



Fort Union National Monument

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 Fort Union National Monument (NM) includes both paved and unpaved roads in both units over its full three-year rotation. In 2010, exotic plant monitoring occurred at Fort Union NM for two days in July. The vectors sampled were unpaved maintenance roads around from the fort ruins to the water tower and down into the northwest corner of the main unit. The two-track road in the Old Fort unit was also surveyed leading to and in front of the ruins. Ninety-six vector blocks were monitored, for a total of 2.4 linear kilometers sampled on both sides (Figure 1). In addition, six permanent transects within the landscape were sampled for a total of 30 4x1 meter plots. No exotics were found in six vector blocks.

Results

Prickly Russian thistle (*Salsola tragus*) was the most commonly found exotic species this field season (Table 1), followed by kochia (*Kochia scoparia*). Prickly Russian thistle was found in 80% of the vector blocks sampled and 50% of the secondary transects. While most frequently seen within the first 12 meters of the roadside in scattered patches, it was often observed running over 20 m into the landscape. The scattered patches appear to be expanding, as surrounding blocks contain occasional plants. An evenly distributed, fairly dense area of prickly Russian thistle occurs near the riparian

Prickly Russian thistle (*Salsola tragus*) was the most commonly found exotic in 2010 at Fort Union NM.



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area along the northwest boundary. Kochia appeared in 59% of vector blocks and 33% of secondary transects.

White sweetclover (*Melilotus alba*) was present in 15% of vector blocks sampled, and was absent from secondary transects. Only a few plants were detected in one area of the Old Fort unit, and single plants were scattered along the main unit transects up to 12 m into the landscape. Western salsify (*Tragopogon dubius*) was found in 13% of vector blocks sampled and was absent from secondary transects. Field bindweed (*Convolvulus arvensis*) was found in 9% of vector blocks sampled and was also absent from secondary transects. One vector block containing scattered patches of field bindweed was found in the Old Fort unit near the ruins and efforts towards its eradication would prevent further spread. Scattered patches were also found along the northwest

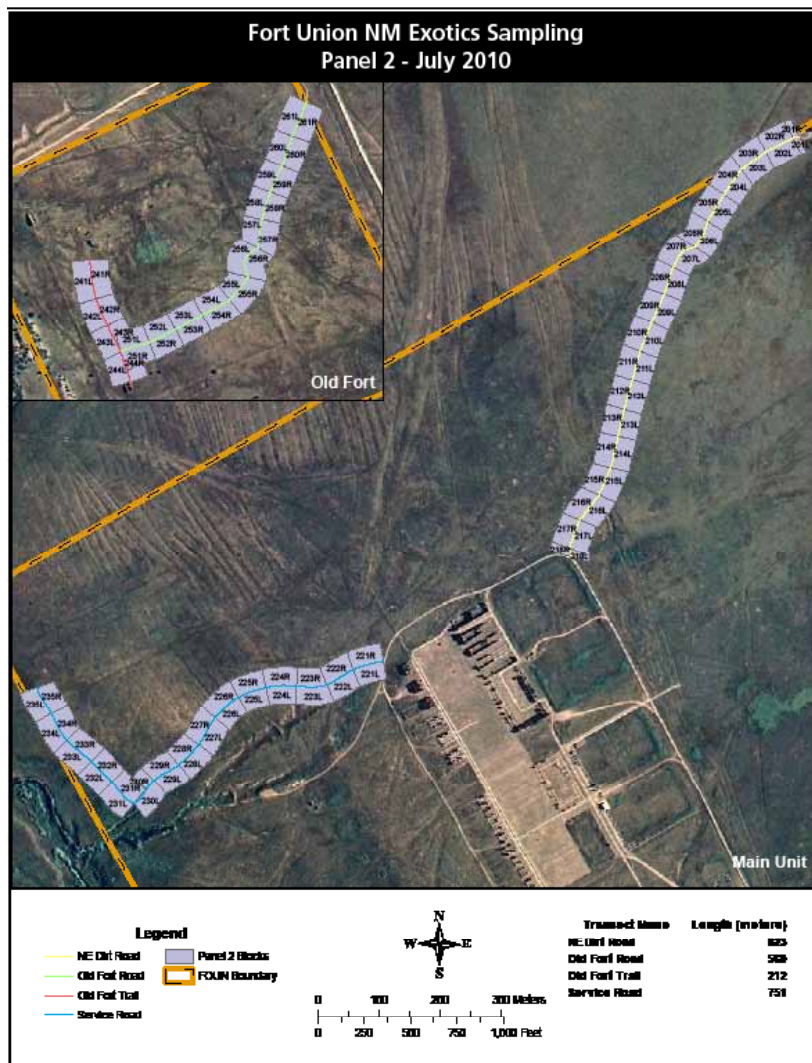


Figure 1. Individual vector blocks sampled, Fort Union NM, 2010.

boundary road (two vector blocks) and in several vector blocks along the road to the water tank. Often these patches were associated with trail ruts.

Musk thistle (*Carduus nutans*) was present in 3% of vector blocks sampled as individual plants and was also absent from secondary transects. David's spurge (*Euphorbia davidii*) was present in 2% of vector blocks sampled and 50% of secondary transects. Two vector blocks at the ruts just past the road junction contained a few plants and this should be watched for spread, as David's spurge appears to multiple easily at Fort Union. Rescue brome (*Bromus catharticus*), horehound (*Marrubium vulgare*), yellow sweetclover (*Melilotus officinalis*), and Siberian elm (*Ulmus pumila*) were each present in 1% of vector blocks sampled and none of the permanent transects.

Table 1. Number and percentage of primary and secondary sample units where each species was detected, Fort Union NM, 2010.

Scientific name	Common name	Primary vector blocks (n=96)		Secondary transects (n=6)	
		Total	% blocks	Total	% transects
<i>Salsola tragus</i>	Prickly Russian thistle	77	80	3	50
<i>Kochia scoparia</i>	Kochia	57	59	2	33
<i>Melilotus alba</i>	White sweetclover	14	15	0	0
<i>Tragopogon dubius</i>	Western salsify	12	13	0	0
<i>Convolvulus arvensis</i>	Field bindweed	9	9	0	0
<i>Carduus nutans</i>	Musk thistle	3	3	0	0
<i>Euphorbia davidii</i>	Dauids spurge	2	2	3	50
<i>Bromus catharticus</i>	Rescue brome	1	1	0	0
<i>Marrubium vulgare</i>	Horehound	1	1	0	0
<i>Melilotus officinalis</i>	Yellow sweetclover	1	1	0	0
<i>Ulmus pumila</i>	Siberian elm	1	1	0	0