

Dealing with Invasive Plants in an Urbanizing Forest



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NC Rapidly Urbanizing

- **People moving to metro areas**
 - Lost connection to the forest
- **Land cleared of pre-urban forest**
- **Landscaped with a few plants – most exotic**
 - Source of *invasives*
 - Specimen plantings



Urban landscapes dominated by invasives

Type of Settlement	Native Species present (%)
Forest Settlement	70-80
Small towns	60-65
Medium towns	50-60
Cities	30-50

as cited by Adams 1994

Definitions

- **Native species occurred in the Southeast before European exploration (early 1500s)**
- **Exotic species present as a result of deliberate or accidental human action**
 - alien, introduced, non-native or non-indigenous

Definitions

- Benign exotics depend on humans
- Invasive exotics threaten native plants because they can survive and reproduce without human intervention
 - in this case, the same as naturalized

Characteristics of an Invasive

- Prolific seed producer
- Tolerates extreme conditions
- Long seed viability
- Adaptations for dispersal
- Vegetative reproduction
- Allelopathic

Japanese Grass produces abundant seed and roots at nodes



The Top 10 List

- **Kudzu**
- **Privet**
- **Exotic Wisteria**
- **Japanese Honeysuckle**
- **Japanese Grass**
- **Multiflora Rose**
- **Sericea Lespedeza**
- **Tree-of-Heaven**
- **Princess Tree**
- **Chinese Silver Grass**

Other Invasives

1. *Eleagnus* spp.
2. **Oriental Bittersweet**
3. **Japanese Knotweed**
4. **Shrub Lespedeza**
5. **Bush honeysuckle**
6. *Spirea japonica*
7. **Johnsongrass**
8. **Bamboo**
9. **Porcelainberry**
10. **Chinese Tallow Tree**
11. **Chinaberry**
12. **English Ivy**
13. *Vinca*
14. **Nandina**
15. **Japanese Barberry**
16. **Sawtooth Oak????**

How Are They Introduced?

- **Ornamental (Miscanthus, Spirea)**
- **Wildlife food (Autumn Olive)**
- **Erosion control (Kudzu, Sericea)**
- **Packing material (Japanese stilt grass)**
- **Wood fiber (Paulownia)**

Weekend Visit to Home Depot



From the Nursery to the Forest

- **Characteristics that make exotics attractive as ornamentals,**
 - **colorful berries**
 - **pest resistance**
 - **tolerance of harsh conditions,**
- **increase their potential for invasiveness**

Fruits on Autumn Olive



Invasive Plants

- **Displace native plants**
 - **Dominate disturbed sites**
- **Alter ecological processes**
 - **Silvergrass raises fire risk**



Miscanthus sinensis



Implications for Wildlife

- **Plant diversity = Wildlife diversity**
 - Ex., Butterflies and host plants
 - Exotic plant monocultures bad for wildlife
- **Altered plant structure affects wildlife**
- **Generalists least affected**

Deer have flexible diets



Lower Avian Nest Success

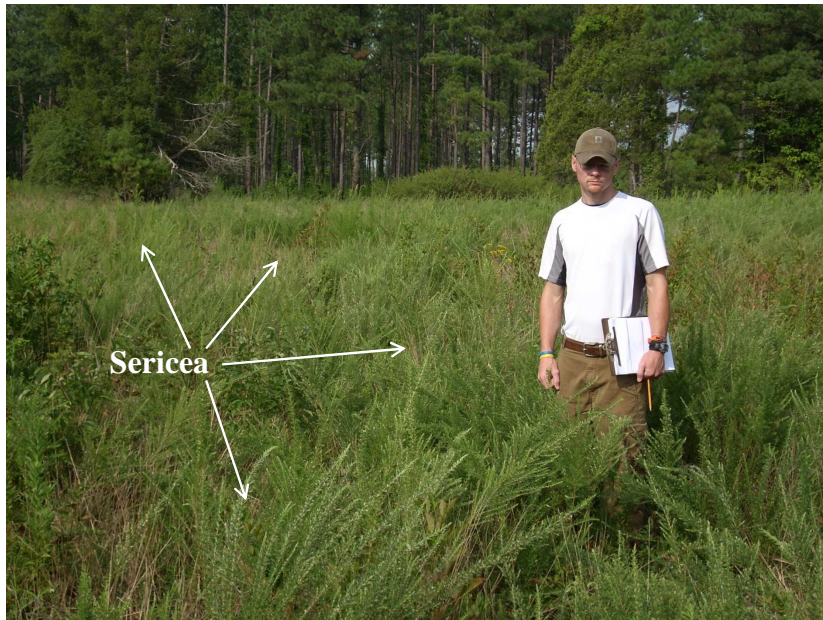
- **Birds favored strong branches of exotic shrubs, but shrubs eased predator access**
 - *Lonicera maackii* & *Rhamnus cathartica* in Chicago
 - *Lonicera* spp. and *Rosa multiflora* in

BUT Veery favor Japanese barberry and had higher nest success



Management Difficulties

- **Many wildlife favor disturbed habitats**
 - E.g., Northern bobwhite
- **Site prep or harvest are disturbances**
- **Invasive plants often favor disturbance**
 - E.g., *Sericea lespedeza*



Implications for Timber

- **Competition in plantations**
 - Increased seedling mortality
- **Problems for natural regeneration**
 - Allelopathy, overtopping, twining
- **Reduced growth rates of crop trees**
- **An ecological issue only?**



Cypressvine Morningglory

The Future

- **Generally takes 100 years for invasion**
 - Today's *invasives* introduced in 1800s
 - Today's *introductions* are tomorrow's *invasives*



Mahonia bealei invading suburban areas

Managing Invasives

- **Elimination often not realistic**
 - Targeted control more appropriate
 - Control even sometimes not cost efficient
- **Multiple techniques may be required**
 - Appropriate timing
 - Herbicides a necessity
 - Local experimentation



Non-native Invasive Plants of Southern Forests

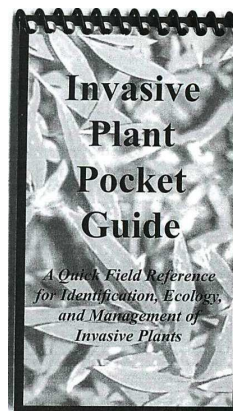
http://www.srs.fs.usda.gov/public/gtr/gtr_srs062/

At NCSU, we have created...

Publications

- **Pocket Guide – USDA-NCDFR**
- **3 Urban Publications (USDA-NCDFR)**
 - **Emphasize Native Plants**
 - **Managing Backyard Birds**
 - **Butterflies in Your Backyard**
 - **Landscaping for Wildlife with Native Plants**

Pocket Guide for Foresters



Demonstration Landscape



NCSU faculty posing

Me supervising student labor



Demonstration Landscape



Before



After

“Going Native” Website

- www.ncsu.edu/goingnative
- **Focus on Native Plants**
 - Database with 250 plants and wildlife value
- **Create Your Own Landscape**
- **Invasive Plants and Control Measures**
- **Video**

USDA-NCDFR grant supported development of the website



cnr:

Alternative Plants

- Viburnum or American Beautyberry for Autumn Olive



Alternative Plants

- Native Oak for Sawtooth Oak



Alternative Plants

- Creeping Red Fescue or Partridge Pea for Sericea Lespedeza or Tall Fescue
- Or annual:
 - Oats or wheat
 - Browntop millet



What Can You Do?

- **Monitor for invasive plants**
- **Be aware of how invasives spread**
 - Clean equipment
- **Don't plant exotics**
- **Control invasives when appropriate**
 - Agencies may be able to assist with cost
- **Tell colleagues about the problem**