



Natural Resource Quarterly | Winter 2019

Newsletter of Natural Resources in the National Capital Area



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Spotted Lanternfly 101

by Dorothy Borowy, NCA Integrated Pest Management Coordinator

[Photo: Spotted lanternfly adult. Credit: Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org]



Spotted lanternfly is a new, invasive, insect pest approaching the National Capital Area (NCA). Here's what you need to know.

What is it and what does it do?

Spotted lanternfly (SLF; *Lycorma delicatula*) is an invasive insect native to China, India, and Vietnam. It was first identified in the U.S. in 2014, in Berks County, Pennsylvania. Despite its name, spotted lanternfly is not a fly; it is a planthopper in the order Hemiptera, which also includes true bugs, aphids, and cicadas. It spreads primarily by hopping (in the juvenile stage) and short-distance flight (in the adult stage)--similar to its close relative, grasshoppers. As a result, SLF does not typically move very far without help. Unfortunately, human action is currently the main factor helping spread SLF in the U.S.

People can unknowingly move the inconspicuous egg masses over long distances when moving plants (e.g. nursery trade), firewood, construction and shipping materials (e.g. stone, lumber, wood crates), outdoor household articles (e.g. grills, mowers, furniture) or recreational vehicles. So it's vital that anyone visiting or traveling through a quarantined area is aware of the risks of spreading SLF, and take extra precautions.

Once established in an area, SLF has the potential to dramatically affect forest ecosystems, agricultural production, and cultural resources. Although SLF has a preference for feeding on the exotic tree-of-heaven (*Ailanthus altissima*), it is an indiscriminate pest and will feed on over 70 different plant species. It impacts its host directly by extracting plant sap from young leaves and stems using piercing and sucking mouthparts, and causes indirect harm by excreting a sugary liquid (honeydew) that attracts other insects and promotes the proliferation of black sooty mold, which can negatively affect plant growth and initiate secondary fungal infections.

How close is it?

To date, Spotted Lanternfly (SLF; *Lycorma delicatula*) **has not** been observed in any National Capital Area (NCA) parks. However, there have been several confirmed sightings nearby resulting in quarantines for counties throughout Pennsylvania, Delaware, northern Virginia, New Jersey, and Maryland. Of particular concern are the quarantined areas in Virginia (Frederick County and the City of Winchester) and Maryland (Harford and Cecil

counties) as they are within 50 miles of five NCA parks: Catoctin Mountain Park, Antietam National Battlefield, Harpers Ferry National Memorial Park, and the Chesapeake & Ohio Canal National Historical Park.

[Read More](#)

Microplastics Study Leads to Volunteer Award

By Ann Gallagher, Education Coordinator for the Urban Ecology Research Learning Alliance

Have you ever wondered how pervasive plastics pollution is in the parks, given our urban lifestyle complete with polyfleece jackets and disposable containers? At the [Urban Ecology Research Learning Alliance](#) (UERLA) we commit to scientific investigations on these types of emerging topics where parks have little-to-no information.

So when high school junior Riley Moran said he'd like to know more about microplastics pollution in the environment during his science internship at the offices of [Natural Resources and Science](#) (NRS), many programs encouraged and supported the development of his project.



This past summer, Riley joined the [Inventory & Monitoring](#) water monitoring team to learn from them and to collect his own microplastics pollution samples. One of the NRS labs was taken over by the glass petri dishes used to store his filter-paper samples.

Two microplastics experts from Cornell and American University, and one statistician recently retired from federal service received copies of preliminary data. Unsurprisingly, Riley found that there is an abundance of plastic microfiber pollution in the streams sampled. An analysis of his findings will be available through UERLA in the spring of 2020.

The experts found his work compelling. “[I’m v]ery impressed with what you’ve done. Pretty comprehensive. It’s not easy” said Dr. Jesse Meiller, Senior Professorial Lecturer Environmental Science at American University. “You’ve done a good job” said Dr. Jose Luis Lozano, Co-Founder Biological Energy, Inc. and Director at EnviroLabs.

Along the way, Riley earned the first ever **Gold Award-level at NRS of the Presidential Volunteer Service Award** and volunteered more than 250 hours in one calendar year!

[Photo: Riley Moran loading his sampling gear into an I&M vehicle . Credit: NPS]

A Tireless Matchmaker for Research



[Photo: Danny Filer. Credit: NPS]

“I’m a matchmaker for research,” says Danny Filer over the phone when I ask him how he describes his job. “A lot of folks think I do research, but I don’t. I help others do research.”

That’s probably why the energetic Filer is always on the go. Zipping over from his office at the University of Maryland Center for Environmental Science in Frostburg, Maryland to meet with NPS staff in the National Capital Area, then over to a University in Virginia,

followed by a phone call with officials at Department of Defense. He’s making connections all the time.

"I essentially help federal partners find researchers at partner institutions to do needed research or technical assistance that helps them achieve their mission" he sums up. Danny Filer is Research Coordinator for the Chesapeake Watershed Cooperative Ecosystem Studies Unit (CW CESU). An organization that in the three years he's been running it, has doubled its number of partner institutions, with, he says, "more room to grow."

[Read More](#)

How Urbanization Affects Stream Conductivity

[Image: Owens Creek at Catoclin Mountain Park. Credit: NPS/Matthew Schley]

By Matthew Schley, NCA Hydrologist

Urbanization and the associated spread of buildings and pavement (impervious surfaces) threatens the health of streams and all the creatures that depend on them. That's because precipitation that falls on impervious surfaces gets transformed by the experience and may warm in temperature, pick up sediment or other material that changes its chemistry, and pick up speed before becoming stream flow.



A team of scientists including NCA's new Hydrologist Matt Schley, recently published a study focusing on how stream chemistry changes during this process of urbanization. More specifically, the study looked at how gradual watershed urbanization changed stream conductivity. Conductivity is an easy-to-measure substitute for dissolved solids and is often used to measure stream health since it tends to track both overall water quality and patterns in urbanization.

The team analyzed a twenty-five year dataset of impervious cover changes in the Baltimore-Washington D.C. metro area and a long-term stream chemistry dataset collected by the Maryland Department of Natural Resources to look for potential connections between them.

What Happens When You Pave Paradise

The researchers looked at watersheds with differing levels of impervious surface: low, moderate, and high. In watersheds with low levels of impervious surface cover (0 to 4.5%), there were consistently steep systemic increases in stream conductivity across years and seasons. As imperviousness increased to moderate levels (4.5% to 13.8%) streams exhibited smaller overall increases in conductivity but with distinct seasonal variability. When watershed impervious cover exceeded 13.8% (high), conductivity signatures were dominated by seasonal pulses, with the most extreme pulses accompanying winter storm events.

The patterns they observed suggest that with low levels of impervious surface, changes in stream conductivity are associated with changes in land use during development. Development includes the installation of new impervious cover, the associated construction runoff, the leaching of ions from new concrete structures, etc. At moderate and high levels of impervious surfaces, conductivity is related more closely to activities within developed areas, like winter salting, as opposed to development itself. In the moderate to high categories, some watersheds showed echoes of winter pulses in the spring and summer seasons after winters with large storm events. This suggests that watersheds have different response times because of differences in hydrologic connectivity.

The Up-Shot

National Parks in the National Capital Area are part of several larger watersheds that fit

into the low, moderate, and high impervious surface categories. A few watersheds were directly involved in the study (Cabin John, Rock Creek, and Anacostia). But regardless of what category of watershed a park is part of, there are actions that all park staff can take to help maintain the health of their streams. These include, whenever possible, limiting the installation of new impervious cover, conservative and thoughtful placement of de-icers in winter, and the integration of green infrastructure (pervious pavement, infiltration basins, etc.) to help reduce pollutants reaching streams.

Water monitoring in park streams can also help diagnose current and potential future impacts of conductivity on local ecosystems. Continuous monitoring is best for documenting the extreme variability of conductivity during the winter months.

For more information on this topic, check out the recent [conductivity resource brief from the Inventory & Monitoring program](#), or contact regional Hydrologist Matthew Schley by NPS email or at 202-339-8327 (office) or 202-365-4489 (cell).

Reference:

Baker, M. E., Schley, M. L., & Sexton, J.O. (2019). Impacts of expanding impervious surface on specific conductance in urbanizing streams. *Water Resources Research*, 55. <https://doi.org/10.1029/2019WR025014>

NRS Field Work in Your Park

During winter (December - February), programs from the Natural Resources and Science (NRS) are in parks doing the following field work.

For details of [specific locations to be visited](#), consult the Inventory & Monitoring weekly field update and the Invasive Plant Management Team's Look Ahead weekly email messages sent to your park's Chief of Resources.



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

IPMT Treatment of lesser celandine starts in late February at Rock Creek Park.

[Photo: Water monitoring at Henson Creek. Credit: NPS]

Calendar

2019

DECEMBER

4. Earthworks Workshop. A combined Natural and Cultural Resource Advisory Team (NAT & CAT) Meeting. Glen Echo Park, 10:00 am to 2:00 pm.

2020 - The 20th Anniversary of NPS Exotic Plant Management Teams!

APRIL

30. 2020 Spotlight on National Park Resources in the National Capital Region.

JUNE

5. Chesapeake Watershed Cooperative Ecosystem Studies Unit (CW CESU) Annual Meeting. National Conservation Training Center (NCTC).

Stay Tuned: NCA Grassland Management Workshop tentatively planned for early spring 2020

Submit your ideas for the next Natural Resource Quarterly newsletter.

The Natural Resource Quarterly provides updates on the status of natural resources and science in the parks of Region 1 - National Capital Area.

[NCA Natural Resources](#) | [Previous Issues](#) | [NCR Inventory & Monitoring](#)

