



FOREST INVENTORY & ANALYSIS FACTSHEET



Japanese honeysuckle.
(photo by James H. Miller)

U.S. Department of
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Invasive Plants Found in Tennessee Forests, 2009

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Introduction

This science update provides an overview of nonnative invasive plants found in forests of the State of Tennessee based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) Program at the Southern Research Station of the U.S. Department of Agriculture Forest Service in cooperation with the Tennessee Department of Agriculture Division of Forestry. These estimates and coverage maps will be updated on a periodic basis. For more information regarding past inventory reports for this State, inventory program information, field sampling methodology, and estimation procedures, please refer to the citations at the end of this report.

Foresters and ecologists have noted the spread of nonnative invasive species onto United States forest land for decades. Despite soaring costs and inestimable environmental impacts, nonnative invasive species continue to spread across managed and natural forests. This update describes current results from data collected in Tennessee between 2005 and 2009 and provides graphic illustrations of where invasive plants are being observed in forests across the State of Tennessee.

Findings

Invasive plants were detected on 1,932 plots across the State, or 71 percent of all forested plots measured (fig. 1). The maximum number of species detected on an individual plot was nine, which occurred on <1 percent of forested plots (table 1). Invasive plant presence seems to be lowest along the State's eastern border where the Cherokee National Forest and Great Smoky Mountains National Park comprise much of the land ownership, and along the Cumberland Plateau. Land management decisions (e.g., deliberately controlling invasive plants in the national park and on the national forest) and large tracts of less-fragmented forests are likely primary reasons those forests are less impacted. Disturbance (harvests, tornadoes, etc.) and proximity to agricultural land may account for the larger proportion of impacted plots in the west-central region of the State.

Table 1—Invasive species on Tennessee forest land—number of species detections and the number and percent of plots on which they occur

Count of unique species	No. of plots	Percent of surveyed plots ^a
1	624	23
2	561	21
3	407	15
4	240	9
5	64	2
6	25	1
7	8	<1
8	1	<1
9	2	<1
Total	1,932	71

^a Percent of surveyed plots out of 2,713.

Japanese honeysuckle (*Lonicera japonica*) was the most frequently detected nonnative species in Tennessee (table 2). The ubiquitous invasive vine was found on 56 percent of all forested plots surveyed, and 79 percent of all plots containing an invasive species. On average, Japanese honeysuckle foliage covered 25 percent of the subplots on which it was found. Nepalese browntop (*Microstegium vimineum*), a species whose introduction to the United States can be traced to east Tennessee, was the second most frequently detected species, and was noted on 24 percent of measured plots, with an average percent cover of about 24 percent on subplots where it was detected. The above mentioned species along with privet shrubs (*Ligustrum sinense*/L. *vulgare*), nonnative roses (*Rosa* spp.), shrubby and Chinese lespedeza (*Lepedeza bicolor*/L. *cuneata*), Tree-of-heaven (*Ailanthus altissima*), bush honeysuckles (*Lonicera* spp.), Mimosa (*Albizia julibrissin*), and Royal Paulownia (*Paulownia tomentosa*) comprise the top 10 most frequently detected invasive plants surveyed for on forested plots in Tennessee (table 2).

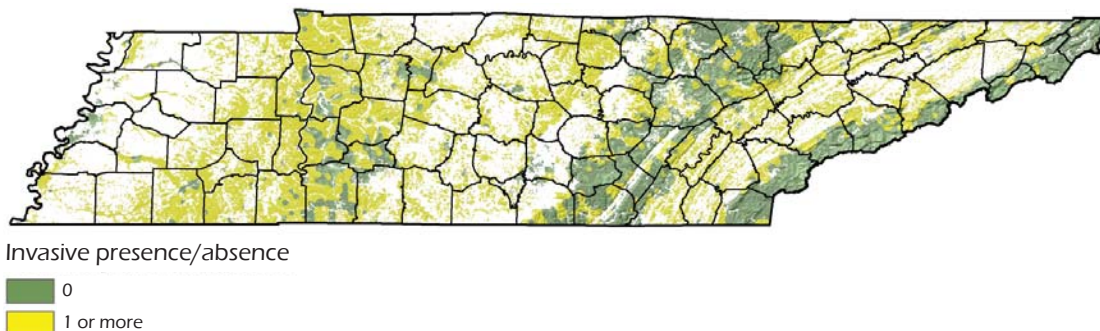


Figure 1—Presence/absence of invasive species on Tennessee forest land, statewide 2009.

Table 2— Invasive species detected on Tennessee forest land with frequency of plot detections and mean percent subplot cover, 2009

Common name	Scientific name	Plot detections ^a number	Mean percent subplot cover ^b percent
Japanese honeysuckle	<i>Lonicera japonica</i>	1,530	25
Nepalese browntop	<i>Microstegium vimineum</i>	649	24
Chinese/European privet	<i>Ligustrum sinense/L. vulgare</i>	616	11
Nonnative roses	<i>Rosa</i> spp.	517	9
Shrubby lespedeza	<i>Lespedeza bicolor</i>	249	6
Tree-of-heaven	<i>Ailanthus altissima</i>	241	16
Chinese lespedeza	<i>Lespedeza cuneata</i>	191	13
Bush honeysuckles	<i>Lonicera</i> spp.	102	18
Silktree, Mimosa	<i>Albizia julibrissin</i>	81	6
Princess tree, Royal Paulownia	<i>Paulownia tomentosa</i>	59	14
Tall fescue	<i>Lolium arundinaceum</i>	37	36
Nonnative climbing yams—air yam/Chinese yam	<i>Dioscorea bulbifera/D. oppositifolia</i>	37	5
English ivy	<i>Hedera helix</i>	34	5
Japanese/glossy privet	<i>Ligustrum japonicum/L. lucidum</i>	26	23
Kudzu	<i>Pueraria Montana</i> var. <i>lobata</i>	19	38
Nonnative bamboos	<i>Phyllostachys</i> spp., <i>Bambus</i> spp.	16	31
Nonnative vincas, Periwinkles	<i>Vinca minor/V. major</i>	15	31
Chinese/Japanese wisteria	<i>Wisteria sinensis/W. floribunda</i>	13	16
Sacred bamboo, Nandina	<i>Nandina domestica</i>	12	10
Wintercreeper	<i>Euonymus fortunei</i>	11	19
Autumn olive	<i>Alaegagnus umbellata</i>	11	13
Garlic mustard	<i>Alliaria petiolata</i>	5	19
Winged burning bush	<i>Euonymus alata</i>	3	0
Tropical soda apple	<i>Solanum viarum</i>	2	0
Russian olive	<i>Elaeagnus angustifolia</i>	2	18
Silverthorn, Thorny olive	<i>Elaeagnus pungens</i>	1	0

^a Plot refers to the forested portion of all subplots measured. If a species was detected on more than one subplot it is only counted once here.

^b Percent cover in this column is the average cover on an individual subplot, not the whole plot.

Invasive trees were noted throughout the State (fig. 2). Tree-of-heaven was the most frequently detected invasive tree in every physiographic region in the State except east Tennessee, where mimosa was observed with equal frequency. Tree-of-heaven detections were highest in Central Tennessee, where it was noted on 21 percent of plots. Invasive shrubs and vines are the most frequently recorded invasive plants in Tennessee forests (figs. 3 and 4), with many plots containing two or more species. Japanese honeysuckle is the most commonly detected vine and was recorded on 81 percent of plots in West Tennessee, 73 percent

of plots in Central Tennessee, 53 percent of plots in West Central Tennessee, 50 percent of plots in East Tennessee, and 30 percent of plots on the Plateau. No other invasive vine was detected on >4 percent of plots in any region. Chinese/European privet and nonnative roses were the two most frequently detected shrubs on Tennessee forest land. Chinese/European privet occupies 26, 18, 34, 11, and 24 percent of plots in the West, West Central, Central, Plateau, and East Tennessee units, respectively, while nonnative roses occupied a fairly high proportion of plots in Central Tennessee (30 percent) and <20 percent in all other regions.

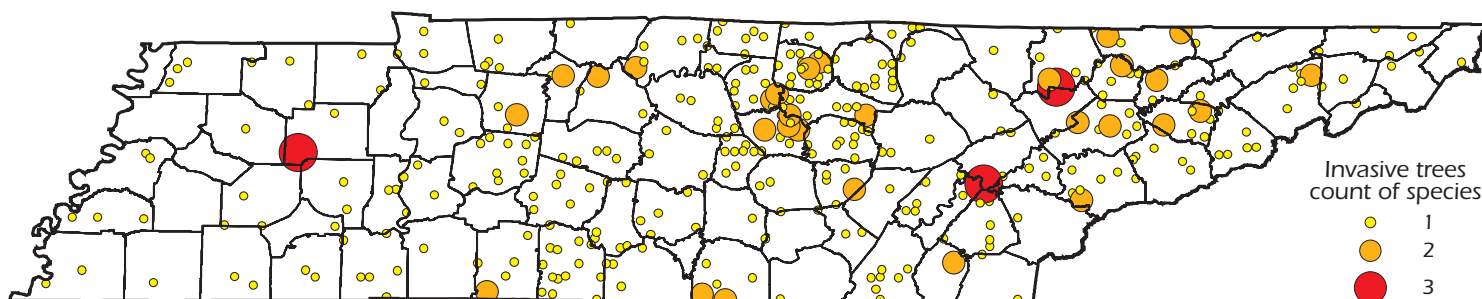


Figure 2—Number of invasive trees on plots, Tennessee, 2009.

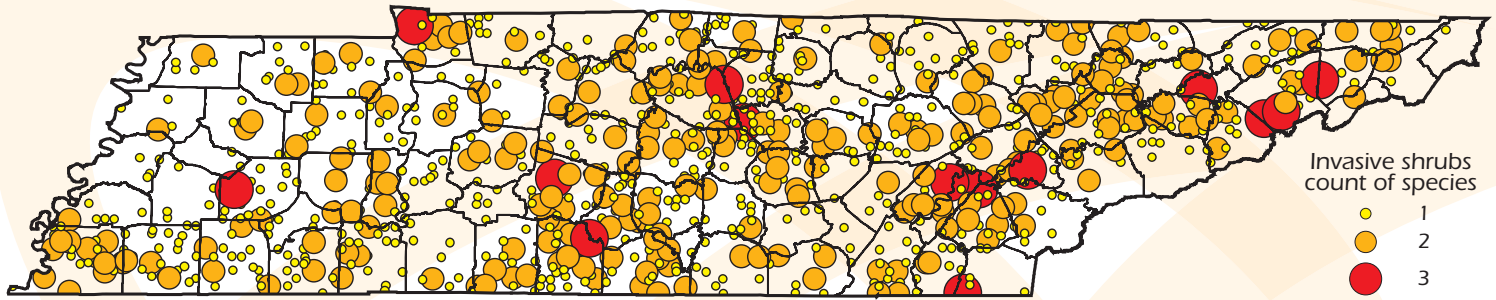


Figure 3—Number of invasive shrubs on plots, Tennessee, 2009.

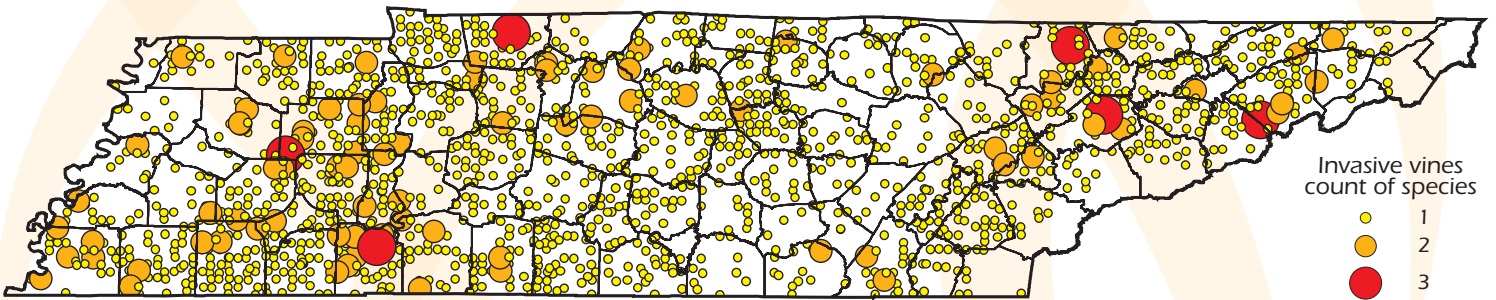


Figure 4—Number of invasive vines on plots, Tennessee, 2009.

Nepalese browntop was the most frequently detected invasive grass in Tennessee (fig. 5), and it was detected on 31, 27, 30, 15, and 19 percent of plots in West, West Central, Central, Plateau, and East Tennessee units, respectively. Invasive herbs were most common in West Central and West Tennessee (fig. 6), and consisted primarily of shrubby and Chinese lespedezas.

Conclusions

Invasive species are common on forested plots across the State of Tennessee. The prevalence of invasive plants on Tennessee forest land illustrates the need for public education regarding the ecological and economic costs of invasive plants, and the need for concentrated control and management efforts for invasive plants.

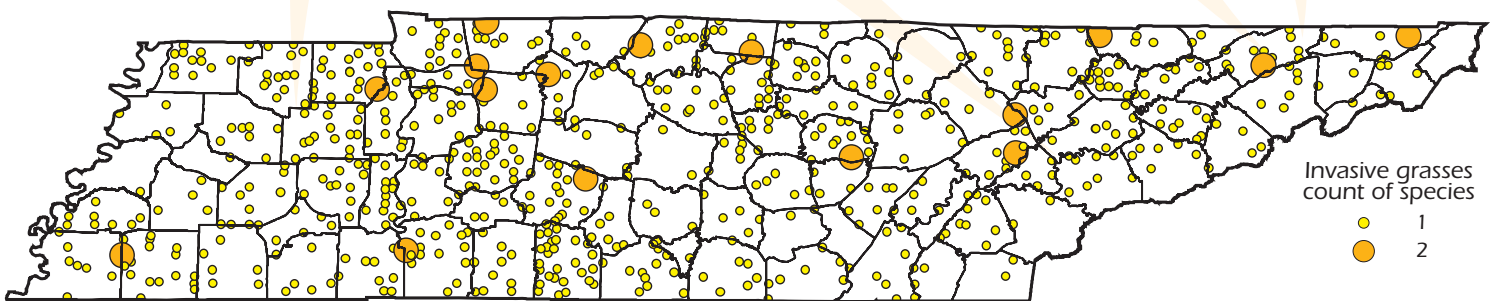


Figure 5—Number of invasive grasses on plots, Tennessee, 2009.

Nepalese browntop. (photo by Chris Evans)



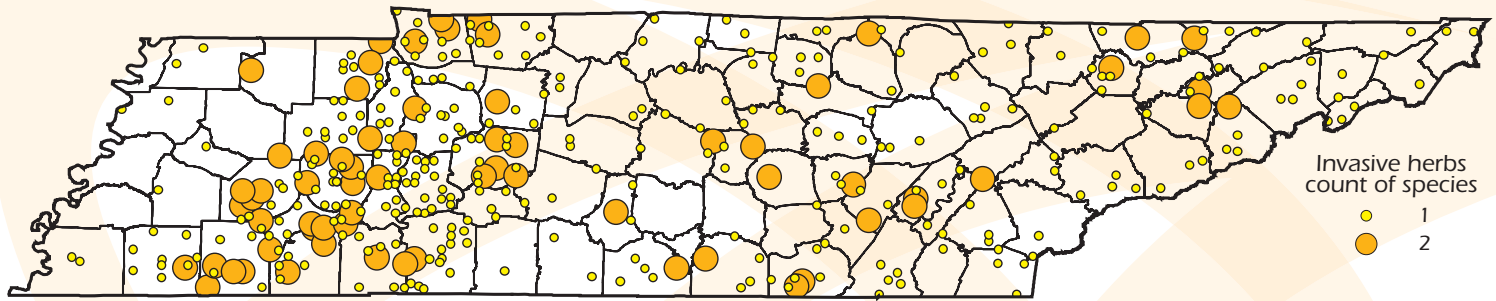


Figure 6—Number of invasive herbs on plots, Tennessee, 2009.

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Tree-of-heaven. (photo by James H. Miller)

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