



Lake Meredith NRA and Alibates Flint Quarries NM

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 Lake Meredith National Recreation Area (NRA) and Alibates Flint Quarries National Monument (NM) occurs on paved roads over its full three-year rotation. In 2010, exotic plant monitoring occurred at Lake Meredith NRA for 2.5 days in June. Bugbee, Cedar Canyon, and Sanford Yake roads were sampled. Eighty-eight vector blocks were monitored, for a total of 2.2 linear kilometers sampled on both sides (Figure 1). In addition, 27 permanent transects within the landscape were sampled for a total of 135 4x1 meter plots.

Results

Prickly Russian thistle (*Salsola tragus*) was the most commonly found exotic species this field season, found in 61% of vector blocks sampled and 81% of secondary transects (Table 1). It is widespread within the landscape at Lake Meredith, found in numerous plots in numerous transects in cover densities of up to 50% per plot, but more generally of 20% or less. Japanese brome (*Bromus japonicus*), found in 59% of vector blocks sampled in similar locations and densities along all vectors. Senesced (dead) plants of Japanese brome were observed in various secondary transects and were treated as litter, so no cover information is available.

Hairy crabgrass (*Digitaria sanguinalis*) commonly found in 2010 at Lake Meredith NRA.



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Hairy crabgrass (*Digitaria sanguinalis*) was present in 56% of vector blocks sampled in scattered patches commonly 12 meters and occasionally up to 20 meters into the landscape on all vectors. White sweetclover (*Melilotus alba*) was present in 43% of vector blocks sampled in scattered patches up to 20 meters into the landscape on all vectors. Bermuda grass (*Cynodon dactylon*) was present in 28% of vector blocks sampled in scattered patches within the first 12 meters of the vectors. Kochia (*Kochia scoparia*) was found in 26% of vector blocks sampled and 41% of secondary transects. Western salsify (*Tragopogon dubius*) was found in 16% of vector blocks sampled as a few plants within the first 10 meters of all vectors, but primarily along the Sanford Yake road. Toothed spurge (*Euphorbia dentata*) was found in 11% of vector blocks

sampled, as scattered patches up to 20 meters along the Cedar Creek road and as a few individual plants up to 10 meters into the landscape along the Bugbee road.

Many species of exotics were detected in minor amounts along primary vectors, but only one—Johnsongrass (*Sorghum halepense*)—was found in the secondary transects. Scattered patches of Johnsongrass were detected deep into the landscape in two vector blocks located at the maintenance yard on Sanford Yake road and was found in two secondary transects; one transect contained Johnsongrass in one plot at 1% cover, but the second transect had it in four plots at up to 28% cover. Field bindweed (*Convolvulus arvensis*) and dandelion (*Taraxacum officinale*) were found in four vector blocks each as a few plants to scattered patches in the first 12 meters of both Sanford Yake and Cedar Canyon roads.

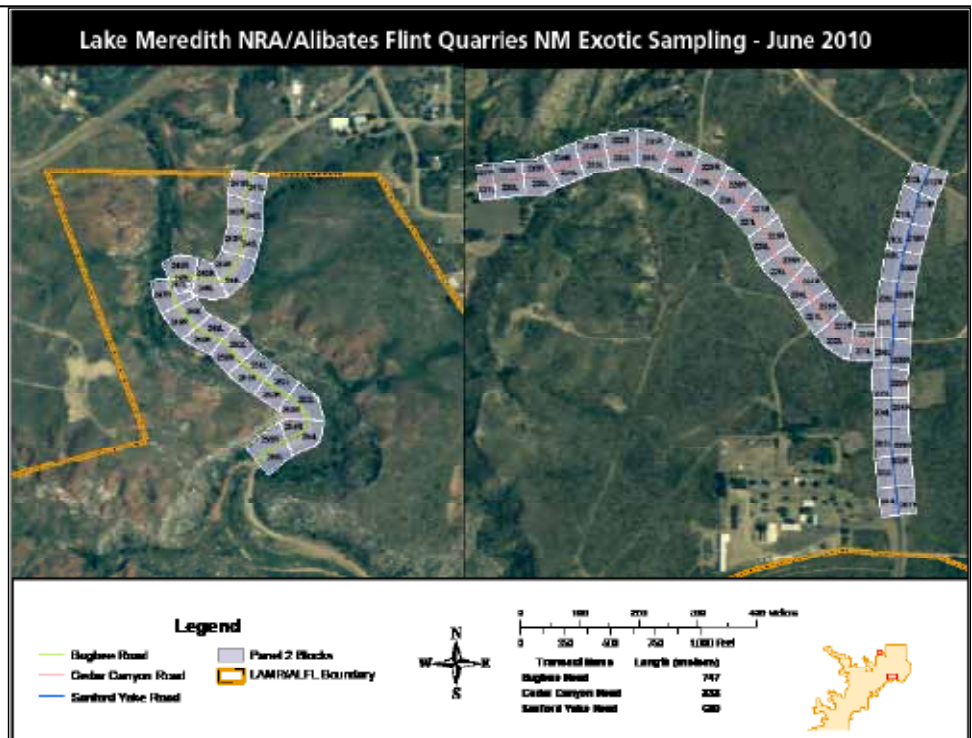


Figure 1. Individual vector blocks sampled, Lake Meredith NRA and Alibates Flint Quarries NM, 2010.

Table 1. Number and percentage of primary and secondary sample units where each species was detected, Lake Meredith NRA and Alibates Flint Quarries NM, 2010.

Scientific name	Common name	Primary vector blocks (n=88)		Secondary transects (n=27)	
		Total	% blocks	Total	% transects
<i>Salsola tragus</i>	Prickly Russian thistle	54	61	22	81
<i>Bromus japonicus</i>	Japanese brome	52	59	0	0
<i>Digitaria sanguinalis</i>	Hairy crabgrass	49	56	0	0
<i>Melilotus alba</i>	White sweetclover	38	43	0	0
<i>Cynodon dactylon</i>	Bermuda grass	25	28	0	0
<i>Kochia scoparia</i>	Kochia	23	26	11	41
<i>Tragopogon dubius</i>	Western salsify	14	16	0	0
<i>Euphorbia dentata</i>	Toothed spurge	10	11	0	0
<i>Convolvulus arvensis</i>	Field bindweed	4	5	0	0
<i>Taraxacum officinale</i>	Dandelion	4	5	0	0
<i>Erodium cicutarium</i>	Red stork's-bill	3	3	0	0
<i>Poa pratensis</i>	Kentucky bluegrass	3	3	0	0
<i>Tamarix chinensis</i>	Tamarisk	3	3	0	0
<i>Salsola collina</i>	Spineless Russian thistle	2	2	0	0
<i>Sorghum halepense</i>	Johnsongrass	2	2	2	7
<i>Bromus tectorum</i>	Cheatgrass	1	1	0	0
<i>Medicago minima</i>	Burr medic clover	1	1	0	0
<i>Polypogon monspeliensis</i>	Annual rabbitsfoot grass	1	1	0	0
<i>Scorzonera laciniata</i>	Cutleaf vipergrass	1	1	0	0