ranked as "Caution" in the early years (High Canopy Forager, Omnivore, and Canopy Nester) improved to "Good," while the Shrub Nester guild improved from "Significant Concern" to "Caution," suggesting that the park's forest bird community appears to be doing well.

Marsh-Billings-Rockefeller National Historical Park

The combined EIA comparing the first 4 years of park surveys to the latest 4 showed that two categories improved and one declined. The proportion of Residents and Shrub Nesters improved from "Caution" to "Good," while the proportion of Canopy Nesters detected dropped from "Good" to "Caution." Ten of the 13 guilds showed no change at all, with half ranked "Good" and half "Caution", making it appear that the forest bird community is doing well in this largely forested, rural region of NETN.

Minute Man National Historical Park

The forest EIA comparing the first 4 years of surveys to the latest 4 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 wholly unexpected given the urbanized and highly fragmented landscape of the park and surrounding area.

The grassland EIA has only 2 years worth of data so far. So even though five guilds were rated "Significant Concern" and one "Caution", with such a limited amount of data this assessment is considered 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 dependant species, which is what this integrity assessment was designed to detect.

Morristown National Historical Park

Comparison of the 4-year blocks showed that the proportion of Bark Probers declined in later years, dropping the guild from "Good" to "Caution," while the proportion of Canopy Nesters increased by five percentage points, raising its rank from "Significant Concern" to "Caution." In general, guilds within the Structural Integrity element consisted of "Caution" and "Significant Concern" ranks, possibly reflecting the low structural diversity throughout much of the park and the legacy



A single bird species can be a member of several bird guilds. For example, the Hermit Thrush belongs to Forest Ground Nester, Interior Forest Obligate, Temperate Migrant, and the Ground Gleaner guilds. Ed Sharron photo.

of a high deer population which has resulted in very limited forest regeneration. Guilds within the Compositional and Functional categories however, were dominated by "Caution" or "Good" ranks.

Roosevelt-Vanderbilt National Historic Sites:

Eleanor Roosevelt National Historic Site

The 4 year EIA comparison showed that three categories changed over time. Both the Single Brooded and Shrub Nester response guilds dropped from "Caution" to "Significant Concern," although both were the result of very small changes in the proportion of birds detected in each guild. The biggest change noted was a near doubling in the proportion of Low Canopy Foragers detected (from 9% to 16%), which bumped that category up from "Significant Concern" to "Caution." Among those guilds that remained unchanged, three were ranked as "Good" and one (Canopy Nester) was ranked as "Significant Concern".

A bird community that has a low number of canopy nesting species, which includes birds that require a well-developed canopy layer, may be the result of the park's location within a fragmented landscape. The decline noted among shrub nesters may indicate poor structural diversity within the forest, possibly due to a deer over-browse problem. However, the significant increase among low canopy foragers, which includes birds that specialize in feeding within the forest sub-canopy, may suggest that conditions in the understory are beginning to improve.

Home of Franklin D. Roosevelt National Historic Site

Comparing the first 3 years of surveys to the latest 4 revealed that there were changes to six categories. The biggest percent changes were noted in three categories that declined, the ratings of which all went from "Caution" to "Significant Concern". These included a 10% drop in the proportion of Single Brooded species detected, an 8% decline in the proportion of Low Canopy Foragers, and a 6% drop in Canopy Nesters.

Among the three categories that improved, both Nest Predators/Brood Parasites and Ground Gleaners went from "Caution" to "Good", while the proportion of Resident species detected went from "Significant Concern" to "Caution".

Even though the EIA is dominated by “Caution” and “Significant Concern” ratings, that may have more to do with landscape-scale effects of forest fragmentation and habitat loss, than it does with park-specific habitat quality.

Vanderbilt Mansion National Historic Site

The EIA comparing the first 4 years of surveys to the latest 4 showed changes to three categories. Both High Canopy Foragers and Shrub Nesters improved from “Significant Concern” to “Caution,” although the proportional changes were quite small. The proportion of birds detected in the Low Canopy Foragers guild decreased markedly (from 24% to 8%), dropping this guild’s rank from “Good” to “Significant Concern.” This could be indicative of a mature, even-aged forest with a poorly developed low canopy layer. Similarly, as in past years, guilds within the structural category earned no “Good” rankings, which may reflect the park’s location within a fragmented and urbanized landscape like the other Roosevelt-Vanderbilt parks.

Saint-Gaudens National Historic Site

Four year comparisons for this park highlighted changes to two categories within the Functional integrity element. The proportion of Ground Gleaners dropped by less than 1% to just below the threshold, bumping this guild from “Good” to “Caution,” while Low Canopy Foragers increased from “Caution” to “Good.” Overall, composition data were generally “Good,” while function and structural guilds were largely “Caution” or “Good.”

Saratoga National Historical Park

The EIA 4-year comparison for forest sites showed changes to two categories with the proportion of Resident species increasing, dropping that guild from “Good” to “Caution,” while the proportion of High Canopy Foragers increased slightly, nudging that category from “Significant Concern” to “Caution.” In general, structural and functional elements were dominated by “Caution” or “Significant Concern” ratings, which continue to suggest that the park’s forest bird community may be affected by the generally fragmented landscape consisting of small forest blocks broken up by fields and early successional habitats. Other stresses may be affecting vegetation structure, including deer over-browsing and invasive species, such as European Buckthorn and Japanese Barberry.

The grasslands EIA showed changes to three categories, all of which declined. Two guilds that evaluate the proportion of grassland-dependent species detected both declined from “Good” to “Caution,” the most significant of which was a 25% decline in Partner’s-in-Flight (PIF) Grassland Obligate species. The other guild that showed a decline was the Edge Generalists, which dropped from “Caution” to “Significant Concern” due to a slight increase in the proportion of edge species detected. Grassland communities are considered a high priority in the region, and study organizers recommend that the park continues its efforts to manage this habitat to support grassland species. However, because 54% of shrub-dependent birds are of high conservation concern in the region, there is also value in providing habitat for these rare and/or declining species.



Since parks like Saratoga NHP (pictured) and Minute Man NHP are a mix of both forests and grasslands, an ecological integrity assessment for grasslands was also created for these parks. Diane Cordell photo.

Saugus Iron Works National Historic Site

Splitting the 6 years of available monitoring data down the middle for this park revealed changes to two categories. The proportion of Bark Probers detected increased, improving that guild’s rank from “Significant Concern” to “Caution.” However, the proportion of Low Canopy Foragers declined markedly, dropping that category from “Good” to “Caution” and eliminating the park’s only “Good” ranking from the assessment. The scarcity of “Good” rankings is not surprising considering the urbanized location of this small park, and the fact that the tool was developed to assess the breeding bird community of interior forests.

Weir Farm National Historic Site

Having only 5 years worth of data to draw from, WEFA did not have enough information for a down-the-middle comparison. Combining all the years showed that forest avian ecological integrity assessment had three categories ranking as “Good,” seven ranking as “Caution,” and three as “Significant Concern.” This was a slight change from 2012, with Exotic Species detected increasing from zero to 3 percent, bumping that guild from “Good” to “Caution.” As in previous years, guilds within the structural category earned no “Good” rankings, while “Significant Concern” ratings reflected low abundance of canopy and single brooded species, and high abundance of shrub nesting species, which is not unexpected given the park’s location in a suburban, fragmented landscape.

Forest condition and bird communities in NETN parks are and will continue to be impacted by a range of stresses including invasive exotic plants and pests, diseases, high deer densities, climate change, and lack of late-successional forest features. Current indicators suggest that most parks could benefit from heightened invasive species control. Continued vigilance for the early detection of new exotic forest pests and plants combined with rapid response control measures is important to maintain forest condition. As long as forests are left to mature and management activities do not reduce the potential for development of late-successional structure, NETN expects conditions and some bird habitats to improve in network parks over time.⁷⁷

ROVA veg, from page 5.

Hemlock-northern hardwood forest represents the most common NYNHP community type within ROVA. It is made up of five USNVC associations: Hemlock / White Pine - Red Oak - Mixed Hardwood Forest, Hemlock - Northern Hardwood Forest, Central Appalachian Hemlock - Chestnut Oak Forest, White Pine - Hemlock Dry-Mesic Coniferous Forest, and Hemlock - Beech - Oak Forest. A particularly good example of this forest for the state occurs within Roosevelt Farm and Forest. This 183-acre woodland is generally in excellent condition, with good species diversity, regeneration, and very little evidence of exotic plants or the hemlock woolly adelgid (a small exotic-invasive aphid-like insect that damages or kills hemlock trees and is on many NETN park invasive species watch lists).

A small, 10.6 acre, diverse red-cedar rocky summit natural community located at Home of Franklin D. Roosevelt NHS has been determined to be a significant occurrence for this community type. The stand does have a few invasive plant species, but this heat stress-maintained red-cedar rocky summit has excellent overall species diversity and is in good condition. The majority of the community is located within a roadless area of about 400 acres and is well connected to the surrounding natural communities. Roads, residential areas, and railroads fragment similar forests in the distant landscape. Maintenance of this occurrence may require management measures that slow invasion of open areas by woody vegetation (through burning, goat grazing, mechanical removal of invading saplings, etc.).

There are vernal pool communities in all of the park units, but the vernal pool complexes within and adjacent to Roosevelt Farm and Forest and Eleanor Roosevelt NHS were determined to be especially significant occurrences. The Roosevelt Farm and Forest vernal pools are embedded within a 334 acre landscape and are characterized by the NYNHP community hemlock-northern hardwood forest with small inclusions of oak-tulip tree forest, Appalachian oak-hickory forest, and red maple-hardwood swamp. There are over 20 good quality vernal pools of varying size totaling just over 7 acres. The major portions of these vernal pools are in excellent condition, with good floristic diversity and an intact forested buffer. That said, the southernmost pools are quite close to a major road, which could threaten their ecological integrity.

The vernal pools in Eleanor Roosevelt NHS were surveyed for fauna in 2006 and found to support breeding salamander species. Six vernal pools totaling about 1.5 acres are situated within a semi-natural landscape comprised of hemlock-northern hardwood forest, Appalachian oak-hickory forest, and red maple-hardwood



Vernal pools like this one in ROVA have seasonally fluctuating water levels and often dry out completely over the course of a summer. They provide important breeding sites for myriad amphibian species.

swamp. This vernal pool complex occurs in a landscape with suburban development on most sides. Report authors recommended that further ecological surveys be conducted within these vernal pools to document plant species, condition, and other characteristics.

A small, 2.7 acre freshwater tidal marsh located within Home of Franklin D. Roosevelt NHS was also considered to be noteworthy. This marsh, created at least in part from the construction of a railroad embankment along the eastern shore of the Hudson River, has excellent species diversity. The marsh is a mosaic of open water near the inlet, small regions of mudflats, and vegetation patches dominated by yellow pond-lily. This freshwater tidal marsh is comprised of two USNVC associations: Broadleaf Pond-lily Tidal Marsh and Atlantic Coast Wild Rice Tidal Marsh. Some marsh areas that currently do not receive tidal flushing from the Hudson River because of structural barriers might benefit from hydrologic restoration measures.

Within these small parks, vegetation dynamics are caused by variation in climate and a variety of natural and human disturbance types. Natural pest and plant diseases undoubtedly influence the vegetation mosaics resulting from environmental complexity, drought, and fire. Because of this, the compact ROVA landscape offers a unique place to contemplate past and continued environmental changes. This new vegetation inventory project provides an important benchmark for evaluating these and similar processes of environmental change in the Lower Hudson River drainage.^{TT}



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