

Invasive Plant Species by Growth Form in Northern U.S. Forests

Northern Research Station | Research Note NRS-312 | May 2023

This publication is part of a series that provides an overview of the presence of invasive plant species monitored on an extensive systematic network of plots measured by the Forest Inventory and Analysis (FIA) program of the USDA Forest Service, Northern Research Station (NRS). Previous research notes in this series featured one of the invasive plants monitored on forested plots by NRS FIA in the 24 states of the midwestern and northeastern United States. This report shifts to an overview of all the monitored invasive plants, by growth form, and their abundance in each of the NRS states.

Introduction

Invasive plant species (IPS)¹ have been monitored on select Phase 2 (P2) FIA plots since 2005 in the Midwest and since 2007 in the northeastern part of the NRS. In 2005 and 2006, IPS data were collected year-round on 100 percent of the plots. Starting in 2007, the sampling changed to collecting IPS data on 20 percent of plots with the monitoring window running from May through September. Since 2012, IPS data are collected on the Phase 2 Plus (P2+) sample. These plots are a 12.5 percent subsample of the Phase 2 plots, measured from May through September. These plots only occur on forest land.²

In this report, the inventory data are presented to examine IPS by growth form: shrub, tree, herbaceous, and graminoid. (Graminoids are grass-like plants.) NRS FIA crews monitored 4,244 plots for invasive plant species in the 2019 inventory. Along with standard forest variables collected during the P2 measurement (e.g., tree diameter, height) these plots have various other attributes collected, including the occurrence and coverage of IPS, vegetation structure, and down woody debris.

In past research notes, all species level nonnative bush honeysuckle data were lumped with the genus level observations. For this report, they are not combined. This results in reporting on 43 species plus one undifferentiated genus (nonnative bush honeysuckle), hereafter referred to as the 44 monitored IPS.³ Overall, 52 percent of forested plots had one or more of the monitored invasives present in 2014. This number increased to 55 percent in 2019.

Invasive Plant Species on Phase 2 Plus Plots

Inventory results of the IPS monitored by FIA, for each growth form, are displayed in Tables 1, 2, 3, and 4. It is important to note that species may be present within the state, but due to low sample size or not occurring on plots, may not show up in the FIA data. Table 1 shows the presence of the 17 shrub species monitored by the NRS. The most abundant, multiflora rose, occurs on 31.3 percent of plots. Of the NRS states, Ohio has the highest percentage of plots with multiflora rose present (87.8 percent). Indiana also has a high percentage of plots with multiflora rose (86.1 percent). These two states also have the highest percentage of plots with monitored IPS at 98 percent (Ohio) and 97 percent (Indiana) (Kurtz 2023). The only other



Common reed (*Phragmites australis*) invasion. USDA Forest Service photo by Cassandra M. Kurtz.

shrub occurring on over 10 percent of plots is nonnative bush honeysuckle at 11.4 percent. All 17 of the monitored shrub species are found in the region and presence varies by state.

Looking at the trees (Table 2), black locust occurs on 6.2 percent of plots. This is the only monitored tree species present at over 5 percent in the NRS region. The next most abundant invasive tree species are tree of heaven (3 percent) and Norway maple (1.1 percent). Three of the 11 trees monitored, Chinaberry, punktree, and tallowtree, are not present on plots within the region.

Of the 13 herbaceous plants monitored (Table 3), garlic mustard is the most frequently observed (13.1 percent of plots). It is present on over one-third of plots in Indiana and Ohio. The remaining plants are more infrequent with European swallow-wort, the least commonly observed herb, present on one plot (New York). Bohemian knotweed is the only monitored herbaceous plant that is not present on P2+ plots in the NRS region.

Three graminoids are monitored in the NRS region (Table 4). Japanese stiltgrass is the most frequently observed, occurring on 9.5 percent of plots. Its presence is high in several states with observations on over one-third of the plots in Indiana, Ohio, and West Virginia. Reed canarygrass is present on 6.9 percent of plots with the highest presence in Minnesota at 34.1 percent of plots. Common reed occurs on 0.4 percent of plots with only one to four observations in the eight states where it is present.

Table 1.—Number and percentage of plots with monitored shrub species present for each of the states monitored by the Northern Research Station Forest Inventory and Analysis, 2019. Percentages are rounded to the nearest tenth.

State	Amur honeysuckle	Autumn olive	Common barberry	Common buckthorn	English ivy	European cranberrybush	European privet	Glossy buckthorn	Japanese barberry	Japanese honeysuckle	Japanese meadow sweet	Morrow's honeysuckle	Multiflora rose	Nonnative bush honeysuckle	Oriental bitter sweet	Showy fly honeysuckle	Tatarian honeysuckle	Total
CT	-	6 (13.6%)	-	4 (9.1%)	-	-	1 (2.3%)	1 (2.3%)	25 (56.8%)	3 (6.8%)	-	2 (4.5%)	27 (61.4%)	13 (29.5%)	28 (63.6%)	-	-	110
DE	-	-	-	-	1 (6.7%)	-	2 (13.3%)	-	-	7 (46.7%)	-	-	4 (26.7%)	-	1 (6.7%)	-	-	15
IL	33 (26.8%)	1 (0.8%)	11 (8.9%)	-	-	4 (3.3%)	-	-	5 (4.1%)	40 (32.5%)	-	2 (1.6%)	84 (68.3%)	13 (10.6%)	5 (4.1%)	-	1 (0.8%)	267
IN	9 (7.8%)	21 (18.3%)	1 (0.9%)	6 (5.2%)	1 (0.9%)	-	9 (7.8%)	-	7 (6.1%)	41 (35.7%)	-	-	99 (86.1%)	34 (29.6%)	15 (13.0%)	-	-	243
IA	28 (36.8%)	8 (10.5%)	1 (1.3%)	6 (7.9%)	-	1 (1.3%)	1 (1.3%)	-	5 (6.6%)	-	-	-	42 (55.3%)	13 (17.1%)	3 (3.9%)	-	-	108
KS	8 (11.1%)	2 (2.8%)	-	-	-	-	-	-	-	2 (2.8%)	-	-	5 (6.9%)	-	-	-	-	17
ME	-	1 (0.3%)	-	1 (0.3%)	-	-	-	4 (1.0%)	1 (0.3%)	-	-	-	9 (2.3%)	17 (4.4%)	4 (1.0%)	-	-	37
MD	2 (4.1%)	4 (8.2%)	1 (2.0%)	-	2 (4.1%)	-	1 (2.0%)	-	10 (20.4%)	17 (34.7%)	-	2 (4.1%)	18 (36.7%)	2 (4.1%)	5 (10.2%)	-	-	64
MA	-	3 (4.7%)	1 (1.6%)	7 (10.9%)	-	-	-	16 (25.0%)	7 (10.9%)	-	-	-	7 (10.9%)	7 (10.9%)	13 (20.3%)	-	-	61
MI	3 (0.7%)	43 (10.6%)	2 (0.5%)	18 (4.4%)	1 (0.2%)	16 (3.9%)	3 (0.7%)	11 (2.7%)	13 (3.2%)	1 (0.2%)	-	1 (0.2%)	36 (8.9%)	37 (9.1%)	5 (1.2%)	-	-	190
MN	-	-	-	69 (19.0%)	-	11 (3.0%)	-	7 (1.9%)	3 (0.8%)	-	-	-	-	57 (15.7%)	-	-	6 (1.6%)	153
MO	25 (7.2%)	26 (7.5%)	-	3 (0.9%)	-	-	5 (1.4%)	-	-	47 (13.5%)	-	-	197 (56.8%)	13 (3.7%)	-	-	-	316
NE	1 (1.9%)	-	-	2 (3.8%)	-	-	-	-	-	-	-	-	3 (5.7%)	1 (1.9%)	-	-	-	7
NH	-	2 (2.2%)	-	2 (2.2%)	-	-	-	8 (8.6%)	6 (6.5%)	-	-	-	3 (3.2%)	4 (4.3%)	7 (7.5%)	-	-	32
NJ	2 (3.8%)	6 (11.5%)	-	2 (3.8%)	1 (1.9%)	1 (1.9%)	6 (11.5%)	-	16 (30.8%)	10 (19.2%)	1 (1.9%)	7 (13.5%)	20 (38.5%)	4 (7.7%)	17 (32.7%)	-	-	93
NY	7 (1.8%)	17 (4.4%)	3 (0.8%)	77 (20.1%)	1 (0.3%)	-	12 (3.1%)	14 (3.6%)	17 (4.4%)	2 (0.5%)	-	47 (12.2%)	130 (33.9%)	87 (22.7%)	18 (4.7%)	-	1 (0.3%)	433
ND	-	-	-	2 (13.3%)	-	-	-	-	-	-	-	-	-	8 (53.3%)	-	-	1 (6.7%)	11
OH	25 (13.8%)	40 (22.1%)	4 (2.2%)	5 (2.8%)	1 (0.6%)	-	35 (19.3%)	9 (5.0%)	33 (18.2%)	73 (40.3%)	-	8 (4.4%)	159 (87.8%)	34 (18.8%)	18 (9.9%)	-	-	444
PA	45 (6.5%)	91 (13.2%)	11 (1.6%)	12 (1.7%)	2 (0.3%)	-	69 (10.0%)	10 (1.5%)	151 (21.9%)	59 (8.6%)	1 (0.1%)	114 (16.6%)	342 (49.7%)	44 (6.4%)	86 (12.5%)	1 (0.1%)	5 (0.7%)	1,043
RI	-	-	-	1 (16.7%)	-	-	-	1 (16.7%)	2 (33.3%)	-	-	-	3 (50.0%)	-	3 (50.0%)	-	-	10
SD	-	-	-	1 (2.0%)	-	-	-	-	-	-	-	-	-	-	-	-	-	1
VT	-	1 (1.0%)	4 (4.1%)	9 (9.3%)	-	-	-	5 (5.2%)	5 (5.2%)	-	-	-	3 (3.1%)	13 (13.4%)	3 (3.1%)	-	-	43
WV	4 (1.9%)	52 (24.4%)	4 (1.9%)	-	-	1 (0.5%)	15 (7.0%)	1 (0.5%)	25 (11.7%)	37 (17.4%)	9 (4.2%)	8 (3.8%)	111 (52.1%)	28 (13.1%)	11 (5.2%)	-	1 (0.5%)	307
WI	19 (5.4%)	14 (4.0%)	3 (0.9%)	57 (16.2%)	-	2 (0.6%)	1 (0.3%)	14 (4.0%)	3 (0.9%)	-	-	-	26 (7.4%)	54 (15.3%)	1 (0.3%)	2 (0.6%)	-	196
Total	246 (5.8%)	370 (8.7%)	36 (0.8%)	295 (7.0%)	10 (0.2%)	36 (0.8%)	160 (3.8%)	101 (2.4%)	334 (7.9%)	339 (8.0%)	11 (0.3%)	191 (4.5%)	1,328 (31.3%)	483 (11.4%)	243 (5.7%)	3 (0.1%)	15 (0.4%)	4,208

Table 2.—Number and percent of plots with monitored tree species present for each of the states monitored by the Northern Research Station Forest Inventory and Analysis, 2019. Percentages are rounded to the nearest tenth.

State	Black locust	China-berry	Norway maple	Prin-cestree	Punktree	Russian olive	Saltcedar	Siberian elm	Silktree	Tallowtree	Tree of heaven	Total
CT	1 (2.3%)	-	4 (9.1%)	-	-	5 (11.4%)	-	-	-	-	1 (2.3%)	0
DE	-	-	-	-	-	-	-	-	-	-	-	0
IL	7 (5.7%)	-	1 (0.8%)	-	-	-	-	1 (0.8%)	1 (0.8%)	-	2 (1.6%)	12
IN	9 (7.8%)	-	-	-	-	-	-	-	1 (0.9%)	-	7 (6.1%)	17
IA	1 (1.3%)	-	-	-	-	-	-	6 (7.9%)	-	-	-	7
KS	-	-	-	-	-	1 (1.4%)	-	7 (9.7%)	-	-	-	8
ME	-	-	4 (1.0%)	-	-	-	-	-	-	-	-	4
MD	10 (20.4%)	-	-	-	-	-	-	-	-	-	7 (14.3%)	17
MA	1 (1.6%)	-	3 (4.7%)	-	-	-	-	-	-	-	-	4
MI	4 (1.0%)	-	1 (0.2%)	-	-	-	-	-	-	-	-	5
MN	3 (0.8%)	-	1 (0.3%)	-	-	1 (0.3%)	-	4 (1.1%)	-	-	-	9
MO	11 (3.2%)	-	-	-	-	-	-	1 (0.3%)	-	-	3 (0.9%)	15
NE	1 (1.9%)	-	-	-	-	3 (5.7%)	1 (1.9%)	7 (13.2%)	-	-	-	12
NH	-	-	2 (2.2%)	-	-	-	-	-	-	-	-	2
NJ	1 (1.9%)	-	3 (5.8%)	-	-	-	-	-	-	-	2 (3.8%)	6
NY	12 (3.1%)	-	5 (1.3%)	-	-	-	-	-	-	-	5 (1.3%)	22
ND	-	-	-	-	-	-	-	2 (13.3%)	-	-	-	2
OH	29 (16.0%)	-	-	1 (0.6%)	-	-	-	-	-	-	17 (9.4%)	47
PA	96 (14.0%)	-	21 (3.1%)	4 (0.6%)	-	1 (0.1%)	-	-	-	-	45 (6.5%)	167
RI	-	-	-	-	-	-	-	-	-	-	-	0
SD	-	-	-	-	-	-	-	4 (8.0%)	-	-	-	4
VT	2 (2.1%)	-	-	-	-	-	-	-	-	-	-	2
WV	71 (33.3%)	-	-	3 (1.4%)	-	-	-	-	-	-	40 (18.8%)	114
WI	3 (0.9%)	-	-	-	-	-	-	5 (1.4%)	-	-	-	8
Total	262 (6.2%)	-	45 (1.1%)	8 (0.2%)	-	11(0.3%)	1 (0.0%)	37 (0.9%)	2 (0.0%)	-	129 (3.0%)	495

Table 3.—Number and percentage of plots with monitored herbaceous species present for each of the states monitored by the Northern Research Station Forest Inventory and Analysis, 2019. Percentages are rounded to the nearest tenth.

State	Bohemian knotweed	Bull thistle	Canada thistle	Creeping jenny	Dames rocket	European swallow-wort	Garlic mustard	Giant knotweed	Japanese knotweed	Leafy spurge	Louise's swallow-wort	Purple loosestrife	Spotted knapweed	Total
CT	-	-	1 (2.3%)	-	-	-	8 (18.2%)	-	1 (2.3%)	-	-	-	-	10
DE	-	-	-	-	-	-	-	-	-	-	-	-	-	0
IL	-	2 (1.6%)	1 (0.8%)	3 (2.4%)	2 (1.6%)	-	34 (27.6%)	-	1 (0.8%)	-	-	-	-	43
IN	-	3 (2.6%)	5 (4.3%)	12 (10.4%)	1 (0.9%)	-	40 (34.8%)	-	-	-	-	-	-	61
IA	-	3 (3.9%)	3 (3.9%)	2 (2.6%)	1 (1.3%)	-	23 (30.3%)	-	-	-	-	-	-	32
KS	-	3 (4.2%)	-	-	1 (1.4%)	-	13 (18.1%)	-	-	-	-	-	-	17
ME	-	7 (1.8%)	10 (2.6%)	-	-	-	-	-	-	-	-	1 (0.3%)	-	8
MD	-	-	-	-	-	-	15 (30.6%)	-	-	-	-	-	-	15
MA	-	-	-	-	-	-	1 (1.6%)	-	-	-	-	-	1 (1.6%)	2
MI	-	10 (2.5%)	53 (13.1%)	2 (0.5%)	1 (0.2%)	-	14 (3.4%)	-	1 (0.2%)	1 (0.2%)	1 (0.2%)	-	26 (6.4%)	109
MN	-	30 (8.2%)	-	-	-	-	4 (1.1%)	-	-	-	-	-	-	105
MO	-	5 (1.4%)	-	4 (1.2%)	-	-	17 (4.9%)	-	-	-	-	-	-	26
NE	-	3 (5.7%)	4 (7.5%)	-	3 (5.7%)	-	1 (1.9%)	-	-	3 (5.7%)	-	-	-	14
NH	-	-	-	-	-	-	-	-	-	-	-	-	-	0
NJ	-	1 (1.9%)	-	-	1 (1.9%)	-	11 (21.2%)	-	-	-	-	-	1 (1.9%)	14
NY	-	2 (0.5%)	4 (1.0%)	18 (4.7%)	10 (2.6%)	1 (0.3%)	64 (16.7%)	-	-	-	1 (0.3%)	3 (0.8%)	2 (0.5%)	105
ND	-	-	2 (13.3%)	-	-	-	1 (6.7%)	-	-	3 (20%)	-	-	-	6
OH	-	3 (1.7%)	5 (2.8%)	13 (7.2%)	1 (0.6%)	-	63 (34.8%)	-	-	-	-	-	-	85
PA	-	5 (0.7%)	9 (1.3%)	13 (1.9%)	16 (2.3%)	-	188 (27.3%)	3 (0.4%)	6 (0.9%)	-	-	-	1 (0.1%)	241
RI	-	-	-	-	-	-	-	-	1 (16.7%)	-	-	-	-	1
SD	-	7 (14.0%)	8 (16.0%)	-	-	-	-	-	-	-	-	-	-	15
VT	-	-	-	2 (2.1%)	-	-	-	-	-	-	-	1 (1.0%)	-	3
WV	-	3 (1.4%)	-	2 (0.9%)	-	-	25 (11.7%)	-	3 (1.4%)	-	-	-	-	33
WI	-	11 (3.1%)	20 (5.7%)	3 (0.9%)	1 (0.3%)	-	32 (9.0%)	-	-	-	-	-	3 (0.9%)	70
Total	-	98 (2.3%)	196 (4.6%)	74 (1.7%)	38 (0.9%)	1 (0.0%)	554 (13.1%)	3 (0.1%)	13 (0.3%)	7 (0.2%)	2 (0.0%)	5 (0.1%)	34 (0.8%)	1025

Of the 44 species monitored, multiflora rose is the most common. Forty species are present in the NRS region. The four monitored species that are not observed are Bohemian knotweed, Chinaberry, punktree, and tallow tree. This does not mean they do not exist in the region, but that they have not been found on the plots inventoried. Additionally, comparing the 2019 inventory to the 2014 inventory, there were three species observed that did not occur in both inventories. Saltcedar and European swallow-wort are only found in 2019 whereas Chinaberry is only present in 2014.



Dried oriental bittersweet (*Celastrus orbiculatus*) for sale. Courtesy photo by Leslie J. Mehrhoff/ Bugwood.org.

Table 4.—Number and percent of plots with monitored graminoid species present for each of the states monitored by the Northern Research Station Forest Inventory and Analysis, 2019. Percentages are rounded to the nearest tenth.

State	Common reed	Japanese stiltgrass	Reed canarygrass	Total
CT	4 (9.1%)	1 (2.3%)	-	5
DE	-	4 (26.7%)	-	4
IL	-	3 (2.4%)	9 (7.3%)	12
IN		41 (35.7%)	6 (5.2%)	47
IA	-	-	23 (30.3%)	23
KS	-	-	1 (1.4%)	1
ME	-	-	6 (1.6%)	6
MD	1 (2.0%)	15 (30.6%)	-	16
MA	-	-	-	0
MI	4 (1.0%)	-	33 (8.1%)	37
MN	1 (0.3%)	-	124 (34.1%)	125
MO	-	1 (0.3%)	7 (2.0%)	8
NE	-	-	11 (20.8%)	11
NH	-	-	-	0
NJ	2 (3.8%)	11 (21.2%)	-	13
NY	3 (0.8%)	11 (2.9%)	9 (2.3%)	23
ND	-	-	5 (33.3%)	5
OH	1 (0.6%)	62 (34.3%)	9 (5.0%)	72
PA	-	164 (23.8%)	3 (0.4%)	167
RI	-	-	-	0
SD	-	-	-	0
VT	-	-	-	0
WV	-	91 (42.7%)	-	91
WI	3 (0.9%)		45 (12.8%)	48
Total	19 (0.4%)	404 (9.5%)	291 (6.9%)	714



Multiflora rose (*Rosa multiflora*) invasion. Courtesy photo by Leslie J. Mehrhoff/ Bugwood.org.

Distribution of Invasive Plant Species on Phase Two Plus Plots, 2019

Invasive plant presence varies spatially across the region monitored by the NRS. The most common species of each growth form is mapped in Figure 1 to show regional distribution on plots. In addition to noting the presence in these maps, the cover is also shown, showing the proportion of forest land the species covers on plots where it is observed. The most commonly observed invasive tree is black locust (Fig. 1A). It is a nitrogen fixing species with rapid juvenile growth. It is most commonly observed on plots in the southeastern part of the region where it is widely believed to be native. The native range is debated, but it is believed that the observations in the Ozarks of Missouri, southern Illinois, Indiana, and Pennsylvania to northern Georgia are within the native range (Alden 1995). The most commonly

observed herbaceous plant is garlic mustard. This invader is abundant throughout the region and found on plots in 18 of the 24 states (Fig. 1B). Japanese stiltgrass is the most common graminoid monitored by NRS (Fig. 1C). Observations are only in the southeastern part of the region. Multiflora rose is the most commonly observed shrub (Fig. 1D) and it is also the most abundant IPS in the region. It is found in most states but is not found in Minnesota, North Dakota, and South Dakota. Across the region it is observed on nearly one-third (31.3 percent) of the plots, an increase from 28.8 percent in 2014. If only looking at the 21 states where multiflora rose is found, occurrence increases to 34.8 percent.

Various mechanical, chemical, and biological control methods are useful to keep the populations of IPS in check. This data may be utilized to see the effects of widespread biological control or disease impacts on the monitored species.

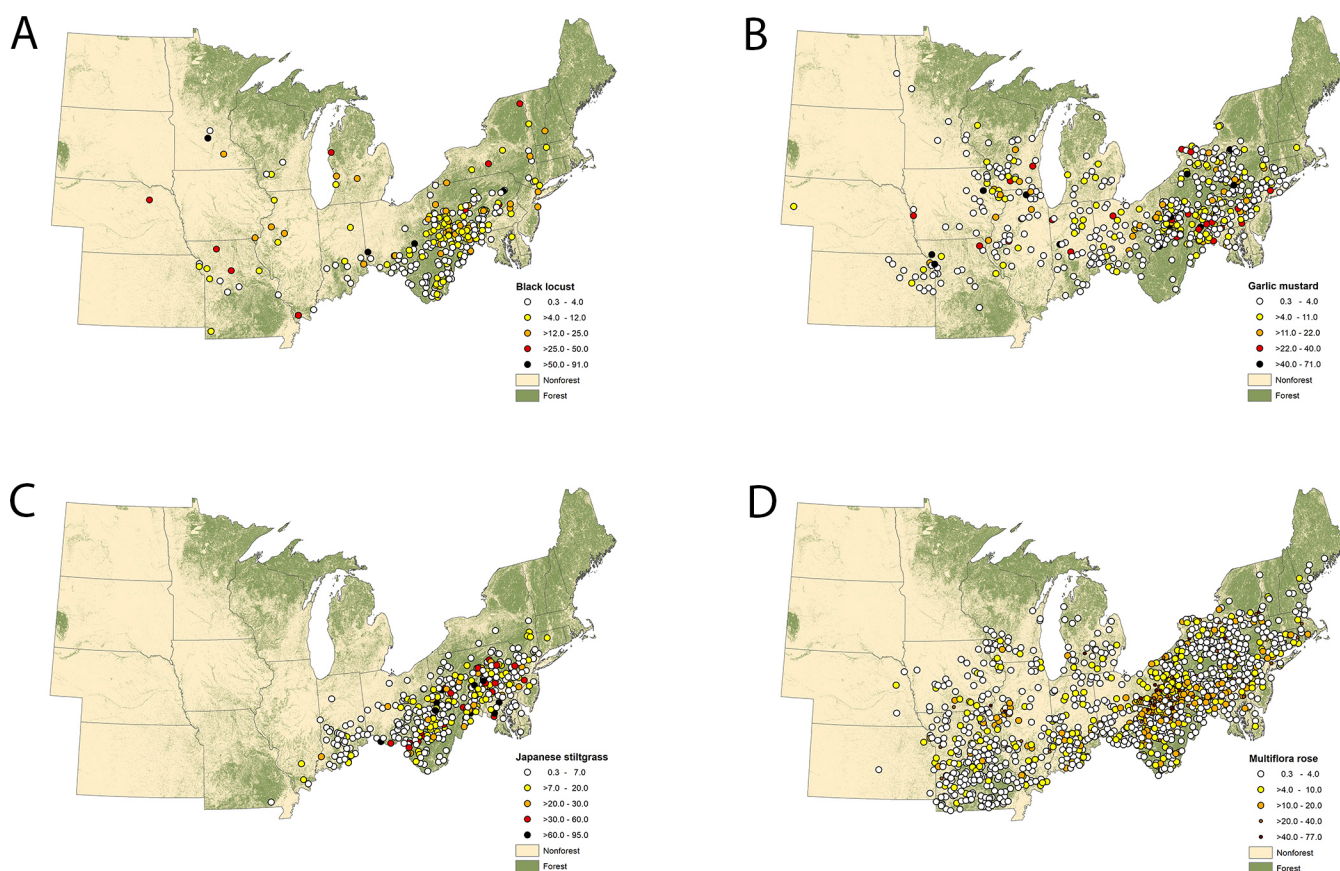


Figure 1.—Proportion of forest land with the most common invasive plant species for each growth form, (A) tree, (B) herbaceous, (C) graminoid, and (D) shrub, found on Phase 2 invasive plots, 2019. Approximate plot locations depicted.

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Additional Invasive Plant Information

Invasive and Exotic Plants: <http://www.invasive.org/species/weeds.cfm>
Invasive Plant Atlas of New England: <http://www.eddmaps.org/ipane/>
Invasive Plant Atlas of the United States: <http://www.invasiveplantatlas.org/index.html>
Midwest Invasive Plant Network: <http://mipn.org/>

Citation for this Publication

Kurtz, Cassandra M. 2023. **Invasive plant species by growth form in northern U.S. forests**. Res. Note NRS-312. Madison, WI: U.S. Department of Agriculture, Forest Service, Northern Research Station. 6 p. <https://doi.org/10.2737/NRS-RN-312>.

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Footnotes (from page 1)

- ¹ Hereafter IPS may also be referred to as "invasive species," "invasive plants," or "invasives."
- ² FIA defines forest land as land that is at least 10 percent canopy cover of trees of any size or land formerly having had such tree cover and not currently developed for nonforest use. Generally, the minimum area for classification as a forest is 1 acre in size and at least 120 feet in width. There are more specific criteria for defining forest land near streams, rights-of-way, and shelterbelt strips (USDA Forest Service 2021).
- ³ Amur honeysuckle (*Lonicera maackii*), autumn olive (*Elaeagnus umbellata*), black locust (*Robinia pseudoacacia*), Bohemian knotweed (*Polygonum x bohemicum*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), Chinaberry (*Melia azedarach*), common barberry (*Berberis vulgaris*), common buckthorn (*Rhamnus cathartica*), common reed (*Phragmites australis*), creeping jenny (*Lysimachia nummularia*), dames rocket (*Hesperis matronalis*), English ivy (*Hedera helix*), European cranberrybush (*Viburnum opulus*), European privet (*Ligustrum vulgare*), European swallow-wort (*Cynanchum rossicum*), garlic mustard (*Alliaria petiolata*), giant knotweed (*Polygonum sachalinense*), glossy buckthorn (*Frangula alnus*), Japanese barberry (*Berberis thunbergii*), Japanese honeysuckle (*Lonicera japonica*), Japanese knotweed (*Polygonum cuspidatum*), Japanese meadowsweet (*Spiraea japonica*), Japanese stiltgrass (*Microstegium vimineum*), leafy spurge (*Euphorbia esula*), Louise's swallow-wort (*Cynanchum louiseae*), multiflora rose (*Rosa multiflora*), Morrow's honeysuckle (*Lonicera morrowii*), nonnative bush honeysuckle (*Lonicera* spp.), Norway maple (*Acer platanoides*), oriental bittersweet (*Celastrus orbiculatus*), princess tree (*Paulownia tomentosa*), punktree (*Melaleuca quinquenervia*), purple loosestrife (*Lythrum salicaria*), reed canarygrass (*Phalaris arundinacea*), Russian olive (*Elaeagnus angustifolia*), saltcedar (*Tamarix ramosissima*), showy fly honeysuckle (*Lonicera x bella*), Siberian elm (*Ulmus pumila*), silk tree (*Albizia julibrissin*), spotted knapweed (*Centaurea stoebe* ssp. *micranthos*), tallow tree (*Triadica sebifera*), tatarian honeysuckle (*Lonicera tatarica*), tree of heaven (*Ailanthus altissima*).