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CESU Provides Funding to Study and Protect Bats

Dan Filer, Research Coordinator, CW CESU
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The Chesapeake Watershed Cooperative Ecosystem Studies Unit (CW CESU) promotes stewardship and integrated ecosystem management of natural and cultural resources in the Chesapeake Watershed through collaborative research, technical assistance, and education.

The CW CESU recently sponsored research looking at bats in 3 abandoned railroad tunnels in the Chesapeake & Ohio Canal National Historical Park (CHOH). These tunnels (Indigo, Stickpile, and Kessler) host the largest number of hibernating bats in the state of Maryland. They're also home to 2 federally protected and 1 state endangered bat as well as several other bat species.

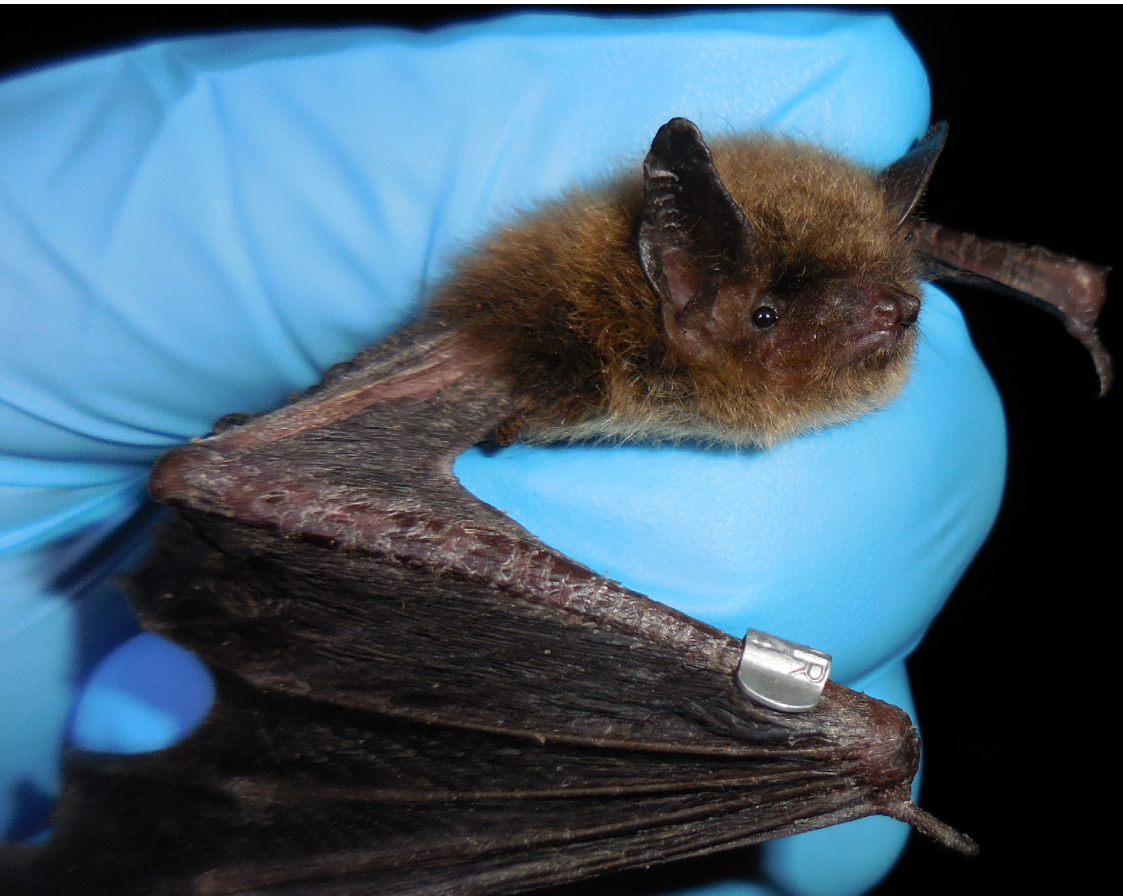
But conflicts with visitor use and resource protection, as well as the spread of the fatal white nose syndrome (WNS) had park staff worried about the health of these bat populations.

To examine changes in bat abundance and activity, swarming or emergence surveys were conducted at all three tunnels in fall 2014, spring and fall 2015, and spring 2016. During 60 nights of surveys 816 bats were identified. This included 714 big brown bats (*Eptesicus fuscus*), 48 eastern small-footed bats (*Myotis leibii*), 22 tri-colored bats (*Perimyotis subflavus*), 17 silver-haired bats (*Lasionycteris noctivagans*), 10 northern long-eared bats (*M. septentrionalis*), 4 eastern red bats (*Lasiurus borealis*), and 1 little brown bat (*M. lucifugus*).

The investigators concluded that the three tunnels provide regionally important hibernation sites for at least 5 bat species, and that individuals that hibernate in the tunnels and emerge in spring have no obvious signs of WNS.

The park used this information to contract a firm to design, construct, and install specially designed gates to allow bat passage while preventing park visitors from entering the hibernacula. This research project exemplifies the value of the CW CESU in assisting NPS managers in practic-

CESU AND BATS Continued on **p2**



A federally-threatened, northern long-eared bat (*Myotis septentrionalis*) captured at one of the railroad tunnels in 2015. (Photo: UMCES/ Gates)

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ing sound integrated resource management: the protected habitat helps federally listed bat species and the tunnels are included on the National Register of Historic Places as contributing to a historic district.

NPS Photo

Indigo tunnel bat gate.

CW CESU

Dan Filer began as CW CESU Research Coordinator on October 30, 2016. He is stationed at University of Maryland, Center for Environmental Sciences Appalachian Lab in Frostburg.

The CW CESU connects agencies with subject matter experts from more than 25 universities and partners to undertake research, provide technical assistance, and provide educational resources that will help NPS managers and park superintendents make informed decisions based on sound science. In addition to the NPS, eight federal agencies participate in the Chesapeake Watershed CESU — U.S. Fish and Wildlife Service, Bureau of Land Management, Army Corps of Engineers Civil Works, U.S. Forest Service, National Oceanic and Atmospheric Administration, Natural Resources Conservation Service, United States Geological Survey, and the Department of Defense.

To learn more about the CW CESU, visit http://chwacesu.al.umces.edu/ or contact Dan Filer directly at 301-689-7108.

University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE

Birds Reveal How Small Mid-Atlantic Parks Have Outsized Protective Punch

Yellowstone and Yosemite may get all the love as National Parks, but it turns out that some smaller parks in Pennsylvania, Maryland, D.C., and Virginia may punch above their weight in protecting nature. How?

Scientists tracking changes in the groups of bird species unique to 17 National Parks, found that all but one park had stable or improving bird communities and by extension, environmental conditions.

National Parks in a swath from Valley Forge (PA) down to Petersburg National Battlefield (VA)—including all of the National Capital Region—showed this resilience despite the region's increasing urbanization. For a group of parks including mostly Civil War battlefields and historical parks, that's pretty impressive.

Not surprisingly, bird populations were healthiest where surrounding land cover was mostly forest. And in D.C.-area parks where up to 75% of surrounding land is developed, population health was somewhat lower. Yet still, these small parks are providing good habitat for birds of all kinds.

Authors of the study speculate that part of the reason these National Parks show such robust conditions may be park efforts to manage invasive plants, protect unique habitat, or manage deer populations.

The research, by NPS and University of Delaware scientists, used 9 years of I&M bird monitoring data from 17 parks.

Ladin, Z. S., C. D. Higgins, J. P. Schmit, G. Sanders, M. J. Johnson, A. S. Weed, M. R. Marshall, J. P. Campbell, J. A. Comiskey, and W. G. Shriver. 2016. Ecosphere 7(9):e01464. 10.1002/ecs2.1464 https://irma.nps.gov/DataStore/Reference/Profile/2236102

I&M Division Seeks Input on Inventories 2.0

Does your park have a resource you wish you understood better? Is there inventory-type data that would be useful in supporting science-based management of that resource?

This coming year, the national Inventory & Monitoring Division (IMD) is asking park staff for input on just this question. It's part of a scoping effort they're calling Inventories 2.0. The goal is to determine what the Service's natural resource inventory needs are.

You may be contacted for this inventory-specific scoping between now and March 2017.

So stay tuned. Questions about Inventories 2.0 can be directed to Geoff Sanders, Acting NCRN Program Manager at 202-339-8330. To learn more about NCRN's completed inventories, visit: http://science.nature.nps.gov/im/units/ncrn/inventories.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

Addressing Amphibian Declines in NCR

There is strength in numbers. So when it comes to fighting amphibian declines, 11 parks working together can have more effect than one park working alone. That is one of the reasons that the National Capital Region Network, Inventory & Monitoring program (NCRN I&M) is organizing a strategy for park amphibian management.

NPS Photo

Green frog

Amphibian Declines

Across the country from 2002-2011, the number of wetlands inhabited by amphibians has dropped 3.7% a year (Adams et al. 2013). At the C&O Canal, eight of twelve species have declined (2005-2011), causing the number of amphibian species in each wetland to drop (Grant et al. 2013). Trends predicted through 2020 continue to deteriorate.

One of the species that exhibited the strongest declines (2005-2011) is the northern green frog (*Lithobates clamitans*). Northern green frog tadpoles often overwinter in wetlands and take two seasons to transform into adults. As a result of this long development period, changes in the timing and amount of precipitation can have especially detrimental effects on its persistence.

Group Effort

To combat future declines, the NCRN is partnering with scientists from the USGS Patuxent Wildlife Research Center and Michigan State University to work with parks in developing network-scale management strategies. Through a process called structured decision-making (SDM), the team will:

(1) Identify specific objectives for amphibian populations across NCR parks, and for each individual park.

(2) Identify potential park-level management actions.

(3) Develop and compare a set of models (using existing amphibian data) which predict the system response to proposed management actions stated in Step 2.

(4) Investigate the success of the proposed actions in achieving our full set of objectives stated in Step 1.

2017 Amphibian Workshop

During the first workshop (targeted for Fall/Winter 2017) participants will define amphibian population objectives for each park and across NCR, and identify potential management actions. For more information, please contact Alex Wright at adwright@msu.edu.

Further Reading

Adams, M.J., et al. 2013. Trends in amphibian occupancy in the United States. PloS one, 8(5), e64347.

Grant, E. H. C., et al. 2013. A strategy for monitoring and managing declines in an amphibian community. Conservation Biology 27(6), 1245–1253.

Photo: USGS/Dietrich

This albino spotted salamander larvae (near metamorphosis) was found in Oxon Cove (NACE) in 2016. It surprised NCRN amphibian crew member Andrew Dietrich who had never seen one before outside of Patuxent Wildlife Research Center, or one so mature.

I&M Winter Field Schedule

The NCRN water monitoring crew fearlessly continues field work this winter. In January, they hope to visit all 37 of the established stream monitoring sites in ANTI, CATO, GWMP, HAFE, MANA, MONO, NACE, PRWI, ROCR, and WOTR.

As always, park staff and volunteers are welcome to join us in the field to learn about how NCRN I&M monitors natural resources in parks. Just be sure to dress warm and bring your boots! For more information contact Margie Shaffer at 202-339-8315 or visit:

http://science.nature.nps.gov/im/units/ncrn/monitor/water_quality/index.cfm.

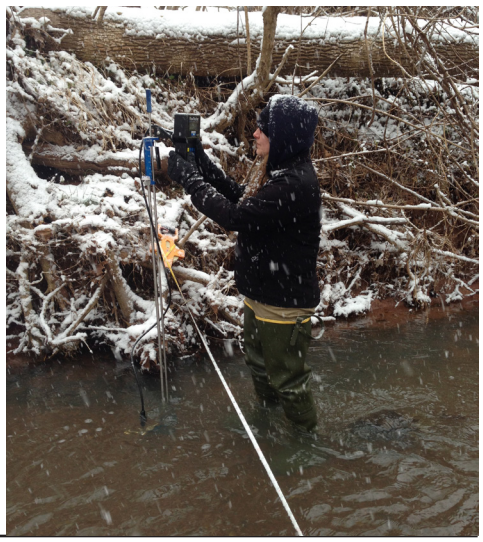

Photo: NPS/Pieper

Tonya Watts takes a stream flow measurement in Youngs Branch at Monocacy National Battlefield. Tonya and the NCRN water crew visit small, non-tidal streams throughout NCR on a quarterly basis to check nutrient levels, chemical parameters such as pH, specific conductance, dissolved oxygen, and temperature; and take flow, discharge, and depth measurements.

New Resource Briefs: Big Trees & Woody Debris, and Catoctin Mountain Orchids

Big Trees and Woody Debris

A new study shows that National Park Service (NPS) protection allows forests in the eastern U.S. to age gracefully. Without logging or large human manipulations, NPS forests tend to have more trees that live longer and grow larger and more dead and rotting wood material providing habitat for creatures large and small.

Photo: NPS/Brolis

Large, old trees are more common in National Park forests—like this one being measured at CHOH.

In the National Capital Region Network (NCRN), parks like Rock Creek, protected for more than 125 years, show some characteristics consistent with old age forests. In contrast, forests in battlefield parks, which have not been protected for as long, are on average still in earlier phases of growth and succession. Yet taken as a whole, NCRN parks show more mature forest structure than nearby non-park forests.

The brief is available online at: http://science.nature.nps.gov/im/units/ncrn/assets/docs/RBs/NCRN_Big_Trees_Woody_Debris.pdf

Results from 2016 Orchid Census in Catoctin Mountains

In 2016 NCRN revisited sites in Catoctin and Cunningham Falls State Park that were part of a 1968-2008 study (Knapp and Wiegand 2014) of orchids in the Catoctin Mountains. The original study found declines for 19 of 21 orchids at the same time that deer populations surged.

The NCRN census found that two species that were part of the 1968-2008 decline-- downy rattlesnake plantain (*Goodyera pubescens*) and greater purple fringed orchid (*Platanthera grandiflora*)-- were present in far greater numbers than previous trends would've predicted.

The brief discusses factors that could be affecting orchid survival and rebound. It is available at: http://science.nature.nps.gov/im/units/ncrn/assets/docs/RBs/CATO_orchids.pdf

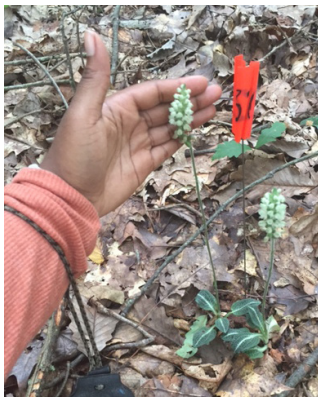

Photo: NPS

Downy rattlesnake plantain (*Goodyera pubescens*) was found frequently during the 2016 census.

Calendar

DECEMBER

16. NCRN Inventory & Monitoring Board of Directors Meeting. 10 am - 1 pm. MANA.

2017

JANUARY

26. Natural Resources Advisory Team (NAT) Meeting. GWMP.

APRIL

2-7. George Wright Society Conference. Norfolk, VA. http://www.georgewright.org/gws2017.

20. Natural Resources Advisory Team (NAT) Meeting. CATO.

JULY

20. Natural Resources Advisory Team (NAT) Meeting. HAFE.

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

Acting Program Manager: Geoff Sanders
Data Manager: Geoff Sanders
Botanist: Elizabeth Matthews
GIS Specialist: Vacant
Hydrologic Technician: Tonya Watts
Hydrologic Technician: Margie Shaffer
Quantitative Ecologist: John Paul Schmit
Science Communicator: Megan Nortrup

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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