

# Bad Plants and What to do About Them



# **National Park Service Mission Statement**

**“ To conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”**

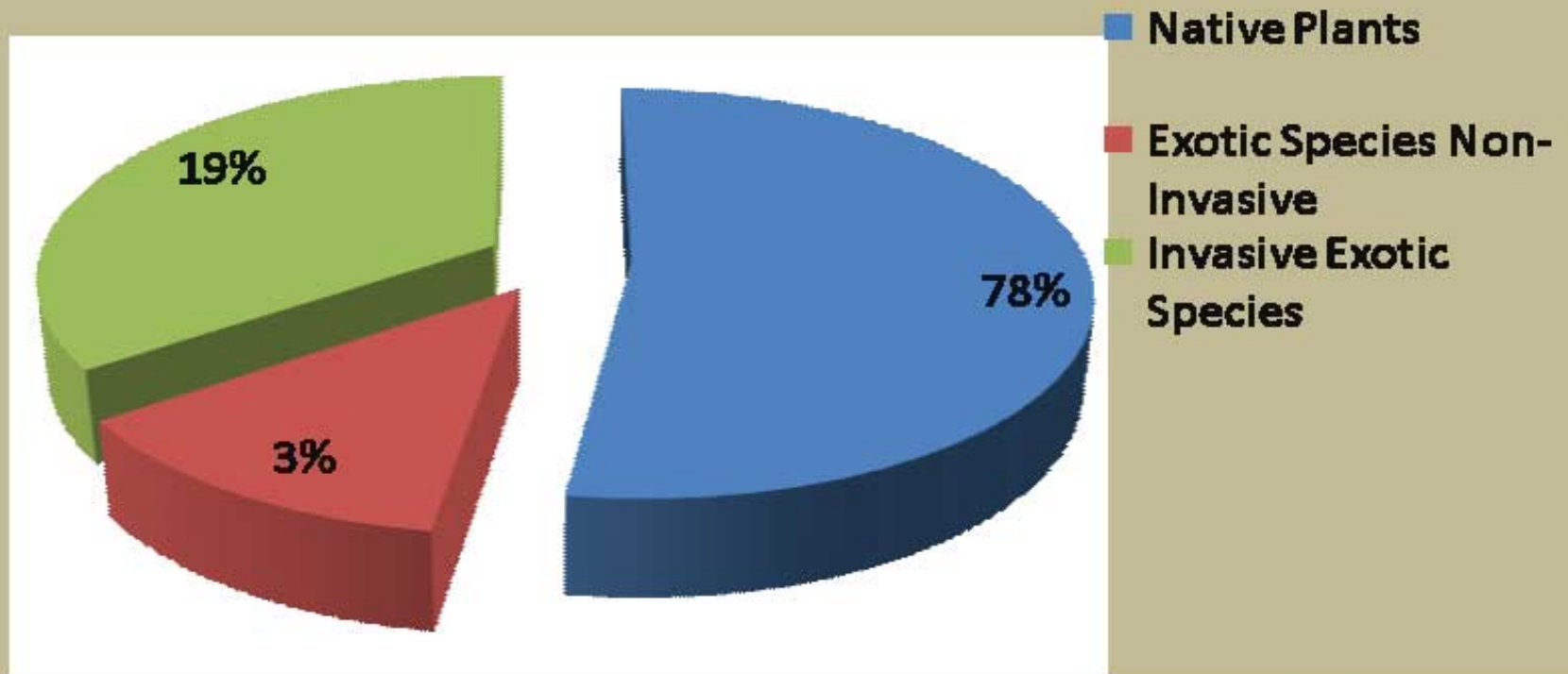


# Vascular Plant Species

Total Vascular Plant Species 1670

Total Exotic Species 360

Total Invasive Exotic Species 52



# Targeted Species

- 1670 Vascular Species in the park
- Currently 360 Non-native species in the park
- 52 species in management
  
- Trees - Royal Paulownia, Mimosa, Tree of Heaven
- Shrubs - Chinese Privet, Multiflora Rose, Japanese Spiraea
- Vines - Kudzu, Chinese Yam, Oriental Bittersweet
- Herbaceous Plants - Garlic Mustard, Common Mullien, Japanese Grass
- Grasses - Miscanathus, Tall Fescue

Great Smoky Mountains National Park  
Invasive Plant Locations 2010

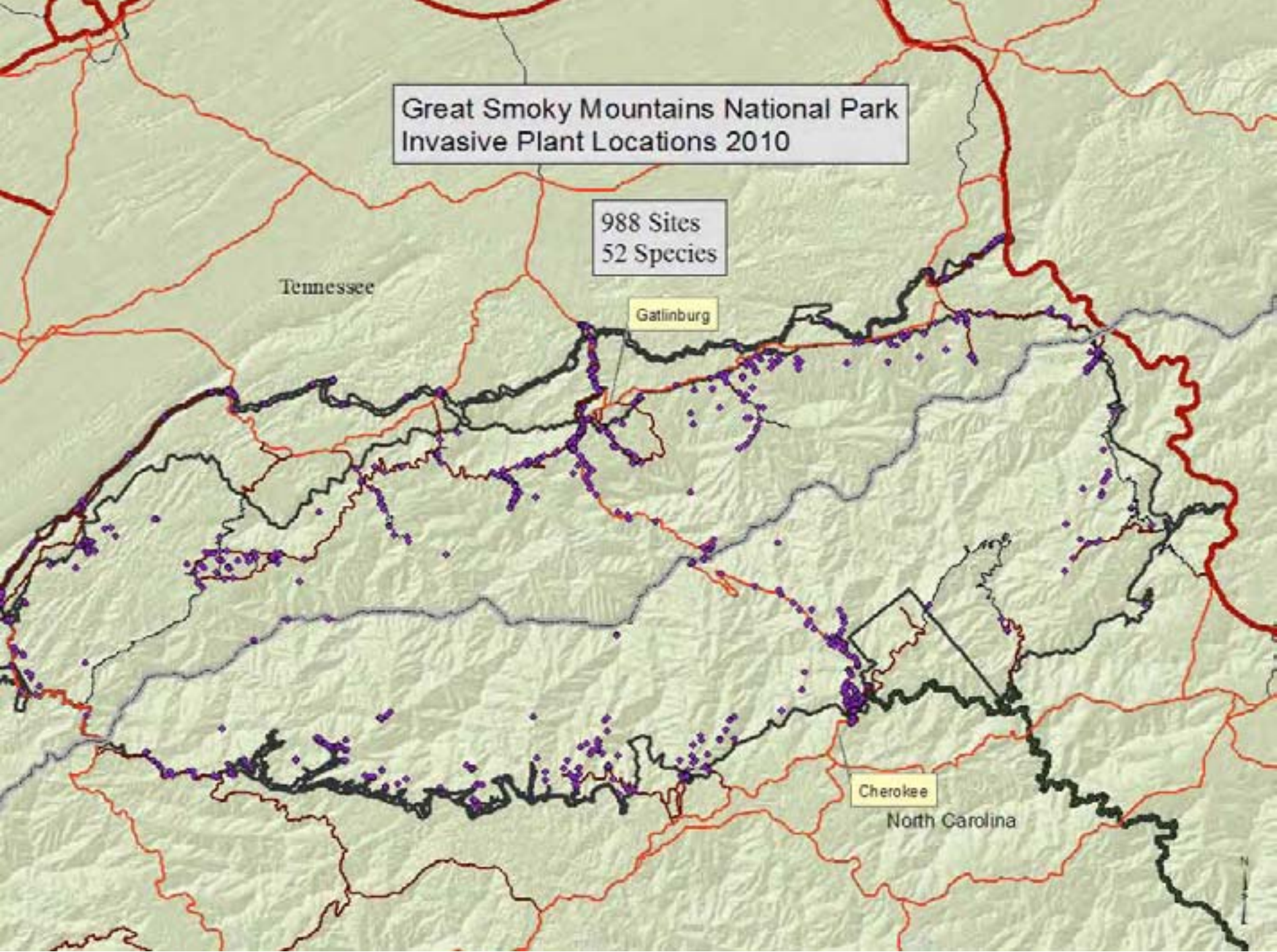
988 Sites  
52 Species

Tennessee

Gatlinburg

Cherokee

North Carolina







Abram's  
Creek  
Kudzu  
Site







[http://kipili.com/wp-content/uploads/2008/11/miscanthus\\_sinensis.jpg](http://kipili.com/wp-content/uploads/2008/11/miscanthus_sinensis.jpg)



# Landscaping with Native Plants

- Reduces maintenance in developed areas (when properly designed)
- Conserves resources (water, fuel)
- Provides an example of sustainable landscaping for visitors
- Reduces invasion of exotic plants into natural areas



*Paulownia tomentosa*- Princess Tree





English Ivy





Hedera helix- English Ivy





**Japanese Wisteria**  
(*Wisteria floribunda*)





Vinca minor- Periwinkle





Alliaria petiolata- Garlic Mustard



# Garlic Mustard Removal by Site

- Big Cr. Campground (1994-2007): 106,221
- Balsam Mtn CG (1999-2007): 33,035
- Cosby CG (2000-2007) : 25,009
- Maloney Pt. Overlook(2002-2007): 98,166





Albizia julibrissin-





*Celastrus orbiculatus*- Oriental Bittersweet





Rosa multiflora- Multiflora Rose





Tree of Heaven





<http://www.americanartifacts.com/smma/per/ewp14.jpg>



[http://farm4.static.flickr.com/3362/3547655851\\_5779801da0\\_b.jpg](http://farm4.static.flickr.com/3362/3547655851_5779801da0_b.jpg)



# Herbicide Criteria

- Systemic qualities : Translocates to root system, but not through soil.
- No restricted use herbicides.
- Not persistent in soil.
- Selective properties : Specific to certain plant families or groups.



# Herbicide Selection

- Accord (Glyphosate): Broad-spectrum herbicide with no soil residual activity
- Garlon 4 Ultra (Triclopyr): Applications for broadleaf species, basal, coppice and cut/stump treatments. Safe for grasses.
- Transline (Clopyralid) : Specific to Legume, Composite, and Nightshade families. Very effective on perennial weeds.



# Foliar Spraying



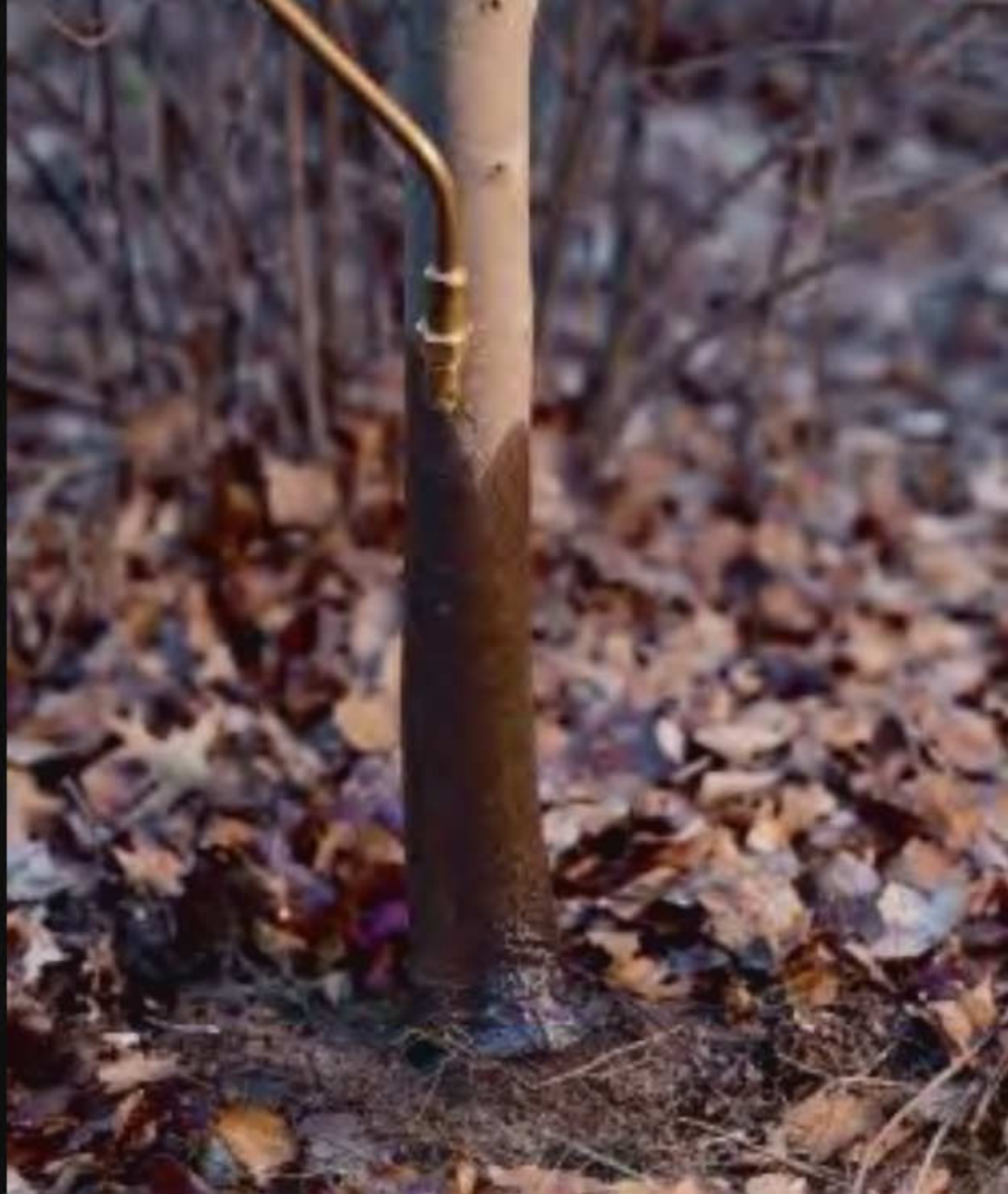




# Basal Bark Treatments

- Coverage of the entire stem circumference is key to success
- Must treat higher up on larger diameter stems
- On root suckering species, make sure collar area is covered, treat root flares, or exposed roots
- Can be done in dormant season





# Cut and Stump Treatments





# Pulling and Grubbing

- Used to remove shallow-rooted or small plants, such as annuals or seedlings
- Pulling or grubbing of entire root system is crucial
- Untrained personnel can be utilized
- No herbicide is used
- Con is that soil is disturbed and may release dormant seed sources

# Coltsfoot rhizome





# Pulling Garlic Mustard



# Herbicide application methods

- **Follow Label!**

- Foliar treatment- usually 2-4% waxy leaves require 4%
- Use of a surfactant will help the herbicide stick to the leaf surface
- Use of indicator dye will allow you to see the area treated more clearly
- Cut stump and Basal applications- 25%, use a oil carrier if using Triclopyr



# Related Information

- Southeast - EPPC

<http://www.se-eppc.org/>

- The Nature Conservancy

[tncweeds.ucdavis.edu/  
northamerica/states/](http://tncweeds.ucdavis.edu/northamerica/states/)

<http://>

<http://nature.org/wherewework/>

- US Forest Service

<http://www.southernregion.fs.fed.us/resources/botany/default.htm>  
[http://svinet2.fs.fed.us/foresthealth/briefs/man\\_exotics.html](http://svinet2.fs.fed.us/foresthealth/briefs/man_exotics.html)

- US Fish and Wildlife Service

[invasives.fws.gov/](http://invasives.fws.gov/)

<http://>