Southern Plains Network
RESOURCE BRIEF
National Park Service
U.S. Department of the Interior
Inventory & Monitoring Program

Capulin Volcano National Monument

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 Capulin Volcano National Monument (NM) occurs on paved and unpaved roads and trails over its full three-year rotation. In 2011, exotic plant monitoring occurred at Capulin Volcano NM in July (see Figure 1). The vectors sampled were both loops of the unpaved Boca Trail. Eighty primary vector blocks were monitored on both sides of the trail, for a total of two linear kilometers sampled. In addition, six permanent secondary transects within the landscape were sampled for a total of 30 2x1 meter plots. SOPN has now completed one full 3-year panel rotation and will begin re-visiting vectors in 2012.

Results

The steep and easily erodible slopes of the volcano cone present a unique set of problems for detection and control of exotic plants, resulting in recurring infestation of the lands below the cone. Wind-borne seed find hospitable bare ground among the native short grass and igneous rock outcroppings. It is likely that many of these exotic species have been present in the park for quite some time as they are well established in many surrounding areas.

NPS

Common mullein (*Verbascum thapsus, top right*) and prickly Russian thistle (*Salsola tragus*, left) were commonly found exotic species in 2011 at Capulin Volcano NM.

Seven species of exotics were detected with primary and secondary monitoring (see Table 1). Exotics were not detected in forty-four (55%) of the vector blocks. Prickly Russian thistle (*Salsola tragus*) was the most frequently detected exotic during 2011 monitoring, appearing in approximately one-half of the primary vector blocks and 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.

Common mullein (*Verbascum thapsus*) continues to persist in the plant communities at Capulin Volcano NM, found occasionally during primary monitoring in 12.5% of the vector blocks surveyed, but never as more than a few individual plants. It is a biennial plant spending its first year as a low rosette, thus making detection difficult. The large coverage of a mature plant and prolific seeding allows mullein to crowd natives out of the surrounding area, while a large and deep taproot makes eradication very difficult.

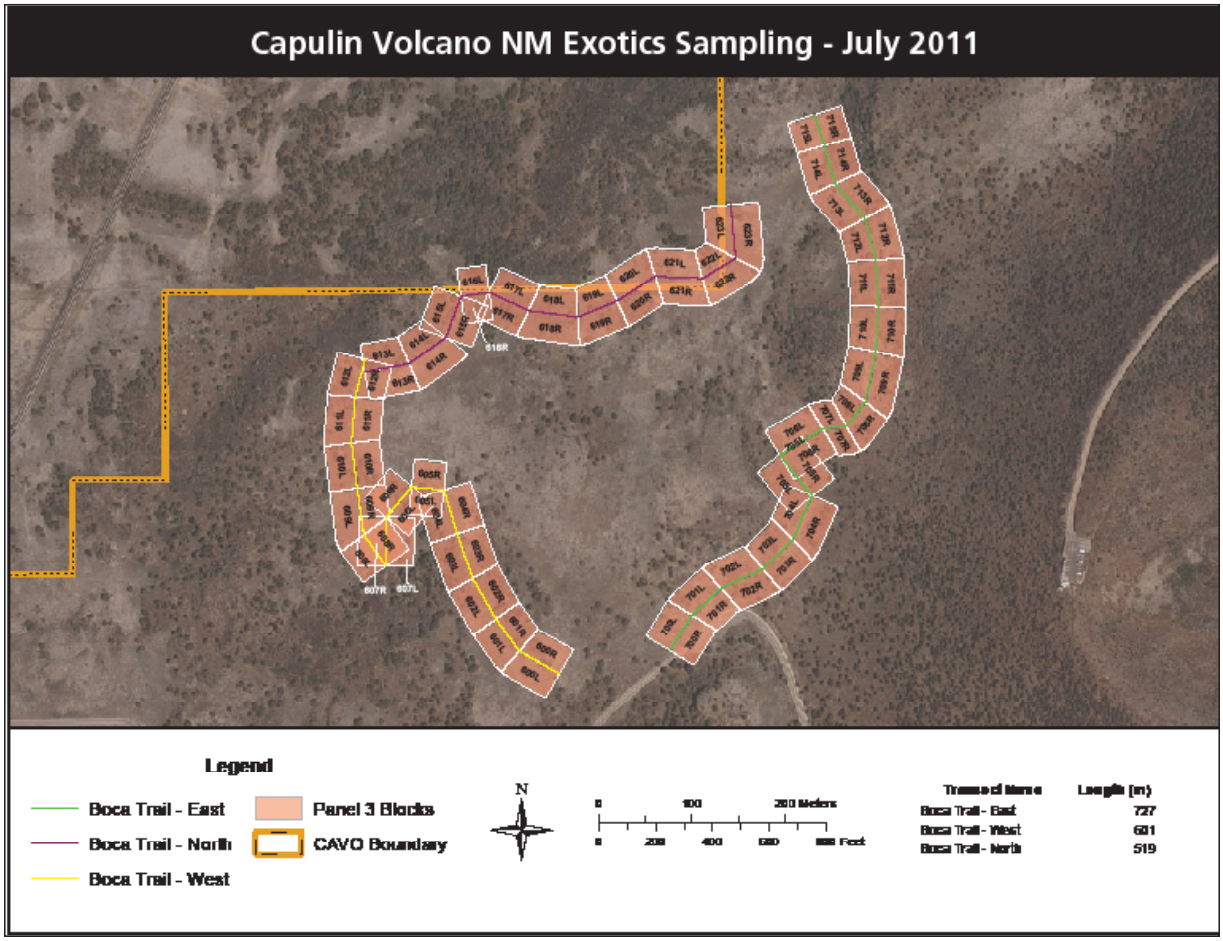

Figure 1. Individual vector blocks sampled at Capulin Volcano NM, 2011.

Table 1. Number and percentage of primary and secondary sample units where each species was detected, Capulin Volcano NM, 2011.

		Primary vector blocks (n=80)		Secondary transects (n=6)	
Scientific name	**Common name**	**Total**	**% blocks**	**Total**	**% transects**
Salsola tragus	prickly Russian thistle	27	33.75	3	50
Verbascum thapsus	common mullein	10	12.5	—	—
Marrubium vulgare	horehound	5	6.25	—	—
Bromus tectorum	cheatgrass	4	5	—	—
Chenopodium album	common lambsquarters	3	3.75	—	—
Bromus inermis	smooth brome	1	1.25	—	—
Lactuca serriola	prickly lettuce	—	—	1	16.67
None		44	55	—	—