



Priority Planning for Ash Trees Impacted by the Emerald Ash Borer

Corinne Murray

Urban Forestry Consultant

City of Auburn, NY Public Works Dept.

Identification & Infestation

General information on the Emerald Ash Borer, the species of Ash trees susceptible to infection, and the devastating effects it can have on urban forestry.

What is an ash borer?

- A small green beetle native to Asia
- Attacks ash trees only in the genus fraxinus
- Invasive Species to the US– no natural suppressors



Identification of Ash Tree Species

Leaf

- Opposite branching
- Compound leaves



Trunk

- Thick, ridged, raised bark
- Diamond-like pattern



How is an ash tree infected?

- The female deposits eggs along the trunk or major branch.
- Larvae bore through bark to feed on the phloem tissue of the host.
- To emerge from ash trees, adults chew D shaped holes and exit, feeding on the leaves before dispersing to infect other ash trees.



How does an infestation affect ash trees?

- Tissue that brings water and nutrients throughout the tree are damaged.
- When disturbed, the tree starts to die within 2-5 years.
- Once an the Emerald Ash Borer is introduced into the ecosystem, virtually every ash tree will be infested.
- Noticeable signs & symptoms of infection include Serpentine Galleries, D-Shaped Holes, Canopy Dieback & Dead limbs.



Serpentine Galleries



D-Shaped Exit Holes



Canopy Dieback

Building an Ash Tree Inventory using Geospatial Technology

Using spatial and descriptive data to create a critical tree database



Data Collection

- 100% of City property was inspected & inventoried for all species of Ash Trees.
- Data was collected using High Resolution GeoTiff Imagery and iPad App- “PDF Maps”
- Spatial location and attributes for Tree Size, Condition of Health, & Surrounding Utilities were collected at each location.

The image shows a screenshot of an iPad Maps application. The left side displays an aerial map of a residential area with several red placemark pins. One pin is selected, showing a callout box with the text 'Placemark 251' and an information icon. The right side of the screen shows the 'Placemark' details panel. At the top, it says 'Placemark' and 'Close'. Below that, there is a 'Change' button and a text field containing 'Placemark 251' with a close icon. Underneath, the date and time '6/27/14, 2:15 PM' are displayed. The panel lists several fields: 'Description' (Not Set), 'Photos' (Not Set), and 'Location' (42.93613, -76.55747). Below these is an 'ATTRIBUTES' section with a folder icon and the text 'Placemark' and 'Parent Folder/Schema'. The attributes listed are: 'Condition' (Healthy), 'Site' (Utility conflict), and 'Tree Size Class' (Pole). At the bottom of the panel is a red 'Delete' button. The top of the iPad screen shows 'iPad', signal strength, and the time '9:12 AM'. The bottom of the screen shows a compass, a location pin icon, and the coordinates '42.93613, -76.55747'.

9:12 AM
Auburn NE

Placemark 251

Placemark 251
6/27/14, 2:15 PM

Description Not Set >

Photos Not Set >

Location 42.93613, -76.55747 >

ATTRIBUTES

Placemark
Parent Folder/Schema Edit Move

Condition Healthy >

Site Utility conflict >

Tree Size Class Pole >

Delete

42.93613, -76.55747

Analysis

Using spatial and descriptive data to better planning, management, and risk mitigation.

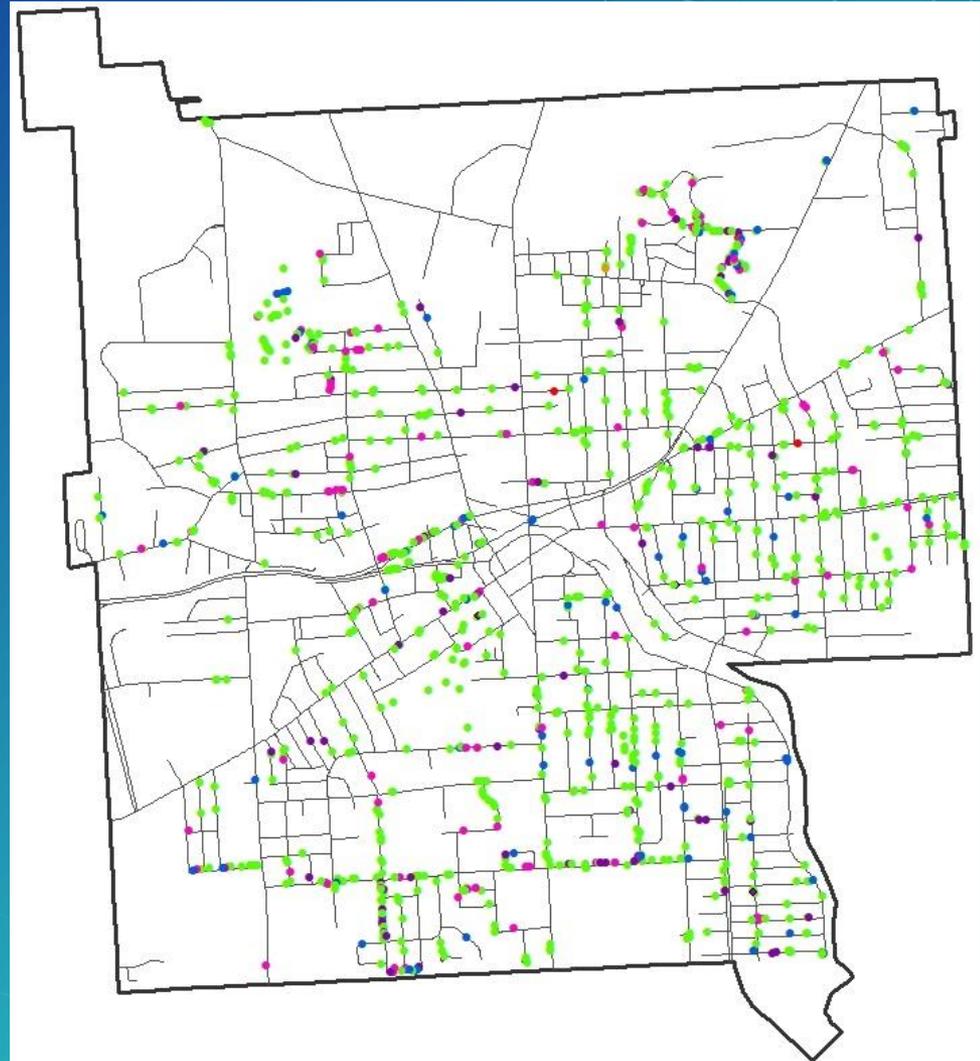


Summarizing the Data

- Each attribute collected was summarized and analyzed using Minitab statistical software

Condition	Count_Condition
	0
Dead Limbs	120
Dead tree	4
Foliage Loss	88
Healthy	759
Stem damage	1
Yellowing/browning leaves	68

- Healthy
- Dead Limbs
- Foliage Loss
- Yellowing/browning leaves
- Stem damage
- Dead tree

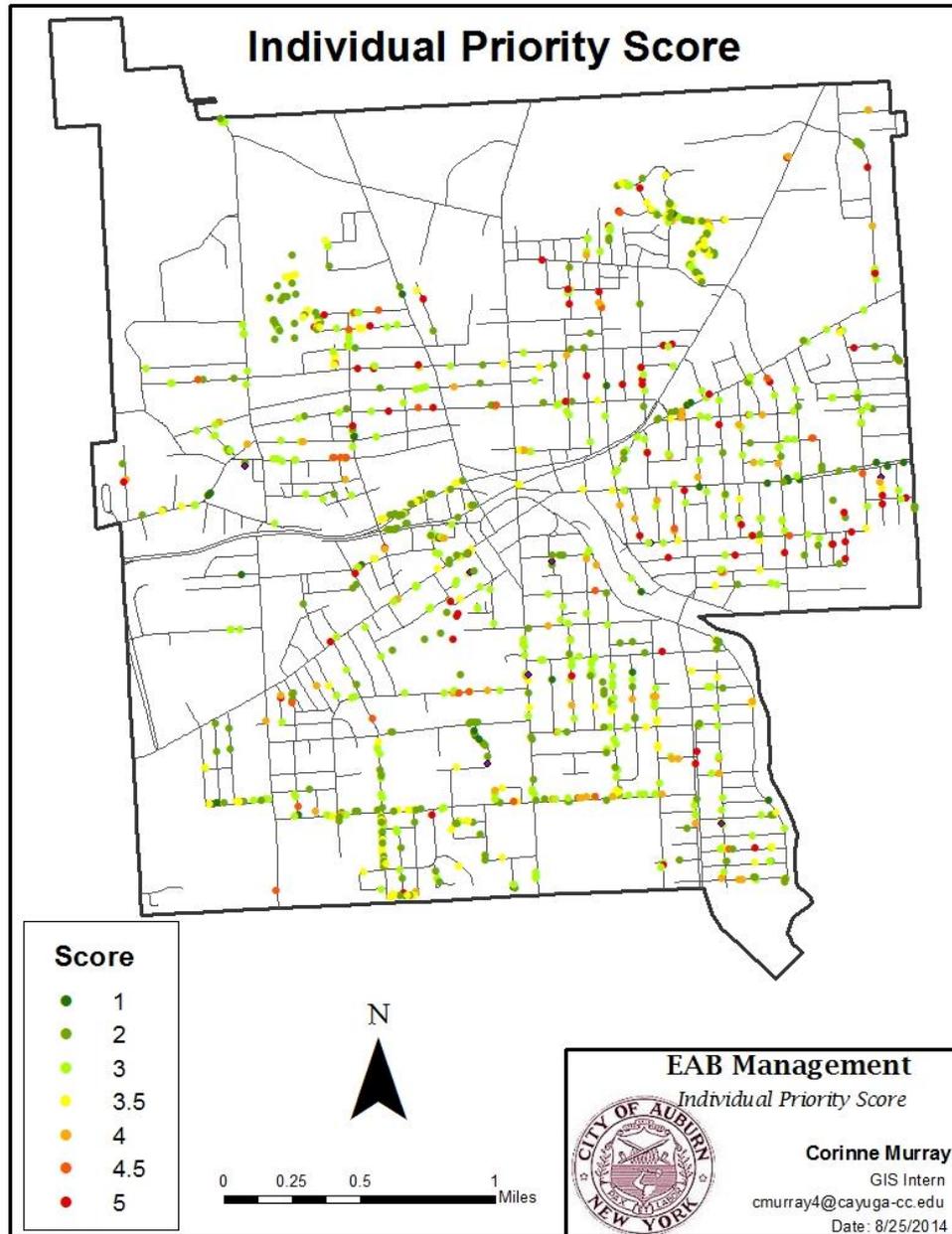


Identifying Critical At Risk Locations

- Based on statistical analysis and input by the City, a Priority Rank was assigned to each ash tree.

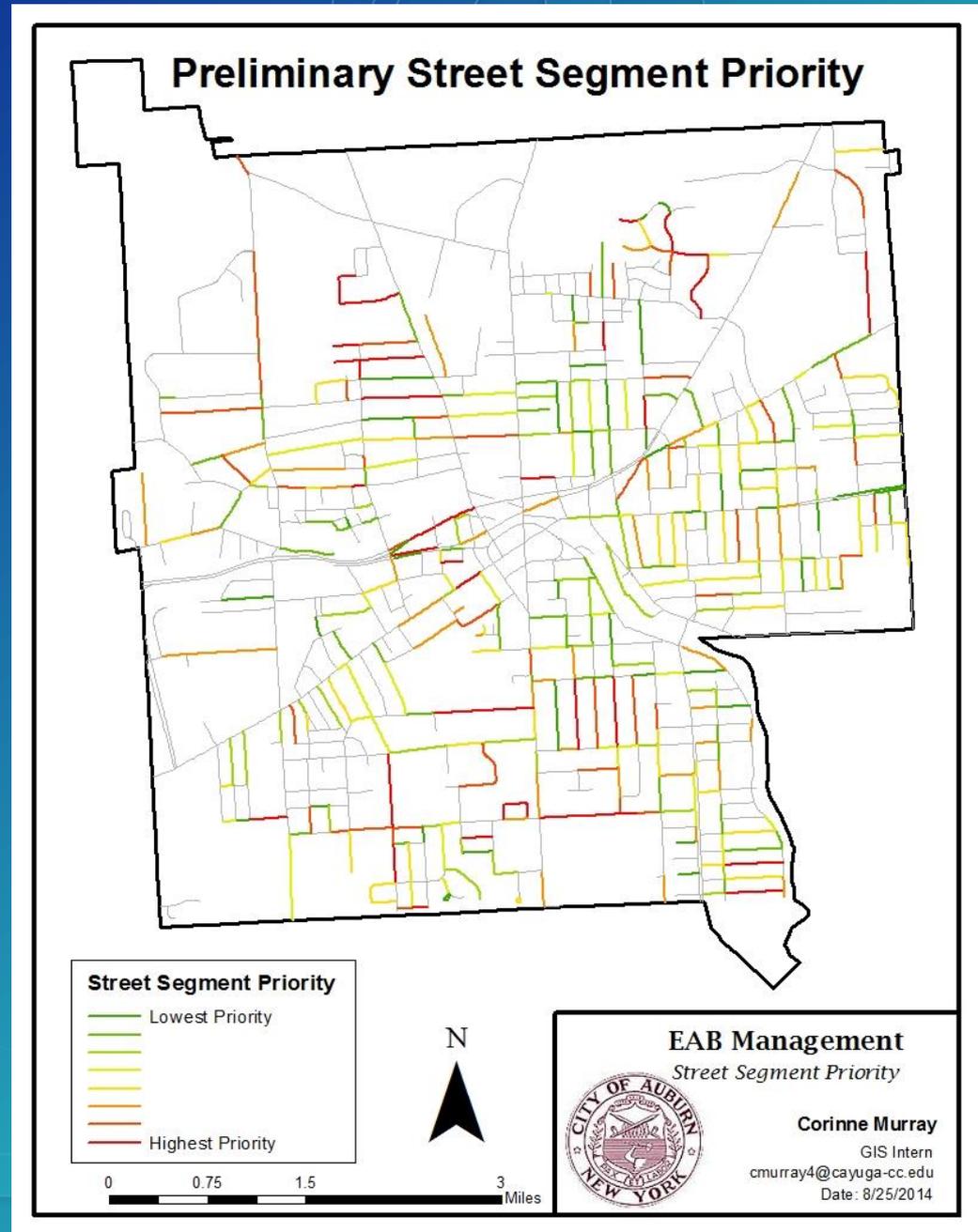
<u>Score</u>	<u>Criteria</u>
• 5	Large & Extra Large Trees
• 4.5	Medium & Pole Size Trees, Overhead Utilities, Dead Branches
• 4	Medium & Pole Size Trees, Overhead Utilities, All Conditions but Healthy
• 3.5	Medium & Pole Size Trees, All Other Site Conflicts, All Conditions but Healthy
• 3	Medium & Pole Size Trees, All Conflicts, Healthy
• 2	Medium & Pole Size Trees, No Site Conflicts, Healthy
• 1	All Sapling Trees

Priority Rank Distribution



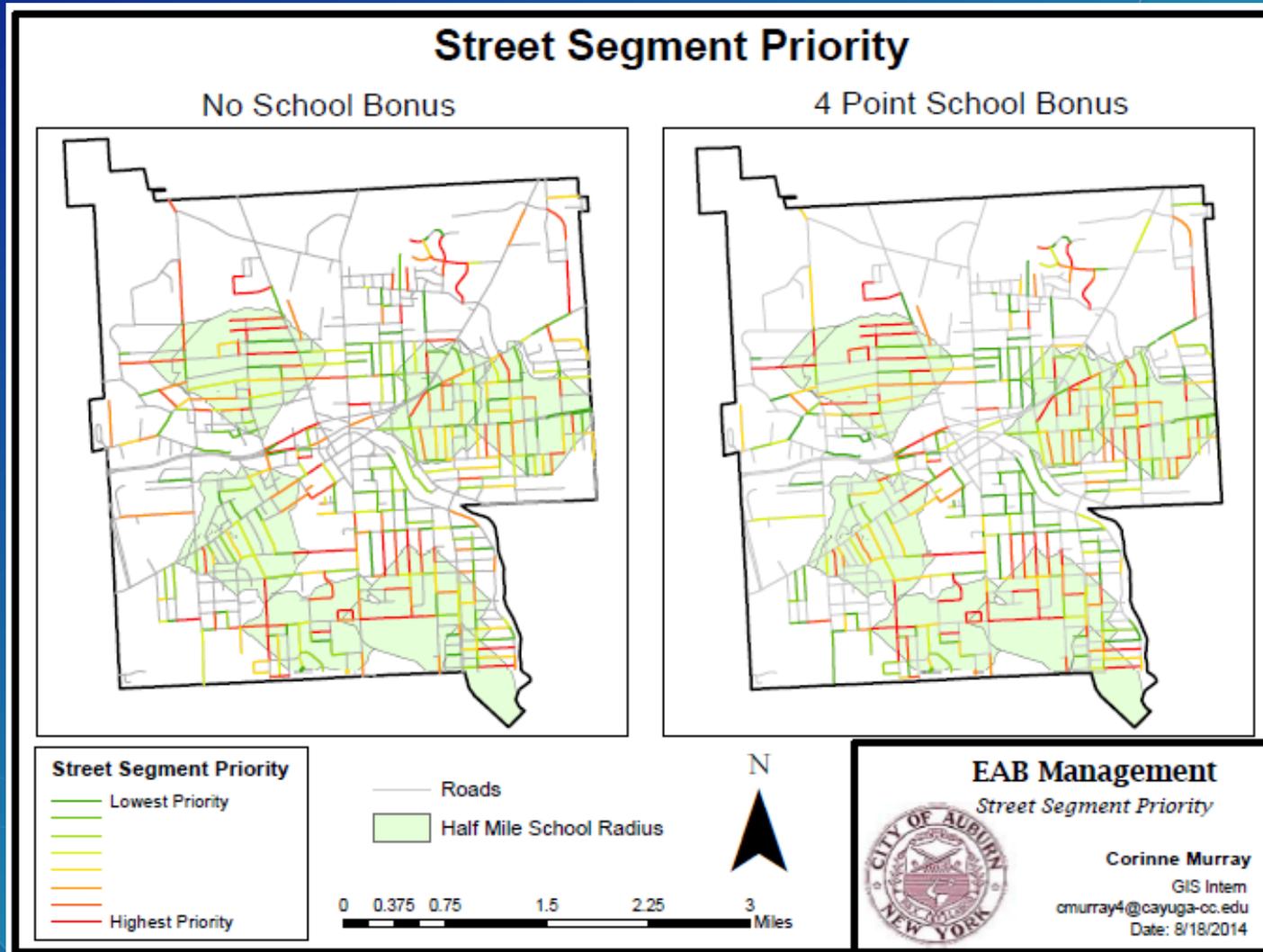
Street Segment Priority

- By spatially joining the Critical Ash Tree Scores to a city street layer and summing the scores along a street segment, the crews are able to more efficiently execute high priority areas spatially.



School Priority Rank Point Bonus

- Before determining the final priorities of street segments, trees on street segments most frequently traveled by children walking to school should be given special consideration by adding to their scores.



What are the options for action?

- **Insecticide treatment**

- Systemic insecticide into base of trees prevent damage for up to two years before needing another application of insecticide.
- By the time people notice canopy thinning, EAB has caused considerable vascular damage. These trees are not healthy enough to spread the insecticide through the tree, and must be removed.

- **Removal**



Questions?

