

# Mosaics in Science Natural Resource Assistant Internship Hopewell Culture Historical Park.

By Stephen Roethle



## Management Techniques

### Invasive Species Management

The primary focus of the Natural Recourse Internship is invasive plant management.



Exotic honeysuckles are the primary invasive species dealt with at Hopewell Culture Historical Park. More time was spent on management of this single group of plants than all other activities combined.



Other species managed included Multiflora Rose and Autumn Olive.



Canada Thistle and Garlic Mustard.



### Cut Stump Treatment

For large woody invasive species such as honeysuckles, and autumn olive the most affective available treatment is a process know as cut stump. In this treatment woody plants are cut down to stumps with a brush cutter or chainsaw. The bare stump is then sprayed with Pathfinder 2 (Triclopyr) a herbicide produced by Dow AgroSciences. Triclopyr is absorbed by the roots and prevents regrowth.



### Foliar Application of Herbicide

In foliar application, concentrated herbicide (typically glyphosate) and water are mixed in a backpack sprayer then applied to invasive plants. Glyphosate blocks synthesis of phenylalanine, tyrosine and tryptophan in plants. It does this by inhibiting the enzyme 5-enolpyruvylshikimate-3-phosphate synthase, which catalyzes the reaction of shikimate-3-phosphate and phosphoenolpyruvate to form 5-enolpyruvyl-shikimate-3-phosphate.

### Emerald Ash Borer Treatment

The Emerald ash borer is a beetle who's larvae feed on the conductive tissue of the tree. This tissue is what transfers the nutrients and water from the roots to the leaves, and when disturbed, the tree begins to die.



There is only one EPA approved treatment for Emerald ash borer beetles. Tree-age, made by Arborjet is a broad spectrum pesticide that is injected into the xylem of at risk trees.

### Cleanup After Management

A large part of mangement is cleaning up after everything is dead. This opens the park up and keeps everything looking nice.



All dead material is pulled from the forest and stacked at the treeline. Any material large enough is then chipped and disposed of.

### Wildlife Surveys



Wildlife surveys were also a small part of the internship. A breeding bird survey was conducted as well as a frog and toad survey. These surveys consist of going to predefined plots and recording all target species within a 3 minute period.