



Invasive Plants Found in Kentucky Forests, 2009

FOREST INVENTORY & ANALYSIS FACTSHEET



Big periwinkle. (photo by Joseph M. DiTomaso)

Introduction

This publication provides an overview of nonnative invasive plants found in forests of the Commonwealth of Kentucky 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 Kentucky Division of Forestry. These estimates and coverage maps will be updated on a periodic basis. For more information regarding past inventory reports, 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 U.S. 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 Kentucky between 2005 and 2009 and provides graphic illustrations of where invasive plants are being observed in forests across Kentucky. Observations of nonnative invasive plants include only those plants on the southern FIA invasive plants "Watch List" which currently contains 33 plant species regionally recognized as problematic nonnative invasive plants.

Findings

Nonnative invasive plants were detected on 1,723 plots across the Commonwealth, or 71 percent of all forested plots measured (fig. 1). The maximum number of nonnative invasive species detected on an individual plot was eight, which occurred on < 1 percent of forested plots (table 1). Invasive plant presence seems to be lowest in the more heavily forested eastern part of the Commonwealth. Disturbance (harvests, tornadoes, etc.) and proximity to agricultural land may account for the larger proportion of impacted plots in the west-central and western regions.

Japanese honeysuckle (*Lonicera japonica*) was the most frequently detected nonnative species in Kentucky (table 2). The seemingly ubiquitous invasive vine was found on 52 percent of all forested plots surveyed, and 73 percent of all plots containing an invasive species. On average,

Christopher Oswalt and
Sonja Oswalt

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

Unique species per plot count	Plots number	Surveyed plots ^a percent
1	582	24
2	606	25
3	333	14
4	155	6
5	36	1
6	7	<1
7	2	<1
8	2	<1
Total	1,723	71

^a Percent of surveyed plots out of 2,438.

Japanese honeysuckle foliage covered 22 percent of the subplots on which it was found. Nonnative roses (*Rosa* spp.) were the second most frequently detected species, and was noted on 41 percent of measured plots, with an average percent cover of about 10 percent on subplots where it was detected. Tall fescue (*Lolium arundinaceum*) was the third most frequently observed nonnative invasive in forests of Kentucky. Nepalese browntop (*Microstegium vimineum*), a grass species whose introduction to the United States can be traced to east Tennessee, was the fourth most frequently detected species, and was noted on 11 percent of measured plots, with an average percent cover of about 22 percent on subplots where it was detected. The above mentioned species along with bush honeysuckles (*Lonicera* spp.), tree-of-heaven (*Ailanthus altissima*), Chinese lespedeza (*Lespedeza cuneata*), autumn olive (*Alaegmus umbellata*), garlic mustard (*Alliaria petiolata*), and royal paulownia (*Paulownia tomentosa*) comprise the top 10 most frequently detected invasive plants surveyed for on forested plots in Kentucky (table 2).

U.S. Department of
Agriculture

Forest Service



Southern Research
Station

e-Science Update SRS-048
February 2012

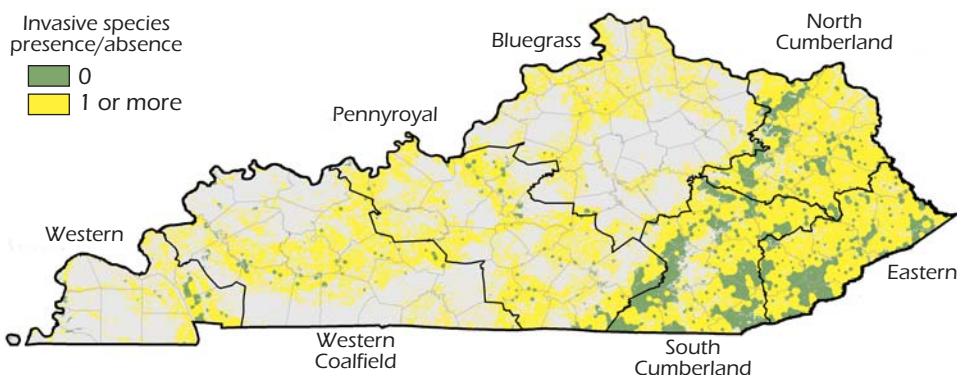


Figure 1—Presence/absence of invasive species on Kentucky forest land, 2009.

Table 2—Invasive species detected on Kentucky forest land with frequency of plot detections and mean percent subplot cover by common and scientific name, 2009

Common name	Scientific name	Plot detections ^a	Subplot cover ^b
		number	percent
Japanese honeysuckle	<i>Lonicera japonica</i>	1,258	22
Nonnative roses	<i>Rosa</i> spp.	994	10
Tall fescue	<i>Lolium arundinaceum</i>	330	28
Nepalese browntop	<i>Microstegium vimineum</i>	278	22
Bush honeysuckles	<i>Lonicera</i> spp.	230	20
Tree-of-heaven	<i>Ailanthus altissima</i>	143	14
Chinese lespedeza	<i>Lespedeza cuneata</i>	80	22
Autumn olive	<i>Alaegagnus umbellata</i>	59	14
Garlic mustard	<i>Alliaria petiolata</i>	59	9
Princesstree, Royal paulownia	<i>Paulownia tomentosa</i>	34	14
Nonnative climbing yams-air yam/Chinese yam	<i>Dioscorea bulbifera</i> /D. <i>oppositifolia</i>	31	6
Chinese/European privet	<i>Ligustrum sinense</i> /L. <i>vulgare</i>	28	14
Silktree, Mimosa	<i>Albizia julibrissin</i>	27	7
Wintercreeper	<i>Euonymus fortunei</i>	26	14
Winged burning bush	<i>Euonymus alata</i>	25	7
Shrubby lespedeza	<i>Lespedeza bicolor</i>	23	20
Nonnative vincas, Periwinkles	<i>Vinca minor</i> /V. <i>major</i>	14	26
Chinese silvergrass	<i>Miscanthus sinensis</i>	11	25
Kudzu	<i>Pueraria Montana</i> var. <i>lobata</i>	5	24
Nonnative bamboos	<i>Phyllostachys</i> spp., <i>Bambus</i> spp.	4	32
Japanese/glossy privet	<i>Ligustrum japonicum</i> /L. <i>lucidum</i>	3	9
Russian olive	<i>Elaeagnus angustifolia</i>	3	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.

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

Invasive vines, primarily Japanese honeysuckle, was the most frequently detected nonnative invasive plant life form (table 3) and was found on 53 percent of all forested plots. Invasive shrubs were found on 42 percent of all forested plots, while grasses were found on 24 percent, trees on 8 percent, and herbs were found on only 7 percent of all forested plots.

Invasive trees were noted throughout Kentucky (fig. 2). Tree-of-heaven was the most frequently detected invasive tree in every physiographic region in the Commonwealth except the Western Kentucky FIA unit, where mimosa (*Albizia julibrissin*) was observed

with greater frequency. Tree-of-heaven detections were highest in the Eastern FIA unit. Nonnative roses occupied a fairly high proportion of plots in Bluegrass and Pennyroyal units occupying 70 and 52 percent of forested plots, respectively. No other nonnative shrubs were detected on >7 percent of forested plots within any given Kentucky unit (fig. 3). Japanese honeysuckle was the most commonly detected vine and was recorded on 24 percent of plots in the Eastern unit, 42 percent of plots in the North Cumberland unit, 30 percent of plots in the South Cumberland unit, 60 percent of plots in the Bluegrass unit, 67 percent of plots in the Pennyroyal unit, 72 percent of plots in the Western Coalfield unit, and 71

Table 3—Invasive species on Kentucky forest land—number of detections by plant life form and the percent of plots on which they occur

Plant life form	Plots	Surveyed plots ^a
	number	percent
Trees	197	8
Shrubs	1,032	42
Herbs	160	7
Vines	1,283	53
Grass	576	24

^a Percent of surveyed plots out of 2,438.

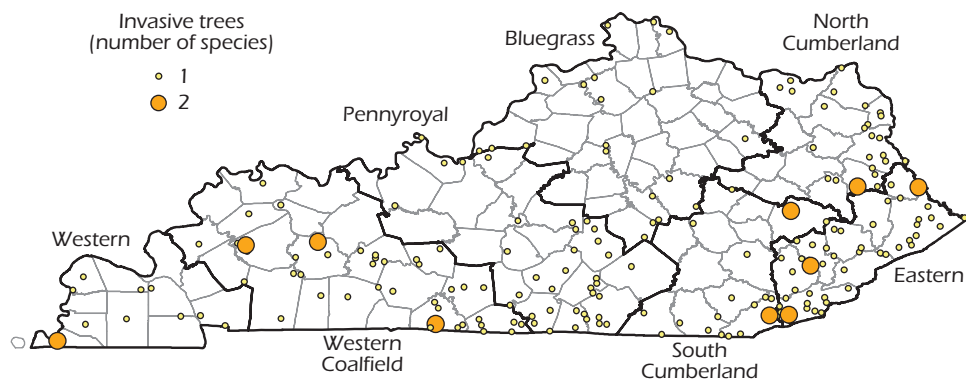


Figure 2—Number of invasive trees on plots, Kentucky, 2009.

percent of plots in the Western unit (fig. 4). No other invasive vine was detected on > 4 percent of plots in any region. Nonnative roses were clearly the most frequently detected shrubs on Kentucky forest land and were detected on 41 percent of all forested plots across the Commonwealth.

Tall fescue was the most frequently detected invasive grass in Kentucky (fig. 5), and it was detected on 6, 13, 3, 29, 9, 21, and 16 percent of plots in the Eastern, North Cumberland, South Cumberland, Bluegrass, Pennyroyal, Western Coalfield, and Western units, respectively. Invasive herbs were most common in the Bluegrass unit (fig. 6), and consisted primarily of garlic mustard.

Conclusions

Invasive species are common on forested plots across the Commonwealth of Kentucky. The prevalence of invasive plants on Kentucky 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.

Garlic mustard. (photo by Steven Katovich, Forest Service)

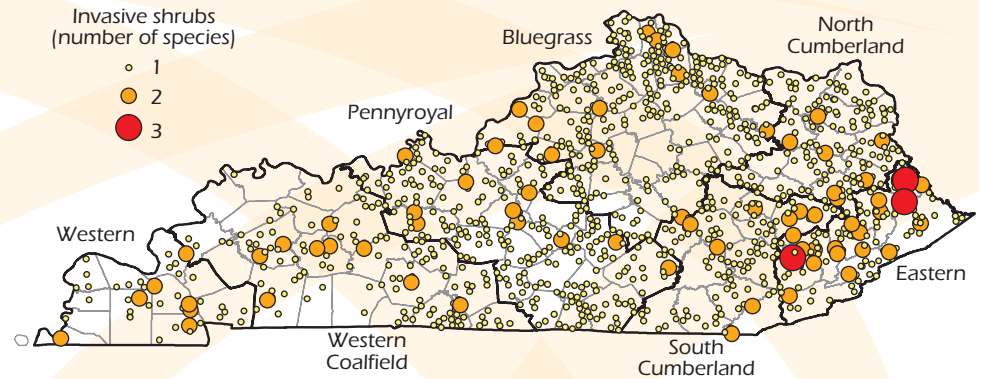


Figure 3—Number of invasive shrubs on plots, Kentucky, 2009.

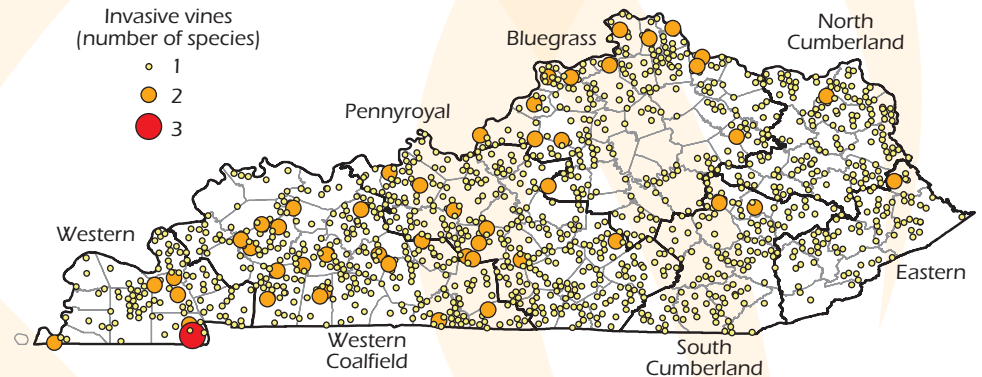


Figure 4—Number of invasive vines on plots, Kentucky, 2009.

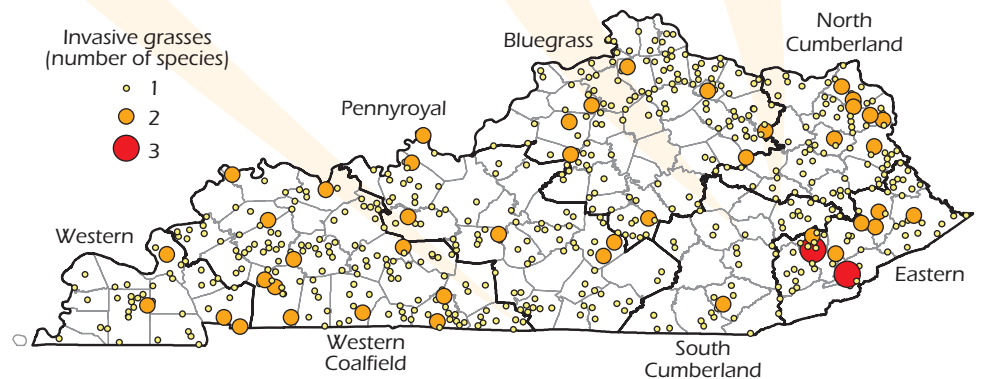


Figure 5—Number of invasive grasses on plots, Kentucky, 2009.

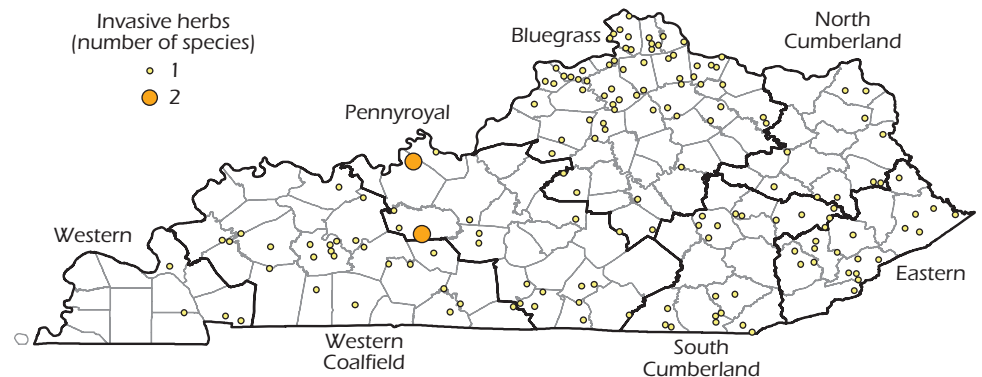


Figure 6—Number of invasive herbs on plots, Kentucky, 2009.

FIA Program Information

Bechtold, W.A.; Patterson, P.L., eds. 2005. The enhanced forest inventory and analysis program: national sampling design and estimation procedures. Gen. Tech. Rep. SRS-80. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 85 p.

Smith, W.B. 2002. Forest inventory and analysis: a national inventory and monitoring program. Environmental Pollution. 116: 233-242.

U.S. Department of Agriculture Forest Service. 2005. Forest inventory and analysis national core field guide. Field data collection procedures for phase 2 plots. Version 3.0. Arlington, VA: U.S. Department of Agriculture Forest Service, Forest Inventory and Analysis Program. Vol. 1. http://fia.fs.fed.us/library/field-guides-methods-proc/doc/2006/core_ver_3-0_10_2005.pdf. [Date assessed unknown].

Additional Kentucky Information

Miller, J.H.; Chambliss, E.B.; Loewenstein, N.J. 2010. A field guide for the identification of invasive plants in southern forests. Gen. Tech. Rep. SRS-119. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 126 p. <http://www.srs.fs.usda.gov/pubs/35292> and <http://wiki.bugwood.org/Archive:IPSF>. [Date assessed unknown].

Miller, J.H.; Manning, S.T.; Enloe, S.F. 2010. A management guide for invasive plants in southern forests. Gen. Tech. Rep. SRS-131. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 120 p. <http://www.srs.fs.usda.gov/pubs/36915> and <http://wiki.bugwood.org/Archive:MGIPSF>. [Date assessed unknown].

Oswalt, C.M.; King, C.R.; Johnson, T.G. 2010. Kentucky, 2007 forest inventory and analysis factsheet. e-Science Update SRS-026. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

Turner, J.A.; Oswalt, C.M.; Chamberlain, J.L. [and others]. 2008. Kentucky's forests, 2004. Resour. Bull. SRS-129. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 101 p.

How to Cite this Publication

Oswalt, Christopher M.; Oswalt, Sonja N. 2012. Invasive plants found in Kentucky forests, 2009 forest inventory and analysis factsheet. e-Science Update SRS-048. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

Autumn olive. (photo by Pennsylvania Department of Conservation and Natural Resources)

Contact Information

Sonja Oswalt, Forester
Forest Inventory and Analysis
Southern Research Station, USDA Forest Service
4700 Old Kingston Pike
Knoxville, TN 37919
Phone: 865-862-2058 / Fax: 865-862-0262
Email: soswalt@fs.fed.us
Southern FIA: <http://srsfia2.fs.fed.us>
National FIA: <http://fia.fs.fed.us>

Christopher Oswalt, Research Forester
Forest Inventory and Analysis
Southern Research Station, USDA Forest Service
4700 Old Kingston Pike
Knoxville, TN 37919
Phone: 865-862-2068 / Fax: 865-862-0262
Email: coswalt@fs.fed.us
Southern FIA: <http://srsfia2.fs.fed.us>
National FIA: <http://fia.fs.fed.us>



The Forest Service, U.S. Department of Agriculture (USDA), is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

The USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.