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Invasive Plants Found in Georgia's Forests, 2010

Sonja N. Oswalt and Christopher M. Oswalt

FOREST INVENTORY & ANALYSIS FACTSHEET

Japanese honeysuckle (*Lonicera japonica*). (photo courtsey of James H. Miller, Bugwood.org)

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Introduction

This science update provides an overview of invasive plants found in forests of the State of Georgia based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) Program at the Southern Research Station (SRS) of the U.S. Department of Agriculture, Forest Service in cooperation with the Georgia Forestry Commission. These estimates and coverage maps will be updated periodically. For more information about 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 invasive species onto U.S. forest land for decades. Despite the soaring costs of management and control, and inestimable negative environmental impacts, invasive species continue to spread across managed and natural forests. This update describes current results from data collected in Georgia between 2005 and 2010 and provides graphic illustrations of where invasive plants are being observed in forests across the State of Georgia. Observations of invasive plants include only those plants on the southern FIA invasive plants "watch list," which in this case contains 33 plant species regionally recognized as problematic invasive plants.

Findings

Invasive plants were detected on 2,584 plots across the State, or 56 percent of all forested plots measured (fig. 1). The maximum number of the surveyed invasive plant species detected on an individual plot was 12, which occurred on <1 percent (1 plot) of forested plots (table 1). Approximately 40 percent of invaded plots contained only one invasive plant from the SRS FIA "watch list," while 76 percent of invaded plots contained only one or two invasive plants (table 1).

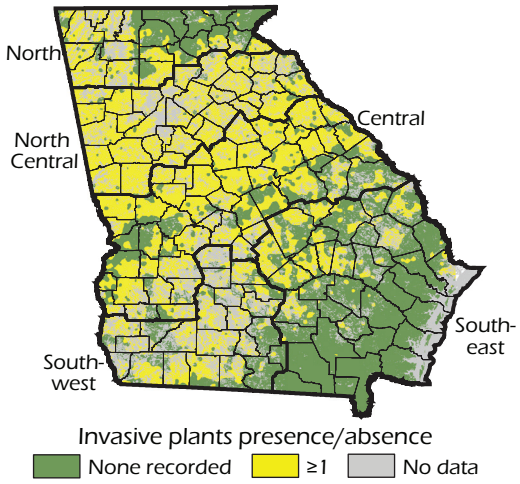

Figure 1—Presence/absence of invasive plant species on forest land statewide, Georgia, 2010.

Table 1—Invasive species on Georgia forest land by number of species detections and the number and percent of plots on which they occur, 2010

Number of unique species detected[a]	South-east	South-west	Central	North Central	North	Total of invaded plots	Invaded plots[b]
	number of plots						*percent*
1	194	118	478	146	90	1,026	22
2	114	108	332	269	102	925	20
3	45	66	144	125	58	438	9
4	14	17	47	46	15	139	3
5	3	3	17	14	5	42	1
6	—	—	4	3	5	12	<1
7	—	—	1	—	—	1	<1
8	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—
10	—	—	—	—	—	—	—
11	—	—	—	—	—	—	—
12	—	—	—	1	—	1	<1
Total invaded plots (all species)	370	312	1,023	604	275	2,584	
Percent of all sampled plots	26	56	72	89	50	56	
Total number of sampled plots	1,421	560	1,420	681	554	4,636	

— = no data for the cell.

[a] Up to 4 unique species may be noted per subplot, for a total possibility of 16 unique species per complete plot.

[b] Percent of survey plots with the listed number of unique species, out of 4,636.

Forests in the North Central unit exhibited the highest frequency of invasion, with 89 percent of sampled plots containing at least one invasive plant. Forested plots in the Southeast unit were less likely to contain invasive plants, with only 26 percent of plots containing at least one invasive plant.

The distribution of invasive plants in the central and southwestern parts of the State is much higher than observed in the extreme northeastern and southeastern forests (fig. 1). Although invasive vines such as Japanese honeysuckle (*Lonicera japonica*) and shrubs such as privets (*Ligustrum* spp.) are primarily culpable for this dichotomy as the most frequently observed plant invaders, many of the invasive plants monitored by FIA exhibit a similar pattern. Differences in distribution may be due to land use, differences in overall species richness, site productivity, length of growing season, forest type characteristics, or other environmental differences (e.g., soil, moisture, temperature, precipitation, elevation, aspect). One driving factor in this case may be the Atlanta metropolitan area's influence within the Central and North Central units in contrast to relatively low populations and large swaths of national forest land in the northeast, and managed timberlands in the southeast.

Japanese honeysuckle was the most frequently detected invasive plant species in Georgia (table 2). The seemingly ubiquitous invasive vine was found on 47 percent of all forested plots surveyed, and 83 percent of all plots containing an invasive species. On average, Japanese honeysuckle foliage covered 12 percent of the subplots on which it was found. The Chinese/European privet (*Ligustrum sinense/L. vulgare*), as a group, was the second most frequently detected species, and was noted on 32 percent of measured plots, with an average percent cover of approximately 11 percent on subplots where it was detected. Chinese lespedeza (*Lespedeza cuneata*) was the third most frequently detected species, and was noted on only 5 percent of measured plots, with an average percent cover of approximately 3 percent on subplots where it was detected. Chinaberry (*Melia azedarach*) was the fourth most frequently observed invasive plant species in forests of Georgia. The above-mentioned species along with Japanese climbing fern (*Lygodium japonicum*), Nepalese browntop (*Microstegium vimineum*), mimosa (*Albizia julibrissin*), nonnative roses (*Rosa* spp.), autumn olive (*Elaeagnus umbellata*), and shrubby lespedeza (*Lespedeza bicolor*) were the top 10 most frequently detected invasive plants surveyed for on forested plots in Georgia (table 2).

Invasive vines, primarily Japanese honeysuckle, were the most frequently detected invasive plant life form (table 3) and were found on nearly one-half (49 percent) of all forested plots. Invasive shrubs were found on 37 percent of all forested plots, while trees (8 percent), forbs (7 percent), grasses (4 percent), and ferns (4 percent) were observed on far fewer forested plots.

Invasive trees were noted throughout the State (fig. 2). However, 42 percent of the plots with observations of invasive trees were located in the Central unit (table 3). Chinaberry was the most frequently detected invasive tree across the State and found on a significantly higher number of plots than any other invasive tree monitored (Chinaberry was found on 209 plots, mimosa on 94 plots, and tallowtree [*Triadica sebifera, Sapium sebiferum*] on 41 plots). Although tallowtree was only observed on slightly <1 percent of all forested plots sampled, the species is known to be aggressively invading new areas, resulting in a rapidly expanding distribution in the Southern United States. Japanese honeysuckle was the most commonly detected of all vines observed (fig. 3) and was recorded on 19, 34, 63, 83, and 42 percent of forested plots in the Southeast, Southwest, Central, North Central, and North units, respectively. Observations of Japanese honeysuckle were considerably lower in the Southeast unit of Georgia. No other invasive vine was detected on >2 percent of plots in any region except for kudzu (*Pueraria Montana* var. *lobata*) in the North Central unit, where it was found on approximately 4 percent of forested plots. Chinese and European privet, as a group, were the most frequently detected shrubs (fig. 4) in each region and were detected on 32 percent of all forested plots across the State.

Table 2—Invasive species detected on Georgia forest land with frequency of plot detections and mean percent subplot cover, 2010

Common name	Scientific name	Plot detections	Mean percent subplot cover
Japanese honeysuckle	*Lonicera japonica*	2,157	12
Chinese/European privet	*Ligustrum sinense/L. vulgare*	1,483	11
Chinese lespedeza	*Lespedeza cuneata*	252	3
Chinaberry	*Melia azedarach*	209	13
Japanese climbing fern	*Lygodium japonicum*	184	4
Nepalese browntop	*Microstegium vimineum*	162	20
Silktree, Mimosa	*Albizia julibrissin*	94	8
Nonnative roses	*Rosa* spp.	79	7
Autumn olive	*Elaeagnus umbellate*	65	6
Shrubby lespedeza	*Lespedeza bicolor*	60	5
Kudzu	*Pueraria Montana* var. *lobata*	48	28
Tallowtree	*Triadica sebifera, Sapium sebiferum*	41	9
Silverthorn	*Elaeagnus pungens*	36	5
Nandina	*Nandina domestica*	32	6
Japanese/glossy privet	*Ligustrum japonicum/L. lucidum*	30	6
English ivy	*Hedera helix*	21	13
Chinese/Japanese wisteria	*Wisteria sinensis/W. floribunda*	18	18
Princesstree, Royal paulownia	*Paulownia tomentosa*	15	8
Tropical soda apple	*Solanum viarum*	14	8
Tree-of-heaven	*Ailanthus altissima*	9	25
Tall fescue	*Lolium arundinaceum*	9	42
Russian olive	*Elaeagnus angustifolia*	7	2
Nonnative vincas, Periwinkles	*Vinca minor/V. major*	7	22
Nonnative climbing yams-air yam/Chinese yam	*Dioscorea bulbifera/D. oppositifolia*	6	6
Bush honeysuckles	*Lonicera* spp.	4	9
Oriental bittersweet	*Celastrus orbiculatus*	2	0
Wintercreeper	*Euonymus fortunei*	1	30
Giant reed	*Arundo donax*	1	0
Nonnative bamboos	*Phyllostachys* spp., *Bambusa* spp.	1	65

Table 3—Invasive species detected on Georgia forest land by FIA unit and invasive plant life form, 2010

Life form	South-east	South-west	Central	North Central	North	Total
			number of plots			
Trees	90	56	156	46	27	375
Shrubs	207	224	549	531	218	1,729
Vines	276	200	926	610	248	2,260
Grasses	—	—	39	81	53	173
Forbs	27	14	176	72	37	326
Ferns	28	121	32	3	—	184

— = no sample for the cell.

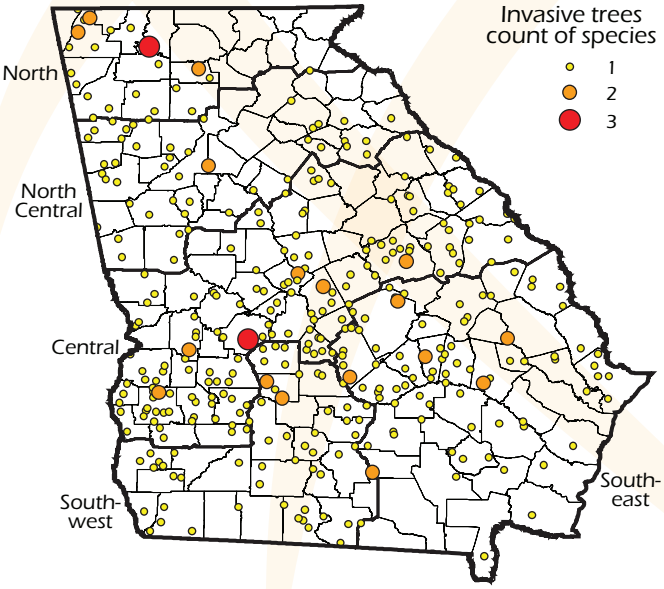

Figure 2—Number of invasive trees on plots, Georgia, 2010.

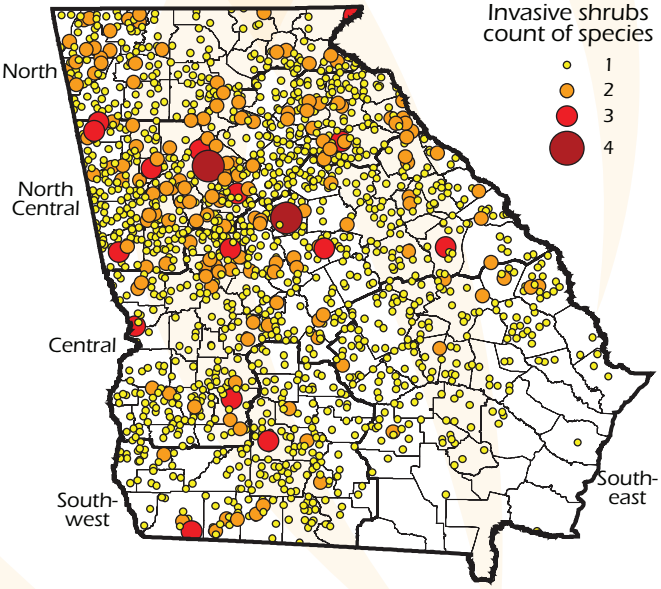

Figure 4—Number of invasive shrubs on plots, Georgia, 2010.

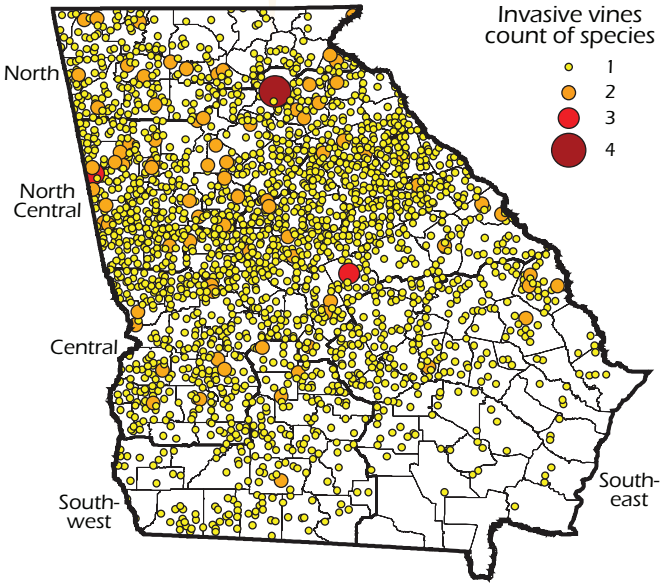

Figure 3—Number of invasive vines on plots, Georgia, 2010.

Although invasive grasses were not observed on forest lands within the State with the same frequency as other life forms, Nepalese browntop was observed in the three most northern units of the State with enough frequency to warrant attention. Nepalese browntop was most frequently noted in the North Central unit, where it was found on 11 percent of forested plots.

Japanese climbing fern represented one species from the "watch list" that departed from the geographical distribution trends of almost all other invasive plants monitored by the program. Large portions of the Japanese climbing fern population were not observed in the northern units within the State; instead, it was observed primarily in the southern units. Japanese climbing fern was found only in the Southeast (2 percent of forested plots), Southwest (22 percent of forested plots), and Central (2 percent of forested plots) units.

Conclusions

Invasive species are common on forested plots across the State of Georgia. The prevalence of invasive plants on Georgia 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.

FIA Program Information

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Mimosa (*Ailanthus altissima*). (Bugwood.org)

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