National Capital Region Inventory & Monitoring Network

National Park Service
U.S. Department of the Interior

NCRN Natural Resource Quarterly

Fall 2014

American Chestnut Trees

It's been a good summer for learning more about American chestnut trees in the region. The Inventory & Monitoring program's Chestnut Crew members Mike Riedman and Drew Henderson (from University of Maryland Baltimore County) recorded 241 trees of the *Castanea* species. The team's primary goal this summer was to locate American chestnuts (*Castanea dentata*), but along the way they also recorded instances of Allegheny chinkapin (*Castanea pumila*), and Chinese chestnut (*Castanea mollissima*).

15 Reproductive American Chestnut Trees Found

Castanea trees were found at Rock Creek Park; Great Falls Park (VA); Harpers Ferry NHP; Catoctin Mountain Park; Fort Dupont and Oxon Run in National Capital Parks - East; Wolf Trap NP for the Performing Arts; Monocacy NBP; Prince William Forest Park; and C&O Canal NHP in the Gold Mine Tract. The vast majority were American chestnut, ~40 were chinkapins, and fewer than 5 were Chinese chestnut. And while most of the American chestnuts found are persistent saplings resprouting from stumps of the trees that fell to chestnut blight in the 1930s, some seem to be succeeding against all odds. In fact, the crew found 15 American chestnut trees that displayed some sign of reproduction. The largest tree found was 74cm in diameter at breast height, and 30 meters tall. It even had signs of reproductivity including flowers and fruit! Amazing!

Data Available

Results from this summer's scouting will be available in a map and brief summary and also as KML data layers (a geographic data format that works with browsers like Google Earth), and in other formats upon request. Each tree record includes species identification, location coordinates, estimated height, number of stems, condition (including presence of blight/cankers), and reproductive status. To learn more about the new I&M chestnut data, contact NCRN Botanist Liz Matthews by NPS email or at 202-339-8303.

Photo: NPS/Henderson

Mike Riedman, part of NCRN I&M's chestnut team, holds flowers and burrs at the base of an American chestnut tree at Catoctin Mountain Park.

Hybird Chestnut Trees

What does the presence of these (*Continued page 2*)

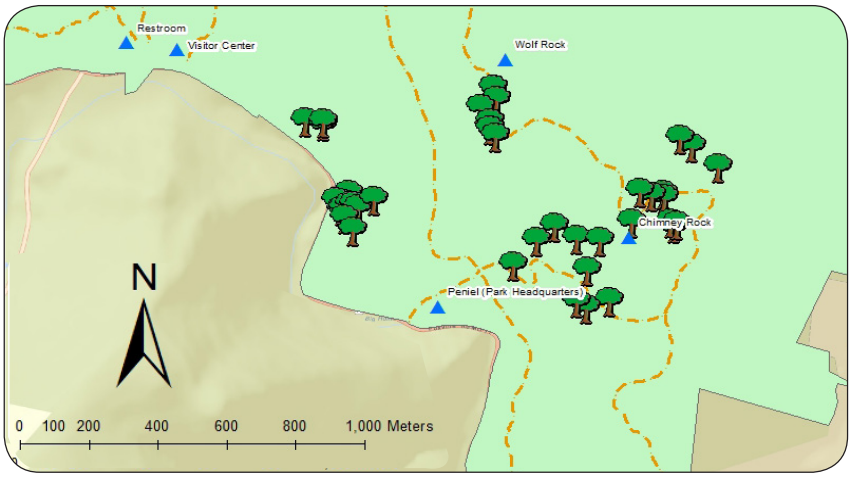
Fieldwork scheduled for September, October, and November	ANTI*	CATO	CHOH	GWMP	HAFE	MANA	MONO	NACE	PRWI	ROCR	WOTR
Exotic Plant Management	X	X	X	X	X	X	X	X	X	X	X
I&M Marsh Elevation Monitoring				X				X			
I&M Forest Vegetation Monitoring	X	X	X	X	X	X	X	X	X	X	X
I&M Water Monitoring	X	X		X	X	X	X	X	X	X	X

In This Issue:

*Park acronyms on page 2

(*Chestnuts continued*)
American chestnut survivors mean for demonstration plantings of blight-tolerant American/Chinese chestnut cultivars? Since NPS approved limited hybrid plantings in 2011, a demonstration planting was installed at Prince William Forest Park and other plantings are under consideration in additional NCR parks.

The ultimate restoration goal of long-term self-sustaining and naturally reproducing populations of American chestnuts is yet to come. While surviving American chestnuts and new resistant hybrids are both promising, much remains to be learned. It is unknown how both will do in the long run—whether blight tolerance persists within hybrids, whether there is much reproduction from survivors or hybirds, or whether tolerance persists over generations.



Map: NPS/Riedman & Henderson

A map of American chestnut trees in lower Catoctin Mountain Park. The southeast boundary pictured is Maryland-77, Foxville Road.

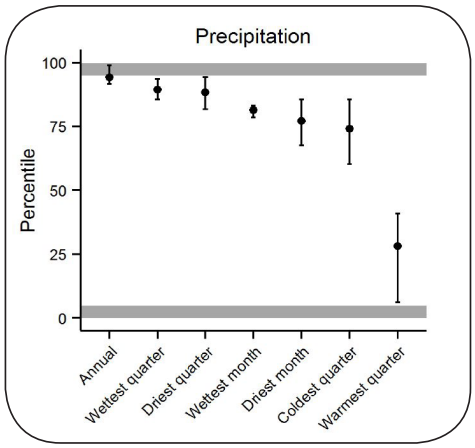
If you have questions on hybrid chestnut plantings contact NPS Restoration Ecologist Greg Eckert at greg_eckert@nps.gov or 970-225-3594.

Wetter & Hotter: Climate Extremes Already Happening in NCR Parks

We are currently experiencing wetter summers and higher average temperatures than ever before in some parts of the National Capital Region (NCR). Weather records for CATO (see acronyms below), GWMP, ROCR, and NACE, all show that the 30-year period 1982 - 2012 was wetter than 95% of previous 30-year periods back to 1901. That's a look back at more than 100 years of data! When the same records are examined for temperature, they show that in Rock Creek and NACE, weather from 1982-2012 was also hotter than 95% of previous 30-year periods back to 1901 for both average annual temperature and average summer temperature.

It is probably not surprising that parks within the Washington, D.C. metropolitan region are experiencing hotter temperatures, since ongoing increases in development and impervious surfaces contribute to an urban heat island. But more precipitation during summer months may be more of a surprise, especially to parks as far away from DC as Catoctin.

While most NCR parks outside of the DC metro area were not shown to be experiencing extreme high precipitation or temperature patterns, many were not far off. While for most, 1982-2012 wasn't extreme, it is clearly warmer and wetter than the majority of 30-year periods back to 1901. As an example, Antietam's precipitation records show that 1982-2012 was wetter than approximately 90% of previous 30-year periods (average precipitation levels) and that summers (wettest quarter) were wetter than about 85% of previous 30-year periods back to 1901.



Antietam's precipitation records for 1982-2012 show a wetter pattern just shy of being "extremely" different from all previous 30-year periods back to 1901.

This analysis is part of a recent publication by NPS scientists Bill Monahan and Nick Fisichelli in the scientific journal PLOSOne. Monahan & Fisichelli looked for extreme climate phenomena in climate data for parks across the country—extreme wet and dry periods as well as extreme heat and cold. Interestingly, no NCR parks were found to have recent extremely dry precipitation patterns or extreme cold temperatures. Wetter and hotter predominate.

This research is now also available in park-specific resource briefs available at: http://science.nature.nps.gov/im/units/ncrn/monitor/air/index.cfm.

Park Acronyms

ANTI = Antietam National Battlefield
CATO = Catoctin Mountain Park
CHOH = Chesapeake & Ohio Canal National Historical Park
GWMP = George Washington Memorial Parkway
HAFE = Harpers Ferry National Historical Park
MANA = Manassas National Battlefield Park
MONO = Monocacy National Battlefield
NACE = National Capital Parks - East
NAMA = National Mall and Memorial Parks
PRWI = Prince William Forest Park
ROCR = Rock Creek Park
WOTR = Wolf Trap National Park for the Performing Arts

Hybrid Coyotes in the National Capital Region?

Scott Bates, NCR Wildlife Biologist; Megan Nortrup, NCRN I&M Communicator

Are there coyote-wolf hybrids in the National Capital Region (NCR)? And if there are, what do we need to know about their behavior?

History of coyotes in NCR

Coyotes were first seen in far western Virginia in the early 1950s, likely from the Midwest. They did not appear in Maryland until 1972. Initial Maryland sightings were in counties along the Pennsylvania border, from western Maryland to the northeast corner of the state. This suggests that coyotes entered the state from the north.

Hybrids & Genetics

In 2007, Christine Bozarth did a coyote scat study at the NCR's own Prince William Forest Park and neighboring Marine Corps Base Quantico. She found local coyotes had a genetic link (one section of one chromosome) to Great Lakes wolves.

Two other coyote studies, one by Roland Kays and the other by Javier Monzon, covered a large region to the north and west of the NCR including New England, the Mid-Atlantic States north of Maryland, and Ohio. Kays found a range of 25%-35% Great Lakes wolf genes in northeastern coyotes. In 2012, Monzon found genetic contributions from western wolves, eastern wolves, coyotes, and domestic dogs in northeastern coyote populations.

To date, Monzon's research is the most in-depth study of coyote hybrids. He defined the popularly-known hybrid called the "coywolf" as a species that is genetically 62% coyote, 27% wolf, and 11% dog.

While the coyotes in the NCR have not been specifically studied (except for those in Prince William) it is highly likely that populations of hybrid coyotes to our north and south mean that we too have "hybrid coyotes." But these hybrids are not coywolves.

The makeup of our coyote hybrids depends on where their ancestors originated. Coyotes coming from the southeast have no wolf genes, while those from the north/northwest may have 20%-35% wolf genes.

Coyote Behavior

But what does it mean to have hybrid coyotes here? Do hybrid coyotes act any differently than pure coyotes? What should I do if I think I see one?

Photo: NPS

A wildlife camera in Rock Creek Park captured this pair of coyotes scavenging off a road-kill deer in 2005.

Coyotes have been mating with other species (dogs and red wolves in the south; grey wolves in Canada) as they moved eastward. The average adult weighs 30 to 40 pounds and their behavior remains largely unchanged.

Coyotes, like many animals, will avoid humans at almost all costs. They have very broad diets and are opportunistic consumers of everything from plant material and insects to deer and small domestic animals. They hunt alone or in small family groups. Coyotes are most often seen at dawn and dusk year round (they don't hibernate). If you see one, you can stop and watch, but do not approach. Always keep dogs on a leash, secure trash, and do not attempt to feed or influence their behavior.

References:

- Bozarth, C.A., F. Hailer, L.L. Rockwood, C.W. Edwards, and J.E. Maldonado. 2011. Coyote colonization of northern Virginia and admixture with Great Lakes wolves. Journal of Mammalogy 92(5):1070-1080.
- Kays, R., A. Curtis, and J.J. Kirchman. 2010. Rapid adaptive evolution of northeastern coyotes via hybridization with wolves. Biology Letters 6:89-03.
- Monzon, J., R. Kays, and D. Dykhuizen. 2014. Assessment of coyote–wolf–dog admixture using ancestry-informative diagnostic SNPs. Molecular Ecology. Vol 23, Issue 1, pp182-197. http://onlinelibrary.wiley.com/doi/10.1111/mec.12570/abstract

Visibility: Oh Say Can You See?

Is the distant horizon covered with haze? Clean air is key to enjoying natural and historic vistas in our national parks.

The good news is that visibility is actually improving in the National Capital Region. But it's not yet as clear as we want it to be. Small particles suspended in the atmosphere, mostly a result of human-caused air pollution, often create gray or white haze that mutes colors, forms, and textures.

A new resource brief describes how these impairments to visibility are quantified, the improvements in visibility we've had from 2003 to 2012, and what particulates make up the haze that's blocking our views. The brief is online at: http://science.nature.nps.gov/im/units/ncrn/assets/docs/RBs/NCRN_Visibility_2014.pdf.

NCR Staff Changes

The NCRN I&M team recently bade farewell to **Mark Lehman**, our long-time Geographic Information Specialist. Mark has accepted a permanent position as Data Manager for the I&M Mojave Desert Network where he will support parks including Lake Mead, Death Valley, and Joshua Tree.

NCRN I&M Hydrologist **James Pieper** recently accepted the position of NCR Natural Resource Specialist.

Giselle Mora-Bourgeois, Science Education Coordinator for NCR's Urban Ecology Research Learning Alliance, recently accepted the position of NPS Coordinator for the Gulf Coast Cooperative Ecosystem Studies Unit in College Station, TX.

Photo: NPS/Paradis

Mark Lehman

Calendar

SEPTEMBER

17. IPM Training: Forest Pest Update. Overview of major insect and disease pests affecting forests. WOTR Musicians lounge. Register on DOILearn.

19. MD-DE Wildlife Society Meeting. Columbia, MD. http://wildlife.org/mdde/.

23. IPM Training: Human Health and Home Invaders. Ticks, mosquitoes, their diseases and perimeter pests that enter buildings. WOTR Musicians lounge. Register on DOILearn.

OCTOBER

9. NAT (Natural Resources Advisory Team) Meeting. CATO. 10 am.

NOVEMBER

21. Maryland Water Monitoring Council Annual Conference. 7:30 am - 4:30 pm. North Linthicum, MD. www.marylandwatermonitoring.org

National Capital Region Network Inventory & Monitoring (NCRN I&M) Staff:

Program Manager: Patrick Campbell
Botanist: Liz Matthews
Data Manager: Geoff Sanders
GIS Specialist: vacant
Hydrologic Technician: Tonya Watts
Hydrologic Technician: vacant
Quantitative Ecologist: John Paul Schmit
Science Communicator: Megan Nortrup

Visit NCRN I&M online at:
Website: http://science.nature.nps.gov/im/units/ncrn
RSS: http://science.nature.nps.gov/im/units/ncrn/rss/ncrn_rss.xml
Facebook: http://www.facebook.com/NPSNCRN
Twitter: https://twitter.com/NPSNCRN

NCRN Natural Resource Quarterly offers updates on the status of park natural resources and Inventory and Monitoring (I&M) "vital signs" for the NPS National Capital Region Network (NCRN).

Questions or comments? Contact Megan Nortrup by NPS email or at 202-339-8314