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**Chinese Yam (*Dioscorea oppositifolia*) Eradication and Restoration: A Cooperative Weed Management Area Project**

Terri Hogan, Ecologist  
Stones River National Battlefield

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- Introduction to Chinese yam
- Project overview
  - Yam within the Stones River watershed
  - Strategy to control Chinese yam
  - Project partners
  - Project components
- Results of project to date
- Project components in process
- Where do we go from here

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## Introduction to Chinese yam

- Introduced from Asia in the 1800s
- Uses: landscaping, medicinal
- Perennial deciduous vine, grows up to 15 feet in one season, blankets surrounding vegetation, reproduces vegetatively through bulbils, produces up to four bulbils per node, may produce third generation in one season
- Discovered at Stones River National Battlefield in 2002

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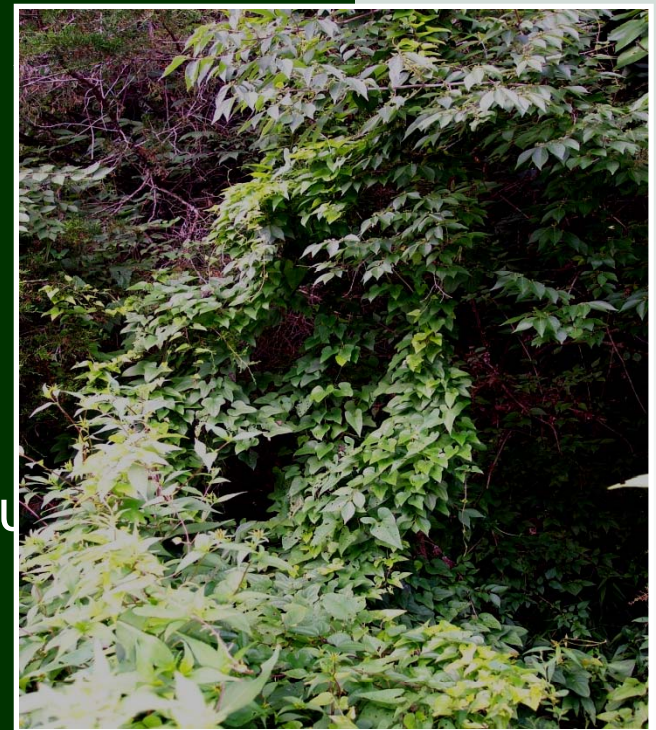
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## Impact of Chinese yam

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- Grows rapidly, blanketing surrounding vegetation, reproduces prolifically, strangling out native vegetation and reducing suitable habitat for many native organisms
- Due to rapid growth and high reproductive rate, potential to significantly affect and alter riparian systems throughout the southeast is substantial
- Impact on rare plants may be significant



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## Strategy: Addressing Chinese Yam Infestation within the Stones River Watershed

- Identify and engage stakeholders
- Assess available resources
- Acquire funding
- Plan treatment of invasive species taking species life history, surrounding plant community, and other environmental and political factors into account
- Plan restoration

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## Project Partners



Friends  
of the  
Greenway



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*School of Agribusiness & Agriscience*



TENNESSEE  
EXOTIC  
PEST  
PLANT  
COUNCIL



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## Project components

- Survey and map location of Chinese yam within 10 km section of Stones River watershed (2003)  
– MTSU Department of Biology and School of Agribusiness and Agriscience
- Identify land owners – city of Murfreesboro
- Develop monitoring plan, establish plots, begin monitoring – NPS, MTSU Biology
- Develop treatment plan and begin treatment – NPS, city of Murfreesboro

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## Project components

- Select native plant species to be used in restoration efforts, collect seed within the Stones River watershed, propagate seed, plant natives into treatment sites – NPS, NRCS, Discovery Center, MTSU Center for Environmental Education
- Develop educational materials – MTSU Center for Environmental Education, Discovery Center



QESHU\_Chris Evans, River to River CWMA, Bugwood

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PTETRI\_Chris Evans, River to River  
CWMA, Bugwood

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CORDRU\_John D. Byrd, Mississippi State University

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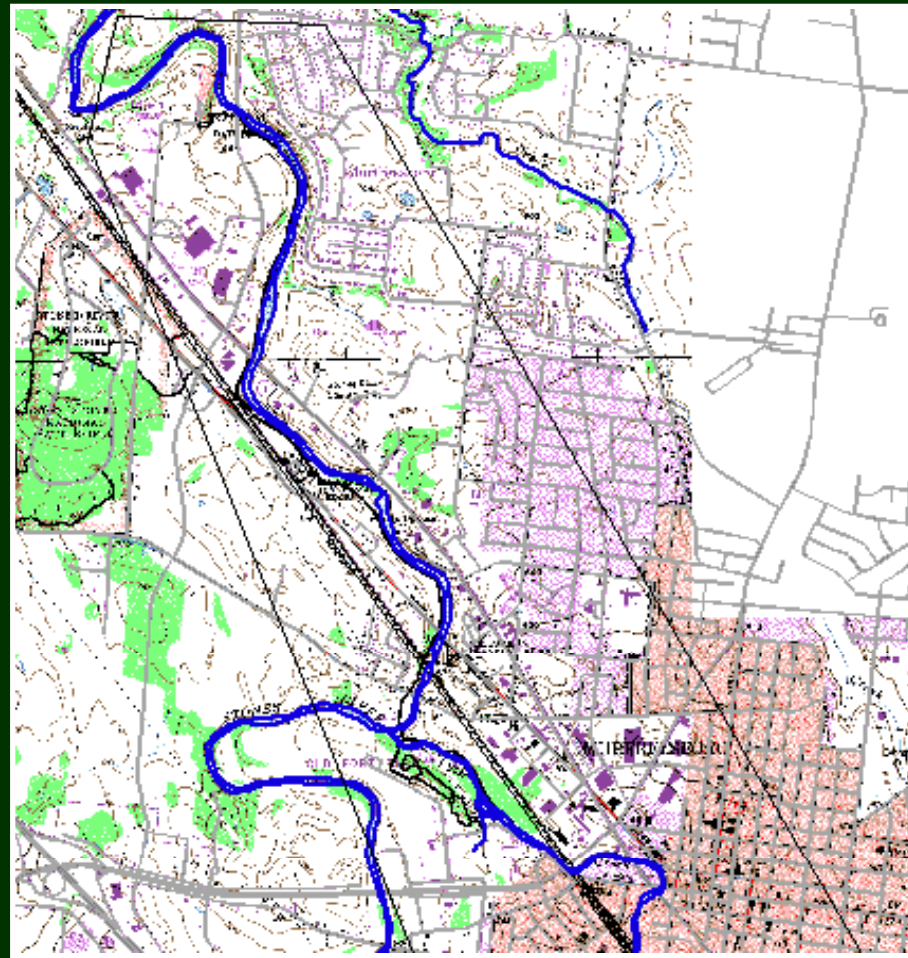
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**Chinese  
yam  
within the  
Stones  
River  
watershed**



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## Monitoring: Project Design

- Monitored six sites: one beginning in 2003, two beginning in 2004, one beginning in 2005, two beginning in 2006
- Six baselines with perpendicular transects
- Point-intercept – identified all species encountered
- Assessed change in cover of Chinese yam after treatment

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## Monitoring: Project Design and Results

- Results: 18 to 100% reduction in cover of Chinese yam
- Sites where treatment began in 2002 show greatest decrease in yam cover overall

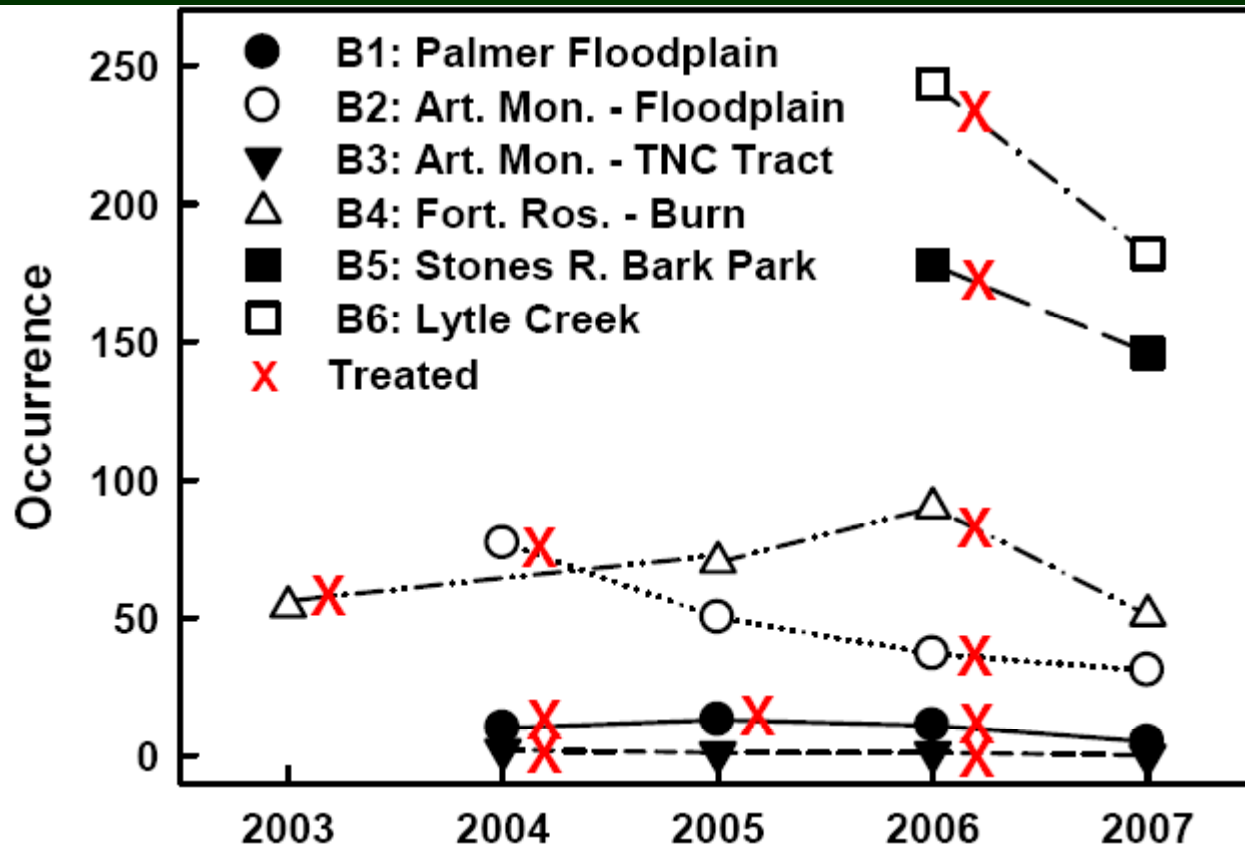


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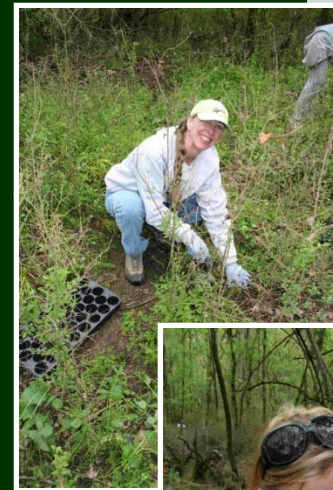
Occurrence of Chinese yam summed over three strata layers at six sites. Herbicide treatment following each sampling period indicated by X.

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## Chinese Yam Control: Results

- All known occurrences of Chinese yam mapped from Cannonsburg through NPS property
- Chinese yam treated with herbicide on NPS and Murfreesboro city property covering 29 acres covered in 2007
- Six sites monitored, Analysis of data shows treatment effective at all sites
- 15,000 plants grown out by NRCS from propagules collected within the Stones River watershed planted within treatment area



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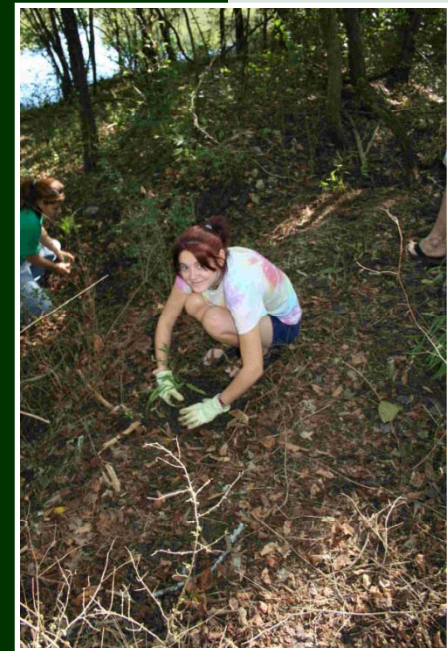
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## Chinese Yam Control: Results

- Hours contributed to date: Volunteers at 889 hours, cooperators at 835 hours
- Educational video and curriculum on threat of invasive plant species developed, 450 copies distributed, elementary school student participation, teacher training conducted

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## Homer Pittard Campus School Project

- Inspired by woolly adelgid invasion in Smokies
- One year project with 6<sup>th</sup> grade students, language arts teacher, pre service teacher
- Class objective: to listen, speak, & write for an authentic purpose
- Research, writing, presentation development
- Student presentations to business & government agencies in community



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## How are we using these data?

- Data are used to determine effectiveness of treatment, adjustments are made if necessary
- Data will be used to determine rate of recovery at sites, measured as increase in native plant cover and decrease in invasive plant cover, planting of natives will be intensified if needed
- Results are reported to NPS, cooperators, and the general public, provides positive reinforcement for volunteers and proof that positive change is achievable
- Data are used to help attain funding

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## How is Information Being Communicated to Audiences?

- National Park Service Reports
- Presentations: Cooperative Weed Management Area Conference in Reno, NV; 6<sup>th</sup> grade class at Homer Pittard Campus School speaking to community groups and decision makers; Invasive plant walks; ESA meeting in 2009
- Media: Newspaper articles, Session on NPT Volunteer Gardener Program
- Volunteer Work Days: Conducted at least 10 to date
- Educational Materials: Invasive plant curriculum and workshops, Video, Hands-on activities, Way-side exhibits

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## Where do we go from here?

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- Cooperators continue to acquire grants to fund project on a smaller scale, maintenance
- SRWA approach private landowner for permission to treat on their property, acquire funding for this aspect of the project
- Develop educational kiosks in highly visible areas
- Expand area currently being restored



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## Questions



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