

Why Foresters Should be Concerned about Invasive Exotic Plants

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“For me nonnative invasives are plant bioterrorists. They occupy our lands at will, making them useless for wildlife, native plants, and humans.”

- Jim Miller

- 50,000 introduced plants in United States
 - 4,500 are exotic invasive

 - 25-30 % of total plants in eastern United States are nonnative
 - 5 % are exotic invasives
- *small proportion are forest invasives

- Invasive – “An alien species whose introduction does or is likely to cause economic or environmental harm to human health.”

Major forest cover types:

- Loblolly-shortleaf pine
- Maple-beech-birch
- Oak-hickory
- Oak-pine
- Spruce-fir



- Closed canopy (fully occupied) vs vegetative voids (openings)
- Manmade: timber harvesting (roads) will continue
 - Fragmentation will continue
 - Wildlife food plots
 - Recreation trails, overlooks, campsites
 - Utility rights-of-way
- Natural voids: blow-downs
 - Ice storms
 - Insect and disease damage

Natural openings:

- Wetlands – bogs, swamps, marshes, beaver ponds, lake margins, pocosins
- Above tree line, grass balds, savannahs
- Old fields in transition to forests
- Streambanks, riverbanks, scour zones, gravel and sand bars
- Shale barrens, limestone barrens, pine barrens, cedar glades, talus slopes, cliffs

Not fully occupied

Habitat for rare plants; will increase E & T species







Worst forest invasives:

- Trees – Tree-of-heaven
Amur corktree
Paulownia (Imperial tree)
Norway maple
Bradford pear
Siberian elm
- Shrubs – multiflora rose
bush honeysuckles
Japanese barberry
Japanese spiraea
autumn olive
privets
winged euonymus
wineberry
- Vines – Japanese honeysuckle
Kudzu
English ivy
oriental bittersweet
wisterias
- Herbs – Japanese knotweed
Dame's rocket
mile-a-minute
garlic mustard
periwinkle (?vine)
- Grasses – Japanese stilt grass
Kentucky 31 fescue
Chinese silver grass
reed Canary grass
- Niche habitat invasives: purple loosestrife
yellow iris
common reed grass

Exotic invasive plant characteristics:

- Reproduce from seeds, sprouts and root suckers
- Seeds spread by wind, water, and/or animals
- Seeds produced abundantly and often
- Relatively immune to insects, diseases, and browsing in new area
- Tolerate wide range of light intensities and soil moistures
- Hybridize with native counterparts and their genes dominate
- Seeds can remain viable in seedbank relatively long



Forest Management : Present and Future

- Industrial versus NIPF
 - NIPF: timber goals rank below wildlife, recreation, et. al.
 - No harvest may be best option
- Shorter rotations, higher utilization, and bigger equipment = more vegetative voids
- BMP: reclamation with KY 31 fescue, flat peas, crown vetch, and sericea lespedeza encourage invasives
- Crushed limestone encourages calciphile invasives
- Southern pines: keep in early succession stages with prescribed fires, herbicides & reforestation = more invasives





- **War on deer**

Deer overpopulation = vegetative voids

Deer leases = more access roads, food plots, & ?ATV's

- **Future Forest Management**

Increase exotic invasives

Increase endangered, threatened & rare native species

More complicated forest management strategies

Decreased profits from forest management

Intensive management will be on highest productivity sites and with long-term, high-value species, i.e., red & white oak, sugar maple, black cherry, shortleaf pine

Ecological Impacts

Increased competition for light, moisture, nutrients, space

- Japanese stilt grass may be the “worst of the worst”

Impacts of insects and diseases

- American chestnut replaced by oaks
- Beech, hemlock, sugar maple, ash, black oak group

Vines will strangle and overtop (kudzu, oriental bittersweet, mile-a-minute)

**** Herbicides

- Direct: stem injection, cut-treat, basal spray
- Indirect: directed foliar spray, soil spot

Herbicides and pesticides in general are **NOTORIOUSLY** misapplied

- (will cover this under “Water Quality”)

Hope and pray our recommendations aren’t proven false in our lifetime or ever.

(Tordon 10K, DDT, Dieldrin/Endrin)



Wildlife Impacts

- Use by most wildlife species is very low (tree-of-heaven, Japanese spiraea, English ivy, Japanese knotweed, periwinkle, garlic mustard, mile-a-minute, Chinese silver grass, Japanese stilt grass, common reed)
- Good food & cover provided by Norway maple, Bradford pear, multiflora rose, autumn olive, Japanese honeysuckle, all privets, kudzu, all shrub honeysuckles, oriental bittersweet, etc.



Wildfire Impacts

- All grasses burn readily and hot
- Most vines & shrubs create dense thickets with considerable dead material = high fire hazard
- Southern pines: when held in early succession stages, provides lighter competition that can be invaded





Water Quality Impacts

Timber kills, from insects & diseases will create vegetative void that ...

1. may be replaced by nearby species
2. may be replaced by exotic invasive plants

Herbicides : Notorious misapplications

1. misuse: applied in wrong sites or wrong chemical used
2. equipment failure, improper cleaning
3. failure to “ follow the label”
4. Philosophy: If 1 is good, then 2 is better, and add a 3rd for good measure.

Japanese stilt grass is in a class of its own

Annual with fragile, fibrous root system

Completely dominates miles of streambanks, floodplains, roadsides, and colluvial slopes

Major erosion and sediment when plants die in winter (land unprotected)



Recreation Impacts

Forests with heavy infestations of many exotic invasive plants will provide marginal recreation benefits

- Toxic chemicals from hogweed, and European nettles will blister skin
- Thorns & dense thickets from multiflora rose, autumn olive, mile-a-minute, Japanese hop, Japanese knotweed, oriental bittersweet, and kudzu will greatly inhibit access



Summary

Vegetative voids will be created by timber harvesting, fragmentation, & human development

Numerous exotic invasives are already present and ready to take advantage of vegetative voids and openings

Foresters biggest concern will likely be limitations on desirable regeneration

Exotic invasive plants will:

- Reduce ecological integrity
- Increase costs of management
- Increase use of risky management prescriptions

