



Integrated Pest Management Report: 2023

Charlottesville Parks and Recreation Department

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Introduction

Integrated Pest Management (IPM) is a methodology that establishes an effective and environmentally sensitive response to pests (insects, weeds, diseases, other vertebrates that can damage plants) that damage trees, shrubs, and turfgrass. IPM establishes a sustainable approach to managing pests by combining biological, cultural, physical, and if necessary, chemical tools in a way that minimizes health, environmental and economic risks.

An effective IPM program requires analysis, planning, and revision. Looking critically at the level of service and methods used to maintain this level of service are vital to the success of the program. Assessing these methods and practices maintains a level of responsibility and transparency to the public and promotes innovation in the IPM program. The Parks and Recreation Department strives to be proactive rather than reactive in the implementation of IPM methods.

This report is a summary of the activities of the City of Charlottesville's Integrated Pest Management (IPM) program as adopted by City Council in 2015. It is a common misconception to conclude that all pest management activities on a landscape involve chemical control (i.e., spraying pesticides), and our approach uses many different methods, which include:

- **Inspections:** routine assessment of the health and quality of plants; establishing threshold for pest damage.
- **Cultural control:** proper pruning, thinning, and mulching cultivated plants.
- **Physical or mechanical control:** hand removal of insects, or the use of machines, traps, barriers, fences or nets to control a targeted pest.
- **Biological control:** using natural enemies—parasites, predators, and pathogens to control a target pest.
- **Chemical control:** the use of pesticides to prevent, repel, suppress, or destroy a pest.

Our IPM strategy regularly uses most, if not all, of the methods listed above. In summary, maintaining proper soil fertility, soil moisture (irrigation), mulching, mowing, monitoring, and choosing native vegetation are all strategies that help ensure plant health. The following summary of activities and initiatives from January – December 2023 will help describe some of these strategies.

Summary of Initiatives in 2023

Invasive Plant Control:

As part of a new capital budget item, Parks began work on suppressing and controlling invasive plants, including many different vines, shrubs, and trees. We received a lot of positive feedback from the various projects. We utilized several different methods of control, including mechanical, biological, and chemical. The initial areas of focus were Washington Park, Forest Hills Park, Azalea Park, and City-owned land located west of Jordan Park, totally approximately 11 acres. For example, we contracted the services of a forestry mulcher (mechanical control), a powerful machine used to grind and pulverize vegetative material, including vines, shrubs, and even small trees. This was a new service and contractor for us this year, but it proved to be very effective in removing invasive plants.

Parks also utilized goats (biological control) as a means of helping to control invasive plant species. Two sites (Washington Park, Fry's Spring) were targeted to bring in the goats to help control kudzu, porcelainberry, multiflora rose, and other plants. In total, approximately 2 acres were consumed by goats. After these methods were used, selected herbicide applications (chemical control) were made to help keep the invasives from growing back. The areas were re-planted with approximately 650 small tree seedlings, and the restored areas will be maintained through mowing, trimming, and chemical controls.



Before forestry mulching (near Jordan Park)



After forestry mulching. (same location)

Staff Training and Continuing Education

We had 3 employees from the Parks Division become certified as Registered Technicians through the Virginia Department of Agriculture and Consumer Services (VDACS). This requires 20 hours of on-the-job training, as well as 20 hours of studying the Virginia Core Manual, “Applying Pesticides Correctly.” This training includes practical and legal requirements, as well as training on the theory and practice of Integrated Pest Management principles. Parks Division now has 4 Certified Pesticide Applicators, and 6 Registered Technicians. In February, we had 2 employees from the horticulture crew complete continuing education classes (16 staff hours total) to maintain their Certified Applicator credentials. In November, the City’s Urban Forester and Landscape Manager attended a day long arboriculture workshop (16 staff hours) to hear updates about new tree diseases, insects, and a pesticide re-certification update from a senior VDACS Pesticide Inspector.

Pesticide Records

In accordance with State laws and the City’s IPM policy, pesticide records were kept for each application made by Parks staff. A new system was implemented this year for these records. Parks staff developed a more user-friendly spreadsheet to record and sort the data, which is presented as part of this report. The existing system used an out-of-date database that is not compatible with current operating systems. The new spreadsheet system was implemented about halfway through the summer, and we are still evaluating how well it works.

Downtown Mall Trees

The oak trees downtown are a key part of the landscape and character of the mall and the City. In January 2023, the oaks were pruned to remove dead, diseased, and/or broken branches, and 5 willow oaks were removed. There were also 4 maple trees near Central Place that were removed. Pruning trees is a good way to help keep them healthy by removing dead and dying branches, which can attract insects or serve as entry points for disease. There were several willow oaks downtown that were treated by an outside contractor in the late summer for a damaging insect called ambrosia beetles. The City’s Urban Forester also had these trees inspected by other expert arborists, including an entomologist and plant pathologist from the F.A. Bartlett Tree Expert Company, and locally from Van Yahres Tree Company. The decline and death of the maple trees illustrates the concept of “right tree, right place” because those trees are not suited to grow in that environment (high heat, reduced soil volume).

Emerald Ash Borer: Biocontrol, Pruning, Removals, and Systemic Treatments

We have removed many ash trees due to EAB, and we are currently treating approximately 35 ash trees with a systemic (trunk injected) insecticide to help save them. These treatments are done every two years (by contracted service), and the trees have been identified as good candidates to continue to treat and save because of their location, size, and/or importance.

This year, we were updated on the research done at Ragged Mountain Reservoir to investigate the use of beneficial wasps to help control the emerald ash borer. This is a pest management approach known as biocontrol. In 2021 and 2022, researchers from the USDA Animal and Plant Health Inspection Service released beneficial wasps, capable of parasitizing the eggs of emerald ash borers. In October of 2023, they returned to gather samples from trees to evaluate the efficacy. The bark was removed by a USDA researcher, who will then analyze the sample looking for signs the EAB eggs have been parasitized by the beneficial wasp (results to be determined, and we will be informed of the results). Although a lot of damage has been done to the native ash tree population, this research may yield important scientific advances which may save other ash trees. The City will continue to cooperate with other agencies to work on projects like this.



Goats consuming kudzu near Fry's Spring.

Nutrient Management Plan

The City updated its Nutrient Management Plan in December of 2023. Urban nutrient management plans are required for golf courses, state-owned lands, and publicly owned lands that are fertilized within a Municipal Separate Storm Sewer System (MS4) permit area. Information and soil samples are gathered from each site under our management, and the data is compiled into a comprehensive plan to include detailed fertilizer recommendations. It is written by a Certified Nutrient Manager contracted by the City. We hired a soil consultant to do this sampling in November 2023, and the plan was completed in December. The new nutrient management plan is valid for three years. This plan helps guide fertilizer applicators to apply the correct amount, and type, of fertilizer for each site. This helps our turfgrass remain resilient and healthy, as well as help reduce the negative effects on downstream water quality, which can result from improper fertilization.



USDA staff sampling ash at Ragged Mountain

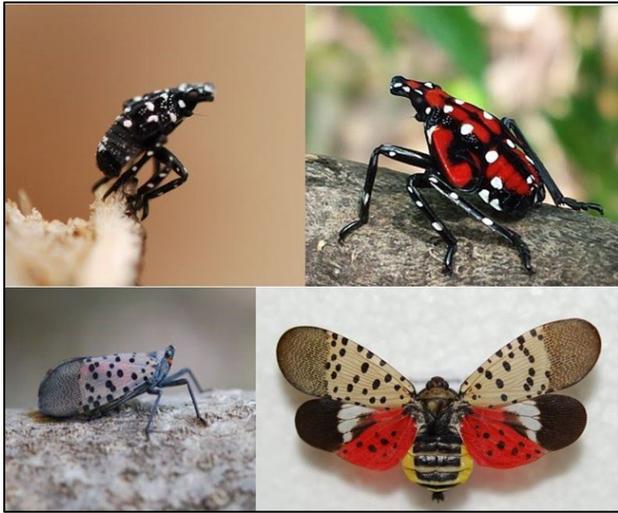


Entomologist from Bartlett Tree Experts

Objectives and Plans for 2024:

- Be on the lookout for Spotted Lantern Fly (SLF): Spotted Lantern Fly is a serious pest for the grape and fruit industries, and a nuisance for urban trees. The urban forestry and horticulture teams will stay informed and aware of developments and how it may affect City landscapes.
- Beech Leaf Disease: this is a relatively newly discovered disease, which is found mostly in the northeast U.S. It is a complex of a disease and nematode (microscopic worm) that begins by infecting beech leaves, which slowly progresses into leaf mortality. It is still not widely known what the potential effects of this disease are.
- Maintain a well-educated, trained, and informed staff (e.g. professional development, continuing education).
- Invasive plants will continue to be an issue, but we will have an on-call contractor for large projects.
- Educating the public and encouraging diversity of plants.
- Watering, mulching, and practicing “right plant, right place.” The best defense against pests is keeping our plants healthy.
- Continue with partnerships and collaboration with other agencies and outside organizations.

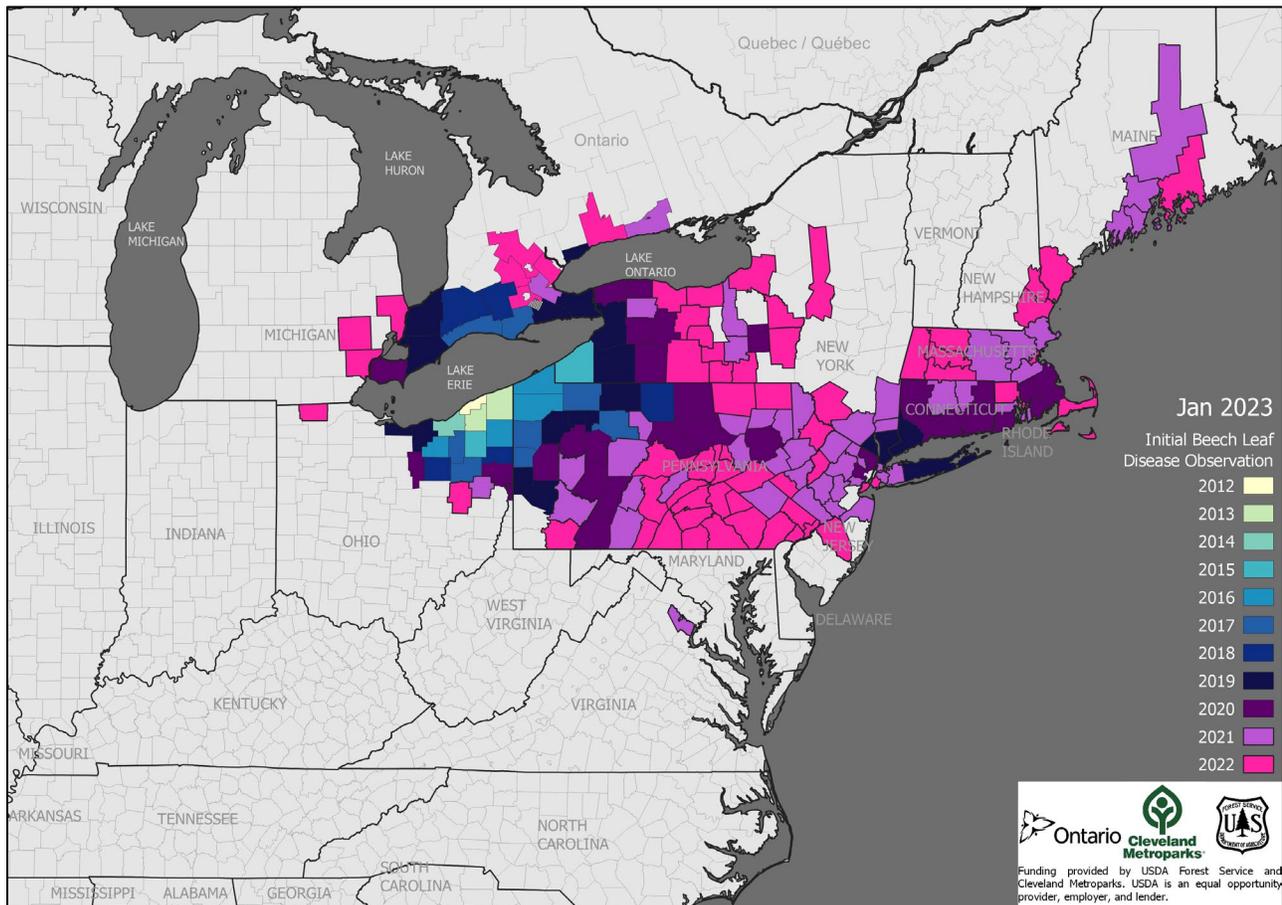
There will be challenges and new pests that may arise this year, and we hope to continue to face these challenges in several different ways. There are several new pests that have been identified in our area that could pose threats to our trees: spotted lanternfly (confirmed in our area), and beech leaf disease (which has been confirmed in northern Virginia). The City’s best resource for identifying and dealing with pest problems is the well-trained staff of workers in the horticulture, turf maintenance, and urban forestry units. We will continue to offer and encourage our staff to stay informed through continuing education (seminars, online courses, etc). We will continue to work with partner organizations (e.g., USDA, Cooperative Extension, VDACS, and the City’s contracted tree service provider, Big-O Tree Company, to identify and advance our IPM objectives through education, cooperative efforts, and scouting.



Spotted Lantern Fly (photo National Park Service)



Beech Leaf Disease (photo Michigan Dept. of Natural Resources)



Beech Leaf Disease distribution: January 2023