



Duke Forest's Least Wanted List

Invasive plants, forest pests and pathogens

Duke Forest Annual Gathering
November 13, 2014



Perpetrators:



► Forest Pests:

- Native or non-native insects that pose a threat to tree and ecosystem health.



► Forest Pathogens:

- Native or non-native diseases that are infectious and transmissible.



► Non-Native, Invasive Plants:

- Non-native vegetation that displace and compete with native plant species and plant communities.



Criminal Profile: Forest Pests

MISDEMEANOR OFFENDERS

- ▶ **Defoliators:** Feed on foliage and harm trees by limiting the ability to carry out photosynthesis.
 - ▶ Examples: Gypsy Moth, Pine Sawflies, Pine Webworms, Tent Caterpillars
- ▶ **Wood Borers:** Secondary pests that bore into declining trees. Larvae feed on inner bark and bore holes deep into the wood.
 - ▶ Examples: Sawyer Beetles, Ambrosia Beetles
- ▶ **Seedling, Twig and Bud Pests:** Attack seedlings or young succulent tissue of small twigs, shoots or buds.
 - ▶ Examples: Weevils, Tip Moths, Twig Girdlers
- ▶ **Piercing/Sucking Insects:** Cause harm by piercing plant tissues and feeding on nutrients.
 - ▶ Examples: Scales, Gall Makers, Adelgids



Criminal Profile: Forest Pests

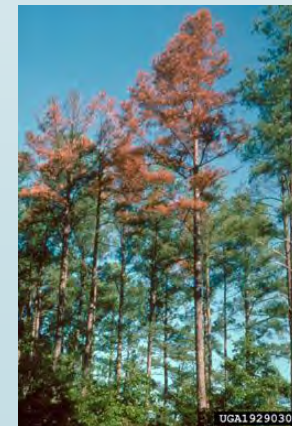
FELONY OFFENDERS

- ▶ **Bark Borers:** Bore into the bark of trees to feed and reproduce. Harm trees by destroying phloem, the tissue that transforms carbohydrates and nutrients.
 - ▶ Examples: Southern Pine Beetle, Ips Beetle
 - ▶ Response: Life without parole or capital punishment

Southern Pine Beetle



3 species of Ips Beetle



Criminal Profile: Forest Pathogens

SUSPICIOUS ACTORS

- ▶ Native or non-native diseases that are Infectious and transmissible.
 - ▶ Fungus, bacteria, biotic and abiotic stress agents.
- ▶ **Foliage diseases:**
 - ▶ Anthracnose, Brown Spot Needle Blight, Needle Cast
- ▶ **Branch and stem diseases:**
 - ▶ Fusiform Rust, Pitch Canker
- ▶ **Root diseases:**
 - ▶ Armillaria Root Rot, Heterobasidion (Annosus) Root Disease, Phytophthora Root Rot
- ▶ **Vascular diseases:**
 - ▶ Dutch Elm Disease



Criminal Profile: Invasive Plants

MISDEMEANOR AND FELONY OFFENDERS

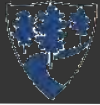
- ▶ Examples of invasives on the Duke Forest:
 - ▶ Trees: Tree of Heaven, Princess Tree
 - ▶ Shrubs: Chinese Privet, Autumn Olive, Multiflora Rose, Bush Honeysuckle
 - ▶ Grasses and forbes: Japanese Stilt Grass
 - ▶ Vines: Wisteria, Japanese Honeysuckle, Kudzu
- ▶ Duke Forest Response to Invasives:
 - ▶ Threat Ranking
 - ▶ Detection of Invasives
 - ▶ Control Methods
 - ▶ Post-Control Methods and Monitoring
- ▶ Prioritization:
 - ▶ Registered Natural Heritage Areas
 - ▶ After silvicultural operations
 - ▶ Highly aggressive invasive species



Invasive Species Management: Control Methods

- Mechanical Treatment:
 - Controlled burn
 - Hand removal
- Chemical Treatment:
 - Cut stump application
 - Foliar spray
 - Basal bark
 - Hack and Squirt
- Prevention:
 - Working with neighbors to address seed sources
 - Promoting healthy populations of native species





FOR FULL CRIMINAL PROFILES AND ADDITIONAL INFORMATION:

- The North Carolina Forest Service Forest Health Handbook, 3rd Edition. Available at: http://ncforestservice.gov/forest_health/forest_health_handbook.htm
- The North Carolina Forest Service Forest Health Webpage: http://ncforestservice.gov/forest_health/forest_health.htm

Useful Resources:

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The North Carolina Forest Service Forest Health Webpage:

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USDA Forest Service - Northeastern Area Archive, USDA Forest Service, Bugwood.org

<http://www.na.fs.fed.us/spfo/pubs/fidls/oakdecline/oakdecline.htm>

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