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*Newsletter of the **National Capital Region Inventory & Monitoring Network***

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Have We Reached a Forest Tipping Point? Mark your Calendar for Discussion September 10

Forest management is a long-term game. It can take decades for changes to play out so it's often hard to know when to nudge or push things in a particular direction and which actions will have the desired results. It's also hard to decide when inaction might set a forest on an unhealthy path that can't be altered.

Luckily, long-term forest monitoring by the NCR Inventory & Monitoring Network has more than twelve years of trend data that can give us some hints about what lies ahead. And lessons from park management actions throughout the northeastern US can provide ideas for the most effective tools for keeping our forests on the desired track.

That's what is on line to be discussed at the **NCRN Forest Regeneration Meeting this coming September 10, 2019, at the Mather Training Center in Harpers Ferry**. Seating is prioritized for park resource staff. Seats for others may be requested by contacting Megan Nortrup.

Inventory & Monitoring staff, including Botanist Liz Matthews and Quantitative Ecologist J.P. Schmit, will lead discussions of:

- forest regeneration (are there enough seedlings and saplings to replace mature trees as they die?)
- how the mix of tree species plays in (effects on the forest's physical shape: canopy trees, understory plants, etc.),
- how deer populations, invasive plants, fire (or lack thereof), invasive pests, climate change, and other factors may influence the look of our future forests
- the forest management tactics used in northeastern parks (planting trees, managing deer, removing invasive plants, etc.)

Forests are the fabric that hold together many natural communities. They are an essential support to native wildlife, and a key part of the visitor experience of many of our parks. Join us on September 10 to discuss the best strategies for keeping them healthy now and in the future.

[Photo: Tree canopy at Prince William Forest Park. Credit: NPS]

Recent Coyote Research: Still Not Coywolves

by Scott Bates, NCR Wildlife Biologist

[Photo: A young coyote with a light gray coat stands in a Monocacy National Battlefield forest. Credit: NPS]

When we last talked about coyotes (Fall 2014 issue), we discussed the presence of wolf genes in coyotes of the National Capital Region (NCR) and the genetic mixture called a "coywolf"*. Since then, the following studies on coyote genetics of interest to the NCR have been published:

Genetic research in New York state indicates that coyotes coming from Canada and the Midwest, once distinct genetic lineages, have lost their uniqueness and are now mixed. The authors suggest that the contact zone between the two sources of invading coyotes has eroded or moved further south.

Coyotes in West Virginia and Virginia (primarily the Appalachian region) had fewer wolf genes than expected. Only one of the coyotes in the study was considered as having wolf DNA. Most of the specimens were primarily from Midwest rather than Great Lakes sources. This is similar to findings from a previous study at Quantico Marine Base and Prince William Forest Park.

Research on coyotes from the Los Angeles area has shown that coyotes living in natural areas are genetically distinct from coyotes living in urban areas.

Research on coyote, wolf, and red fox trapping data in 2015 across North America indicates that coyotes outnumber red fox when wolves have been eliminated.

Radiotelemetry data on coyotes and red fox in Madison, Wisconsin shows that coyotes prefer natural areas but that the presence of highly developed areas expanded the size of their home range. Red fox preferred open areas, but the presence of highly developed areas did not affect their home range size.

Proposed and Ongoing Research in NCR
The amount of interest in coyote research in the area is at a fever pitch! Dr. Mark Ford of Virginia Tech (also principal investigator on regional bat studies) has submitted a proposal to look at coyote and red fox ecology at Rock Creek Park. Researchers at the University of Maryland have submitted a proposal to look at coyote food habits and coyote numbers at Rock Creek Park, and there is interest from George Mason University to conduct a genetic study of coyotes in the District of Columbia.
Meanwhile, if you're in the District of Columbia, a group led by Virginia Tech's Megan Draheim is encouraging citizen scientists to record observations of coyotes in DC.

*A coywolf has a genetic mix that is 62% coyote, 27% wolf, and 11% dog according to Monzon (2014). To date, research in the National Capital Region (NCR) has shown NCR coyotes to be hybrids with a small amount of wolf and dog DNA, but not so much as to be classified as coywolves. The behavior of hybrid coyotes is largely unchanged from non-hybrid coyotes—they avoid humans at all costs, they hunt alone or in small family groups, and are most often seen at dusk or dawn.

Eagles Have a Peaceful Easy Feeling

Bald eagles (*Haliaeetus leucocephalus*) nesting on national park and associated lands in the Chesapeake Bay are doing well. A recent study shows their numbers, once crippled by the effects of the insecticide DDT and other pollutants, are now growing. And juvenile eagles screened for pollutants generally showed low and undetectable exposure levels.

The study, by researchers at the Center for Conservation Biology (part of Virginia Commonwealth University and the College of William and Mary), looked at nestling bald eagles from the James River north to the Potomac River from 2016 to 2018. It included parks from Piscataway Park and Fort Washington (part of National Capital Parks–East) down to Yorktown Battlefield and Jamestown Island in Colonial National Historical Park.

Contaminant Levels Low

Nestling eagles are a good indicator of broader contaminant levels since all the food they eat comes directly from the territory their parents defend: land immediately around the nest. So researchers for this study looked at nestling eagles to assess not just the health of eagles themselves, but also the effects of contaminants more broadly across the entire Chesapeake Bay.

(Read more)

[Photo: A nestling bald eagle from the James River area that was part of the study. Credit: Bryan Watts]

Science History in Parks

[Photo:A bay-breasted warbler, one of the bird species in a famous ecology study at Acadia National Park. Credit: NPS]

National parks have a legacy of serving as living laboratories for scientific learning. The natural landscapes and processes that can be observed in some national parks have played key roles in the evolution of scientific study. Now, a new series of online NPS articles, “Parks in Science History,” documents the role of parks in the history of science.

The series was created by a group of eight University of Maryland graduate students, under the guidance of Dr. Katia Engelhardt, through an agreement with the Chesapeake Watershed Cooperative Ecosystem Studies Unit (CW CESU). All were enrolled in “Classics in Ecology,” a class designed to bring to life important scientific research and as Engelhardt put it, “show students that studies published before they were born aren’t relics —they inform contemporary science.”

The students came from a variety of disciplines including environmental science, ecology, and in one case, soil science. Each chose a landmark scientific study done in a national park, and wrote an account of how it changed the course of scientific understanding. Each study became a separate article in the series covering:

- Changing the face of science in Acadia National Park: warblers, coexistence, and hypothesis-driven ecology
- Rocky intertidal research at Boston Harbor Islands NRA
- Odum’s 1960s Everglades studies shape the science of ecology
- Restoring a dammed river with experimental flooding at Grand Canyon NP
- Testing hypotheses for plant species distributions in the mountains at Great Smoky

Mountains National Park
- A tale of two sides of the mountain in Rocky Mountain NP
- Forest fires in Yellowstone: the science of burning and regrowth
- Discovering life in Yellowstone where nobody thought it could exist

Engelhardt is already planning the next session of Classics in Ecology, and hopes to turn up additional important, national park-based studies. Perhaps there are some from the National Capital Region, or from disciplines like geology and anthropology that could be considered? If there is a study from your park that has implications beyond park boundaries, she'd like to know. Please contact Katia Engelhardt.

Meanwhile, the student authors of the current series hope to present their accounts at the August meeting of the Ecological Society of America in Washington, D.C.

Fish and Macroinvertebrate Monitoring Return!

One way to see if a stream is healthy is to look at what's living in it. The groups of fish and aquatic macroinvertebrates (animals with no backbone, big enough to be seen by the naked eye, and that include crustaceans, insects, molluscs, and worms) present and absent indicate if a stream is hospitable and healthy.

So it's exciting that the NCRN Inventory & Monitoring team restarted surveys of stream life and habitat in NCR this year, through a collaboration with University of Maryland and the Stroud Water Research Center.

The original round of this monitoring (often referred to as MBSS or Maryland Biological Stream Survey monitoring) took place 2007-2014 at the same sites where I&M stream water monitoring currently happens.

Analysis uses an index of biotic integrity scoring system. To learn more about this monitoring, or to look at earlier data visit NCRN's Stream Biota webpage.

[Photo: Rinsing off a macroinvertebrate. Credit: NPS]

Geoff Sanders is Headed to Cape Cod!

Geoffrey Sanders, Program Manager for the National Capital Region Inventory & Monitoring (I&M) Network will be leaving the region in June to take on the position of Chief of Natural Resource Management for Cape Cod National Seashore. He has been with the National Capital Region for fifteen years.

"Geoff has made huge contributions to science and natural resource management," said NCR Natural Resource Chief Patrick Campbell, "He'll certainly be missed and we wish him

luck at Cape Cod."

As I&M Network Program Manager, Geoff oversaw all aspects of planning, management, and program implementation for long-term ecological monitoring in NCR parks. Prior to his selection as Program Manager he served for 12 years as the network's Data Manager. Geoff came to the NPS from a biologist position at the U.S. Geological Survey's Patuxent Wildlife Research Center where he supported research efforts focused primarily on coastal ecosystems. He earned his undergraduate degree in biology at the University of Scranton and a master's of science in Environmental Science and Policy at Johns Hopkins University.

A farewell gathering for Geoff is set for June 5, 11am to 1pm at the Office of Natural Resources and Science (a.k.a. CUE). Contact Megan Nortrup for details.

[Photo: Geoffrey Sanders. Credit: NPS]

Inventory & Monitoring Field Work in Your Park

During summer (June - August), I&M field work continues for amphibians, stream water quality, fish, forest birds, grassland birds, and forest vegetation.
For details of specific locations to be visited, consult the I&M weekly field updates emailed out every Friday to your park's Chief of Resources.

Amphibian Monitoring- runs through late July at Catoctin, C&O Canal, GW Memorial Parkway, Manassas, Monocacy, National Capital Parks- East, Prince William, and Rock Creek.

Fish Monitoring- runs through August at Rock Creek Park. This year is the first of four years that will revisit ~37 sites across the NCR where monitoring occurred 2007-2014 and where stream water quality is currently monitored. (Related macroinvertebrate monitoring occurs in early spring.)

Forest Bird Monitoring- runs from May to July at all I&M parks in NCR.

Grassland Bird Monitoring- runs from May to July at Antietam, Harpers Ferry, Manassas, and Monocacy.

Forest Vegetation- runs from May to September at all I&M parks in NCR.

Stream Water Quality- continues on a bi-monthly basis at all I&M parks in NCR except C&O Canal.

[Photo: Grassland bird monitoring at Antietam National Battlefield. Credit: NPS/Nortrup]

Calendar

JUNE
6. Invasive Plant Management Training. Sponsored by the NCR Exotic Plant Management Team and the NCR Partnership for Regional Invasive Species Management (PRISM). Rock Creek Park. 8:30 to 3:30. No cost. Register online

JULY
25. Natural Resource Advisory Team (NAT) Meeting. C&O Canal National Historical Park headquarters. 8:30 to 1:30.

SEPTEMBER
10. Forest Monitoring and Regeneration Meeting. Mather Training Center at Harpers Ferry. 9:30 to 2:00. Contact Megan Nortrup for details.

Submit your ideas for the next NCRN Natural Resource Quarterly newsletter.

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