



ARTICLE

Ash Tree Update 2022

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By Nicholas Tait, NCRN I&M Science Communication Intern

Ash Trees Continue to Decline

Emerald ash borer (EAB), first detected in the National Capital Region in 2014, has killed the majority of the 300,000 ash trees once present in the region's parks. The invasive beetle targets all ash tree species, laying eggs in cracks in their bark so larvae can feed on the woody tissue vital for transporting water and sugar within a tree. Nearly 100% of ash trees infested with EAB have been killed.

As of 2022, monitoring data from the National Capital Region Inventory and Monitoring Program (NCRN I&M) indicate that there are fewer than 56,000 surviving ash trees remaining in the region. The ashes that have died continue to swell the number of standing dead trees (snags), which may be nearing their peak (Figure 1). In the next few years, these snags will decline (both literally and numerically) as they fall to the forest floor.

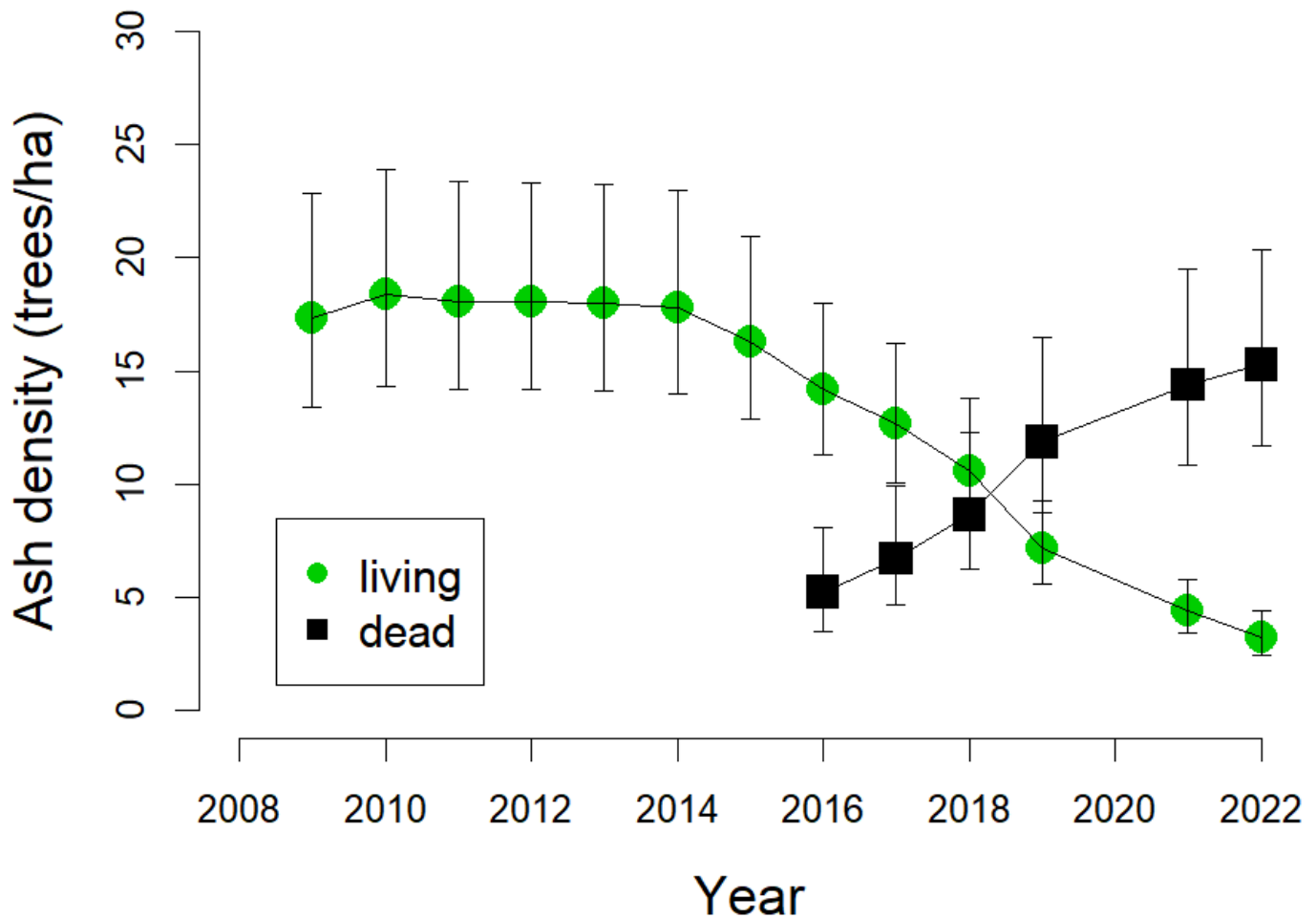


Figure 1. Ash tree density in NCR parks. Green dots show living tree density. Black squares show standing dead tree density. Both circles and squares represent rolling 4-year monitoring periods labelled by ending year (e.g., 2016 point shows data for 2013-2016) except for 2021 and 2022 which show 5-year rolling periods. Vertical lines show estimated error.

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But Seedlings and Saplings are Increasing

NCRN monitors ash trees of all sizes, from seedlings to saplings to adult trees. The number of individuals in each of these size classes has changed in recent years (Figure 2). While trees continue to plummet from the devastation of EAB, seedlings have seen a huge spike in density and sapling numbers are now starting to increase as well. The burst of seedling growth can likely be attributed to several factors including:

- Ash trees naturally produce large quantities of small seeds that germinate quickly.
- Stressed canopy trees producing an additional burst of seeds before they die.
- Park [deer management](https://www.nps.gov/articles/000/resilient-forests-initiative-deer.htm) (<https://www.nps.gov/articles/000/resilient-forests-initiative-deer.htm>) is increasing seedling survival.
- Dying canopy trees allow more sunlight to reach the seedlings on the forest floor

The recent increase in sapling density, however, is likely a result of stump sprouting from many of the green and pumpkin ash trees in wetlands that have been hit hard by EAB but haven't fully died. The stump sprouts have grown large enough to qualify as saplings (between 1 and 10 cm diameter at breast height) but not yet large enough to become appetizing to EAB. It is unclear, though,

whether these now shrub-like ashes will continue to cycle indefinitely in that shrubby state or whether they will eventually form flowering and seed-producing trees.

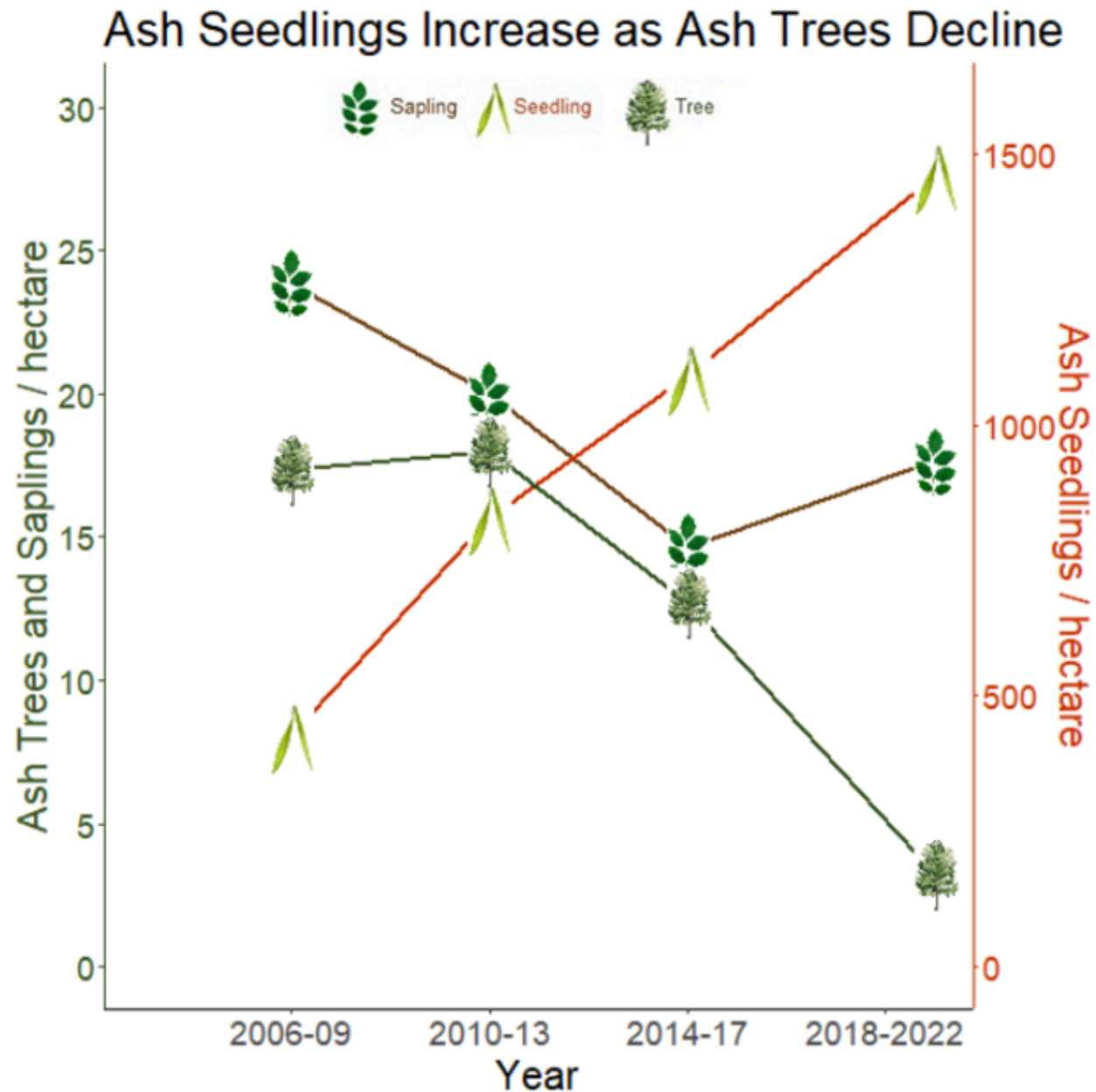


Figure 2. Density (individuals/hectare) of ash trees (shown by tree icons) and saplings (leaf icons) on left axis, and ash seedlings (inverted V-shaped samara icons) on the right axis, at four time intervals. Vegetation is monitored on a 4-yr rotation; each icon represents a full sample. Monitoring was paused in 2020 due to COVID-19, so the last time interval spans 5 years. Seedlings are greater than 15cm tall, but less than 1cm diameter at breast height (DBH).

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What's next for NCR's ash trees?

It is still too early to know for sure. Based on trends in monitoring data since EAB invaded, I&M ecologists expect that ash trees will continue to decline for the next few years and large trees will likely be a rare occurrence in NCR parks. There are high numbers of ash seedlings, but it is unlikely that EAB will allow any of these seedlings to reach maturity. It is possible that our region's ash in wetland areas could go the way of the American chestnut: seedlings grow into saplings or young trees that are large enough to be appetizing to EAB, they die, then the cycle repeats, with individuals rarely reaching canopy height or producing viable seeds.

The prognosis for ash trees could potentially improve with the continued spread of biological controls. The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) has released several parasitoid wasps that hail from EAB's native range in East Asia and serve as the beetle's natural predators. As of 2020, APHIS had [released over 8 million](https://www.mapbiocontrol.org/home/maps/) (<https://www.mapbiocontrol.org/home/maps/>) of these stingless wasps in 30 states and the District of Columbia. They've also recovered offspring in 22 states, including Maryland, DC, and Virginia, which means that the wasps are establishing themselves, reproducing, and killing EAB in the National Capital Region. The end goal of this release program is to have thriving wasp populations in every county with emerald ash borer infestations. Only time will tell if these biological controls have the desired impact on EAB populations and allow ash trees to rebound to their former standing in NCR forests.

*SPATHIUS GALINAE**SPATHIUS AGRILI**OBIUS AGRILI**TETRASTICHUS PLANIPENNISI*

USDA APHIS released these four species of tiny, stingless parasitoid wasps to prey on emerald ash borer.

USDA APHIS

Further Reading

Learn more about white ash trees in this [NPS Species Spotlight on White Ash](https://www.nps.gov/articles/species-spotlight-white-ash.htm) (<https://www.nps.gov/articles/species-spotlight-white-ash.htm>). Previous material on ash trees and emerald ash borer in national parks of the National Capital Region was published in online articles in [2021](https://www.nps.gov/articles/000/ash-tree-update-2021.htm) (<https://www.nps.gov/articles/000/ash-tree-update-2021.htm>) and [2017](https://www.nps.gov/articles/ash-tree-update.htm) (<https://www.nps.gov/articles/ash-tree-update.htm>).

Learn More about the National Park Service's Inventory & Monitoring Efforts

To help protect natural resources ranging from bird populations to forest health to water quality, National Park Service scientists perform ecological Inventory & Monitoring (I&M) work in parks across the country. The [National Capital Region Network, Inventory & Monitoring program](https://www.nps.gov/im/ncrn/index.htm) (<https://www.nps.gov/im/ncrn/index.htm>) (NCRN I&M) serves national parks in the greater Washington, DC area. To learn more about NCRN I&M forest monitoring, you can visit [the NCRN forest monitoring webpage](https://www.nps.gov/im/ncrn/forest.htm) (<https://www.nps.gov/im/ncrn/forest.htm>).



anacostia park

antietam national battlefield

baltimore-washington parkway

catoctin mountain park

chesapeake & ohio canal national historical park

fort dupont park

george washington memorial parkway

great falls park

harpers ferry national historical park

kenilworth park & aquatic gardens

manassas national battlefield park

monocacy national battlefield

national capital parks-east

piscataway park

prince william forest park

rock creek park

theodore roosevelt island

wolf trap national park for the performing arts

emerald ash borer

ash

fraxinus

agrilus planipennis

invasive non-native species

insect

invasive pests

ncrn im

ncrn

i&m

forest

forest pests

resilient forest management

biological control

wasp

invasive species

exotic species

non-native species

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