



Chickasaw National Recreation Area

2010 Exotic Plant Monitoring

Exotic plants represent one of the most significant threats to natural resources in national parks due to their abilities to reproduce prolifically, rapidly colonize new areas, displace native species, alter ecosystem processes across multiple scales, and detract from the interpretive value of park resources. In the Great Plains, grasslands have been increasingly degraded and fragmented, which results in increasing chances of exotic plant species invasions. Prevention and early detection are the principal strategies for successful invasive exotic plant management.

Invasive exotic plant monitoring was recognized across all Southern Plains Inventory & Monitoring Network (SOPN) parks as the most important shared monitoring need. The objectives of monitoring high-priority exotics in areas of high and low invasion probability are to: (1) detect exotic species introductions early, (2) determine changes in the status and trend (density, abundance, or extent), and (3) determine changes in species composition.

Methods

Overall sampling at Chickasaw National Recreation Area (NRA) occurs on paved and unpaved roads and trails over its full three-year rotation (Figure 1). In 2010, exotic plant monitoring occurred over 2.5 days in June. One hundred vector blocks were monitored, for a total of 2.5 linear kilometers sampled on both sides. In addition, 13 permanent transects within the landscape were sampled for a total of 65 4x1 meter plots.

Results

Japanese brome (*Bromus japonicus*) was the most commonly found exotic species this field season (Table 1), found in 97% of vector blocks sampled and in 23% of secondary transects. Spreading hedgeparsley (*Torilis arvensis*) was the second most commonly encountered exotic, found in 73% of the vector blocks monitored and on 38% of the secondary transects. Stinkgrass (*Eragrostis cilianensis*) was found in 57% of the vector blocks but no secondary transects. Yellow sweetclover (*Melilotus officinalis*) was found in half of the vector blocks monitored and one secondary transect. Perennial ryegrass (*Lolium perenne*) was found in 42% of the vector blocks and one secondary transect. Mimosa tree (*Albizia julibrissin*) was found in 39% of the vector blocks monitored. Sericea lespedeza (*Lespedeza cuneata*) was detected on 33% of the vector blocks and in 38% of the secondary transects.

Spreading hedgeparsley (*Torilis arvensis*) was the second most commonly encountered exotic in 2010 at Chickasaw NRA.



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Johnsongrass (*Sorghum halepense*) appeared in one-third of all vector blocks and was the most common exotic found in the secondary transects (62%).

Several species of exotics appeared minimally along vectors and in secondary transects. Bermuda grass (*Cynodon dactylon*) appeared in eight vector blocks and one transect. Singletary pea (*Lathyrus hirsutus*) was found in seven vector blocks and two transects. Toothed spurge (*Euphorbia dentata*) was found in the first two meters of four vector blocks as individual plants, and in one secondary transect at less than 1% cover. Redroot pigweed (*Amaranthus retroflexus*), cheatgrass (*Bromus tectorum*), meadow fescue (*Lolium pretense*), dandelion (*Taraxacum officinale*), and tall fescue (*Lolium arundinaceum*) all appeared in limited vector blocks and in no secondary transects. Eight exotic species were not found along primary vectors but did appear in secondary

transects. Small hop clover (*Trifolium dubium*) was detected in three transects; two which held the greatest quantities were in the restoration area with cover values of less than 1% to as much as 20%. A species of agricultural clover (*Trifolium species*) was found in the two transects of the restoration area with cover as high as 90% or more in some plots. Spiny sowthistle (*Sonchus asper*) was detected in limited quantities in two transects at less than 1% cover. Redstem stork's bill (*Erodium cicutarium*) was found in both transects of the restoration area with a 1% cover

or less. KR bluestem (*Bothriochloa ischaemum*) was found in one plot of one transect, but the cover was 15%. White sweetclover (*Melilotus alba*), salsola (*Salsola tragus*) and thymeleaf sandwort (*Arenaria serpyllifolia*) were all found in single transects. Salsola and thymeleaf sandwort had covers of less than 1%, while white sweetclover had a cover of up to 15%.

Figure 1. Individual vector blocks sampled, Chickasaw NRA, 2010.



Table 1. Number and percentage of primary and secondary sample units where each species was detected, Chickasaw NRA, 2010.

Scientific name	Common name	Primary vector blocks (n=100)		Secondary transects (n=13)	
		Total	% blocks	Total	% transects
<i>Bromus japonicus</i>	Japanese brome	97	97	3	23
<i>Torilis arvensis</i>	Spreading hedgeparsley	73	73	5	38
<i>Eragrostis cilianensis</i>	Stinkgrass	57	57	0	0
<i>Melilotus officinalis</i>	Yellow sweetclover	50	50	1	8
<i>Lolium perenne</i>	Perennial ryegrass	42	42	1	8
<i>Albizia julibrissin</i>	Mimosa	39	39	0	0
<i>Lespedeza cuneata</i>	Sericea lespedeza	33	33	5	38
<i>Sorghum halepense</i>	Johnsongrass	33	33	8	62
<i>Melia azedarach</i>	Chinaberry	23	23	0	0
<i>Medicago minima</i>	Burr medic clover	21	21	0	0
<i>Medicago lupulina</i>	Black medic clover	20	20	1	8
<i>Tragopogon dubius</i>	Western salsify	11	11	0	0
<i>Cynodon dactylon</i>	Bermuda grass	8	8	1	8
<i>Lathyrus hirsutus</i>	Singletary pea	7	7	2	15
<i>Amaranthus retroflexus</i>	Red-root pigweed	4	4	0	0
<i>Euphorbia dentata</i>	Toothed spurge	4	4	1	8
<i>Bromus tectorum</i>	Cheatgrass	3	3	0	0
<i>Lolium pratense</i>	Meadow fescue	2	2	0	0
<i>Taraxacum officinale</i>	Dandelion	2	2	0	0
<i>Lolium arundinaceum</i>	Tall fescue	1	1	0	0
<i>Bothriochloa ischaemum</i> var. <i>songarica</i>	KR bluestem	0	0	1	8
<i>Erodium cicutarium</i>	Red stork's-bill	0	0	2	15
<i>Melilotus alba</i>	White sweetclover	0	0	1	8
<i>Salsola tragus</i>	Prickly Russian thistle	0	0	1	8
<i>Arenaria serpyllifolia</i>	Thymeleaf sandwort	0	0	1	8
<i>Sonchus asper</i>	Spiny sowthistle	0	0	2	15
<i>Trifolium dubium</i>	Small hop clover	0	0	3	23
<i>Trifolium species</i>	Agricultural clover	0	0	2	15
<i>Trifolium species</i>	Agricultural clover	0	0	2	15