



Lake Meredith NRA and Alibates Flint Quarries NM

2011 Exotic Plant Monitoring

Exotic plants represent one of the most significant threats to natural resources in national parks. Exotic plants are a concern 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.

Invasive exotic plants have been consistently ranked as a top vital sign for long-term monitoring as part of the NPS Inventory & Monitoring Program. During final selection of vital signs in 2006, invasive exotic plant monitoring was recognized across all Southern Plains 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.

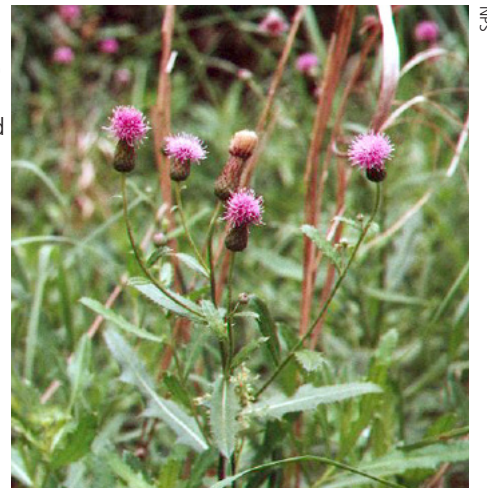
Methods

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 2011, exotic plant monitoring occurred at in June. The paved road in Blue West canyon was sampled. One hundred four vector blocks were monitored, for a total of 2.6 linear kilometers sampled on both sides (Figure 1). In addition, 21 permanent transects within the landscape were sampled for a total of 105 2 x 1 meter plots. Thirteen species of exotics were detected with primary and secondary monitoring. There were no exotics found in nineteen vector blocks sampled. SOPN has now completed one full rotation of panels scheduled and re-visits will begin in 2012.

Results

Lake Meredith NRA and Alibates Flint Quarries NM cover an extensive area comprised primarily of Canadian River impoundment, bottomland and “breaks” or cliffs, surrounded by a narrow band of upland. Typical uses of the park, such as some recreational activities and leases, contribute to the disturbance and fragmentation of the landscape, providing opportunities for exotic contamination. The presence of the

Canada thistle (*Cirsium arvensis*) was the most commonly found exotic species in 2011 at Lake Meredith NRA.



Canadian River running the length of the park is also a prime entry vector for exotic propagules from upstream.

Canada thistle (*Cirsium arvense*) was the most dominant exotic encountered in 2011, found in 69% of the primary vector blocks but in no secondary transects. This perennial is considered a noxious weed in all surrounding states, spreading primarily vegetatively and secondarily by seed and resulting in displaced natives and a decrease in biodiversity. Its aggressive rhizomes require multi-year treatments to eradicate and it is a particular threat to both prairie and riparian ecosystems.

Prickly Russian thistle (*Salsola tragus*) was the second most frequently encountered exotic, detected in 27% of the primary vector blocks and 38% of the secondary transects. This drought-tolerant annual produces abundant seed and disperses them widely when it breaks from its roots and tumbles across the prairie. As long as it has access to sunlight, prickly Russian thistle is efficient at establishing in small bare-ground areas among existing vegetation in the landscape. The resulting widespread distribution makes it difficult to control.

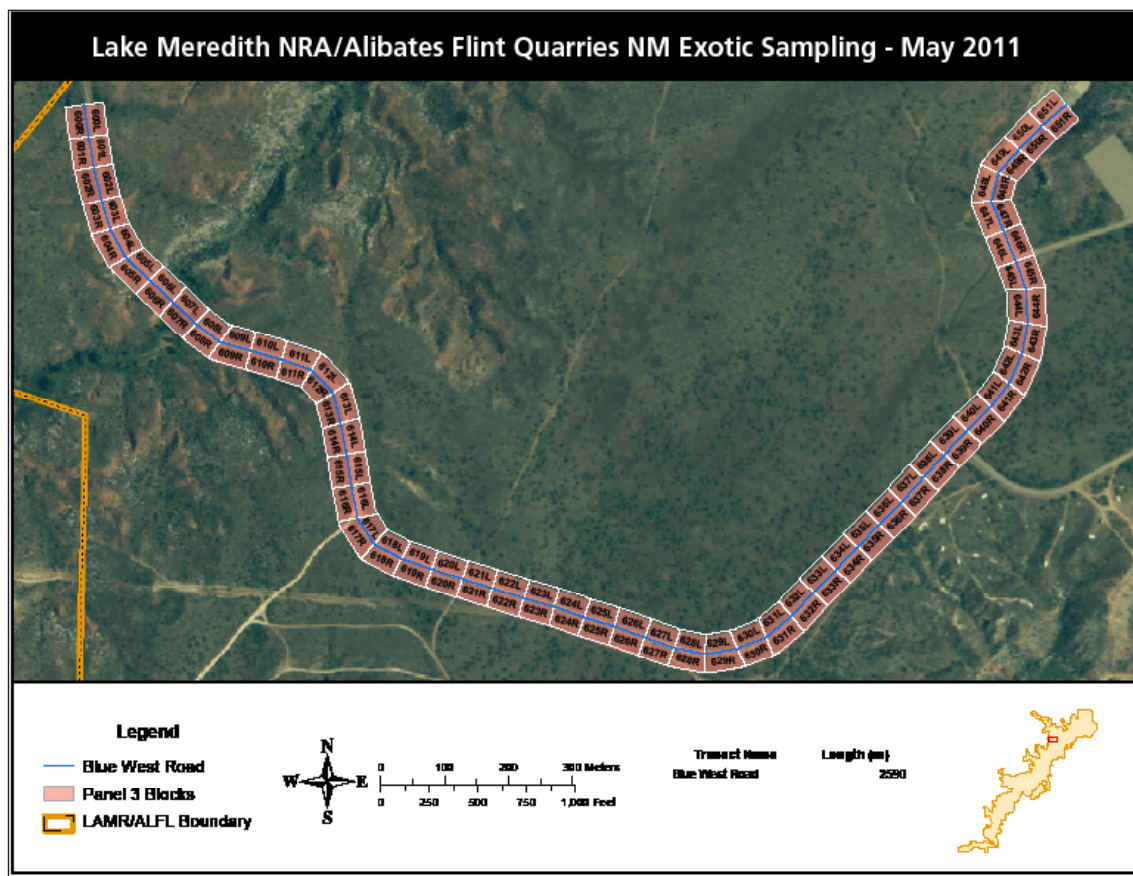


Figure 1. Individual vector blocks sampled, Lake Meredith NRA and Alibates Flint Quarries NM, 2011.

Table 1. Number and percentage of primary and secondary sample units where each species was detected, Lake Meredith NRA/Alibates Flint Quarries NM, 2011.

Scientific name	Common name	Primary vector blocks (n=104)		Secondary transects (n=21)	
		Total	% blocks	Total	% transects
<i>Cirsium arvensis</i>	Canada thistle	72	69.23	—	—
<i>Salsola tragus</i>	prickly Russian thistle	28	26.92	8	38.1
<i>Tribulus terrestris</i>	puncturevine	11	10.58	—	—
<i>Bromus tectorum</i>	cheatgrass	10	9.62	—	—
<i>Sorghum halepense</i>	Johnsongrass	4	3.85	1	4.76
<i>Tamarix chinensis</i>	saltcedar	2	1.92	—	—
<i>Triticum aestivum</i>	common wheat	2	1.92	—	—
<i>Convolvulus arvensis</i>	field bindweed	1	0.96	—	—
<i>Kochia scoparia</i>	kochia	1	0.96	3	14.29
<i>Melilotus alba</i>	white sweetclover	1	0.96	4	19.05
<i>Tragopogon dubius</i>	western salsify	1	0.96	—	—
<i>Chenopodium album</i>	common lambsquarters	—	—	1	4.76
<i>Chenopodium glaucum</i>	oakleaf goosefoot	—	—	1	4.76
None		19	18.27	—	—