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Exotic Plant Monitoring in the Southern Plains Network

Project Report 2011

Natural Resource Technical Report NPS/SOPN/NRTR—2012/538

ON THE COVER

Sand Creek Massacre National Historic Site. David Zettner.

Exotic Plant Monitoring in the Southern Plains Network

Project Report 2011

Natural Resource Technical Report NPS/SOPN/NRTR—2012/538

Authors

Tomye Folts-Zettner
Southern Plains Network
100 Ladybird Lane (P.O. Box 329)
Johnson City, TX 78636

Heidi Sosinski
National Park Service
Southern Plains Network
PO Box 329
Johnson City, Texas 78636

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Executive Summary

Globalization of commerce, transportation, human migration, and recreation in recent history has introduced invasive exotic species to new areas at an unprecedented rate. For the National Park Service (NPS), the consequences of these invasions present a significant challenge to the management of the agency's natural resources "unimpaired for the enjoyment of future generations." National parks, like other land-management organizations, are deluged by new exotic species arriving through predictable (e.g., road, trail, and riparian corridors), sudden (e.g., long-distance dispersal through contaminated off-site equipment and material deliveries), and unexpected anthropogenic pathways (e.g., weed seeds in restoration planting mixes).

Invasive exotic plants have been consistently ranked as a top vital sign for long-term monitoring as part of the NPS Inventory & Monitoring (I&M) 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 strategy of early detection requires resource managers to: (1) detect invasive exotic species early (i.e., find a new species or an incipient population of an existing species while the infestation is small—less than one hectare), and (2) respond rapidly (i.e., implement appropriate management techniques to eliminate the invasive plant and all of its associated regenerative material). As a complement to this strategy, the SOPN has incorporated the following objectives into its monitoring plan for exotic plants: (1) to detect the initial occurrence for any of a subset of high-priority species in areas of high and low invasion probability, (2) to determine changes in the status and trend (density, abundance or extent) of a subset of high-priority species in areas of high and low invasion probability, and (3) to determine changes in species composition of a subset of high-priority species in areas of high and low invasion probability, taking into account any management treatments that occurred between sampling intervals.

In 2011, the SOPN conducted a third season of exotic-plant monitoring to continue to test the methods and results of the network's proposed Exotic Plant Monitoring Protocol. A total of 886 vector blocks (each 50 m long) were sampled along high-invasion-probability vectors (primary units) in SOPN parks. These vectors consisted of paved and unpaved roads, trails, and boundaries. As part of the SOPN grassland and fire monitoring effort, a total of 480 individual 2 x 1-meter plots on 96 transects in areas not considered high-invasion probability (secondary units) were also sampled. Overall, 45 species of exotic plants were observed in SOPN parks. Some species (e.g., *Kochia scoparia*) were widespread among parks, whereas others were found in only a few parks. Results of the 2011 sampling for each park are presented in this report.

Chapter 1 Introduction

Globalization of commerce, transportation, human migration, and recreation in recent history has introduced invasive exotic species to new areas at an unprecedented rate. Biogeographical barriers that once restricted the location and expansion of species have been circumvented, culminating in the homogenization of Earth's biota. Although only 10% of introduced species become established and only 1% become problematic (Williamson 1993; Williamson and Fitter 1996) or invasive, nonnative species have profound impacts worldwide on the environment, economies, and human health.

Invasive species have been directly linked to the replacement of dominant native species (Tilman 1999), the loss of rare species (King 1985), changes in ecosystem structure, alteration of nutrient cycles and soil chemistry (Ehrenfeld 2003), shifts in community productivity (Vitousek 1990), reduced agricultural productivity, and changes in water availability (D'Antonio and Mahall 1991). The damage caused by these species to natural resources is often irreparable, and our understanding of the consequences incomplete. Invasive species are second only to habitat destruction as a threat to wildland biodiversity (Wilcove et al. 1998). Consequently, the dynamic relationships among plants, animals, soil, and water established over many thousands of years are at risk of being destroyed in a relatively brief period.

For the National Park Service (NPS), the consequences of these invasions present a significant challenge to the management of the agency's natural resources "unimpaired for the enjoyment of future generations." National parks, like other land-management organizations, are deluged by new exotic species arriving through predictable (e.g., road, trail, and riparian corridors), sudden (e.g., long-distance dispersal through cargo containers and air freight), and unexpected anthropogenic pathways (e.g., weed seeds in restoration planting mixes). Nonnative plants claim an estimated 4,600 acres of public lands each year in the United States (Asher and Harmon 1995), significantly altering local flora. For example, exotic plants comprise an estimated 43% and 36% of the flora of the states of Hawai'i and New York, respectively (Rejmanek and Randall 1994). Invasive plants infest an estimated 2.6 million acres of the 83 million acres managed by the NPS.

Despite diligent efforts to curtail the problem, more NPS lands are infested daily. Impacts from invasive species have been realized in most parks, resulting in an expressed need to control existing infestations and restore affected ecosystems. Additionally, there is a growing urgency to be proactive—to protect resources not yet impacted by current and future invasive species (Marler 1998). Invasive exotic species will continue to be a management priority for the NPS well into the foreseeable future.

Invasive exotic plants have been consistently ranked as a top vital sign for long-term monitoring as part of the NPS Inventory & Monitoring (I&M) Program. During the vital signs selection process in 2004–2005, Southern Plains Network (SOPN) national parks recognized the need for exotic-plant monitoring (Perkins et al. 2006). All eleven network parks identified invasive exotic plants as among their most important management issues. SOPN parks include Alibates Flint Quarries National Monument (NM), Bent's Old Fort National Historic Site (NHS), Capulin Volcano NM, Chickasaw National Recreation Area (NRA), Fort Larned NHS, Fort Union NM, Lake Meredith NRA, Lyndon B. Johnson National Historical Park (NHP), Pecos NHP, Sand Creek Massacre NHS, and Washita Battlefield NHS. During final selection of vital signs in 2006, invasive exotic-plant monitoring was recognized across all network parks as the most important shared monitoring need.

Prevention and early detection are the principal strategies for successful invasive exotic plant management. While there is a need for long-term suppression programs to address high-impact species, eradication

efforts are most successful for infestations of less than one hectare in size (Rejmanek and Pitcairn 2002). Eradication of infestations larger than 100 hectares is largely unsuccessful, costly, and unsustainable (Rejmanek and Pitcairn 2002). Costs, or impacts, to ecosystem components and processes resulting from invasion also increase dramatically over time, making ecosystem restoration improbable in the later stages of invasion. Further, in their detailed review of the nonnative species problem in the United States, the U.S. Congress, Office of Technology Assessment (1993) stated that the environmental and economic benefits of supporting prevention and early detection initiatives significantly outweigh any incurred costs, with the median benefit-to-cost ratio being 17:1 in favor of being proactive. Although preventing the introduction of invasive exotic plants is the most successful and preferred strategy for resource managers, the realities of globalization, tight fiscal constraints, and limited staff time guarantee that invaders will get through park borders. Fortunately, invasive exotic plants quite often undergo a lag period between introduction and subsequent colonization of new areas. Managers, then, can take advantage of early detection monitoring to make certain invasive exotic species are found and successfully eradicated before populations become well established.

This strategy requires resource managers to: (1) detect invasive exotic species early (i.e., find a new species or an incipient population of an existing species while the infestation is small—less than one hectare), and (2) respond rapidly (i.e., implement appropriate management techniques to eliminate the invasive plant and all of its associated regenerative material). As a complement to this strategy, the SOPN has incorporated the following objectives into its monitoring plan for exotic plants:

(1) to detect the initial occurrence for any of a subset of high-priority species in areas of high and low invasion probability,

(2) to determine changes in the status and trend (density, abundance or extent) of a subset of high-priority species in areas of high and low invasion probability, and

(3) to determine changes in species composition of a subset of high-priority species in areas of high and low invasion probability, taking into account any management treatments that occurred between sampling intervals.

Chapter 2 Methods

In 2011, the SOPN conducted a third season for exotic-plant monitoring to test the methods and results of the proposed protocol. Sampling was carried out from May through July.

2.1 Primary sampling methodology

The methodology employed in this monitoring is based on a generalized linear model. Fifty-meter sections (vector blocks) of both sides (right [R] and left [L]) of a vector were sampled (Figure 2-1). The transect ran parallel to the vector but was set into the roadside along the interior edge of the mow strip.

Distance classes from the vector were set as follows:

D1 = Roadside–transect (mowed area, approximately 2 m)

D2 = Transect–10 meters

D3 = 10–20 meters into the landscape

D4 = >20 meters into the landscape

Within each 50-meter length, the occurrence of an exotic species was noted only once, but its detectable presence in each distance class (D#) and its density (distribution within a given block) were recorded. This allowed for a rapid assessment; thus, we were able to cover more distance along the vector, as well as a greater sampling area. While a detailed location of a given population is lacking, the presence of any exotic within a 50-meter sample block, in conjunction with the distance class, can be reasonably relocated by management teams. Additionally, the presence of a major species of concern can trigger a more thorough search of the area for additional occurrences.

Density classes were used to describe exotic species populations. A population is distributed within a block in one of four ways: (1) less than five plants, (2) scattered throughout the block in a patchy or clumped manner, (3) scattered throughout in an even distribution, or (4) forming a matrix. This distribution equates to an initial introduction, establishment, spread and complete invasion of the habitat, and will

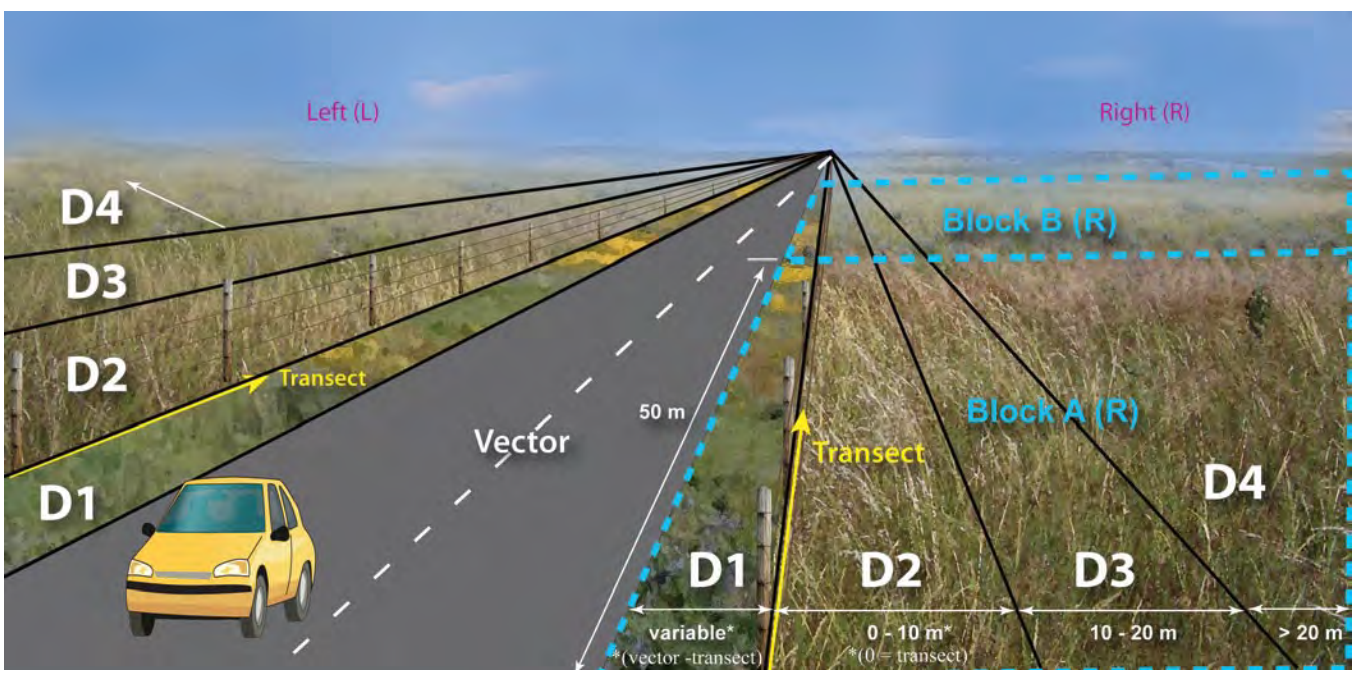

Figure 2-1. Fifty meter blocks are sampled on each side of a vector (e.g., roads and trails) in each of four distance classes from the vector.

allow for the future monitoring of gross changes to exotic populations.

Detection of some exotic species, particularly low-growing and rosette-stage species, decreases with distance, while other large-mass or tall growing species can easily be seen at a great distance. This limitation should always be taken into consideration when management actions are planned. The presence of a species of concern in any given area should trigger a more thorough search prior to eradication efforts. At times, topographic features, such as rises and depressions, will screen the visual field. These disruptions are noted in each sample block in the appropriate distance class as "no data available," to distinguish from areas where no plants were detected.

2.2 Secondary sampling methodology

Secondary exotic-plant monitoring was accomplished for lower priority (interior landscape) areas in conjunction with the Grassland Monitoring efforts. This monitoring consists of collecting plant occurrence and cover data from five 2 x 1-m nested quadrats along a 50-meter permanent transect. This was the third year for establishing permanent transects and not all transects were established across the network. Secondary data was collected at each park.

Chapter 3 Results

During 2011, we sampled a total of 884 vector blocks along high-invasion-probability vectors (primary units) in SOPN parks (Table 3-1). These vectors consisted of paved and unpaved roads, trails, and boundaries. As part of our grassland and fire monitoring effort, we also sampled a total of 480 individual plots on 96 transects in areas not considered high-invasion probability (secondary units).

Overall, 50 species of exotic plants were observed in SOPN parks (Table 3-2). Some species, for instance prickly Russian thistle (*Salsola tragus*, see photos) were widespread among parks, whereas others were found in only a few parks. Results of the 2011 sampling for each park are presented below.

Table 3.1 Number of primary (high invasion probability) and secondary (low invasion probability) units sampled during 2011

Park unit	Total vector blocks	Primary sample units					Secondary sample units
		Roads		Trails		Boundary	Total Transects[1]
		Paved	Unpaved	Paved	Unpaved		
Bent's Old Fort NHS	122	—	56	—	36	30	13
Capulin Volcano NM	80	—	—	—	80	—	6
Chickasaw NRA	128	—	128	—	—	—	12
Fort Larned NHS	87	—	—	—	—	87	8
Fort Union NM	68	30	38	—	—	—	6
Lake Meredith NRA/ Alibates Flint Quarries NM	104	104	—	—	—	—	21
Lyndon B. Johnson NHP	30	—	—	—	30	—	2
Pecos NHP	88	20	68	—	—	—	7
Sand Creek Massacre NHS	110	—	110	—	—	—	12
Washita Battlefield NHS	67	—	—	—	—	67	9

[1] For each secondary sampling unit (transect), five individual plots were sampled.

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MARY ELLEN (MEL) HARTE, BUGWOOD.ORG

Salsola tragus seedling, flowers, and leaves.

Table 3-2. Exotic plant species observed in specific parks during 2011 SOPN exotic plant monitoring

Scientific name	Common name	Lifeform	Duration	Park unit									
				BEOL	CAVO	CHIC	FOLS	FOUN	LAMR	LYJO	PECO	SAND	WABA
Albizia julibrissin	Mimosa	Tree	P			•							
Arundo donax	Giant reed	Grass	P	•									
Asparagus officinalis	Garden asparagus	Forb	P	•									
Bothriochloa ischaemum	KR bluestem	Grass	P			•				•			
Bromus catharticus	Rescue grass	Grass	A/P			•							
Bromus inermis	Smooth brome	Grass	P	•	•		•						
Bromus japonicus	Japanese brome	Grass	A			•				•	•		•
Bromus tectorum	Cheatgrass	Grass	A	•	•	•	•		•		•		•
Broussonetia papyrifera	paper mulberry	Tree	P			•							
Chenopodium album	Common lambsquarters	Forb	A		•		•		•			•	
Chenopodium glaucum	oakleaf goosefoot	Forb	A			•			•				
Cirsium arvensis	Canada thistle	Forb	P	•					•				
Cirsium vulgare	Bull thistle	Forb	B								•	•	
Conium maculatum	Poison Hemlock	Forb	B	•		•	•			•			
Convolvulus arvensis	Field bindweed	Forb	P	•			•	•	•	•	•	•	•
Coronilla varia	Purple crownvetch	Forb	P			•							
Cynodon dactylon	Bermuda grass	Grass	P			•	•			•			•
Dianthus armeria	Deptford pink	Forb	A/B			•							
Erodium cicutarium	Red stem storksbill	Forb	A					•			•		•
Euphorbia davidii	David's spurge	Forb	A			•							
Kochia scoparia	Kochia	Forb	A	•		•	•	•	•		•	•	•
Lactuca seriola	Prickly lettuce	Forb	A/B	•		•					•		•
Lamium amplexicaule	Henbit	Forb	A/B				•						
Lathyrus hirsutus	Singletary pea	Forb	A			•							
Lespedeza cuneata	Sericea lespedeza	Forb	P			•							
Lolium perenne	Perennial rye	Grass	A/P			•				•			•
Lonicera japonica	Japanese honeysuckle	Vine	P			•				•			
Marrubium vulgare	Horehound	Forb	P		•						•		
Medicago lupulina	Black medic clover	Forb	A/P			•				•	•		
Medicago minima	Burr medic clover	Forb	A			•							•
Medicago sativa	Alfalfa	Forb	A/P			•	•				•		
Meilotus officinalis	Yellow sweetclover	Forb	A/P			•	•	•			•	•	•

Table 3-2. Exotic plant species observed in specific parks during 2011 SOPN exotic plant monitoring (continued)

Scientific name	Common name	Lifeform	Duration	Park unit									
				BEOL	CAVO	CHIC	FOLS	FOUN	LAMR	LYJO	PECO	SAND	WABA
Melilotus alba	White sweetclover	Forb	A/P	•		•	•	•	•		•		•
Poa pratensis	Kentucky bluegrass	Grass	P			•	•						
Rumex crispus	Curly dock	Forb	P	•				•			•	•	
Rumex patientia	Patience dock	Forb	P				•						
Salsola tragus	Prickly Russian thistle	Forb	A	•	•			•	•		•	•	•
Setaria viridis	Green bristlegrass	Grass	A				•						
Sorghum halepense	Johnsongrass	Grass	P	•		•	•		•	•			•
Tamarix chinensis	Saltcedar	Tree	P	•					•				
Taraxacum officinale	Dandelion	Forb	P	•		•	•				•		
Thinopyrum ponticum	Rush wheatgrass	Grass	P	•									
Torilis arvensis	Spreading hedgeparsley	Forb	A			•							
Tragopogon dubius	Western salsify	Forb	A/B	•		•	•		•		•	•	•
Tribulus terrestris	Puncturevine	Forb	A	•			•		•				
Trifolium campestre	big-hop field clover	Forb	A/B			•							
Triticum aestivum	Common wheat	Grass	A						•				
Typha angustifolia	narrowleaf cattail	Forb	P	•									
Ulmus pumila	Siberian elm	Tree	P								•		•
Verbascum thapsus	Common mullein	Forb	B	•				•			•		

3.1 Bent's Old Fort NHS

Overall sampling at Bent's Old Fort includes most of the roadways and some trails within the park over a three-year rotation (Figure 3.1-3). During 2011, exotic-plant monitoring occurred at Bent's Old Fort in late June. The 2011 vectors sampled included unpaved maintenance roads on the south side of the Arkansas River, a portion of the unpaved maintenance road/loop trail in the north bank riparian area, and sections of the eastern and southern park boundary (Figure 3.1-1). One hundred twenty-two primary vector blocks were monitored, for a total linear effort of 3,800 meters (sampled on both sides of the roads and one side of the boundary) (Appendix A). These vectors are scheduled for monitoring again in 2014. Thirteen permanent (secondary) transects within the landscape were also sampled, for a total of 65 2 x 1 meter plots. Twenty species of exotics were detected with primary and secondary monitoring. No exotics were detected in four vector blocks.

Kochia (*Kochia scoparia*) was the most frequently encountered exotic this field season in both the primary vector blocks and the secondary interior monitoring, with scattered to evenly distributed patches throughout. This drought-tolerant annual exotic produces abundant seed that are widely distributed as the spent plant breaks from its roots and blows across the prairie. Kochia is an early successional plant that readily establishes in sites with soil disturbance, outcompeting other native early successionals and responding favorably to increased nitrogen in the soil. It persists in the landscape by developing dense stands and maintaining increased nitrogen levels through annual foliage shedding. Kochia can also increase the fine-fuel load leading to a more intense fire capacity.

The second most frequently detected plant in both primary and secondary monitoring is field bindweed (*Convolvulus arvensis*), found in scattered patches around the Arch wetland and evenly distributed patches in the highly-disturbed prairie dog town. It was seldom encountered on the vectors nearest the Arkansas River. The perennial taprooted bindweed is also drought-tolerant and an abundant seeder, with the ability to establish from small bits of vegetative material. Field bindweed, ranked as "noxious" in Colorado and surrounding states, is an effective colonizer with the ability to blanket an area; it climbs over existing vegetation, intercepting rainfall and shading out other plants. Its deep taproot insures continued regeneration and is very difficult to destroy.

SOPN has now completed one full rotation of panels scheduled for BEOL (Appendix A). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.1-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at BEOL. Kochia, field bindweed and prickly Russian thistle (*Salsola tragus*) are the dominant exotics found throughout the park. Sixteen of the twenty-six species were detected in 6% or less of the vector blocks.

Areas of disturbance at BEOL will continue to be invaded by exotics because native competition has been reduced. Mowed areas allow established low-growing exotics access to sunlight, stimulating their expansion while reducing the vigor of native plants. Prairie dogs continuously disturb the soil, eliminate all but low-growing plants and maintain an early successional state – all prime conditions for the spread of field bindweed. Riparian areas are frequently impacted by seasonal flooding, providing more mesic habitats enjoyed by a suite of exotics and fresh propagules from upstream exotic populations. Disturbance factors combined with reintroduction from visitors, routine maintenance and surrounding uncontrolled areas will require vigilance on the part of park staff. The improvement and maintenance of healthy grasslands and understory vegetation to facilitate succession will greatly assist in limiting the potential for exotic invasion.

Legend

- Hiking Trail
- Oxbow Road
- Railroad
- South Side Loop
- Panel 3 Blocks
- BEOL Boundary

N W E S

0 150 300 450 Meters

0 500 1,000 1,500 Feet

Transect Name	Length (m)
Railroad	1225
Hiking Trail	899
South Side Loop - Upper	892
Oxbow Road - South	491

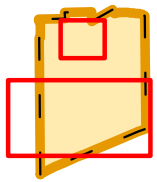


Figure 3.1-1. Individual vector blocks sampled, Panel 3, Bent's Old Fort NHS, 2011.

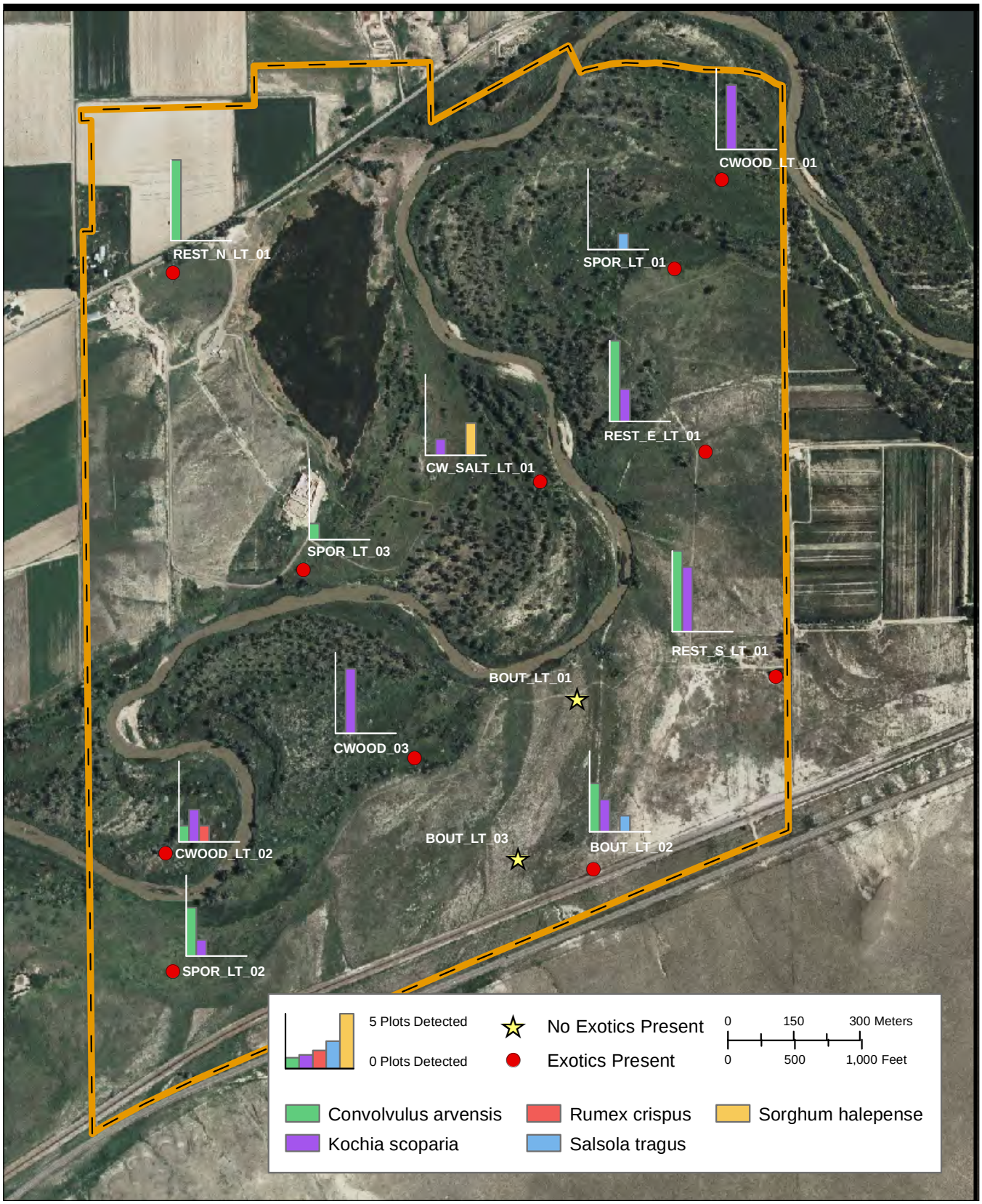
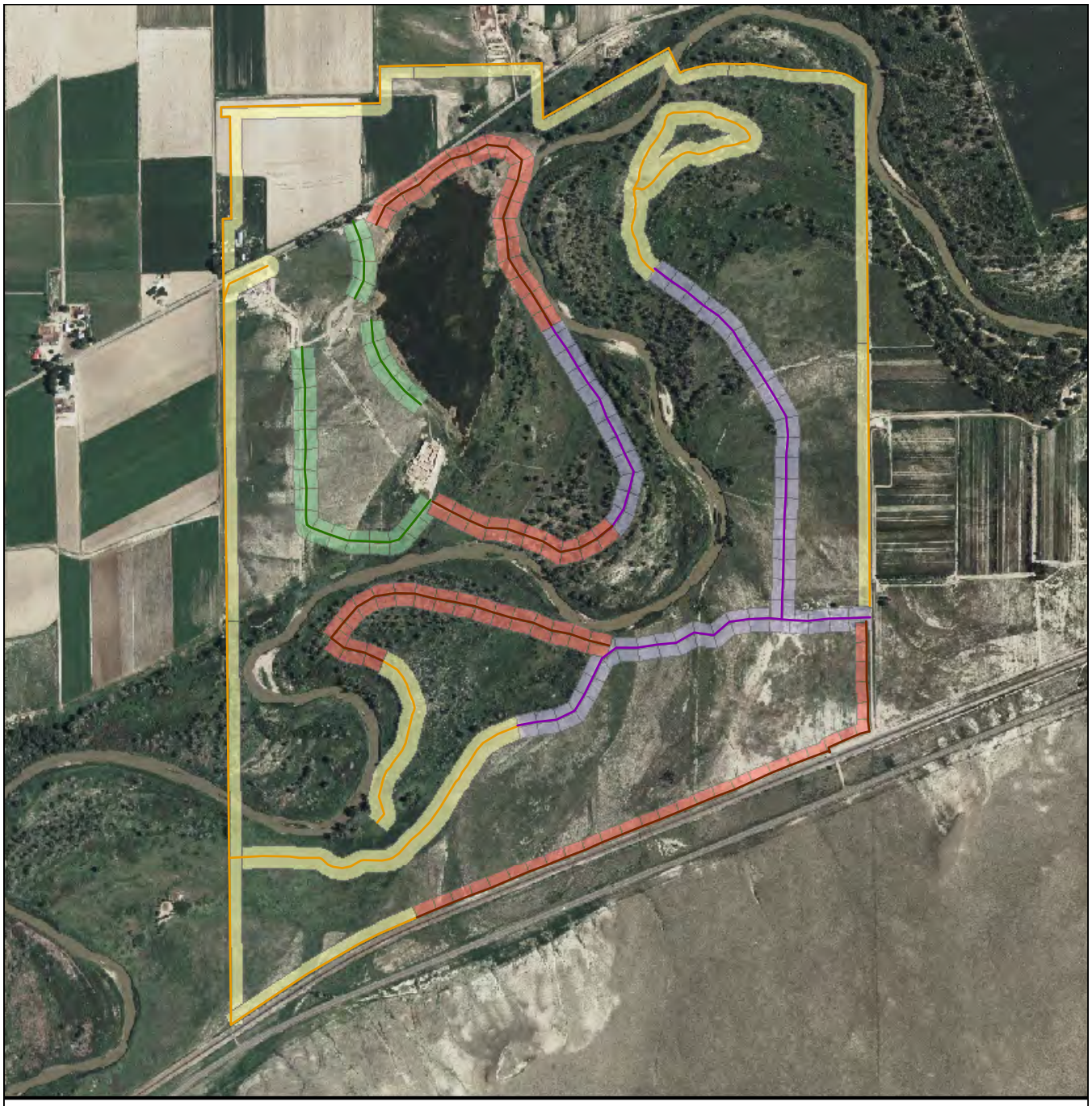


Figure 3.1-2. Secondary sample locations, Bent's Old Fort NHS, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



Year	Transect	Length (m)
Panel 1	Path to Fort	252
Panel 1	Entrance Road	201
Panel 1	Main Maitenance / Oxbow	804
Panel 2	Tamarisk Road - East	989
Panel 2	East Road	999
Panel 2	SE Oxbow Road - East	642
Panel 3	Railroad	1225
Panel 3	Hiking Trail	899
Panel 3	South Side Loop - Upper	892
Panel 3	Oxbow Road - South	491
Panel 3	Railroad	272

Figure 3.1-3. Overall planned sampling scheme for panels (annual samples) at Bent's Old Fort NHS for a full three-year rotation.

Table 3.1-1. Number and percentage of primary and secondary sample units where each species was detected, Bent's Old Fort NHS, 2011

		Primary vector blocks (N=122)		Secondary transects (N=13)	
Scientific name	**Common name**	**Total**	**% blocks**	**Total[1]**	**% of transects**
Kochia scoparia	kochia	81	66.39	7	53.85
Convolvulus arvensis	field bindweed	36	29.51	6	46.15
Asparagus officinalis	garden asparagus	27	22.13	—	—
Typha angustifolia	narrowleaf cattail	25	20.49	—	—
Cirsium arvensis	Canada thistle	20	16.39	—	—
Salsola tragus	prickly Russian thistle	19	15.57	2	15.36
Tamarix chinensis	saltcedar	11	9.02	—	—
Bromus tectorum	cheatgrass	8	6.56	—	—
Rumex crispus	curly dock	7	5.74	1	7.70
Sorghum halepense	Johnsongrass	7	5.74	1	7.70
Arundo donax	giant reed	5	4.10	—	—
Melilotus alba	white sweetclover	5	4.10	—	—
Tribulus terrestris	puncturevine	5	4.10	—	—
Lactuca seriola	prickly lettuce	4	3.28	—	—
Thinopyrum ponticum	rush wheatgrass	4	3.28	—	—
Bromus inermis	smooth brome	2	1.64	—	—
Tragopogon dubius	western salsify	2	1.64	—	—
Conium maculatum	poison hemlock	1	0.82	—	—
Taraxacum officinale	dandelion	1	0.82	—	—
Verbascum thapsus	common mullein	1	0.82	—	—
None	no exotics found	4	3.36	—	—

[1] The number of individual plots on secondary transects is shown in Figure 3.1-2.

Table 3.1-2. Parkwide detection of exotics during primary monitoring at Bent's Old Fort for first 3-year panel rotation.

Scientific Name	Common Name	N=49	N=106	N=119	N=274	%
		2009	2010	2011	TOTAL	
Kochia scoparia	kochia	49	27	81	157	57.30
Convolvulus arvensis	field bindweed	31	66	36	133	48.54
Salsola tragus	prickly Russian thistle	11	57	19	87	31.75
Asparagus officinalis	garden asparagus	—	19	27	46	16.79
Tragopogon dubius	western salsify	3	37	2	42	15.33
Melilotus alba	white sweetclover	2	30	5	37	13.50
Bromus arvensis	field brome	24	11	—	35	12.77
Typha angustifolia	narrowleaf cattail	10	—	25	35	12.77
Bromus tectorum	cheatgrass	—	22	8	30	10.95
Cirsium arvensis	Canada thistle	7	2	20	29	10.58
Euphorbia davidii	David's spurge	4	10	—	14	5.11
Melilotus officinalis	yellow sweetclover	—	14	—	14	5.11
Thinopyrum ponticum	rush wheatgrass	—	8	4	12	4.38
Tamarix chinensis	saltcedar	—	—	11	11	4.01
Amaranthus retroflexus	red—root pigweed	2	8	—	10	3.65
Lactuca seriola	prickly lettuce	5	—	4	9	3.28
Chenopodium album	common lambsquarters	—	8	—	8	2.92
Rumex crispus	curly dock	1	—	7	8	2.92
Sorghum halepense	Johnsongrass	—	—	7	7	2.55
Arundo donax	giant reed	—	—	5	5	1.82
Tribulus terrestris	puncturevine	—	—	5	5	1.82
Bromus inermis	smooth brome	—	—	2	2	0.73
Setaria viridus	green bristlegrass	2	—	—	2	0.73
Conium maculatum	poison hemlock	—	—	1	1	0.36
Taraxacum officinale	dandelion	—	—	1	1	0.36
Verbascum thapsus	common mullein	—	—	1	1	0.36

3.2 Capulin Volcano NM

Overall sampling at Capulin Volcano occurs on paved and unpaved roads and trails over its full three-year rotation (Figure 3.2-3). In 2011, exotic- plant monitoring occurred at Capulin Volcano in July. The vectors sampled were both loops of the unpaved Boca Trail. Eighty primary vector blocks were monitored, for a total of 2.0 linear kilometers sampled on both sides (Figure 3.2-1) (Appendix B). In addition, six permanent secondary transects within the landscape were sampled for a total of 30 2 x 1 meter plots. Seven species of exotics were detected with primary and secondary monitoring. 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 CAVO, 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.

STEVE DEWEY, UTAH STATE UNIVERSITY, BUGWOOD.ORG

Prickly Russian thistle (*Salsola tragus*) was the most commonly found exotic species in 2011 at Capulin Volcano NM.

SOPN has now completed one full rotation of panels scheduled for CAVO (Appendix B). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.2-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at CAVO. Various brome grasses (*Bromus* species) and common mullein (*Verbascum thapsus*) and were the most frequently detected exotic species over the first panel rotation. Most exotic bromes are dead during the monitoring timeframe, making it problematic to identify species with certainty, although all of these species have similar impact on the landscape. If all the detected exotic bromes are "lumped" together, they occupied 65% of the vector blocks monitored throughout the park. These bromes have the potential to alter the fire regime and are of great concern. Mullein was found in over 40% of the vector blocks, but extensive eradication efforts have been undertaken by the park since monitoring began, which may be reflected in the fewer numbers detected in recent monitoring. Twelve of the twenty-two exotic species were detected in less than 10% of the vector blocks.

The steep and easily erodible slopes of the volcano cone at CAVO present a unique set of problems for detection and control of exotic plants, resulting in a propagule pool within the park allowing for 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. The curtailment of historic grazing may have had an impact on the present exotic population densities.

Legend

- Boca Trail - East
- Boca Trail - North
- Boca Trail - West
- Panel 3 Blocks
- CAVO Boundary

N

0 100 200 Meters

0 200 400 600 800 Feet

Transect Name	Length (m)
Boca Trail - East	727
Boca Trail - West	601
Boca Trail - North	519

Figure 3.2-1. Individual vector blocks sampled, Panel 3, Capulin Volcano NM, 2011.

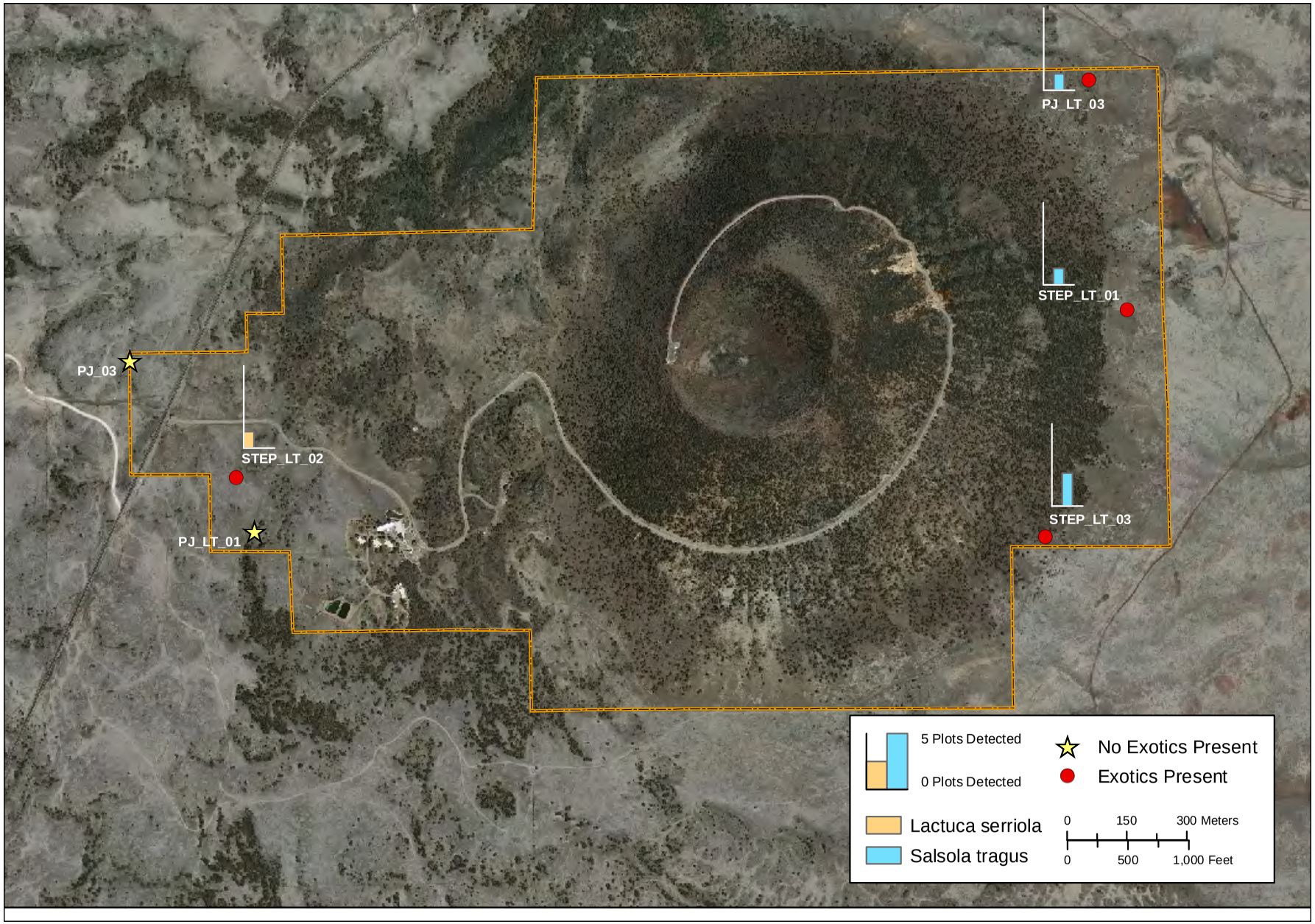


Figure 3.2-2. Secondary sample locations, Capulin Volcano NM, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.

Primary Transects
- Panel 1
- Panel 2
- Panel 3

Oversample Transects
- Oversample

Primary Blocks
- Panel 1
- Panel 2
- Panel 3

Oversample Blocks
- Oversample

N W E S

0 100 200 300 400 Meters

0 500 1,000 1,500 Feet

Year	Transect	Length (m)	Year	Transect	Length (m)
Panel 1	Water Tank Road	205	Panel 3	Boca Trail - East	439
Panel 1	Boca Trail - South	216	Panel 3	Boca Trail - West	231
Panel 1	Lava Flow Trail - West	199	Panel 3	Boca Trail - North	519
Panel 1	Lava Flow Trail - North	619	Panel 3	Boca Trail - West	242
Panel 2	Main Road - West	697	Panel 3	Boca Trail - West	129
Panel 2	Crater Rim	450	Panel 3	Boca Trail - East	232
Panel 2	Vent Trail	188	Panel 3	Boca Trail - East	56

Figure 3.2-3. Overall planned sampling scheme for panels (annual samples) at Capulin Volcano NM for a full three-year rotation.

Table 3.2-1. 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[1]**	**% 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	—	—

[1] The number of individual plots on secondary transects is shown in Figure 3.2-2.

Table 3.2-2. Parkwide detection of exotics during primary monitoring at Capulin Volcano NM for first 3-year panel rotation.

Scientific Name	Common Name	N=52	N=54	N=80	N=186	%
		2009	2010	2011	TOTAL	
Verbascum thapsus	Common mullein	52	16	10	78	41.94
Bromus species	brome grasses	47	-	-	47	25.27
Marrubium vulgare	Horehound	19	14	5	38	20.43
Tragopogon dubius	western salsify	16	21	-	37	19.89
Bromus tectorum	Cheatgrass	-	29	4	33	17.74
Descurainia sophia	flixweed	19	13	-	32	17.20
Salsola tragus	Prickly Russian thistle	3	-	27	30	16.13
Bromus japonicus	Japanese brome	-	25	-	25	13.44
Chenopodium album	Common lambsquarters	20	-	3	23	12.37
Bromus inermis	Smooth brome	-	15	1	16	8.60
Setaria viridus	green bristlegrass	1	15	-	16	8.60
Agropyron cristatum	crested wheatgrass	-	10	-	10	5.38
Medicago lupulina	black medic clover	-	9	-	9	4.84
Melilotus officanis	yellow sweet clover	9	-	-	9	4.84
Kochia scoparia	kochia	4	1	-	5	2.69
Euphorbia davidii	David's spurge	-	4	-	4	2.15
Cynoglossum officinale	houndstongue	3	-	-	3	1.61
Polygonum convolvulus	climbing buckwheat	2	-	-	2	1.08
Taraxaxum officinale	dandelion	2	-	-	2	1.08
Convolvulus arvensis	field bindweed	-	1	-	1	0.54
Lactuca serriola	prickly lettuce	1	-	-	1	0.54
Sonchus asper	spiny sowthistle	1	-	-	1	0.54
Verbascum thapsus	common mullein	—	—	1	1	0.36

3.3 Chickasaw NRA

Overall sampling at Chickasaw occurs on paved and unpaved roads and trails over its full three-year rotation (Figure 3.3-5, -6, -7, -8). In 2011, exotic plant monitoring occurred at Chickasaw in earlyJune along the unpaved access roads in the east and west Guy Sandy area. One hundred twenty-eight primary vector blocks were monitored, for a total of 3.2 linear kilometers sampled on both sides (Figure 3.3-1 and 3.3-2) (Appendix C). In addition, 12 permanent secondary transects within the landscape were sampled for a total of 60 2 x 1 meter plots. Twenty-eight species of exotics were detected with primary and secondary monitoring. Exotics were detected in every vector block. It should be stressed that, due to the large scale of the park, these monitoring results do not reflect an overall state of exotics at CHIC.

White sweetclover (*Melilotus alba*) was detected in 74% of the primary vector blocks this season but was not found in any secondary transects. A member of the legume family, the roots of annual/biennial sweetclovers fix nitrogen in the soil, displacing native nitrogen fixers. The sweetclovers are dispersed by wind and water and are often found in riparian areas following flooding events.

The second most commonly detected exotic was Japanese brome (*Bromus japonicas*) found in 73% of the primary vector blocks and 25% of the secondary transects. This cool season annual grass is a prolific reseeder with the capacity to modify native plant communities through early-season competition (to the detriment of native seedlings) and by adding considerably to the fine-fuel load.

Johnsongrass (*Sorghum halepense*) was found in 66% of the primary vector blocks and 33% of the secondary transects. This is a perennial grass with a strong rhizomatous root system providing the capacity to colonize large areas and is most often found in disturbed and flooded bottomlands. Once established, Johnsongrass persists in the landscape despite eradication efforts, effectively displacing native grasses and forbs.

Sericea lespedeza (*Lespedeza cuneata*) was the exotic found in the most (50%) secondary transects. This perennial legume is a relict of past agricultural land use within the park boundary. It is a long-lived perennial legume that produces abundant seed, has a deep root system, and produces dense stands that out-compete native plants. It is drought-resistant, responds to favorably to fire and readily colonizes bottomland habitats.

SOPN has now completed three years of monitoring as scheduled for CHIC, but have not achieved a full rotation due to Panel replacement (Appendix C). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Table 3.3-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at CHIC. It should be noted that Panel 1, monitored in 2009, has been replaced with an area of higher concern, which will be first sampled in 2012, thus completing a true Panel rotation. Japanese brome and Johnsongrass were the two most dominant exotic grasses found throughout the park (69% and 42% respectively). Four exotic forbs were also detected in over 30% of the vector blocks; three of these are in the legume family. Sixteen of the thirty-three exotics were present in < 10% of the vector blocks monitored over this three-year rotation.

CHIC is primarily a narrow band of land surrounding streams, floodplains and a reservoir, with a great amount of urban interface along its boundary. The numerous streams and drainages throughout CHIC provide an invasion pathway for exotics from surrounding urban and agricultural areas and a moist environment for their establishment. Recreational activities such as horseback riding and hunting provide additional opportunity for introduction and spread of exotics into the landscape. Historic homesteading and recent agricultural use of parklands provide long-term disturbance regimes that will be challenging to bring back to health. Recent control efforts of eastern red cedar (*Juniperus virginiana*) will require monitoring to prevent additional establishment of exotics in disturbed areas.

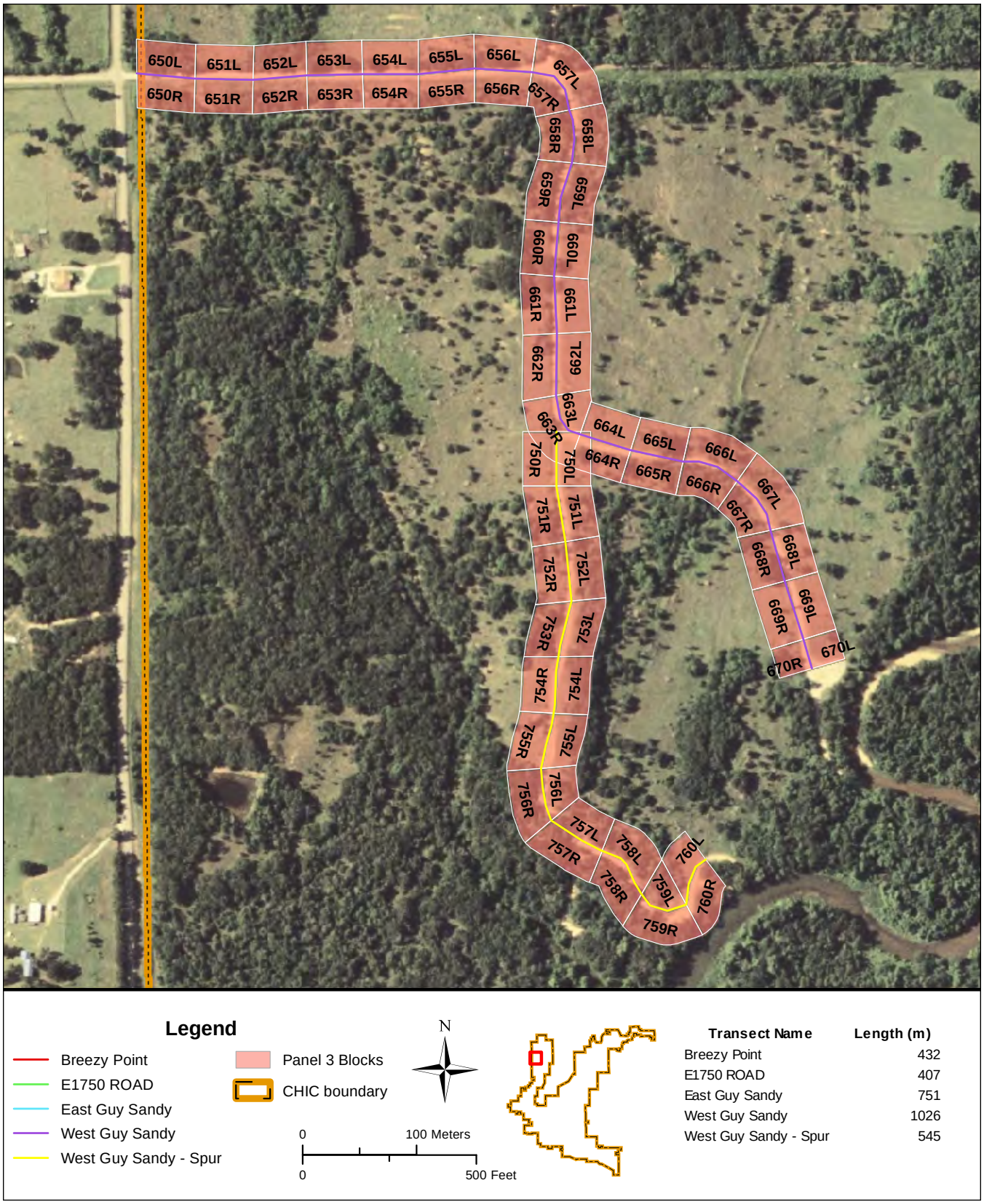
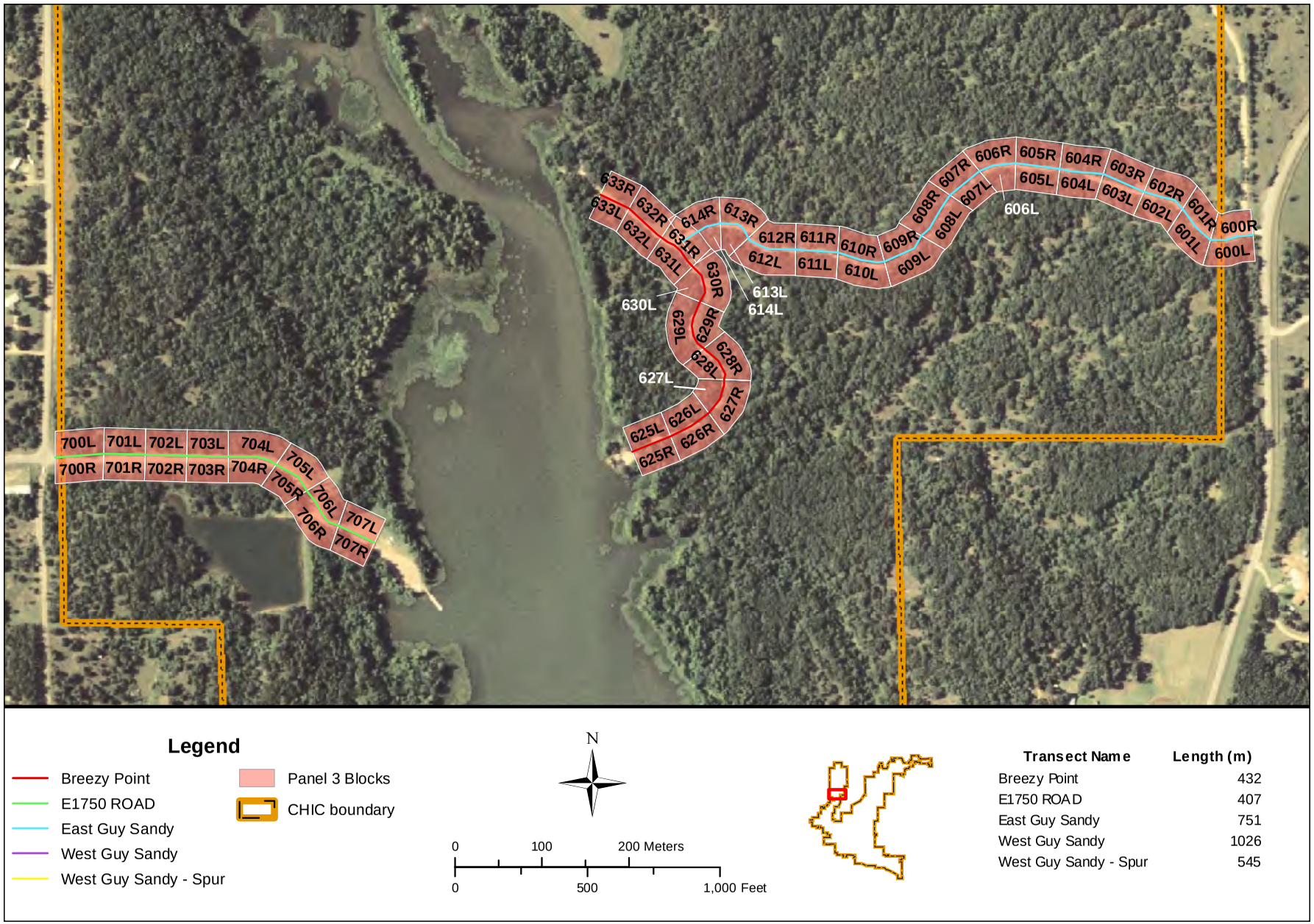


Figure 3.3-1. Individual vector blocks sampled, Panel 3 (upper transects), Chickasaw NRA, 2011.



Legend

- Breezy Point
- E1750 ROAD
- East Guy Sandy
- West Guy Sandy
- West Guy Sandy - Spur
- Panel 3 Blocks
- CHIC boundary

Transect Name	Length (m)
Breezy Point	432
E1750 ROAD	407
East Guy Sandy	751
West Guy Sandy	1026
West Guy Sandy - Spur	545

Figure 3.3-2. Individual vector blocks sampled, Panel 3 (lower transects), Chickasaw NRA, 2011.

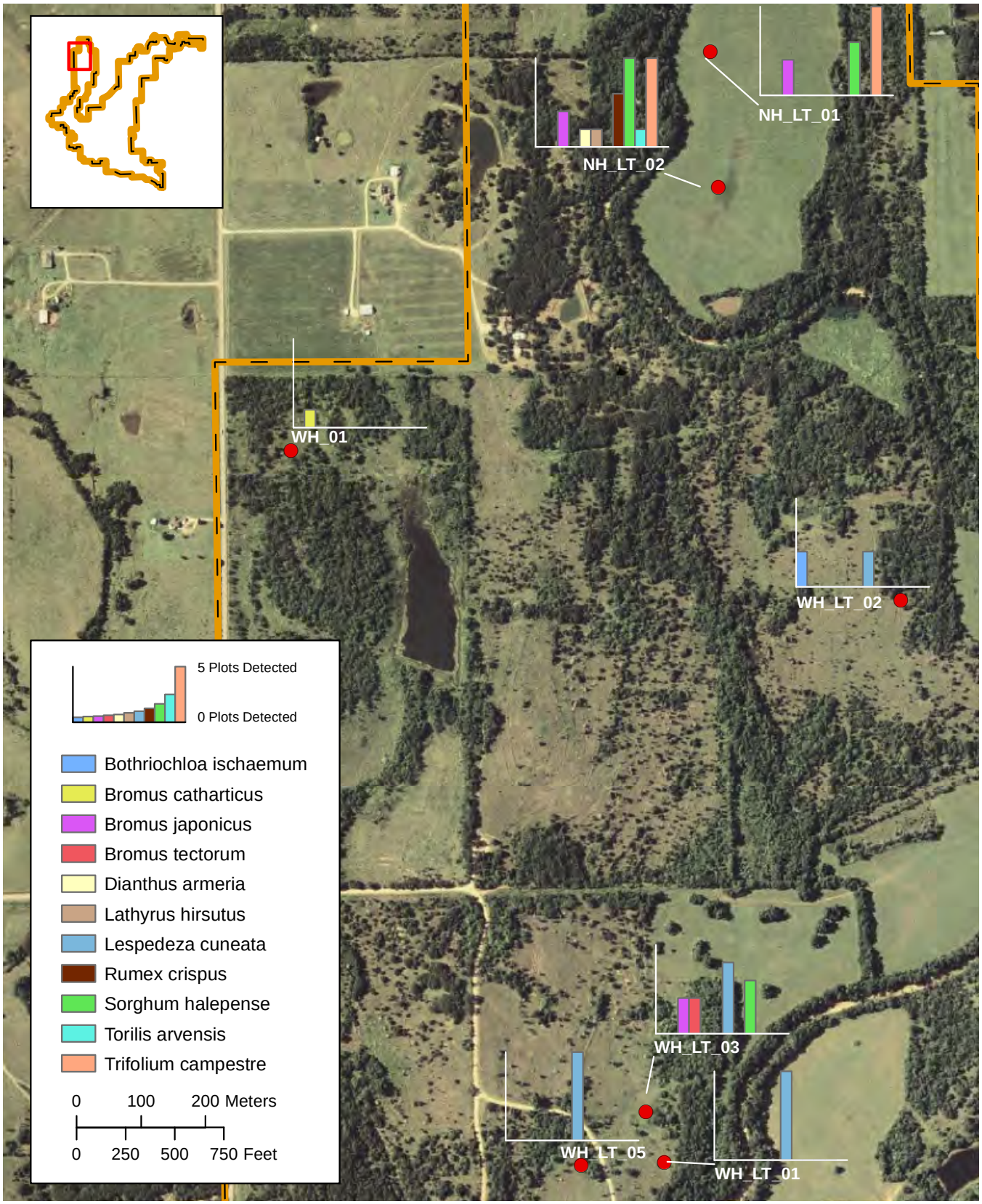


Figure 3.3-3. Secondary sample locations, Chickasaw NRA, West Hunting Area, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.

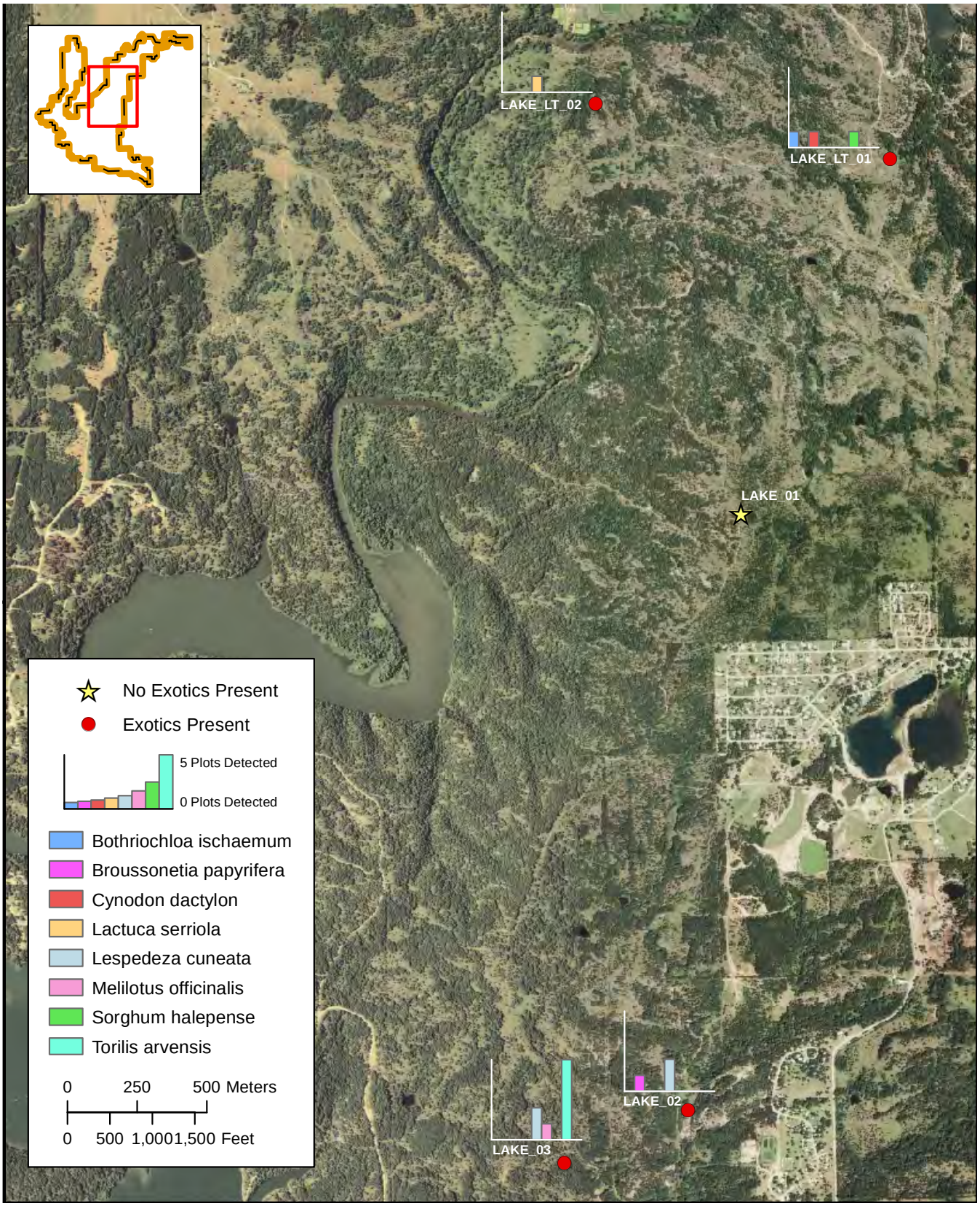
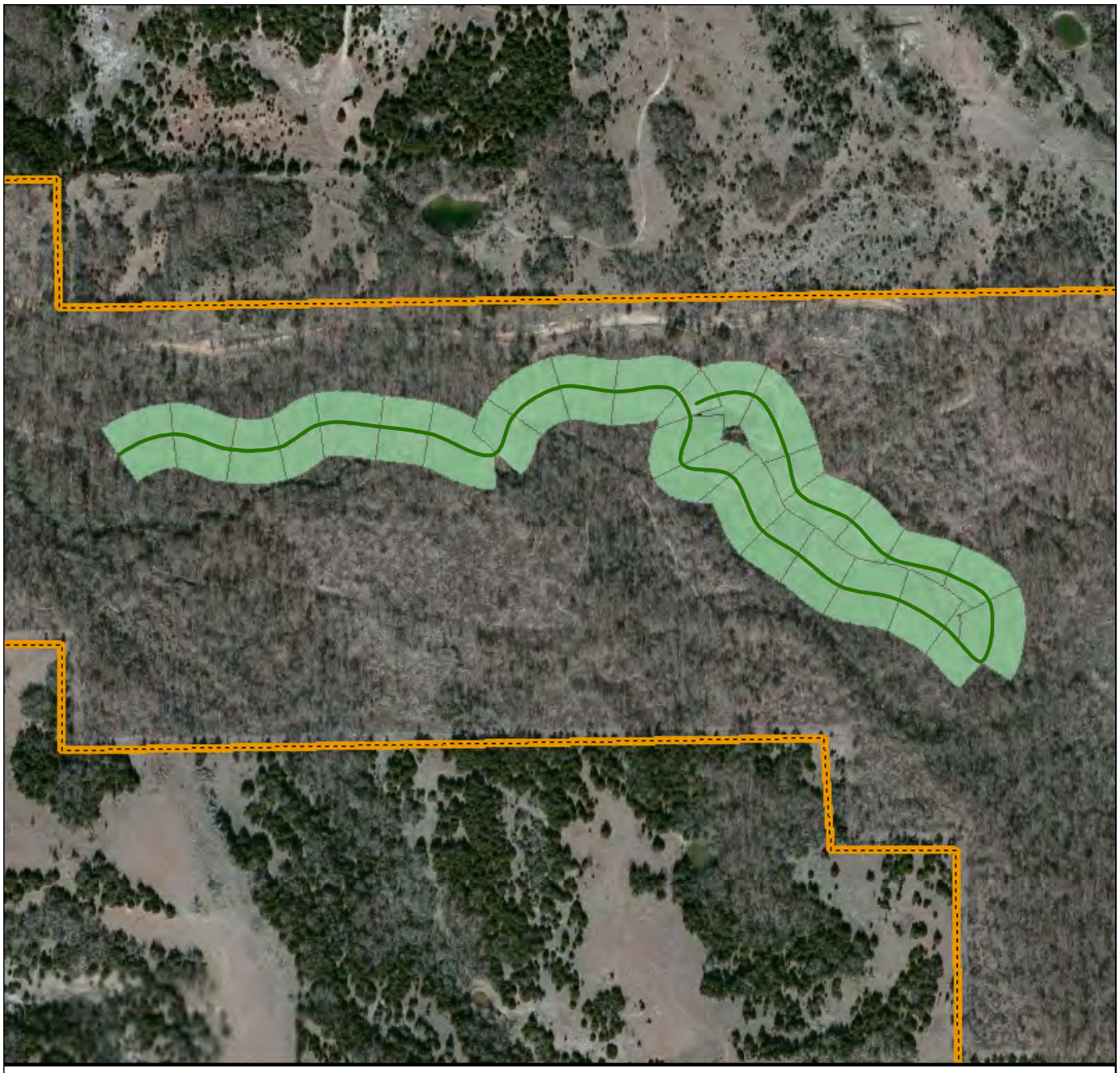


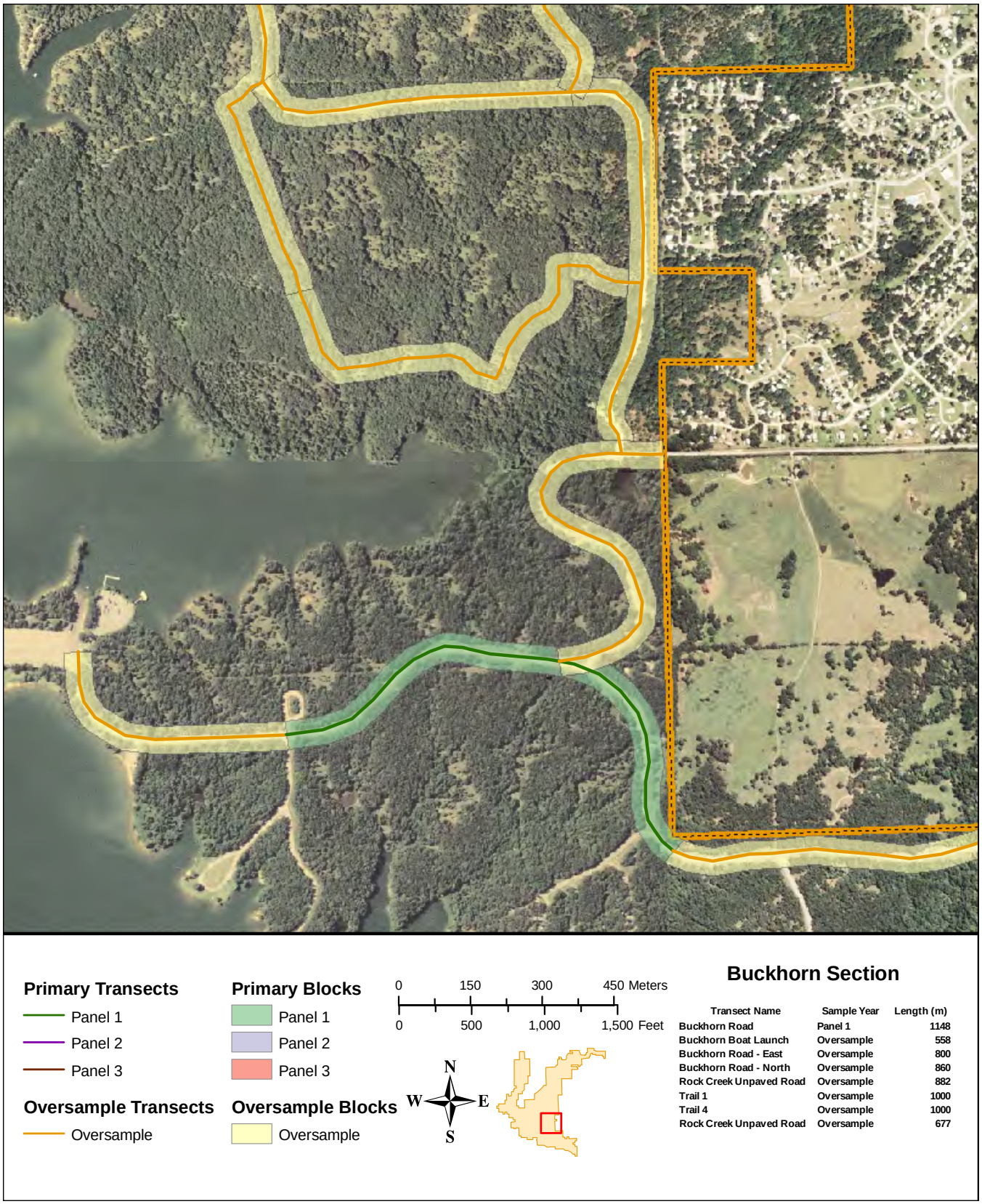
Figure 3.3-4. Secondary sample locations, Chickasaw NRA, Five Lakes Area,2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



Travertine Nature Trail Section

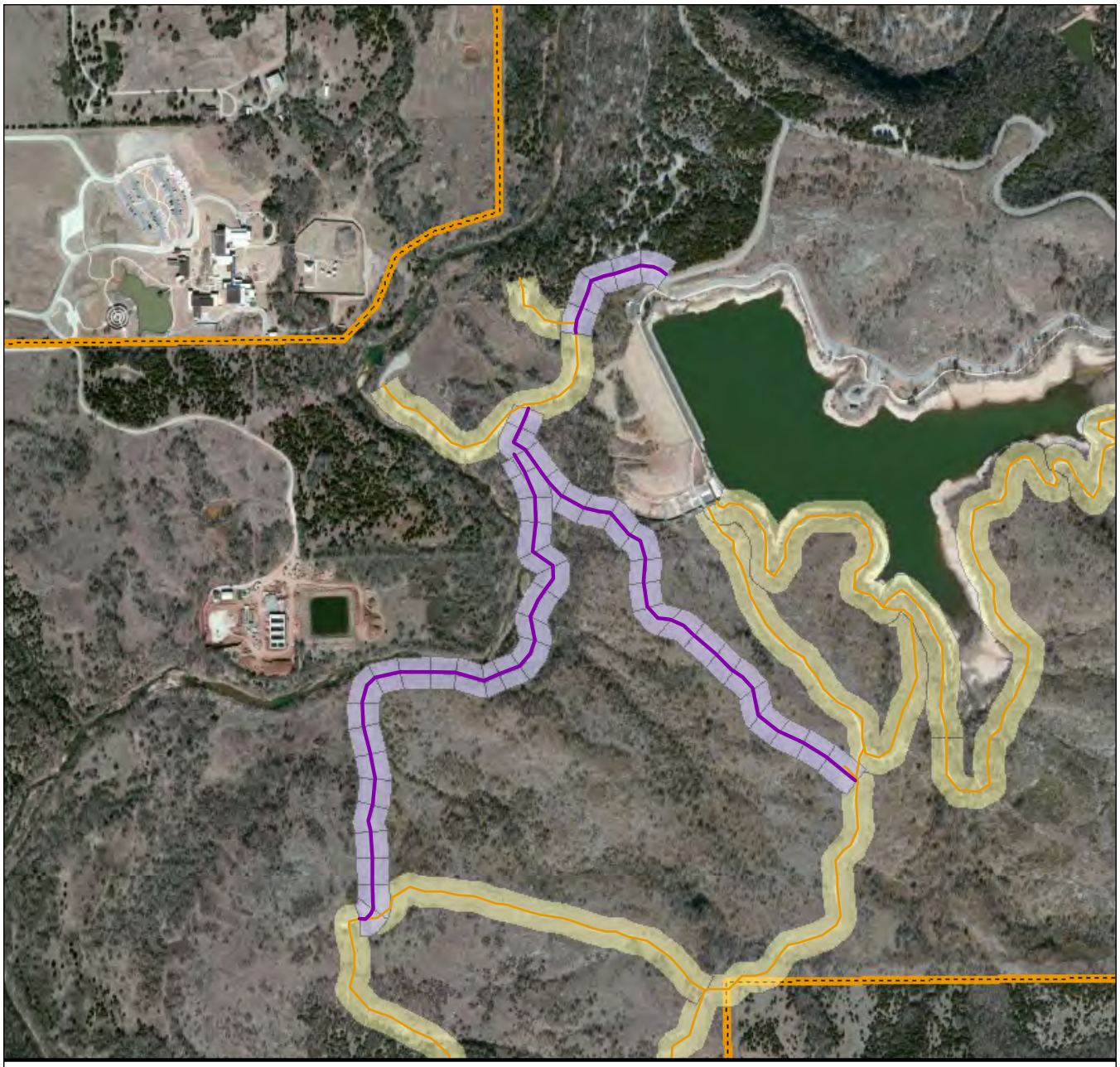
Year	Ttansect	Length (m)
Panel 1	Travertine Nature Trail	1395
Panel 2	Trail 1	1187
Panel 2	Trail 3	1015
Panel 2	Trail Access Road	247
Panel 3	E1750 ROAD	407
Panel 3	West Guy Sandy - Spur	545
Panel 3	West Guy Sandy	1026
Panel 3	East Guy Sandy	751
Panel 3	Breezy Point	432

Figure 3.3-5. Panel 1 sampling conducted in the Travertine Nature Trail vicinity of Chickasaw NRA. This panel is to be replaced by the transect located in the Buckhorn vicinity (Figure 3.3-8).



Transect Name	Sample Year	Length (m)
Buckhorn Road	Panel 1	1148
Buckhorn Boat Launch	Oversample	558
Buckhorn Road - East	Oversample	800
Buckhorn Road - North	Oversample	860
Rock Creek Unpaved Road	Oversample	882
Trail 1	Oversample	1000
Trail 4	Oversample	1000
Rock Creek Unpaved Road	Oversample	677

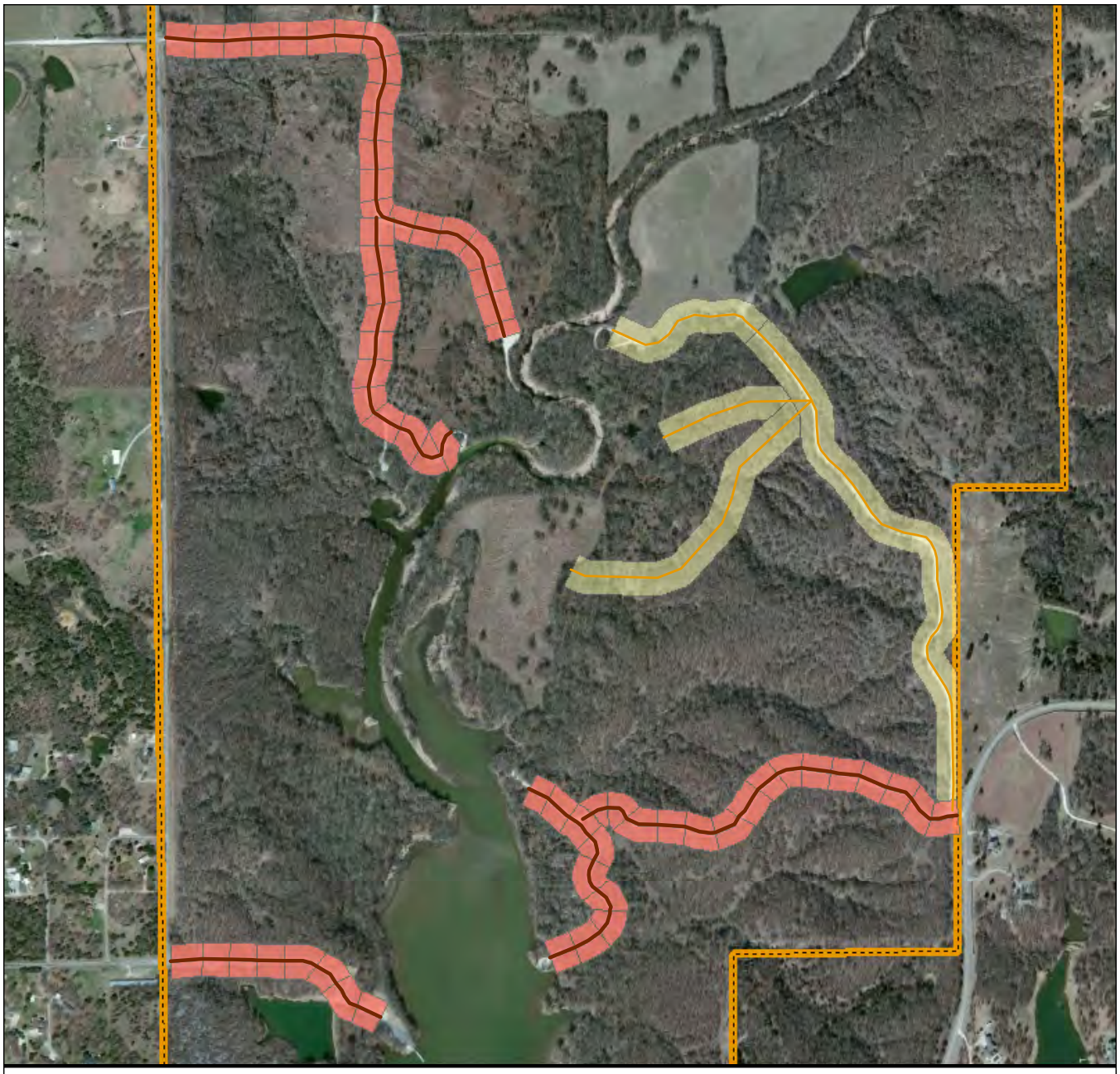
Figure 3.3-6. Overall planned sampling scheme for panels (annual samples) in the Buckhorn vicinity of Chickasaw NRA for a full three-year rotation.



Veterans Lake Section

Year	Ttansect	Length (m)
Panel 1	Travertine Nature Trail	1395
Panel 2	Trail 1	1187
Panel 2	Trail 3	1015
Panel 2	Trail Access Road	247
Panel 3	E1750 ROAD	407
Panel 3	West Guy Sandy - Spur	545
Panel 3	West Guy Sandy	1026
Panel 3	East Guy Sandy	751
Panel 3	Breezy Point	432

Figure 3.3-7. Overall planned sampling scheme for panels (annual samples) in the Veterans Lake vicinity of Chickasaw NRA for a full three-year rotation.



Primary Transects

- Panel 1
- Panel 2
- Panel 3

Oversample Transects

- Oversample

Primary Blocks

- Panel 1
- Panel 2
- Panel 3

Oversample Blocks

- Oversample

0 150 300 Meters

0 500 1,000 Feet

N W E S

Upper Guy Sandy Section

Year	Ttansect	Length (m)
Panel 1	Travertine Nature Trail	1395
Panel 2	Trail 1	1187
Panel 2	Trail 3	1015
Panel 2	Trail Access Road	247
Panel 3	E1750 ROAD	407
Panel 3	West Guy Sandy - Spur	545
Panel 3	West Guy Sandy	1026
Panel 3	East Guy Sandy	751
Panel 3	Breezy Point	432

Figure 3.3-8. Overall planned sampling scheme for panels (annual samples) in the Upper Guy Sandy vicinity of Chickasaw NRA for a full three-year rotation.

Table 3.3-1. Number and percentage of primary and secondary sample units where each species was detected, Chickasaw NRA, 2011

		Primary vector blocks (n=128)		Secondary transects (n=12)	
Scientific name	**Common name**	**Total**	**% blocks**	**Total[1]**	**% transects**
Melilotus alba	White sweetclover	95	74.22	-	-
Bromus japonicus	Japanese brome	93	72.66	3	25
Sorghum halepense	Johnsongrass	85	66.41	4	33.33
Bothriochloa ischaemum	KR bluestem	71	55.47	2	16.67
Medicago lupulina	Black medic clover	67	52.34	-	-
Lespedeza cuneata	Sericea lespedeza	46	35.94	6	50
Lonicera japonica	Japanese honeysuckle	36	28.13	-	-
Cynodon dactylon	Bermuda grass	35	27.34	1	8.33
Torilis arvensis	Spreading hedgeparsley	35	27.34	2	16.67
Medicago minima	Burr medic clover	31	24.22	-	-
Bromus tectorum	Cheatgrass	29	22.66	1	8.33
Tragopogon dubius	Western salsify	25	19.53	-	-
Meilotus officinalis	Yellow sweetclover	20	15.63	1	8.33
Lolium perenne	Perennial rye	18	14.06	-	-
Medicago sativa	Alfalfa	9	7.03	-	-
Kochia scoparia	Kochia	8	6.25	-	-
Lathyrus hirsutus	Singletary pea	5	3.91	1	8.33
Euphorbia davidii	David's spurge	4	3.13	-	-
Taraxacum officinale	Dandelion	4	3.13	-	-
Bromus catharticus	Rescue grass	2	1.56	1	8.33
Conium maculatum	Poison Hemlock	2	1.56	-	-
Lactuca seriola	Prickly lettuce	2	1.56	1	8.33
Coronilla varia	Purple crownvetch	1	0.78	-	-
Trifolium campestris	big hop clover	-	-	2	16.67
Broussonetia papyrifera	paper mulberry	-	-	1	8.33
Dianthus armeria	Deptford pink	-	-	1	8.33
Rumex crispus	curly dock	-	-	1	8.33

[1] The number of individual plots on secondary transects is shown in Figure 3.3-2.

Table 3.3-2. Parkwide detection of exotics during primary monitoring at Chickasaw NRA for first 3-year panel rotation.

Scientific Name	Common Name	N=56	N=100	N=128	N=284	%
		2009	2010	2011	TOTAL	
Bromus japonicus	Japanese brome	5	97	93	195	68.66
Sorghum halepense	Johnsongrass	-	33	85	118	41.55
Torilis arvensis	Spreading hedgeparsley	-	73	35	108	38.03
Melilotus alba	White sweetclover	-	-	95	95	33.45
Lespedeza cuneata	Sericea lespedeza	9	33	46	88	30.99
Medicago lupulina	Black medic clover	-	20	67	87	30.63
Bothriochloa ischaemum	KR bluestem	-	-	71	71	25.00
Meilotus officinalis	Yellow sweetclover	-	50	20	70	24.65
Lolium perenne	Perennial rye	-	42	18	60	21.13
Eragrostis cilianensis	stinkgrass	-	57	-	57	20.07
Cyperus eculentus	nutgrass sedge	54	-	-	54	19.01
Medicago minima	Burr medic clover	-	21	31	52	18.31
Albizia julibrissin	Mimosa	7	39	-	46	16.20
Cynodon dactylon	Bermuda grass	2	8	35	45	15.85
Lonicera japonica	Japanese honeysuckle	1	-	36	37	13.03
Tragopogon dubius	Western salsify	1	11	25	37	13.03
Bromus tectorum	Cheatgrass	-	3	29	32	11.27
Melia azedarach	Chinaberry	-	23	-	23	8.10
Euphorbia dentata	toothed spurge	12	4	4	20	7.04
Lathyrus hirsutus	Singletary pea	-	7	5	12	4.23
Medicago sativa	Alfalfa	-	-	9	9	3.17
Kochia scoparia	Kochia	-	-	8	8	2.82
Taraxacum officinale	Dandelion	2	2	4	8	2.82
Lactuca seriola	Prickly lettuce	3	-	2	5	1.76
Amaranthus retroflexus	red-root pigweed	-	4	-	4	1.41
Erodium cicutarium	red-stem stork'sbill	4	-	-	4	1.41
Agrostis gigantea	creeping bentgrass	2	-	-	2	0.70
Bromus catharticus	Rescue grass	-	-	2	2	0.70
Conium maculatum	Poison Hemlock	-	-	2	2	0.70
Lolium pratense	meadow fescue	-	2	-	2	0.70
Coronilla varia	Purple crownvetch	-	-	1	1	0.35
Echinochloa colona	jungle ricegrass	1	-	-	1	0.35
Lolium arundinacea	tall fescue	-	1	-	1	0.35

3.4 Fort Larned NHS

Overall sampling at Fort Larned occurs on paved and unpaved roads, trails and boundaries of the main unit over its full three-year rotation (Figure 3.4-4). In 2011, exotic-plant monitoring occurred at Fort Larned in June. A total of 87 vector blocks were monitored resulting in 4,350 linear meters surveyed on one side of the park boundary (Figure 3.4-1 and 3.4-2) (Appendix D). In addition, eight permanent transects within the landscape were sampled for a total of 40 2 x 1 meter plots. Eighteen species of exotics were detected with primary and secondary monitoring. Exotics were detected in every vector block.

Smooth brome (*Bromus inermis*) was detected in 82% of the primary vector blocks and 88% of the secondary transects monitored in 2011. It is a deep rooting, rhizomatous, highly persistent perennial grass that colonizes old fields, becoming particularly troublesome to land managers. This grass forms thick mats of roots underground and large quantities of litter, effectively excluding any preferred natives through efficient competition.

Field bindweed (*Convolvulus arvensis*) was present in 69% of the primary vector blocks and 75% of the secondary transects. This perennial taprooted exotic is drought-tolerant and an abundant seeder, with the ability to establish from small bits of vegetative material. Field bindweed, ranked as "noxious" in Kansas and surrounding states, is an effective colonizer with the ability to blanket an area; it climbs over existing vegetation, intercepting rainfall and shading out other plants. Its deep taproot insures continued regeneration and it is very difficult to destroy.

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Smooth Brome (*Bromus inermis*) was the most commonly found exotic species in 2011 at Fort Larned NHS.

A third species, cheatgrass (*Bromus tectorum*) was found in 53% of primary vector blocks but was absent in interior secondary transects. This cool-season annual produces dense stands and abundant seed and has the capacity to alter native plant communities. The lack of cheatgrass within the landscape may be caused by the monotypic nature of smooth brome, which is taller, more robust and also a dense colonizer.

SOPN has now completed one full rotation of panels scheduled for FOLS (Appendix D). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.4-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at FOLS. All three exotic species mentioned above ranked highest in dominance over the full panel rotation, with smooth brome (90%) surpassing field bindweed and cheatgrass (53% each) in detection of primary vector blocks. Kochia (*Kochia scoparia*) also ranked high in distribution at 52% of all the vector blocks. Of the 37 exotic species detected over the past three years, 20 had a distribution of < 10% of primary vector blocks.

The exotic plant infestation at FOLS is very problematic due primarily to previous land use; all land except for immediately surrounding the fort has been repeatedly plowed and used as agricultural fields. The park itself is surrounded by agricultural fields in continuing production, providing a permanent vector for cross-contamination of exotic species. The riparian area of the Pawnee River has suffered from agricultural drawdown in recent years resulting in an altered hydrological regime that affords the establishment of exotics in the alluvial soils of the streambed.

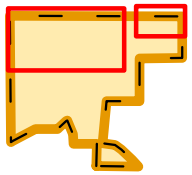
Legend

- Boundary - N
- Boundary - NW
- Boundary - S
- Panel 3 Blocks
- FOLS boundary

N

0 50 100 Meters

0 200 400 Feet



Transect Name	Length (m)
Boundary - NW	1451
Boundary - N	379
Boundary - S	2525

Figure 3.4-1. Individual vector blocks sampled, Panel 3 (north transect), Fort Larned NHS, 2011.

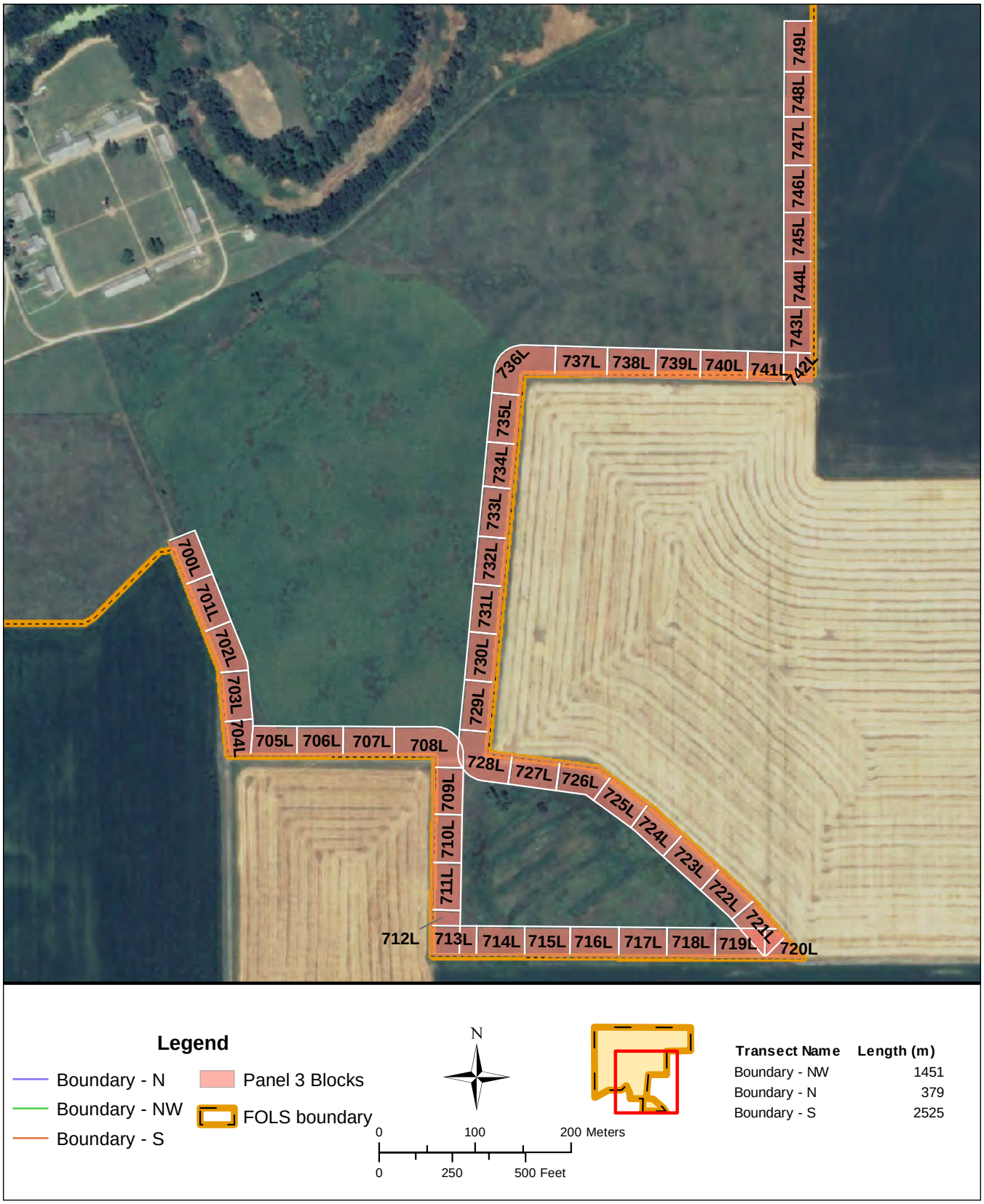


Figure 3.4-2. Individual vector blocks sampled, Panel 3 (south transect), Fort Larned NHS, 2011.

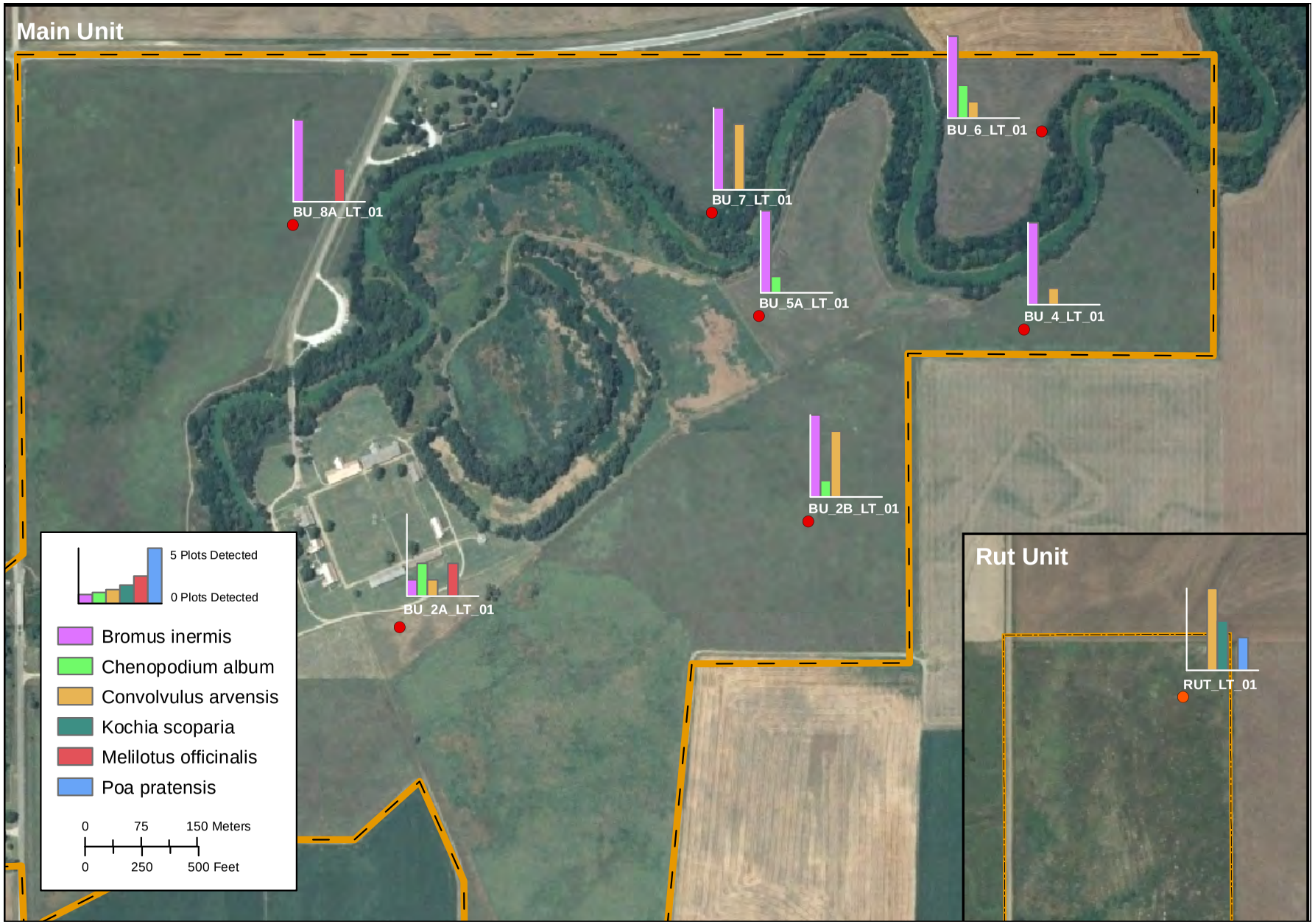
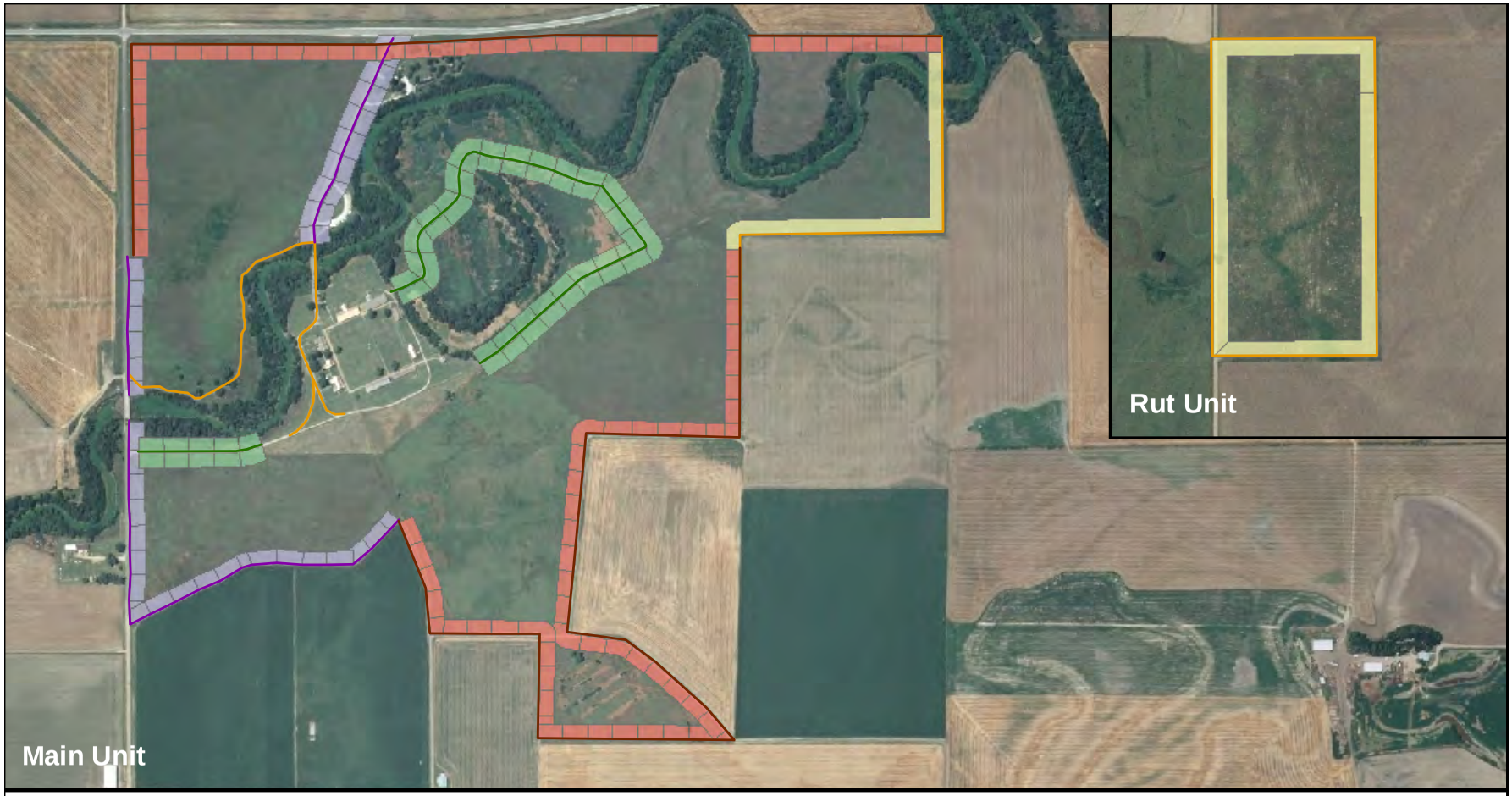


Figure 3.4-3. Secondary sample locations, Fort Larned NHS, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



Primary Transects
- Panel 1
- Panel 2
- Panel 3

Oversample Transects
- Oversample

Primary Blocks
- Panel 1
- Panel 2
- Panel 3

Oversample Blocks
- Oversample

N
W E
S

0 250 500 Meters

0 500 1,000 1,500 Feet

Year	Transect	Length (m)
Panel 1	East Trail	1182
Panel 1	Low er Trail	245
Panel 2	Entrance Road / Trail	437
Panel 2	SW Corner Boundary	997
Panel 2	West Boundary	275
Panel 3	Boundary - NW	1451
Panel 3	Boundary - N	379
Panel 3	Boundary - S	2525

Figure 3.4-4. Overall planned sampling scheme for panels (annual samples) at Fort Larned NHS for a full three-year rotation.

Table 3.4-1. Number and percentage of primary and secondary sample units where each species was detected, Fort Larned NHS, 2011

Scientific name	Common name	Primary vector blocks (n=87)		Secondary transects (n=8)	
		Total	% blocks	Total[1]	% transects
Bromus inermis	Smooth brome	71	81.6092	7	87.5
Convolvulus arvensis	Field bindweed	60	68.9655	6	75
Bromus tectorum	Cheatgrass	46	52.8736	—	—
Kochia scoparia	Kochia	35	40.2299	1	12.5
Rumex patientia	Patience dock	33	37.931	—	—
Chenopodium album	Common lambsquarters	19	21.8391	4	50
Tragopogon dubius	Western salsify	19	21.8391	—	—
Melilotus alba	White sweetclover	12	13.7931	—	—
Setaria viridis	Green bristlegrass	12	13.7931	—	—
Meilotus officinalis	Yellow sweetclover	9	10.3448	2	25
Taraxacum officinale	Dandelion	6	6.8966	—	—
Medicago sativa	Alfalfa	5	5.7471	—	—
Sorghum halepense	Johnsongrass	4	4.5977	—	—
Cynodon dactylon	Bermuda grass	2	2.2989	—	—
Lamium amplexicaule	Henbit	2	2.2989	—	—
Tribulus terrestris	Puncturevine	2	2.2989	—	—
Conium maculatum	Poison Hemlock	1	1.1494	—	—
Poa pratensis	Kentucky bluegrass	—	—	1	12.5

[1] The number of individual plots on secondary transects is shown in Figure 3.4-2.

Table 3.4-2. Parkwide detection of exotics during primary monitoring at Fort Larned NHS for first 3-year panel rotation.

Scientific Name	Common Name	N=56	N=45	N=87	N=188	%
		2009	2010	2011	TOTAL	
Bromus inermis	Smooth brome	55	44	71	170	90.43
Bromus tectorum	Cheatgrass	44	10	46	100	53.19
Convolvulus arvensis	Field bindweed	23	17	60	100	53.19
Kochia scoparia	Kochia	43	19	35	97	51.6
Taraxacum officinale	Dandelion	55	16	6	77	40.96
Setaria viridis	Green bristlegrass	42	—	12	54	28.72
Lamium amplexicaule	Henbit	42	7	2	51	27.13
Chenopodium album	Common lambsquarters	15	11	19	45	23.94
Tragopogon dubius	Western salsify	12	14	19	45	23.94
Meilotus officinalis	Yellow sweetclover	6	28	9	43	22.87
Amaranthus retroflexus	red—root pigweed	31	11	—	42	22.34
Rumex patientia	Patience dock	—	6	33	39	20.74

Table 3.4-2. Parkwide detection of exotics during primary monitoring at Fort Larned NHS for first 3-year panel rotation (cont.).

Scientific Name	Common Name	N=56	N=45	N=87	N=188	%
		2009	2010	2011	TOTAL	
Conium maculatum	Poison Hemlock	33	2	1	36	19.15
Digitaria sanguinalis	hairy crabgrass	21	10	—	31	16.49
Sonchus asper	spiny sowthistle	31	—	—	31	16.49
Capsella bursa—pastoris	shepards purse	24	—	—	24	12.77
Medicago lupulina	black medic clover	8	16	—	24	12.77
Euphorbia dentata	toothed spurge	—	16	—	16	8.51
Cynodon dactylon	Bermuda grass	1	11	2	14	7.45
Melilotus alba	White sweetclover	—	—	12	12	6.38
Polygonum arenastrum	prostrate knotweed	11	—	—	11	5.85
Sorghum halepense	Johnsongrass	—	4	4	8	4.26
Allaria petiolata	garlic mustard	6	—	—	6	3.19
Cirsium arvense	Canada thistle	—	6	—	6	3.19
Cirsium vulgare	bull thistle	1	5	—	6	3.19
Medicago sativa	Alfalfa	—	—	5	5	2.66
Rumex crispus	curly dock	4	1	—	5	2.66
Tribulus terrestris	Puncturevine	2	1	2	5	2.66
Calystegia sepium	hedge bindweed	3	—	—	3	1.6
Descurainia sophia	flixweed	1	2	—	3	1.6
Cannabis sativa	marijuana	2	—	—	2	1.06
Salsola tragus	prickly Russian thistle	—	2	—	2	1.06
Trifolium repens	white clover	—	2	—	2	1.06
Bromus japonicus	Japanese brome	—	1	—	1	0.53
Elaeagnus angustifolia	Russian olive	1	—	—	1	0.53
Eragrostis cilianensis	stinkgrass	1	—	—	1	0.53
Lolium perenne	perennial ryegrass	—	1	—	1	0.53

3.5 Fort Union NM

Overall sampling at Fort Union includes both paved and unpaved roads in both units over its full three-year rotation (Figure 3.5-3). In 2011, exotic-plant monitoring occurred at Fort Union in July. The vectors sampled were unpaved maintenance roads from the maintenance yard to the fort ruins and the paved entrance road to the Visitor Center. Sixty-eight vector blocks were monitored, for a total of 1.7 linear kilometers sampled on both sides (Figure 3.5-1) (Appendix E). In addition, six permanent transects within the landscape were sampled for a total of 30 2 x 1 meter plots. Eight species of exotics were detected with primary and secondary monitoring. No exotics were found in seven vector blocks.

Prickly Russian thistle (*Salsola tragus*) was detected in 76% of the primary vector blocks monitored in 2011, and four 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.

Field bindweed (*Convoluvulus arevensis*) was also prevalent, being found in 54% of the primary vector blocks and one secondary transect. This perennial taprooted exotic is drought-tolerant and an abundant seeder, with the ability to establish from small bits of vegetative material. Field bindweed, ranked as "noxious" in Kansas and surrounding states, is an effective colonizer with the ability to blanket an area; it climbs over existing vegetation, intercepting rainfall and shading out other plants. Its deep taproot insures continued regeneration and it is very difficult to destroy.

A third species of exotic, Kochia (*Kochia scoparia*) was detected in 43% of the primary vector blocks and two secondary transects. This drought-tolerant annual exotic produces abundant seed that are widely distributed as the spent plant breaks from its roots and blows across the prairie. Kochia is an early successional plant that readily establishes in sites with soil disturbance, outcompeting other native early successionals and responding favorably to increased nitrogen in the soil. It persists in the landscape by developing dense stands and maintaining increased nitrogen levels through annual foliage shedding. Kochia can also increase the fine-fuel load leading to a more intense fire capacity.

SOPN has now completed one full rotation of panels scheduled for FOUN (Appendix E). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.5-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at FOUN. Kochia (66%) and prickly Russian thistle (62%) ranked highest in distribution of primary vector blocks throughout the park. Of the fifteen exotic plant species detected during the three year rotation, eleven species were detected in < 10% of the vector blocks.

FOUN has possibly the "healthiest" grasslands in the Southern Plains Network, yet vigilance will be needed to prevent the spread of new and existing exotic species. Both the fort ruins and the housing area are pools of exotic species propagules with the potential of being spread into the landscape by wind and machinery. Dirt brought into the park for the production of mud plaster on the ruins has a great potential to introduce additional exotic plants. The exclusion of fire and grazing on the prairie has the potential to weaken the resilience of the native plant community, thus allowing exotics to spread.

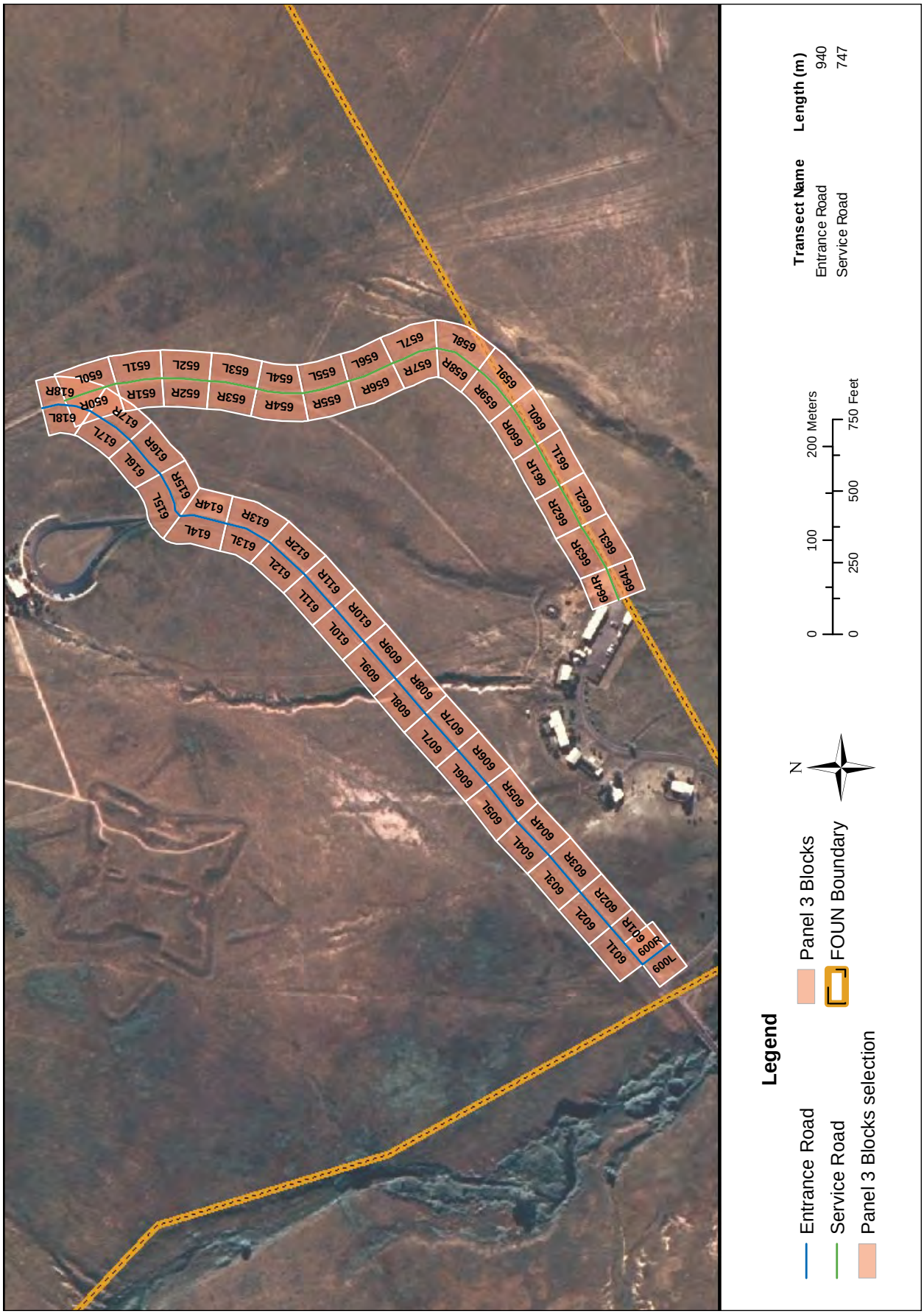


Figure 3.5-1. Individual vector blocks sampled, Panel 3, Fort Union NM, 2011.

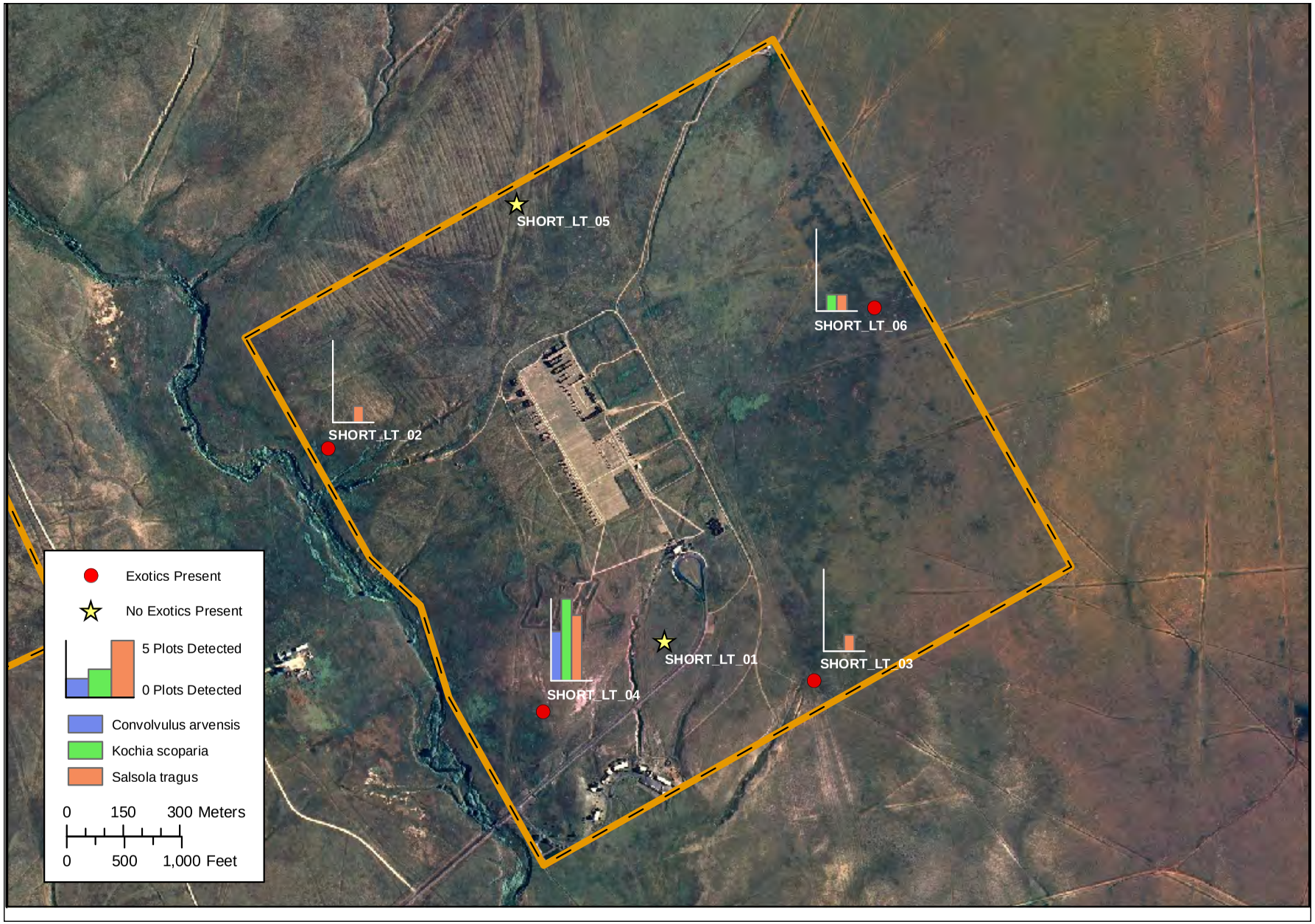
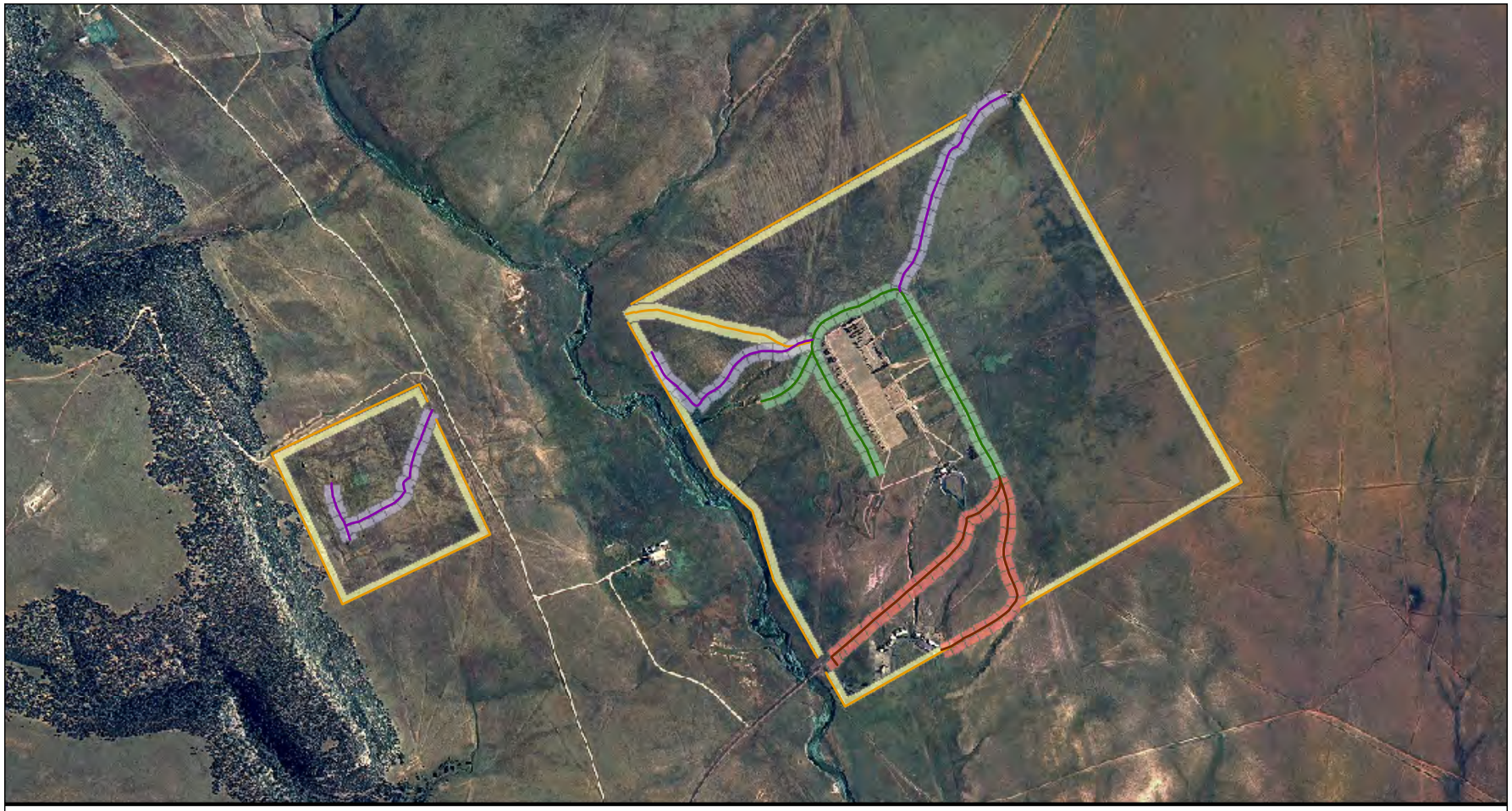


Figure 3.5-2. Secondary sample locations, Fort Union NM, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



Primary Transects
- Panel 1
- Panel 2
- Panel 3

Oversample Transects
- Oversample

Primary Blocks
- Panel 1
- Panel 2
- Panel 3

Oversample Blocks
- Oversample

N
W E
S

0 250 500 750 Meters
0 1,000 2,000 3,000 Feet

Year	Transect	Length (m)
Panel 1	Ruin Trail - NW	1000
Panel 1	West Spur	266
Panel 1	Ruin Trail - E	700
Panel 2	Old Fort Road	560
Panel 2	Old Fort Trail	212
Panel 2	NE Dirt Road	823
Panel 2	Service Road	751
Panel 3	Entrance Road	940
Panel 3	Service Road	747

Figure 3.5-3. Overall planned sampling scheme for panels (annual samples) at Fort Union NM for a full three-year rotation.

Table 3.5-1. Number and percentage of primary and secondary sample units where each species was detected, Fort Union NM, 2011

Scientific name	Common name	Primary vector blocks (n=68)		Secondary transects (n=6)	
		Total	% blocks	Total[1]	% transects
Salsola tragus	Prickly Russian thistle	52	76.47	4	66.67
Convolvulus arvensis	Field bindweed	37	54.41	1	16.67
Kochia scoparia	Kochia	29	42.65	2	33.33
Erodium cicutarium	Red stem storksbill	11	16.18	—	—
Melilotus alba	White sweetclover	5	7.35	—	—
Verbascum thapsus	Common mullein	4	5.88	—	—
Meilotus officinalis	Yellow sweetclover	2	2.94	—	—
Rumex crispus	Curly dock	1	1.47	—	—
None		7	10.29		

[1] The number of individual plots on secondary transects is shown in Figure 3.5-2.

Table 3.5-2. Parkwide detection of exotics during primary monitoring at Fort Union NM for first 3-year panel rotation.

Scientific Name	Common Name	N=56	N=45	N=87	N=188	%
		2009	2010	2011	TOTAL	
Kochia scoparia	Kochia	74	57	29	160	66.12
Salsola tragus	Prickly Russian thistle	20	77	52	149	61.57
Melilotus alba	White sweetclover	41	14	5	60	24.79
Convolvulus arvensis	Field bindweed	3	0	37	40	16.53
Chenopodium album	common lambsquarters	24	-	-	24	9.92
Euphorbia davidii	David's spurge	16	2	-	18	7.44
Tragopogon dubius	western salsify	1	12	-	13	5.37
Erodium cicutarium	Red stem storksbill	-	-	11	11	4.55
Marrubium vulgare	horehound	10	1	-	11	4.55
Verbascum thapsus	Common mullein	-	-	4	4	1.65
Carduus nutans	musk thistle	-	3	-	3	1.24
Meilotus officinalis	Yellow sweetclover	-	1	2	3	1.24
Bromus catharticus	rescue brome	-	1	-	1	0.41
Rumex crispus	Curly dock	-	-	1	1	0.41
Ulmus pumila	Siberian elm	-	1	-	1	0.41

3.6 Lake Meredith NRA/ Alibates Flint Quarries NM

Overall sampling at Lake Meredith/Alibates Flint Quarries (LAMR/ALFL) occurs on paved roads over its full three-year rotation (Figure 3.6-4, -5, -6). In 2010, exotic-plant monitoring occurred at LAMR 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 3.6-1) (Appendix F). 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. It should be stressed that, due to the large scale of the park, these monitoring results do not reflect an overall state of exotics at LAMR/ALFL.

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.

DAN TENAGLIA, MISSOURIPLANTS.COM, BUGWOOD.ORG

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

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.

SOPN has now completed one full rotation of panels scheduled for LAMR (Appendix F). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.6-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at LAMR. Prickly Russian thistle was the most widely distributed exotic encountered during this three year effort, being detected in 38% of the primary vector blocks on all vectors. Canada thistle was found in 28% of all blocks, but it should be noted that it was found only in 2011 on the vector in Blue West. Kochia (*Kochia scoparia*) was found on all vectors in 23% of the vector blocks. Twenty-four exotic species were detected during this three year rotation, with eighteen found in < 10% of the vector blocks.

LAMR is comprised primarily of Canadian River impoundment, bottomland and "breaks" or cliffs, surrounded by a narrow band of upland, and covers an extensive area. The permitting of oil and gas leases inside the park contribute greatly to the disturbance and fragmenting of the landscape, providing numerous opportunities for exotic contamination. Recreational activities including off-road vehicles, horseback riding and hunting allow exotic plant introductions even farther into the landscape. The presence of the Canadian River running the length of the park is a prime entry vector for exotic propagules from upstream.

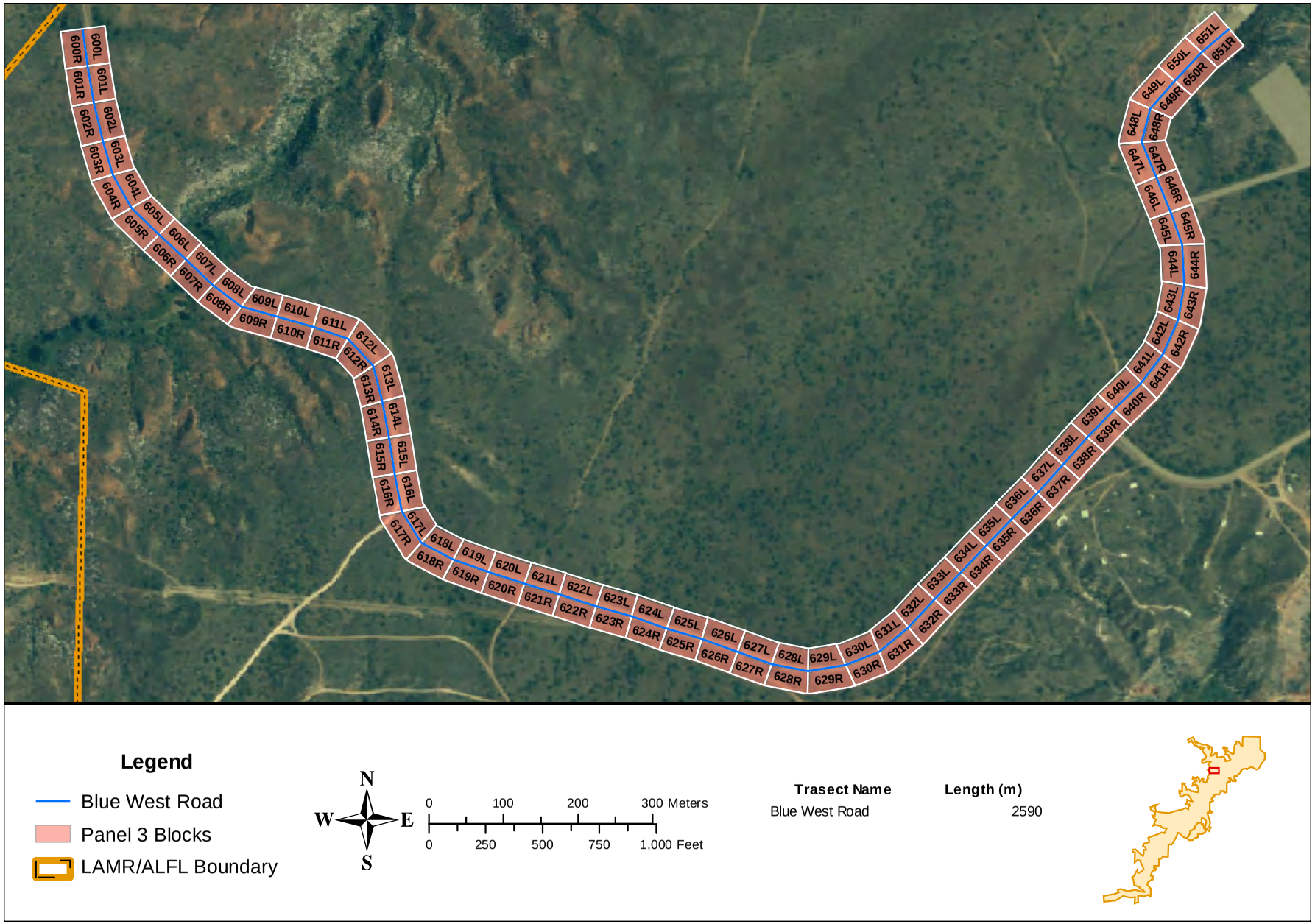


Figure 3.6-1. Individual vector blocks sampled, Panel 3, Lake Meredith NRA and Alibates Flint Quarries NM, 2011

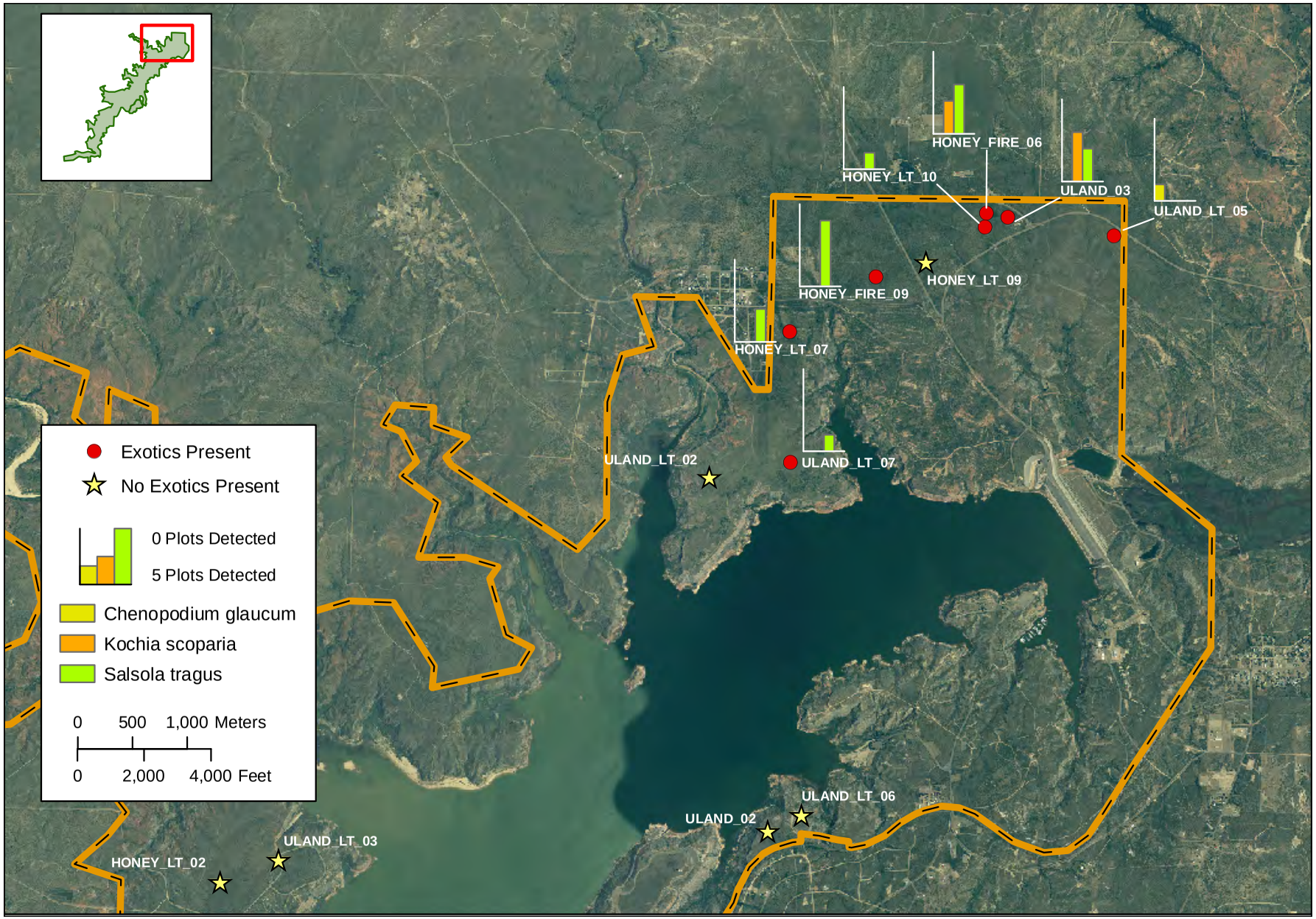


Figure 3.6-2. Secondary sample locations, Lake Meredith NRA, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.

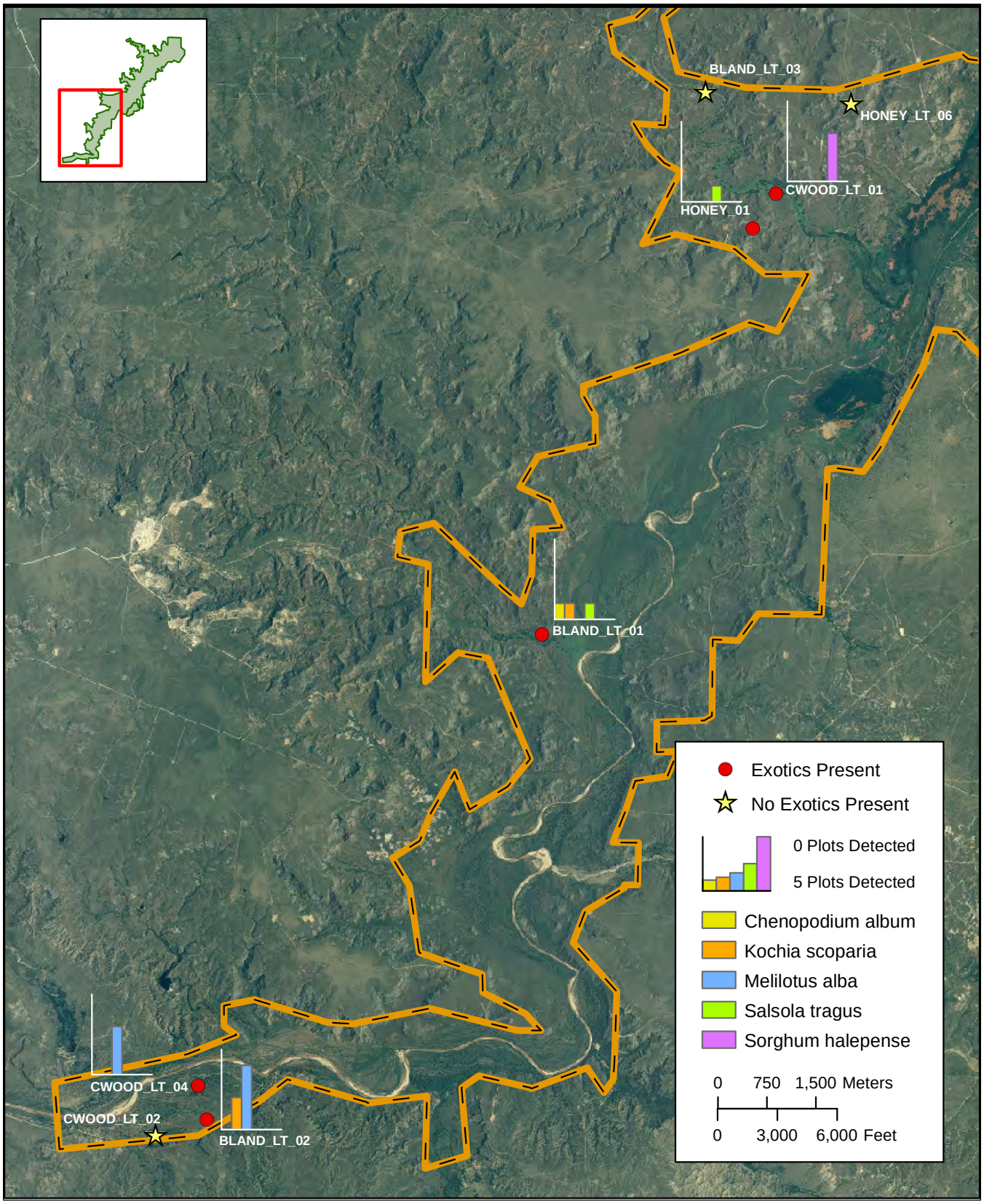
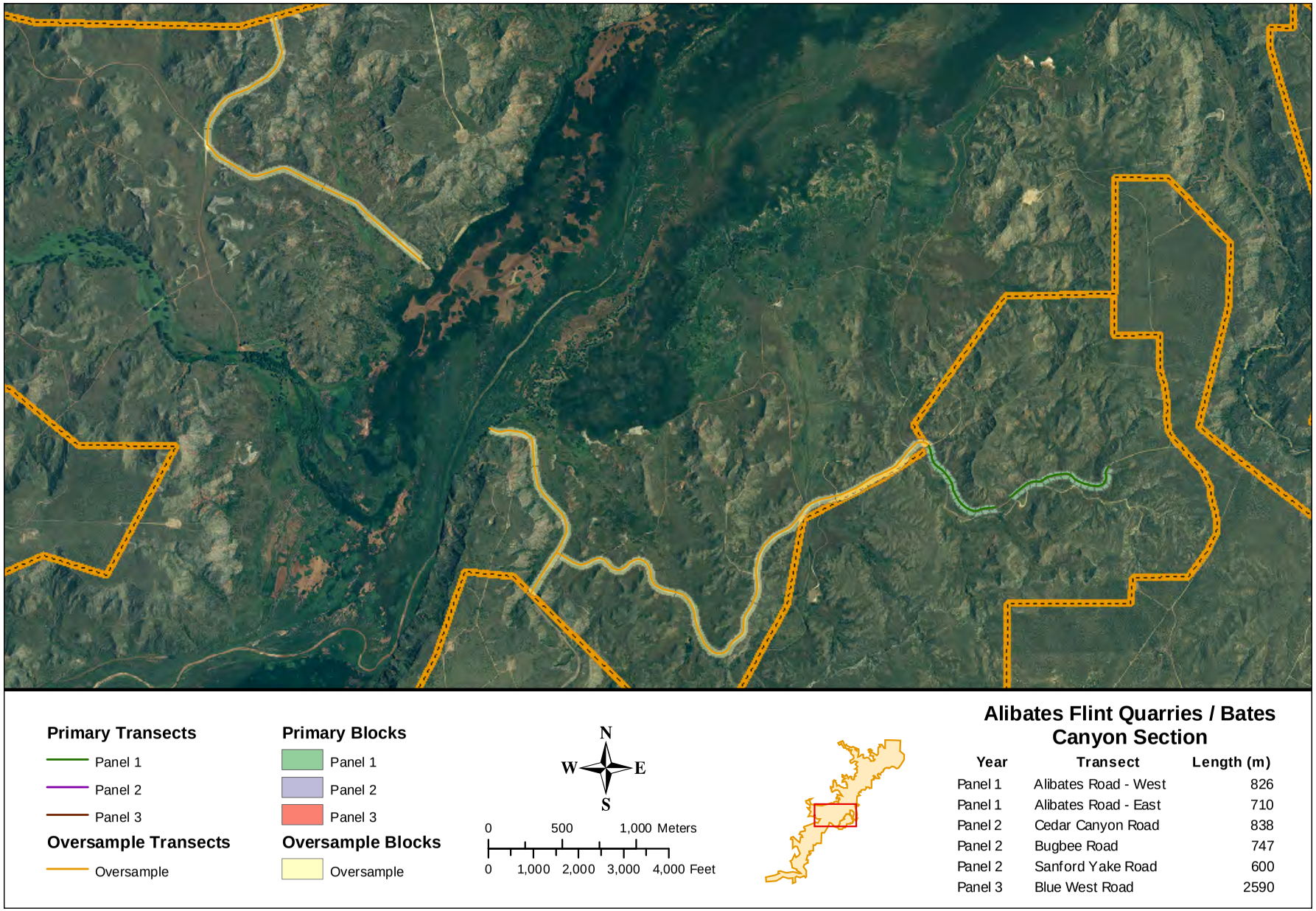
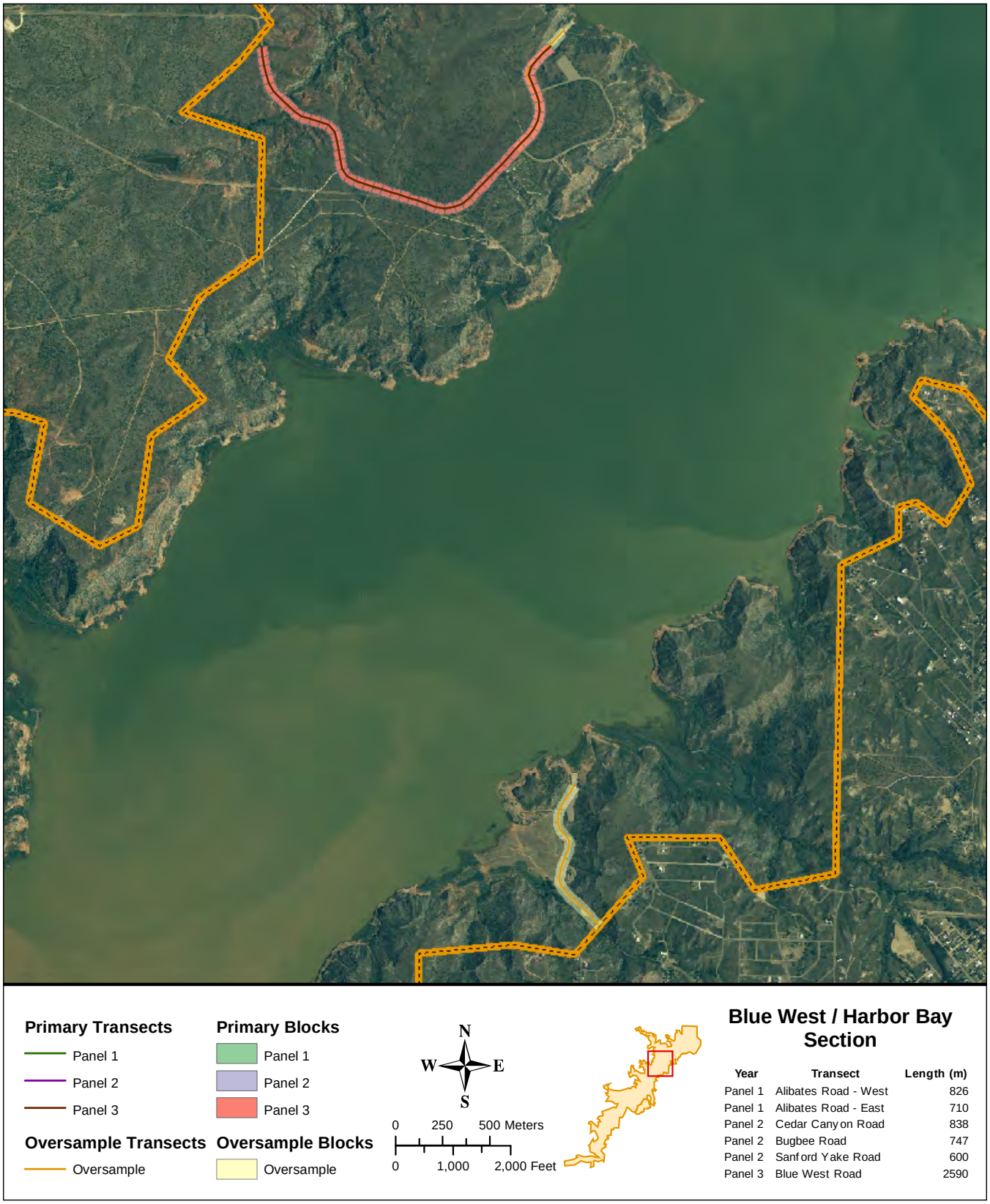


Figure 3.6-3. Secondary sample locations, Lake Meredith NRA, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



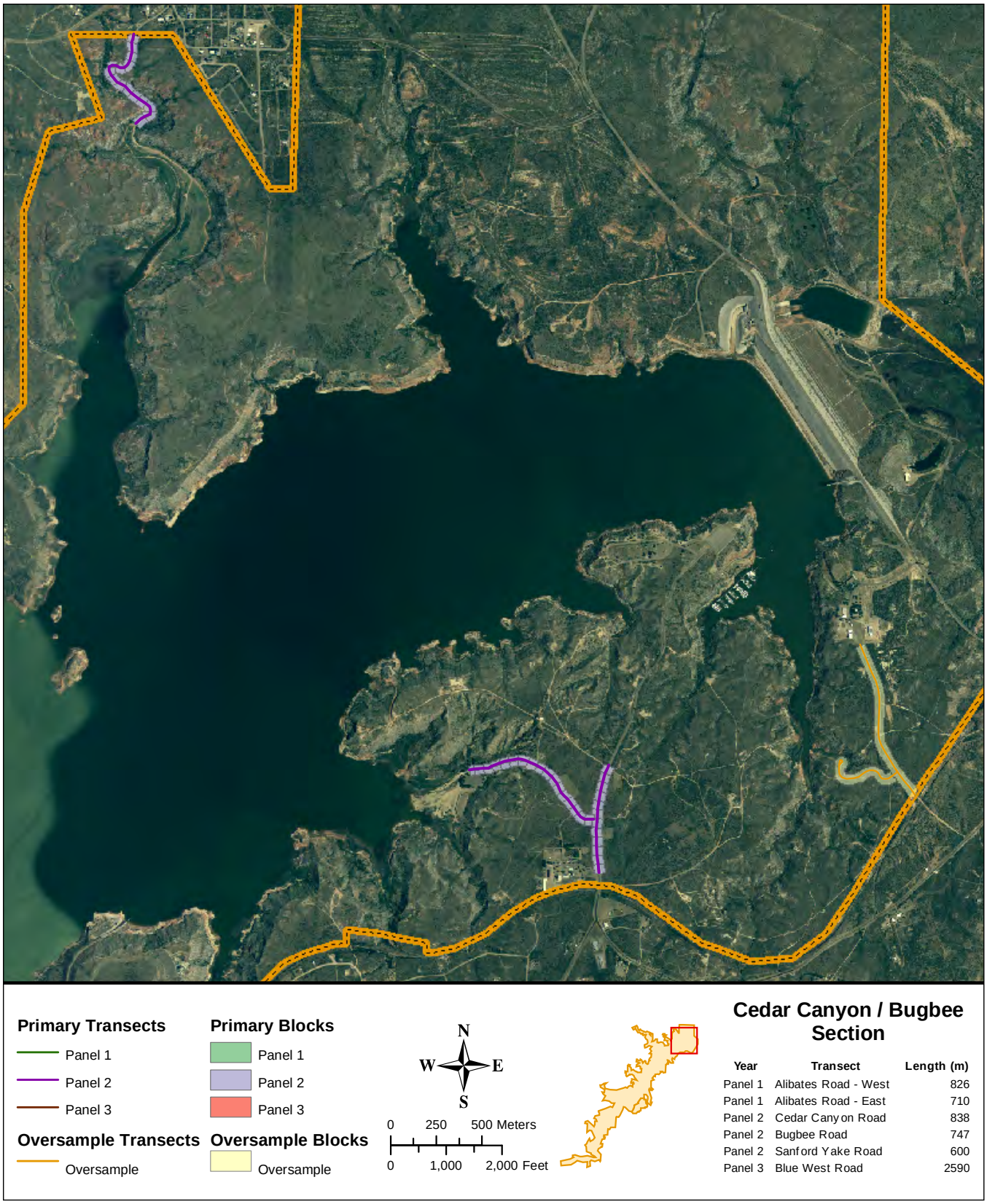
Year	Transect	Length (m)
Panel 1	Alibates Road - West	826
Panel 1	Alibates Road - East	710
Panel 2	Cedar Canyon Road	838
Panel 2	Bugbee Road	747
Panel 2	Sanford Yake Road	600
Panel 3	Blue West Road	2590

Figure 3.6-4. Overall planned sampling scheme for panels (annual samples) in the Alibates Flint Quarries NM vicinity for a full three-year rotation.



Year	Transect	Length (m)
Panel 1	Alibates Road - West	826
Panel 1	Alibates Road - East	710
Panel 2	Cedar Canyon Road	838
Panel 2	Bugbee Road	747
Panel 2	Sanford Yake Road	600
Panel 3	Blue West Road	2590

Figure 3.6-5. Overall planned sampling scheme for panels (annual samples) in the Blue West/Harbor Bay vicinity of Lake Meredith NRA for a full three-year rotation.



Year	Transect	Length (m)
Panel 1	Alibates Road - West	826
Panel 1	Alibates Road - East	710
Panel 2	Cedar Canyon Road	838
Panel 2	Bugbee Road	747
Panel 2	Sanford Yake Road	600
Panel 3	Blue West Road	2590

Figure 3.6-6. Overall planned sampling scheme for panels (annual samples) in the Cedar Canyon/Bugbee vicinity of Lake Meredith NRA for a full three-year rotation.

Table 3.6-1. 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[1]	% transects
Cirsium arvensis	Canada thistle	72	69.23	—	—
Salsola tragus	Prickly Russian thistle	28	26.92	8	38.1
Tribulus terrestris	Puncturevine	11	10.58	—	—
Bromus tectorum	Cheatgrass	10	9.62	—	—
Sorghum halepense	Johnsongrass	4	3.85	1	4.76
Tamarix chinensis	Saltcedar	2	1.92	—	—
Triticum aestivum	Common wheat	2	1.92	—	—
Convolvulus arvensis	Field bindweed	1	0.96	—	—
Kochia scoparia	Kochia	1	0.96	3	14.29
Melilotus alba	White sweetclover	1	0.96	4	19.05
Tragopogon dubius	Western salsify	1	0.96	—	—
Chenopodium album	common lambsquarters	—	—	1	4.76
Chenopodium glaucum	oakleaf goosefoot	—	—	1	4.76
None		19	18.27	—	—

[1] The number of individual plots on secondary transects is shown in Figure 3.6-2.

Table 3.6-2. Parkwide detection of exotics during primary monitoring at Lake Meredith NRA/Alibates Flint Quarries NM for first 3-year panel rotation.

Scientific Name	Common Name	N=62	N=88	N=104	N=254	%
		2009	2010	2011	TOTAL	
Salsola tragus	Prickly Russian thistle	15	54	28	97	38.19
Cirsium arvensis	Canada thistle	—	—	72	72	28.35
Kochia scoparia	Kochia	34	23	1	58	22.83
Digitaria sanguinalis	hairy crabgrass	4	49	—	53	20.87
Bromus japonicus	Japanese brome	—	52	—	52	20.47
Melilotus alba	White sweetclover	—	38	1	39	15.35
Cynodon dactylon	Bermudagrass	—	25	—	25	9.84
Seteria viridus	green bristlegrass	24	—	—	24	9.45
Tragopogon dubius	Western salsify	5	14	1	20	7.87
Bromus tectorum	Cheatgrass	—	1	10	11	4.33
Tribulus terrestris	Puncturevine	—	—	11	11	4.33
Euphorbia davidii	David's spurge	—	10	—	10	3.94
Sorghum halepense	Johnsongrass	—	2	4	6	2.36
Convolvulus arvensis	Field bindweed	—	4	1	5	1.97
Tamarix chinensis	Saltcedar	—	3	2	5	1.97
Taraxacum officinale	dandelion	1	4	—	5	1.97
Chenopodium glaucum	oakleaf goosefoot	3	—	—	3	1.18
Erodium cicutarium	red stem stork's-bill	—	3	—	3	1.18
Poa pratensis	Kentucky bluegrass	—	3	—	3	1.18
Salsola collina	spineless Russian thistle	—	2	—	2	0.79
Triticum aestivum	Common wheat	—	—	2	2	0.79
Medicago minima	burr medic clover	—	1	—	1	0.39
Polypogon monspeliensis	annual rabbitsfoot grass	—	1	—	1	0.39
Scorzonera laciniata	cutleaf vipergrass	—	1	—	1	0.39

3.7 Lyndon B. Johnson NHP

Overall sampling at Lyndon B. Johnson occurs only on the unpaved Settlement Trail over its full three-year rotation (Figure 3.7-2). In 2011, exotic-plant monitoring occurred at Lyndon B. Johnson in late May. Thirty vector blocks were monitored, for a total of 0.8 linear kilometers sampled on both sides (Figure 3.7-1) (Appendix G). In addition, two permanent transects within the landscape were sampled for a total of 10 2 x 1 meter plots. Nine species of exotics were detected with primary and secondary monitoring. Exotics were detected in every vector block.

K.R. bluestem (*Bothriochloa ischaemum*) was the most dominate exotic found in 2011, appearing in 97% of the primary vector blocks and one secondary transect. This perennial sod-forming grass is drought-tolerant, a prodigious seeder, and responds favorably to mowing and burning. The basal growth becomes very thick and full of thatch, displacing native species and decreasing both plant and animal biodiversity. Left unmanaged, this grass has the potential to become a monoculture and adds to fire threat by providing abundant fine fuel.

Johnsongrass (*Sorghum halepense*) was the second most prevalent exotic found, detected in 77% of the vector blocks monitored. This is a perennial grass with a strong rhizomatous root system providing the capacity to colonize large areas and is most often found in disturbed and flooded bottomlands. Once established, Johnsongrass persists in the landscape despite eradication efforts, effectively displacing native grasses and forbs.

The restoration area of the Johnson Settlement at LYJO is the only unmowed semi-natural area of the park available for monitoring. Therefore, we depart from the standard three-year panel rotation and instead monitor this area every year (Appendix G). This is the second year of monitoring in this area, so an average of detections was compiled for the two years of monitoring. Johnsongrass was detected in 79% of the primary vector blocks, followed by the forb black medic clover (*Medicago lupulina*) at 74% and K.R. bluestem at 69%. 2011 has been a year of extreme drought in this area and we anticipate that this has had an effect on the variety and quantity of exotics presenting themselves. Of the nineteen exotic species detected over the last two years, eight have been in found in < 10% of the vector blocks.

Long-term establishment of a suite of exotic species will make it very difficult to successfully control the invasions. The restoration area has been plowed and terraced in the past and has also served as a pecan orchard. Several efforts through the years to re-establish a midgrass prairie have met with limited success. It has been shown in many studies that the lack of prescribed fire can leave a grassland diminished and allow exotics to proliferate. KR bluestem is reported to diminish due to hot summer fire (Simmons et al., 2007).

JOHN M. RANDALL, THE NATURE CONSERVANCY, BUGWOOD.ORG

KR bluestem (*Bothriochloa ischaemum*) was the most commonly found exotic species in 2011 at Lyndon B. Johnson NHP.

Table 3.7-1. Number and percentage of primary and secondary sample units where each species was detected, Lyndon B. Johnson NHP, 2011

Scientific name	Common name	Primary sample units (n=30)		Secondary sample units (n=2)	
		Total	% blocks	Total[1]	% transects
Bothriochloa ischaemum	KR bluestem	29	96.67	1	50
Sorghum halepense	Johnsongrass	23	76.67	1	50
Medicago lupulina	Black medic clover	16	53.33	—	—
Bromus japonicus	Japanese brome	7	23.33	—	—
Conium maculatum	Poison Hemlock	5	16.67	—	—
Cynodon dactylon	Bermuda grass	5	16.67	—	—
Convolvulus arvensis	Field bindweed	1	3.33	—	—
Lolium perenne	Perennial rye	1	3.33	—	—
Lonicera japonica	Japanese honeysuckle	1	3.33	—	—

[1] The number of individual plots on secondary transects is shown in Figure 3.7-2.

Table 3.7-2. Parkwide detection of exotics during primary monitoring at Lyndon B. Johnson NHP for first 3-year panel rotation.

Scientific Name	Common Name	Dropped[1]	N=32	N=30	N=62	%
		2009	2010	2011	TOTAL	
Sorghum halepense	Johnsongrass	—	26	23	49	79.03
Medicago lupulina	Black medic clover	—	30	16	46	74.19
Bothriochloa ischaemum	KR bluestem	—	14	29	43	69.35
Bromus japonicus	Japanese brome	—	17	7	24	38.71
Taraxacum officinale	dandelion	—	22	—	22	35.48
Torilis arvensis	spreading hedgeparsley	—	22	—	22	35.48
Lolium perenne	Perennial rye	—	17	1	18	29.03
Dichanthium annulatum	Kleberg bluestem	—	11	—	11	17.74
Galium divaricatum	Lamarck's bedstraw	—	9	—	9	14.52
Lolium arundinaceum	tall fescue	—	9	—	9	14.52
Medicago minima	bur medic clover	—	8	—	8	12.90
Lonicera japonica	Japanese honeysuckle	—	5	1	6	9.68
Bromus tectorum	cheatgrass	—	5	—	5	8.06
Centaurea melitensis	Malta starthistle	—	5	—	5	8.06
Conium maculatum	Poison Hemlock	—	—	5	5	8.06
Cynodon dactylon	Bermuda grass	—	—	5	5	8.06
Paspalum urvillei	vaseygrass	—	5	—	5	8.06
Vicia sativa	garden vetch	—	5	—	5	8.06
Convolvulus arvensis	Field bindweed	—	—	1	1	1.61

[1] 2009 data was from a separate area that has been dropped from the rotation.

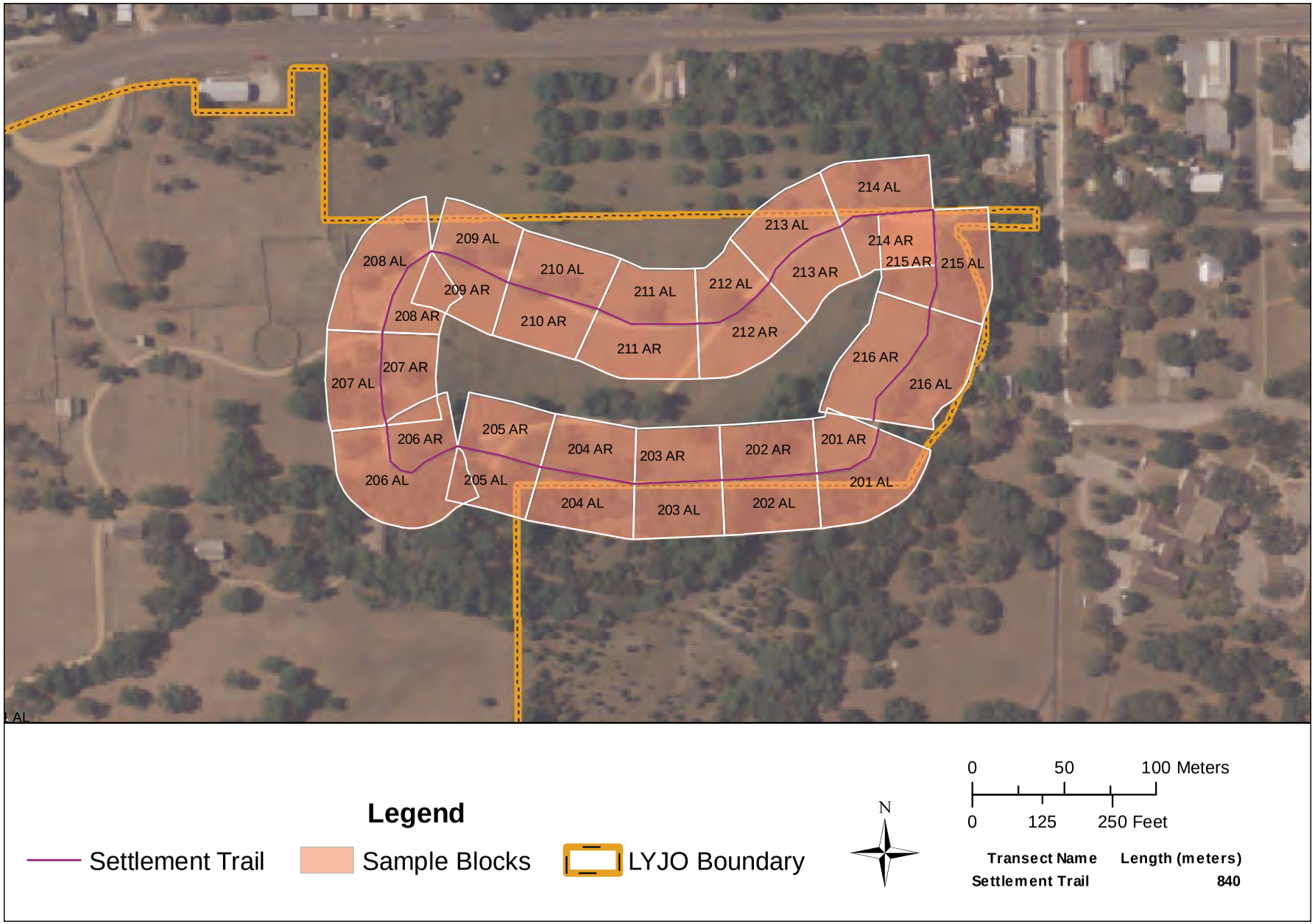


Figure 3.7-1. Individual vector blocks sampled, Panel 1, Lyndon B. Johnson NHP, 2011.

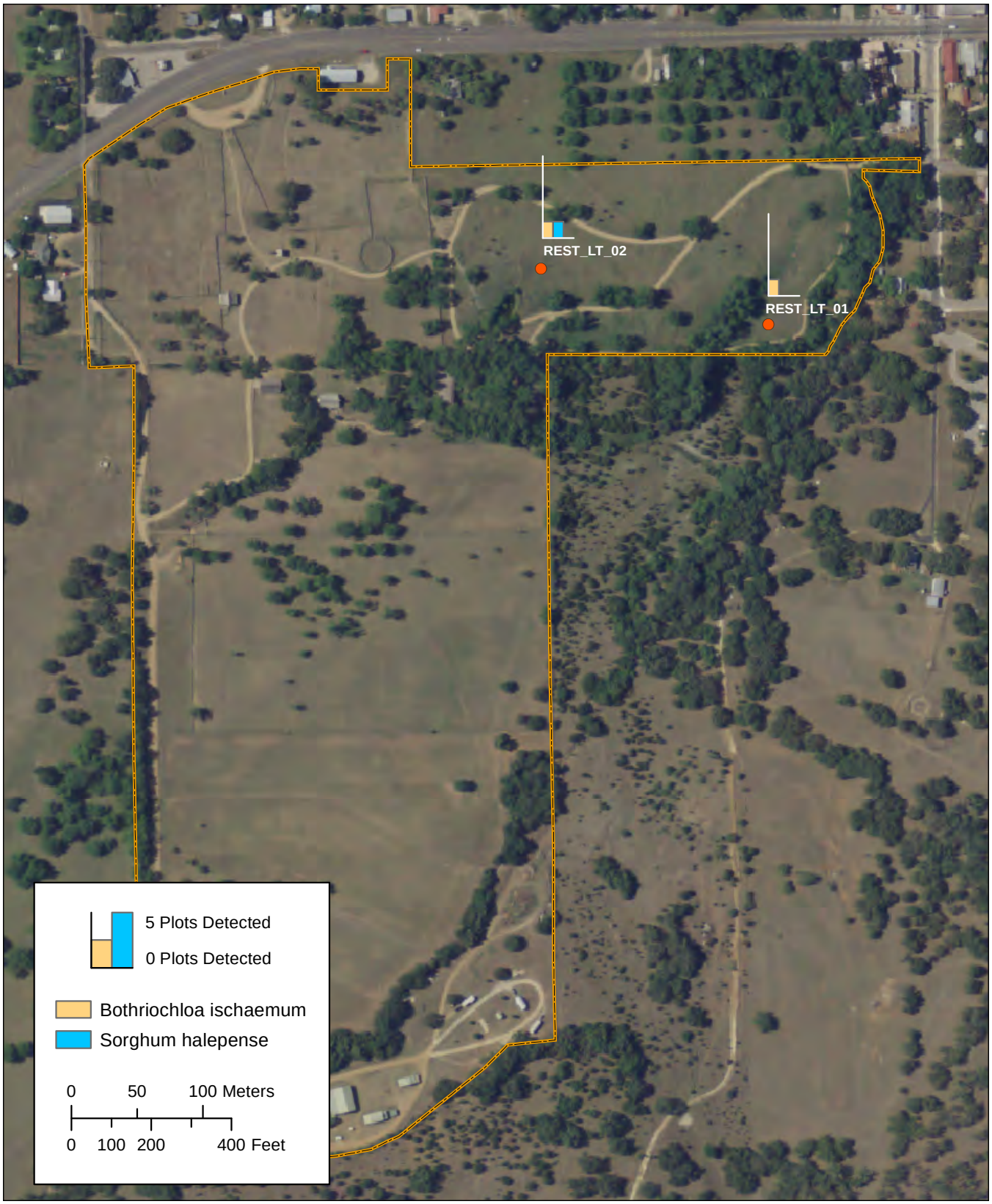


Figure 3.7-2. Secondary sample locations, Lyndon B. Johnson NHP, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.

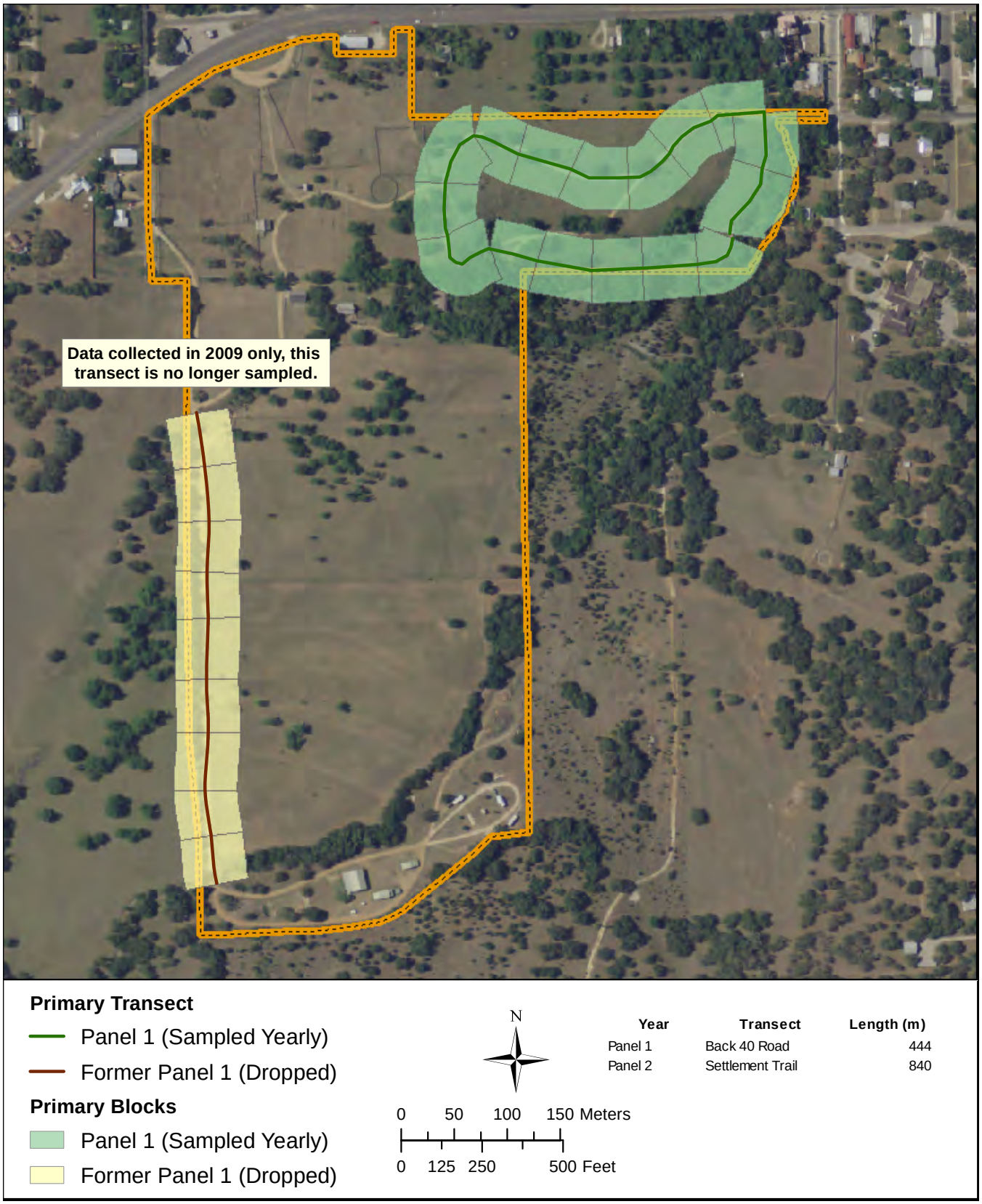


Figure 3.7-3. Overall planned sampling scheme for panels (annual samples) at Lyndon B. Johnson NHP for a full three-year rotation.

3.8 Pecos NHP

Overall sampling at Pecos occurs on paved and unpaved roads and trails over its full three-year rotation (Figure 3.8-3). In 2011, exotic-plant monitoring occurred at Pecos in July. The vector sampled was the paved road to the Visitor Center and Headquarters, the unpaved road past Headquarters to Glorieta Creek and the remainder of the unpaved Well Road through the Forked Lightening Ranch. Eighty-eight vector blocks were monitored, for a total of 2.2 linear kilometer sampled on both sides (Figure 3.8-1) (Appendix H). In addition, seven permanent transects within the landscape were sampled for a total of 35 2 x 1 meter plots. Eighteen species of exotics were detected with primary and secondary monitoring. No exotics were detected in 16 vector blocks. It should be stressed that, due to the large scale of the park, these monitoring results do not reflect an overall state of exotics at PECO.

Prickly Russian thistle (*Salsola tragus*) was detected in 47% of the primary vector blocks in 2011 and one secondary transect. 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.

A similar species, kochia (Kochia scoparia) was found in 34% of the primary vector blocks but none of the secondary transects. This drought-tolerant annual exotic produces abundant seed that are widely distributed as the spent plant breaks from its roots and blows across the prairie. Kochia is an early successional plant that readily establishes in sites with soil disturbance, outcompeting other native early successionals and responding favorably to increased nitrogen in the soil. It persists in the landscape by developing dense stands and maintaining increased nitrogen levels through annual foliage shedding. Kochia can also increase the fine-fuel load leading to a more intense fire capacity.

SOPN has now completed one full rotation of panels scheduled for PECO (Appendix H). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.8-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at PECO. Both prickly Russian thistle and kochia were detected in 48% and 39% of the vector blocks of this three year period. The problematic forb western salsify (***Tragopogon dubius***) was found in 44% of the vector blocks. All three species were found in every vector monitored. Of the 36 exotic species detected during this rotation at PECO, 29 species were detected in < 10% of the vector blocks.

The long-term habitation of the PECO area has permanently shaped the plant communities. Wind is a major factor in erosion and aids the dispersal of seeds throughout the landscape, including those of exotic species. The presence of both the Pecos River and Glorieta Creek provide continuous introduction of exotic propagules from upstream infestations. The current drought affecting the area may provide additional openings in the landscape for the establishment of additional exotics in areas of sparse vegetation.

JOHN M. RANDALL, THE NATURE CONSERVANCY, BUGWOOD.ORG

Kochia (*Kochia scoparia*) was one of the most commonly found exotic species in 2011 at Pecos NHP.

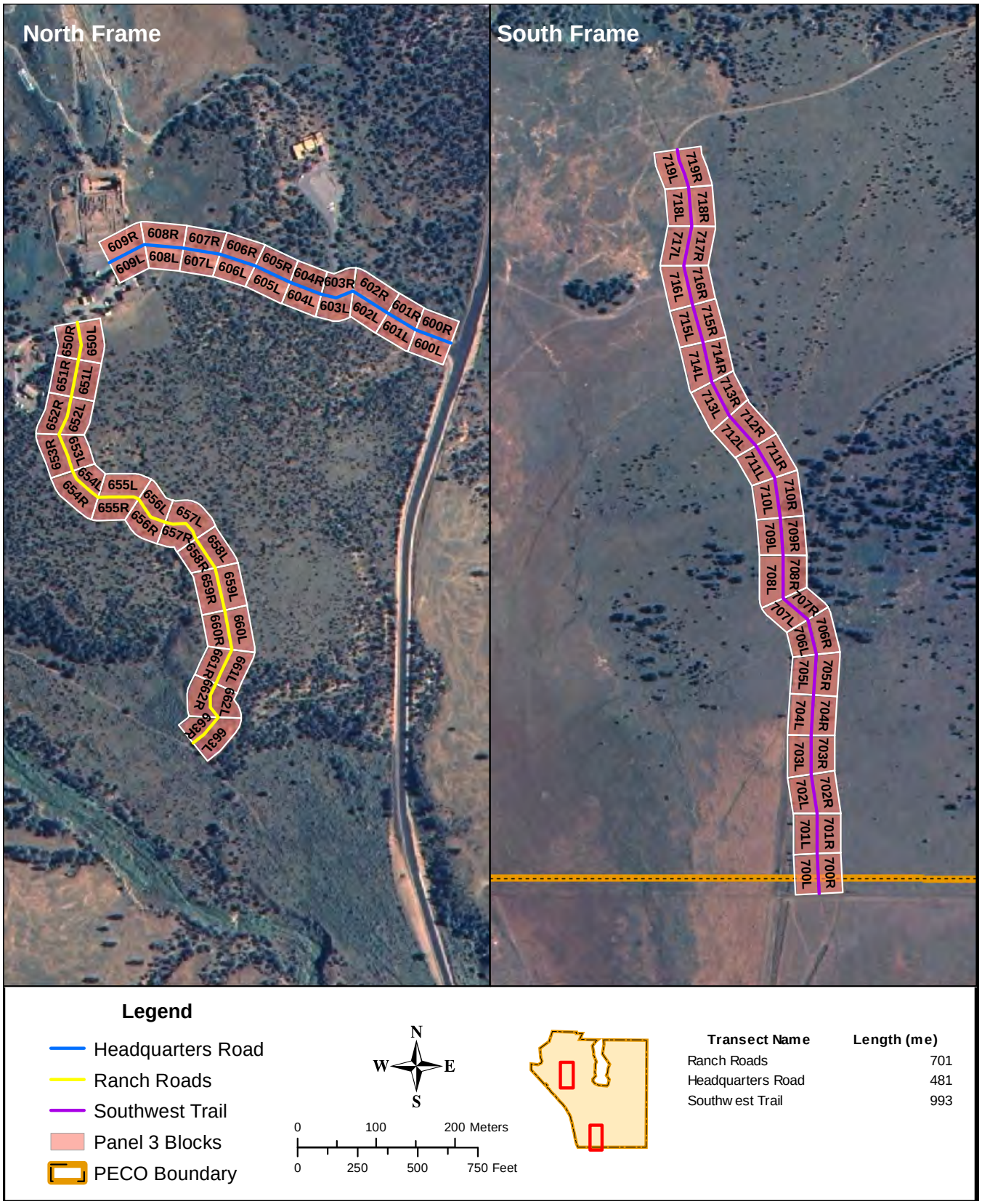


Figure 3.8-1. Individual vector blocks sampled, Panel 3, Pecos NHP, 2011.

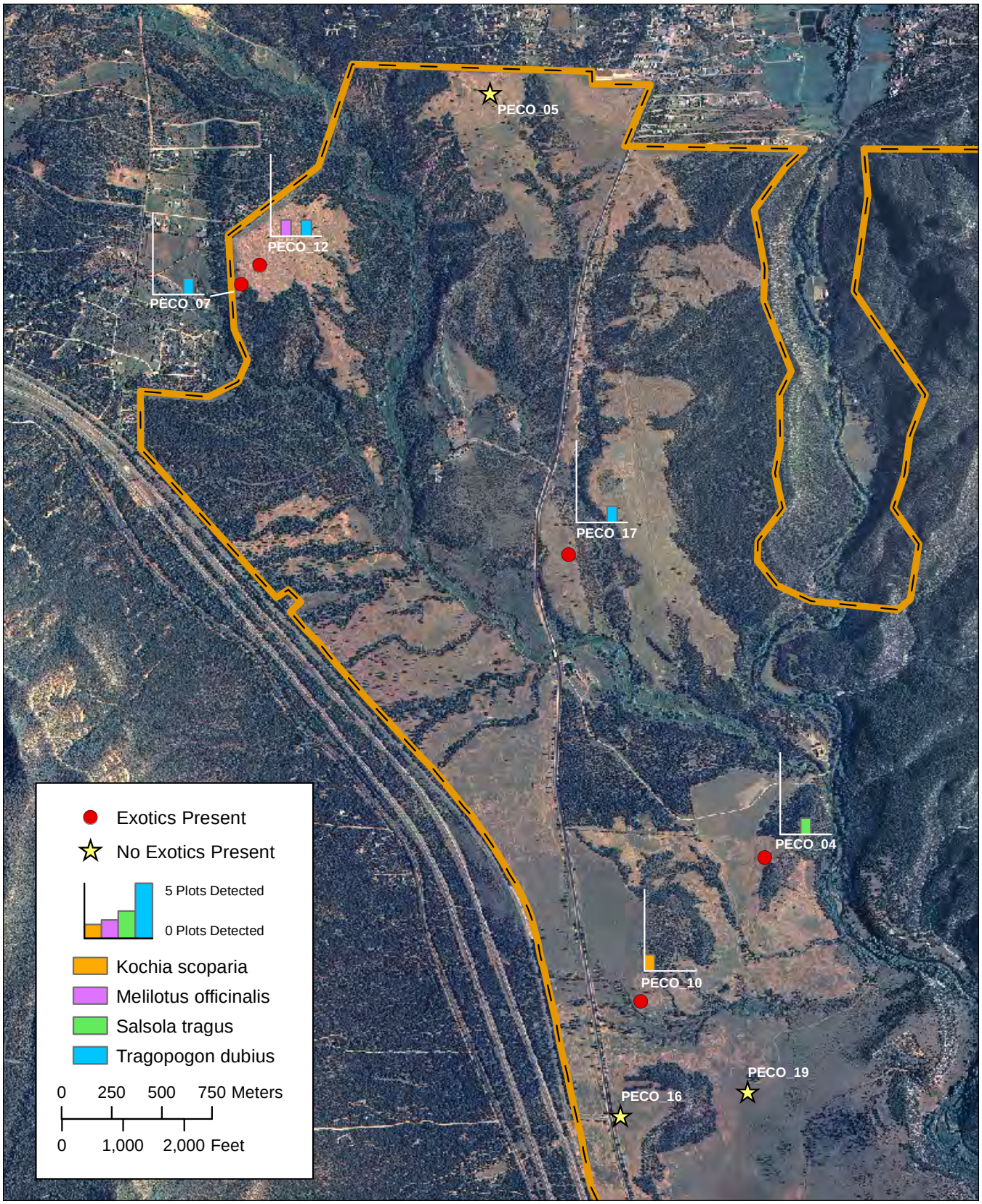
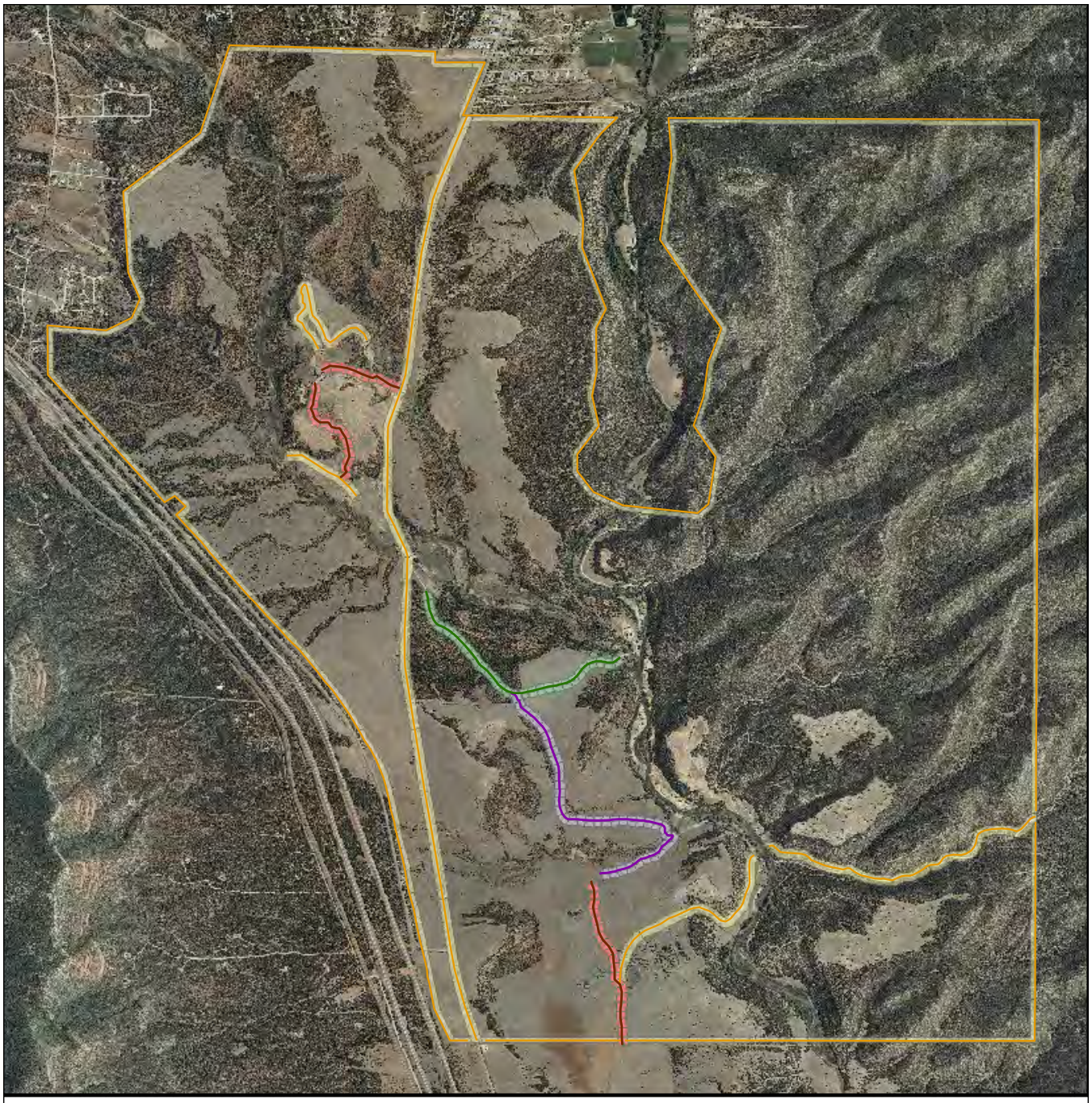


Figure 3.8-2. Secondary sample locations, Pecos NHP, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



Year	Transect	Length (m)
Panel 1	Forked Lightning Road	1490
Panel 2	Well Road	1995
Panel 3	Ranch Roads	701
Panel 3	Headquarters Road	481
Panel 3	Southwest Trail	993

Figure 3.8-3. Overall planned sampling scheme for panels (annual samples) at Pecos NHP for a full three-year rotation.

Table 3.8-1. Number and percentage of primary and secondary sample units where each species was detected, Pecos NHP, 2011

Scientific name	Common name	Primary sample units (n=88)		Secondary sample units (n=7)	
		Total	% blocks	Total[1]	% transects
Salsola tragus	Prickly Russian thistle	41	46.59	1	14.29
Kochia scoparia	Kochia	30	34.09	—	—
Meilotus officinalis	Yellow sweetclover	22	25.00	1	14.29
Verbascum thapsus	Common mullein	17	19.32	—	—
Erodium cicutarium	Red stem storksbill	13	14.77	—	—
Bromus tectorum	Cheatgrass	12	13.64	—	—
Lactuca seriola	Prickly lettuce	12	13.64	—	—
Melilotus alba	White sweetclover	11	12.50	—	—
Tragopogon dubius	Western salsify	11	12.50	3	42.86
Medicago sativa	Alfalfa	8	9.09	—	—
Convolvulus arvensis	Field bindweed	6	6.82	—	—
Cirsium vulgare	Bull thistle	4	4.55	—	—
Bromus japonicus	Japanese brome	2	2.27	—	—
Taraxacum officinale	Dandelion	2	2.27	—	—
Marrubium vulgare	Horehound	1	1.14	—	—
Medicago lupulina	Black medic clover	1	1.14	—	—
Rumex crispus	Curly dock	1	1.14	—	—
Ulmus pumila	Siberian elm	1	1.14	—	—
None		16	18.1818	—	—

[1] The number of individual plots on secondary transects is shown in Figure 3.8-2.

Table 3.8-2. Parkwide detection of exotics during primary monitoring at Pecos NHS for first 3-year panel rotation.

Scientific Name	Common Name	N=60	N=80	N=88	N=228	%
		2009	2010	2011	TOTAL	
Salsola tragus	Prickly Russian thistle	14	55	41	110	48.25
Tragopogon dubius	Western salsify	17	73	11	101	44.30
Kochia scoparia	Kochia	39	21	30	90	39.47
Melilotus officinalis	Yellow sweetclover	17	42	22	81	35.53
Camelina microcarpa	smallseed false flax	-	53	-	53	23.25
Verbascum thapsus	Common mullein	19	11	17	47	20.61
Chenopodium alum	common lambsquarters	14	24	-	38	16.67
Bromus japonicus	Japanese brome	-	20	2	22	9.65
Convolvulus arvensis	Field bindweed	11	3	6	20	8.77
Lactuca seriola	Prickly lettuce	6	-	12	18	7.89
Melilotus alba	White sweetclover	4	1	11	16	7.02
Cirsium arvense	Canada thistle	-	15	-	15	6.58
Eragrostis barrelleri	Mediterranean lovegrass	15	-	-	15	6.58
Euphorbia davidii	David's spurge	15	-	-	15	6.58
Erodium cicutarium	Red stem storksbill	1	-	13	14	6.14
Tragopogon pratensis	meadow salsify	-	14	-	14	6.14
Bromus tectorum	Cheatgrass	-	1	12	13	5.70
Medicago sativa	Alfalfa	-	4	8	12	5.26
Bromus lanceolatus	Mediterranean brome	-	11	-	11	4.82
Bromus species	brome species	11	-	-	11	4.82
Asparagus officinalis	garden asparagus	-	8	-	8	3.51
Tribulus terrestris	puncturevine	8	-	-	8	3.51
Thinopyrum ponticum	rush wheatgrass	-	7	-	7	3.07
Cirsium vulgare	Bull thistle	2	-	4	6	2.63
Brassicaceae	mustard species	5	-	-	5	2.19
Agropyron desertorum	crested wheatgrass	4	-	-	4	1.75
Bromus inermis	smooth brome	4	-	-	4	1.75
Dactylis glomerata	orchardgrass	-	4	-	4	1.75
Poa compressa	Canada bluegrass	-	3	-	3	1.32
Scorzonera laciniata	curtleaf vipergrass	-	3	-	3	1.32
Melilotus indicus	annual sweet clover	-	2	-	2	0.88
Taraxacum officinale	Dandelion	-	-	2	2	0.88
Ulmus pumila	Siberian elm	-	1	1	2	0.88
Marrubium vulgare	Horehound	-	-	1	1	0.44
Medicago lupulina	Black medic clover	-	-	1	1	0.44
Rumex crispus	Curly dock	-	-	1	1	0.44

3.9 Sand Creek Massacre NHS

Overall sampling at Sand Creek Massacre occurs on unpaved roads over its full three-year rotation (Figure 3.9-4). In 2011, exotic-plant monitoring occurred at Sand Creek Massacre in late June. The vector sampled was the unpaved interior road from the grove to the northwestern boundary. A total of 110 vector blocks were monitored, for a total of 2.75 linear kilometers sampled on both sides (Figure 3.9-1, -2) (Appendix I). In addition, 12 permanent transects within the landscape were sampled for a total of 60 2 x 1 meter plots (Figure 3.9-3). Eight species of exotics were detected with primary and secondary monitoring. No exotics were observed in twenty-five vector blocks.

Common lambsquarters (*Chenopodium album*) was the most frequently encountered exotic in 2011, found in 50% of the primary vector blocks and one secondary transect. It was found in scattered patches primarily along the vector itself. This drought-tolerant annual is found throughout the west, seeding prolifically and primarily occupying disturbed ground, although once established it has the capacity to persist in the landscape. Botanists debate its nativity, some treating it as an exotic from Eurasia while others think there is a native strain. A word of caution must be offered: positive identification of this species can be difficult. Common lamsquarters has variable traits that mimic other native and exotic lambsquarters. SOPN continues to verify this species whenever encountered, but we do believe we have identified it correctly.

Prickly Russian thistle (*Salsola tragus*) was the second most commonly detected species in 37% of the primary vector blocks and 25% 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.

A similar species, kochia (*Kochia scoparia*) was found in 28% of the primary vector blocks and 50% of the secondary transects. This drought-tolerant annual exotic produces abundant seed that are widely distributed as the spent plant breaks from its roots and blows across the prairie. Kochia is an early successional plant that readily establishes in sites with soil disturbance, outcompeting other native early successionals and responding favorably to increased nitrogen in the soil. It persists in the landscape by developing dense stands and maintaining increased nitrogen levels through annual foliage shedding. Kochia can also increase the fine-fuel load leading to a more intense fire capacity.

SOPN has now completed one full rotation of panels scheduled for SAND (Appendix I). Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.9-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at SAND. The three species mentioned above were also the top three species detected throughout the park. Prickly Russian thistle was found in 54% of the primary vector blocks, kochia in 46% of the blocks and common lambsquarters in 35% of the blocks. Of the 14 exotic species detected during this three year rotation, 10 were found in less than 10% of the primary vector blocks.

Past land use at SAND has impacted the current plant communities and possibly introduced many of the exotics found today. Wind efficiently spreads the seed of many of the worst exotics at SAND. Fire suppression and lack of grazing may result in diminished resilience of the shortgrass prairie to exclude exotic establishment. The presence of CRP land in and around the park, as well as the constant disturbance of prairie dog towns, provide propagule pools for re-infestation of treated areas.

Figure 3.9-1. Individual vector blocks sampled, Panel 3 (north section), Sand Creek Massacre NHS, 2011.

Figure 3.9-2. Individual vector blocks sampled, Panel 3 (south section), Sand Creek Massacre NHS, 2011.

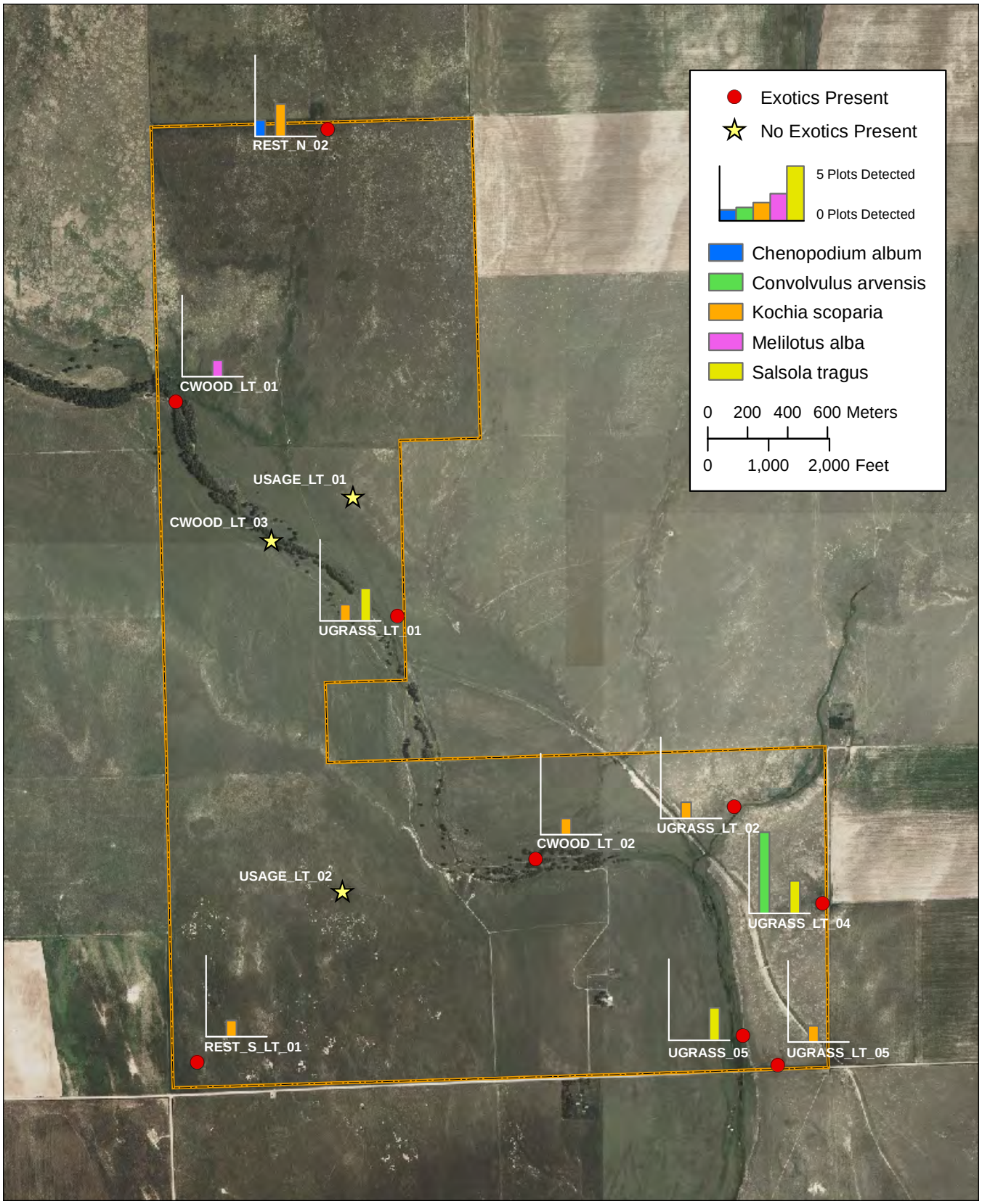
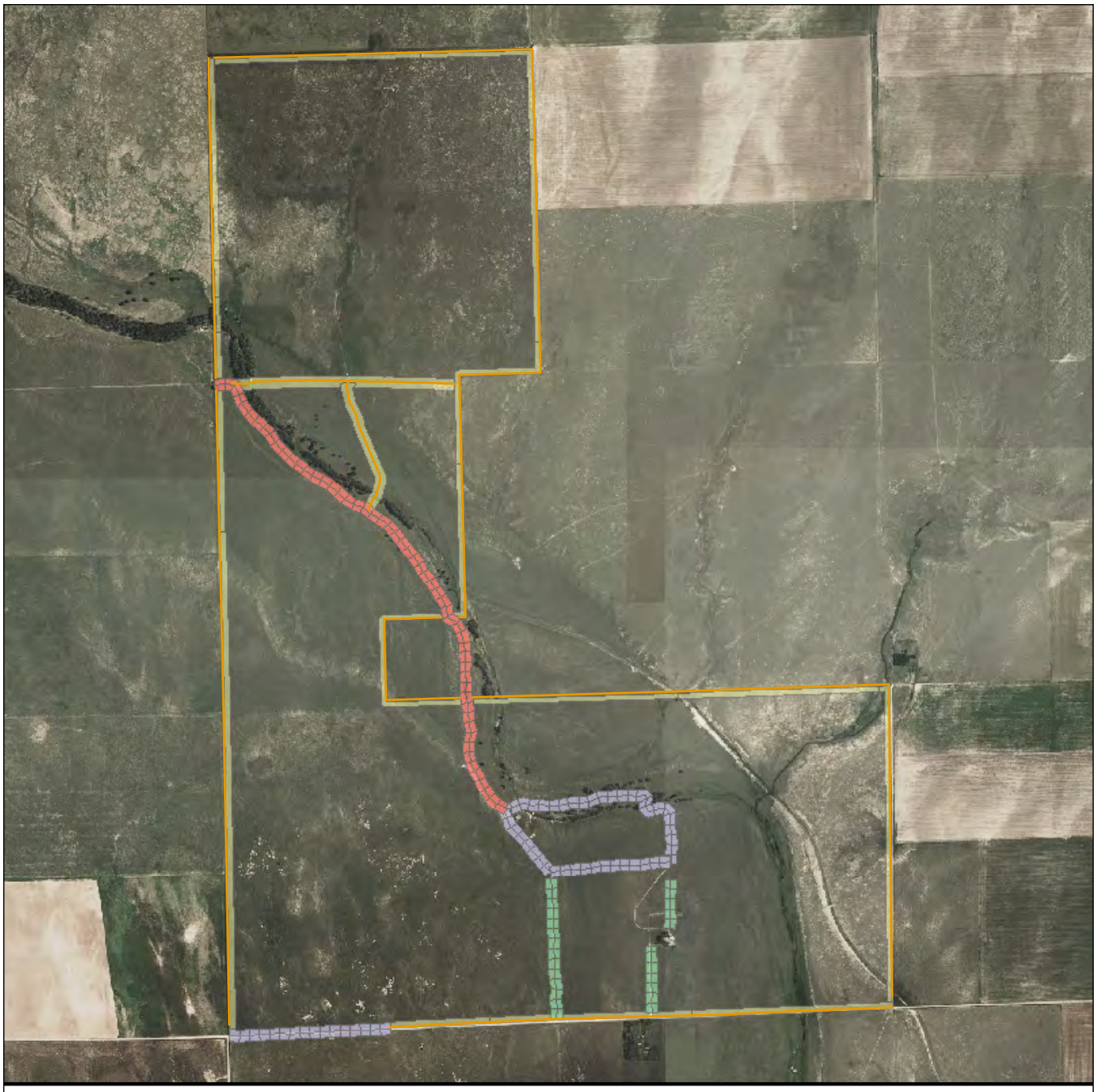


Figure 3.9-3. Secondary sample locations, Sand Creek Massacre NHS, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



Primary Transects
- Panel 1
- Panel 2
- Panel 3

Oversample Transects
- Oversample

Primary Blocks
- Panel 1
- Panel 2
- Panel 3

Oversample Blocks
- Oversample

N

0 500 1,000 Meters

0 1,000 2,000 3,000 Feet

Year	Transect	Length (m)
Panel 1	Low er Monument Road	702
Panel 1	Low er Ranch House Road	247
Panel 1	Upper Ranch House Road	329
Panel 2	Cuttoff Road	597
Panel 2	Low er Monument Road - North	402
Panel 2	County Road	799
Panel 2	Ceremony Road	1245
Panel 3	Momument Road	2755

Figure 3.9-4. Overall planned sampling scheme for panels (annual samples) at Sand Creek Massacre NHS for a full three-year rotation.

Table 3.9-1. Number and percentage of primary and secondary sample units where each species was detected, Sand Creek Massacre NHS, 2011

Scientific name	Common name	Primary sample units (n=122)		Secondary sample units (n=12)	
		Total	% blocks	Total[1]	% transects
Chenopodium album	Common lambsquarters	66	60.00	1	8.33
Salsola tragus	Prickly Russian thistle	41	37.27	3	25.00
Kochia scoparia	Kochia	31	28.18	6	50.00
Cirsium vulgare	Bull thistle	3	2.73	-	-
Tragopogon dubius	Western salsify	2	1.82	-	-
Convolvulus arvensis	Field bindweed	1	0.91	1	8.33
Meilotus officinalis	Yellow sweetclover	1	0.91	1	8.33
Rumex crispus	Curly dock	1	0.91	-	-

[1] The number of individual plots on secondary transects is shown in Figure 3.9-2.

Table 3.9-2. Parkwide detection of exotics during primary monitoring at Sand Creek Massacre NHS for first 3-year panel rotation.

Scientific Name	Common Name	N=52	N=122	N=110	N=284	%
		2009	2010	2011	TOTAL	
Salsola tragus	Prickly Russian thistle	50	62	41	153	53.87
Kochia scoparia	Kochia	6	95	31	132	46.48
Chenopodium album	Common lambsquarters	34	-	66	100	35.21
Tragopogon dubius	Western salsify	10	61	2	73	25.70
Meilotus officinalis	Yellow sweetclover	-	14	1	15	5.28
Buglossoides arvensis	corn gromwell	8	-	-	8	2.82
Melilotus alba	white sweetclover	-	8	-	8	2.82
Setaria viridus	green bristlegrass	8	-	-	8	2.82
Bromus tectorum	cheatgrass	1	2	-	3	1.06
Cirsium vulgare	Bull thistle	-	-	3	3	1.06
Bromus arvensis	field brome	2	-	-	2	0.70
Convolvulus arvensis	Field bindweed	-	-	1	1	0.35
Poa pratensis	Kentucky bluegrass	1	-	-	1	0.35
Rumex crispus	Curly dock	-	-	1	1	0.35

3.10 Washita Battlefield NHS

Overall sampling at Washita Battlefield includes both unpaved roads and trails over its full three-year rotation (Figure 3.10-3). In 2011, exotic plant monitoring occurred at Washita Battlefield in early June. The vector sampled was the entire boundary south of the river. Sixty-seven vector blocks were monitored, for a total of 3.35 linear kilometers sampled on one side only (Figure 3.10-1). In addition, nine permanent transects within the landscape were sampled for a total of 45 2 x 1 meter plots. Fifteen species of exotics were detected with primary and secondary monitoring. There were no exotics detected in only one vector block.

Cheatgrass (*Bromus tectorum*) was the most frequently detected exotic in 2011, appearing in 69% of the primary vector blocks but no secondary transects. This cool-season annual produces dense stands and abundant seed and has the capacity to alter native plant communities through displacement of natives and changes in fire regime. It should be noted that all monitoring in 2011 occurred along park boundary that had received new fencing within the past year. It is possible that this recent disturbance released an existing seedbank of cheatgrass. Care must be taken to prevent this noxious weed to infest the park interior.

Siberian elm (*Ulmus pumila*) was found in 58% of the primary vector blocks and 67% of the secondary transects. This is a fast-growing tree tolerant of a wide range of conditions and soil types. It efficiently competes for resources, produces abundant seed and has the capacity to greatly alter the native plant and animal communities. Siberian elm has been long planted in surrounding areas as a shelter-belt tree.

Johnsongrass (*Sorghum halepense*) was observed in 40% of the 2011 primary vector blocks and 33% of the secondary transects. This is a perennial grass with a strong rhizomatous root system providing the capacity to colonize large areas and is most often found in disturbed and flooded bottomlands. Once established, Johnsongrass persists in the landscape despite eradication efforts, effectively displacing native grasses and forbs.

SOPN has now completed one full rotation of panels scheduled for WABA. Keep in mind that the panels are not annual spatial replications so there is a confounding of space and time. The true test of a temporal effect comes from the repeat of a panel which will come in the future. Re-visits will begin in 2012. Table 3.10-2 contains all exotic species detected during the past three years of primary monitoring, with a cumulative percentage of detections at WABA. Exotic grasses were the top three exotics detected during the past three years. The annuals Japanese brome and cheatgrass were detected in 65% and 54% respectively of the primary vector blocks, while Johnsongrass was found in 61% of the blocks. Of the 24 exotic species observed during this period, 15 were found in < 10% of the vector blocks.

The majority of the land at WABA is reclaimed agricultural field that still contains terracing and the scars of a one-time homestead. The hydrological regime is further altered by an abandoned railroad grade that effectively divides the uplands from the bottomlands across the park. These long-term distubances provide ample microhabitats for the establishment and proliferation of exotic species. The surrounding agricultural lands and shelterbelts provide propagule sources for continuous re-infestation of park lands. The presence of the Washita River enables additional propagules to enter the park from up-stream populations of exotics and the altered flow, due to agricultural draw-downs and impoundments provide ideal conditions for exotic establishment.

CHRIS EVANS, RIVER TO RIVER CWMA, BUGWOOD.ORG

Cheatgrass (*Bromus tectorum*) was the most commonly found exotic species in 2011 at Washita Battlefield NHS.

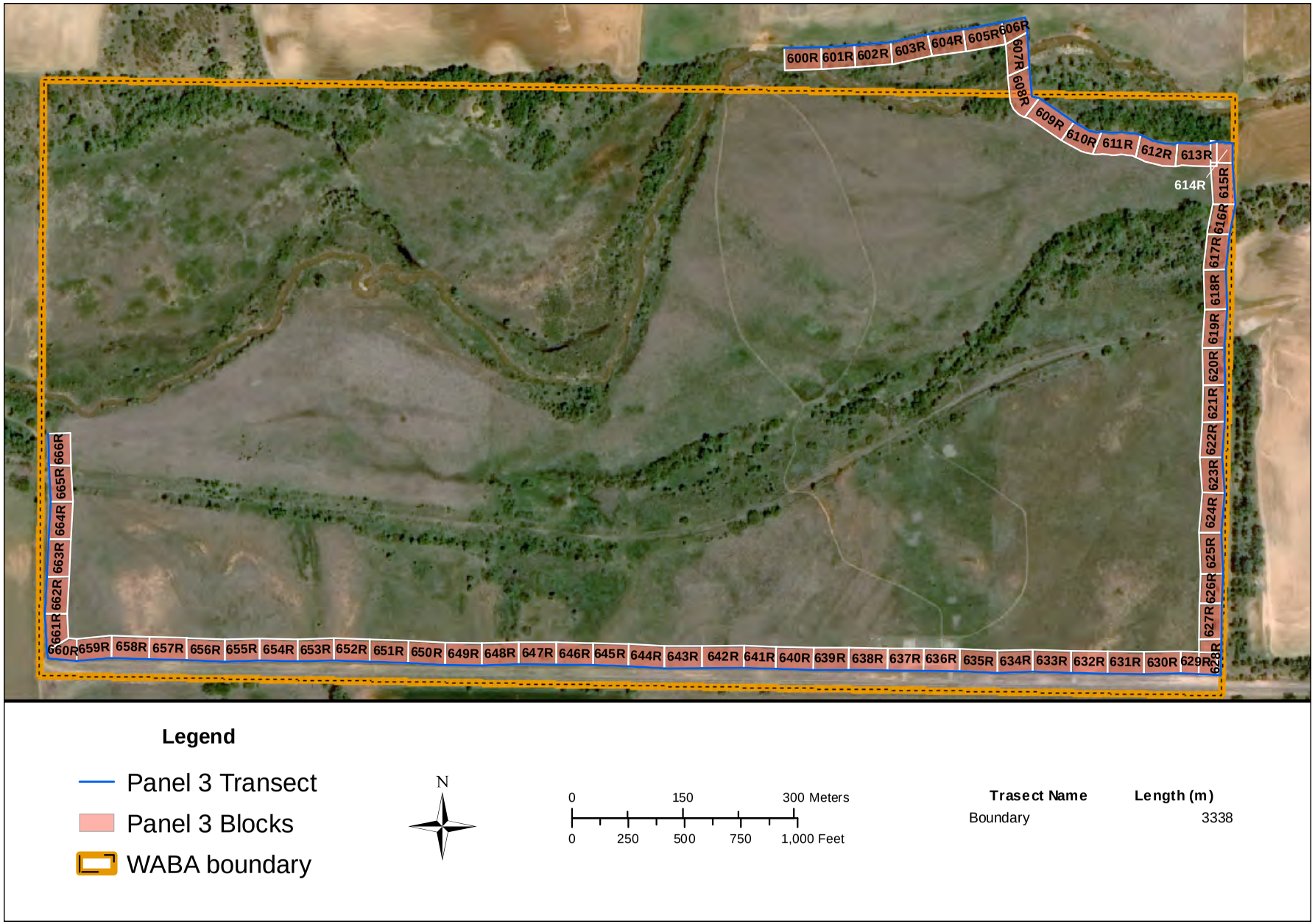


Figure 3.10-1. Individual vector blocks sampled, Panel 3, Washita Battlefield NHS, 2011.

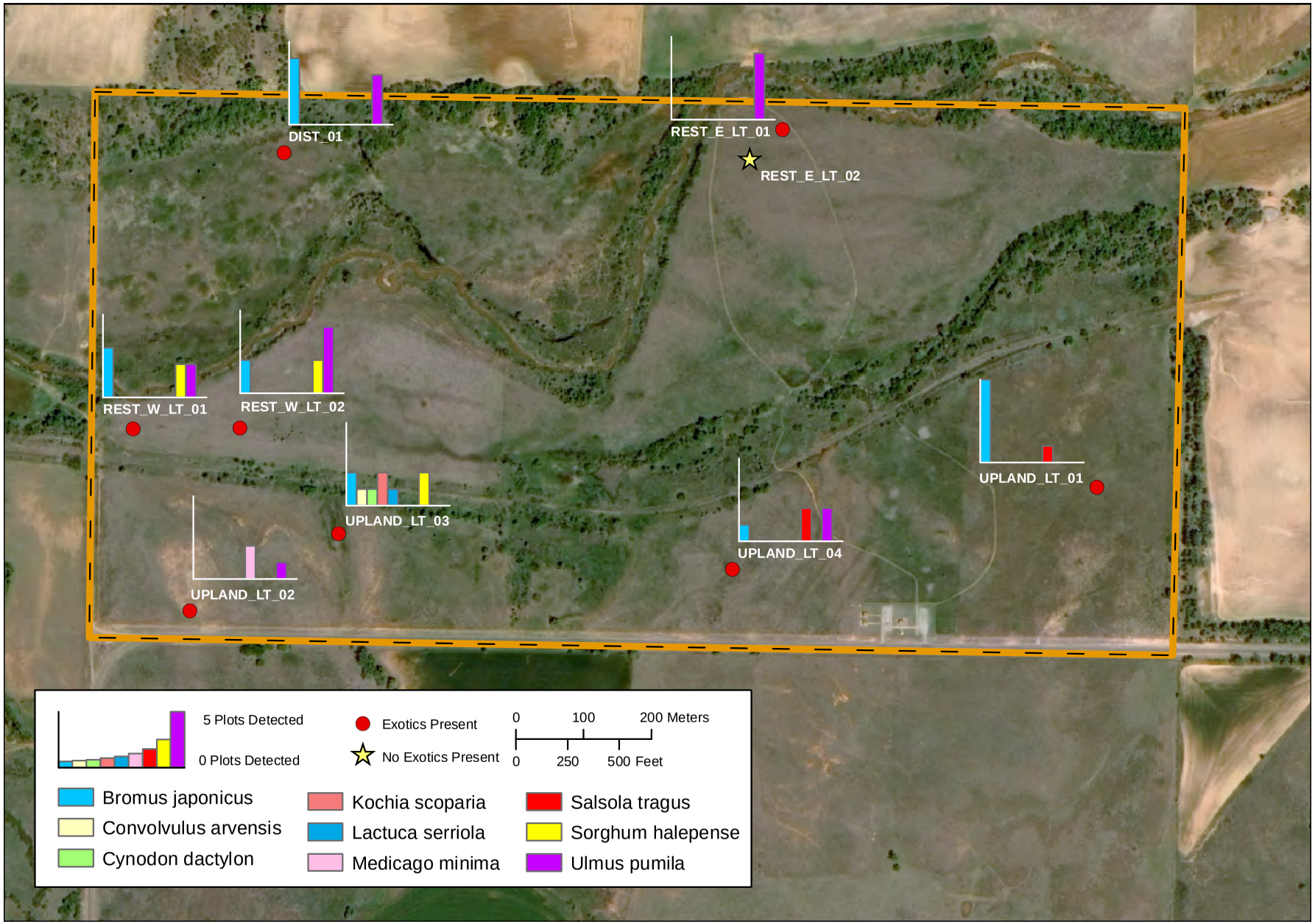
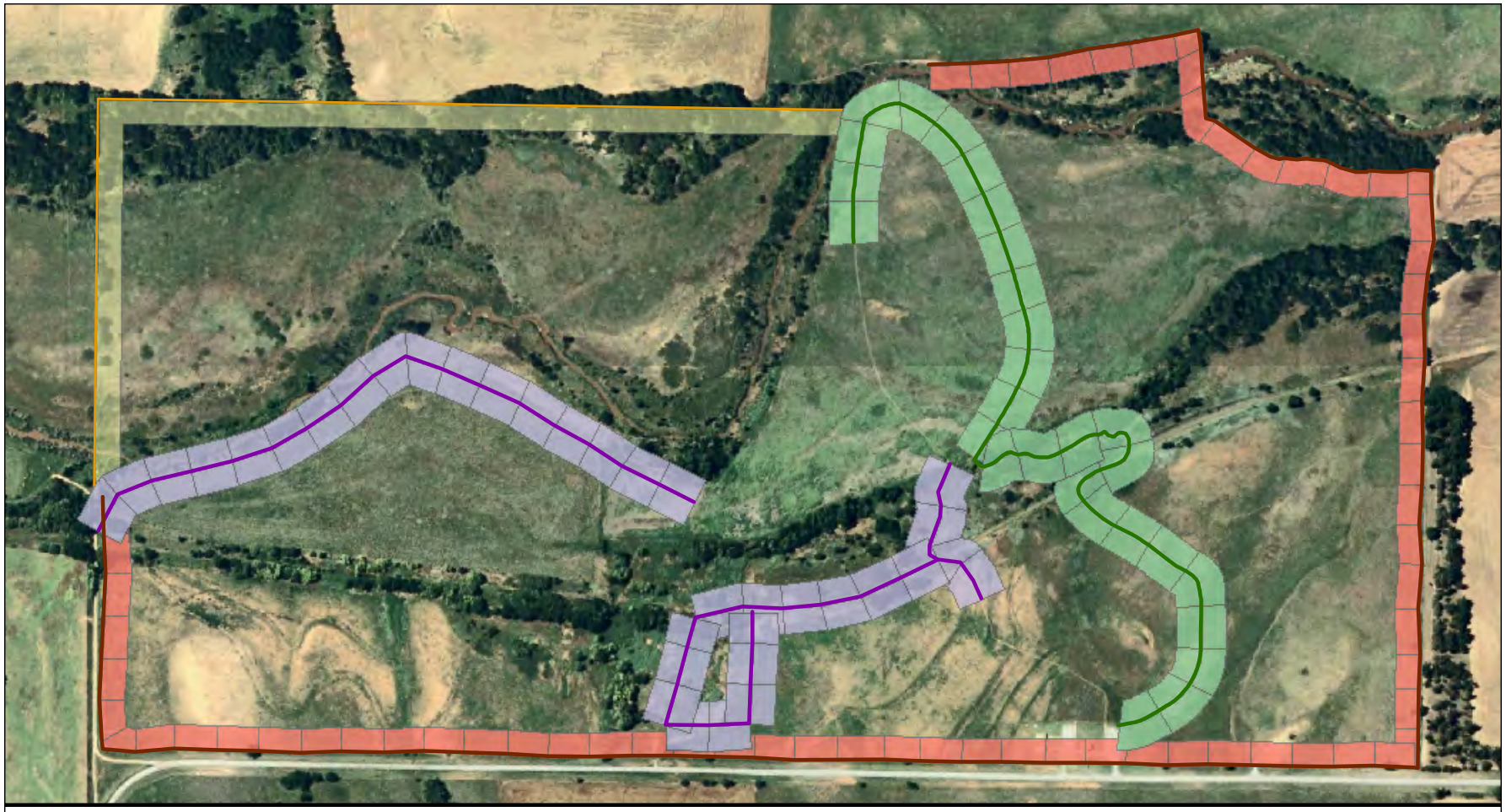


Figure 3.10-2. Secondary sample locations, Washita Battlefield NHS, 2011. Map also shows the invasive species detected, and the number of individual plots (out of five) for each transect where they were detected.



Primary Transects
- Panel 1
- Panel 2
- Panel 3

Oversample Transects
- Oversample

Primary Blocks
- Panel 1
- Panel 2
- Panel 3

Oversample Blocks
- Oversample

N
W E
S

0 100 200 300 Meters
0 250 500 750 1,000 Feet

Year	Transect	Length (m)
Panel 1	North Loop Trail	697
Panel 1	South Loop Trail	719
Panel 2	Dirt Road	831
Panel 2	New Trail	674
Panel 2	South Loop Trail	204
Panel 3	Boundary	3338

Figure 3.10-3. Overall planned sampling scheme for panels (annual samples) at Washita Battlefield NHS for a full three-year rotation.

Table 3.10-1.Number and percentage of primary and secondary sample units where each species was detected, Washita Battlefield NHS, 2011

Scientific name	Common name	Primary sample units (n=67)		Secondary sample units (n=9)	
		Total	% blocks	Total[1]	% transects
Bromus tectorum	Cheatgrass	46	68.66	—	—
Ulmus pumila	Siberian elm	39	58.21	6	66.67
Sorghum halepense	Johnsongrass	27	40.30	3	33.33
Kochia scoparia	Kochia	15	22.39	1	11.11
Bromus japonicus	Japanese brome	12	17.91	6	66.67
Salsola tragus	Prickly Russian thistle	9	13.43	2	22.22
Melilotus alba	White sweetclover	7	10.45	—	—
Cynodon dactylon	Bermuda grass	4	5.97	1	11.11
Meilotus officinalis	Yellow sweetclover	3	4.48	—	—
Erodium cicutarium	Red stem storksbill	2	2.99	—	—
Lolium perenne	Perennial rye	2	2.99	—	—
Tragopogon dubius	Western salsify	2	2.99	—	—
Convolvulus arvensis	Field bindweed	1	1.49	1	11.11
Lactuca serriola	prickly lettuce	—	—	1	11.11
Medicago minima	burr medic clover	—	—	1	11.11
None		1	1.49		

[1] The number of individual plots on secondary transects is shown in Figure 3.10-2.

Table 3.10-2. Parkwide detection of exotics during primary monitoring at Washita Battlefield NHS for first 3-year panel rotation.

Scientific Name	Common Name	N=56	N=70	N=67	N=193	%
		2009	2010	2011	TOTAL	
Bromus japonicus	Japanese brome	46	68	12	126	65.28
Sorghum halepense	Johnsongrass	28	62	27	117	60.62
Bromus tectorum	Cheatgrass	—	58	46	104	53.89
Ulmus pumila	Siberian elm	10	26	39	75	38.86
Kochia scoparia	Kochia	7	47	15	69	35.75
Tragopogon dubius	Western salsify	24	34	2	60	31.09
Melilotus officinalis	Yellow sweetclover	1	38	3	42	21.76
Cirsium vulgare	bull thistle	—	33	—	33	17.10
Sonchus asper	spiny sowthistle	23	—	—	23	11.92
Melilotus alba	White sweetclover	9	—	7	16	8.29
Salsola tragus	Prickly Russian thistle	5	—	9	14	7.25
Euphorbia dentata	David's spurge	1	11	—	12	6.22
Bothriochloa ischaemum	KR bluestem	6	—	—	6	3.11
Cynodon dactylon	Bermuda grass	—	2	4	6	3.11
Medicago minima	burr medic clover	—	6	—	6	3.11
Chenopodium album	common lambsquarters	—	4	—	4	2.07
Tamarix chinensis	saltcedar	1	3	—	4	2.07
Lactuca serriola	prickly lettuce	—	3	—	3	1.55
Lolium perenne	Perennial rye	—	1	2	3	1.55
Rumex crispus	curly dock	3	—	—	3	1.55
Convolvulus arvensis	Field bindweed	1	—	1	2	1.04
Erodium cicutarium	Red stem storksbill	—	—	2	2	1.04
Medicago lupulina	black medic clover	—	1	—	1	0.52
Taraxacum officinale	dandelion	—	1	—	1	0.52

Chapter 4 Discussion

Our monitoring objectives indicate that all SOPN parks will be stratified into high- and low-probability areas for sampling, roughly corresponding to roads, trails, streams, and boundaries (high-probability) and interior areas (low-probability). Exotic species present in the low invasion probability areas have been sampled in conjunction with grassland monitoring. This report encompasses both high- and low-probability invasion areas, although not all low-probability areas were sampled this season.

Specific exotic species differ among the parks as environmental conditions change along the north–south and east–west gradients. While Johnsongrass (*Sorghum halepense*) is a major problem at Chickasaw (easternmost park), it becomes non-existent in the far western reach of the network. Each state produces a noxious weed list, but any particular species may not be considered noxious in all states where it is found. Therefore, a noxious designation is just one of many components to be considered when determining the level of threat posed by a species. Of greater importance is the displacement of native species through the rate of spread and extent of an exotic. Both prickly Russian thistle (*Salsola tragus*) and mullein (*Verbascum thapsus*) are listed as noxious weeds only in Colorado, but they are major invasive components at Capulin Volcano, Fort Union, and Lake Meredith, requiring management consideration.

Each park within the SOPN has its problematic exotic plants, with field bindweed (*Convolvulus arvensis*), Johnsongrass, K.R. bluestem (*Bothriochloa ischaemum*), green bristlegrass (*Setaria viridus*), and prickly Russian thistle found in several parks. Both the greatest variety of exotics and the most established populations occur most frequently within and adjacent to the mowstrips along paved vectors.

2011 was a year of extreme drought over most of the SOPN parks (Figure 4-1). It remains to be seen what effect this will have on the proliferation of exotic species. Many herbaceous exotics detected during previous monitoring were not seen in 2011;

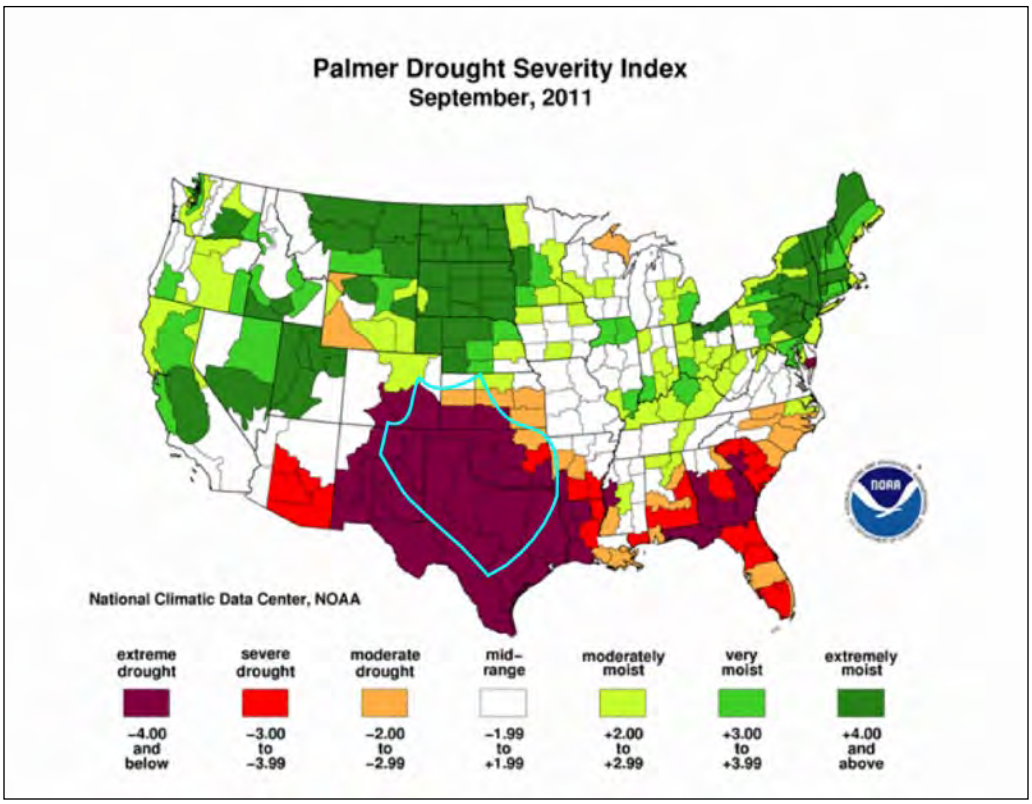


Figure 4-1. Palmer Drought Severity Index map.

it is not known if this was a drought effect or just lack of these populations in the vectors monitored this season. However, prickly Russian thistle, kochia (*Kochia scoparia*), field bindweed and mullein were frequently observed to be the only green in a sea of dormant prairie, all steadily producing abundant seed. This competitive advantage could produce expanded distribution in future years if the drought persists.

The SOPN will continue to monitor the introduction, distribution, and spread of exotics in network parks, and develop a system to rapidly communicate results to parks and the appropriate Exotic Plant Management Teams. In return, it will be important for the SOPN to receive information about management activities relative to specific exotic species, which will help inform future monitoring results.

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Appendix A. Bent's Old Fort NHS Sampling Results

A.1 Panel 3 - June 2011

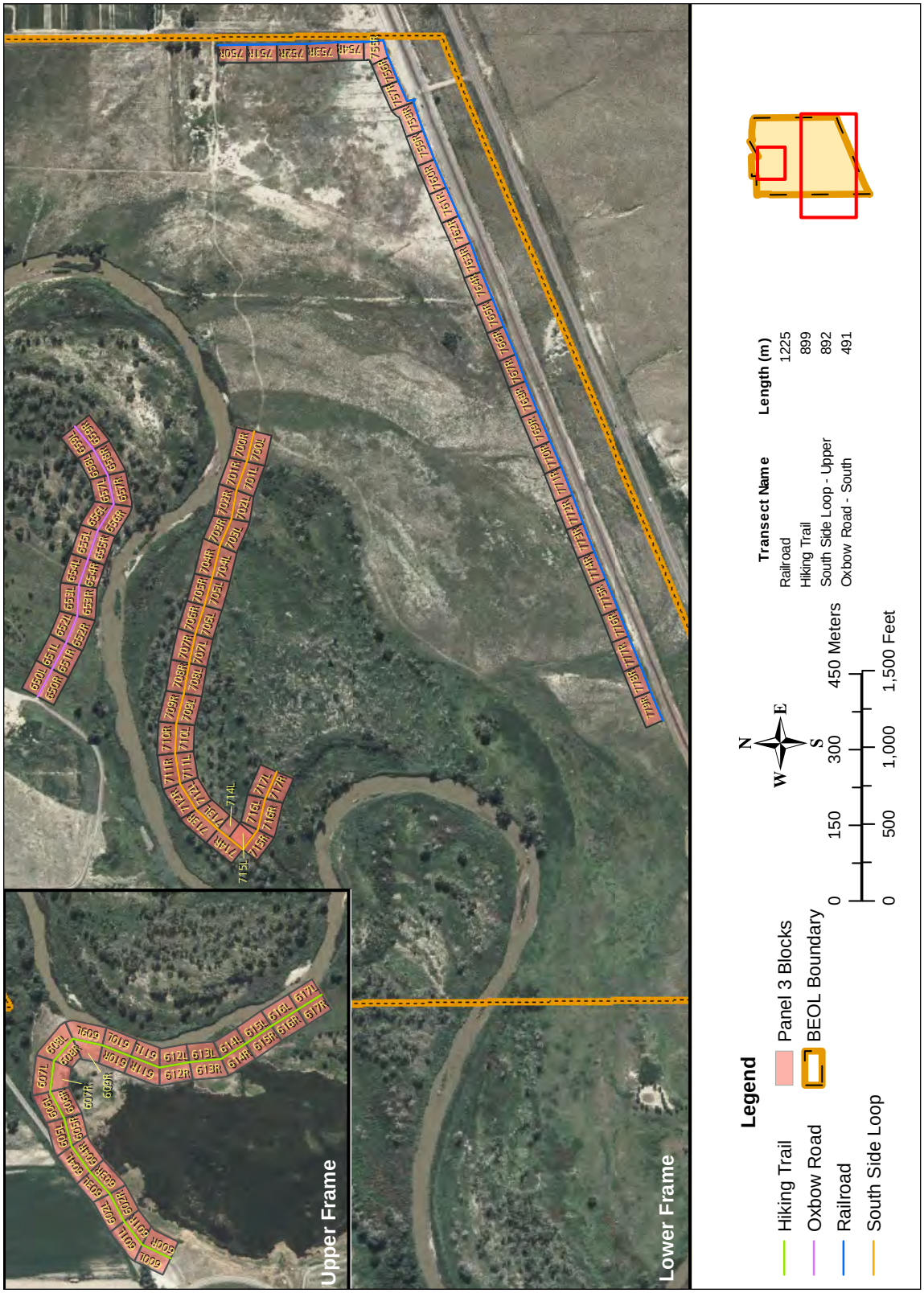


Figure A.1. Individual vector blocks sampled, Panel 3, Bent's Old Fort NHS, 2011.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011.

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Arundo donax	giant reed	L	703	0	0	0	2
		L	704	0	0	0	2
		L	714	0	0	0	2
		R	716	0	2	X	X
		R	717	0	3	X	X
Asparagus officianalis	garden asparagus	L	617	0	2	X	0
		R	617	0	1	0	0
		R	651	0	0	0	1
		R	654	0	2	0	0
		L	655	0	0	1	1
		L	656	0	0	0	1
		L	657	0	1	1	1
		L	658	0	1	0	0
		R	658	1	1	0	0
		L	659	0	1	1	0
		R	659	2	2	0	0
		R	700	0	0	1	X
		L	704	0	1	0	0
		R	704	0	0	2	0
		R	705	0	0	1	0
		L	706	0	1	0	0
		R	706	0	0	0	1
		R	707	0	0	1	0
		L	708	0	1	0	0
		R	709	0	0	1	0
		L	710	0	1	1	2
		R	710	0	0	1	0
		R	711	0	2	2	1
		R	712	0	2	2	0
		R	713	0	0	1	0
		R	714	0	2	2	0
		R	715	0	2	1	0
Bromus inermis	smooth brome	R	603	1	1	0	0
		R	604	0	2	2	0
Bromus tectorum	cheatgrass	L	600	1	0	0	0
		R	602	1	0	0	0
		R	603	1	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	cheatgrass	R	604	2	2	0	0
		R	605	2	2	2	0
		L	615	1	0	0	0
		R	615	2	2	0	0
		R	657	2	0	0	0
Cirsium arvensis	Canada thistle	R	600	0	0	2	0
		R	602	2	2	0	0
		R	603	0	2	0	0
		L	604	2	2	0	0
		R	604	0	1	0	0
		L	605	0	2	2	0
		R	605	0	2	0	0
		R	606	0	2	2	0
		L	608	0	1	0	0
		L	609	0	2	2	0
		R	609	1	1	0	0
		L	610	2	2	X	0
		L	611	2	2	X	0
		L	612	2	2	X	0
		L	613	1	X	X	X
		R	613	2	2	2	0
		L	614	2	2	0	X
		R	614	0	2	2	0
		L	615	2	0	0	0
		L	650	0	2	0	0
Convolvulus arvensis	field bindweed	L	601	2	2	0	0
		L	602	2	2	0	0
		R	602	2	2	0	0
		L	604	2	2	2	0
		L	605	0	2	2	0
		L	606	0	0	0	2
		L	607	2	2	2	2
		R	609	2	2	0	0
		L	611	2	2	X	0
		R	611	2	2	0	0
		L	612	2	0	X	0
		R	612	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis (cont.)	field bindweed	R	613	0	1	0	0
		R	615	1	1	0	0
		R	616	1	1	0	0
		R	617	2	2	0	0
		L	700	1	0	0	0
		R	700	1	1	0	X
		R	750	3	3	3	3
		R	751	3	3	3	3
		R	752	3	3	3	3
		R	753	3	3	3	3
		R	754	2	2	3	2
		R	755	0	2	2	3
		R	756	2	3	2	3
		R	757	2	2	2	3
		R	758	2	2	3	3
		R	759	2	2	3	3
		R	760	2	2	2	3
		R	761	2	2	2	3
		R	762	2	2	2	3
		R	763	2	2	2	2
		R	764	2	2	2	0
		R	765	2	2	2	2
		R	767	2	2	0	0
		R	768	2	2	0	0
Conium maculatum	poison hemlock	R	617	0	2	2	0
Kochia scoparia	kochia	L	600	2	2	2	0
		R	600	2	2	0	0
		L	601	2	2	0	0
		R	601	2	2	2	0
		L	602	2	2	0	0
		R	602	2	2	0	0
		L	603	2	2	2	X
		R	603	2	0	0	0
		L	604	2	2	2	0
		R	604	2	2	0	0
		L	605	2	2	2	0
		R	605	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	kochia	L	606	2	2	2	0
		R	606	2	2	0	0
		L	607	2	2	2	2
		R	607	2	3	X	X
		L	608	2	2	2	2
		R	608	2	2	0	0
		L	609	2	2	0	0
		R	609	2	2	0	0
		L	610	2	X	X	0
		R	610	2	3	0	0
		L	611	2	0	X	0
		R	611	2	2	0	0
		L	612	2	2	X	0
		R	612	2	2	0	0
		L	613	2	X	X	X
		R	613	2	2	0	0
		L	614	2	2	0	X
		R	614	2	2	0	0
		L	615	2	0	0	0
		R	615	2	2	0	0
		R	616	2	2	0	0
		L	617	2	0	X	0
		R	617	2	2	0	0
		L	650	2	2	2	0
		R	650	2	2	0	0
		L	651	0	2	2	0
		R	651	2	2	0	0
		L	652	2	2	2	0
		R	652	2	2	0	0
		L	653	2	2	0	0
		R	653	2	2	0	0
		L	654	2	2	2	0
		R	654	2	2	0	0
		L	655	2	2	0	0
		R	655	2	2	2	0
		L	657	0	2	0	0
		R	657	0	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	kochia	L	658	2	0	0	0
		R	658	2	2	2	2
		L	659	0	2	0	0
		R	700	2	0	0	X
		L	702	2	0	0	0
		R	702	2	2	2	0
		L	703	2	3	3	3
		R	703	2	2	0	X
		L	704	0	0	3	3
		L	705	0	0	0	3
		L	706	2	0	0	3
		R	706	2	2	0	0
		L	708	0	0	0	3
		L	709	0	0	0	3
		L	710	0	0	0	3
		L	711	0	0	0	3
		R	711	0	2	0	0
		L	712	0	0	0	3
		L	713	0	0	0	3
		L	716	2	0	0	0
		R	716	2	2	X	X
		R	765	2	0	0	0
		R	766	1	1	0	0
		R	767	2	0	0	0
		R	768	2	2	0	0
		R	769	2	2	0	0
		R	770	2	1	0	0
		R	771	2	0	0	0
		R	772	1	0	0	0
		R	773	2	0	0	0
		R	775	1	0	0	0
		R	776	1	1	0	0
Lactuca serriola	prickly lettuce	R	603	1	0	0	0
		R	605	0	1	0	0
		R	613	0	1	0	0
		R	614	0	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Melilotus alba	white sweetclover	R	657	0	2	0	0
		L	658	0	1	0	0
		R	658	1	1	0	0
		L	659	0	1	0	0
		R	659	2	0	0	0
NONE	no exotics found	L	715	0	0	0	0
		R	774	0	0	0	0
		R	777	0	0	0	0
		R	778	0	0	0	0
Rumex crispus	curly dock	L	600	0	2	0	0
		L	602	0	2	0	0
		L	604	0	0	0	2
		L	605	0	0	0	2
		L	607	0	0	0	0
		R	607	0	2	X	X
		L	610	2	2	X	0
Salsola tragus	prickly Russian thistle	R	601	1	0	0	0
		R	604	1	0	0	0
		L	614	2	0	0	X
		R	614	1	0	0	0
		R	615	1	0	0	0
		L	654	1	0	0	0
		L	655	2	0	0	0
		R	655	2	0	0	0
		L	656	2	2	0	0
		L	657	2	2	0	0
		L	658	2	2	0	0
		L	659	0	2	0	0
		R	659	2	2	0	0
		R	711	0	1	0	0
		R	766	1	0	0	0
		R	768	1	0	0	0
		R	769	1	0	0	0
		R	770	1	0	0	0
		R	779	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense	Johnsongrass	L	600	0	2	0	0
		L	602	0	2	2	0
		L	603	0	2	2	X
		L	604	2	2	2	0
		R	604	0	2	0	0
		L	605	0	2	2	0
		R	605	0	2	0	0
Tamarisk chinensis	saltcedar	R	703	0	1	0	X
		L	704	0	0	0	1
		L	705	0	0	0	2
		L	706	0	0	0	1
		R	706	0	1	0	0
		L	710	0	0	0	2
		R	710	0	0	1	0
		L	713	0	0	0	2
		R	713	0	0	2	2
		L	717	0	0	0	1
		R	763	0	0	0	1
Taraxacum ofiicinale	dandelion	R	603	0	1	0	0
Thinopyrum ponticum	rush wheatgrass	L	707	2	0	0	0
		R	707	0	1	0	0
		L	708	2	2	0	0
		R	708	0	2	0	0
Tragopogon dubius	western salsify	L	600	2	2	0	0
		R	604	1	0	0	0
Tribulus terrestris	puncturevine	L	655	1	0	0	0
		R	713	1	0	0	0
		L	714	2	0	0	0
		R	714	2	2	0	0
		R	715	2	2	0	0
Typha angustifolia	narrowleaf cattail	R	600	0	0	3	4
		R	601	0	0	3	4
		R	602	0	0	4	4
		R	603	0	3	4	4
		R	604	0	3	4	4
		R	605	0	3	4	4
		R	606	0	3	4	4

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table A-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Typha angustifolia (cont.)	narrowleaf cattail	L	607	0	0	0	2
		L	608	0	0	0	2
		R	608	0	3	4	4
		L	609	0	2	0	2
		R	609	3	4	4	4
		L	610	2	2	X	0
		R	610	0	3	4	4
		R	611	0	3	4	4
		L	612	0	2	X	0
		R	612	0	3	4	4
		R	613	0	3	4	4
		L	614	2	0	0	X
		R	614	0	3	4	4
		R	615	0	0	4	4
		L	616	0	2	X	2
		R	616	0	0	0	4
		R	617	0	0	0	4
		L	650	0	0	0	4
		L	614	0	1	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

A.2 Panel 2 - June 2010

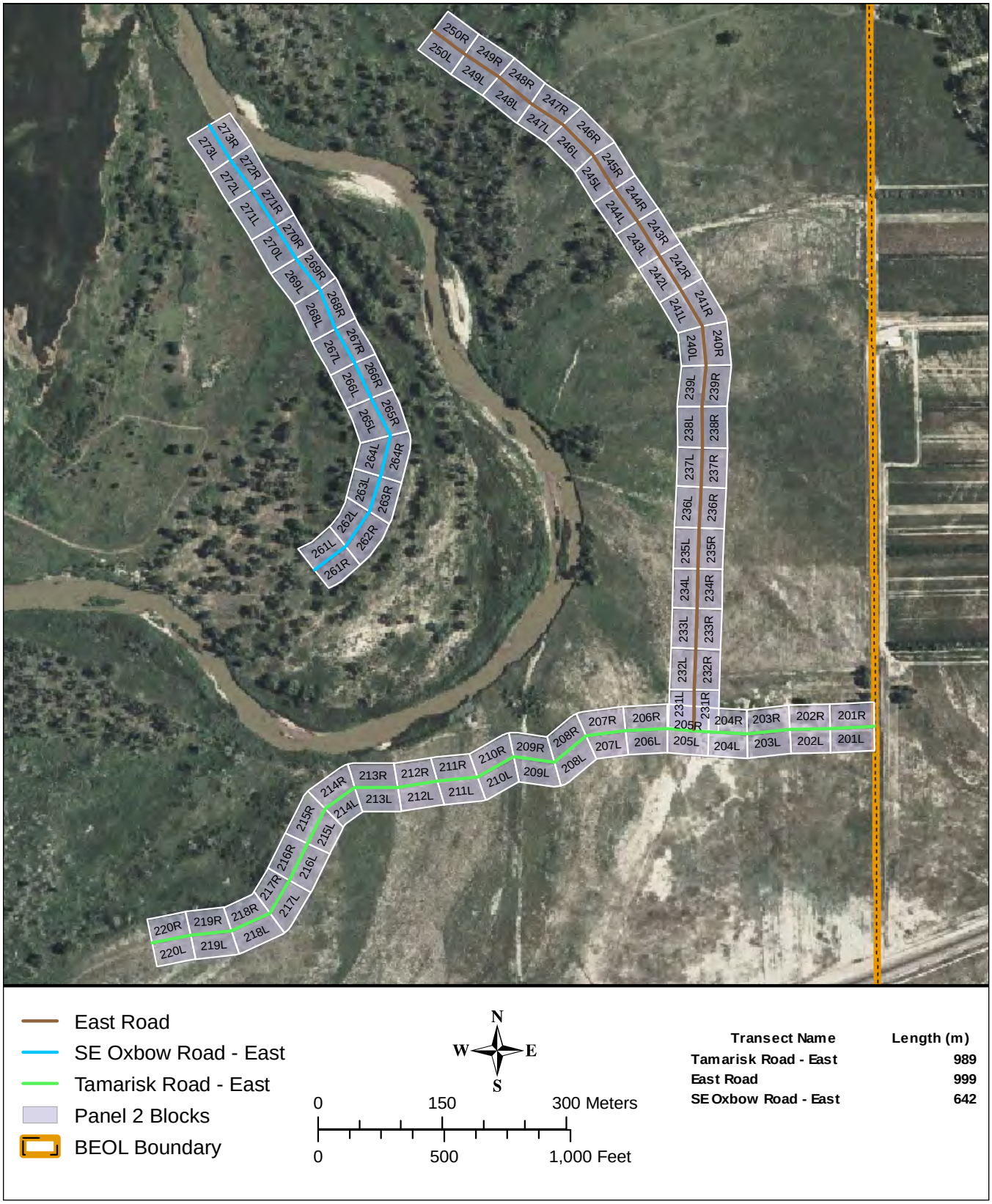


Figure A.2. Individual vector blocks sampled, Panel 2, Bent's Old Fort NHS, 2010.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Amaranthus retroflexus	Red-root pigweed	L	237	0	1	0	0
		R	237	1	1–2	0	0
		L	238	0	1	0	0
		R	238	2	1	0	0
		L	247	0	1	0	0
		R	249	0	0	1	0
		R	250	0	1	0	0
		R	272	0	1	–	–
Asparagus officinalis	Garden asparagus	L	261	0	1	1	0
		R	261	0	2	1	0
		L	262	0	1	1	0
		R	262	1	2	0	0
		L	263	0	1	1	0
		R	263	0	2	0	0
		L	264	0	0	2	0
		R	264	1	2	0	0
		L	265	0	1	1	0
		R	265	0	1	0	0
		L	266	0	1	2	2
		R	266	0	2	0	0
		L	267	0	1	0	0
		R	267	0	1	0	0
		L	268	0	1	0	0
		R	268	0	1	–	–
		R	269	0	1	–	–
		R	270	0	1	0	–
		L	273	0	1	0	0
Bromus arvensis	Field brome	L	237	0	2	3	3
		R	237	2	2	0	0
		L	238	0	2	3	3
		R	238	2	2	2	0
		L	239	0	2	3	3
		R	239	0	2	0	0
		L	241	0	1	0	0
		R	244	0	1	0	0
		L	245	0	2	0	0
		R	245	0	2	2	0
		L	246	0	2	0	0
Bromus tectorum	Cheatgrass	L	205	0	1	0	0
		L	209	0	2	2	0
		R	237	2	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	Cheatgrass	R	238	0	2	2	0
		L	246	0	2	0	0
		R	248	1	0	0	0
		L	261	0	2	2	0
		R	261	2	2	2	2
		R	262	2	2	2	2
		L	263	0	2	0	0
		R	263	0	2	2	2
		L	264	0	1	0	0
		R	264	2	2	2	0
		R	265	2	2	0	0
		L	266	2	2	0	0
		R	266	2	2	1–2	0
		L	267	0	2	2	0
		R	267	2	2	0	0
		R	268	2	2	–	–
		R	269	2	0	–	–
		L	271	2	2	0	0
		R	271	2	1–2	–	–
Chenopodium album	Common lambsquarters	R	239	1	0	0	0
		L	241	0	1	0	0
		L	242	0	1	0	0
		L	248	0	1	0	0
		R	248	0	1	0	0
		R	249	0	1	1	0
		L	264	0	1	0	0
		R	273	0	1–2	–	–
Cirsium arvense	Canada thistle	R	214	0	1–2	0	0
		R	238	0	1	0	0
Convolvulus arvensis	Field bindweed	L	201	3	3	3	3
		R	201	3–4	3–4	3–4	3–4
		L	202	2	3	3	3
		R	202	3	3	3	3
		L	203	3	3	3	3
		R	203	3	3	3	3
		L	204	3	3	3	3
		R	204	3	3	3	3
		L	205	3	3	3	3
		R	205	3	3	3	3
		L	206	3	3	3	3
		R	206	2	2–3	2	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis (cont.)	Field bindweed	L	207	2	3	3	3
		R	207	2	2	0	0
		L	208	3	3	3	3
		R	208	2	2	2	0
		L	209	2	0	3	3
		R	209	2	2	0	0
		L	213	2	2	2	0
		R	213	2	2	2	0
		L	214	2	2	2	0
		R	214	2	2	0	0
		L	215	0	2	2	0
		R	215	0	1–2	0	0
		L	216	2	2	2	0
		R	216	2	2	0	0
		L	217	2	2	2	0
		R	217	2	2	–	–
		L	218	2	2	0	0
		R	218	1–2	0	0	–
		L	219	2	2	2	0
		R	219	2	1	–	–
		R	220	1	0	0	0
		L	231	2	2	2	0
		R	231	3	3	3–4	3
		L	232	2	2	2	0
		R	232	3	3	3	3
		L	233	2	2	0	0
		R	233	3	3	3	3
		L	234	2	2	2	0
		R	234	3	3	3	3
		L	235	2	2	2	0
		R	235	3	3	3	3
		L	236	2	2	2	0
		R	236	3	3	3	3
		L	237	2	2	0	0
		R	237	3	2–3	2	3
		L	238	2	2	2	0
		R	238	2	2	2	0
		L	239	2	2	0	0
		R	239	2	2	2	2
		L	240	2	2	0	0
		R	240	3	2	2	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis (cont.)	Field bindweed	L	241	2	0	0	0
		R	241	2	2–3	3	3
		R	242	0	0	2	0
		L	243	0	1	0	0
		L	245	2	2	0	0
		R	245	1	2	0	0
		L	246	1	2	0	0
		R	246	1	0	0	0
		R	247	1	1	0	0
		L	249	2	1	0	0
		R	249	0	1–2	0	0
		L	250	1	2	0	0
		R	250	1–2	1	0	0
Euphorbia dentata	Toothed spurge	L	201	0	1	0	0
		R	201	1	1–2	0	0
		L	205	0	2	2	0
		R	205	1	0	0	0
		L	206	2	2	2	0
		R	206	1	1	0	0
		L	207	0	1	1	0
		L	208	0	2	2	0
		L	209	0	1	0	0
		L	210	0	1	0	0
Kochia scoparia	Kochia	L	214	0	1	0	0
		R	214	0	1	0	0
		L	216	0	1	0	0
		L	219	0	2	0	0
		R	219	1	2	–	–
		L	220	0	2	2	0
		R	220	0	2	0	0
		L	237	0	2	0	0
		R	237	1	2	1	0
		R	241	0	1	1	0
		L	242	0	0	1	0
		L	243	0	1	1	0
		R	243	1–2	2	2	0
		L	244	0	2	0	–
		R	244	2	2–3	2	0
		R	245	0	2	0	0
		L	246	0	2	0	0
		R	246	0	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	L	247	0	1	0	0
		R	247	0	1–2	0	0
		R	248	0	1	1–2	0
		R	249	1	2	0	0
		L	250	0	1	0	0
		R	250	1–2	2	0	0
		R	261	1	1	0	0
		R	262	1	1	0	0
		R	267	1	0	0	0
Melilotus alba	White sweetclover	R	208	0	1	0	0
		R	211	1	2	0	0
		L	237	0	2	3	0
		R	237	1–2	1	1	0
		L	238	0	3	3	3
		R	238	0	2	2	1
		L	239	0	2	2	0
		R	239	2	2	2	1
		L	242	0	0	2	0
		L	243	0	2	3	3
		R	243	0	1	0	0
		L	244	0	2	2	–
		R	244	1	1	2	0
		L	245	0	2	2	0
		R	245	0	2	2	2
		R	246	0	2	2	0
		L	250	0	1	0	0
		L	261	0	1	0	0
		R	261	0	2	0	0
		L	262	0	2	0	0
		R	262	0	2	0	2
		L	263	0	2	0	0
		R	263	0	0	0	2
		L	265	0	0	1	0
		R	266	0	0	1	0
		L	269	0	1	0	0
		L	270	0	2	3	3
		L	271	0	2	3	3
		L	272	0	2	2	0
		L	273	0	2	3	3
Melilotus officinalis	Yellow sweetclover	L	237	0	2	2	0
		R	237	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus officinalis (cont.)	Yellow sweetclover	L	238	0	2	2	0
		R	238	1	0	0	0
		L	239	0	2	2	0
		R	239	1	1	0	0
		L	242	0	0	2	0
		L	243	1	0	0	0
		R	243	1	0	0	0
		L	245	0	0	1	0
		L	246	0	1	0	0
		R	246	0	1	0	0
		L	272	0	2	3	3
		L	273	0	2	2	0
Salsola tragus	Prickly Russian thistle	R	202	1	0	0	0
		L	204	1	1	0	0
		R	204	1	0	0	0
		L	206	1	1	0	0
		R	206	2	2	1	0
		L	207	1	1	0	0
		R	207	1	0	0	0
		L	208	1	1	0	0
		R	208	1	0	0	0
		L	209	1	1	0	0
		R	209	2	1	0	0
		L	210	1	1	0	0
		R	210	2	1	0	0
		L	211	1	1	0	0
		R	211	2	1	0	0
		L	212	2	2	0	0
		R	212	2	0	0	0
		L	213	2	2	0	0
		R	213	2	0	0	0
		L	214	2	2	0	0
		R	214	1–2	0	0	0
		L	215	2	2	0	0
		R	215	2	1	0	0
		R	217	1	0	–	–
		L	218	2	2	0	0
		R	218	1	0	0	–
		R	219	1	0	–	–
		L	220	2	2	0	0
		R	220	1–2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	Prickly Russian thistle	L	235	0	2	0	0
		R	235	0	1	0	0
		L	236	0	2	2	0
		R	236	1	1	0	0
		L	237	0	2	0	0
		R	237	0	1–2	0	0
		R	238	0	2	2	0
		R	239	0	1	0	0
		L	240	1	1	0	0
		R	240	1–2	1	0	0
		L	241	2	2	0	0
		R	241	2–3	2	0	0
		L	242	2	2	0	0
		R	242	2	2	0	0
		L	243	2	2	0	0
		R	245	0	1	0	0
		R	246	1	0	0	0
		L	247	2	2	2	0
		R	247	0	1	0	0
		L	248	0	2	3	3
		R	248	0	1	0	0
		L	249	0	2	3	3
		R	249	0	1	0	0
		L	250	0	2	3	3
		L	261	1	1	0	0
		L	262	0	1	0	0
		R	264	1	0	0	0
		R	270	0	1	0	–
Thinopyrum ponticum	Rush wheatgrass	L	213	0	2	2	0
		R	213	1	1	0	0
		L	214	0	1	1	0
		L	216	0	0	1	0
		L	239	0	0	1	1
		R	239	1	2	2	1
		R	243	0	1	0	0
		R	246	0	1	0	0
		L	211	0	1	1	0
		L	212	0	1	0	0
		R	212	0	1	0	0
		R	213	0	1	0	0
		L	214	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	R	214	0	1	0	0
		L	215	0	1	0	0
		L	216	0	1	0	0
		L	217	0	1	1	0
		L	219	0	1	1	0
		L	220	0	1	0	0
		L	237	0	1	0	0
		L	238	0	1	0	0
		R	238	1	1	0	0
		L	239	0	1	0	0
		R	239	1–2	0	0	0
		L	242	0	1	0	0
		R	242	0	1	0	0
		L	243	0	1	0	0
		R	243	1	1	0	0
		L	244	0	2	0	–
		R	244	2	2	2	0
		L	245	0	2	0	0
		R	245	1	2	1	0
		L	246	0	2	0	0
		R	246	1	1	0	0
		L	247	0	2	1	0
		R	262	0	1	0	0
		R	263	0	1	0	0
		L	268	0	1	0	0
		R	268	1	0	–	–
		L	270	0	2	2	0
		L	271	0	2	2	0
		R	271	0	1	–	–
		L	272	1	0	0	0
		L	273	0	1	1	0
		R	273	0	1	–	–
Tribulus terrestris	Puncturevine	L	201	2	0	0	0
		R	201	2	0	0	0
		R	202	1	0	0	0
		L	204	1	0	0	0
		R	204	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

A.3 Panel 1 - July 2009

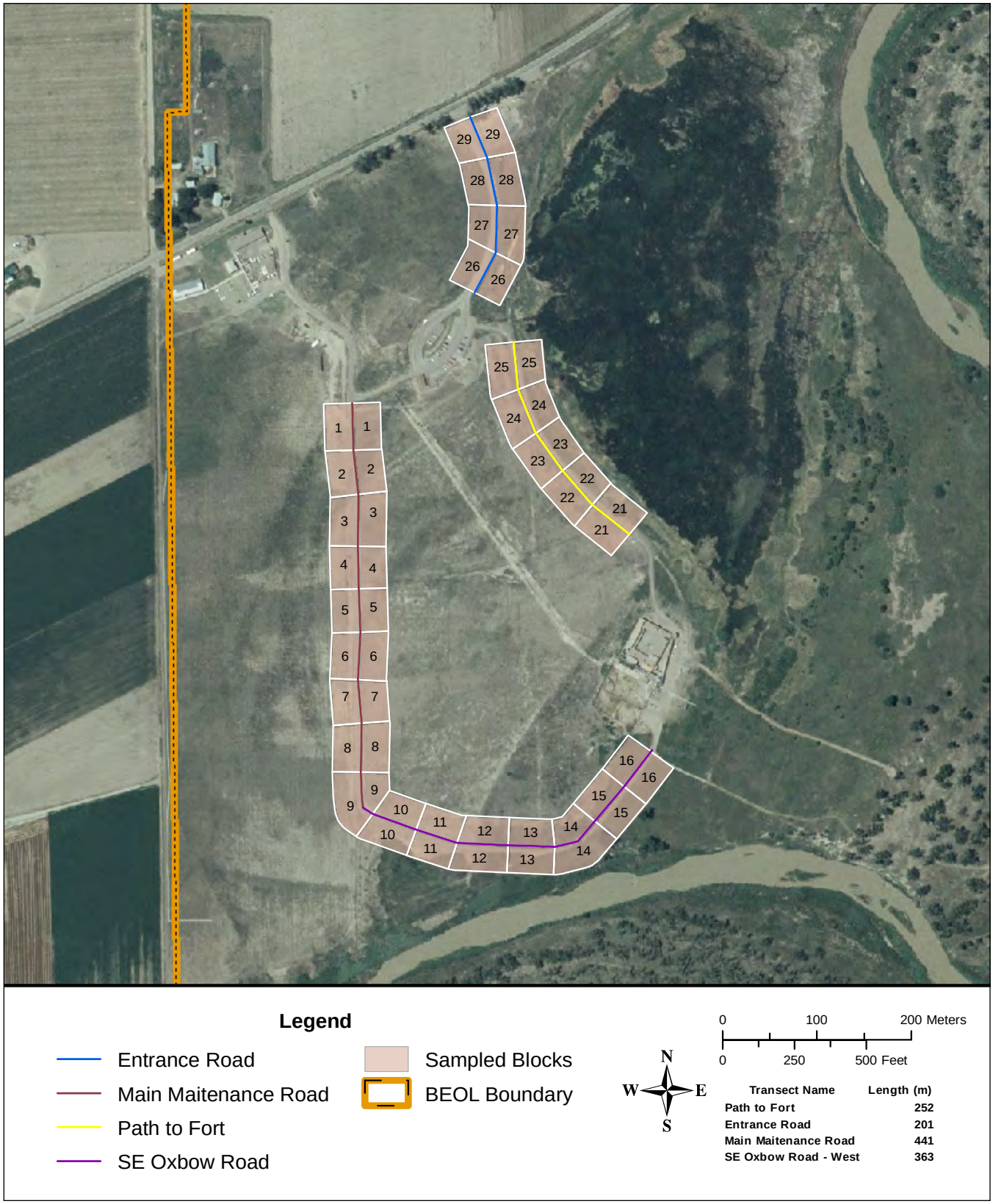


Figure A.3. Individual vector blocks sampled, Panel 1, Bent's Old Fort NHS, 2009.

Table A-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Amaranthus retroflexus	redroot pigweed	R	28	2	0	0	0
		L	29	1	0	0	0
Bromus arvensis	field brome	L	2	0	2	0	0
		R	2	2	0	0	0
		L	3	1	1	0	0
		R	3	2	0	0	0
		L	4	1	1	0	0
		L	6	0	2	0	0
		R	6	2	2	0	0
		R	7	3	3	0	0
		R	9	2	0	0	0
		R	13	2	0	–	–
		L	16	0	2	0	0
		R	21	0	2	0	0
		L	22	0	3	2	0
		R	22	0	3	0	0
		L	23	0	3	3	0
		R	23	0	2	0	0
		L	24	0	3	3	0
		R	24	0	2	0	0
		L	25	0	3	3	0
		L	26	0	3	3	0
		R	26	2	3	–	0
		L	27	0	3	0	0
		R	27	3	3	0	0
		R	28	3	3	0	0
Cirsium arvense	Canadian thistle	R	10	0	1	1	0
		R	22	0	2	0	0
		R	23	0	2	0	0
		R	24	0	3	0	0
		R	25	0	2	0	0
		R	26	0	1	–	0
		R	27	2	2	0	0
Convolvulus arvensis	field bindweed	L	1	1	1	0	0
		R	1	2	0	0	0
		L	2	1	1	0	0
		R	2	2	0	0	0
		R	3	2	0	0	0
		R	4	1	0	0	0
		R	5	2	0	0	0
		R	6	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis, cont.	field bindweed	R	9	0	1	0	0
		L	11	2	0	0	0
		R	11	2	0	0	0
		L	12	2	1	0	0
		R	12	3	3	–	–
		L	13	3	0	0	0
		R	13	3	3	–	–
		L	14	2	3	0	0
		R	14	3	3	0	–
		L	15	2	2	0	0
		L	16	1	0	0	0
		R	21	0	2	0	0
		R	22	2	3	0	0
		R	23	2	3	0	0
		R	24	2	3	0	0
		R	25	2	3	0	0
		L	26	1	2	2	0
		R	26	2	3	–	0
		L	27	0	3	0	0
		R	27	3	3	0	0
		L	28	0	2	0	0
		R	28	3	3	0	0
		L	29	0	2	2	0
Eupatorium dentata	toothed spurge	R	23	0	1	0	0
		L	26	0	1	0	0
		R	26	0	1	–	0
		R	27	0	1	0	0
Kochia scoparia	kochia	L	1	3	0	0	0
		R	1	3	3	2	0
		L	2	1	1	0	0
		R	2	3	3	0	0
		L	3	2	0	0	0
		R	3	3	3	0	0
		L	4	2	0	0	0
		R	4	3	3	0	0
		L	5	1	0	0	0
		R	5	3	2	0	0
		L	6	1	0	0	0
		R	6	3	3	0	0
		L	7	1	0	0	0
		R	7	3	3	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia, cont.	kochia	L	8	2	0	0	0
		R	8	3	3	0	0
		L	9	3	2	0	0
		R	9	3	3	3	0
		L	10	3	2	0	0
		R	10	3	3	2	0
		L	11	2	0	0	0
		R	11	0	3	0	0
		L	12	2	1	3	0
		R	12	2	0	–	–
		L	13	2	0	0	0
		R	13	3	2	–	–
		L	14	2	4	4	0
		R	14	3	2	2	–
		L	15	2	4	4	4
		R	15	3	0	2	–
		L	16	2	0	3	4
		R	16	2	0	0	0
		L	21	2	1	0	0
		R	21	2	2	0	0
		L	22	2	2	1	0
		R	22	0	2	0	0
		L	23	2	0	0	0
		R	23	0	2	0	0
		L	24	3	0	0	0
		R	24	2	3	0	0
		L	25	3	2	0	0
		R	25	3	3	0	0
		L	26	0	2	3	3
		R	26	2	3	–	0
		L	27	1	2	3	0
		R	27	2	3	0	0
		L	28	2	2	0	0
		R	28	3	2	0	0
		L	29	2	3	3	0
Lactuca serriola	prickly lettuce	R	13	0	1	–	–
		R	22	2	2	0	0
		R	23	2	0	0	0
		R	24	0	2	0	0
		R	26	1	0	–	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table A-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Bent's Old Fort NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus alba	white sweetclover	R	11	0	1	0	0
		R	12	0	1	–	–
Rumex crispus	curly dock	R	11	0	2	0	0
Salsola tragus	prickly Russian thistle	R	3	1	0	0	0
		L	6	2	0	0	0
		L	7	1	0	0	0
		R	7	1	0	0	0
		L	8	2	0	0	0
		R	10	2	2	0	0
		L	11	2	0	0	0
		R	11	2	2	0	0
		R	12	2	2	–	–
		R	21	0	2	0	0
		R	22	0	2	0	0
Setaria viridis	green bristlegrass	R	1	0	2	0	0
		R	27	1	0	0	0
Tragopogon dubius	western salsify	R	12	0	1	–	–
		R	21	0	1	0	0
		R	26	0	1	–	0
Typha angustifolia	narrowleaf cattail	R	10	0	0	4	0
		R	11	0	0	4	0
		R	21	0	0	3	4
		R	22	0	0	3	4
		R	23	0	0	3	4
		R	24	0	0	3	4
		R	25	0	3	4	4
		R	26	0	0	–	3
		R	27	0	0	4	4
		R	28	0	0	4	4

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix B. Capulin Volcano NM Sampling Results

B.1 Panel 3 - July 2011

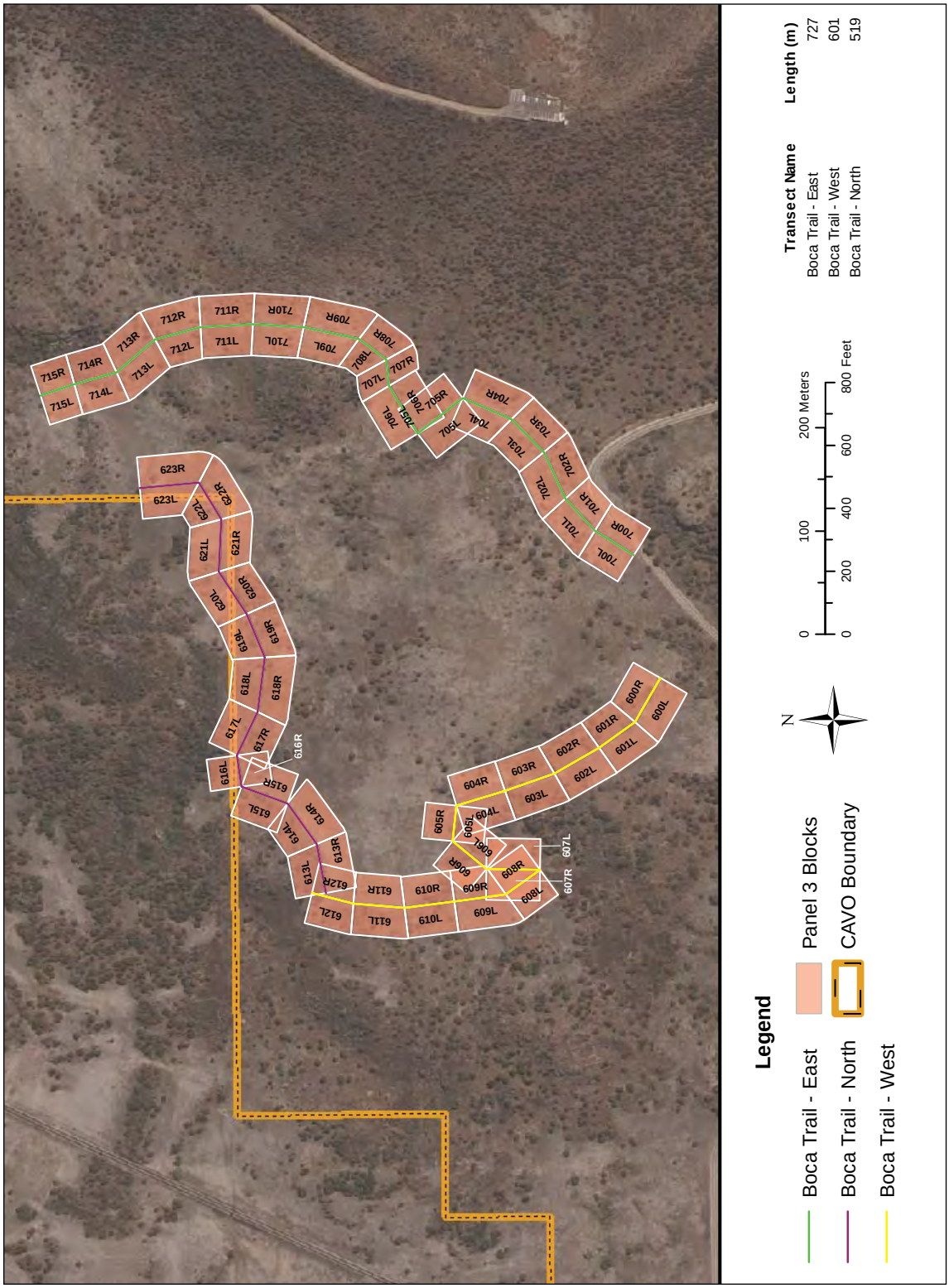


Figure B.1. Individual vector blocks sampled, Panel 3, Capulin Volcano NM, 2011.

Table B-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2011.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Agropyron cristatum	Crested wheatgrass	R	202	1	0	–	–
Bromus inermis	smooth brome	R	701	0	0	0	2
		L	601	0	1	0	0
		L	620	1	0	0	0
		L	621	1	0	0	0
		R	701	0	0	2	2
Chenopodium album	common lambsquarters	R	606	0	1	0	0
		L	609	0	0	1	0
		L	621	1	0	0	0
Marrubium vulgare	horehound	R	600	1	0	0	0
		L	601	2	2	2	0
		L	603	0	1	0	0
		R	605	1	0	0	X
		R	714	0	1	0	0
NONE	no exotics found	L	600	0	0	0	0
		R	602	0	0	0	0
		L	605	0	0	X	X
		L	606	0	0	0	0
		L	607	0	0	0	0
		R	607	0	0	0	0
		L	608	0	0	0	0
		R	608	0	0	0	0
		L	610	0	X	X	X
		R	610	0	0	0	0
		L	611	0	X	X	X
		R	611	0	0	0	0
		L	612	0	X	X	X
		L	613	0	X	X	X
		R	613	0	0	0	0
		L	614	0	0	X	X
		R	614	0	0	0	0
		R	615	0	0	0	0
		L	616	0	0	X	X
		R	616	0	0	0	0
		R	617	0	0	0	0
		L	618	0	0	0	X
		R	618	0	0	0	0
		L	619	0	0	0	X
		R	619	0	0	0	0
		R	702	0	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table B-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
NONE (cont.)	no exotics found	R	704	0	0	0	0
		L	705	0	0	0	0
		R	705	0	0	0	0
		L	706	0	0	0	0
		R	706	0	0	0	0
		L	707	0	0	0	0
		L	708	0	0	0	0
		R	708	0	0	0	0
		L	709	0	0	0	0
		R	709	0	0	0	0
		L	710	0	0	0	0
		R	710	0	0	X	X
		L	711	0	0	0	0
		R	711	0	0	X	X
		L	712	0	0	0	0
		R	712	0	0	0	0
		L	713	0	0	0	0
		R	713	0	0	0	0
Salsola tragus	prickly Russian thistle	L	601	0	2	2	0
		R	601	1	0	0	0
		L	602	0	2	2	0
		R	603	0	2	0	0
		L	604	1	2	0	0
		R	604	2	2	0	0
		R	605	2	2	0	X
		L	620	2	1	0	0
		R	620	2	2	0	0
		L	621	2	2	0	0
		R	621	2	2	0	0
		L	622	2	2	0	0
		R	622	2	2	0	0
		L	623	2	2	0	0
		R	623	2	2	0	0
		L	700	2	0	0	0
		R	700	2	2	2	0
		L	701	0	2	0	0
		R	701	0	2	2	0
		L	702	0	1	0	0
		L	703	1	1	0	0
		R	703	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table B-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	prickly Russian thistle	L	704	1	2	0	0
		L	714	2	2	0	0
		R	714	1	0	0	0
		L	715	2	1	0	0
		R	715	2	0	0	0
Verbascum thapsus	common mullein	L	603	0	1	0	0
		L	609	1	1	0	0
		R	609	0	1	0	0
		R	612	1	0	0	0
		L	615	1	0	X	X
		L	617	0	0	1	X
		R	700	0	0	1	0
		R	703	0	1	0	0
		R	707	0	1	0	0
		R	715	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

B.2 Panel 2 - July 2010

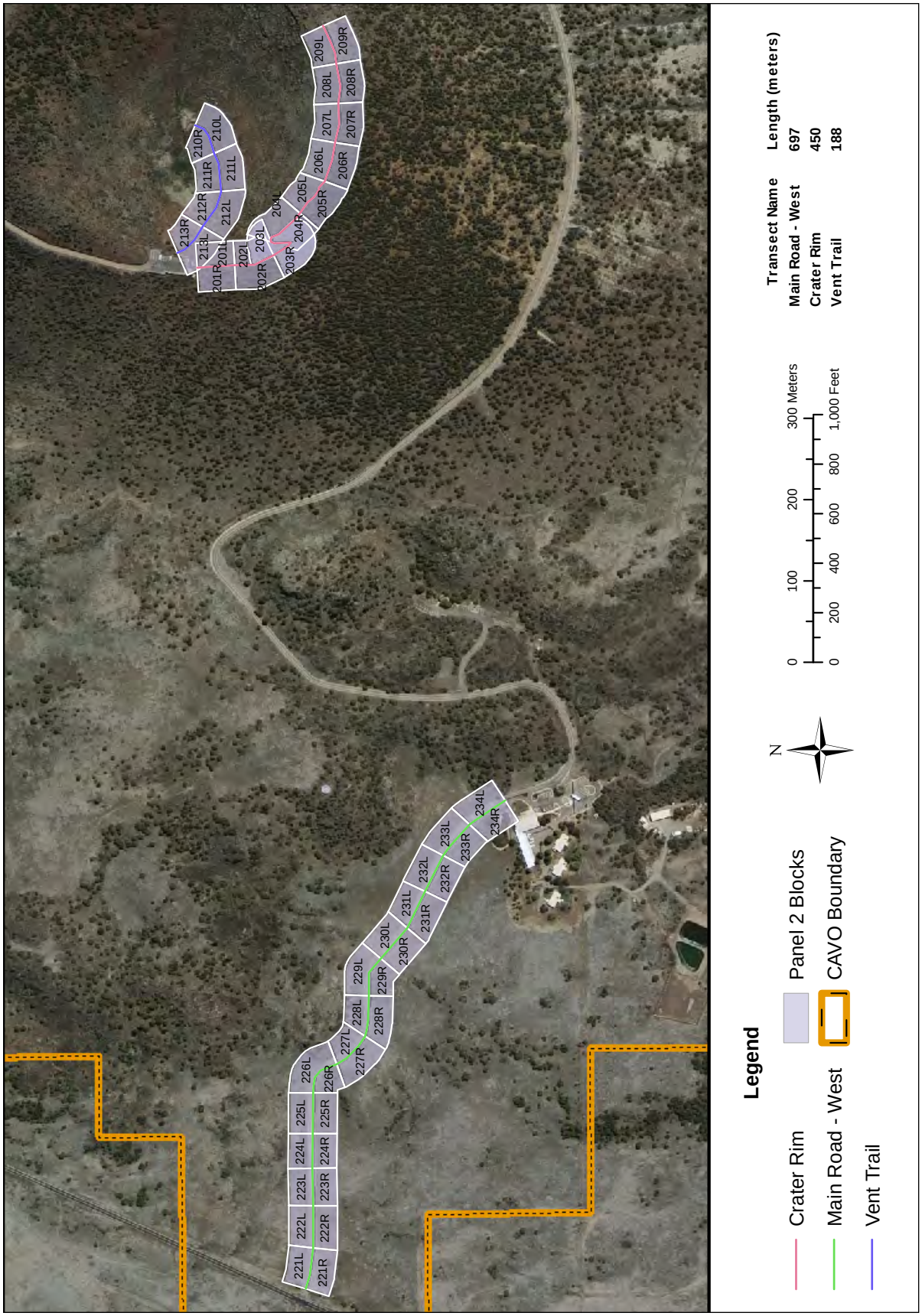


Figure B.2. Individual vector blocks sampled, Panel 2, Capulin Volcano NM, 2010.

Table B-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2010

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Agropyron cristatum	Crested wheatgrass	R	202	1	0	–	–
		R	206	0	1–2	–	–
		R	208	1	0	–	–
		L	201	0	2	–	–
		L	202	0	2	–	–
		L	207	0	1	–	–
		R	213	1	0	0	0
		L	210	0	2	–	–
		L	211	0	2	–	–
		L	212	0	2	–	–
Bromus inermis	Smooth brome	R	201	0	2	–	–
		R	202	1–2	0	–	–
		R	203	1	2	–	–
		R	205	0	2	–	–
		L	201	0	2	–	–
		L	202	0	2	–	–
		L	203	0	2	–	–
		R	210	1–2	2	0	0
		R	211	0	1	0	0
		R	212	1	–	–	–
		R	213	1	1	0	0
		L	210	0	1	–	–
		L	211	0	2	–	–
		L	212	0	2	–	–
		L	227	0	2	0	0
Bromus japonicus	Japanese brome	R	201	1	2	–	–
		L	201	0	2	–	–
		R	221	2	2	0	0
		R	222	2	2	2	0
		R	223	2	2	2	0
		R	224	1	2	2	2
		R	225	1	2	2	2
		R	226	1–2	2	2	1–2
		R	227	0	2	2	0
		R	228	0	2	2	0
		R	230	0	2	2	0
		R	231	1	0	0	0
		R	232	0	2	0	0
		L	221	2	2	0	0
		L	223	1	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	L	224	0	2	2	0
		L	225	0	2	0	0
		L	226	0	2	2	–
		L	227	0	2	2	0
		L	229	0	2	2	0
		L	230	0	0	2	2
		L	231	0	2	2	2
		L	232	0	2	2	0
		L	233	0	2	2	2
		L	234	0	2	2	2
Bromus tectorum	Cheatgrass	R	201	1–2	0	–	–
		R	202	0	2	–	–
		R	206	1	1–2	–	–
		R	207	0	2	–	–
		R	208	0	1	–	–
		R	211	1	0	0	0
		R	212	1	–	–	–
		R	221	0	2	2	0
		R	222	2	2	0	0
		R	223	1	2	2	0
		R	224	1	2	2	0
		R	225	–	2	2	2
		R	226	0	2	0	0
		R	227	0	0	2	0
		R	228	0	2	0	0
		R	230	0	2	2	0
		R	231	0	2	2	0
		R	232	0	0	2	0
		R	233	0	0	2	0
		R	234	0	2	0	0
		L	223	1	2	0	0
		L	225	0	2	0	0
		L	228	2	2	0	0
		L	229	0	2	2	0
		L	230	0	0	2	2
		L	231	0	2	2	0
		L	232	0	2	2	0
		L	233	0	2	2	2
		L	234	2	2	2	2
Chenopodium album	Common lambsquarters	L	203	0	1	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis	Field bindweed	L	229	1	0	0	0
Descurainia sophia	Flixweed	R	206	0	1	–	–
		R	207	0	1	–	–
		R	208	1	0	–	–
		R	209	0	1	–	–
		L	204	0	1	–	–
		L	205	0	1	–	–
		L	206	0	1	–	–
		L	207	0	2	–	–
		L	208	0	1	–	–
		L	209	0	1	–	–
		R	210	0	1	0	0
		R	211	0	1	0	0
		L	224	0	1	0	0
Euphorbia davidii	Davids spurge	R	201	1	0	–	–
		R	202	2	0	–	–
		L	212	0	1	–	–
		L	213	0	1	–	–
Kochia scoparia	Kochia	L	222	0	2	2	0
Marrubium vulgare	Horehound	R	202	0	1–2	–	–
		R	203	1	0	–	–
		R	204	0	1	–	–
		R	207	0	2	–	–
		R	208	1	0	–	–
		L	203	0	1	–	–
		L	204	0	1	–	–
		L	206	0	1	–	–
		L	209	0	1	–	–
		R	212	1	–	–	–
		L	210	0	1	–	–
		L	211	0	1	–	–
		L	212	0	2	–	–
		L	225	0	2	0	0
Medicago lupulina	Black medic clover	R	212	1–2	–	–	–
		R	213	2	0	0	0
		L	212	2	0	–	–
		L	213	2	1	–	–
		R	222	2	0	0	0
		R	223	2	0	0	0
		R	225	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Medicago lupulina (cont.)	Black medic clover	R	226	2	0	0	0
		R	234	2	0	0	0
Melilotus officinalis	Yellow sweetclover	R	230	1	0	0	0
		L	229	0	1	0	0
Salsola tragus	Prickly Russian thistle	L	222	0	2	2	0
		L	226	0	2	0	–
		L	230	0	2	2	0
		L	234	2	2	0	0
Setaria viridis	Green bristlegrass	R	224	1	0	0	0
		R	225	2	0	0	0
		R	226	2	0	0	0
		R	227	1	0	0	0
		R	228	1	0	0	0
		R	229	1	0	–	–
		R	230	1	0	0	0
		R	231	2	1	0	0
		R	232	2	0	0	0
		R	233	2	0	0	0
		R	234	2	0	0	0
		L	223	0	1	0	0
		L	224	0	1	0	0
		L	225	1	2	0	0
		L	233	1	0	0	0
Tragopogon dubius	Western salsify	R	201	1	0	–	–
		R	202	1	0	–	–
		R	203	1	1	–	–
		R	205	1	0	–	–
		L	201	0	1	–	–
		L	202	0	1	–	–
		L	213	0	1	–	–
		R	222	1	0	0	0
		R	225	1	1	0	0
		R	227	1	0	0	0
		R	229	1	1	–	–
		R	231	1	0	0	0
		R	232	1	0	0	0
		R	233	0	1	1	0
		R	234	1	1	0	0
		L	227	0	1	0	0
		L	228	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	L	229	0	1	0	0
		L	230	1	1	0	0
		L	231	0	1	0	0
		L	232	0	1	0	0
Verbascum thapsus	Mullein	R	201	0	1–2	–	–
		R	202	1	0	–	–
		R	203	1	1	–	–
		R	204	0	1	–	–
		R	205	1	2	–	–
		R	206	1	2	–	–
		L	201	0	1	–	–
		L	202	0	2	–	–
Verbascum thapsus (cont.)	Mullein	L	203	0	2	–	–
		L	205	0	1	–	–
		L	207	0	1	–	–
		L	208	0	1	–	–
		L	212	0	1	–	–
		L	213	0	1	–	–
		L	229	0	1	0	0
		L	234	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

B.3 Panel 1 - July 2009

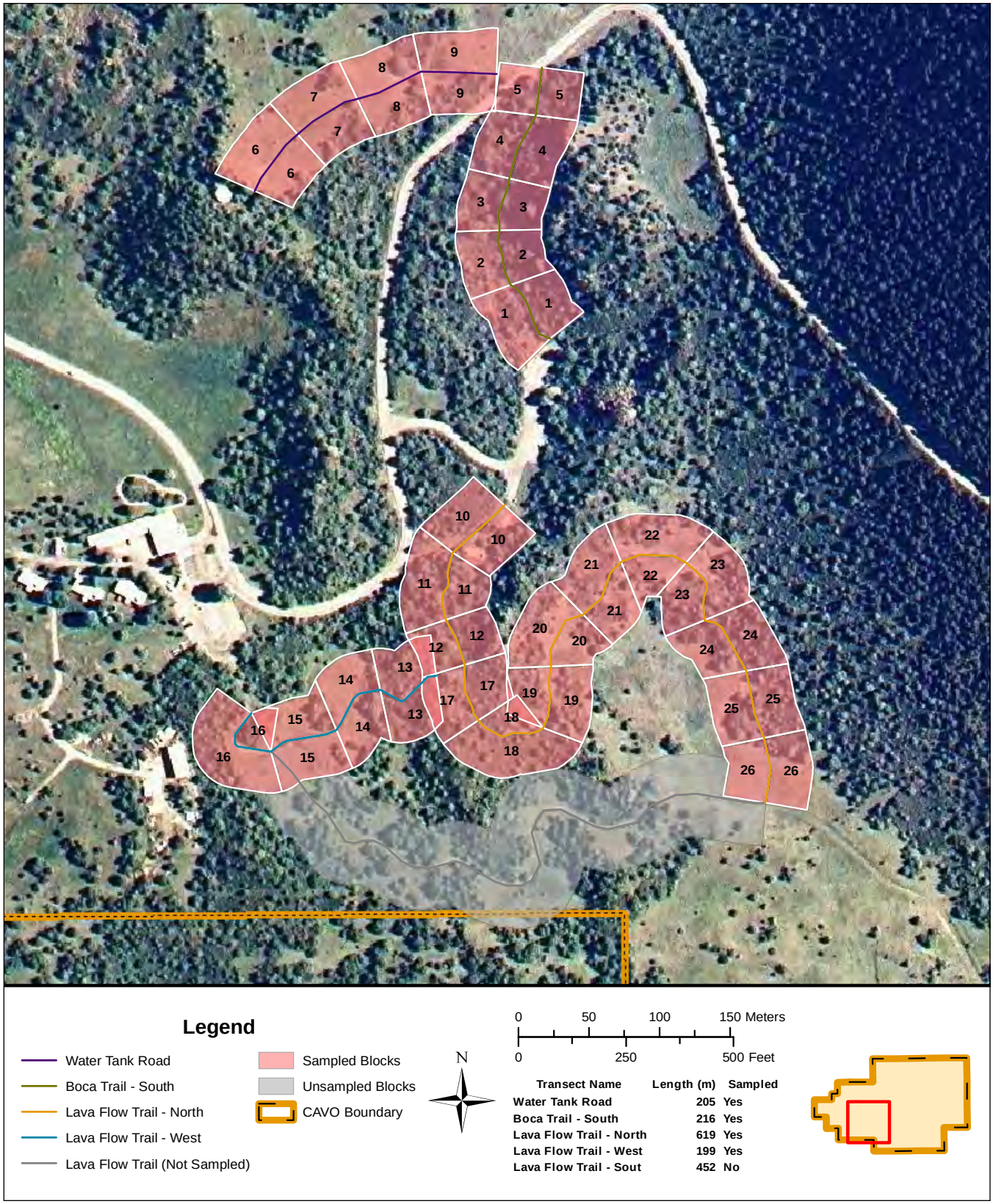


Figure B.3. Individual vector blocks sampled, Panel 1, Capulin Volcano NM, 2009.

Table B-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus spp.	unidentified bromes	L	1	2	2	2	0
		R	1	2	3	0	0
		L	2	2	2	2	0
		R	2	0	2	3	0
		L	3	2	2	0	0
		R	3	0	2	–	–
		L	4	2	2	3	0
		R	4	0	2	0	0
		L	5	3	3	2	0
		R	5	2	2	0	–
		L	6	2	2	2	0
		R	6	0	2	0	–
		L	7	2	2	2	0
		R	7	2	2	0	–
		L	8	0	3	3	0
		L	9	2	3	3	0
		R	9	2	2	0	0
		L	10	2	2	2	0
		R	10	2	3	3	0
		L	11	0	3	0	0
		R	11	0	3	0	0
		L	12	0	2	3	0
		R	12	2	3	3	0
		R	13	0	2	0	0
		L	14	2	2	0	0
		L	15	1	0	0	0
		L	16	1	0	0	0
		R	16	0	2	0	0
		L	17	0	2	0	0
		R	17	0	2	0	0
		L	18	2	2	0	0
		R	18	0	2	0	0
		L	19	2	2	3	0
		L	20	2	2	3	0
		R	20	2	2	0	0
		L	21	2	2	3	0
		R	21	2	2	2	0
		L	22	1	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus spp., cont.	unidentified bromes	R	22	0	2	0	0
		L	23	2	2	3	0
		R	23	1	1	0	0
		L	24	2	3	0	0
		R	24	2	2	0	0
		L	25	2	2	2	0
		R	25	2	2	0	0
		L	26	2	2	2	3
		R	26	2	2	0	0
Chenopodium alba	common lambsquarters	L	3	0	1	0	0
		R	3	1	0	–	–
		L	4	0	1	0	0
		R	4	1	0	0	0
		L	5	1	0	0	0
		R	5	1	0	0	–
		R	7	1	0	0	–
		R	8	2	1	0	–
		L	10	1	0	0	0
		R	10	1	2	0	0
		R	11	1	2	0	0
		L	13	0	1	0	0
		L	14	1	0	0	0
		L	15	1	1	0	0
		R	15	0	1	0	0
		L	17	1	1	0	0
		L	18	1	1	0	0
		R	18	1	2	0	0
		L	19	1	1	0	0
		R	19	1	2	0	0
Convolvulus arvensis	field bindweed	L	2	0	0	1	0
Cynoglossum officinale	houndstongue	L	2	1	0	0	0
		L	5	2	2	0	0
		R	5	2	2	2	–
		L	2	0	1	0	0
		R	5	1	0	0	–
		L	6	0	2	0	0
		R	6	0	2	0	–
		L	7	2	3	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Descurainia sophia (cont.)	herb sophia	R	7	2	2	0	–
		L	8	2	2	2	0
		R	8	2	0	0	–
		L	9	0	2	2	0
		R	9	2	1	0	0
		L	17	1	0	0	0
Marrubium vulgare	horehound	R	16	0	2	2	0
		R	17	0	2	2	0
		L	18	0	2	2	0
		L	20	0	2	2	0
		R	21	0	2	0	0
		L	23	0	1	1	0
		R	23	0	2	0	0
		L	24	0	1	0	0
		R	24	0	2	0	0
		R	25	0	2	0	0
Melilotus officinalis	yellow sweetclover	R	5	1	0	0	–
		L	14	1	0	0	0
		R	14	1	0	0	0
		L	16	2	2	0	0
		R	16	0	2	0	0
		R	17	0	2	0	0
		R	18	0	1	0	0
		L	26	2	2	2	0
		R	26	2	0	0	0
Polygonum convolvulus	climbing bindweed	L	5	0	1	0	0
		R	5	1	0	0	–
Salsola tragus	prickly Russian thistle	R	25	0	2	0	0
		L	26	1	0	0	0
		R	26	1	2	0	0
Setaria viridis	green bristlegrass	L	2	1	0	0	0
Sonchus asper	spiny sowthistle	R	5	1	0	0	–
Taraxacum officinale	dandelion	R	3	1	0	–	–
		R	5	2	0	0	–
Tragopogon dubius	western salsify	R	3	2	0	–	–
		R	5	2	0	0	–
		R	6	1	2	0	–
		L	7	1	0	0	0
		R	7	1	0	0	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	western salsify	R	8	1	0	0	–
		L	12	0	1	0	0
		R	12	0	1	0	0
		R	14	0	1	0	0
		L	17	1	0	0	0
		R	18	1	0	0	0
		R	22	1	0	0	0
		L	25	1	1	0	0
		R	25	2	2	0	0
		L	26	1	0	0	0
		R	26	2	2	0	0
Verbascum thapsus	mullein	L	1	1	0	0	0
		R	1	0	1	2	0
		L	2	1	2	3	3
		R	2	1	1	0	0
		L	3	0	2	2	0
		R	3	1	1	–	–
		L	4	0	2	0	0
		R	4	0	2	2	2
		L	5	2	2	3	0
		R	5	2	2	2	2
		L	6	0	1	0	0
		R	6	0	2	2	–
		L	7	0	2	2	1
		R	7	0	2	2	–
		L	8	2	2	0	2
		R	8	0	2	2	–
		L	9	2	2	2	3
		R	9	0	3	3	3
		L	10	0	1	0	0
		R	10	0	3	3	0
		L	11	0	2	3	0
		R	11	0	2	3	0
		L	12	0	2	3	0
		R	12	0	2	3	0
		L	13	1	2	3	3
		R	13	1	2	3	3
		L	14	1	2	2	3

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table B-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Capulin Volcano NM, 2009 (continued).

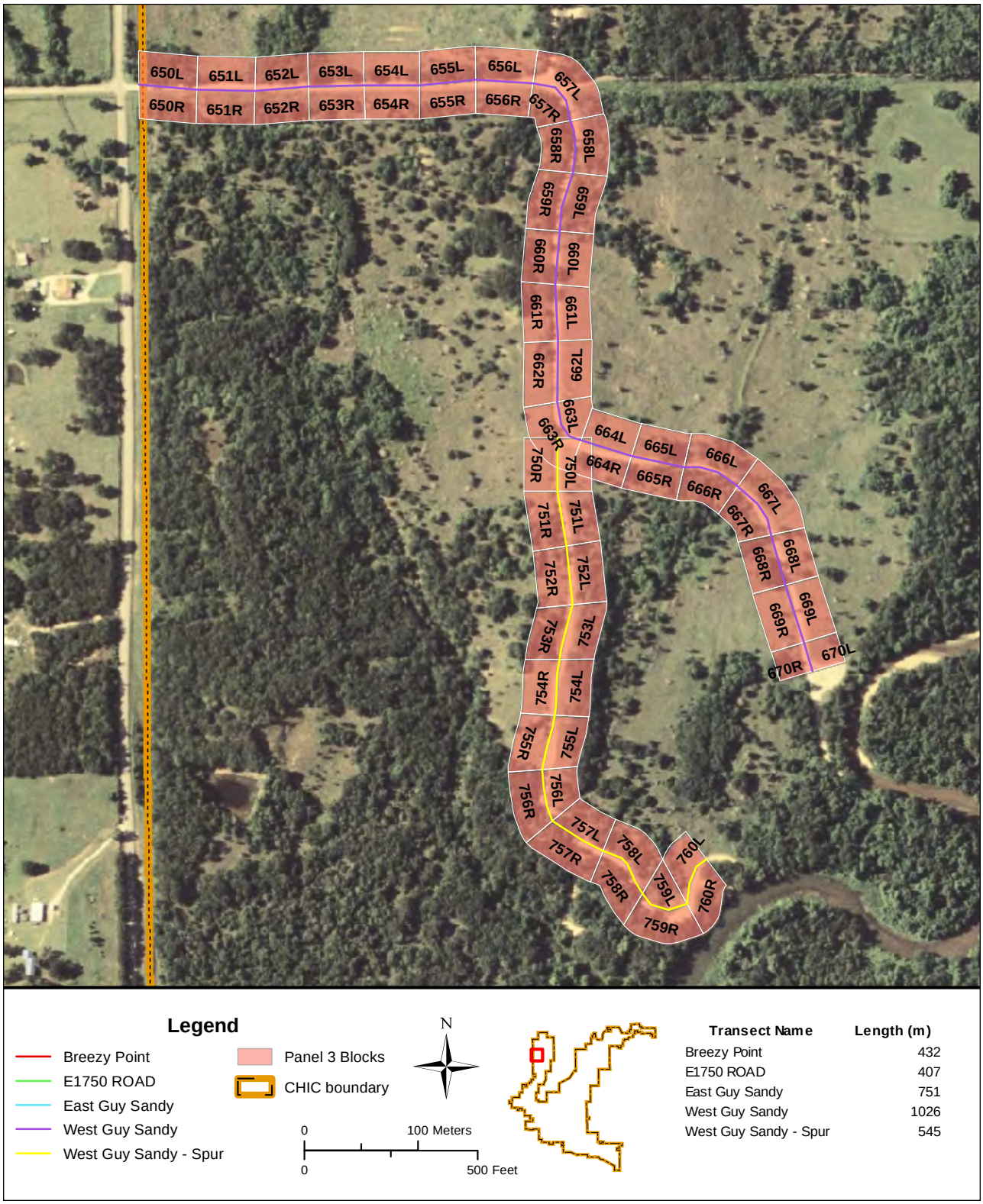
Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Verbascum thapsus (cont.)	mullein	R	14	2	2	3	3
		L	15	0	2	2	0
		R	15	0	2	3	3
		L	16	0	2	0	0
		R	16	0	3	3	0
		L	17	0	2	2	0
		R	17	0	3	3	0
		L	18	2	2	3	0
		R	18	0	2	3	0
		L	19	0	3	0	0
		R	19	0	2	3	3
		L	20	0	2	3	3
		R	20	0	2	3	3
		L	21	0	1	0	0
		R	21	0	2	2	3
		L	22	1	2	3	0
		R	22	0	2	3	2
		L	23	0	2	3	3
		R	23	0	0	2	2
		L	24	0	2	3	3
		R	24	1	2	2	2
		L	25	1	2	2	3
		R	25	0	2	2	2
		L	26	0	2	2	2
		R	26	0	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix C. Chickasaw NRA Sampling Results

C.1 Panel 3 - May 2011



Legend

- Breezy Point
- E1750 ROAD
- East Guy Sandy
- West Guy Sandy
- West Guy Sandy - Spur
- Panel 3 Blocks
- CHIC boundary

N

0 100 Meters

0 500 Feet

Transect Name	Length (m)
Breezy Point	432
E1750 ROAD	407
East Guy Sandy	751
West Guy Sandy	1026
West Guy Sandy - Spur	545

Figure C.1. Individual vector blocks sampled, Panel 3 (upper transects), Chickasaw NRA, 2011.

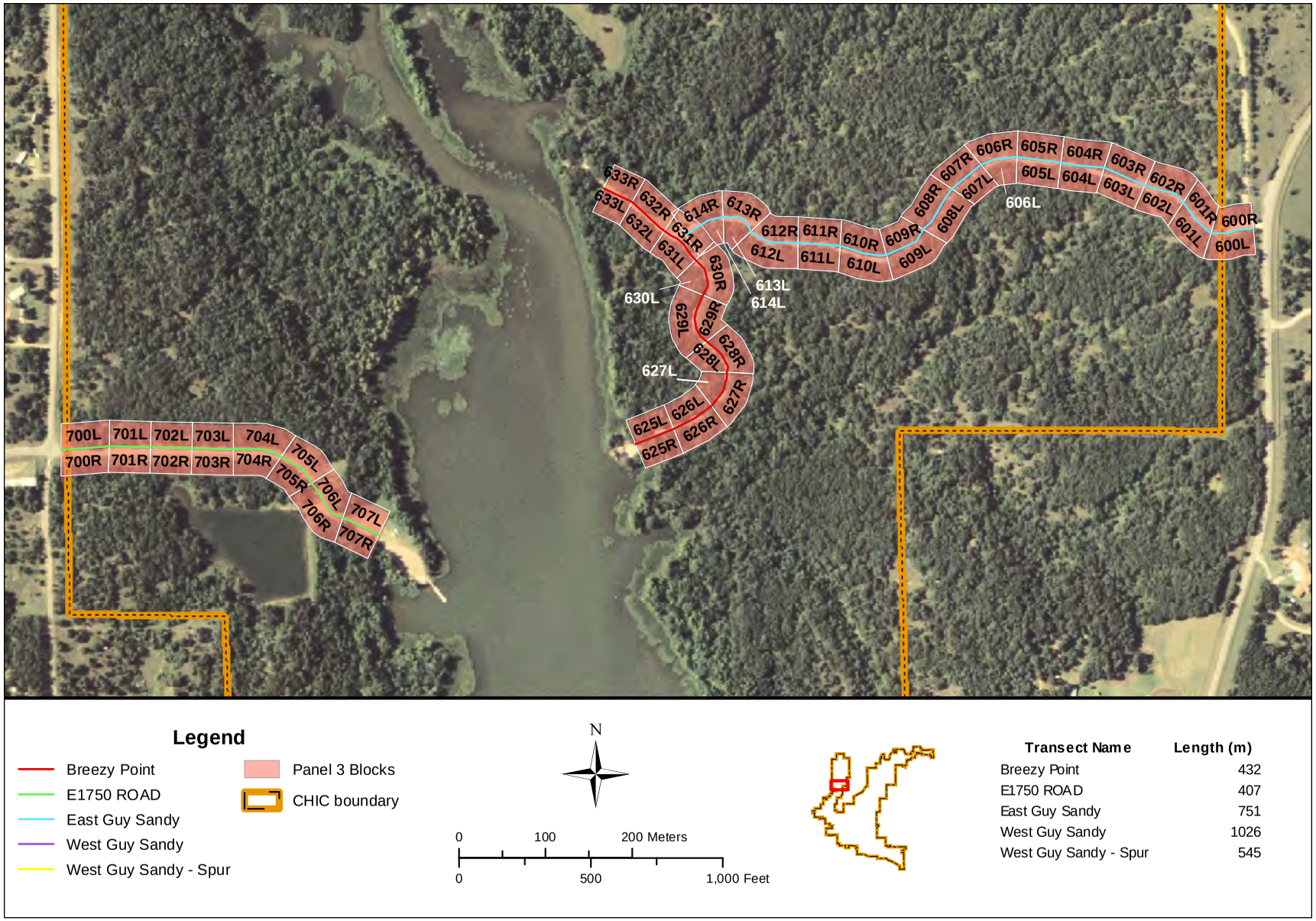


Figure C.2. Individual vector blocks sampled, Panel 3 (lower transects), Chickasaw NRA, 2011..

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011.

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Albizia julibrissin	mimosa	R	650	2	2	2	2
		L	651	2	0	0	0
		R	651	2	2	0	0
		L	652	1	1	X	X
		L	653	1	2	0	0
		R	653	2	2	X	X
		L	654	0	2	0	0
		R	654	2	2	0	X
		L	655	2	2	0	0
		R	655	2	2	0	X
		L	656	1	2	0	0
		R	656	2	2	0	0
		L	657	2	0	0	0
		R	657	2	2	X	X
		L	658	1	0	X	X
		R	658	0	2	X	X
		L	659	1	0	X	X
		R	659	2	2	X	X
		L	660	1	0	0	0
		R	660	3	2	X	X
		L	661	1	0	0	0
		R	661	2	2	0	0
		L	662	1	0	0	0
		R	662	2	2	0	0
		L	663	1	0	0	0
		L	664	1	1	0	0
		R	664	2	2	0	X
		L	665	1	1	X	X
		R	665	2	2	0	X
		L	666	2	0	0	0
		R	666	2	2	X	X
		L	667	2	0	0	0
		R	667	2	2	X	X
		L	668	2	0	X	X
		R	668	2	2	X	X
		L	669	2	0	0	0
		R	669	2	2	0	X
		L	670	2	2	0	0
		R	670	2	2	X	X
		L	700	0	1	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Albizia julibrissin (cont.)	mimosa	R	700	2	2	X	X
		L	702	0	1	X	X
		R	702	2	2	X	X
		R	703	2	2	X	X
		L	704	0	1	0	X
		R	704	2	2	0	X
		R	705	0	2	0	X
		R	706	2	2	0	X
		L	750	1	0	0	0
		R	750	2	2	0	0
		L	751	1	1	0	0
		R	751	2	2	0	0
		L	752	2	0	0	0
		R	752	2	0	0	X
		L	753	3	0	0	X
		R	753	2	2	X	X
		L	754	2	2	0	X
		R	754	2	2	0	0
		L	755	2	2	0	X
		R	755	2	2	X	X
		L	756	1	0	0	X
		R	756	2	2	0	X
		L	757	1	1	0	0
		R	759	2	X	X	X
		L	760	1	0	X	X
Bothriochloa ischaemum	KR bluestem	L	600	2	1	0	0
		R	600	3	2	2	X
		L	601	2	1	0	0
		R	601	2	0	0	X
		R	602	2	0	0	X
		L	614	2	2	2	0
		R	614	2	2	0	X
		L	627	2	2	0	0
		L	630	2	0	0	0
		R	630	2	2	X	X
		L	631	2	2	0	0
		R	631	2	2	0	X
		L	632	2	2	0	0
		R	632	2	2	0	X
		L	633	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bothriochloa ischaemum	KR bluestem	R	633	2	2	X	X
(cont.)		R	651	2	0	0	0
		R	653	2	0	X	X
		L	654	2	2	2	0
		R	654	2	2	0	X
		L	655	2	2	2	0
		R	655	2	2	0	X
		L	656	2	2	2	0
		R	656	2	2	0	0
		L	657	2	2	2	0
		R	657	3	2	X	X
		L	659	2	0	X	X
		L	660	2	2	0	0
		R	660	2	2	X	X
		L	661	2	2	0	0
		R	661	2	3	3	3
		L	662	2	0	0	0
		R	662	2	3	3	3
		L	663	2	2	0	0
		R	663	2	2	2	2
		L	664	2	2	0	0
		R	664	2	3	3	X
		L	665	2	2	X	X
		R	665	2	2	0	X
		L	666	2	2	0	0
		L	700	2	2	X	X
		R	700	2	2	X	X
		L	701	2	2	0	0
		R	701	2	2	X	X
		L	702	2	2	X	X
		R	702	2	2	X	X
		L	703	2	2	0	X
		R	703	2	2	X	X
		L	704	2	0	0	X
		R	704	2	2	0	X
		L	705	3	3	3	X
		R	705	2	2	0	X
		L	706	3	3	3	X
		R	706	2	2	0	X
		L	707	1	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bothriochloa ischaemum	KR bluestem	R	750	2	2	2	0
(cont.)		R	751	2	2	0	0
		L	752	1	0	0	0
		L	753	1	0	0	X
		R	753	2	2	X	X
		L	754	2	2	0	X
		R	754	2	2	0	0
		L	755	2	0	0	X
		R	755	2	2	X	X
		L	756	2	2	0	X
		R	756	2	2	0	X
		L	757	2	2	0	0
		L	758	2	2	0	0
		L	759	2	2	X	X
		L	760	2	2	X	X
		R	760	2	X	X	X
Bromus catharticus	rescue grass	L	650	1	0	X	X
		L	653	1	0	0	0
Bromus japonicus	Japanese brome	L	600	1	0	0	0
		R	600	2	0	0	X
		R	601	2	0	0	X
		L	604	1	0	0	0
		L	605	1	0	0	0
		R	606	1	0	0	X
		L	607	2	0	X	X
		R	607	2	2	0	X
		L	608	2	0	X	X
		R	610	1	1	0	X
		L	611	1	0	0	X
		L	612	2	0	0	0
		L	613	2	0	0	0
		L	614	1	0	0	0
		L	625	2	0	0	0
		L	626	2	2	0	0
		L	627	2	2	0	0
		R	627	2	2	X	X
		L	628	2	0	0	0
		R	628	2	0	X	X
		L	629	2	0	0	0
		R	629	2	2	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	L	630	2	0	0	0
		R	630	2	0	X	X
		L	631	2	0	0	0
		R	631	2	0	0	X
		L	632	2	0	0	0
		R	632	2	2	0	X
		L	633	2	2	0	0
		R	633	2	2	X	X
		L	650	2	0	X	X
		R	650	2	2	0	0
		L	651	2	0	0	0
		R	651	2	2	0	0
		L	652	2	2	X	X
		R	652	2	2	0	X
		L	653	2	0	0	0
		R	653	2	2	X	X
		L	654	2	0	0	0
		R	654	2	2	0	X
		L	655	2	0	0	0
		L	656	2	0	0	0
		L	657	2	0	0	0
		R	657	2	2	X	X
		L	658	2	2	X	X
		R	658	2	2	X	X
		L	659	2	2	X	X
		R	659	2	2	X	X
		L	660	2	0	0	0
		R	660	2	2	X	X
		L	661	2	0	0	0
		L	662	2	2	0	0
		L	663	2	0	0	0
		L	664	2	0	0	0
		R	664	2	2	0	X
		L	665	2	0	X	X
		R	665	2	2	0	X
		L	666	2	2	0	0
		R	666	2	2	X	X
		L	667	2	2	0	0
		R	667	3	3	X	X
		L	668	3	3	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	R	668	3	3	X	X
		L	669	2	2	0	0
		R	669	3	3	0	X
		L	670	2	2	0	0
		R	670	2	2	X	X
		L	700	2	0	X	X
		R	700	2	2	X	X
		L	701	1	0	0	0
		R	701	2	2	X	X
		R	702	2	2	X	X
		L	705	1	0	0	X
		R	707	2	0	X	X
		L	750	2	2	0	0
		L	751	2	0	0	0
		R	751	2	2	0	0
		L	752	2	0	0	0
		R	752	2	2	0	X
		L	753	2	0	0	X
		R	753	2	2	X	X
		L	754	2	0	0	X
		R	754	2	2	0	0
		L	755	2	0	0	X
		R	755	2	2	X	X
		L	757	2	0	0	0
		R	757	2	2	X	X
		L	758	1	1	0	0
		R	758	2	2	X	X
		L	759	2	0	X	X
		R	759	2	X	X	X
		L	760	1	0	X	X
		R	760	3	X	X	X
Bromus tectorum	cheatgrass	R	600	2	0	0	X
		L	626	1	0	0	0
		L	627	1	0	0	0
		R	632	2	0	0	X
		L	650	2	0	X	X
		R	650	2	2	0	0
		R	651	2	0	0	0
		L	652	1	0	X	X
		R	652	2	2	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	cheatgrass	R	653	2	2	X	X
		R	654	2	2	0	X
		R	656	2	2	0	0
		R	657	2	2	X	X
		R	658	2	2	X	X
		R	659	2	3	X	X
		R	660	2	3	X	X
		L	667	1	1	0	0
		R	667	3	3	X	X
		R	668	3	3	X	X
		L	669	0	1	0	0
		R	669	3	3	0	X
		R	670	2	2	X	X
		R	700	2	2	X	X
		R	750	2	2	0	0
		R	751	2	2	0	0
		R	752	2	2	0	X
		R	758	3	2	X	X
		R	759	3	X	X	X
		R	760	3	X	X	X
Conium maculatum	poison hemlock	L	626	1	0	0	0
		L	628	0	1	0	0
Coronilla varia	purple crownvetch	L	630	1	0	0	0
Cynodon dactylon	Bermudagrass	R	650	2	2	0	0
		R	651	2	2	0	0
		L	652	2	0	X	X
		R	652	3	2	0	X
		L	653	2	0	0	0
		R	653	2	2	X	X
		L	654	2	0	0	0
		R	654	2	0	0	X
		R	656	2	2	0	0
		L	657	2	0	0	0
		R	657	2	2	X	X
		L	660	2	0	0	0
		R	661	2	2	0	0
		R	662	3	3	0	0
		L	663	2	2	0	0
		R	663	2	2	0	0
		R	664	2	2	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Cynodon dactylon (cont.)	Bermudagrass	R	669	2	2	0	X
		L	700	2	0	X	X
		R	700	2	2	X	X
		R	701	3	2	X	X
		R	702	3	3	X	X
		R	703	3	3	X	X
		R	704	3	3	0	X
		R	706	2	2	2	X
		L	707	3	3	3	3
		R	707	2	2	X	X
		R	750	2	0	0	0
		R	751	2	0	0	0
		R	752	2	2	0	X
		R	754	2	2	0	0
		R	757	2	0	X	X
		L	758	2	0	0	0
		R	759	2	X	X	X
		L	760	2	2	X	X
Euphorbia davidii	David's spurge	L	628	1	0	0	0
		L	651	0	1	0	0
		L	657	1	0	0	0
		L	700	1	0	X	X
Kochia scoparia	kochia	L	657	2	2	2	0
		L	661	0	2	0	0
		L	662	0	1	0	0
		L	663	1	1	0	0
		L	668	2	2	X	X
		L	751	0	1	0	0
		L	752	1	0	0	0
		L	754	1	1	0	X
Lactuca serriola	prickly lettuce	L	652	0	2	X	X
		L	754	0	1	0	X
Lathyrus hirsutus	singletary pea	R	629	2	2	X	X
		R	630	2	0	X	X
		R	631	2	2	0	X
		L	651	1	0	0	0
		L	657	0	1	0	0
Lespedeza cuneata	sericea lespedeza	L	600	1	1	0	0
		L	601	0	2	0	0
		R	601	2	2	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Lespedeza cuneata (cont.)	sericea lespedeza	L	602	2	2	0	0
		R	602	2	2	0	X
		L	603	2	2	0	0
		L	604	2	2	0	0
		L	605	2	2	2	0
		L	606	2	1	X	X
		L	607	2	1	X	X
		L	608	2	2	X	X
		L	609	2	2	X	X
		L	610	2	2	X	X
		L	611	2	2	0	X
		L	612	2	2	0	0
		L	613	0	2	0	0
		L	614	0	2	2	0
		L	625	0	2	0	0
		L	626	2	2	0	0
		L	627	2	3	3	0
		L	628	2	2	2	0
		L	629	2	2	2	0
		L	630	2	2	0	0
		L	631	2	2	0	0
		L	632	2	2	0	0
		L	633	2	2	0	0
		L	655	2	2	2	0
		L	656	2	2	2	0
		L	665	1	1	X	X
		L	666	1	1	0	0
		L	667	2	2	0	0
		L	668	2	2	X	X
		L	700	2	0	X	X
		L	701	0	2	2	0
		L	702	2	2	X	X
		L	703	2	2	2	X
		L	704	2	2	0	X
		R	704	0	2	0	X
		L	705	2	3	3	X
		L	706	3	3	3	X
		L	707	2	2	2	2
		R	707	2	2	X	X
		L	757	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Lolium perenne	perennial rye	L	758	2	3	3	0
		L	759	2	2	X	X
		L	760	2	2	X	X
		L	626	1	0	0	0
		L	628	1	0	0	0
		L	650	2	0	X	X
		R	650	2	0	0	0
		L	651	2	0	0	0
		L	652	2	2	X	X
		R	652	2	2	0	X
		L	653	2	0	0	0
		R	653	2	2	X	X
		L	654	2	2	0	0
		R	654	2	0	0	X
		L	657	2	2	0	0
		L	658	1	0	X	X
		R	658	2	0	X	X
		L	659	1	0	X	X
		R	659	2	0	X	X
		L	666	0	1	0	0
		L	667	2	0	0	0
Lonicera japonica	Japanese honeysuckle	L	605	2	2	0	0
		L	607	2	2	X	X
		L	608	2	2	X	X
		L	609	0	2	X	X
		L	610	2	2	X	X
		L	611	2	2	0	X
		L	612	0	2	0	0
		L	614	2	2	0	0
		R	614	2	2	0	X
		L	625	0	2	0	0
		R	625	2	2	0	X
		R	626	2	2	0	X
		L	627	0	2	0	0
		R	627	2	2	X	X
		L	628	0	2	0	0
		R	628	2	2	X	X
		R	629	2	2	X	X
		L	631	2	2	0	0
		L	633	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Lonicera japonica (cont.)	Japanese honeysuckle	R	633	2	2	X	X
		L	650	2	2	X	X
		R	650	2	2	0	0
		L	651	2	2	0	0
		L	652	1	2	X	X
		L	654	0	1	0	0
		L	656	1	1	0	0
		L	659	1	2	X	X
		R	666	2	2	X	X
		L	703	0	2	0	X
		L	752	1	1	0	0
		L	753	0	1	0	X
		L	754	1	1	0	X
		R	756	2	2	2	X
		R	757	2	2	X	X
		R	758	2	2	X	X
		R	759	2	X	X	X
Medicago lupulina	black medic clover	L	601	2	1	0	0
		R	601	2	0	0	X
		L	602	2	2	0	0
		L	603	2	2	0	0
		L	604	2	0	0	0
		R	604	2	0	0	X
		L	605	2	1	0	0
		R	605	2	2	0	X
		R	606	2	2	0	X
		L	607	2	2	X	X
		L	608	2	0	X	X
		L	609	2	0	X	X
		R	609	2	0	0	X
		L	610	2	0	X	X
		L	611	2	0	0	X
		R	611	2	0	0	X
		R	612	2	2	X	X
		L	613	2	0	0	0
		R	613	2	0	X	X
		L	614	1	2	0	0
		L	625	2	0	0	0
		R	625	2	0	0	X
		L	626	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Medicago lupulina (cont.)	black medic clover	R	627	2	0	X	X
		L	628	2	0	0	0
		R	628	2	0	X	X
		L	629	2	0	0	0
		R	629	2	0	X	X
		L	630	2	0	0	0
		L	631	2	0	0	0
		R	633	2	0	X	X
		L	650	2	0	X	X
		R	650	2	2	0	0
		L	651	2	0	0	0
		R	651	2	2	2	0
		L	652	2	2	X	X
		R	652	3	2	0	X
		L	653	2	0	0	0
		R	653	2	2	X	X
		L	656	1	0	0	0
		L	657	2	0	0	0
		R	657	2	2	X	X
		L	658	2	2	X	X
		R	658	3	3	X	X
		L	659	2	0	X	X
		R	659	3	3	X	X
		R	665	2	0	0	X
		L	666	2	0	0	0
		R	666	2	2	X	X
		L	667	2	0	0	0
		R	667	3	3	X	X
		L	668	2	0	X	X
		R	668	3	3	X	X
		L	669	2	0	0	0
		R	669	3	3	0	X
		L	670	2	0	0	0
		R	670	2	2	X	X
		R	700	2	2	X	X
		R	701	2	2	X	X
		R	706	2	2	0	X
		L	752	2	2	0	0
		L	757	2	0	0	0
		R	757	2	0	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Medicago lupulina (cont.)	black medic clover	L	758	2	0	0	0
		R	758	2	0	X	X
		L	760	2	0	X	X
		R	760	3	X	X	X
Medicago minima	burr medic clover	L	632	1	0	0	0
		L	633	1	0	0	0
		L	652	1	0	X	X
		R	652	2	0	0	X
		L	653	2	0	0	0
		R	653	3	2	X	X
		L	654	2	0	0	0
		L	656	2	0	0	0
		L	657	2	0	0	0
		R	657	2	3	X	X
		L	658	2	0	X	X
		R	658	3	3	X	X
		L	659	2	0	X	X
		R	659	3	3	X	X
		L	660	2	0	0	0
		L	662	2	0	0	0
		L	665	2	0	X	X
		R	665	2	0	0	X
		L	666	2	0	0	0
		R	666	2	2	X	X
		L	667	2	0	0	0
		R	667	3	3	X	X
		R	668	3	3	X	X
		R	670	2	2	X	X
		L	700	2	0	X	X
		R	700	2	2	X	X
		L	701	2	0	0	0
		R	701	3	2	X	X
		R	702	3	2	X	X
		L	705	2	0	0	X
		L	756	2	0	0	X
Medicago sativa	alfalfa	R	613	1	0	X	X
		L	629	1	0	0	0
		R	630	2	0	X	X
		L	664	1	1	0	0
		R	664	2	0	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Medicago sativa (cont.)	alfalfa	R	665	2	0	0	X
		R	754	2	0	0	0
		R	755	2	2	X	X
		L	756	2	0	0	X
Melilotus alba	white sweetclover	L	600	2	1	0	0
		L	601	1	0	0	0
		R	601	2	0	0	X
		L	602	1	0	0	0
		R	602	2	2	0	X
		L	603	1	1	0	0
		R	603	2	2	0	X
		L	604	1	0	0	0
		R	604	2	2	0	X
		R	605	2	2	0	X
		L	606	1	0	X	X
		R	606	2	2	0	X
		L	607	1	0	X	X
		R	607	2	2	0	X
		L	608	2	0	X	X
		R	608	2	2	0	X
		L	609	1	0	X	X
		R	609	2	0	0	X
		L	610	1	0	X	X
		R	610	2	2	0	X
		L	611	1	0	0	X
		R	611	2	0	0	X
		L	612	1	0	0	0
		R	612	2	2	X	X
		L	613	1	0	0	0
		R	613	2	0	X	X
		L	614	0	1	0	0
		R	614	2	2	0	X
		L	625	1	1	0	0
		R	625	2	0	0	X
		L	626	2	2	0	0
		R	626	2	2	0	X
		L	627	2	0	0	0
		R	627	2	0	X	X
		L	628	1	0	0	0
		R	628	2	0	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Melilotus alba (cont.)	white sweetclover	L	629	2	0	0	0
		L	630	1	0	0	0
		L	632	1	1	0	0
		R	632	2	0	0	X
		L	633	1	1	0	0
		R	633	2	0	X	X
		L	650	1	0	X	X
		R	650	2	2	0	0
		L	651	1	0	0	0
		L	652	1	1	X	X
		R	653	2	2	X	X
		L	654	1	1	0	0
		R	654	2	2	0	X
		L	655	2	0	0	0
		R	655	2	2	0	X
		L	656	1	1	0	0
		R	656	2	2	0	0
		L	657	1	0	0	0
		R	657	3	2	X	X
		L	658	1	0	X	X
		R	658	2	2	X	X
		L	659	1	0	X	X
		R	659	2	2	X	X
		L	660	1	0	0	0
		R	660	3	2	X	X
		L	661	1	0	0	0
		R	661	2	0	0	0
		L	662	2	0	0	0
		R	662	3	2	0	0
		L	663	2	1	0	0
		R	663	2	2	2	0
		L	664	1	0	0	0
		R	664	3	2	0	X
		L	665	1	0	X	X
		R	665	2	2	0	X
		R	666	2	2	X	X
		L	667	1	0	0	0
		L	668	1	0	X	X
		L	701	0	1	0	0
		R	701	1	0	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Melilotus alba (cont.)	white sweetclover	L	704	1	0	0	X
		R	704	2	2	0	X
		L	705	1	0	0	X
		R	705	2	2	0	X
		L	707	0	0	1	0
		L	750	1	0	0	0
		R	750	2	2	0	0
		L	751	2	0	0	0
		R	751	2	2	0	0
		L	752	1	0	0	0
		R	752	1	0	0	X
		R	753	2	0	X	X
		L	754	1	0	0	X
		L	755	1	0	0	X
		R	755	2	2	X	X
		L	756	2	0	0	X
		R	756	2	2	0	X
		L	757	1	0	0	0
		R	757	2	0	X	X
Meilotus officinalis	yellow sweetclover	L	600	2	0	0	0
		L	601	1	1	0	0
		L	604	1	0	0	0
		L	605	1	0	0	0
		L	607	1	0	X	X
		R	610	1	0	0	X
		L	626	2	0	0	0
		R	626	2	2	0	X
		R	627	2	0	X	X
		L	631	1	0	0	0
		R	652	2	2	0	X
		L	653	0	1	0	0
		R	657	2	2	X	X
		R	658	2	2	X	X
		R	660	2	2	X	X
		R	666	2	2	X	X
		L	753	1	0	0	X
		R	756	2	2	0	X
		R	757	2	0	X	X
		R	760	1	X	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense	Johnsongrass	R	606	1	0	0	X
		L	607	1	0	X	X
		L	612	1	2	2	0
		R	612	2	0	X	X
		L	613	0	0	2	3
		R	613	2	0	X	X
		L	614	1	2	0	0
		R	614	2	2	0	X
		L	625	1	2	3	3
		R	625	2	0	0	X
		L	626	2	2	3	3
		L	627	1	2	3	3
		L	628	1	2	2	0
		R	628	2	0	X	X
		L	629	1	2	2	0
		R	629	2	2	X	X
		L	630	1	2	2	2
		R	630	2	2	X	X
		L	632	0	1	0	0
		R	632	2	2	0	X
		L	650	1	2	X	X
		R	650	2	2	2	2
		L	651	1	2	0	0
		R	651	2	2	0	0
		L	652	2	2	X	X
		R	652	2	3	0	X
		L	653	1	2	0	0
		R	653	2	2	X	X
		L	654	1	2	0	0
		R	654	2	3	0	X
		L	655	1	0	0	0
		R	655	2	2	0	X
		L	656	1	1	2	0
		R	656	2	2	0	0
		L	657	2	2	3	3
		R	657	2	2	X	X
		L	658	2	2	X	X
		R	658	2	2	X	X
		L	659	1	2	X	X
		R	659	2	2	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense (cont.)	Johnsongrass	L	660	2	2	0	0
		R	660	2	2	X	X
		R	661	2	2	2	0
		L	662	0	1	0	0
		R	662	2	2	0	0
		L	664	0	1	2	0
		L	665	0	1	X	X
		R	665	2	2	2	X
		L	666	0	3	2	0
		L	667	0	3	3	0
		R	667	2	2	X	X
		L	668	0	2	X	X
		R	668	2	2	X	X
		L	669	0	2	3	0
		R	669	2	2	2	X
		L	670	0	3	0	0
		R	670	2	2	X	X
		L	700	1	2	X	X
		R	700	2	3	X	X
		L	701	0	2	2	0
		R	701	2	3	X	X
		L	702	0	1	X	X
		R	702	2	2	X	X
		L	703	0	2	2	X
		R	703	2	2	X	X
		L	704	1	0	0	X
		R	704	2	2	0	X
		L	705	1	3	3	X
		R	705	2	2	0	X
		L	706	1	3	3	X
		R	706	2	3	2	X
		L	707	2	2	3	2
		R	707	2	2	X	X
		L	750	0	0	0	2
		R	750	1	0	0	0
		L	751	1	2	2	0
		L	752	2	2	0	0
		L	754	0	2	0	X
		L	756	1	0	0	X
		R	756	2	2	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense (cont.)	Johnsongrass	L	757	0	1	2	0
		R	757	2	2	X	X
		L	758	1	2	3	0
		L	759	1	2	X	X
		R	759	2	X	X	X
Taraxacum officinale	dandelion	R	625	1	0	0	X
		R	626	2	2	0	X
		R	628	2	2	X	X
		L	660	1	0	0	0
Torilis arvensis	spreading hedgeparsley	L	650	2	2	X	X
		R	650	2	2	0	0
		L	651	2	0	0	0
		L	652	2	2	X	X
		R	652	2	2	0	X
		L	653	0	1	0	0
		L	654	0	0	1	0
		L	655	0	1	1	0
		R	655	2	2	0	X
		L	657	1	0	0	0
		R	657	2	2	X	X
		L	658	1	1	X	X
		L	659	1	0	X	X
		L	660	1	1	0	0
		L	661	0	1	0	0
		R	666	0	2	X	X
		L	667	2	0	0	0
		R	667	2	3	X	X
		L	668	0	1	X	X
		L	669	1	2	2	0
		L	670	1	2	0	0
		R	700	2	2	X	X
		R	701	1	0	X	X
		L	704	1	0	0	X
		L	705	1	0	0	X
		R	706	2	0	0	X
		L	707	0	1	0	0
		R	707	0	2	X	X
		L	750	0	1	1	0
		L	758	0	2	2	0
		R	758	3	2	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table C-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Torilis arvensis (cont.)	spreading hedgeparsley	L	759	1	2	X	X
		R	759	2	X	X	X
		L	760	0	2	X	X
		R	760	3	X	X	X
Tragopogon dubius	western salsify	L	625	0	1	0	0
		L	626	2	0	0	0
		L	627	1	0	0	0
		L	628	1	0	0	0
		L	629	1	1	0	0
		L	630	1	0	0	0
		L	633	1	0	0	0
		L	650	1	0	X	X
		L	651	1	0	0	0
		R	651	2	2	0	0
		L	652	2	2	X	X
		R	655	0	2	0	X
		R	659	0	2	X	X
		L	661	1	0	0	0
		L	666	1	0	0	0
		R	666	2	2	X	X
		R	670	2	2	X	X
		L	700	1	0	X	X
		L	703	1	0	0	X
		R	703	2	2	X	X
		L	706	2	0	0	X
		L	707	0	0	1	0
		L	750	1	0	0	0
		R	751	2	0	0	0
		L	758	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

C.2 Panel 2 - May 2010

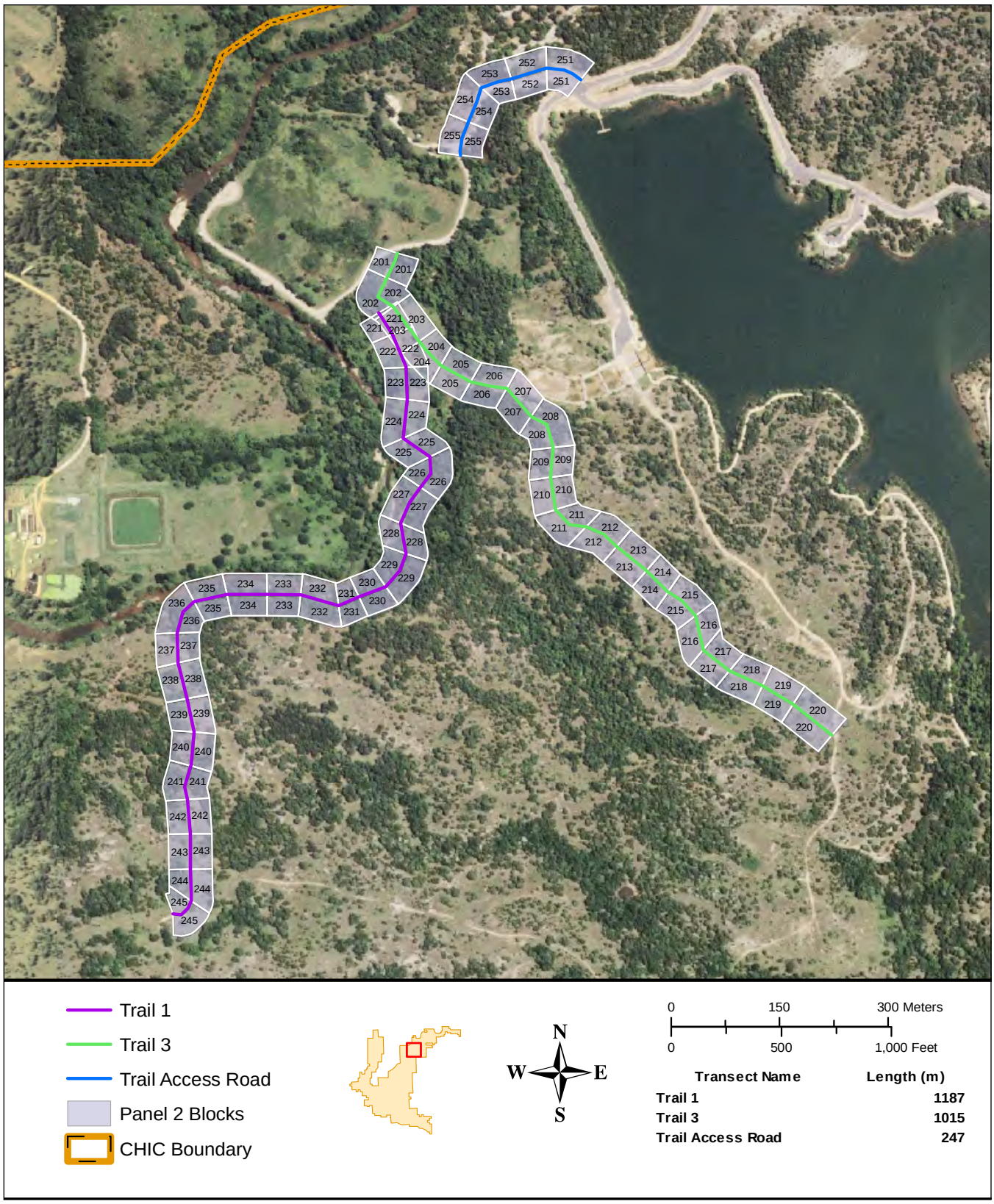


Figure C.3. Individual vector blocks sampled, Panel 2, Chickasaw NRA, 2010.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Albizia julibrissin	Mimosa	R	206	2	2	–	–
		R	207	1	2	–	–
		R	208	0	1	–	–
		R	209	0	1	–	–
		R	212	0	2	0	–
		R	213	1	2	–	–
		R	216	1	0	0	–
		R	218	1–2	2	–	–
		L	207	1	1	0	0
		L	208	0	2	0	0
		L	209	0	2	0	0
		L	210	1	2	0	0
		L	211	2	3	0	0
		L	212	1	2	0	0
		L	213	2	2	0	0
		L	214	1	2	0	0
		L	216	0	2	0	–
		L	218	1	2	0	0
		L	220	1	2	0	0
		R	221	0	2	0	–
		R	224	1	0	0	–
		R	225	0	2	–	–
		R	236	1–2	0	–	–
		R	239	1	1	0	–
		R	240	2	2	1	–
		R	241	0	2	0	–
		R	245	0	1	–	–
		L	221	0	1	0	0
		L	222	1	0	0	0
		L	225	1	1	–	–
		L	239	1	2	2	0
		L	240	2	1	0	0
		L	241	2	2	–	–
		L	242	2	2	0	0
		R	251	1	0	–	–
		R	253	1	0	–	–
		R	254	2	2	–	–
		R	255	1	2	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Albizia julibrissin (cont.)	Mimosa	L	251	0	1	–	–
		L	252	0	1	–	–
Amaranthus retroflexus	Red-root pigweed	R	205	0	1	–	–
		R	223	1	2	–	–
		L	223	2	2	0	0
		L	224	2	2	0	0
Bromus japonicus	Japanese brome	R	201	2	2	–	–
		R	202	0	2	2	2
		R	203	3	3	2	0
		R	204	3	3	3	0
		R	205	3	3	–	–
		R	205	0	1	–	–
		R	206	2	2	–	–
		R	207	2	0	–	–
		R	208	2	0	–	–
		R	209	2	0	–	–
		R	210	2	2	0	0
		R	211	2	0	–	–
		R	212	1	1	0	–
		R	213	1	0	–	–
		R	214	2	0	–	–
		R	215	1	0	0	–
		R	216	1–2	0	0	–
		R	217	2	2	0	–
		R	218	2	2	–	–
		R	219	3	3	–	–
		R	220	2	2–3	1	–
		L	201	2	2	–	–
		L	202	1	2	–	–
		L	203	3	3	0	0
		L	204	3	3	0	0
		L	205	2	3	3	0
		L	206	2	3	3	0
		L	207	2	3	3	0
		L	208	2	2	0	0
		L	209	2	2	0	0
		L	210	0	2	0	0
		L	211	1	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	L	212	1	0	0	0
		L	214	0	1	0	0
		L	215	1	0	0	–
		L	216	1	0	0	–
		L	217	2	0	0	0
		L	218	2	0	0	0
		L	219	2	3	3	3
		L	220	2	2	0	0
		R	221	2–3	3	0	–
		R	222	3	3	2	–
		R	223	2–3	2–3	–	–
		R	224	3	3	2	–
		R	225	2–3	3	–	–
		R	226	2	2–3	–	–
		R	227	2	1	–	–
		R	228	2	2	–	–
		R	229	2	2	–	–
		R	230	1	2	–	–
		R	231	2	2	–	–
		R	232	2	2	–	–
		R	233	1	2	–	–
		R	234	1	2	–	–
		R	235	1	2	–	–
		R	236	2	3	–	–
		R	237	2	3	3	–
		R	238	2	3	2	–
		R	239	2	2	0	–
		R	240	2	2	1	–
		R	241	1	1	0	–
		R	242	2	2	0	–
		R	243	3	2	0	–
		R	244	3–4	3–4	–	–
		R	245	3–4	3–4	–	–
		L	221	2	3	3	0
		L	222	3	3	3	0
		L	223	3	3	0	0
		L	224	3	3	3	0
		L	225	3	3	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	L	226	2	–	–	–
		L	227	1	–	–	–
		L	228	2	–	–	–
		L	229	2	2	2	–
		L	230	1	1	–	–
		L	231	1	0	–	–
		L	232	2	–	–	–
		L	233	1	0	0	0
		L	234	1	1	0	0
		L	235	1	2	–	–
		L	236	2	3	–	–
		L	237	2	3	0	0
		L	238	2	3	3	3
		L	239	2	3	3	3
		L	240	2	0	0	0
		L	241	2	0	–	–
		L	242	1	2	0	0
		L	243	2	2	–	–
		L	244	3	3	3	3
		L	245	3	3	0	0
		R	251	2	2	–	–
		R	253	2	2	–	–
		R	255	1	0	–	–
		L	251	2	3	–	–
		L	252	2	3	–	–
		L	253	3	–	–	–
		L	254	0	2	–	–
Bromus tectorum	Cheatgrass	L	201	1	2	–	–
		L	204	0	2	2	0
		L	244	0	1	0	0
Cynodon dactylon	Bermuda grass	R	251	3	1	–	–
		R	252	3	0	–	–
		R	253	1	0	–	–
		R	254	0	1	–	–
		L	251	3	0	–	–
		L	252	3	3	–	–
		L	253	3	–	–	–
		L	254	2	0	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Eragrostis cilianensis	Stinkgrass	R	201	0	2	–	–
		R	202	0	2	0	0
		R	203	2	2	0	0
		R	204	2	2	0	0
		R	205	1	0	–	–
		R	208	0	2	–	–
		R	209	2	2	–	–
		R	210	0	2	0	0
		R	211	0	2	–	–
		R	213	1	1–2	–	–
		R	214	1	2	–	–
		R	215	2	2	0	–
		R	216	2	2	0	–
		R	217	1	2	0	–
		R	218	1	2	–	–
		R	219	2	1	–	–
		R	220	2	2	1	–
		L	202	1	0	–	–
		L	204	1	1	0	0
		L	208	0	1	0	0
		L	209	1	1	0	0
		L	210	0	1	0	0
		L	213	1	0	0	0
		L	214	1	1	0	0
		L	215	0	1	0	–
		L	216	1	0	0	–
		L	217	1	0	0	0
		L	219	0	1	0	0
		R	221	0	2	0	–
		R	222	0	2	0	–
		R	223	2	1	–	–
		R	224	2	2	0	–
		R	225	1–2	1–2	–	–
		R	226	2	2	–	–
		R	227	2	2	–	–
		R	228	1	1	–	–
		R	233	2	0	–	–
		R	235	1	1	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Eragrostis cilianensis (cont.)	Stinkgrass	R	237	2	2	2	–
		R	238	2–3	3	2	–
		R	239	2	2	0	–
		R	241	1	1	0	–
		R	242	1	0	0	–
		R	243	2	1	0	–
		R	244	3	3	–	–
		R	245	2	2	–	–
		L	223	1	0	0	0
		L	226	2	–	–	–
		L	227	1	–	–	–
		L	228	2	–	–	–
		L	234	1	0	0	0
		L	237	2	0	0	0
		L	238	3	3	0	0
		L	239	2	2	0	0
		L	244	1	2	0	0
		L	245	3	3	0	0
		L	255	0	2	–	–
Euphorbia dentata	Toothed spurge	L	202	2	0	–	–
		L	207	1	0	0	0
		L	230	1	0	–	–
		L	254	1	0	–	–
Lathyrus hirsutus	Singletary pea	R	204	0	2	0	0
		L	203	0	2	0	0
		L	204	0	2	0	0
		R	238	1	1	0	–
		R	244	1	2	–	–
		R	245	0	1	–	–
		L	238	1	2	0	0
Lespedeza cuneata	Sericea lespedeza	R	201	2	2	–	–
		R	202	2	2	2	2
		R	203	0	0	2	0
		R	204	0	2	2	0
		R	205	2	2–3	–	–
		R	206	2	2	–	–
		R	207	0	2	–	–
		R	208	0	2	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Lespedeza cuneata (cont.)	Sericea lespedeza	L	201	1	1	–	–
		L	202	2	2	–	–
		L	205	2–3	3	3	0
		L	206	3	3	2	0
		R	221	1	2	1	–
		R	223	1	1	–	–
		R	224	2	2–3	0	–
		R	227	2	2	–	–
		R	228	2	2	–	–
		R	232	0	1	–	–
		R	233	0	1	–	–
		R	235	1	1	–	–
		R	237	0	0	2	–
		L	221	2	2	1	0
		L	222	1	2	3	3
		L	223	0	2	3	0
		L	224	0	2	0	0
		L	225	2	2	–	–
		L	226	2	–	–	–
		L	227	2	–	–	–
		L	228	2	–	–	–
		L	235	2	2	–	–
		L	237	0	2	0	0
		L	251	0	1	–	–
		L	253	2	–	–	–
Lolium arundinaceum	Tall fescue	R	206	0	1	–	–
Lolium perenne	Perennial ryegrass	R	201	2	2	–	–
		R	202	1	2	0	0
		R	203	2	0	0	0
		R	204	2	2	0	0
		R	205	2	2	–	–
		R	206	2	0	–	–
		R	208	1–2	0	–	–
		R	209	2	0	–	–
		R	210	2	1	0	0
		R	211	1	0	–	–
		R	215	1	0	0	–
		R	216	1	1	0	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Lolium perenne (cont.)	Perennial ryegrass	R	219	3	3	–	–
		R	220	1	1	0	–
		L	201	1	2	–	–
		L	203	0	1	0	0
		L	204	1	2	0	0
		L	205	2	0	0	0
		L	206	1	0	0	0
		L	207	0	1	0	0
		L	208	1	0	0	0
		L	209	1	0	0	0
		L	211	1	0	0	0
		L	214	0	1	0	0
		L	219	3	0	0	0
		R	223	2	2	–	–
		R	224	2	2–3	0	–
		R	225	1	0	–	–
		R	237	2	2	0	–
		R	238	2–3	2–3	0	–
		R	239	2	2	0	–
		R	240	2	2	1	–
		R	241	1	1	0	–
		R	242	1	2	0	–
		R	243	1	0	0	–
		L	223	1	1	0	0
		L	224	1	0	0	0
		L	237	1	0	0	0
		L	240	1	0	0	0
		R	251	1	0	–	–
		R	253	1	0	–	–
		L	251	1	1	–	–
Lolium pratense	Meadow fescue	R	252	0	1	–	–
		L	252	0	1	–	–
Medicago lupulina	Black medic clover	R	201	2	0	–	–
		R	204	2–3	2–3	0	0
		R	205	2–3	2–3	–	–
		R	206	2	2	–	–
		L	201	1	0	–	–
		L	203	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Medicago lupulina (cont.)	Black medic clover	L	204	2	2	0	0
		L	205	2	2	0	0
		L	206	2	2	0	0
		L	207	1	0	0	0
		R	221	1	0	0	–
		R	222	2	2	0	–
		R	224	1	0	0	–
		R	238	2	2	0	–
		L	236	1	0	–	–
		L	237	2	0	0	0
		R	251	2	0	–	–
		R	252	2	0	–	–
		R	253	2	0	–	–
		R	254	2	0	–	–
Medicago minima	Burr medic clover	R	201	2	0	–	–
		R	202	1	0	0	0
		L	201	1	0	–	–
		L	202	2	2	–	–
		L	203	1	1	0	0
		R	222	2	1–2	0	–
		R	224	1	0	0	–
		R	237	1	0	0	–
		R	238	2	0	0	–
		L	221	2	0	0	0
		L	222	2	0	0	0
		L	224	2	2	0	0
		L	237	1	0	0	0
		L	238	2	0	0	0
		R	251	2–3	0	–	–
		R	252	3	0	–	–
		R	254	2	0	–	–
		L	251	2	0	–	–
		L	252	3	0	–	–
		L	253	3	–	–	–
		L	255	2	0	–	–
Melia azedarach	Chinaberry	R	201	0	2	–	–
		R	202	0	2	0	0
		R	203	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melia azedarach (cont.)	Chinaberry	R	204	0	2	0	0
		R	205	0	2	–	–
		R	211	0	2	–	–
		R	213	0	2	–	–
		R	216	0	0	1	–
		R	217	0	2	1	–
		L	201	0	2	–	–
		L	203	0	2	2	0
		L	204	0	2	3	3
		L	205	0	2	3	3
		L	207	0	1	0	0
		L	208	0	1	0	0
		L	220	0	1	0	0
		R	225	0	1	–	–
		R	226	0	2	–	–
		R	228	0	1	–	–
		L	226	2	–	–	–
		L	228	1	–	–	–
		L	229	1	0	0	–
		L	237	0	1	0	0
Melilotus officinalis	Yellow sweetclover	R	201	0	1	–	–
		R	202	1	2	0	0
		R	204	2	2	2	0
		R	205	2	2	–	–
		R	206	2	2	–	–
		R	207	1	2	–	–
		R	208	3	3	–	–
		R	220	1	1	0	–
		L	201	0	2	–	–
		L	202	1	2	–	–
		L	203	1	0	0	0
		L	204	2	0	0	0
		L	205	2	0	0	0
		L	206	1	2	2	0
		L	207	2	2	0	0
		L	208	2	3	3	0
		L	209	1	0	0	0
		R	221	0	1	1	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus officinalis (cont.)	Yellow sweetclover	R	225	1–2	2	–	–
		R	226	2	2	–	–
		R	235	2	0	–	–
		R	237	2–3	2–3	2	–
		R	238	2	2–3	2	–
		R	239	2–3	2–3	3	–
		R	241	1	0	0	–
		R	242	0	2	0	–
		R	243	1	0	0	–
		R	244	1	0	–	–
		L	221	1	2	2	0
		L	222	0	2	2	2
		L	224	0	2	2	0
		L	225	2	2	–	–
		L	226	3	–	–	–
		L	228	2	–	–	–
		L	235	1	0	–	–
		L	237	1	2	0	0
		L	238	1	2	2	0
		L	239	2	3	0	0
		L	240	2	0	0	0
		L	241	1	2	–	–
		L	243	1	2	–	–
		L	244	2	2	0	0
		L	245	0	0	2	0
		R	252	0	2–3	–	–
		R	254	2	0	–	–
		L	251	0	2	–	–
		L	252	0	2	–	–
		L	253	2	–	–	–
		L	254	1	0	–	–
		L	255	0	1	–	–
Sorghum halepense	Johnsongrass	R	201	0	2	–	–
		R	202	2	2	2	0
		R	203	0	2	2	0
		R	204	0	0	2	0
		R	205	3	3	–	–
		R	206	2–3	2–3	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense (cont.)	Johnsongrass	R	207	0	1	–	–
		L	201	1	2	–	–
		L	202	2	1	–	–
		L	203	0	2	3	0
		L	204	0	2	2	0
		L	205	2	3	0	0
		L	206	2	3	0	0
		L	213	0	2	3	0
		L	216	0	0	2	–
		R	221	0	2	2	–
		R	222	0	2–3	2	–
		R	223	0	3	–	–
		R	224	0	3	3	–
		R	237	0	1	0	–
		L	221	0	0	2	2
		L	222	2	2	3	3
		L	223	1	2	3	3
		L	224	3	3	3	3
		R	251	1	1	–	–
		R	252	2–3	2	–	–
		R	253	3	3	–	–
		R	254	0	2	–	–
		R	255	1	0	–	–
		L	251	1	1	–	–
		L	252	2	2	–	–
		L	253	2	–	–	–
		L	255	0	1	–	–
Taraxacum officinale	Dandelion	R	251	2	0	–	–
		R	253	1	0	–	–
Torilis arvensis	Spreading hedgeparsley	R	201	2	2	–	–
		R	202	2	2	2	2
		R	203	3	3	2	3
		R	204	3	3	3	0
		R	205	3	3	–	–
		R	206	0	2	–	–
		R	207	1	0	–	–
		R	209	1	1	–	–
		R	210	1	0	0	1

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Torilis arvensis (cont.)	Spreading hedgeparsley	R	212	0	2	0	–
		R	213	0	2	–	–
		R	214	0	2	–	–
		R	216	1	2	0	–
		R	219	2	2	–	–
		R	220	0	1	0	–
		L	201	2	2	–	–
		L	203	0	3	3	0
		L	204	3	3	0	0
		L	205	2	3	0	0
		L	206	2	3	0	0
		L	207	2	0	0	0
		L	208	1	1	0	0
		L	210	1	1	0	0
		L	212	0	1	0	0
		L	213	0	1	0	0
		L	214	0	1	0	0
		L	215	0	1	0	–
		L	216	0	1	1	–
		L	217	0	1	0	0
		L	218	1	1	0	0
		L	219	1	1	2	2
		L	220	0	2	0	0
		R	221	0	1–2	0	–
		R	222	0	2–3	2	–
		R	223	0	2	–	–
		R	224	2	2–3	0	–
		R	225	0	2	–	–
		R	226	2	2	–	–
		R	227	1	2	–	–
		R	228	1–2	1	–	–
		R	229	1	1	–	–
		R	234	1	0	–	–
		R	237	0	1	0	–
		R	238	2	2	0	–
		R	239	0	2	2	–
		R	240	0	1	0	–
		R	242	1	0	0	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Torilis arvensis (cont.)	Spreading hedgeparsley	R	243	1	1	0	–
		R	244	0	2	–	–
		R	245	0	1	–	–
		L	221	0	2	0	0
		L	222	0	0	3	0
		L	223	1	2	2	0
		L	224	0	2	2	2
		L	225	2	2	–	–
		L	226	2	–	–	–
		L	227	1	–	–	–
		L	228	1	–	–	–
		L	237	0	1	0	0
		L	238	1	2	2	0
		L	239	1	2	2	2
		L	242	0	1	0	0
		L	244	2	2	0	0
		L	245	0	2	0	0
		R	251	0	2	–	–
		R	252	0	2–3	–	–
		R	253	2	2	–	–
		R	254	0	1	–	–
		L	251	1	2	–	–
		L	252	0	2	–	–
		L	253	2	–	–	–
		L	254	1	2	–	–
		L	255	1	1	–	–
Tragopogon dubius	Western salsify	R	203	1	1	0	0
		R	204	0	1	0	0
		R	205	0	1	–	–
		L	203	0	1	0	0
		L	204	0	1	0	0
		L	205	0	1	0	0
		L	218	0	1	0	0
		L	222	2	2	2	0
		L	224	1	0	0	0
		L	225	1	0	–	–
		L	255	0	1	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

C.3 Panel 1 - August 2009

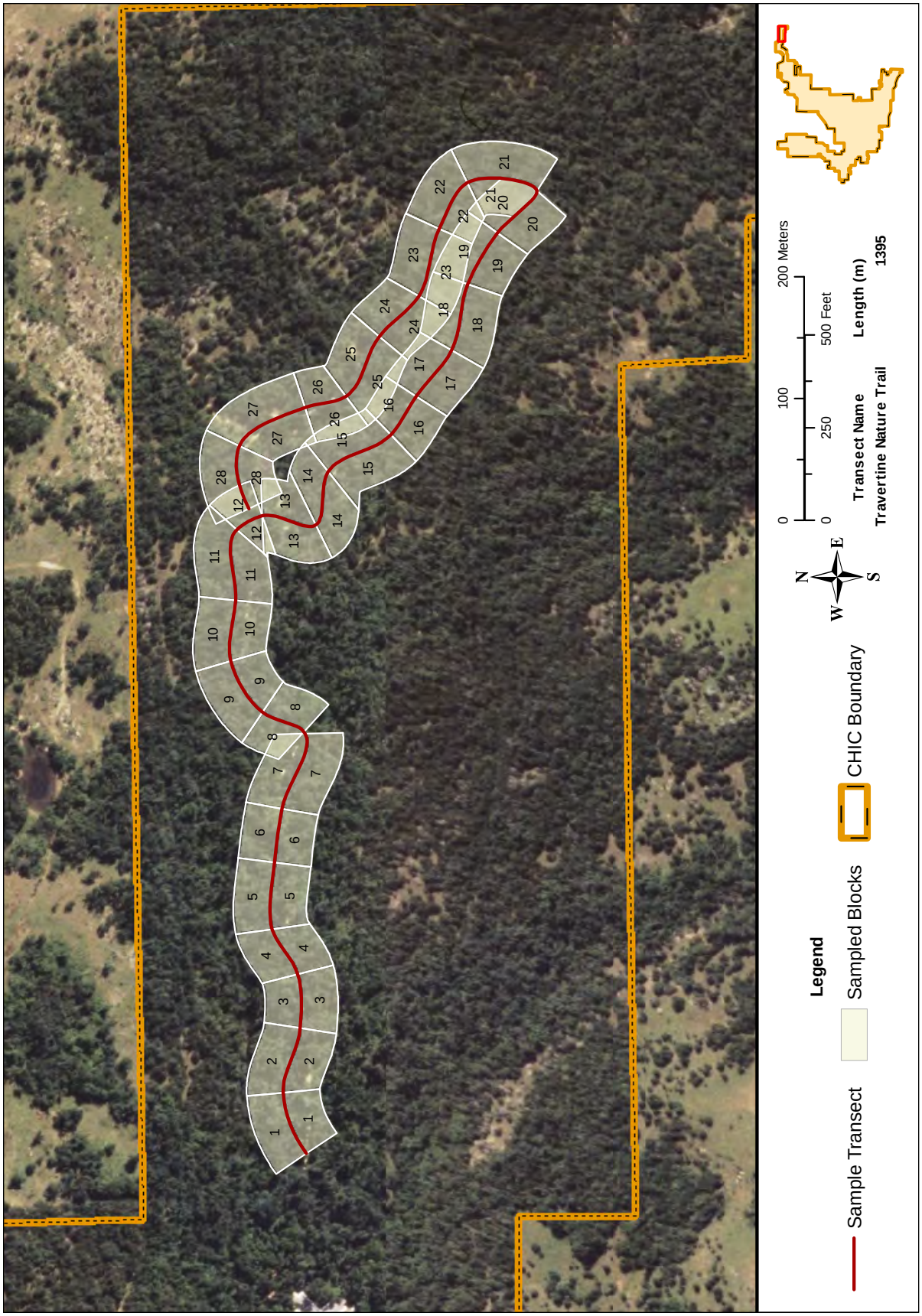


Figure C.4. Individual vector blocks sampled, Panel 1, Chickasaw NRA, 2009.

Table C-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Agrostis gigantea	creeping bentgrass	R	26	1	1	0	–
		R	27	0	1	–	–
Albizia julibrissin	mimosa tree	L	20	1	1	–	–
		L	21	2	2	–	–
		R	21	3	2	–	–
		R	23	1	0	–	–
		L	24	0	1	–	–
		L	26	2	2	–	–
		R	27	1	0	–	–
Bromus japonicus	Japanese brome	L	17	1	0	–	–
		R	17	1	0	–	–
		L	18	1	1	–	–
		R	18	1	0	–	–
		L	22	1	0	–	–
Cynodon dactylon	Bermudagrass	L	22	2	0	–	–
		R	22	1	0	–	–
Cyperus esculentus(?)	yellow nutgrass(?)	L	1	2	1	–	–
		R	1	2	2	–	–
		L	2	1	0	–	–
		R	2	2	1	–	–
		L	3	2	0	–	–
		R	3	2	1	–	–
		L	4	1	0	–	–
		R	4	2	2	–	–
		L	5	1	0	–	–
		R	5	2	1	–	–
		L	6	1	0	–	–
		R	6	2	0	–	–
		L	7	1	0	–	–
		R	7	1	0	–	–
		L	8	1	0	–	–
		R	8	1	–	–	–
		L	9	1	0	–	–
		R	9	1	1	–	–
		L	10	2	0	–	–
		R	10	1	0	–	–
		L	11	2	0	–	–
		R	11	1	1	–	–
		L	12	2	0	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Cyperus esculentus(?), cont.	yellow nutgrass(?)	R	12	1	0	–	–
		L	13	2	–	–	–
		R	13	1	–	–	–
		L	14	2	2	–	–
		R	14	1	1	–	–
		L	15	2	2	–	–
		L	16	3	3	2	–
		R	16	2	2	–	–
		L	17	2	0	–	–
		R	17	2	2	–	–
		L	18	2	0	–	–
		R	18	3	1	–	–
		L	19	2	2	–	–
		R	19	2	2	–	–
		L	20	2	2	–	–
		R	20	2	2	–	–
		L	21	2	2	–	–
		R	21	2	1	–	–
		L	22	2	0	–	–
		R	22	2	2	–	–
		L	23	2	2	–	–
		R	23	2	2	–	–
		L	24	2	2	–	–
		R	24	2	1	–	–
		L	25	2	0	–	–
		R	25	2	1	–	–
		R	26	2	0	0	–
		L	27	2	–	–	–
		R	27	2	0	–	–
		L	28	2	–	–	–
		R	28	1	0	–	–
Echinochloa colona	jungle ricegrass	R	27	1	0	–	–
Erodium cicutarium	redstem storksbill	R	1	1	0	–	–
		R	2	1	0	–	–
		L	11	1	1	–	–
		R	11	1	1	–	–
Eupatorium dentata	toothed spurge	L	13	2	–	–	–
		R	13	2	–	–	–
		L	14	2	2	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table C-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Chickasaw NRA, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Eupatorium dentata (cont.)	toothed spurge	R	14	2	0	–	–
		L	15	2	0	–	–
		R	15	1	0	–	–
		L	16	2	2	0	–
		R	16	2	0	–	–
		L	17	2	2	–	–
		R	17	2	0	–	–
		R	20	2	0	–	–
		L	24	2	1	–	–
Lactuca serriola	prickly lettuce	L	1	1	0	–	–
		R	1	1	0	–	–
		L	2	1	0	–	–
Lespedeza cuneata	sericea lespedeza	L	15	1	0	–	–
		L	19	2	0	–	–
		L	23	1	0	–	–
		R	23	1	0	–	–
		R	24	1	0	–	–
		L	26	2	0	–	–
		R	26	1	1	0	–
		L	27	3	3	–	–
		L	28	2	–	–	–
Lonicera japonicus	Japanese honeysuckle	L	13	1	–	–	–
Taraxacum officinale	dandelion	L	26	1	0	–	–
		R	26	0	1	0	–
Tragopogon dubius	western salsify	R	16	1	0	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix D. Fort Larned NHS Sampling Results

D.1 Panel 3 - May 2011

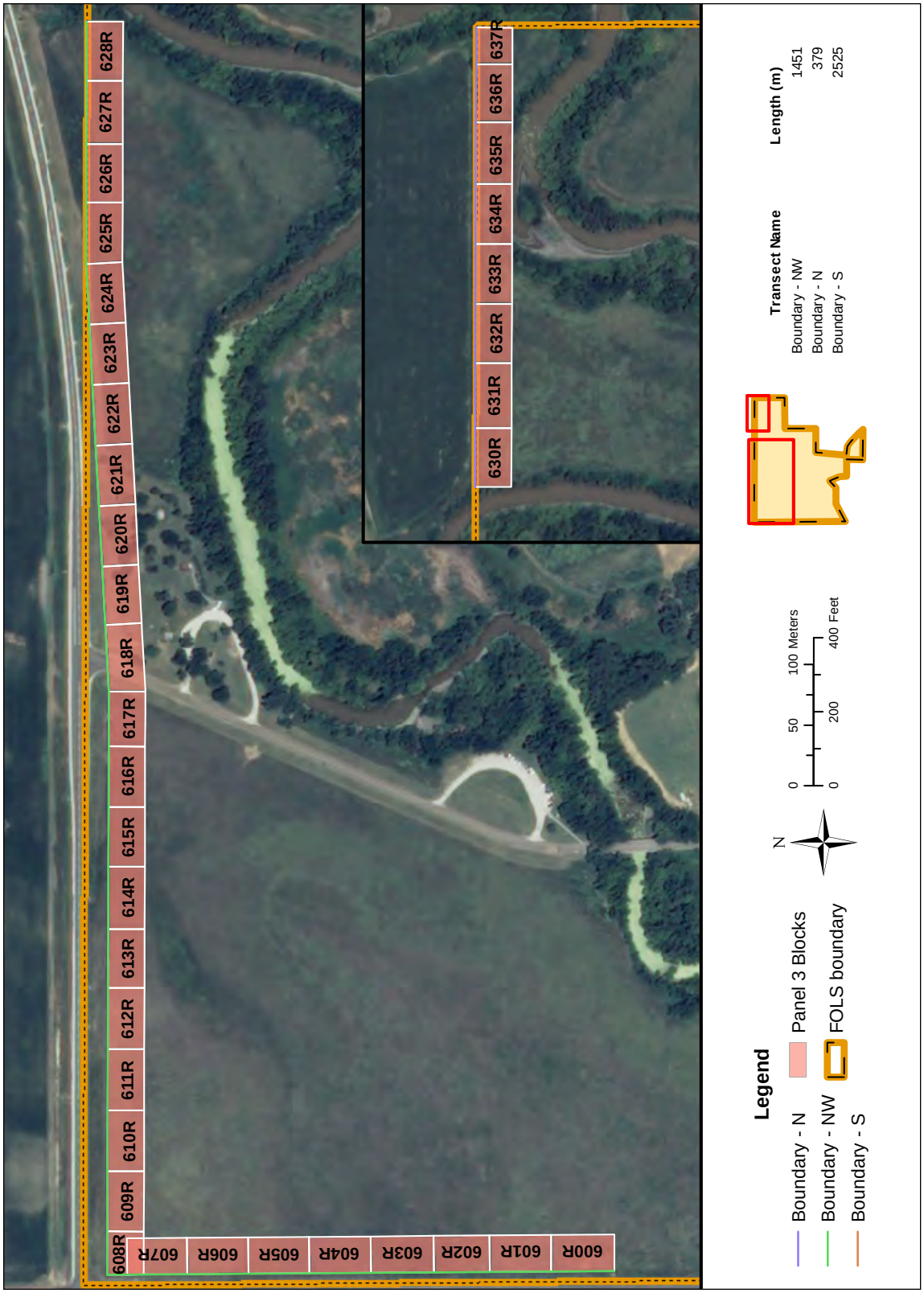


Figure D.1. Individual vector blocks sampled, Panel 3 (north transect), Fort Larned NHS, 2011..

Figure D.2. Individual vector blocks sampled, Panel 3 (south transect), Fort Larned NHS, 2011.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011.

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bromus inermis	smooth brome	R	600	3	4	4	4
		R	601	3	4	4	4
		R	602	4	4	4	4
		R	603	4	4	4	4
		R	604	4	4	4	4
		R	605	4	4	4	3
		R	606	4	4	4	4
		R	607	4	3	2	2
		R	608	4	4	4	4
		R	609	3	3	3	3
		R	610	4	4	4	4
		R	611	3	3	2	3
		R	612	4	4	4	4
		R	613	3	3	3	3
		R	614	4	4	4	4
		R	615	4	4	4	4
		R	616	4	4	4	4
		R	617	4	4	4	4
		R	620	0	0	0	2
		R	621	2	2	2	2
		R	622	4	4	4	4
		R	623	4	4	4	4
		R	624	4	4	4	4
		R	625	4	4	4	4
		R	626	4	4	4	4
		R	627	4	4	4	4
		R	628	4	4	4	4
		R	629	3	3	0	0
		R	630	4	4	4	4
		R	631	4	4	4	4
		R	632	4	4	4	4
		R	633	4	4	4	4
		R	634	0	4	4	X
		R	635	4	4	4	X
		R	636	4	4	4	X
		R	637	4	4	4	4
		L	700	4	4	2	2
		L	701	4	4	2	0
		L	702	4	4	2	2
		L	703	3	3	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bromus inermis (cont.)	smooth brome	L	704	4	4	2	2
		L	705	2	2	2	0
		L	706	0	0	2	2
		L	709	3	3	2	2
		L	710	3	3	X	3
		L	711	3	3	X	0
		L	712	4	4	X	0
		L	715	2	2	2	0
		L	721	2	2	2	0
		L	722	0	2	0	0
		L	724	0	2	2	0
		L	728	2	2	0	0
		L	730	2	2	0	0
		L	731	2	2	0	0
		L	732	2	2	2	0
		L	733	2	2	0	0
		L	734	–	–	–	0
		L	735	2	2	2	0
		L	736	2	3	4	4
		L	737	2	2	3	3
		L	738	3	3	3	3
		L	739	2	2	3	3
		L	740	4	4	4	4
		L	741	2	2	3	3
		L	742	4	4	4	4
		L	743	2	3	3	3
		L	744	4	4	4	4
		L	745	3	4	4	4
		L	746	4	4	4	4
		L	747	4	4	4	4
		L	748	4	4	4	4
Bromus tectorum	cheatgrass	R	600	3	3	0	0
		R	601	0	2	0	0
		R	635	3	0	0	X
		L	700	0	2	2	0
		L	701	2	2	2	0
		L	702	2	0	0	0
		L	703	2	2	2	0
		L	704	2	2	0	0
		L	705	2	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	cheatgrass	L	706	2	0	0	0
		L	707	2	0	0	0
		L	708	2	2	0	0
		L	709	2	2	2	0
		L	710	3	2	X	2
		L	711	2	2	X	0
		L	712	2	0	X	0
		L	713	2	2	2	0
		L	715	2	2	2	0
		L	716	0	2	0	0
		L	717	2	2	2	X
		L	718	2	0	0	0
		L	719	2	2	2	0
		L	720	2	2	0	0
		L	721	3	2	2	0
		L	722	3	3	3	0
		L	723	3	3	3	2
		L	724	3	3	2	0
		L	725	3	2	2	2
		L	726	2	2	2	0
		L	727	3	2	2	0
		L	728	3	3	3	0
		L	729	2	2	2	0
		L	730	2	2	3	0
		L	731	2	2	2	0
		L	732	2	2	2	0
		L	733	0	2	2	0
		L	734	–	–	0	0
		L	735	2	2	2	0
		L	736	2	2	0	0
		L	737	2	2	3	3
		L	738	2	2	0	0
		L	739	2	2	3	3
		L	740	2	2	0	0
		L	741	2	2	3	3
		L	742	2	2	0	0
		L	743	2	3	3	3
Chenopodium album	common lambsquarters	R	632	1	0	0	0
		L	700	2	0	0	0
		L	702	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Chenopodium album (cont.)	common lambsquarters	L	706	2	2	2	0
		L	707	2	0	0	0
		L	708	2	2	2	0
		L	714	2	2	2	0
		L	716	2	2	0	0
		L	718	0	2	2	0
		L	721	3	2	2	0
		L	722	0	2	2	0
		L	724	2	2	2	0
		L	726	2	2	0	0
		L	727	2	2	0	0
		L	728	2	2	0	0
		L	729	0	2	2	0
		L	730	1	0	0	0
		L	738	0	1	0	0
		L	742	0	1	0	0
Convolvulus arvensis	field bindweed	R	600	2	3	3	0
		R	601	2	3	3	0
		R	602	3	3	0	0
		R	605	2	2	0	0
		R	610	0	2	2	0
		R	613	0	0	2	2
		R	614	0	2	2	0
		R	615	0	2	2	0
		R	616	2	2	2	0
		R	617	0	2	2	0
		R	618	2	2	2	0
		R	619	2	2	2	0
		R	620	2	2	0	0
		R	621	2	2	0	0
		R	622	2	2	2	0
		R	623	2	2	2	1
		R	624	3	3	3	0
		R	625	2	2	2	0
		R	626	0	2	2	0
		R	627	0	2	2	0
		R	628	2	3	3	0
		R	631	0	0	2	0
		R	632	0	2	2	2
		R	633	0	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis (cont.)	field bindweed	R	637	1	1	2	0
		L	700	2	2	0	0
		L	701	0	2	2	0
		L	702	0	2	2	0
		L	706	2	0	0	0
		L	708	2	2	0	0
		L	709	2	2	2	0
		L	712	2	2	X	0
		L	713	2	2	2	0
		L	714	2	3	3	0
		L	715	2	2	0	0
		L	716	2	2	2	0
		L	718	2	3	3	0
		L	719	2	2	2	0
		L	720	2	2	0	0
		L	721	2	2	2	2
		L	722	3	3	3	3
		L	723	2	2	2	2
		L	724	0	0	3	3
		L	726	0	0	2	2
		L	728	2	2	0	0
		L	730	2	2	0	0
		L	731	2	0	0	0
		L	732	2	2	0	0
		L	733	2	0	0	0
		L	734	–	–	0	0
		L	736	2	3	3	3
		L	737	2	0	2	0
		L	738	3	3	3	3
		L	739	2	0	2	2
		L	740	3	3	3	3
		L	741	2	0	2	2
		L	742	0	0	3	3
		L	743	2	2	2	2
		L	744	2	3	3	3
		L	745	2	2	2	2
Conium maculatum	poison hemlock	R	629	0	3	0	0
Cynodon dactylon	Bermuda grass	R	618	2	2	0	0
		L	729	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia	kochia	L	706	2	0	0	0
		L	707	2	0	0	0
		L	708	2	2	0	0
		L	709	2	2	0	0
		L	710	2	2	X	2
		L	711	2	2	X	2
		L	712	2	2	X	0
		L	713	3	3	2	0
		L	714	3	3	0	0
		L	715	2	2	2	0
		L	716	2	2	0	0
		L	717	3	2	0	X
		L	718	2	2	0	0
		L	719	2	2	2	0
		L	720	2	2	0	0
		L	721	3	2	2	0
		L	722	2	2	0	0
		L	723	2	2	2	2
		L	725	0	2	2	0
		L	726	2	2	0	0
		L	727	2	2	2	2
		L	728	2	2	0	0
		L	729	2	2	2	0
		L	730	2	0	0	0
		L	731	2	0	0	0
		L	734	–	0	0	0
		L	735	2	0	0	0
		L	736	2	0	0	0
		L	737	2	2	0	0
		L	738	2	2	0	0
		L	739	2	0	0	0
		L	740	2	2	0	0
		L	741	2	0	0	0
		L	742	2	2	0	0
		L	743	2	0	0	0
Lamium amplexicaule	henbit	R	600	0	1	0	0
		L	713	1	0	0	0
Medicago sativa	alfalfa	L	732	1	0	0	0
		L	733	1	0	0	0
		L	743	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Melilotus alba	white sweetclover	L	745	1	0	0	0
		L	747	2	0	0	0
		R	600	0	0	2	0
		R	601	0	0	2	0
		R	602	2	2	2	0
		R	606	0	0	2	2
		R	608	2	3	3	0
		R	610	0	2	0	0
		R	612	2	2	3	0
		L	700	0	1	0	0
		L	702	0	1	0	0
		L	721	2	2	0	0
		L	732	0	1	2	0
		L	734	–	–	–	0
Meilotus officinalis	yellow sweetclover	R	607	2	2	3	4
		R	609	2	2	2	0
		R	611	2	2	0	0
		L	716	0	1	0	0
		L	717	2	2	0	X
		L	725	2	2	0	0
		L	729	0	2	0	0
		L	733	0	1	0	0
		L	735	1	0	0	0
Rumex patientia	patience dock	R	600	0	2	2	0
		R	601	0	1	0	0
		R	602	2	2	1	0
		R	603	2	2	2	2
		R	604	0	1	2	0
		R	605	2	2	0	0
		R	614	1	0	0	0
		R	616	1	0	0	0
		R	617	0	2	0	0
		R	625	2	2	0	0
		R	626	2	2	2	0
		R	627	2	2	3	0
		R	632	0	0	1	0
		L	701	2	2	0	0
		L	702	2	1	0	0
		L	703	2	2	0	0
		L	704	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Rumex patientia (cont.)	patience dock	L	705	2	2	2	0
		L	706	2	2	0	0
		L	707	2	2	0	0
		L	708	0	2	2	0
		L	710	0	2	X	0
		L	712	0	1	X	0
		L	722	0	2	2	0
		L	723	1	1	0	0
		L	724	2	3	3	0
		L	725	0	0	3	2
		L	726	0	2	2	2
		L	728	0	2	2	0
		L	730	0	2	2	0
		L	742	1	1	0	0
		L	743	2	0	0	0
		L	745	1	0	0	0
Setaria viridis	green bristlegrass	R	600	2	0	0	0
		R	618	2	2	0	0
		R	619	3	3	3	3
		R	620	2	2	2	0
		R	621	4	4	4	4
		L	700	2	2	0	0
		L	701	2	0	0	0
		L	729	2	0	0	0
		L	730	2	2	0	0
		L	732	2	2	0	0
		L	738	2	2	0	0
		L	740	2	2	0	0
Sorghum halepense	Johnsongrass	R	600	1	1	0	0
		R	601	1	1	0	0
		R	616	1	0	0	0
		L	726	1	0	0	0
Taraxacum officinale	dandelion	R	618	2	0	0	0
		R	619	2	2	0	0
		R	620	2	2	0	0
		R	621	2	2	0	0
		L	732	1	0	0	0
		L	741	2	2	0	0
Tragopogon dubius	western salsify	R	630	1	0	0	0
		R	634	1	0	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table D-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2011 (continued)

Scientific name	Common Name	Vector Side	Vector Block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	western salsify	L	700	1	1	0	0
		L	702	1	1	0	0
		L	704	0	1	0	0
		L	710	1	1	X	0
		L	712	1	1	X	0
		L	720	0	1	0	0
		L	722	1	1	0	0
		L	723	2	2	0	0
		L	724	0	2	0	0
		L	725	2	2	0	0
		L	726	1	1	0	0
		L	727	2	2	0	0
		L	729	0	2	0	0
		L	730	1	1	0	0
		L	731	2	0	0	0
		L	734	–	–	0	0
		L	742	1	0	0	0
Tribulus terrestris	puncturevine	L	741	2	0	0	0
		L	742	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

D.2 Panel 2 - June 2010

Transect Name	Length (meters)
Entrance Road / Trail	437
SW Corner Boundary	997
West Boundary	275

Figure D.3. Individual vector blocks sampled, Panel 2, Fort Larned NHS, 2010.

Table D-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2010.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Amaranthus retroflexus	Red-root pigweed	L	216	1	0	0	0
		L	225	0	1	0	0
		L	227	0	2	0	0
		L	229	2	2	2	0
		L	231	1	0	0	0
		L	236	2	1	0	0
		L	238	1	1	0	0
		L	226	0	2	0	0
		L	228	0	2	3	0
		L	230	2	2	0	0
		L	239	1	2	2	0
Bromus inermis	Smooth brome	L	202	0	1	1	0
		L	203	0	0	2	2
		L	204	0	2	4	–
		L	205	0	1–2	4	–
		L	206	0	1	4	4
		L	207	0	0	2	3
		L	208	1	0	0	3
		L	209	1	2	2	3
		R	201	2	3–4	3–4	3–4
		R	202	2	3–4	3–4	3–4
		R	203	0	3–4	3–4	3–4
		R	204	0	3–4	3–4	3–4
		R	205	0	3–4	3–4	3–4
		R	206	0	3–4	3–4	3–4
		R	207	0	3–4	3–4	3–4
		R	208	0	3–4	3–4	3–4
		R	209	0	3–4	3–4	3–4
		L	211	3	3	3	3
		L	213	3	3	3	3
		L	215	3–4	3	3	3
		L	212	3	3	3	3
		L	214	3	3	3	3
		L	216	3	3	3	3
		L	221	3	3	3	4
		L	223	3	3	3	3
		L	225	3	3	3	3
		L	227	3	3	3	3
		L	229	3–4	4	4	4
		L	231	3	3	3	3

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus inermis (cont.)	Smooth brome	L	233	3	3	3	3
		L	236	3	3	3	3
		L	238	3	3	3	3
		L	240	3	3	3	3
		L	222	3	4	4	4
		L	224	3	3	3	3
		L	226	3	3	3	3
		L	228	3	3	3	3
		L	230	4	4	4	4
		L	232	3	3	3	3
		L	234	3	3	3	3
		L	235	3	3	3	3
		L	237	3	3	3	3
		L	239	3	3	3	3
		L	241	3	4	4	3
Bromus japonicus	Japanese brome	L	201	1–2	1	0	0
Bromus tectorum	Cheatgrass	L	201	0	1	0	0
		R	201	1	0	0	0
		L	212	2	0	0	0
		L	216	2	0	0	0
		L	236	0	2	0	0
		L	238	0	2	0	0
		L	240	0	2	0	0
		L	228	0	0	2	0
		L	235	2	2	0	0
		L	239	2	0	0	0
Chenopodium album	Common lambsquarters	L	229	2	2	2	0
		L	233	2	0	0	0
		L	236	2	0	0	0
		L	238	2	0	0	0
		L	240	1–2	0	0	0
		L	228	0	2	0	0
		L	230	1	0	0	0
		L	232	2	0	0	0
		L	234	1	1	0	0
		L	239	1	0	0	0
		L	241	1	0	0	0
Cirsium arvense	Canada thistle	R	201	2	0	0	0
		L	224	0	0	1	0
		L	235	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Cirsium arvense (cont.)	Canada thistle	L	237	1	2	0	0
		L	239	1	2	0	0
		L	241	1	0	0	0
Cirsium vulgare	Bull thistle	L	215	0	2	2	0
		L	214	0	2	2	0
		L	216	0	0	2	0
		L	224	0	2	0	0
		L	230	1	0	0	0
Convolvulus arvensis	Field bindweed	L	201	0	1	2	2
		L	202	0	1	0	0
		L	203	0	1	0	0
		R	204	1	1	0	0
		R	205	0	3	2	0
		R	206	2	2	0	0
		R	207	2	0	0	0
		R	208	2	2	3	0
		R	209	2	3	2	0
		L	211	1	2	2	2
		L	213	1	1	0	0
		L	212	2	3	3	0
		L	223	2	1	0	0
		L	233	0	1	0	0
		L	236	2	0	0	0
		L	240	1	0	0	0
		L	230	3	3	3	0
Conium maculatum	Poison hemlock	L	216	1	0	0	0
		L	239	0	0	1	0
Cynodon dactylon	Bermuda grass	L	202	1	0	0	0
		R	204	2	0	0	0
		R	205	2	0	0	0
		R	206	2	0	0	0
		R	208	2	0	0	0
		R	209	2	0	0	0
		L	223	1	0	0	0
		L	227	1	0	0	0
		L	222	2	0	0	0
		L	226	2	2	0	0
		L	228	2	2	0	0
Descurainia sophia	Flixweed	L	213	0	1	0	0
		L	236	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Digitaria sanguinalis	Hairy crabgrass	L	205	2	0	0	–
		L	206	2	0	0	0
		L	208	2	0	0	0
		R	206	2	0	0	0
		R	207	2	0	0	0
		R	208	2	0	0	0
		L	221	1	0	0	0
		L	222	2	0	0	0
		L	224	2	2	0	0
Digitaria sanguinalis	Hairy crabgrass	L	226	2	2	0	0
Euphorbia dentata	Toothed spurge	L	211	1	1	0	0
		L	213	0	1	0	0
		L	212	1	1	0	0
		L	225	0	1	0	0
		L	227	0	1	0	0
		L	236	1	1	0	0
		L	238	1–2	1	0	0
		L	240	1	0	0	0
		L	222	0	1	0	0
		L	228	0	1	0	0
		L	230	1	0	0	0
		L	232	0	1	0	0
		L	234	2	2	2	0
		L	235	2	0	0	0
		L	239	1	2	0	0
		L	241	2	2	0	0
Kochia scoparia	Kochia	L	207	0	1	1	0
		R	202	0	1	1	0
		R	206	0	1	0	0
		L	212	0	1	0	0
		L	229	2	0	0	0
		L	231	2	0	0	0
		L	233	2	0	0	0
		L	236	2	0	0	0
		L	238	2	0	0	0
		L	240	2	1	0	0
		L	224	0	1	0	0
		L	228	0	0	1	0
		L	230	2	2	2	0
		L	232	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	L	234	2	2	0	0
		L	235	2	2	0	0
		L	237	2	2	2	0
		L	239	2	2	0	0
		L	241	2	2	0	0
Lamium amplexicaule	Henbit	L	231	2	0	0	0
		L	233	2	0	0	0
		L	236	1	0	0	0
		L	230	2	0	0	0
		L	232	2	0	0	0
		L	234	2	0	0	0
		L	235	2	0	0	0
Lolium perenne	Perennial ryegrass	L	238	0	1	0	0
Medicago lupulina	Black medic clover	L	201	1–2	0	2	1
		L	202	0	2	2	2
		L	203	0	2	2	2
		L	204	0	2	2	–
		L	205	0	3	0	–
		L	206	0	3	0	0
		L	207	0	2	0	0
		R	201	2	0	0	0
		R	202	2	0	0	0
		R	203	2	0	0	0
		R	204	2	0	0	0
		R	206	2	0	0	0
		R	207	2	0	0	0
		R	208	2	0	0	0
		L	237	2	2	0	0
		L	239	2	0	0	0
Melilotus officinalis	Yellow sweetclover	R	201	1	0	0	0
		R	202	0	2	2	3
		R	203	0	0	2	3
		R	204	0	0	3	3
		R	205	0	0	3	3
		R	206	0	0	3	3
		R	207	0	1	2	2
		R	208	0	0	2	0
		L	211	0	2	2	2
		L	213	0	2	2	2
		L	215	0	2	2	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus officinalis (cont.)	Yellow sweetclover	L	212	0	2	2	3
		L	214	0	2	3	3
		L	223	0	2	2	0
		L	225	0	2	3	0
		L	227	0	2	0	0
		L	233	0	1	0	0
		L	236	1	2	0	0
		L	238	1	0	2	0
		L	240	2	0	1	0
		L	224	0	2	3	2
		L	226	0	2	2	2
		L	228	0	2	2	2
		L	230	2	2	0	0
		L	235	1	2	0	0
		L	237	0	1	2	0
		L	239	2	2	0	0
		L	241	1	0	0	0
Rumex crispus	Curly dock	L	241	1	0	0	0
Rumex patientia	Patience dock	R	201	0	2	2	0
		R	204	0	1	0	0
		L	211	1	1	1	0
		L	215	0	0	1	0
		L	238	1	0	0	0
		L	222	0	1	0	0
Salsola tragus	Prickly Russian thistle	R	203	1	1	0	0
		R	204	1	0	0	0
Sorghum halepense	Johnsongrass	L	211	2	2	2	2
		L	213	1	1	0	0
		L	212	2	2	2	0
		L	214	2	0	0	0
Taraxacum officinale	Dandelion	L	201	0	2	2	2
		L	202	0	2	3	3
		L	203	0	3	3	3
		L	204	0	2	2	–
		L	205	0	2	0	–
		L	206	0	2	0	0
		L	207	0	0	1	0
		R	201	2	1	0	0
		R	202	2	0	0	0
		R	206	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Taraxacum officinale	Dandelion	R	209	1	1	0	0
(cont.)		L	216	1	0	0	0
		L	223	1	0	0	0
		L	227	2	0	0	0
		L	229	1	0	0	0
		L	238	1	1	0	0
Tragopogon dubius	Western salsify	R	203	0	1	0	0
		L	221	0	0	1	0
		L	229	0	1	0	0
		L	231	2	2	0	0
		L	236	1	1	0	0
		L	238	1	0	0	1
		L	240	1	1	0	0
		L	228	0	0	1	0
		L	230	0	0	1	0
		L	232	0	0	0	0
		L	234	0	2	0	0
		L	235	2	2	0	0
		L	237	0	2	2	0
		L	239	2	2	2	0
Trifolium repens	White clover	L	207	0	0	2	0
		L	208	0	2	2	0
Tribulus terrestris	Puncturevine	L	236	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

D.3 Panel 1 - July 2009

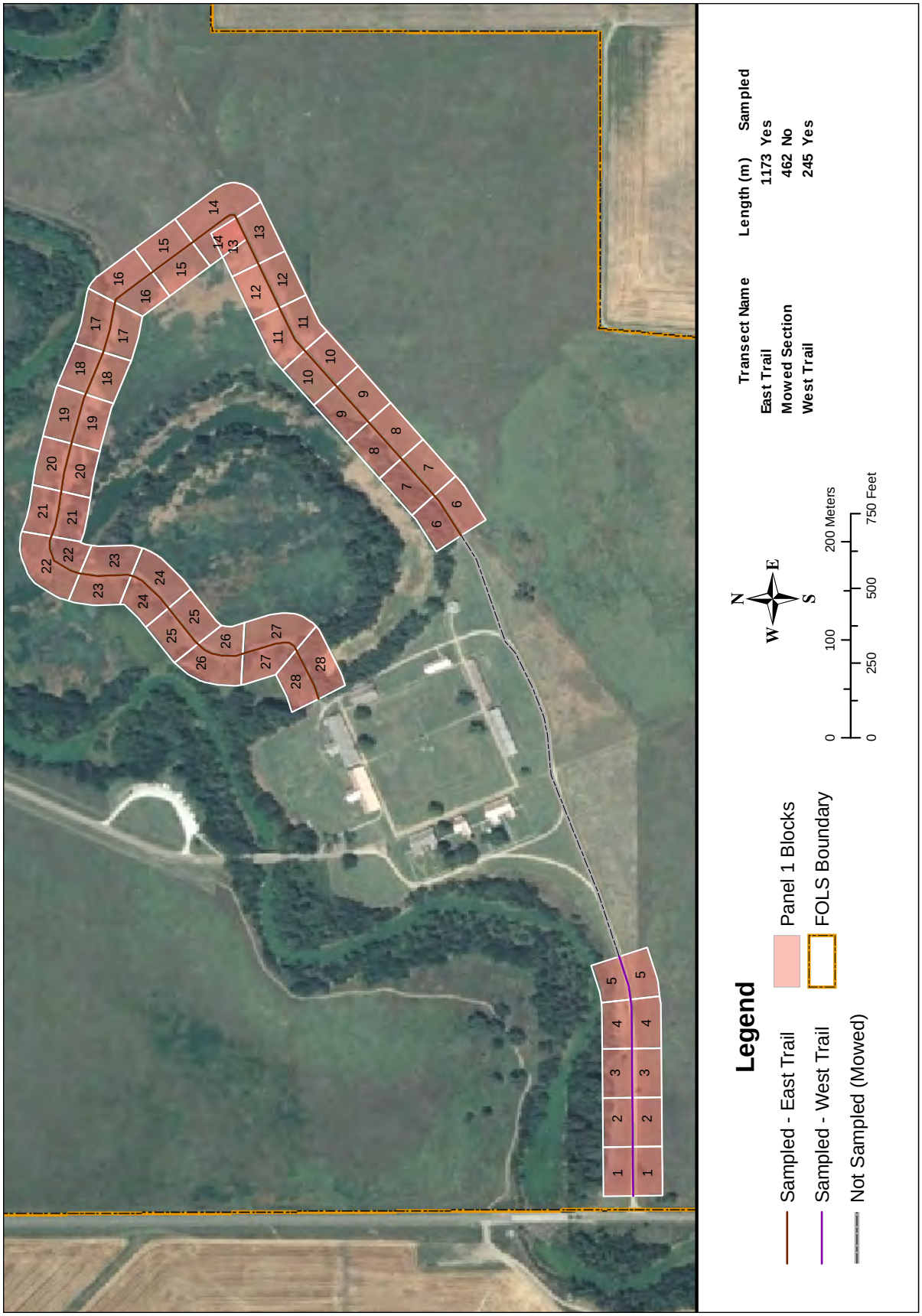


Figure D.4. Individual vector blocks sampled, Panel 1, Fort Larned NHS, 2009.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Alliaria petiolata	garlic mustard	R	1	0	2	0	0
		R	2	0	2	0	0
		R	3	0	2	0	0
		R	27	0	2	0	0
		L	28	0	2	0	0
		R	28	0	2	0	0
Amaranthus blitoides	prostrate pigweed	L	16	1	0	0	0
		R	16	2	0	0	0
		L	17	2	2	0	0
		R	17	2	0	–	–
		L	18	2	0	0	0
		L	20	2	0	0	0
		L	21	1	0	0	0
		R	21	1	0	0	0
		L	28	0	1	0	0
Amaranthus retroflexus	redroot pigweed	R	2	0	2	1	1
		R	4	0	2	0	0
		R	5	0	2	0	0
		L	9	0	1	0	0
		R	10	0	3	0	0
		L	11	0	0	0	1
		R	11	0	3	2	0
		L	12	0	0	2	2
		R	12	0	1	0	3
		R	13	0	2	0	0
		L	15	0	1	0	1
		L	16	0	1	1	1
		R	16	0	2	0	0
		L	17	0	1	0	0
		L	18	0	2	1	0
		R	18	0	2	0	–
		L	19	0	2	0	0
		L	20	0	0	1	0
		R	21	0	2	0	0
		R	22	0	2	3	0
		R	23	0	0	4	–
		L	24	0	1	1	0
		R	24	2	2	0	0
		L	25	0	3	3	0
		R	25	2	3	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Amaranthus retroflexus, (cont.)	redroot pigweed	L	26	2	3	2	0
		R	26	0	4	4	0
		L	27	2	4	2	0
		R	27	0	3	3	2
		L	28	0	2	2	2
		R	28	0	3	2	0
Bromus inermis	smooth brome	L	1	0	4	4	4
		R	1	0	3	4	4
		L	2	0	4	4	3
		R	2	0	4	4	4
		L	3	0	4	4	–
		R	3	0	4	4	4
		L	4	0	3	3	–
		R	4	3	4	4	4
		L	5	0	4	–	–
		R	5	3	4	4	4
		L	6	0	4	4	–
		R	6	0	4	4	4
		L	7	0	4	–	–
		R	7	3	4	4	4
		L	8	0	4	–	4
		R	8	3	4	4	4
		L	9	0	4	0	4
		R	9	3	4	4	4
		L	10	0	4	4	3
		R	10	3	3	4	4
		L	11	0	2	2	2
		R	11	0	3	4	4
		L	12	0	2	0	4
		R	12	0	2	4	4
		L	13	2	3	4	4
		R	13	2	3	4	4
		L	14	2	4	4	4
		R	14	4	4	4	4
		L	15	2	4	4	4
		R	15	3	4	4	4
		L	16	2	4	4	4
		R	16	3	4	4	4
		L	17	2	4	4	4
		R	17	0	4	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus inermis (cont.)	smooth brome	L	18	0	2	4	4
		R	18	2	4	3	–
		R	19	3	4	4	4
		L	20	2	3	4	4
		R	20	0	4	4	4
		L	21	0	2	0	0
		R	21	0	2	4	4
		L	22	0	2	2	2
		R	22	0	4	4	4
		L	23	0	3	0	0
		R	23	2	3	–	–
		L	24	0	3	3	2
		R	24	3	4	4	0
		L	25	3	4	4	4
		R	25	0	4	4	4
		L	26	4	4	4	4
		R	26	2	4	3	3
		L	27	2	4	4	4
		R	27	3	4	3	0
		L	28	0	2	2	2
		R	28	2	2	0	0
Bromus tectorum	cheatgrass	L	1	0	2	0	0
		R	1	0	3	2	0
		L	2	0	2	0	–
		R	2	0	3	2	0
		L	3	0	2	0	–
		R	3	3	3	0	0
		L	4	0	3	3	–
		R	4	0	2	0	0
		L	5	0	3	–	–
		R	5	2	2	0	0
		L	6	0	3	0	–
		R	6	0	1	2	0
		L	8	0	0	–	3
		L	10	0	2	0	0
		R	10	2	2	0	0
		L	11	0	2	2	2
		R	11	2	4	0	0
		L	12	0	3	4	4
		R	12	2	4	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	cheatgrass	L	13	0	2	3	2
		R	13	2	4	0	0
		L	15	0	0	2	2
		R	16	0	2	2	0
		L	17	0	2	2	0
		R	17	3	3	–	–
		L	18	0	3	2	0
		R	18	3	4	3	3
		L	19	0	3	2	2
		R	19	0	2	2	–
		L	20	0	3	2	0
		R	20	2	3	0	0
		L	21	0	3	2	0
		R	21	0	4	3	0
		L	22	0	3	2	2
		R	22	0	3	3	0
		L	23	0	2	0	0
		L	24	0	3	0	0
		L	25	0	3	0	0
		L	26	2	3	0	0
		R	26	0	3	0	0
		L	27	3	3	0	0
		R	27	2	2	0	0
		L	28	0	2	2	2
		R	28	2	0	2	0
Calystegia sepium ssp. sepium	hedge bindweed	L	1	0	1	0	0
		L	4	0	1	0	–
		L	18	0	1	0	0
Cannabis sativa ssp. indica	hemp	R	22	0	1	0	0
		R	23	0	2	0	–
Capsella bursa-pastoris	shepard's purse	R	10	2	0	0	0
		L	11	2	0	0	0
		R	11	0	2	0	0
		R	12	0	1	0	0
		L	13	2	0	0	0
		R	13	2	3	0	0
		L	14	2	0	0	0
		R	14	2	0	0	0
		L	17	2	0	0	0
		R	17	2	0	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Capsella bursa-pastoris	shepard's purse	L	18	2	0	0	0
(cont.)		R	18	3	2	0	–
		L	19	2	0	0	0
		L	20	2	2	0	0
		R	20	3	0	0	0
		L	21	0	3	0	0
		R	21	3	0	0	0
		L	22	2	2	0	0
		R	22	3	0	0	0
		L	23	0	2	0	0
		R	23	2	0	0	–
		L	27	3	0	0	0
		L	28	0	2	2	0
		R	28	2	0	0	0
Chenopodium alba	common lambsquarters	L	16	0	1	0	0
		L	17	0	2	0	0
		L	18	0	1	0	0
		L	20	0	2	0	0
		L	22	2	2	0	0
		L	23	1	0	0	0
		R	23	0	1	0	–
		L	24	2	0	0	0
		R	24	1	0	0	0
		R	25	0	2	0	0
		L	26	2	0	0	0
		R	26	2	3	0	0
		R	27	3	2	0	0
		L	28	0	2	0	0
		R	28	2	0	0	0
Cirsium vulgare	bull thistle	L	3	1	1	0	–
Convolvulus arvensis	field bindweed	L	3	2	3	2	–
		L	4	0	2	2	–
		L	6	2	2	2	–
		R	6	1	3	0	0
		R	7	2	3	1	0
		L	11	1	0	0	0
		R	11	3	3	1	0
		L	13	0	2	2	0
		R	13	2	2	0	0
		L	14	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis	field bindweed	R	14	3	3	0	0
(cont.)		R	16	3	3	3	0
		R	17	2	2	–	–
		R	18	3	3	0	–
		L	19	0	3	0	0
		R	19	3	3	0	–
		L	20	0	3	0	0
		R	20	3	3	0	0
		R	24	3	3	0	0
		R	25	3	3	3	0
		R	26	3	3	0	0
		L	28	0	1	0	2
		R	28	0	2	0	0
Conium maculatum	poison hemlock	R	1	0	1	0	0
		L	3	0	0	3	–
		R	3	2	2	0	0
		L	4	0	2	2	–
		L	5	0	2	–	–
		L	6	0	0	1	–
		L	7	0	0	–	2
		L	8	0	0	–	3
		L	9	0	0	3	3
		L	10	0	0	0	3
		R	16	1	2	0	0
		L	17	2	2	2	0
		R	17	2	4	4	–
		L	18	0	2	0	0
		R	18	2	4	4	4
		L	19	0	0	0	3
		R	19	0	0	4	4
		L	20	0	0	2	4
		R	20	0	0	0	4
		L	21	0	3	3	4
		R	21	0	0	0	4
		L	22	0	2	3	4
		R	22	2	4	0	4
		L	23	2	3	3	4
		R	23	4	4	–	–
		R	24	2	4	2	4
		R	25	0	2	3	4

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Conium maculatum (cont.)	poison hemlock	L	26	2	2	0	0
		R	26	0	3	3	4
		L	27	2	2	0	0
		R	27	2	3	4	3
		L	28	0	2	2	2
		R	28	2	3	3	4
Cynodon dactylon	Bermudagrass	R	1	1	0	0	0
Descurainia sophia	herb sophia	R	3	0	1	0	0
Digitaria sanguinalis	hairy crabgrass	L	6	3	0	0	–
		R	6	3	0	0	0
		L	7	3	0	–	–
		R	7	3	0	0	0
		L	8	3	0	–	0
		R	8	3	0	0	0
		L	9	2	0	0	0
		R	9	2	0	0	0
		R	10	2	0	0	0
		R	11	3	0	0	0
		R	12	2	0	0	0
		L	13	1	0	0	0
		R	13	2	0	0	0
		R	14	2	0	0	0
		L	17	0	1	0	0
		R	25	3	0	0	0
		L	26	3	0	0	0
		R	26	2	0	0	0
		L	27	3	0	0	0
		R	27	2	0	0	0
		R	28	2	0	0	0
Elaeagnus angustifolia	Russian olive	L	24	0	0	0	1
Eragrostis cilianensis	stinkgrass	L	28	0	1	0	0
Kochia scoparia	kochia	L	4	0	2	3	–
		R	6	2	3	0	0
		R	7	0	3	0	0
		R	8	3	3	0	0
		L	9	2	2	0	0
		R	9	3	3	0	0
		L	10	3	3	0	0
		R	10	3	3	0	0
		L	11	3	3	3	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	kochia	R	11	3	4	0	0
		L	12	3	3	0	0
		R	12	3	4	0	3
		L	13	2	2	2	2
		R	13	3	4	0	0
		L	14	2	2	0	0
		R	14	2	0	0	0
		L	15	2	0	2	2
		R	15	2	0	0	0
		L	16	2	0	0	0
		R	16	2	3	3	0
		L	17	3	2	0	0
		R	17	2	3	–	–
		L	18	0	2	0	0
		R	18	3	3	0	–
		L	19	2	2	0	0
		R	19	3	2	0	–
		L	20	2	2	0	0
		R	20	3	2	0	0
		L	21	0	3	2	0
		R	21	3	4	0	0
		L	22	2	2	3	2
		R	22	3	4	0	0
		L	23	1	2	2	2
		R	23	3	3	–	–
		L	24	3	3	3	3
		R	24	3	2	0	0
		L	25	3	2	0	0
		L	26	3	2	0	0
		R	26	3	3	0	0
		L	27	3	2	0	0
		R	27	4	3	0	0
		L	28	2	3	3	2
		R	28	4	4	0	0
Lamium amplexicaule	henbit	L	1	2	0	0	0
		R	1	1	0	0	0
		R	2	2	0	0	0
		R	3	2	0	0	0
		L	5	2	0	–	–
		R	6	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Lamium amplexicaule	henbit	R	8	2	0	0	0
(cont.)		L	9	2	0	0	0
		R	9	3	0	0	0
		L	10	3	0	0	0
		R	10	2	0	0	0
		L	11	3	2	0	0
		R	11	3	3	0	0
		L	12	2	2	0	0
		R	12	0	2	0	0
		L	13	3	0	0	0
		R	13	3	0	0	0
		L	14	2	0	0	0
		R	14	2	0	0	0
		L	15	3	0	0	0
		R	15	2	0	0	0
		L	17	0	2	0	0
		R	17	2	3	–	–
		L	18	2	0	0	0
		R	18	3	0	0	–
		R	19	2	0	0	–
		L	20	2	0	0	0
		R	20	2	0	0	0
		L	21	0	3	0	0
		R	21	2	2	0	0
		L	22	0	2	0	0
		R	22	2	2	0	0
		L	23	0	2	0	0
		R	23	2	3	0	–
		L	24	2	0	0	0
		R	24	2	2	0	0
		L	25	2	0	0	0
		L	26	3	0	0	0
		R	26	2	0	0	0
		L	27	0	2	0	0
		R	27	3	2	0	0
		R	28	2	0	0	0
Medicago lupulina	black medik clover	L	1	2	0	0	0
		L	2	2	0	0	–
		L	3	2	0	0	–
		L	5	2	0	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Medicago lupulina (cont.)	black medik clover	L	7	1	0	–	–
		L	8	2	0	–	0
		L	9	2	0	0	0
		R	9	1	0	0	0
Melilotus officinalis	yellow sweetclover	L	1	0	0	0	2
		R	6	0	0	2	3
		R	7	0	0	0	3
		R	13	0	0	0	4
		R	14	0	0	0	4
		R	15	0	0	0	1
Polygonum arenastrum	prostrate knotweed	L	17	2	0	0	0
		R	17	2	0	–	–
		L	18	3	0	0	0
		R	18	2	0	0	0
		L	19	2	1	0	0
		R	19	3	0	0	–
		L	20	1	0	0	0
		R	23	2	0	0	–
		R	27	2	0	0	0
		L	28	2	0	0	0
		R	28	1	0	0	0
Rumex crispus	curly dock	R	1	0	1	0	0
		R	2	0	1	0	0
		R	4	0	1	0	0
		L	21	0	1	0	0
Setaria viridis	green bristlegrass	L	1	4	0	0	0
		R	1	3	2	2	0
		L	2	4	0	0	–
		R	2	3	2	0	0
		L	3	4	0	0	–
		R	3	3	0	0	0
		L	4	4	0	0	–
		R	4	3	0	0	0
		L	5	4	0	–	–
		R	5	2	0	0	0
		R	6	2	2	0	0
		L	7	2	0	–	–
		R	7	2	0	0	0
		R	8	2	0	0	0
		L	9	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Setaria viridis (cont.)	green bristlegrass	R	9	3	0	0	0
		L	10	2	0	0	0
		R	10	3	0	0	0
		L	11	3	0	0	0
		R	11	3	2	0	0
		L	12	4	0	0	0
		R	12	3	3	0	0
		L	13	4	0	0	0
		R	13	3	2	0	0
		L	14	4	0	0	0
		R	14	4	0	0	0
		L	15	4	0	0	0
		R	15	3	0	0	0
		L	16	4	0	0	0
		R	16	3	0	0	0
		L	17	3	0	0	0
		L	18	3	0	0	0
		R	18	2	0	0	–
		R	21	2	0	0	0
		R	22	2	0	0	0
		R	23	2	0	0	–
		R	25	2	0	0	0
		L	26	3	0	0	0
		R	26	2	0	0	0
		L	27	3	0	0	0
		R	27	2	0	0	0
		R	28	2	0	0	0
Sonchus asper	spiny sowthistle	L	1	2	2	0	0
		R	1	2	2	0	0
		R	2	2	2	0	0
		L	3	0	1	0	–
		R	3	1	0	0	0
		R	5	2	1	0	0
		R	5	2	1	0	0
		L	11	2	0	0	0
		R	11	0	1	0	0
		L	12	0	2	0	0
		L	13	0	2	0	0
		R	14	1	0	0	0
		L	15	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Sonchus asper (cont.)	spiny sowthistle	L	17	0	2	1	0
		L	18	0	2	0	0
		R	18	3	3	0	–
		L	19	0	1	0	0
		R	19	3	2	0	–
		R	20	2	0	0	0
		L	21	0	2	0	0
		R	21	2	0	0	0
		L	22	0	1	0	0
		R	22	0	2	0	0
		L	23	0	1	0	0
		L	25	2	2	0	0
		R	25	3	2	0	0
		L	26	3	3	0	0
		R	26	2	2	0	0
		L	27	2	3	0	0
		R	27	2	3	0	0
		L	28	0	0	0	2
Taraxacum officinale	dandelion	L	1	3	0	0	0
		R	1	2	2	0	0
		L	2	3	0	0	0
		R	2	3	0	0	0
		L	3	3	0	0	–
		R	3	3	2	0	0
		L	4	3	0	0	–
		R	4	3	0	0	0
		L	5	3	0	–	–
		R	5	3	0	0	0
		L	6	3	0	0	–
		R	6	3	2	0	0
		L	7	3	0	–	–
		R	7	3	0	0	0
		L	8	3	0	–	0
		R	8	2	0	0	0
		L	9	3	0	0	0
		R	9	2	0	0	0
		L	10	3	0	0	0
		R	10	2	0	0	0
		L	11	2	0	0	0
		R	11	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Taraxacum officinale	dandelion	L	12	2	0	0	0
(cont.)		R	12	2	0	0	0
		L	13	2	0	0	0
		R	13	2	0	0	0
		L	14	3	0	0	0
		R	14	3	0	0	0
		L	15	3	0	0	0
		R	15	2	0	0	0
		L	16	2	0	0	0
		R	16	3	0	0	0
		L	17	3	0	0	0
		R	17	3	0	–	–
		L	18	3	0	0	0
		R	18	3	0	0	–
		L	19	3	0	0	0
		R	19	3	0	0	–
		L	20	3	0	0	0
		R	20	3	0	0	0
		L	21	2	0	0	0
		R	21	3	0	0	0
		L	22	2	0	0	0
		R	22	3	2	0	0
		R	23	1	0	–	–
		L	24	2	0	0	0
		R	24	2	0	0	0
		L	25	2	0	0	0
		R	25	3	0	0	0
		L	26	3	0	0	0
		R	26	4	0	0	0
		L	27	3	0	0	0
		R	27	3	0	0	0
		L	28	2	0	0	0
		R	28	3	0	0	0
Tragopogon dubius	western salsify	L	1	0	2	0	0
		R	1	0	1	0	0
		L	2	0	1	0	–
		R	2	0	2	0	0
		L	3	0	2	1	–
		R	3	0	2	0	0
		L	4	0	2	2	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table D-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Larned NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	western salsify	R	4	0	2	1	1
		L	5	0	2	–	–
		R	5	0	2	0	0
		R	15	1	0	0	0
		R	17	0	1	–	–
Tribulus terrestris	puncturevine	L	17	2	0	0	0
		R	17	2	0	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix E. Fort Union NM Sampling Results

E.1 Panel 3 - July 2011

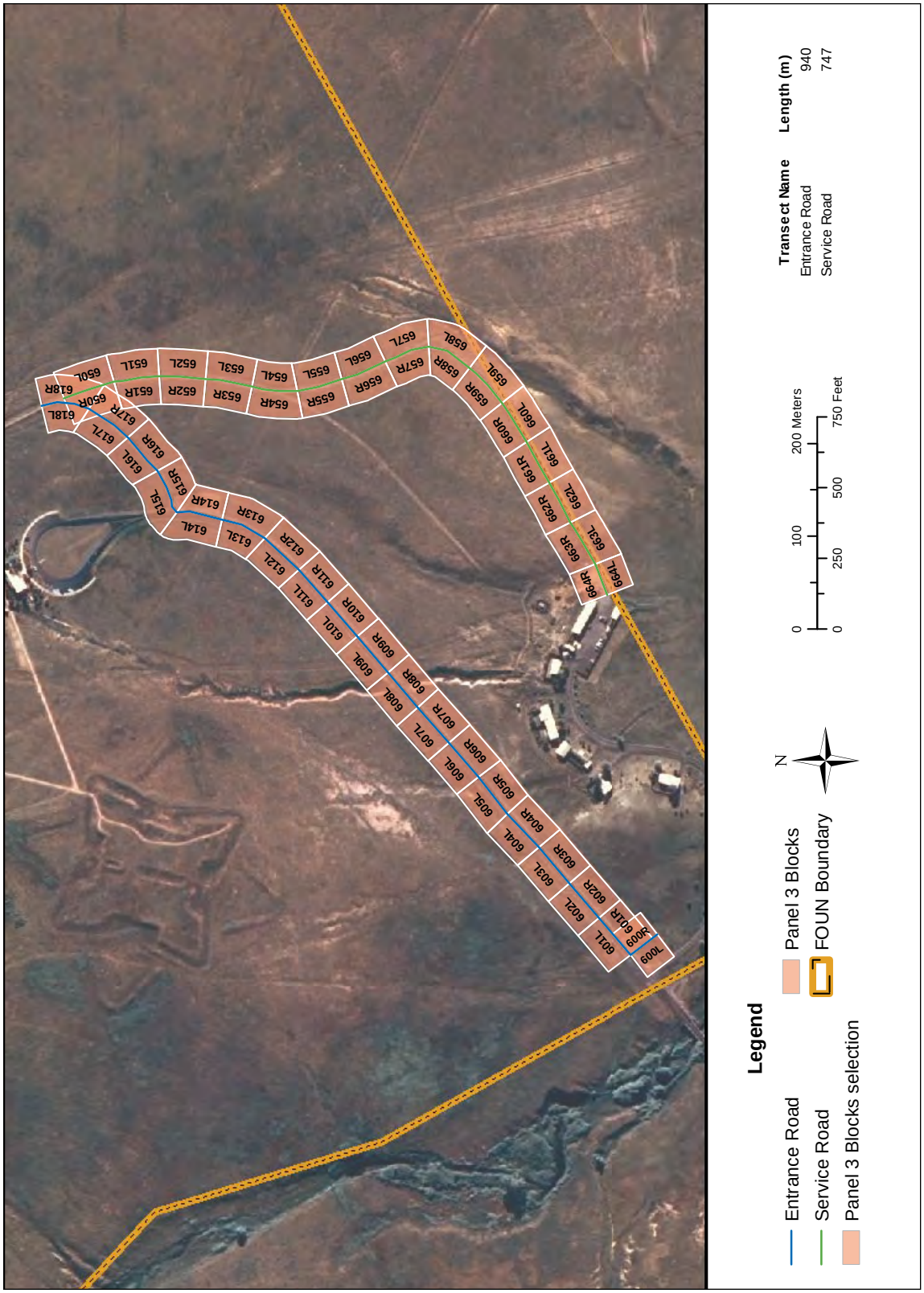


Figure E.1. Individual vector blocks sampled, Panel 3, Fort Union NM, 2011..

Table E-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2011.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis	field bindweed	L	600	2	2	0	0
		R	600	2	2	0	0
		L	601	2	2	0	0
		R	601	2	2	0	0
		L	602	1	1	0	0
		R	602	2	2	0	0
		L	603	2	0	0	0
		R	603	2	1	0	0
		L	604	2	0	0	0
		R	604	2	2	0	0
		L	605	2	0	0	0
		R	605	2	2	0	0
		L	606	2	0	0	0
		R	606	2	2	0	X
		L	607	2	0	0	0
		R	607	2	0	0	0
		L	608	2	0	0	0
		R	608	2	2	2	0
		L	609	2	0	0	0
		R	609	2	2	0	0
		R	610	2	2	0	0
		R	611	1	0	0	0
		R	614	0	1	0	0
		L	615	0	1	1	0
		R	615	1	1	0	0
		L	617	1	0	0	0
		L	650	1	0	0	0
		L	655	0	1	0	0
		L	656	1	2	0	0
		R	656	0	1	0	0
		L	657	2	2	0	0
		R	657	1	1	0	0
		R	658	1	0	0	0
		L	663	2	2	0	0
		R	663	2	0	0	0
		L	664	2	0	0	0
		R	664	2	2	2	0
Erodium cicutarium	red stem storksbill	L	600	2	0	0	0
		L	601	2	0	0	0
		L	602	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table E-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Erodium cicutarium (cont.)	red stem storksbill	L	604	2	0	0	0
		R	604	2	0	0	0
		L	605	1	0	0	0
		R	605	1	0	0	0
		L	606	1	0	0	0
		L	607	1	0	0	0
		L	615	1	0	0	0
		R	615	2	0	0	0
Kochia scoparia	kochia	L	600	2	2	0	0
		R	600	2	2	0	0
		L	601	2	1	0	0
		R	601	2	2	0	0
		L	603	2	1	0	0
		R	603	0	1	0	0
		L	604	2	1	0	0
		R	604	2	2	0	0
		L	605	2	2	0	0
		R	605	2	2	0	0
		L	606	2	2	0	0
		R	606	2	2	0	X
		L	607	2	0	0	0
		L	608	2	0	0	0
		R	608	1	2	2	0
		R	609	2	2	0	0
		R	610	2	2	0	0
		R	611	2	2	0	0
		L	612	0	1	0	0
		R	612	2	2	0	0
		L	613	1	0	0	0
		R	613	2	2	0	0
		R	614	2	2	2	2
		L	615	1	2	0	0
		R	615	2	2	2	0
		R	617	2	2	0	0
		L	650	2	1	0	0
		L	659	1	0	0	0
		R	663	1	0	0	0
Melilotus alba	white sweetclover	L	601	2	0	0	0
		L	602	2	0	0	0
		R	603	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table E-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus alba (cont.)	white sweetclover	L	614	1	0	0	0
		L	663	1	2	0	0
Meilotus officinalis	yellow sweetclover	L	603	2	0	0	0
		L	614	1	0	0	0
None	no exotics found	L	610	0	0	0	0
		L	611	0	0	0	0
		L	618	0	0	0	0
		R	655	0	0	0	0
		R	659	0	0	0	0
		R	661	0	0	0	0
		R	662	0	0	0	0
Rumex crispus	curly dock	R	608	1	0	0	0
Salsola tragus	prickly Russian thistle	L	600	1	0	0	0
		R	600	2	2	0	0
		L	601	1	0	0	0
		R	601	2	0	0	0
		L	603	2	0	0	0
		L	604	1	1	0	0
		R	604	2	2	1	0
		L	605	1	1	0	0
		R	605	1	2	0	0
		L	606	1	1	1	0
		R	606	1	2	0	X
		L	607	1	0	0	0
		R	607	1	1	2	0
		L	608	1	1	0	0
		R	608	1	2	2	0
		R	609	2	2	0	1
		R	610	1	2	0	0
		R	611	2	2	0	0
		L	612	0	1	0	0
		R	612	1	2	2	0
		R	613	1	2	1	0
		R	614	2	2	2	2
		L	615	1	1	0	0
		R	615	2	2	2	0
		L	616	1	0	1	0
		R	616	2	0	0	0
		R	617	2	1	0	0
		R	618	2	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

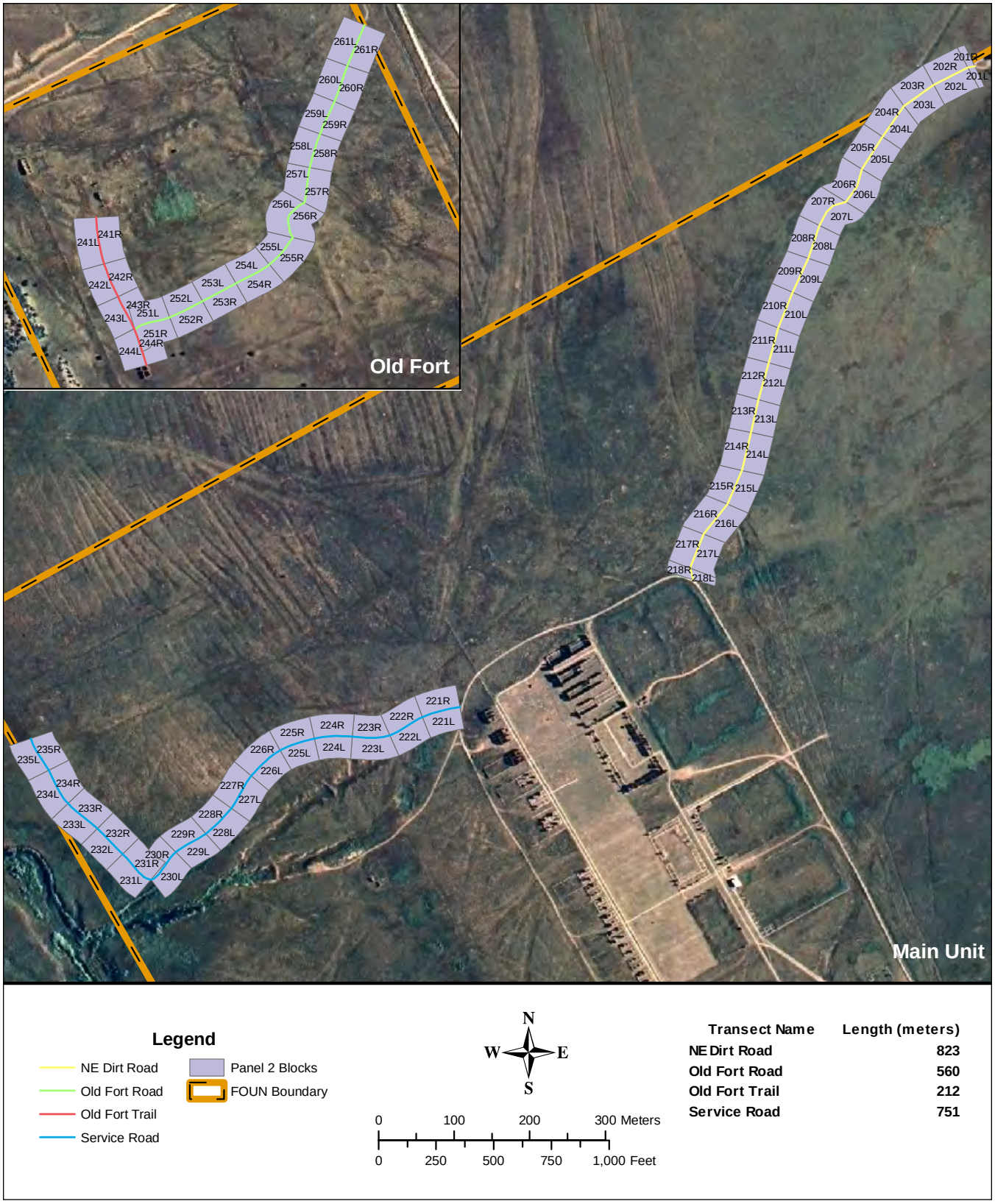
Table E-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	prickly Russian thistle	L	650	2	1	0	0
		R	650	1	1	0	0
		L	651	2	2	0	0
		R	651	2	0	0	0
		L	652	2	2	0	0
		R	652	1	0	0	0
		L	653	2	2	0	0
		R	653	1	0	0	0
		L	654	2	2	0	0
		R	654	1	0	0	0
		L	655	2	2	0	0
		L	656	2	1	0	0
		R	656	1	0	0	0
		L	657	2	2	0	0
		R	657	2	1	0	0
		L	658	2	1	1	0
		L	659	2	2	0	0
		L	660	2	0	0	0
		R	660	1	0	0	0
		L	661	1	0	0	0
		L	662	1	1	0	0
		L	663	2	2	0	0
		R	663	2	2	0	0
		L	664	1	0	0	0
Verbascum thapsus	common mullein	R	600	1	0	0	0
		L	601	1	0	0	0
		R	602	1	0	0	0
		L	614	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

E.2 Panel 2 - July 2010



Transect Name	Length (meters)
NE Dirt Road	823
Old Fort Road	560
Old Fort Trail	212
Service Road	751

Figure E.2. Individual vector blocks sampled, Panel 2, Fort Union NM, 2010.

Table E-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2010.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus catharticus	Rescue brome	R	242	0	2	0	0
Carduus nutans	Musk thistle	R	202	0	1	0	0
		R	229	0	0	0	1
		R	242	1	0	0	0
Convolvulus arvensis	Field bindweed	R	215	2	0	0	0
		R	217	1–2	0	0	0
		L	213	0	2	0	0
		L	214	0	2	0	0
		L	215	2	2	0	0
		L	217	2	2	0	0
		L	224	0	2	0	0
		L	228	0	1	0	0
		R	242	0	2	0	0
Euphorbia davidii	Davids spurge	R	215	1	0	0	0
		L	215	1	0	0	0
Kochia scoparia	Kochia	R	206	0	0	0	1
		R	207	0	0	1	0
		R	208	0	0	1	0
		R	210	0	0	0	1–2
		R	211	0	0	0	2
		R	212	0	0	0	1
		R	213	0	1	1	0
		R	216	0	0	1	1
		R	217	0	2	0	0
		R	218	3	3	2	0
		L	215	0	1	0	0
		L	218	2	2	2	0
		R	221	2	2	2	2
		R	222	0	0	1	0
		R	223	1	1	1	0
		R	224	0	1	0	0
		R	225	0	1	0	0
		R	226	0	2	1	0
		R	227	0	2	0	0
		R	228	1–2	2	2	1
		R	229	1	1–2	0	0
		R	230	2	2	0	0
		L	221	2	2	2	0
		L	222	0	2	2	0
		L	223	0	2	2	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	L	228	0	2	2	0
		L	229	0	2	2	0
		L	230	0	2	2	0
		L	232	0	2	2	0
		L	235	1	0	0	0
		R	241	0	1–2	0	0
		R	242	2	2	2	1
		R	243	2	2	2	2
		R	244	0	2	2	2
		L	241		2	2	2
		L	242	0	2	2	0
		L	243	0	2	2	0
		L	244	2	2	2	2
		R	251	2	2	2	2
		R	252	0	2	2	2
		R	253	1	2	2	2
		R	254	1	1	0	0
		R	256	0	2	2	0
		R	258	0	2	2	1
		R	259	0	2	2	2
		R	260	2	2	2	2
		R	261	0	1–2	1–2	2
		L	251	0	2	2	0
		L	252	0	2	2	0
		L	253	0	2	2	2
		L	255	0	2	2	0
		L	256	0	2	2	0
		L	257	0	2	2	0
		L	258	0	2	2	0
		L	259	0	2	2	0
		L	260	0	2	2	0
		L	261	1	0	0	0
Marrubium vulgare	Horehound	L	224	0	2	0	0
Melilotus alba	White sweetclover	R	203	1	0	0	0
		R	205	1	1	0	0
		R	216	1	1	1	0
		L	214	1	0	0	0
		L	217	0	1	0	0
		R	224	0	1–2	0	0
		R	227	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus alba (cont.)	White sweetclover	R	229	1	1	0	0
		R	233	0	1	0	0
		R	234	0	1	0	0
		R	235	0	1	0	0
		L	224	0	2	0	0
		L	227	0	1	0	0
		R	258	1	0	0	0
Melilotus officinalis	Yellow sweetclover	R	216	0	1	0	0
No exotics found		R	201	0	0	–	–
		R	209	0	0	0	0
		L	201	0	0	0	0
		L	203	0	0	0	0
		L	204	0	0	0	0
		L	234	0	0	0	0
Salsola tragus	Prickly Russian thistle	R	204	0	2	0	0
		R	205	0	1	0	0
		R	206	1–2	1	0	0
		R	207	1	1	0	0
		R	208	1	0	0	0
		R	214	2	2	0	0
		R	215	2	1	2	0
		R	216	2	0	0	0
		R	217	1–2	2	0	0
		R	218	1	0	0	0
		L	202	0	0	1	0
		L	205	0	1	0	0
		L	206	0	2	0	0
		L	207	2	2	0	0
		L	208	0	2	0	0
		L	209	0	1	0	0
		L	210	0	2	0	0
		L	211	0	2	0	0
		L	212	0	2	0	0
		L	213	2	2	0	0
		L	214	0	2	0	0
		L	215	2	2–3	0	0
		L	216	2	2	0	0
		L	218	1	0	0	0
		R	221	0	0	1	0
		R	222	1	1	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	Prickly Russian thistle	R	223	0	1	0	0
		R	224	1	1	0	1
		R	225	1	1–2	0	0
		R	226	0	1–2	2	0
		R	227	0	1–2	0	0
		R	228	2	2	0	0
		R	229	0	0	1	1
		R	230	2	2	2	2
		R	231	3–4	3	3	2
		R	232	3	3	2	2
		R	233	2	2	2	1
		R	235	0	0	0	1
		L	221	0	1	2	0
		L	222	0	2	2	0
		L	223	0	2	2	0
		L	224	2	2	2	0
		L	225	0	2	2	0
		L	226	0	2	2	0
		L	227	0	2	2	0
		L	228	0	2	2	0
		L	229	0	1	0	0
		L	230	2	2	0	0
		L	231	3	3	3	3
		L	232	3	3	3	3
		L	233	3	3	3	0
		R	241	1	1–2	0	0
		R	242	1	2	0	0
		R	243	1–2	1	0	0
		R	244	1	2	0	0
		L	242	0	0	2	0
		L	243	0	0	2	0
		L	244	0	1	0	0
		R	251	1	0	0	0
		R	252	1	1	1	0
		R	253	1–2	0	0	0
		R	254	2	0	0	0
		R	255	1	0	0	0
		R	256	2	0	0	0
		R	257	1	0	0	0
		R	258	2	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	Prickly Russian thistle	R	259	1	0	0	0
		R	260	1–2	0	0	0
		R	261	2	2	0	0
		L	251	1	0	0	0
		L	252	0	2	0	0
		L	253	1	2	2	0
		L	254	2	2	0	0
		L	255	2	2	0	0
		L	256	2	0	0	0
		L	258	1	0	0	0
		L	260	2	1	0	0
Tragopogon dubius	Western salsify	L	230	0	1	0	0
		R	242	0	1	0	0
		L	241	0	1	0	0
		R	253	0	1	0	0
		R	255	1	0	0	0
		R	257	1	0	0	0
		R	258	1	0	0	0
		R	259	0	1	0	0
		R	260	1	1	0	0
		R	261	0	1	0	0
		L	255	0	1	0	0
		L	256	0	1	0	0
Ulmus pumila	Siberian elm	L	231	0	0	0	1

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

E.3 Panel 1 - August 2009

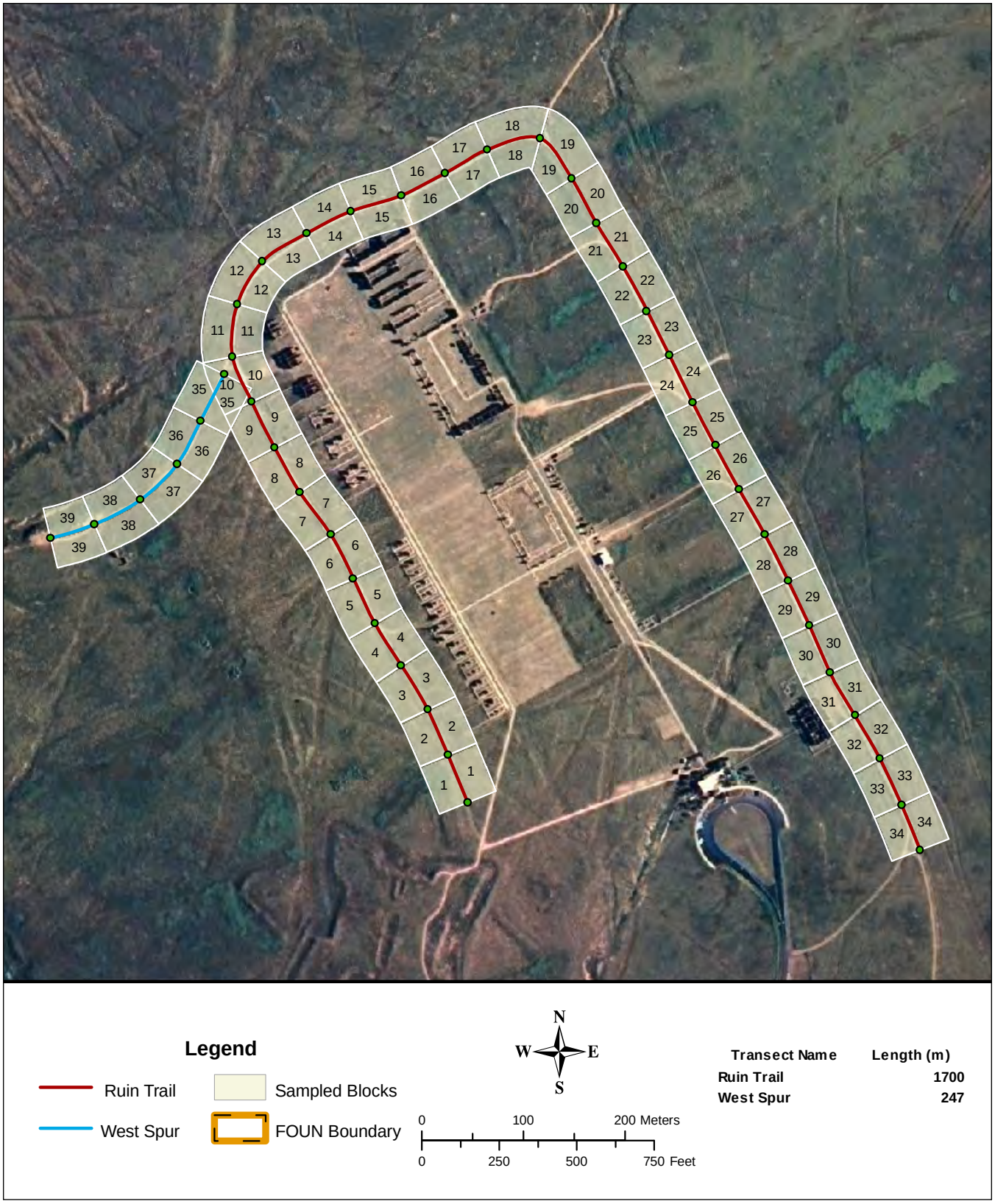


Figure E.3. Individual vector blocks sampled, Panel 1, Fort Union NM, 2009.

Table E-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Brassicaceae species	Mustard species	L	35	1	0	0	0
Chenopodium alba	common lambsquarters	R	2	0	0	2	2
		R	3	0	0	2	0
		R	4	0	0	2	0
		R	8	0	0	1	0
		R	9	1	0	0	0
		R	10	2	2	2	0
		R	11	2	0	0	0
		R	12	2	0	0	0
		R	14	2	0	0	0
		R	15	2	0	0	0
		R	16	2	2	–	–
		R	18	2	0	0	0
		R	19	2	0	1	0
		R	20	0	2	2	0
		R	21	0	2	0	0
		R	22	0	2	2	0
		R	23	0	2	2	2
		R	25	0	0	2	–
		R	26	0	1	0	0
		R	30	0	0	1	0
		L	35	1	0	0	0
		L	36	1	0	0	0
		L	37	2	2	2	0
		L	38	0	2	0	0
Convolvulus arvensis	field bindweed	L	11	2	2	0	0
		L	15	1	0	0	0
		R	15	2	2	0	0
Eupatorium davidii	David's spurge	R	10	0	2	0	0
		R	11	2	0	0	0
		L	17	2	2	0	0
		R	17	2	0	0	0
		L	18	2	2	0	0
		R	18	2	0	0	0
		L	19	0	1	0	0
		R	19	2	0	0	0
		R	20	2	0	0	0
		L	27	1	0	0	0
		R	27	1	0	0	0
		R	29	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Eupatorium davidii (cont.)	David's spurge	R	34	1	0	0	0
		R	37	2	2	0	0
		L	38	2	0	0	0
		R	38	2	3	2	0
Kochia scoparia	kochia	L	1	0	3	3	2
		R	1	0	0	2	0
		L	2	0	1	0	0
		R	2	0	0	2	3
		L	3	0	2	0	0
		R	3	0	0	3	2
		L	4	0	2	0	0
		R	4	0	2	2	0
		L	5	0	2	0	0
		R	5	1	2	3	2
		R	6	0	2	2	2
		L	7	0	2	0	0
		R	7	0	0	3	2
		R	8	1	0	2	0
		L	9	1	2	0	0
		R	9	0	2	2	2
		L	10	2	2	2	2
		R	10	2	3	2	2
		L	11	2	3	3	0
		R	11	3	3	3	2
		L	12	1	0	2	0
		R	12	2	2	2	2
		L	13	1	0	0	0
		L	14	0	2	0	0
		R	14	2	0	0	0
		L	15	2	0	0	0
		R	15	0	2	0	0
		L	16	2	2	0	0
		R	16	3	3	–	–
		L	17	2	2	1	0
		R	17	3	2	2	2
		L	18	3	3	2	0
		R	18	3	3	2	0
		L	19	3	2	1	2
		R	19	3	4	0	3
		L	20	3	0	0	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	kochia	R	20	3	4	2	3
		L	21	1	2	0	0
		R	21	3	4	2	0
		L	22	2	1	0	0
		R	22	3	3	2	2
		L	23	2	2	0	0
		R	23	3	3	2	2
		R	24	0	0	2	2
		L	25	1	0	0	0
		R	25	0	0	3	–
		L	26	2	2	2	0
		R	26	2	2	3	2
		L	27	1	0	0	0
		R	27	2	2	3	0
		L	28	2	2	1	0
		R	28	2	2	2	2
		L	29	2	0	0	0
		R	29	0	2	2	2
		L	30	2	0	0	0
		R	30	2	0	2	2
		L	31	2	0	0	0
		R	31	0	1	0	–
		L	32	2	2	0	0
		R	32	2	0	0	2
		L	33	2	1	0	0
		R	33	2	1	0	0
		L	34	0	0	2	0
		R	34	3	2	2	0
		L	35	0	1	0	0
		R	35	1	2	3	2
		L	36	2	0	0	0
		R	36	0	3	3	2
		L	37	2	2	2	2
		R	37	2	2	2	0
		L	38	3	2	3	2
		R	38	2	2	3	2
		L	39	2	0	2	2
		R	39	0	2	–	–
Marrubium vulgare	horehound	R	4	0	0	1	0
		R	5	0	0	2	1
		R	6	0	0	0	1

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Marrubium vulgare (cont.)	horehound	R	7	0	0	2	0
		R	8	0	0	0	1
		R	10	0	0	0	1
		R	14	0	0	0	1
		R	15	1	0	0	0
		R	31	0	0	3	–
		R	32	0	0	2	2
Melilotus alba	white sweetclover	R	2	0	0	2	0
		L	4	1	0	0	0
		L	6	2	2	0	0
		R	6	0	1	1	0
		R	7	0	2	2	0
		L	8	1	2	1	1
		R	8	0	1	0	0
		L	9	1	2	3	2
		R	9	0	3	2	0
		L	10	2	1	1	0
		R	10	0	2	0	0
		L	12	1	1	0	1
		R	12	2	2	2	0
		L	13	0	2	1	0
		R	13	2	3	3	0
		L	15	0	1	1	0
		R	15	0	2	3	0
		L	16	0	0	0	1
		R	16	0	2	–	–
		L	20	0	0	2	0
		L	21	0	1	1	0
		R	21	1	0	0	0
		R	23	1	1	0	0
		L	24	1	2	0	0
		R	24	1	0	1	0
		L	27	0	2	0	0
		L	28	0	2	0	0
		R	28	2	2	2	0
		L	30	0	1	0	0
		L	31	1	1	0	0
		R	31	0	0	2	–
		L	32	0	1	0	0
		R	32	0	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table E-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Fort Union NM, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus alba (cont.)	white sweetclover	L	33	0	1	1	1
		L	34	0	0	1	0
		L	35	0	1	0	0
		R	36	0	1	0	0
		L	37	0	0	2	2
		R	37	1	1	0	0
		R	38	0	1	0	0
		R	39	0	2	–	–
Salsola tragus	prickly Russian thistle	L	1	0	2	2	0
		R	1	0	0	2	0
		R	2	0	0	2	0
		R	5	0	0	2	0
		R	10	0	1	0	0
		R	11	2	0	0	0
		R	16	2	2	–	–
		R	17	2	2	0	0
		R	18	2	2	0	0
		R	19	2	2	0	0
		R	22	2	0	0	0
		R	27	1	0	0	0
		R	28	2	2	0	0
		R	32	2	0	0	0
		R	33	0	1	0	0
		R	34	0	1	0	0
		L	35	0	1	0	0
		L	37	2	2	2	0
		L	38	2	2	0	0
		L	39	2	0	0	0
Tragopogon dubius	western salsify	R	5	0	0	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix F. Lake Meredith NRA Sampling Results

F.1 Panel 3 - May 2011

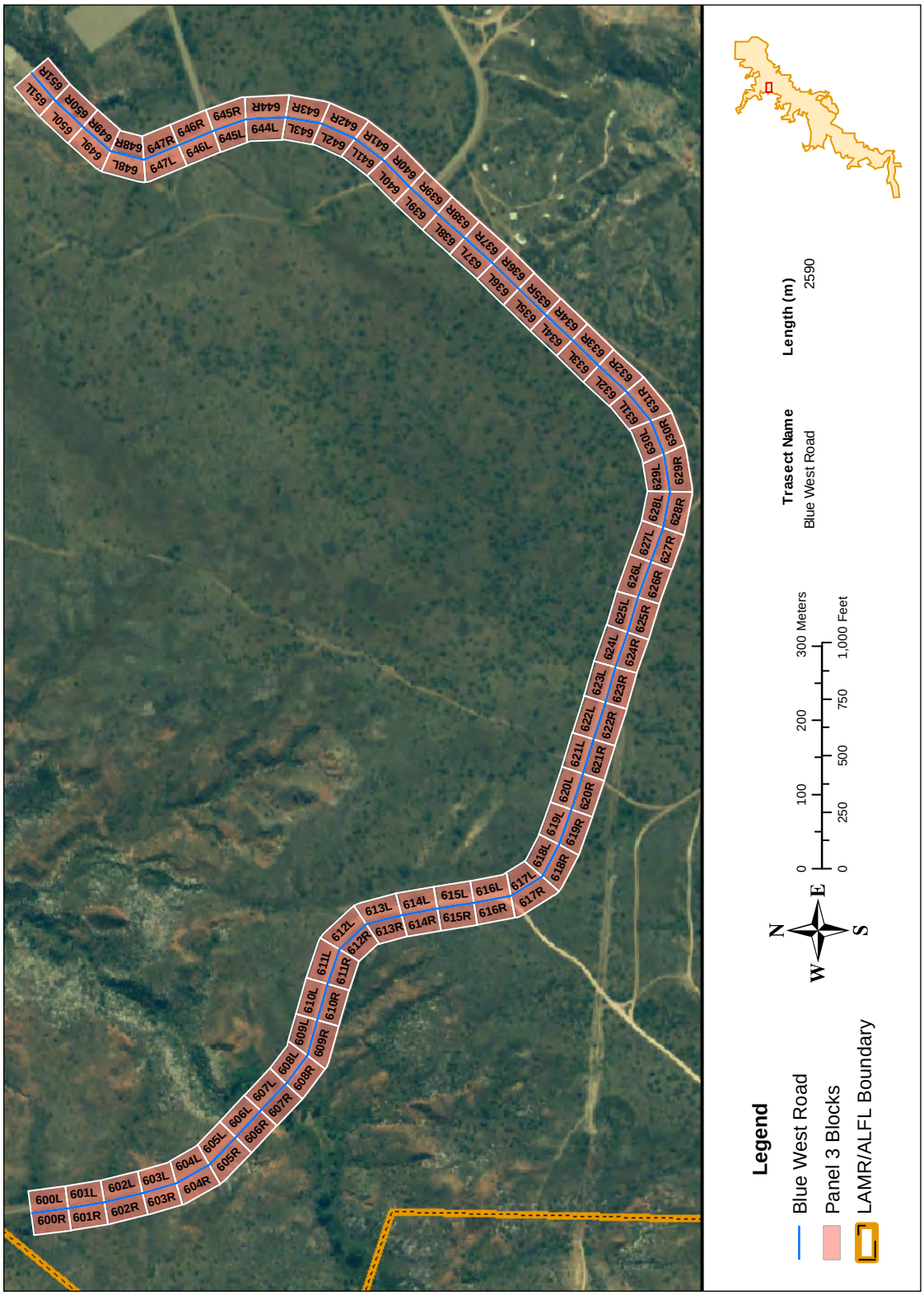


Figure F.1. Individual vector blocks sampled, Panel 3, Lake Meredith NRA, 2011..

Table F-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2011.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum	cheatgrass	R	623	2	2	0	0
		R	624	2	2	0	0
		R	625	0	2	0	0
		L	626	2	2	0	0
		R	626	3	0	0	0
		R	627	3	2	0	0
		L	628	1	2	0	0
		L	629	2	2	0	0
		L	630	2	2	0	0
		L	642	2	2	0	0
Cirsium arvensis	Canada thistle	L	601	2	1	0	0
		R	601	2	2	0	0
		L	602	2	1	0	0
		R	602	2	0	0	0
		L	603	0	1	0	0
		L	606	1	0	X	X
		R	606	2	0	0	0
		L	608	1	0	0	0
		R	608	0	1	X	X
		L	609	2	0	0	0
		R	609	0	2	0	0
		L	610	1	1	0	0
		R	610	2	2	0	0
		L	611	2	1	0	0
		L	613	2	0	0	0
		R	613	2	0	0	0
		L	614	2	0	0	0
		L	615	2	0	0	0
		L	616	2	0	0	0
		L	617	2	0	X	X
		R	617	1	2	0	0
		L	618	2	0	0	0
		L	619	1	0	0	0
		R	619	2	0	0	0
		L	620	1	0	0	0
		L	621	2	1	0	0
		R	621	2	0	0	0
		L	622	2	1	0	0
		R	622	0	2	0	0
		L	623	1	0	0	0
		R	623	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table F-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Cirsium arvensis (cont.)	Canada thistle	L	624	1	0	0	0
		R	624	2	0	0	0
		L	625	1	0	0	0
		L	626	1	0	0	0
		L	627	1	0	0	0
		L	628	1	0	0	0
		L	629	2	0	0	0
		L	630	2	0	0	0
		L	631	2	0	0	0
		R	631	2	1	0	0
		L	632	1	0	0	0
		R	632	2	1	0	0
		L	633	2	0	0	0
		R	633	2	2	0	X
		L	634	2	0	0	0
		R	634	2	2	0	0
		L	635	2	0	0	0
		R	635	2	1	0	0
		L	636	1	0	0	0
		R	636	2	2	0	0
		L	637	2	1	0	0
		R	637	2	2	0	X
		L	638	2	0	0	0
		R	638	2	1	0	X
		L	639	2	0	0	0
		R	639	2	2	0	X
		L	640	2	2	0	0
		L	641	2	0	0	0
		R	641	2	0	0	0
		L	642	1	0	0	0
		R	642	2	0	0	0
		L	643	2	1	0	0
		L	644	2	1	0	0
		L	645	2	0	0	0
		R	645	2	2	0	X
		L	646	0	1	X	X
		R	646	0	2	2	2
		L	647	1	0	X	X
		R	649	2	0	X	X
		R	650	0	2	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table F-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
		R	651	1	0	0	X
Convolvulus arvensis	field bindweed	L	648	1	0	X	X
Kochia scoparia	kochia	L	607	1	0	X	X
Melilotus alba	white sweetclover	R	619	1	0	0	0
None	no exotics found	L	600	0	0	0	0
		R	600	0	0	0	0
		R	603	0	0	0	0
		L	604	0	0	0	0
		R	604	0	0	X	0
		L	605	0	0	X	X
		R	605	0	0	X	0
		R	611	0	0	0	0
		L	612	0	0	X	X
		R	614	0	0	0	0
		R	615	0	0	0	0
		R	616	0	0	0	0
		R	620	0	0	0	0
		R	640	0	0	0	0
		R	644	0	0	0	0
		R	647	0	0	X	X
		L	648	0	0	X	X
		L	649	0	0	X	X
		L	650	0	0	X	X
Salsola tragus	prickly Russian thistle	L	601	0	2	2	0
		L	602	0	2	2	0
		R	609	2	2	2	0
		R	612	2	2	0	0
		R	617	2	0	0	0
		R	618	0	2	2	2
		L	623	1	0	0	0
		R	624	0	2	0	0
		L	626	1	0	0	0
		R	626	2	0	0	0
		R	627	2	0	0	0
		R	628	2	0	0	0
		R	629	2	0	0	0
		R	630	2	0	0	0
		R	632	2	2	0	0
		L	633	1	0	0	0
		L	635	1	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table F-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
		L	637	0	2	2	0
Salsola tragus (cont.)	prickly Russian thistle	L	638	0	2	2	0
		L	639	0	2	0	0
		L	640	0	2	0	0
		L	641	0	2	0	0
		L	642	1	2	0	0
		R	642	2	2	0	0
		R	643	2	0	0	0
		R	645	2	2	0	X
		R	648	2	0	0	0
		L	651	1	0	X	X
Sorghum halepense	Johnsongrass	L	625	1	0	0	0
		L	629	2	2	0	0
		L	630	2	2	0	0
		R	632	2	0	0	0
Tamarix chinensis	saltcedar	L	607	0	1	X	X
		R	607	0	2	2	0
Tragopogon dubius	western salsify	L	632	1	0	0	0
Triticum aestivum	common wheat	L	631	0	2	0	0
		L	633	0	2	0	0
Tribulus terrestris	puncturevine	L	611	1	0	0	0
		L	613	1	0	0	0
		L	614	1	0	0	0
		L	615	1	0	0	0
		L	617	1	0	X	X
		R	619	2	0	0	0
		L	622	1	0	0	0
		R	622	1	0	0	0
		R	624	2	0	0	0
		L	632	1	0	0	0
		L	642	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

F.2 Panel 2 - June 2010

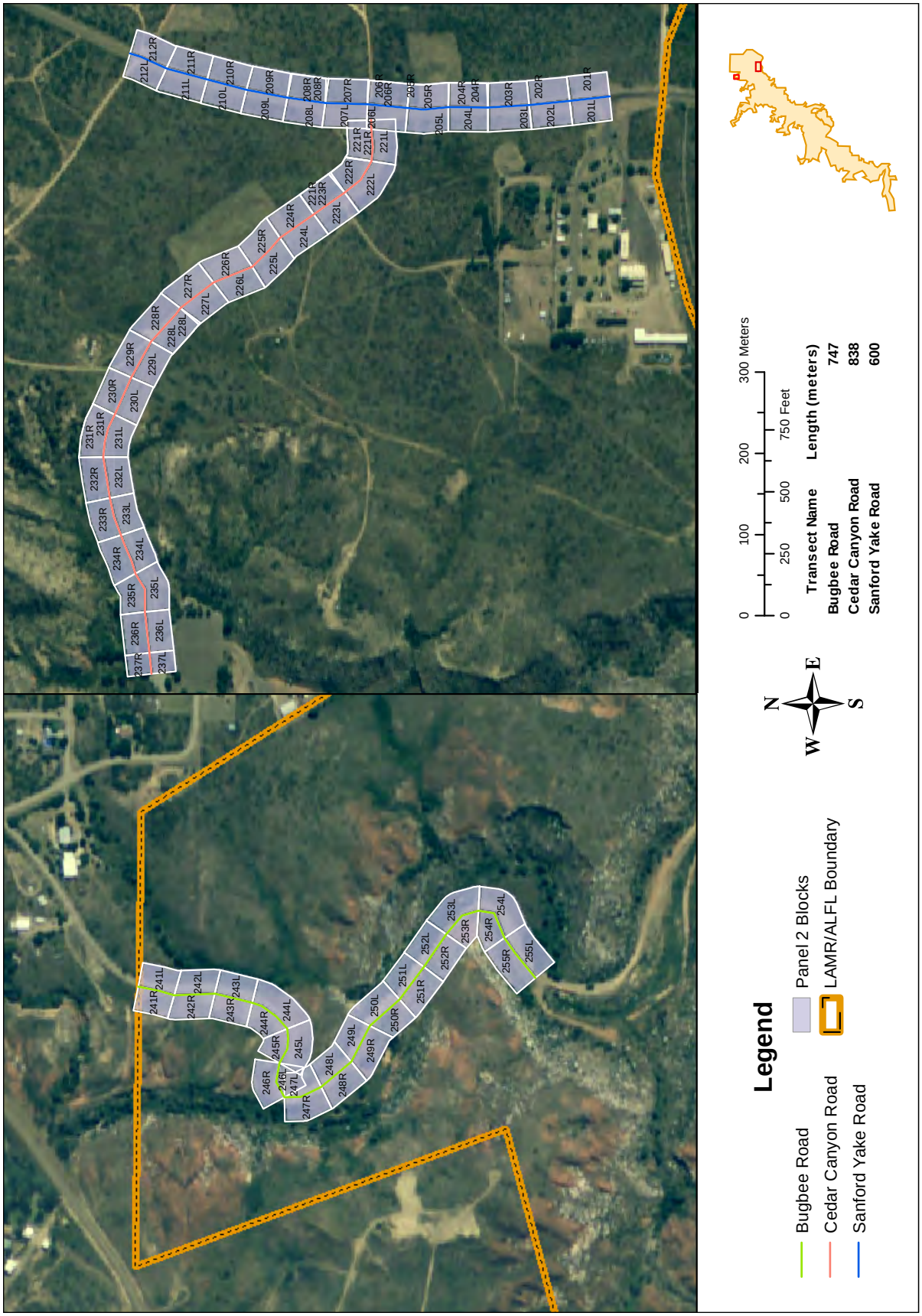


Figure F.2. Individual vector blocks sampled, Panel 2, Lake Meredith NRA, 2010.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus	Japanese brome	L	201	0	0	2	0
		L	202	0	0	0	0
		L	203	0	0	3	0
		L	204	0	0	2	–
		L	206	0	2	3	–
		L	207	0	0	2	3
		L	208	0	2	2	2
		L	209	0	0	2	2
		L	211	0	0	2	2
		L	212	0	2	2	2
		R	202	0	2	0	2
		R	203	0	0	2	0
		R	204	0	2	2	0
		R	205	0	2	0	0
		R	206	0	2	2	0
		R	207	0	3	3	3
		R	208	0	3	3	0
		R	209	0	2	2	0
		R	210	0	2	2	0
		R	211	0	2	0	–
		L	221	0	3	3	3
		L	222	0	2	2	2
		L	223	0	2	2	2
		L	224	0	2	2	0
		L	225	0	2	2	0
		L	227	0	2	2	0
		L	228	0	2	3	0
		L	229	2	3	3	–
		L	230	2	2	–	–
		L	232	2	2	0	–
		L	234	1	2	0	–
		L	235	2	0	–	–
		L	236	2	3	–	–
		R	222	0	2	2	0
		R	223	0	2	2	0
		R	228	0	2	2	2
		R	229	2	2	–	–
		R	230	2	2	–	–
		R	231	1	0	–	–
		R	232	2	0	–	–
		R	233	0	1–2	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	R	237	2	2	0	0
		L	241	1	0	–	–
		L	242	0	2	0	0
		L	250	2	0	–	–
		L	254	0	2	2	0
		R	241	0	1	0	0
		R	242	0	1–2	–	–
		R	243	0	1	–	–
		R	244	1	0	–	–
		R	247	2	2	–	–
		R	255	0	2–3	0	0
Bromus tectorum	Cheatgrass	L	203	0	0	3	0
Convolvulus arvensis	Field bindweed	R	204	0	2	0	0
		L	227	0	1	0	0
		R	223	1	0	0	0
		R	229	1	1	–	–
Cynodon dactylon	Bermuda grass	L	201	2	2	2	0
		L	202	2	2	0	0
		L	203	2	2	0	0
		L	204	2	2	0	–
		L	205	2	2	0	–
		L	206	2	2	0	–
		L	207	2	2	2	0
		L	208	2	2	0	0
		L	209	2	2	0	0
		L	210	1	0	0	0
		L	211	2	0	0	0
		L	212	2	0	0	0
		R	201	2–3	2	0	0
		R	202	3–4	3	0	0
		R	203	2	2	0	0
		R	204	0	2	0	0
		L	221	2	2	0	0
		L	222	2	0	0	0
		L	223	2	0	0	0
		L	224	2	0	0	0
		L	225	2	0	0	0
		L	226	2	0	0	0
		L	242	2	0	0	0
		L	244	2	0	0	0
		R	241	0	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Digitaria sanguinalis	Hairy crabgrass	L	201	2	2	0	0
		L	202	2	2	0	0
		L	203	2	2	0	0
		L	204	2	2	0	–
		L	205	2	2	0	–
		L	206	2	2	0	–
		L	207	2	2	2	0
		L	209	2	0	0	0
		L	210	2	0	0	0
		L	211	2	0	0	0
		L	212	2	0	0	0
		R	201	2	1	0	0
		R	202	2	0	0	0
		R	203	2	2	0	0
		R	204	2	0	0	0
		R	205	2	2	0	0
		R	206	2	2	0	0
		R	207	2	2	0	0
		R	208	2–3	2	0	0
		R	209	2	2	0	0
		R	210	2	2	0	0
		R	211	2	2	0	–
		R	212	2	0	0	–
		L	221	1	2	0	0
		L	224	2	0	0	0
		L	226	2	0	0	0
		L	227	2	0	0	0
		L	228	2	0	0	0
		R	221	2	2	2	0
		R	222	2	2	0	0
		R	224	2–3	2	0	0
		R	225	2	2	0	0
		R	226	1	1	0	0
		R	227	0	1	0	0
		L	241	2	0	–	–
		L	243	2	0	0	0
		L	244	2	0	0	0
		L	254	2	0	0	0
		L	255	2	2	0	0
		R	241	2	2	0	0
		R	242	1	0	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Digitaria sanguinalis (cont.)	Hairy crabgrass	R	243	1	0	–	–
		R	245	1	0	–	–
		R	247	1	0	–	–
		R	248	2	0	0	0
		R	249	1	0	0	0
		R	252	1	0	0	–
		R	254	1	2	0	0
		R	255	1	0	0	0
Erodium cicutarium	Red stork's-bill	R	208	1	0	0	0
		R	211	2	0	0	–
		R	212	1	0	0	–
Euphorbia dentata	Toothed spurge	L	221	0	1	0	0
		L	222	0	2	0	0
		L	223	1	2	2	0
		L	226	0	2	0	0
		R	231	1	1	–	–
		L	245	1	0	–	–
		L	247	1	0	–	–
		L	252	1	0	–	–
		R	241	1	0	0	0
		R	242	0	1	–	–
Kochia scoparia	Kochia	L	205	0	0	2	–
		R	202	0	1	0	0
		R	203	0	2	0	0
		R	204	0	2	0	0
		R	205	2	0	0	0
		R	210	0	1	0	0
		R	211	0	1	0	–
		L	221	0	2	2	0
		L	222	0	2	2	0
		L	223	2	2	0	0
		L	225	0	1	0	0
		L	226	0	1	0	0
		L	227	1	2	0	0
		L	228	1	2	0	0
		L	229	0	2	0	–
		L	236	1	0	–	–
		R	226	0	1	0	0
		R	227	1	0	0	0
		R	228	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	R	229	0	1–2	–	–
		L	241	1	0	–	–
		R	241	1	0	0	0
		R	242	1	0	–	–
Medicago minima	Burr medic clover	R	252	1	0	0	–
Melilotus alba	White sweetclover	L	201	0	0	2	0
		L	211	0	1	0	0
		L	212	0	2	2	0
		R	212	0	1–2	0	–
		L	224	0	2	2	0
		L	225	0	2	2	0
		L	229	0	2	0	–
		L	231	2	0	–	–
		L	232	2	1	0	–
		L	233	2	2	2	–
		L	234	0	2	0	–
		L	235	0	1	–	–
		R	232	0	1	–	–
		R	233	1–2	1–2	–	–
		R	234	1–2	1–2	–	–
		R	235	0	2	0	–
		R	236	1	2	2	–
		L	241	0	1	–	–
		L	244	0	2	2	0
		L	245	2	2	–	–
		L	246	2	2	–	–
		L	247	2	0	–	–
		L	248	2	2	–	–
		L	249	0	2	–	–
		L	253	0	2	–	–
		L	255	2	0	0	0
		R	242	0	2	–	–
		R	243	2–3	2–3	–	–
		R	244	3	2–3	–	–
		R	245	2	3	–	–
		R	246	1	2	1	0
		R	249	0	1	0	0
		R	250	2	2	1	0
		R	251	1	2	1	–
		R	252	1	2	1	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus alba (cont.)	White sweetclover	R	253	2	3	2	–
		R	254	1	1	0	0
		R	255	0	2	0	0
No exotics found		L	237	0	0	0	0
Poa pratensis	Kentucky bluegrass	L	208	0	2	0	0
		L	209	0	2	0	0
		R	207	0	2	0	0
Polypogon monspeliensis	Annual rabbitsfoot grass	R	201	0	2	0	0
Salsola collina	Spineless Russian thistle	L	227	1	0	0	0
		R	223	1–2	0	0	0
Salsola tragus	Prickly Russian thistle	L	202	2	2	2	2
		L	203	0	0	2	0
		L	204	0	0	3	–
		L	206	0	2	3	–
		L	207	0	0	3	3
		L	208	0	0	2	2
		L	210	0	2	0	0
		L	212	0	2	2	0
		R	201	0	2	2	0
		R	202	0	2	1	0
		R	203	0	2	2	0
		R	204	1	2	2	0
		R	205	0	2	0	0
		R	210	0	2	0	0
		R	211	0	2	0	–
		R	212	0	2	0	–
		L	221	2	2	3	3
		L	222	1	3	3	2
		L	223	1	2	3	3
		L	224	1	2	3	2
		L	225	0	3	3	3
		L	226	0	2	2	2
		L	227	0	3	3	3
		L	228	0	2	2	0
		L	236	2	2	–	–
		R	222	2	2	0	0
		R	223	1	2	2	0
		R	224	1	2	2	0
		R	225	1	1	1	0
		R	226	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	Prickly Russian thistle	R	227	2	0	0	0
		R	228	2	2	0	0
		R	229	1	2	–	–
		R	230	1	1	–	–
		R	231	2	2	–	–
		R	235	1	1	0	–
		R	236	2	1	0	–
		R	237	1	2	0	0
		L	242	2	2	0	0
		L	243	2	2	0	0
		L	247	2	2	–	–
		L	248	2	2	–	–
		L	249	0	2	–	–
		R	241	2	2	0	0
		R	242	1–2	0	–	–
		R	243	1	0	–	–
		R	245	0	1	–	–
		R	246	1–2	0	0	0
		R	247	2	2	–	–
		R	248	2	1	0	0
		R	249	0	1	0	0
		R	253	0	2	0	–
		R	254	0	2	0	0
		R	255	1	2	0	0
Scorzonera laciniata	Cutleaf vipergrass	R	246	1	1	0	0
Sorghum halepense	Johnsongrass	L	202	0	0	0	2
		L	203	0	0	0	2
Tamarix chinensis	Tamarisk	L	250	1	0	–	–
		L	251	1	0	–	–
		L	252	1	1	–	–
Taraxacum officinale	Dandelion	L	207	2	2	0	0
		R	204	1	0	0	0
		R	221	0	1	0	0
		R	225	0	1	0	0
Tragopogon dubius	Western salsify	L	205	0	0	0	–
		L	206	1	0	0	–
		L	208	0	1	0	0
		R	201	0	1	0	0
		R	203	1	0	0	0
		R	206	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	R	207	0	1	0	0
		R	208	1	1	0	0
		L	226	0	1	0	0
		L	228	0	1	0	0
		L	229	1	0	0	–
		L	231	1	0	–	–
		L	248	1	0	–	–
		R	255	1	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

F.3 Panel 1 - August 2009

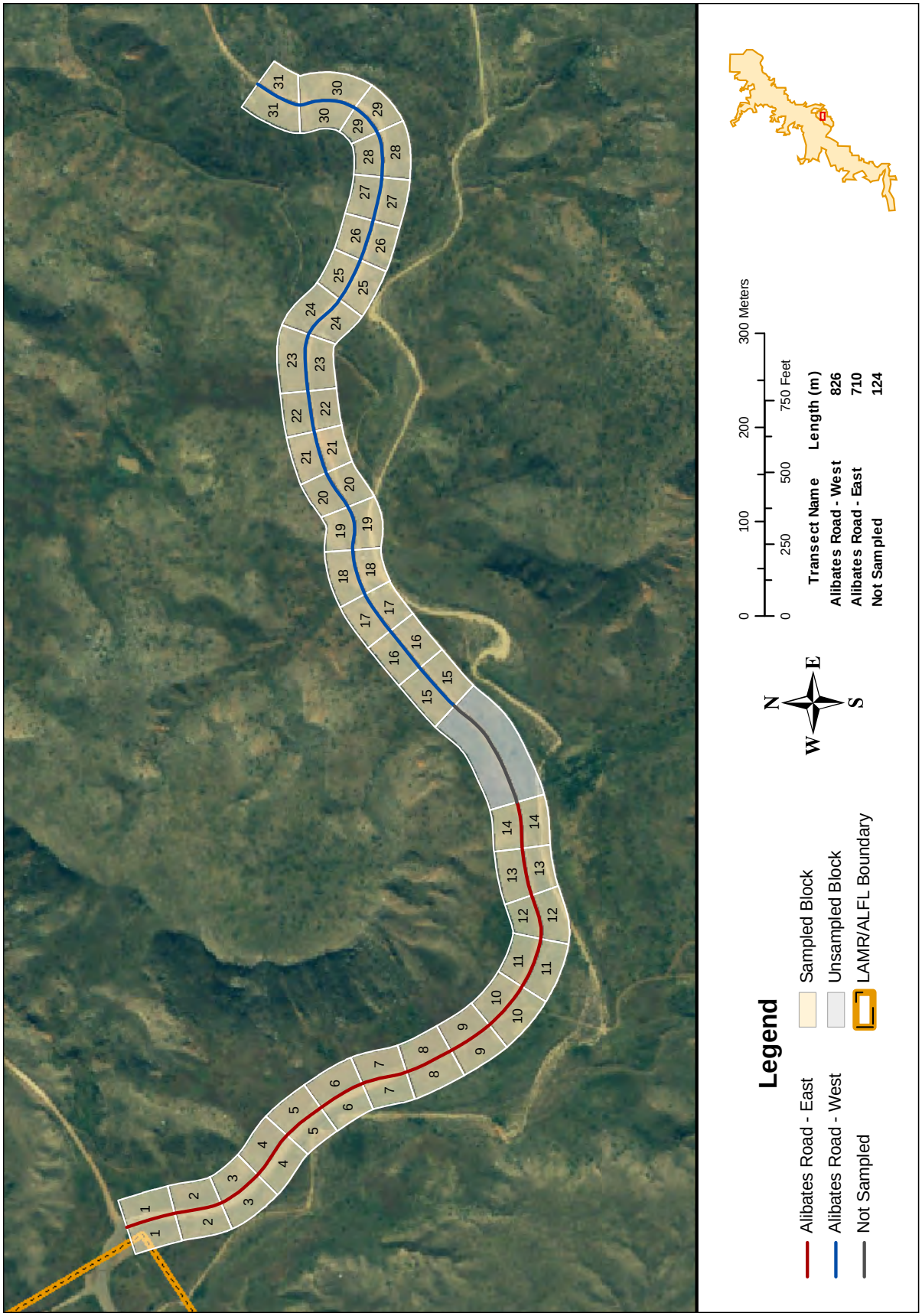


Figure F.3. Individual vector blocks sampled, Panel 1, Lake Meredith NRA, 2009.

Table F-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Chenopodium glaucum	oakleaf goosefoot	R	25	1	0	0	0
		L	26	0	2	0	–
		R	26	1	0	–	–
Digitaria sanguinalis	hairy crabgrass	L	2	1	0	0	0
		R	2	2	0	0	0
		R	3	2	2	0	0
		R	6	2	0	0	0
Kochia scoparia	kochia	L	15	3	2	2	0
		R	15	2	0	0	0
		L	16	2	2	2	0
		R	16	2	0	–	–
		L	17	3	2	2	0
		R	17	3	–	–	–
		L	18	2	2	3	0
		R	18	3	3	0	0
		L	19	3	3	2	0
		R	19	3	3	0	0
		L	20	3	2	2	0
		R	20	3	2	0	0
		L	21	3	3	3	0
		R	21	3	2	0	0
		L	22	3	3	3	0
		R	22	2	2	0	0
		L	23	3	3	3	0
		R	23	2	2	0	0
		L	24	2	2	2	0
		R	24	1	0	0	0
		L	25	3	3	0	0
		R	25	2	0	0	0
		L	26	3	3	3	–
		R	26	2	2	–	–
		L	27	3	3	0	0
		R	27	3	2	0	0
		L	28	2	3	3	0
		R	28	2	2	0	0
		L	29	3	3	–	–
		R	29	2	2	0	0
		L	30	2	3	–	–
		R	30	2	2	–	–
		L	31	2	3	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
		R	31	3	2	0	0
None	*No exotics found*	R	11	0	–	–	–
		R	12	0	–	–	–
		R	13	0	–	–	–
Salsola tragus	prickly Russian thistle	L	1	2	0	0	0
		R	1	0	1	0	0
		L	2	1	1	0	0
		L	3	1	0	0	0
		L	4	1	0	0	0
		L	6	0	1	0	0
		L	7	2	0	0	0
		L	8	2	0	0	0
		L	10	1	0	0	0
		L	11	2	–	–	–
		L	12	1	–	–	–
		L	13	1	–	–	–
		L	15	2	0	0	0
		R	15	2	0	0	0
		L	30	0	1	–	–
Setaria viridis	green bristlegrass	L	1	1	2	2	0
		R	1	0	2	2	0
		L	2	1	2	2	0
		R	2	0	2	2	0
		L	3	1	2	2	0
		R	3	0	2	0	0
		L	4	0	3	3	2
		R	4	0	2	0	0
		L	5	0	3	2	2
		R	5	0	2	0	0
		L	6	1	2	2	1
		R	6	0	2	0	0
		L	7	1	2	1	1
		R	7	2	2	0	0
		L	8	2	2	2	3
		R	8	2	2	0	0
		L	9	1	2	0	2
		R	9	0	2	2	0
		R	10	0	1	0	0
		L	13	2	–	–	–
		L	14	2	2	2	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table F-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lake Meredith NRA, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Setaria viridis (cont.)	green bristlegrass	R	14	1	0	0	0
		R	20	1	2	2	0
		R	21	1	0	2	0
Taraxacum officinale	dandelion	L	29	1	0	–	–
Tragopogon dubius	western salsify	L	15	0	1	2	0
		L	17	0	1	2	0
		L	20	0	2	2	0
		L	23	0	2	2	0
		L	28	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix G. Lyndon B. Johnson NHP Sampling Results

G.1 Panel 1 - March 2011

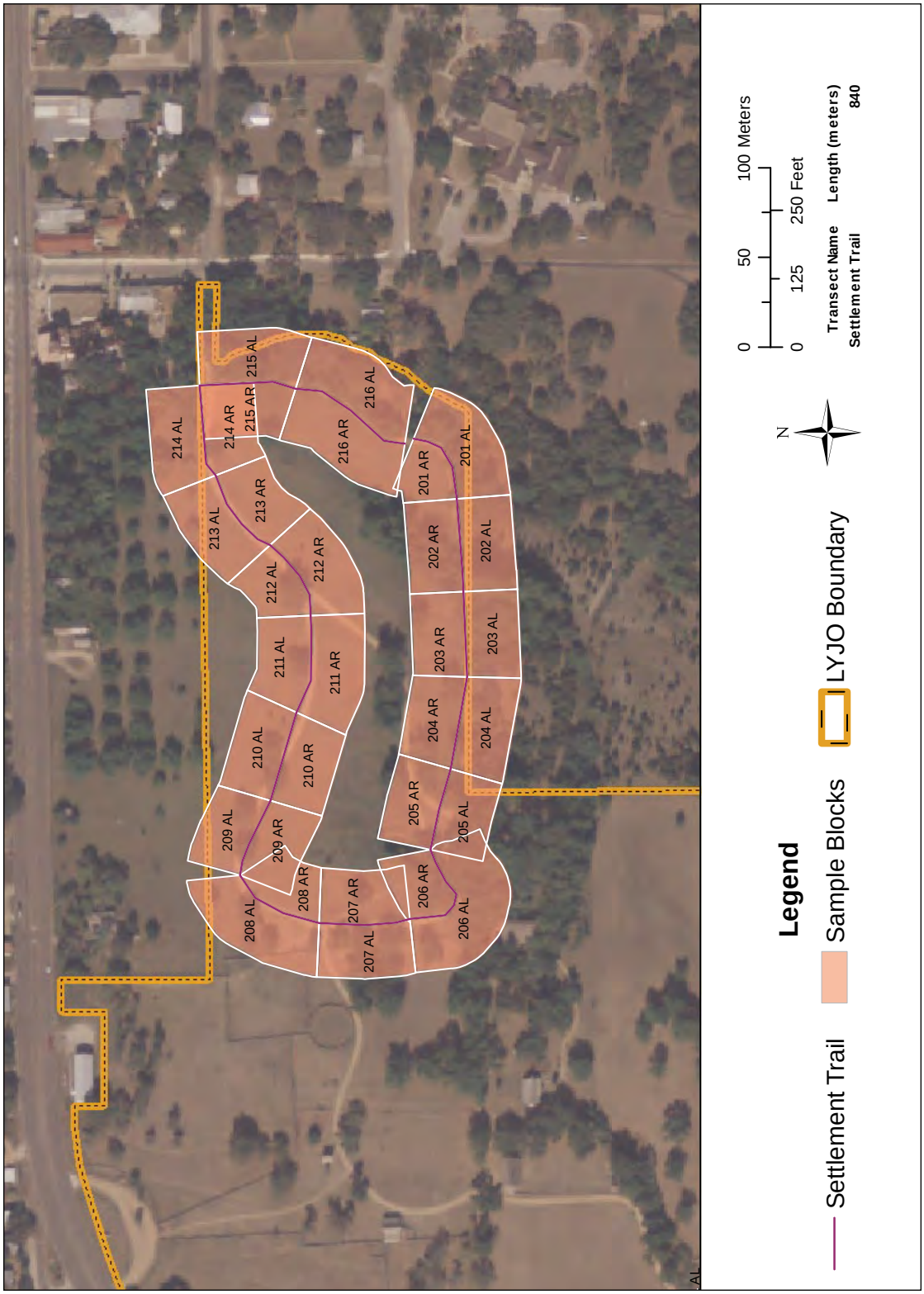


Figure G.1. Individual vector blocks sampled, Panel 1, Lyndon B. Johnson NHP, 2011..

Table G-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2011.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bothriochloa ischaemum	KR bluestem	L	202	2	0	X	X
		R	202	2	2	0	X
		L	203	2	0	X	X
		R	203	2	2	0	X
		L	204	2	0	X	X
		R	204	0	2	2	0
		L	205	2	0	X	X
		R	205	2	0	0	0
		L	206	2	2	0	0
		R	206	2	0	0	0
		L	207	2	2	2	0
		R	207	2	1	0	0
		L	208	2	2	2	0
		R	208	2	2	0	0
		R	209	1	2	0	0
		L	210	2	0	0	0
		R	210	2	2	0	0
		L	211	2	2	0	0
		R	211	2	2	0	0
		L	212	2	0	0	0
		R	212	2	2	0	0
		L	213	2	2	0	0
		R	213	2	2	0	0
		L	214	2	2	0	0
		R	214	2	2	0	0
		L	215	2	0	X	X
		R	215	1	2	0	0
		L	216	2	0	X	X
		R	216	2	2	0	0
Bromus japonicus	Japanese brome	R	203	1	0	0	X
		L	205	2	0	X	X
		R	205	1	0	0	0
		L	206	2	2	0	0
		R	206	2	0	0	0
		R	207	1	1	0	0
		R	209	2	0	0	0
Convolvulus arvensis	field bindweed	R	208	1	1	0	0
Conium maculatum	poison hemlock	L	204	1	0	X	X
		R	204	1	0	0	0
		L	205	1	0	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table G-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Conium maculatum (cont.)	poison hemlock	R	205	1	1	0	0
		R	208	1	0	0	0
Cynodon dactylon	Bermuda grass	R	205	1	0	0	0
		R	206	2	0	0	0
		L	207	2	2	0	0
		R	207	2	0	0	0
		R	208	2	0	0	0
Lolium perenne	perennial rye	R	209	2	0	0	0
Lonicera japonica	Japanese honeysuckle	R	203	0	1	0	X
Medicago lupulina	black medic clover	L	202	2	0	X	X
		R	202	2	0	0	X
		L	203	2	0	X	X
		R	203	2	0	0	X
		L	204	2	0	X	X
		R	204	2	0	0	0
		R	205	2	0	0	0
		L	206	2	2	0	0
		R	207	2	0	0	0
		R	208	2	0	0	0
		R	210	1	0	0	0
		R	211	2	0	0	0
		R	214	2	0	0	0
		R	215	2	0	0	0
		L	216	2	0	X	X
		R	216	2	0	0	0
Sorghum halepense	Johnsongrass	R	202	0	2	2	X
		R	203	0	2	2	X
		R	204	0	2	2	0
		L	205	2	0	X	X
		R	205	0	2	2	0
		R	206	0	3	2	0
		L	207	2	2	2	0
		R	207	1	2	3	0
		L	208	2	2	2	0
		R	208	0	2	0	0
		L	209	2	2	0	0
		L	210	2	0	0	0
		R	210	0	2	2	3
		L	211	2	2	2	0
		R	211	0	1	2	3

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table G-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense (cont.)	Johnsongrass	L	212	2	2	2	0
		R	212	0	1	2	2
		L	214	2	2	0	0
		R	214	0	2	2	2
		L	215	2	2	X	X
		R	215	0	2	2	0
		L	216	2	0	X	X
		R	216	0	0	2	3

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

G.3 Panel 1 - May 2010

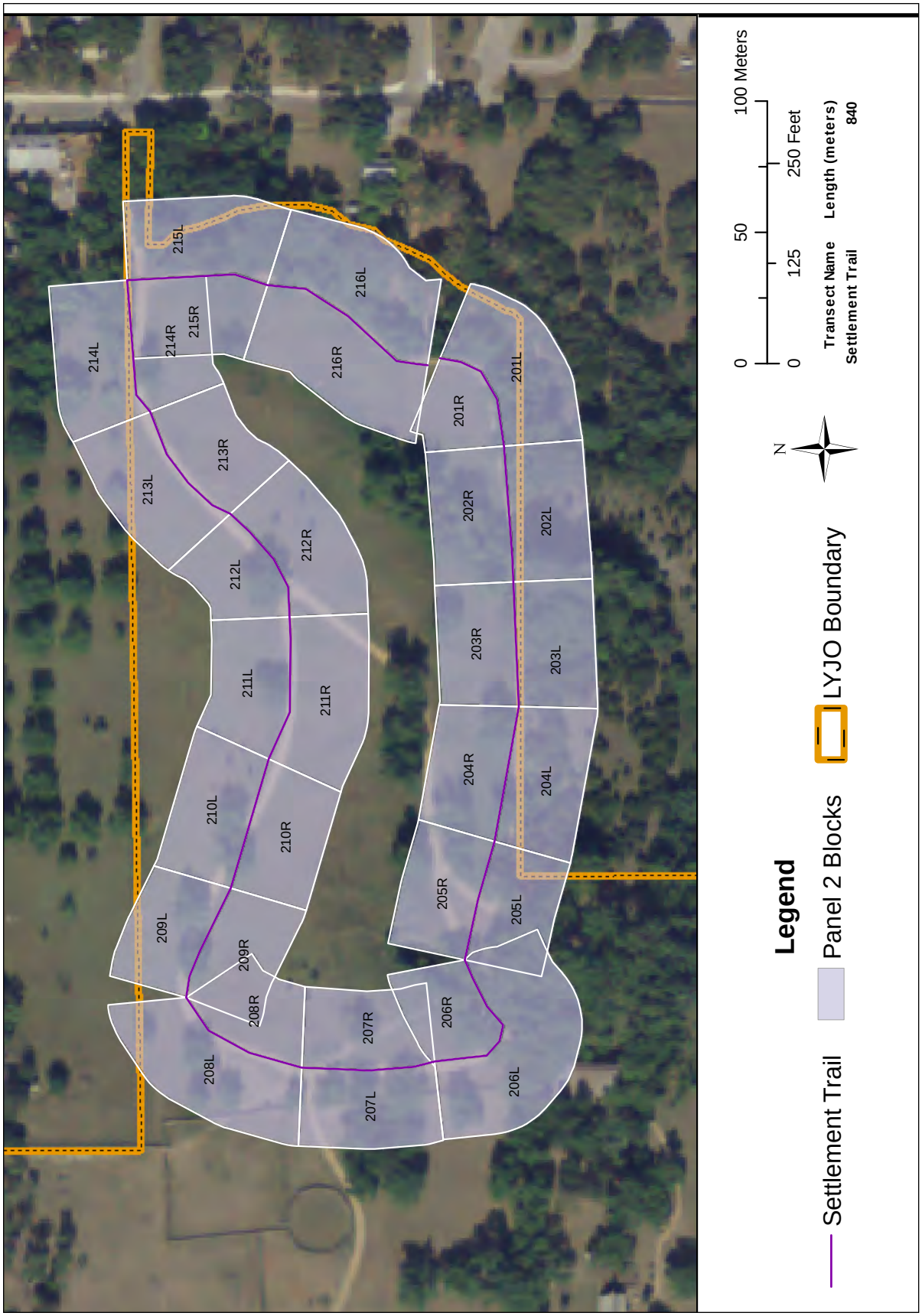


Figure G.2. Individual vector blocks sampled, Panel 1, Lyndon B. Johnson NHP, 2010.

Table G-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2010.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bothriochloa ischaemum var. *songarica*	KR bluestem	L	201	2	–	–	–
		R	201	1	1	1	0
		L	202	1	0	–	–
		R	202	2	2	1	0
		L	203	1	1	–	–
		R	203	1	1	0	0
		L	204	1	1	–	–
		R	204	3	1	0	0
		R	205	2	0	0	0
		R	206	–	1	0	0
		R	207	2	0	0	0
		R	208	2	2	0	0
		L	216	1	–	–	–
		R	216	2	0	0	0
Bromus japonicus	Japanese brome	L	201	1	–	–	–
		L	202	1	0	–	–
		R	202	1	2	0	0
		R	203	0	3	0	0
		L	204	1	1	–	–
		R	204	0	2	0	0
		L	205	0	2	0	0
		R	205	0	2	0	0
		L	206	0	1	0	0
		R	206	–	3	0	0
		L	207	2	0	0	0
		L	208	1	2	0	0
		L	209	2	0	0	0
		L	210	2	2	0	0
		L	215	1	0	–	–
		R	215	0	2	0	0
		R	216	0	1	0	0
Bromus tectorum	Cheatgrass	L	202	1	0	–	–
		L	203	1	1	–	–
		L	204	2	1	–	–
		L	208	0	1	0	0
		L	209	1	0	0	0
Centaurea melitensis	Malta starthistle	L	205	1	0	0	0
		L	207	0	1	0	0
		L	208	1	3	3	2
		L	209	2	3	0	0
		L	211	1	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table G-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Dichanthium annulatum	Kleberg bluestem	L	208	0	2	2	0
		R	208	0	1	0	0
		L	209	1	3	3	3
		R	209	0	1	0	0
		L	210	1	0	0	0
		R	210	2	0	0	0
		R	212	0	2	0	0
		L	213	0	2	3	2
		L	214	2	2	0	0
		R	214	2	2	0	0
		R	215	1	2	0	0
Galium divaricatum	Lamarck's bedstraw	L	202	1	0	–	–
		R	202	0	1	1	0
		R	203	0	1	1	0
		R	204	0	1	0	0
		R	205	0	1	1	0
		R	207	0	2	0	0
		R	208	0	1	1	0
		R	210	0	1	0	0
		R	213	0	1	0	0
Lolium arundinaceum	Tall fescue	R	202	1	0	0	0
		R	203	2	2	0	0
		R	204	0	2	0	2
		R	205	0	1	0	0
		L	206	0	1	0	0
		R	206	0	2	0	0
		L	210	2	2	0	0
		L	212	2	3	3	2
		L	214	0	2	0	0
Lolium perenne	Perennial ryegrass	R	202	1	2	0	0
		L	203	1	0	–	–
		R	203	1	1	0	0
		R	204	0	2	0	0
		L	205	1	2	0	0
		R	205	0	3	1	0
		L	206	1	2	1	0
		R	206	2	0	0	0
		R	207	0	2	2	0
		L	208	1	1	0	0
		R	208	0	2	2	2
		R	209	0	2	0	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table G-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Lolium perenne (cont.)	Perennial ryegrass	R	210	0	2	0	0
		L	213	0	2	2	0
		R	213	1	0	0	0
		R	214	0	1	0	0
Lonicera japonicus	Japanese honeysuckle	L	215	2	1	1	0
		L	203	2	1	–	–
		L	204	1	1	–	–
		L	206	0	1	0	0
		L	209	0	0	1	0
		L	214	0	1	1	0
Medicago lupulina	Black medic clover	L	201	2	–	–	–
		L	201	2	–	–	–
		R	201	3	2	0	0
		L	202	3	0	–	–
		R	202	3	2	0	0
		L	203	2	2	–	–
		R	203	2	0	0	0
		L	204	2	0	–	–
		R	204	2	0	0	0
		L	205	2	0	2	0
		L	206	2	2	2	0
		R	206	1	0	0	0
		L	207	2	2	0	0
		R	207	1	0	0	0
		R	208	1	0	0	0
		L	209	1	0	0	0
		R	209	2	1	0	0
		L	210	2	2	0	0
		R	210	2	0	0	0
		L	211	2	0	0	0
		R	211	1	0	0	0
		L	212	–	–	0	0
		R	212	2	0	0	0
		L	213	1	0	0	0
		R	213	1	0	0	0
		R	214	1	0	0	0
		L	215	2	0	–	–
		R	215	2	0	0	0
		L	216	3	–	–	–
		R	216	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table G-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Medicago minima	Burr medic clover	R	212	2	0	0	0
		R	213	2	2	0	0
		L	214	1	0	0	0
		R	214	2	2	0	0
		L	215	2	2	0	0
		R	215	2	0	0	0
		L	216	3	–	–	–
		R	216	2	2	0	0
Paspalum urvillei	Vaseygrass	L	202	1	0	–	–
		L	203	1	1	–	–
		L	207	1	0	0	0
		L	209	1	0	0	0
		L	216	1	–	–	–
Sorghum halepense	Johnsongrass	R	201	0	1	1	2
		R	202	0	1	1	2
		R	203	0	1	1	0
		L	204	1	0	–	–
		R	204	0	3	2	1
		L	205	0	2	3	0
		R	205	2	3	2	0
		L	206	1	1	0	0
		R	206	–	2	2	0
		L	207	0	0	1	0
		R	207	0	2	2	0
		L	208	0	1	2	0
		R	208	0	2	1	0
		L	209	1	2	2	2
		L	210	1	1	2	2
		R	210	0	1	0	0
		L	211	1	2	3	2
		R	211	0	0	0	2
		L	212	2	3	3	2
		R	212	0	1	0	2
		L	213	0	0	2	2
		R	213	0	2	0	0
		L	214	0	2	3	3
		L	215	2	3	–	–
		L	216	1	–	–	–
		R	216	0	2	0	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table G-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Taraxacum officinale	Dandelion	L	201	1	–	–	–
		L	202	1	0	–	–
		L	203	1	0	–	–
		L	204	1	0	–	–
		L	205	1	0	1	0
		R	205	1	0	0	0
		L	206	0	1	1	0
		L	207	1	0	1	0
		R	207	0	1	0	0
		L	208	1	1	0	0
		R	208	0	1	0	0
		L	209	1	0	0	0
		R	209	0	1	0	0
		L	210	0	1	1	0
		R	210	1	2	1	0
		L	211	1	1	0	0
		R	211	0	2	0	0
		R	212	0	1	0	0
		L	213	0	1	1	0
		R	213	0	1	0	0
		R	215	0	1	0	0
		R	216	0	1	0	0
Torilis arvensis	Spreading hedgeparsley	L	201	1	–	–	–
		R	202	1	1	0	0
		L	203	1	0	–	–
		R	203	1	2	0	0
		L	204	1	0	–	–
		R	204	0	2	0	0
		L	205	1	1	0	0
		R	205	0	1	0	0
		R	206	0	1	0	0
		R	207	0	2	0	0
		L	208	1	2	0	0
		R	208	0	1	1	0
		R	209	0	1	1	0
		L	210	1	2	2	0
		R	210	0	1	1	0
		L	212	–	–	0	0
		R	212	0	1	0	0
		L	213	2	3	3	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table G-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Torilis arvensis (cont.)	Spreading hedgeparsley	R	213	1	2	0	0
		L	214	1	2	0	0
		L	215	2	2	2	0
		R	215	0	1	0	0
Vicia sativa	Garden vetch	L	201	1	–	–	–
		L	202	1	0	–	–
		L	203	1	0	–	–
		L	206	1	1	0	0
		L	208	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

G.3 Former Panel 1 (Dropped) - August 2009

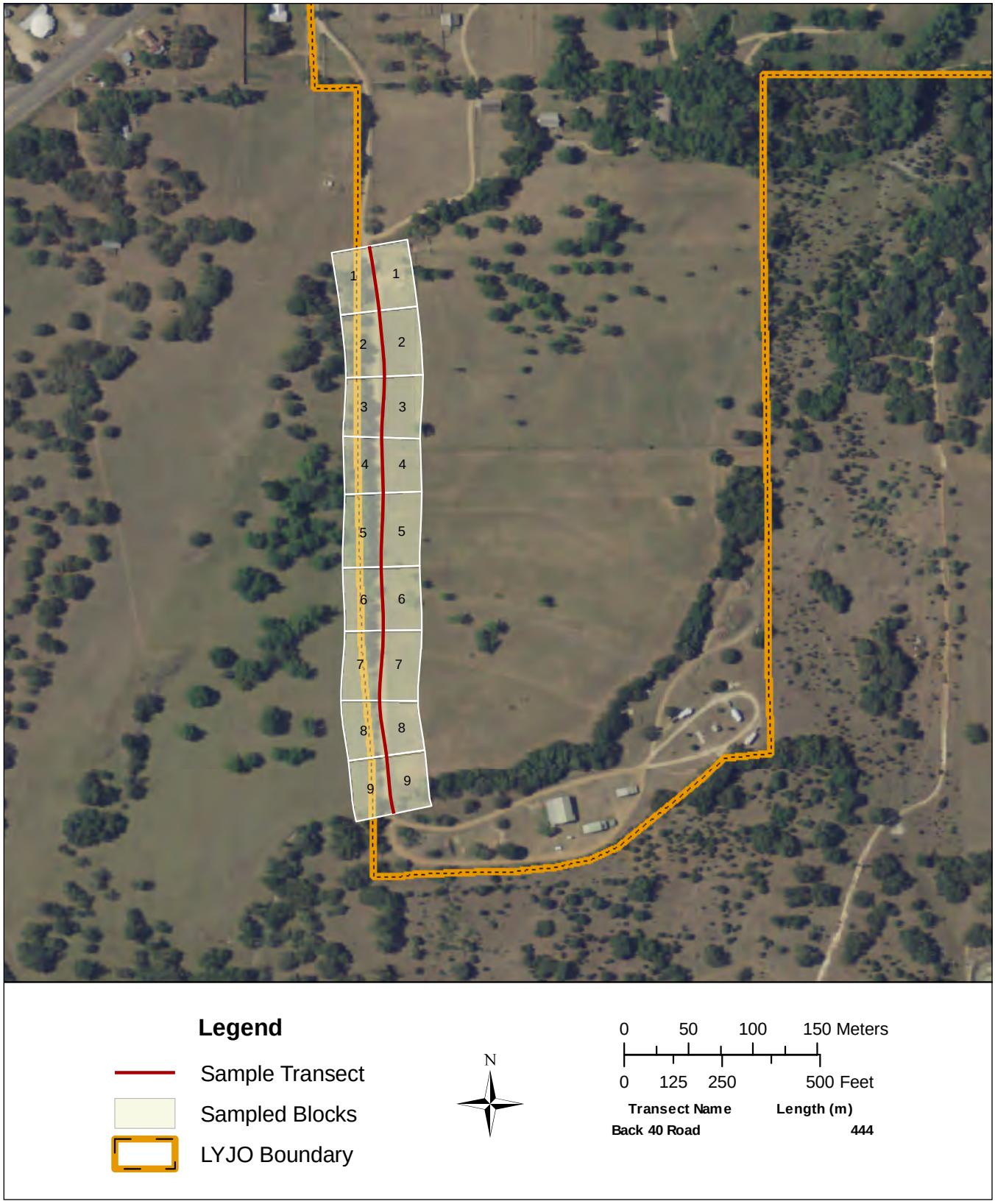


Figure G.3. Individual vector blocks sampled, Retired Panel 1, Lyndon B. Johnson NHP, 2009.

Table G-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bothriochloa ischaemum	K.R. bluestem	L	1	3	3	0	0
		R	1	2	1	–	–
		L	2	3	3	3	0
		R	2	3	2	–	–
		L	3	3	3	3	0
		R	3	3	3	–	–
		L	4	3	3	4	3
		R	4	3	3	–	–
		L	5	4	3	4	3
		R	5	3	3	–	–
		L	6	4	3	4	3
		R	6	3	3	–	–
		L	7	3	3	3	3
		R	7	3	3	–	–
		L	8	3	3	3	3
		R	8	3	3	–	–
		L	9	3	3	3	0
		R	9	3	3	–	–
Bromus japonicus	Japanese brome	L	1	0	3	0	0
		R	1	1	1	–	–
		L	2	0	3	0	0
		R	2	0	1	–	–
		L	4	0	2	0	0
		L	5	0	2	0	0
		R	5	0	2	–	–
		L	6	0	2	0	0
		R	6	1	0	–	–
		R	8	1	0	–	–
		L	9	0	2	0	0
		R	9	2	2	–	–
Centaurea melitensis	Malta starthistle	L	1	0	2	0	0
		L	2	0	2	0	0
		L	7	0	2	0	0
		L	9	0	2	0	0
Cynodon dactylon	Bermudagrass	L	1	3	3	0	0
		L	2	3	2	0	0
		L	3	3	0	0	0
		R	3	2	0	–	–
		L	4	2	0	0	0
		L	5	3	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table G-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Lyndon B. Johnson NHP, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Cynodon dactylon (cont.)	Bermudagrass	L	6	3	0	0	0
		L	7	3	0	0	0
		L	8	3	0	0	0
		L	9	3	0	0	0
Eragrostis barrelieri	Mediterranean lovegrass	L	1	0	2	2	0
		R	1	1	0	–	–
Marrubium vulgare	horehound	L	9	0	2	2	0
Sorghum halepense	Johnsongrass	L	1	0	2	2	2
		R	1	2	3	–	–
		L	2	0	0	0	2
		R	2	0	3	–	–
		L	3	0	0	0	2
		R	3	0	2	–	–
		L	4	0	2	2	0
		R	4	0	2	–	–
		L	5	0	2	0	0
		R	5	0	2	–	–
		R	6	0	2	–	–
		R	7	1	2	–	–
		R	8	2	3	–	–
		L	9	0	2	0	0
		R	9	0	2	–	–
Verbascum thapsus	mullein	L	9	0	0	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix H. Pecos NHP Sampling Results

H.1 Panel 3 - July 2011

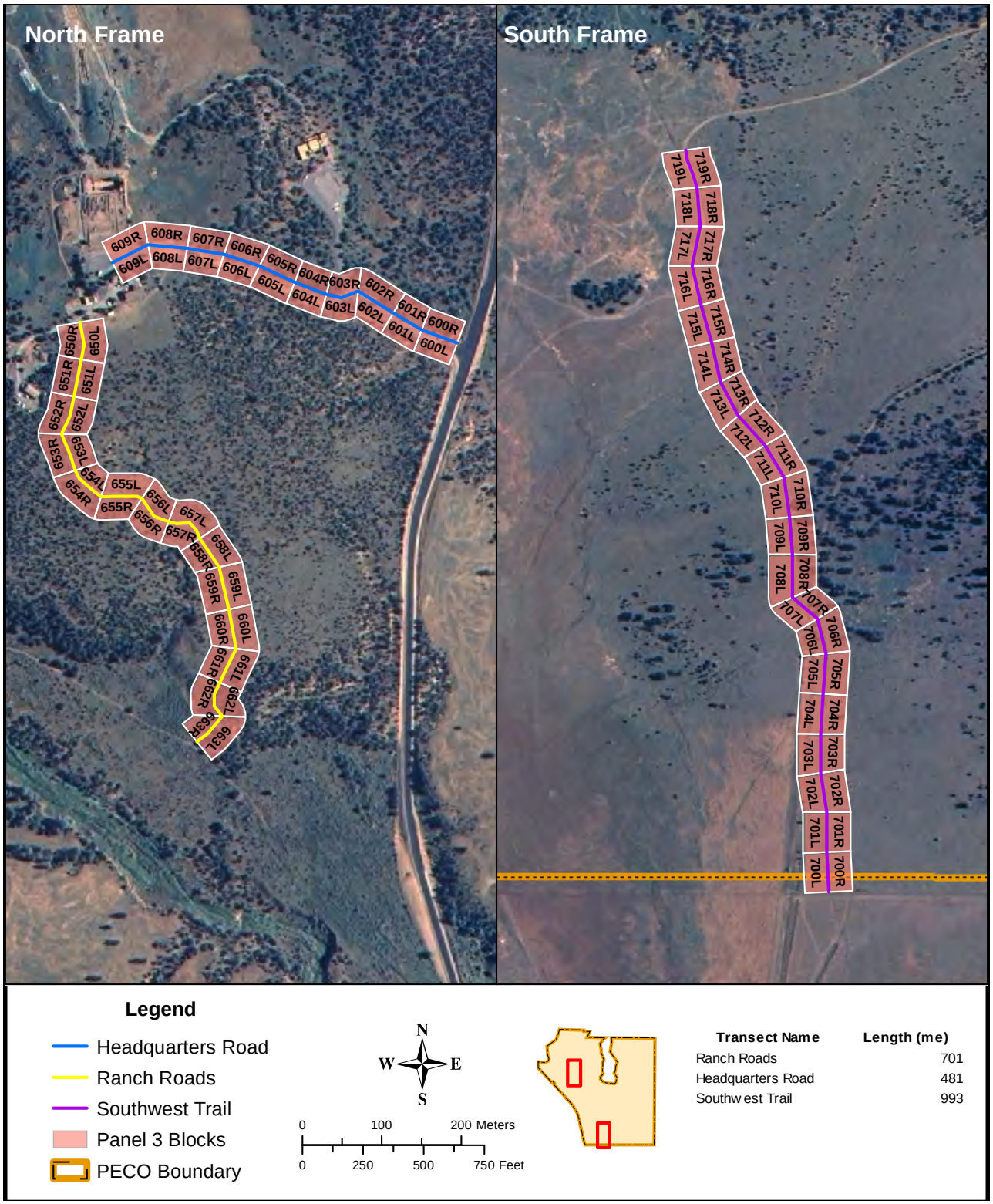


Figure H.1. Individual vector blocks sampled, Panel 3, Pecos NHP, 2011..

Table H-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2011.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus	Japanese brome	L	602	1	0	X	X
		L	604	2	0	0	0
Bromus tectorum	cheatgrass	L	600	2	0	X	X
		R	600	2	0	0	0
		L	601	2	0	X	X
		L	606	1	2	0	0
		L	607	2	2	0	X
		L	700	0	0	2	0
		L	701	0	0	2	0
		L	702	2	2	1	0
		L	703	0	0	2	0
		L	704	0	0	2	0
		L	705	0	2	2	0
		L	707	0	2	0	0
Cirsium vulgare	Bull thistle	R	603	1	1	X	X
		R	656	0	1	0	0
		L	701	0	1	0	0
		R	708	0	0	0	1
Convolvulus arvensis	field bindweed	L	700	0	0	2	0
		L	701	0	0	2	0
		L	703	0	0	2	0
		L	704	0	0	2	0
		L	707	2	2	0	0
		L	715	0	2	2	0
Erodium cicutarium	red stem storksbill	L	600	1	0	X	X
		R	600	1	0	0	0
		L	602	2	0	X	X
		L	603	2	0	0	X
		L	604	1	0	0	0
		L	605	2	0	0	0
		L	606	2	0	0	0
		L	607	2	0	0	X
		R	608	1	0	0	0
		R	609	2	0	0	0
		L	650	0	0	2	0
		R	656	0	1	0	0
		L	701	0	0	1	0
Kochia scoparia	kochia	L	606	1	2	0	0
		L	607	2	2	2	X
		R	607	2	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table H-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2011 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scopari (cont.)	kochia	L	608	2	2	2	0
		R	608	2	2	0	0
		L	609	0	2	X	X
		R	609	2	2	2	0
		L	653	2	X	X	X
		L	654	1	X	X	X
		L	656	0	0	2	X
		R	657	2	1	0	0
		R	658	1	1	X	X
		L	700	0	0	2	0
		L	701	1	1	2	0
		R	701	2	2	1	0
		L	704	0	2	2	0
		R	704	2	2	0	0
		L	705	0	2	3	0
		R	705	0	2	2	0
		L	706	0	2	2	0
		R	708	0	0	2	2
		L	710	0	0	2	2
		R	710	0	0	2	2
		R	711	0	0	1	0
		L	712	0	0	2	0
		R	715	0	1	0	0
		L	718	2	2	0	0
		R	718	0	2	2	0
		L	719	2	3	3	0
		R	719	1	2	2	0
Lactuca seriola	prickly lettuce	L	701	1	0	0	0
		R	701	1	2	1	0
		L	702	0	0	2	0
		L	703	0	1	0	0
		R	703	0	0	1	0
		R	704	1	0	0	0
		R	705	0	1	0	0
		L	706	0	1	0	0
		L	714	1	1	0	0
		L	715	0	0	1	0
		L	716	1	0	0	0
		R	716	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table H-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Marrubium vulgare	horehound	L	607	1	0	0	X
Medicago lupulina	black medic clover	R	600	1	0	0	0
Medicago sativa	alfalfa	R	650	0	1	X	X
		L	651	1	0	0	0
		R	652	0	1	X	X
		R	655	0	1	1	0
		R	658	1	0	X	X
		R	659	2	0	0	0
		R	660	0	1	0	0
		R	662	0	1	0	0
Melilotus alba	white sweetclover	L	600	2	0	X	X
		R	600	2	2	0	0
		L	601	2	2	X	X
		L	602	1	1	X	X
		L	603	1	1	0	X
		R	603	2	2	X	X
		L	604	1	0	0	0
		R	604	2	2	X	X
		L	650	2	0	0	0
		R	650	2	0	X	X
		R	662	0	2	1	0
Meilotus officinalis	yellow sweetclover	L	600	2	0	X	X
		R	600	2	2	0	0
		L	601	2	2	X	X
		R	601	1	1	X	X
		L	602	2	2	X	X
		R	602	2	0	X	X
		L	603	2	2	0	X
		R	603	2	2	X	X
		L	604	2	2	0	0
		R	604	2	2	X	X
		L	605	2	2	0	0
		L	650	2	0	0	0
		R	650	2	0	X	X
		L	651	2	0	0	0
		R	652	0	1	X	X
		R	653	0	1	1	0
		L	658	1	0	0	0
		L	660	1	0	0	0
		L	700	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table H-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Meilotus officinalis (cont.)	yellow sweetclover	L	702	0	0	1	0
		L	703	0	0	1	0
		R	709	0	0	0	2
None	no exotics found	R	651	0	0	X	X
		L	652	0	X	X	X
		L	655	0	0	0	X
		L	657	0	0	0	0
		L	659	0	0	0	0
		L	661	0	0	0	X
		R	661	0	0	0	0
		L	662	0	X	X	X
		L	663	0	X	X	X
		R	663	0	0	0	0
		R	700	0	0	0	0
		R	702	0	0	0	0
		L	708	0	0	0	0
		L	709	0	0	0	0
		L	711	0	0	0	0
		R	717	0	0	0	0
Rumex crispus	curly dock	R	600	1	0	0	0
Salsola tragus	prickly Russian thistle	R	600	1	0	0	0
		L	601	1	1	X	X
		L	606	1	2	2	0
		L	607	2	2	2	X
		R	607	2	0	0	0
		L	608	2	2	2	0
		R	608	1	1	0	0
		R	609	2	2	0	0
		R	653	1	0	0	0
		R	654	0	1	0	0
		R	657	2	1	0	0
		L	700	0	0	2	0
		L	701	2	2	2	0
		R	701	2	2	2	0
		L	702	2	0	3	2
		L	703	0	0	2	0
		L	704	0	0	2	0
		R	704	2	0	1	0
		L	705	2	3	3	0
		R	705	0	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table H-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	prickly Russian thistle	L	706	0	2	2	0
		R	706	2	2	2	0
		L	707	2	2	0	0
		R	707	2	2	2	2
		R	708	0	0	2	2
		R	709	0	0	0	2
		L	710	0	0	1	2
		R	710	0	2	2	2
		L	712	0	0	2	0
		R	712	0	2	2	0
		R	713	0	2	0	0
		L	714	1	0	0	0
		R	714	1	2	0	0
		L	715	1	2	0	0
		R	715	2	2	0	0
		R	716	1	2	0	0
		L	717	1	0	0	0
		L	718	0	0	2	0
		R	718	1	2	2	0
		L	719	2	3	3	0
		R	719	2	2	2	0
Taraxacum officinale	dandelion	R	600	1	0	0	0
		L	602	1	0	X	X
Tragopogon dubius	western salsify	L	601	0	1	X	X
		L	606	0	2	0	0
		L	607	0	1	0	X
		R	650	0	1	X	X
		R	654	0	1	0	0
		R	660	0	1	0	0
		L	701	1	0	0	0
		L	702	0	0	1	0
		L	703	0	0	1	0
		L	706	1	0	0	0
		L	713	1	0	1	0
Ulmus pumila	Siberian elm	R	603	1	0	X	X
Verbascum thapsus	common mullein	L	600	2	0	X	X
		R	600	1	0	0	0
		L	601	1	0	X	X
		L	602	2	0	X	X
		R	602	1	0	X	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table H-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2011 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Verbascum thapsus (cont.)	common mullein	L	603	1	0	1	X
		L	604	2	0	0	0
		L	605	2	0	0	0
		R	605	1	0	X	X
		L	606	2	0	0	0
		R	606	1	0	X	X
		L	607	2	0	0	X
		L	608	2	0	0	0
		L	650	0	0	1	0
		L	651	0	1	0	0
		L	701	1	1	0	0
		L	704	0	0	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

H.2 Panel 2 - August 2010

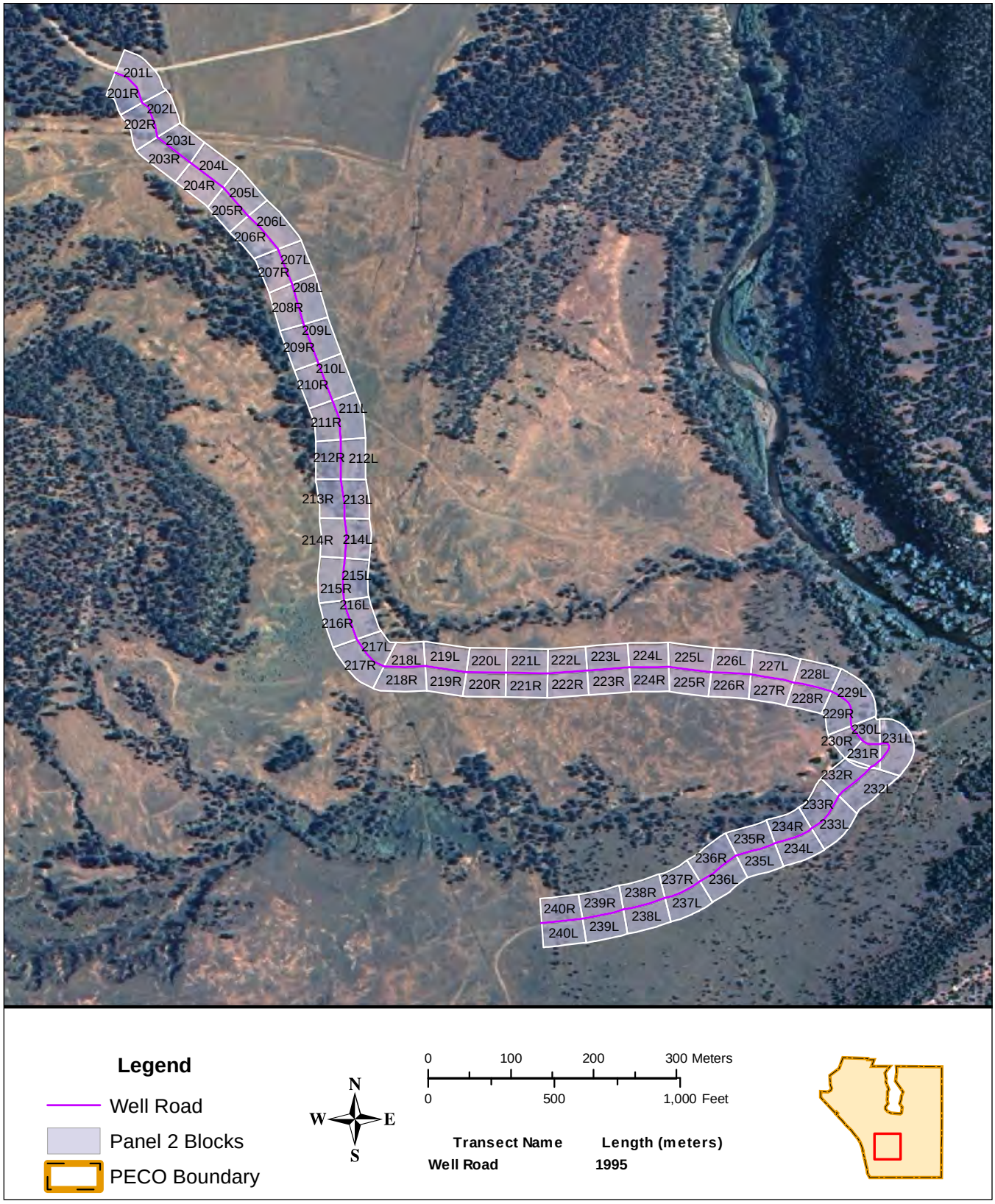


Figure H.2. Individual vector blocks sampled, Panel 2, Pecos NHP, 2010.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Asparagus officinalis	Garden asparagus	R	212	1	0	–	–
		R	213	1	0	–	–
		L	212	0	1	0	0
		L	213	0	2	–	–
		L	215	0	1	–	–
		L	216	0	1	–	–
		L	219	0	1	2	–
		L	221	0	0	2	2
Bromus japonicus	Japanese brome	R	213	1–2	0	–	–
		R	214	2	0	0	0
		R	215	1	0	0	0
		R	217	2	1–2	0	0
		R	219	1	0	0	0
		R	230	2	2	0	0
		R	231	2	0	0	0
		R	232	0	2	1	0
		R	233	1–2	0	0	0
		R	234	0	1	0	–
		R	236	2	2	2	–
		R	237	2	0	0	0
		L	214	0	2	–	–
		L	229	0	2	0	–
		L	230	1	2	–	–
		L	231	2	0	0	0
		L	233	2	2	0	0
		L	237	2	2	0	0
		L	238	2	2	0	0
		L	239	2	0	0	0
Bromus lanceolatus	Mediterranean brome	R	201	2	0	0	–
		R	218	1–2	0	0	0
		R	222	1	0	0	0
		R	230	1	0	0	0
		R	231	1	0	0	0
		L	201	0	2	0	0
		L	202	0	2	0	0
		L	206	0	2	0	0
		L	209	2	2	0	0
		L	213	0	2	–	–
		L	231	0	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum	Cheatgrass	L	217	0	2	0	0
Camelina microcarpa	Smallseed false flax	R	201	0	0	1	–
		R	202	0	0	2	2
		R	203	0	2	2	2
		R	204	1	2	2	–
		R	205	0	2	2	–
		R	206	0	1	–	–
		R	207	1	2	–	–
		R	208	0	1	2	–
		R	209	2	2	–	–
		R	210	0	2	–	–
		R	211	1	2	–	–
		R	212	0	1–2	–	–
		R	213	1–2	1	–	–
		R	214	1	2	2	2
		R	215	0	2	2	2
		R	216	0	1	0	1
		R	217	0	1	1	0
		R	218	1	1	1	0
		R	219	1	2	1	0
		R	220	2	2	1	1
		R	221	1	1–2	1	0
		R	222	0	1	1	0
		R	223	0	0	1	1
		R	230	1	1	0	0
		R	231	1	2	1	0
		R	233	0	1	0	0
		R	240	0	0	1	0
		L	202	0	2	0	0
		L	203	0	2	2	0
		L	204	0	2	2	0
		L	205	0	2	2	0
		L	206	0	2	2	0
		L	207	0	2	2	0
		L	208	0	2	2	0
		L	209	0	2	2	0
		L	210	0	2	2	2
		L	211	0	2	2	2
		L	212	0	1	0	0
		L	213	0	2	–	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Camelina microcarpa (cont.)	Smallseed false flax	L	214	0	2	–	–
		L	215	0	1	–	–
		L	216	0	1	–	–
		L	218	0	2	2	–
		L	219	1	2	2	–
		L	220	0	2	2	0
		L	221	0	2	2	0
		L	222	0	2	2	–
		L	223	0	1	2	–
		L	224	0	2	3	–
		L	225	0	2	2	–
		L	226	0	1	1	–
		L	230	0	1	–	–
		L	231	0	2	0	0
Chenopodium album	Common lambsquarters	R	201	2	2	0	–
		R	222	1	0	0	0
		R	223	1	0	0	0
		R	231	1	0	0	0
		R	232	0	1	0	0
		R	236	2	0	0	–
		R	237	2	2	0	0
		L	201	0	2	0	0
		L	202	0	2	0	0
		L	210	0	1	0	0
		L	215	0	2	–	–
		L	220	1	0	0	0
		L	221	1	1	0	0
		L	222	1	2	0	–
		L	223	1	0	0	–
		L	226	1	1	0	–
		L	227	1	1	0	–
		L	229	0	1	0	–
		L	230	0	2	–	–
		L	231	1	0	0	0
		L	232	0	1	0	0
		L	233	1	0	0	0
		L	236	1	0	0	0
		L	237	0	2	2	0
Cirsium arvense	Canada thistle	R	202	1	0	0	0
		R	204	0	1	1	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Cirsium arvense (cont.)	Canada thistle	R	205	0	1	0	–
		R	207	0	2	–	–
		R	208	0	1	0	–
		L	204	0	1	0	0
		L	205	1	1	1	0
		L	206	0	2	0	0
		L	207	0	1	1	0
		L	209	0	2	0	0
		L	210	0	0	2	0
		L	211	0	2	0	0
		L	217	0	2	0	0
		L	220	0	0	1	0
		L	225	0	2	0	–
Cirsium vulgare	Bull thistle	R	203	0	0	1	0
		R	210	0	1	–	–
Convolvulus arvensis	Field bindweed	R	206	3	3	–	–
		L	206	3	3	0	0
		L	211	0	2	2	0
Dactylis glomerata	Orchardgrass	R	201	0	0	2	–
		R	204	0	1	0	–
		R	205	0	1	0	–
		L	205	0	1	0	0
Kochia scoparia	Kochia	R	201	1–2	1	0	–
		R	204	1	0	0	–
		R	205	1	1	0	–
		R	206	1	0	–	–
		R	207	0	1	–	–
		R	213	0	1	–	–
		R	214	1	0	0	0
		R	215	1	0	0	0
		R	216	0	1	0	0
		R	218	1–2	0	0	0
		R	219	1	0	0	0
		R	221	1–2	0	0	0
		R	226	1	0	0	0
		R	229	1	0	0	0
		L	211	0	1	0	0
		L	218	2	2	0	–
		L	219	2	0	0	–
		L	221	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	L	229	0	1	0	–
		L	230	1	0	–	–
		L	231	0	1	0	0
Marrubium vulgare	Horehound	R	220	0	2	0	0
		R	221	0	2	2	2
		R	222	3	3	2	2
		R	223	2–3	2–3	2	2
		R	224	2	2	2	2
		R	225	1–2	3	3	2–3
		R	226	2	2	2–3	2
		R	227	–	–	–	–
		R	228	2–3	2–3	2–3	2–3
		R	229	2	2	2	2
		R	230	0	2	2	2
		R	231	1–2	2	2	0
		R	232	0	2	2	1–2
		R	235	1	1	0	–
		R	236	1–2	2	2	–
		R	237	2	2	2	2
		R	238	2	2	2	2
		R	239	0	2	2	2
		R	240	0	2	2	0
		L	221	0	2	3	0
		L	222	0	2	3	–
		L	223	0	2	2	–
		L	225	0	2	2	–
		L	226	0	2	3	–
		L	227	0	2	3	–
		L	228	0	2	3	–
		L	229	0	2	2	–
		L	231	0	2	2	0
		L	233	0	2	2	0
		L	234	0	2	2	2
		L	235	0	2	3	3
		L	236	0	2	3	3
		L	237	1	2	3	3
		L	238	1	2	3	3
		L	239	0	2	2	2
		L	240	0	2	3	3

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Medicago sativa	Alfalfa	R	201	2	1	0	–
		L	201	0	2	0	0
		L	212	0	1	0	0
		L	222	1	1	0	–
Melilotus alba	White sweetclover	L	235	1	0	0	0
Melilotus indicus	Annual sweet clover	R	213	1	1	–	–
		L	213	1	0	–	–
Melilotus officinalis	Yellow sweetclover	R	201	2	1	0	–
		R	202	0	2	2	2
		R	203	2	2	0	0
		R	204	0	2	2	–
		R	205	0	2	2	–
		R	206	0	2	–	–
		R	207	2	2	–	–
		R	208	0	2	2	–
		R	209	0	2	–	–
		R	210	0	1	–	–
		R	211	0	1	–	–
		R	212	0	1	–	–
		R	213	1	0	–	–
		R	214	1	1	0	0
		R	215	1–2	0	0	0
		R	216	1	0	0	0
		R	217	2	1	0	1
		R	218	0	1	0	0
		R	219	0	0	1	0
		R	226	1	0	0	0
		R	227	–	–	–	–
		R	230	1	1	0	0
		R	231	1	0	1	0
		R	233	2	0	0	0
		R	234	2	0	0	–
		R	235	3	2	0	–
		R	238	1	0	0	0
		L	201	2	0	0	0
		L	211	1	0	0	0
		L	213	1	1	–	–
		L	214	1	0	–	–
		L	216	1	2	–	–
		L	217	0	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Melilotus officinalis (cont.)	Yellow sweetclover	L	218	0	2	2	–
		L	219	0	2	0	–
		L	224	0	2	0	–
		L	230	1	0	–	–
		L	231	1	1	0	0
		L	232	1	1	1	0
		L	234	2	2	0	0
		L	235	2	2	0	0
		L	239	1	0	0	0
Poa compressa	Canada bluegrass	R	201	0	0	2	–
		R	202	0	2	2	0
		R	203	2	2	0	0
Salsola tragus	Prickly Russian thistle	R	201	1	1	1	–
		R	202	0	0	1	0
		R	203	0	1	1	0
		R	204	1	2	2	–
		R	205	2	2	1	–
		R	206	0	2	–	–
		R	207	2	2	–	–
		R	208	0	1	0	–
		R	214	0	1	0	0
		R	217	1	0	0	0
		R	218	2	0	0	0
		R	219	1	0	0	0
		R	220	2	0	0	0
		R	221	2	0	0	0
		R	222	1–2	1	0	0
		R	224	2	0	0	0
		R	225	2	2	0	0
		R	226	2	1	0	0
		R	227	–	–	–	–
		R	228	1	0	0	0
		R	229	1–2	2	0	0
		R	231	2	0	0	0
		R	232	1	0	0	0
		R	233	1–2	1	0	0
		R	234	1	0	0	–
		R	235	1	2	0	–
		R	236	2	2	1	–
		R	237	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	Prickly Russian thistle	R	238	1	0	0	0
		R	239	1	0	0	0
		R	240	2	0	0	0
		L	201	0	1	0	0
		L	203	0	1	0	0
		L	207	0	1	0	0
		L	212	0	1	0	0
		L	213	0	2	–	–
		L	214	0	1	–	–
		L	216	0	1	–	–
		L	218	1	0	0	–
		L	219	2	0	0	–
		L	220	2	2	0	0
		L	221	2	2	0	0
		L	223	1	1	0	–
		L	224	1	2	0	–
		L	225	1	1	0	–
		L	226	1	1	0	–
		L	227	1	1	0	–
		L	228	1	0	0	–
		L	231	0	2	0	0
		L	232	2	2	0	0
		L	233	2	2	0	0
		L	236	1	0	0	0
		L	238	1	0	0	0
		L	239	1	1	0	0
		L	240	2	2	0	0
Scorzonera laciniata	Cutleaf vipergrass	L	212	0	1	0	0
		L	213	0	1	–	–
		L	215	0	2	–	–
Thinopyrum ponticum	Rush wheatgrass	R	203	0	1	0	0
		R	207	1–2	0	–	–
		R	211	0	2	–	–
		R	212	1	1	–	–
		L	210	0	2	2	0
		L	211	0	2	2	0
		L	212	0	2	0	0
Tragopogon dubius	Western salsify	R	201	1	1	0	–
		R	203	0	0	1	0
		R	204	1	2	1	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	R	205	1	2	0	–
		R	207	2	2	–	–
		R	208	2	2	1	–
		R	209	2	1	–	–
		R	210	2	2	–	–
		R	211	1	1–2	–	–
		R	212	1	1–2	–	–
		R	214	2	2	2	0
		R	215	0	2	2	0
		R	217	1	1	0	1
		R	218	1	1–2	1	0
		R	219	1	2	1	0
		R	220	2	2	0	0
		R	221	1–2	2	0	1
		R	222	1	2	0	0
		R	223	0	2	1	0
		R	224	1	2	0	0
		R	225	1	2	0	0
		R	226	1	1–2	1	1
		R	227	–	–	–	–
		R	228	1–2	1–2	1	2
		R	229	1	2	1	0
		R	230	0	1–2	1	1
		R	231	1	0	2	0
		R	232	1–2	2	1	0
		R	233	2	2	0	0
		R	234	1–2	1	0	–
		R	235	0	1	0	–
		R	236	1	2	0	–
		R	237	1	2	0	0
		R	238	1	1	0	0
		R	239	1	2	1	0
		R	240	0	1	0	0
		L	201	0	1	0	0
		L	204	0	2	2	0
		L	205	1	2	2	0
		L	206	2	2	2	0
		L	207	1	2	2	0
		L	208	1	2	2	0
		L	209	0	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	L	210	1	2	2	2
		L	211	1	2	2	2
		L	212	0	2	2	0
		L	214	0	2	–	–
		L	215	0	2	–	–
		L	216	0	2	–	–
		L	217	1	1	0	0
		L	218	0	1	0	–
		L	219	0	2	0	–
		L	220	2	2	0	0
		L	221	0	2	2	0
		L	222	0	2	2	–
		L	223	0	2	0	–
		L	224	0	1	0	–
		L	225	1	1	2	–
		L	226	0	1	1	–
		L	227	0	2	2	–
		L	228	0	2	2	–
		L	229	0	1	2	–
		L	230	0	1	–	–
		L	231	0	1	2	2
		L	232	1	2	0	0
		L	233	1	2	2	0
		L	234	0	2	2	0
		L	235	0	1	2	2
		L	236	0	2	2	0
		L	237	0	2	2	0
		L	238	1	2	2	0
		L	239	1	2	2	0
		L	240	0	2	2	0
Tragopogon pratensis	Meadow salisify	R	212	0	1	–	–
		R	214	0	1	0	0
		R	215	0	1–2	0	0
		R	216	0	1	0	0
		R	217	1	1	0	0
		R	220	1	0	0	0
		R	224	1	0	0	0
		L	212	0	1	0	0
		L	217	0	2	2	0
		L	218	0	2	0	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2010 (continued)

Scientlfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon pratensis (cont.)	Meadow salisify	L	221	2	0	0	0
		L	224	0	1	0	–
		L	236	1	0	0	0
		L	237	1	1	0	0
Ulmus pumila	Siberian elm	L	235	1	1	0	0
Verbascum thapsus	Mullein	R	202	0	0	1	0
		R	205	0	1	0	–
		R	206	0	2	–	–
		R	207	0	1	–	–
		R	209	1	0	–	–
		R	238	0	0	0	1
		L	209	0	2	2	0
		L	210	0	0	2	0
		L	217	0	2	0	0
		L	229	0	1	1	–
		L	232	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

H.3 Panel 1 - August 2009

Figure H.3. Individual vector blocks sampled, Panel 1, Pecos NHP, 2009.

Table H-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Agropyron desertorum	clustered wheatgrass	L	23	1	0	0	0
		R	23	2	0	0	0
		R	24	2	0	0	0
		R	25	2	2	0	0
Brassicaceae species	mustard species	R	19	1	0	0	0
		R	21	2	2	0	0
		R	26	2	2	2	0
		R	27	0	2	0	0
		R	30	2	2	0	0
Bromus inermis	smooth brome	L	12	1	0	0	–
		R	26	1	0	0	0
		L	27	2	0	0	0
		R	30	2	2	0	0
Bromus species	unidentified bromes	R	18	0	2	0	0
		R	19	3	0	0	0
		R	20	2	0	0	0
		R	22	2	0	0	0
		R	23	2	0	0	0
		R	24	2	0	0	0
		R	25	2	0	0	0
		R	26	2	2	0	0
		L	28	2	2	0	0
		R	29	2	0	0	0
		R	30	1	0	0	0
Chenopodium alba	common lambsquarters	L	4	1	0	0	0
		L	5	1	0	0	0
		L	7	1	0	0	–
		L	12	2	2	0	–
		L	13	1	0	0	–
		L	14	2	1	0	–
		L	16	2	0	0	–
		R	18	2	0	0	0
		R	19	2	2	0	0
		R	26	0	2	0	0
		R	27	0	1	0	0
		L	28	0	2	0	0
		R	29	0	1	0	0
		L	30	0	2	0	0
Cirsium vulgare	bull thistle	R	18	0	1	0	0
		R	20	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Convolvulus arvensis	field bindweed	L	8	3	2	0	–
		R	8	2	0	0	0
		L	9	2	2	0	–
		R	9	2	2	0	–
		R	10	2	2	2	–
		R	12	2	2	0	0
		R	13	2	0	0	0
		L	25	1	0	0	0
		R	25	1	0	0	0
		L	27	2	2	0	0
		L	30	3	0	0	0
Eragrostis barrelieri	Mediterranean lovegrass	L	13	1	0	0	–
		L	14	1	0	0	–
		L	16	1	0	0	–
		R	18	3	0	0	0
		L	19	1	0	0	0
		R	20	2	0	0	0
		L	21	2	0	0	0
		R	21	2	0	0	0
		L	22	3	0	0	0
		R	22	2	0	0	0
		R	23	2	0	0	0
		L	24	1	0	0	0
		L	25	2	0	0	0
		L	26	2	0	0	0
		L	27	1	0	0	0
Erodium cicutarium	red-stem stork's-bill	R	21	2	0	0	0
Eupatorium davidii	David's spurge	L	12	1	1	0	–
		R	12	1	0	0	0
		L	13	1	0	0	–
		R	13	1	0	0	0
		L	14	1	0	0	–
		R	14	1	0	0	0
		L	22	2	0	0	0
		R	22	2	0	0	0
		R	24	2	0	0	0
		L	25	2	0	0	0
		R	25	2	0	0	0
		R	26	3	0	0	0
		L	27	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Eupatorium davidii (cont.)	David's spurge	R	27	0	3	0	0
		L	28	1	0	0	0
Kochia scoparia	kochia	R	3	2	0	0	0
		L	4	2	2	0	0
		L	5	3	0	0	0
		R	5	3	3	0	0
		R	6	1	0	0	–
		L	9	0	1	0	–
		R	9	1	0	0	–
		L	12	2	2	0	–
		R	12	1	0	0	0
		L	14	2	0	0	–
		L	16	2	0	0	–
		R	16	1	0	0	0
		L	17	2	0	0	–
		R	17	1	1	0	0
		L	18	2	2	0	0
		R	18	3	2	0	0
		L	19	0	1	0	0
		R	19	3	3	0	0
		R	20	3	2	0	0
		L	21	3	2	0	0
		R	21	3	2	0	0
		L	22	3	2	0	0
		R	22	3	2	0	0
		L	23	3	0	0	0
		R	23	3	0	0	0
		L	24	3	0	0	0
		R	24	3	0	0	0
		L	25	3	2	0	0
		R	25	3	2	2	2
		L	26	2	0	0	0
		R	26	3	2	2	0
		L	27	2	2	0	2
		R	27	2	2	0	0
		L	28	3	2	0	3
		R	28	2	2	2	2
		R	28	0	2	2	2
		L	29	3	2	0	0
		R	29	2	2	2	2
		L	30	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Lactuca serriola	prickly lettuce	R	21	1	0	0	0
		L	28	1	0	0	0
		R	28	0	1	1	0
		L	29	1	0	0	0
		R	29	1	0	0	0
		R	30	1	0	0	0
Melilotus alba	white sweetclover	L	1	2	2	–	–
		L	2	1	0	0	–
		R	4	1	0	0	–
		L	13	0	1	0	–
Melilotus officinalis	yellow sweetclover	L	1	2	2	–	–
		L	2	2	0	0	–
		L	3	2	0	1	1
		L	5	2	0	0	0
		R	5	1	0	0	0
		L	7	2	0	0	–
		L	10	2	0	0	–
		L	15	1	0	0	–
		R	18	1	0	0	0
		R	21	1	0	0	0
		L	22	2	0	0	0
		R	22	2	0	0	0
		R	24	1	0	0	0
		R	25	2	0	0	0
		L	26	2	0	0	0
		L	27	1	0	0	0
		R	30	2	0	0	0
None	No exotics found	R	1	0	0	0	0
		R	2	0	0	0	0
		L	6	0	0	0	–
		L	11	0	0	0	–
		R	15	0	0	0	0
Salsola tragus	prickly Russian thistle	L	4	2	0	0	0
		L	5	1	0	0	0
		R	5	2	0	0	0
		R	19	1	0	0	0
		L	20	2	0	0	0
		R	20	2	0	0	0
		L	21	2	0	0	0
		R	21	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	prickly Russian thistle	R	24	1	0	0	0
		L	25	1	0	0	0
		R	25	1	0	0	0
		R	26	1	0	0	0
		R	29	2	2	2	0
		R	30	2	2	0	0
Tragopogon dubius	western salsify	L	1	1	0	–	–
		L	3	2	0	0	–
		L	4	1	0	0	0
		L	7	1	0	0	–
		R	7	1	0	0	0
		L	8	1	0	0	–
		R	8	1	0	0	0
		L	10	0	1	0	–
		L	13	0	1	0	–
		R	20	0	1	0	0
		R	21	0	1	0	0
		R	23	1	0	0	0
		R	24	1	0	0	0
		R	26	1	0	0	0
		R	28	1	0	0	0
		R	29	1	0	0	0
		R	30	1	1	0	0
Tribulus terrestris	puncturevine	L	16	1	0	0	–
		L	20	2	0	0	0
		L	21	2	0	0	0
		L	22	1	0	0	0
		R	22	1	0	0	0
		L	24	1	0	0	0
		L	25	1	0	0	0
		R	28	1	0	0	0
Verbascum thapsus	mullein	R	3	1	0	0	0
		L	4	1	1	0	0
		R	5	0	1	0	0
		L	10	0	1	0	–
		L	12	0	0	1	–
		L	13	2	2	2	–
		R	13	2	2	0	0
		R	14	0	2	0	0
		L	18	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table H-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Pecos NHP, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Verbascum thapsus (cont.)	mullein	R	21	1	0	0	0
		R	24	0	1	0	0
		R	25	0	2	0	2
		R	26	0	2	0	2
		L	27	0	2	2	0
		R	27	0	2	0	0
		L	28	0	2	2	0
		R	28	1	0	0	0
		L	29	0	2	2	1
		R	29	0	0	0	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix I. Sand Creek Massacre NHS Sampling Results

I.1 Panel 3 - June 2011

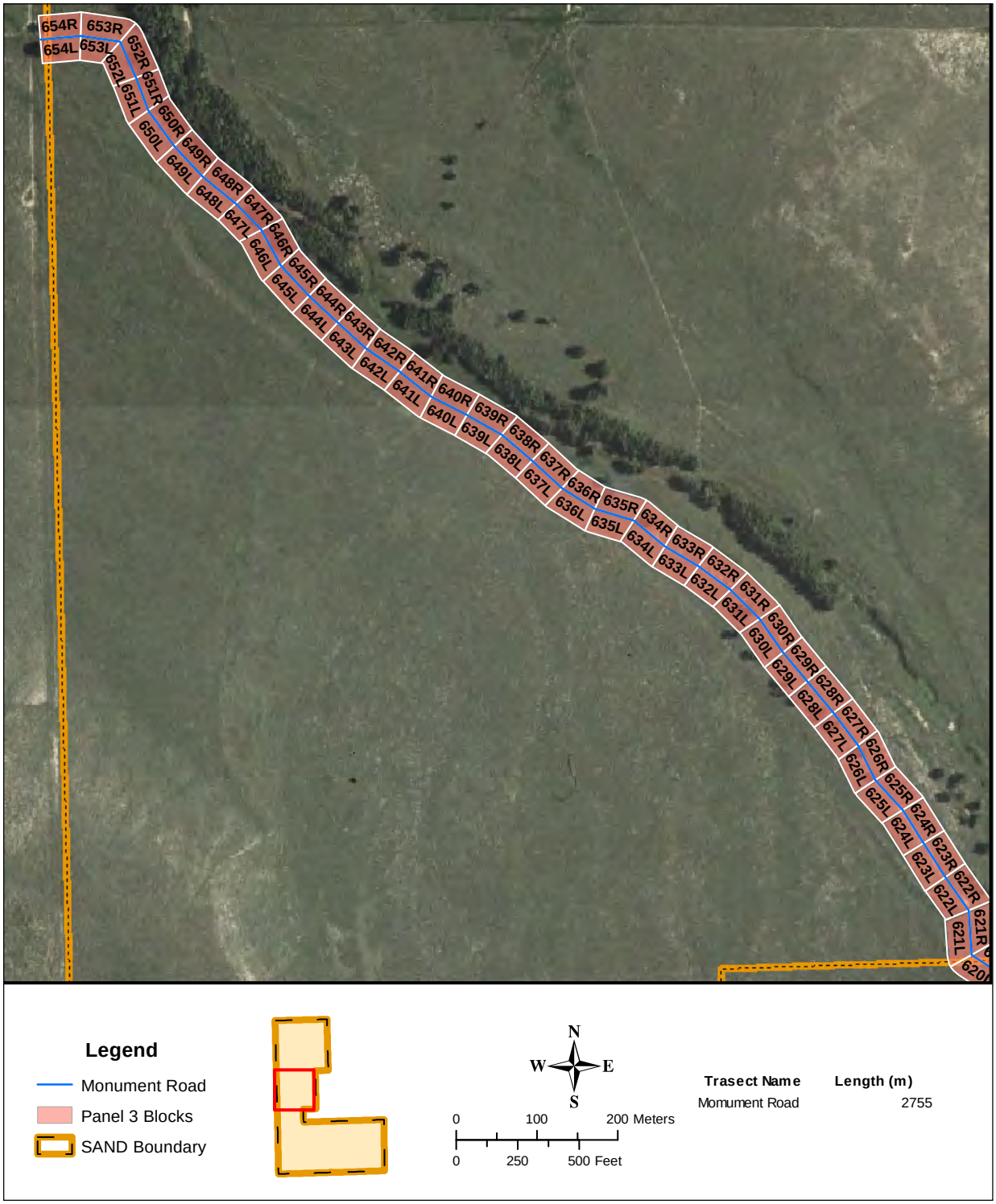


Figure I.1. Individual vector blocks sampled, Panel 3 (north section), Sand Creek Massacre NHS, 2011.

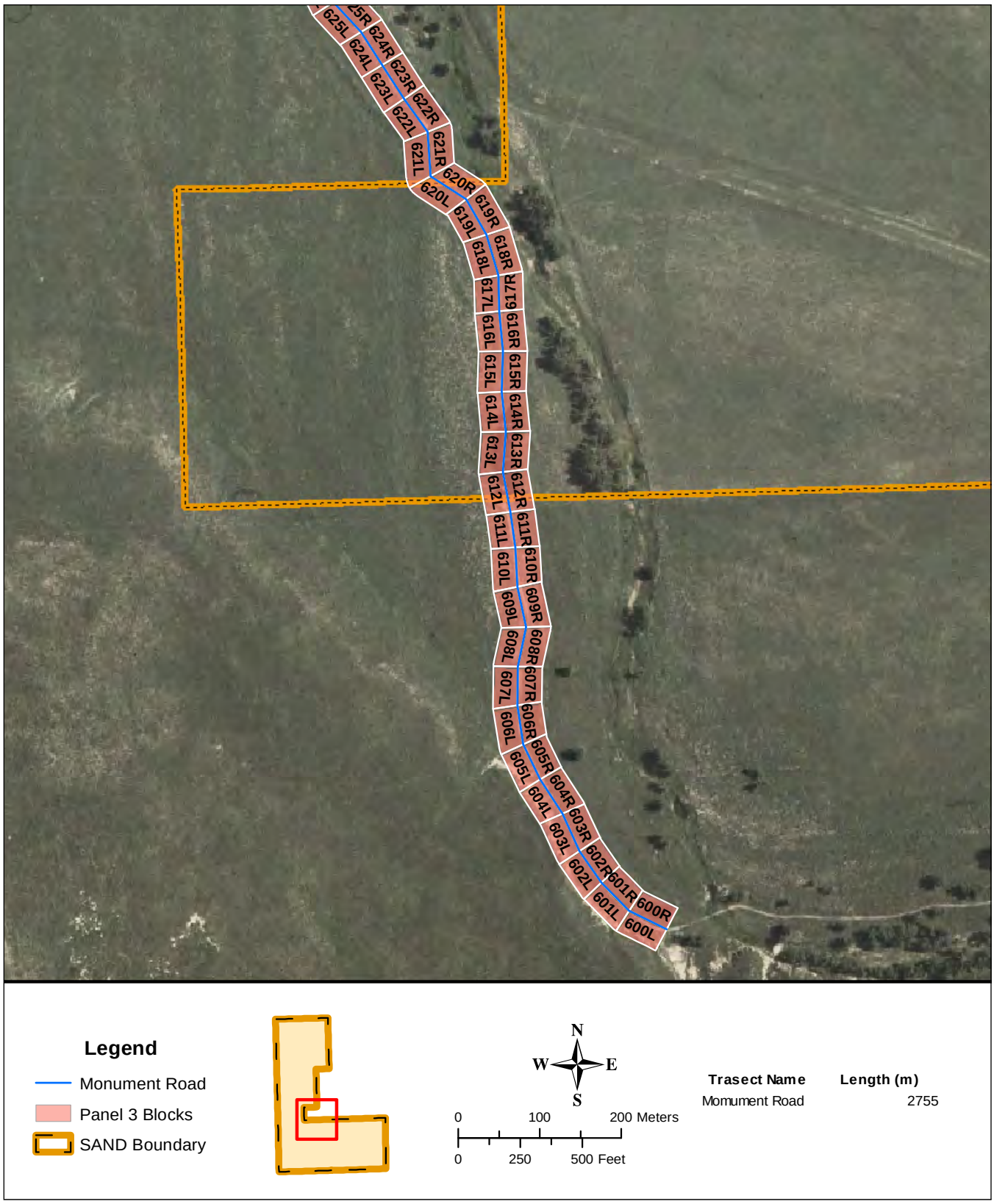


Figure I.2. Individual vector blocks sampled, Panel 3 (south section), Sand Creek Massacre NHS, 2011..

Table I-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2011.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Chenopodium album	common lambsquarters	L	602	1	0	0	X
		R	602	1	0	0	0
		L	603	1	0	0	X
		R	603	1	1	0	0
		L	604	2	0	0	X
		R	604	2	1	0	0
		R	605	0	1	0	0
		R	606	1	2	0	0
		R	608	1	0	0	0
		R	615	1	0	0	0
		R	616	1	0	0	0
		R	621	0	1	0	0
		L	622	1	0	0	0
		L	623	1	0	0	0
		R	623	1	1	0	0
		R	624	1	0	0	0
		L	625	1	0	X	X
		R	625	2	0	0	0
		R	626	1	0	0	0
		R	627	1	1	0	0
		R	628	0	2	0	0
		R	629	1	2	2	0
		L	630	2	2	0	X
		R	630	1	2	2	0
		L	631	1	2	0	X
		R	631	1	0	0	0
		L	632	2	2	0	X
		R	632	1	2	0	0
		L	633	2	2	0	0
		R	633	1	0	0	0
		L	634	2	0	0	0
		R	634	2	2	2	0
		L	635	2	0	0	0
		R	635	2	2	2	0
		L	636	1	1	0	X
		L	637	1	1	0	X
		R	637	2	0	0	X
		L	638	1	2	0	X
		L	639	1	0	0	X
		L	641	2	0	0	X

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table I-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Chenopodium album (cont.)	common lambsquarters	R	641	2	1	0	0
		L	642	2	0	0	0
		R	642	2	2	2	0
		R	643	1	2	2	0
		L	644	2	2	0	0
		R	644	2	2	2	0
		L	645	2	2	0	0
		R	645	2	2	2	0
		L	646	2	2	0	0
		R	646	1	2	0	0
		L	647	2	2	0	0
		R	647	1	1	0	0
		L	648	2	2	2	0
		R	648	1	1	0	0
		L	649	2	2	0	0
		R	649	1	2	0	0
		L	650	2	2	0	0
		R	650	1	1	0	0
		L	651	2	2	0	0
		R	651	1	2	0	0
		L	652	1	2	0	0
		R	652	1	1	0	0
		L	653	2	1	0	0
		R	653	2	0	0	0
		L	654	1	1	0	0
		R	654	1	0	0	0
Cirsium vulgare	bull thistle	L	628	1	0	0	X
		R	628	1	0	0	0
		L	631	1	0	0	X
Convolvulus arvensis	field bindweed	R	631	1	0	0	0
Kochia scoparia	kochia	R	600	1	0	0	0
		R	601	1	0	0	0
		R	602	2	0	0	0
		L	603	2	2	0	X
		R	603	2	0	0	0
		L	604	2	0	0	X
		R	604	2	0	0	0
		L	605	2	0	0	X
		R	605	1	0	0	0
		L	608	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table I-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia	kochia	R	615	2	0	0	0
		L	616	2	0	0	0
		L	617	2	0	0	0
		R	617	2	0	0	0
		R	619	0	1	0	0
		R	624	1	0	0	0
		L	625	1	0	X	X
		R	625	2	1	0	0
		R	629	0	1	0	0
		L	630	1	0	0	X
		L	632	1	0	0	X
		R	632	1	0	0	0
		R	633	0	1	0	0
		R	638	1	1	0	0
		L	642	1	0	0	0
		R	643	1	0	0	0
		R	648	1	0	0	0
		L	653	1	0	0	0
		R	653	2	0	0	0
		L	654	2	0	0	0
		R	654	2	2	3	0
Meilotus officinalis	yellow sweetclover	R	629	1	0	0	0
None	no exotics found	L	600	0	0	0	X
		L	601	0	0	0	X
		L	606	0	0	0	0
		L	607	0	0	0	0
		R	607	0	0	0	0
		L	610	0	0	0	0
		R	610	0	0	0	0
		L	611	0	0	0	0
		R	611	0	0	0	0
		L	612	0	0	0	0
		R	612	0	0	0	0
		L	613	0	0	0	0
		R	613	0	0	0	0
		L	614	0	0	0	0
		R	614	0	0	0	0
		L	618	0	0	0	0
		R	618	0	0	0	0
		L	621	0	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table I-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
None (cont.)	no exotics found	R	622	0	0	0	0
		L	626	0	0	X	X
		R	636	0	0	0	0
		R	639	0	0	0	0
		L	640	0	0	0	X
		R	640	0	0	0	0
		L	643	0	0	0	0
Rumex crispus	curly dock	L	619	1	0	0	0
Salsola tragus	prickly Russian thistle	R	600	1	0	0	0
		R	601	1	1	0	0
		L	602	1	0	0	X
		R	602	1	0	0	0
		L	603	1	0	0	X
		L	604	1	0	0	X
		R	604	2	0	0	0
		L	609	1	0	0	0
		R	609	1	0	0	0
		L	615	2	0	0	0
		R	615	1	0	0	0
		L	616	2	0	0	0
		R	616	1	0	0	0
		L	617	2	0	0	0
		R	617	2	0	0	0
		L	620	1	0	0	0
		R	620	1	0	0	0
		L	622	1	0	0	0
		L	623	1	0	0	0
		R	623	1	1	0	0
		L	624	2	0	0	X
		R	624	1	0	0	0
		L	625	2	0	X	X
		R	625	2	1	0	0
		L	627	1	0	0	X
		L	629	1	0	0	X
		L	630	1	1	0	X
		L	631	1	0	0	X
		L	632	2	1	0	X
		R	632	1	1	0	0
		L	633	1	0	0	0
		R	633	2	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table I-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	prickly Russian thistle	L	634	2	0	0	0
		R	634	1	2	0	0
		L	637	1	1	0	X
		R	638	1	1	0	0
		R	648	1	0	0	0
		L	653	1	0	0	0
		R	653	2	0	0	0
		L	654	2	0	0	0
		R	654	2	0	0	0
Tragopogon dubius	western salsify	R	606	0	1	0	0
		R	628	1	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

I.2 Panel 2 - June 2010

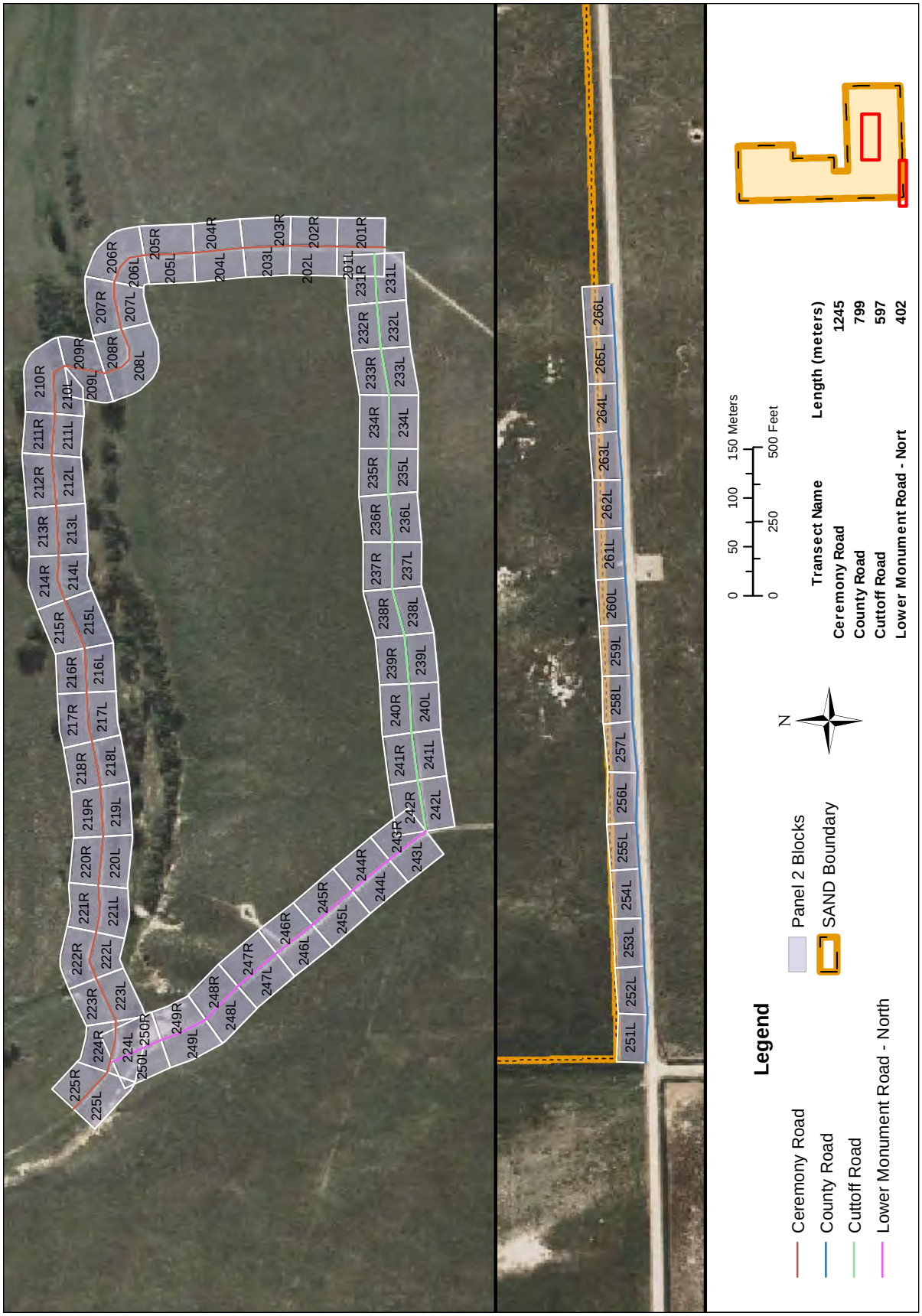


Figure I.3. Individual vector blocks sampled, Panel 2, Sand Creek Massacre NHS, 20010

Table I-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2010.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum	Cheatgrass	R	205	1	0	0	0
		L	259	1	0	0	0
Kochia scoparia	Kochia	L	201	0	2	0	0
		R	201	2	2	2	2
		L	202	2	2	2	0
		R	202	2	2	2	0
		L	203	2	2	2	0
		R	203	2	2	2	0
		L	204	0	2	2	0
		R	204	2	2	2	0
		L	205	2	2	2	0
		R	205	0	2	2	0
		L	206	0	2	2	0
		R	206	0	2	0	0
		L	207	2	2	2	–
		R	207	0	1	0	0
		L	208	0	2	2	0
		R	208	1	0	0	0
		R	210	1	0	0	0
		L	211	0	1	0	0
		L	212	1	1	0	0
		R	212	1	0	0	0
		L	213	0	1	0	0
		R	214	0	1	0	0
		L	215	0	2	0	0
		R	215	2	2	0	0
		L	216	0	2	2	0
		R	216	2	2	1–2	0
		L	217	0	2	2	0
		R	217	0	1–2	0	0
		L	218	0	2	2	0
		R	218	2	2	0	0
		L	219	0	1	0	0
		R	219	2	2	1	0
		L	220	2	2	2	0
		R	220	2	2	2	0
		L	221	2	2	2	0
		R	221	2	2	0	0
		L	222	0	2	2	0
		R	222	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	L	223	0	2	2	2
		R	223	2	2	0	0
		L	224	0	2	2	2
		R	224	2	2	2	0
		L	225	2	2	2	–
		R	225	2	2	2	0
		L	231	2	2	2	0
		R	231	2	2	0	0
		L	232	2	2	2	0
		R	232	2	2	0	0
		L	233	2	2	2	0
		R	233	2	2	1	0
		L	234	2	2	2	0
		R	234	2	2	0	0
		L	235	0	2	2	0
		R	235	2	2	0	0
		L	236	2	2	2	0
		R	236	2	2	0	0
		L	237	2	2	2	0
		R	237	2	2	2	0
		L	238	2	2	2	0
		R	238	2	2	1	0
		L	239	2	2	2	0
		R	239	2	2	0	0
		L	240	2	3	2	0
		R	240	2	2–3	0	0
		L	241	0	2	2	0
		R	241	2	2	0	0
		L	242	0	2	1	0
		R	242	1–2	2	0	0
		L	243	0	2	2	0
		R	243	2	2	2	0
		L	244	0	2	2	0
		R	244	2	2	0	0
		R	245	0	1	0	0
		L	248	2	2	0	0
		R	248	2	2	0	0
		L	249	0	2	2	–
		R	249	1	2	2	0
		L	250	2	2	2	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	R	250	2	2	2	0
		L	251	2	2	2	2
		L	252	0	2	2	0
		L	253	2	2	0	0
		L	254	2	2	0	0
		L	255	0	2	2	0
		L	256	0	2	2	0
		L	257	2	2	0	0
		L	258	2	2	0	0
		L	259	2	2	2	0
		L	260	2	2	2	0
		L	261	2	2	2	0
		L	262	2	2	0	0
		L	263	2	2	2	0
		L	264	2	2	2	0
		L	265	2	2	0	0
		L	266	1	2	0	0
Melilotus alba	White sweetclover	L	209	0	1	0	0
		R	209	1	1	0	0
		R	217	0	1	0	0
		R	218	1	1	1	0
		L	219	0	1	1	0
		R	220	0	1	0	0
		R	222	0	1	0	0
		R	223	1	1	0	0
Melilotus officinalis	Yellow sweetclover	L	209	0	1	0	0
		R	209	1	0	0	0
		L	218	0	1	0	0
		L	220	0	1	0	0
		L	221	1	1	0	0
		L	234	1	0	0	0
		L	250	0	1	0	–
		L	253	0	1	0	0
		L	254	0	1	0	0
		L	260	0	1	0	0
		L	261	0	2	2	2
		L	262	0	1	0	0
		L	263	0	1	2	0
		L	264	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
None	No exotics found	L	245	0	0	0	0
		R	246	0	0	0	0
Salsola tragus	Prickly Russian thistle	L	201	0	1	0	0
		R	201	1	0	0	0
		L	202	1	1	0	0
		L	203	1	0	0	0
		R	203	1	0	0	0
		L	204	0	1	0	0
		R	204	1	0	0	0
		R	206	0	1	0	0
		L	207	1	2	0	–
		R	207	2	0	0	0
		L	208	2	2	0	0
		R	208	2	2	0	0
		L	209	2	2	0	0
		R	209	2	0	0	0
		L	210	1	1	0	0
		L	211	1	0	0	0
		R	211	1	0	0	0
		L	212	2	0	0	0
		R	212	1	0	0	0
		R	213	1	0	0	0
		L	214	1	0	0	0
		R	215	1	1	0	0
		L	216	2	0	0	0
		R	216	2	1–2	0	0
		L	217	2	0	0	0
		R	217	1	1	0	0
		R	218	0	1	0	0
		R	219	1	0	0	0
		L	220	0	2	0	0
		R	220	1	0	0	0
		R	221	1	0	0	0
		L	224	1	0	0	0
		R	224	2	1–2	0	0
		R	225	1	1	0	0
		L	238	2	0	0	0
		R	238	1	0	0	0
		L	239	2	2	0	0
		R	239	2	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	Prickly Russian thistle	L	240	2	2	0	0
		R	240	1	1	0	0
		L	241	3	2	0	0
		R	241	3	1	0	0
		L	242	3	2	0	0
		R	242	3	3	1	0
		L	243	2	0	0	0
		R	243	2	1	0	0
		L	251	1	2	0	0
		L	252	2	0	0	0
		L	253	2–3	2	0	0
		L	254	2–3	2	0	0
		L	255	2	0	0	0
		L	256	2	2	0	0
		L	257	1	0	0	0
		L	258	1	1	0	0
		L	259	2	0	0	0
		L	260	2	2	0	0
		L	261	2	1	0	0
		L	262	2	1	0	0
		L	263	2	2	0	0
		L	264	2	2	0	0
		L	265	3	1	0	0
		L	266	2–3	1	0	0
Tragopogon dubius	Western salsify	L	201	0	0	1	0
		R	201	0	0	0	1
		R	202	0	1	1	0
		L	203	0	1	1	0
		R	203	0	1	0	0
		L	204	0	1	0	0
		R	204	0	1	1	0
		R	205	0	0	0	1
		R	206	0	1	0	0
		R	207	1	0	0	0
		L	208	0	1	0	0
		R	209	0	1	0	0
		L	210	–	1	0	0
		R	210	1	0	0	0
		L	211	0	1	0	0
		R	211	0	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	L	212	0	1	0	0
		R	212	0	1	0	0
		L	213	0	0	0	1
		R	213	1	1	0	0
		L	214	0	1	1	0
		R	214	1	0	0	0
		L	215	0	1	0	0
		R	216	1	0	0	0
		L	217	0	1	0	0
		R	218	0	2	2	0
		L	218	1	0	0	0
		R	219	0	2	2	0
		L	219	0	1	0	0
		R	220	0	2	0	0
		L	222	0	1	0	0
		R	223	0	1	0	0
		L	223	0	1	0	0
		R	224	0	1	0	0
		L	225	1	0	0	0
		R	232	0	0	0	1
		L	234	0	1	0	0
		R	235	0	1	1	0
		L	236	0	1	1	0
		R	236	0	1	1	0
		L	237	0	0	1	0
		R	237	0	1	0	0
		R	238	0	1	0	0
		L	239	0	1	1	0
		R	239	1	1	0	1
		L	240	0	0	0	1
		L	241	0	1	1	0
		L	242	0	1	0	0
		L	246	0	1	0	0
		L	248	0	1	0	0
		R	248	0	1	0	0
		R	250	0	1	0	0
		L	253	0	0	1	0
		L	254	0	1	0	0
		L	256	0	0	1	0
		L	259	0	1	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	L	260	0	1	0	0
		L	261	1	0	0	0
		L	262	0	1	0	0
		L	263	1	2	2	0
		L	264	0	2	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

I.3 Panel 1 - July 2009

Figure I.4. Individual vector blocks sampled, Panel 1, Sand Creek Massacre NHS, 2009.

Table I-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus arvensis	field brome	R	31	1	0	0	0
		R	32	1	0	0	0
Bromus tectorum	cheatgrass	R	21	0	1	0	0
Buglossoides arvensis	corn gromwell	R	2	0	1	0	0
		R	10	1	0	0	0
		L	12	0	1	0	0
		R	24	0	1	0	0
		R	25	1	0	0	0
		L	26	1	1	0	0
		R	26	1	0	0	0
		L	27	0	1	0	0
Chenopodium alba	common lambsquarters	L	1	2	2	1	0
		R	1	0	2	2	0
		L	2	0	1	1	1
		R	2	0	2	0	0
		R	3	0	1	0	0
		L	4	0	1	0	0
		L	5	0	1	1	0
		R	5	0	1	0	0
		L	9	0	1	1	0
		R	9	0	1	0	0
		L	10	0	2	2	0
		L	12	0	1	0	0
		L	14	0	1	0	0
		R	14	0	1	0	–
		R	21	0	2	0	0
		L	22	0	2	2	0
		R	22	0	2	0	0
		R	23	0	2	0	0
		L	24	0	1	0	0
		R	24	0	2	0	0
		L	25	0	1	0	0
		R	25	0	1	0	0
		L	26	0	1	0	0
		R	26	0	1	0	0
		L	27	0	1	0	0
		L	28	3	2	0	0
		R	28	2	3	0	0
		R	29	2	2	2	0
		L	30	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Chenopodium alba (cont.)	common lambsquarters	R	30	2	2	0	0
		L	31	0	1	0	0
		R	31	0	2	0	0
		R	32	0	1	0	0
Kochia scoparia	kochia	L	1	2	2	0	0
		R	1	2	0	0	0
		L	2	1	0	0	0
		L	6	0	1	0	0
		R	29	0	3	3	0
		R	30	0	2	0	0
Polygonum arenastrum	prostrate knotweed	R	30	1	0	0	0
Salsola tragus	prickly Russian thistle	L	1	2	2	1	0
		R	1	3	3	0	0
		L	2	1	0	0	0
		R	2	2	2	0	0
		L	3	1	0	0	0
		R	3	2	2	0	0
		L	4	2	2	0	0
		R	4	2	1	0	0
		L	5	2	2	0	0
		R	5	2	2	0	0
		L	6	3	2	0	0
		R	6	1	0	0	0
		L	7	2	1	0	0
		R	7	1	1	0	0
		L	8	2	0	0	0
		R	8	1	0	0	0
		L	9	2	2	0	0
		R	9	2	2	0	0
		L	10	1	1	0	0
		R	10	2	2	0	0
		L	11	2	2	0	0
		R	11	2	2	0	0
		L	12	2	2	0	0
		R	12	2	2	0	–
		L	13	2	2	0	0
		R	13	2	2	0	–
		R	14	0	2	0	–
		L	21	2	2	0	0
		R	21	3	3	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table I-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Sand Creek Massacre NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Salsola tragus (cont.)	prickly Russian thistle	L	22	2	1	0	0
		R	22	2	2	0	0
		L	23	2	1	0	0
		R	23	3	3	0	0
		L	24	2	1	0	0
		R	24	2	3	0	0
		L	25	2	1	0	0
		R	25	2	2	0	0
		L	26	2	1	0	0
		R	26	2	3	0	0
		L	27	2	1	0	0
		R	27	2	2	–	–
		R	28	2	3	0	0
		L	29	3	2	0	0
		R	29	2	3	0	0
		R	30	2	2	0	0
		R	31	2	0	0	0
		L	32	1	0	0	0
		R	32	2	0	0	0
Setaria viridis	green bristlegrass	L	21	2	0	0	0
		R	21	2	0	0	0
		R	22	2	0	0	0
		L	23	1	0	0	0
		R	26	2	0	0	0
		R	29	2	2	0	0
		R	30	2	0	0	0
Tragopogon dubius	western salsify	R	3	0	1	0	0
		R	4	0	1	0	0
		R	9	0	1	0	0
		R	13	0	1	0	–
		L	21	0	1	0	0
		R	21	0	1	0	0
		R	22	0	2	0	0
		R	23	0	2	0	0
		R	24	0	0	1	0
		R	26	1	1	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Appendix J. Washita Battlefield NHS Sampling Results

J.1 Panel 3 - May 2011

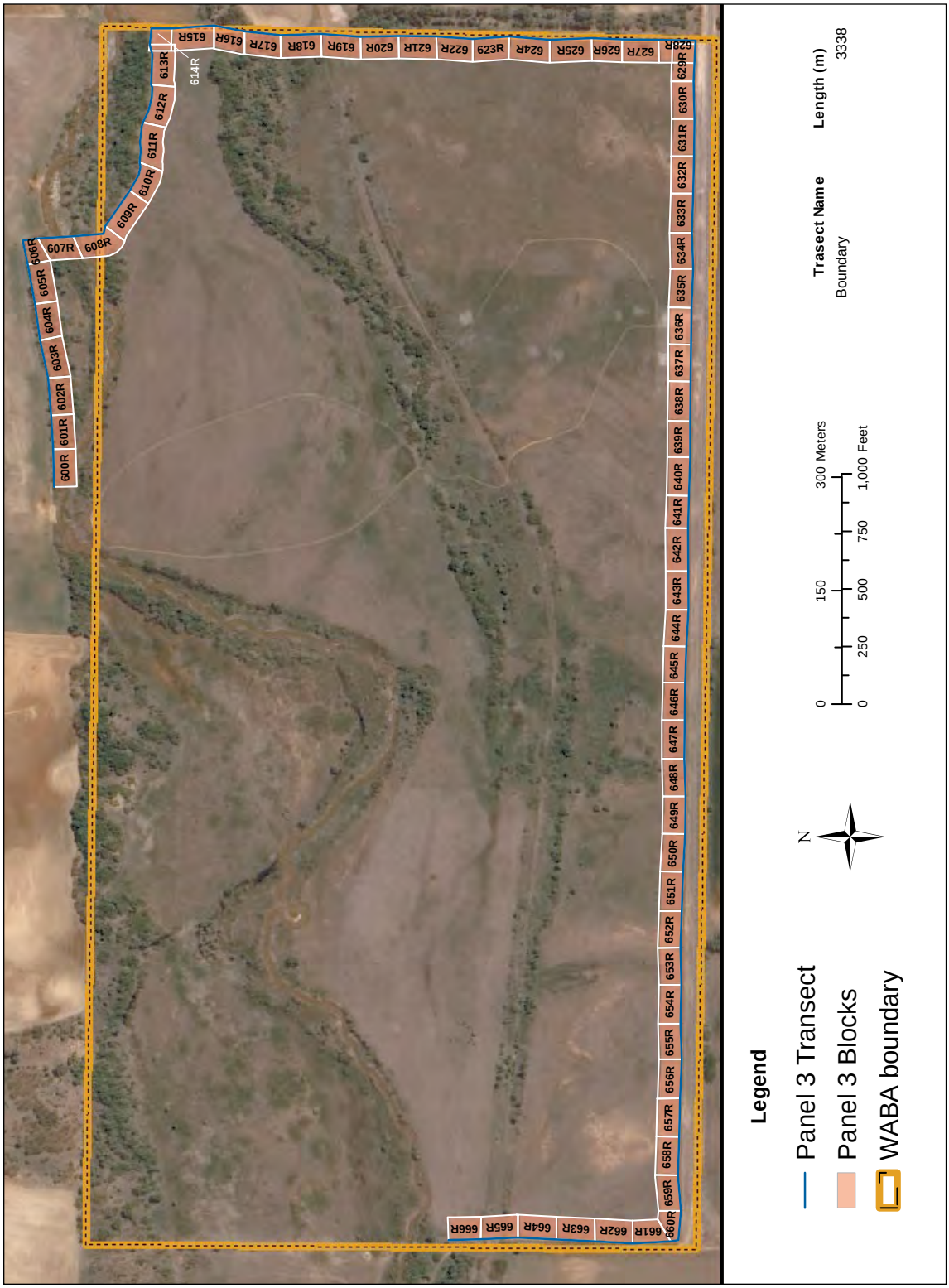


Figure J.1. Individual vector blocks sampled, Panel 3, Washita Battlefield NHS, 2011.

Table J-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2011.

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus	Japanese brome	R	629	3	3	0	0
		R	648	2	2	0	0
		R	649	2	2	0	0
		R	650	2	2	0	0
		R	651	2	2	0	0
		R	652	2	2	0	0
		R	654	3	2	0	0
		R	655	3	3	0	0
		R	657	2	2	0	0
		R	659	2	2	0	0
		R	661	3	3	0	0
		R	663	2	2	0	0
Bromus tectorum	cheatgrass	R	600	3	3	X	X
		R	601	3	3	X	X
		R	602	2	3	X	X
		R	603	3	3	X	X
		R	604	2	2	X	X
		R	605	3	3	X	X
		R	606	3	3	X	X
		R	607	3	3	X	X
		R	608	2	3	0	0
		R	609	2	2	0	0
		R	610	3	3	0	0
		R	611	2	2	0	0
		R	612	3	2	0	0
		R	613	2	2	0	0
		R	614	2	3	0	0
		R	615	2	3	0	0
		R	616	2	3	X	X
		R	617	2	3	X	X
		R	618	2	2	0	0
		R	619	2	3	0	0
		R	620	2	3	2	0
		R	621	2	3	3	3
		R	622	3	3	3	0
		R	623	2	3	3	3
		R	624	3	3	3	2
		R	625	3	3	3	0
		R	626	3	3	X	0
		R	627	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table J-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	cheatgrass	R	628	2	2	0	0
		R	630	2	2	0	0
		R	631	2	2	0	0
		R	633	1	0	0	0
		R	635	2	2	0	0
		R	636	2	2	0	0
		R	639	2	2	0	0
		R	640	2	2	2	0
		R	641	1	0	0	0
		R	644	2	2	0	0
		R	646	3	2	0	0
		R	647	3	3	3	0
		R	656	3	2	0	0
		R	658	3	2	0	0
		R	660	2	2	0	0
		R	662	3	2	0	0
		R	664	3	2	0	0
		R	665	3	3	3	0
Convolvulus arvensis	field bindweed	R	659	1	1	0	0
Cynodon dactylon	Bermuda grass	R	606	2	0	X	X
		R	607	2	2	X	X
		R	636	3	3	3	0
		R	637	2	3	3	0
Erodium cicutarium	red stem storksbill	R	636	2	2	0	0
		R	637	1	1	0	0
Kochia scoparia	kochia	R	600	2	2	X	X
		R	601	2	2	X	X
		R	603	2	0	X	X
		R	613	2	2	0	0
		R	615	2	0	0	0
		R	617	2	0	X	X
		R	619	2	2	0	0
		R	621	2	0	0	0
		R	635	0	2	0	0
		R	647	1	1	0	0
		R	661	2	2	0	0
		R	663	2	2	0	0
		R	664	2	2	0	0
		R	665	1	0	0	0
		R	666	3	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table J-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Lolium perenne	perennial rye	R	608	0	1	0	0
		R	612	2	0	0	0
Melilotus alba	white sweetclover	R	638	2	2	0	0
		R	640	2	2	0	0
		R	642	2	2	0	0
		R	644	0	1	0	0
		R	652	2	2	0	0
		R	654	0	2	0	0
		R	658	2	2	0	0
		R	643	0	1	0	0
		R	646	0	2	0	0
		R	654	2	0	0	0
None	no exotics found	R	632	0	0	0	0
Salsola tragus	prickly Russian thistle	R	606	2	0	X	X
		R	617	2	2	X	X
		R	619	2	2	0	0
		R	620	2	2	0	0
		R	627	2	2	0	0
		R	629	2	2	0	0
		R	631	1	0	0	0
		R	636	2	0	0	0
		R	637	2	2	2	0
Sorghum halepense	Johnsongrass	R	604	2	2	X	X
		R	607	0	1	X	X
		R	610	2	1	0	0
		R	613	2	2	2	0
		R	615	2	2	2	0
		R	619	0	2	2	0
		R	641	2	2	2	0
		R	644	3	3	2	0
		R	645	3	2	0	0
		R	646	2	2	0	0
		R	647	3	2	2	0
		R	648	2	2	2	0
		R	649	2	2	0	0
		R	650	2	2	0	0
		R	651	2	2	0	0
		R	652	2	2	0	0
		R	653	2	2	0	0
		R	654	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table J-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense (cont.)	Johnsongrass	R	655	3	3	3	0
		R	656	3	2	0	0
		R	657	2	2	0	0
		R	658	2	2	0	0
		R	660	2	2	0	0
		R	662	2	2	2	0
		R	664	2	2	0	0
		R	665	2	2	0	0
		R	666	0	2	0	0
Tragopogon dubius	western salsify	R	601	1	0	X	X
		R	603	0	1	X	X
Ulmus pumila	Siberian elm	R	601	2	2	X	X
		R	602	0	2	X	X
		R	603	2	2	X	X
		R	605	2	0	X	X
		R	607	2	2	X	X
		R	611	0	1	0	0
		R	613	1	1	1	0
		R	615	2	3	2	0
		R	616	0	2	X	X
		R	617	2	2	X	X
		R	618	2	2	2	0
		R	619	1	2	2	2
		R	621	1	1	1	0
		R	622	0	2	0	0
		R	627	2	2	0	0
		R	629	1	1	1	0
		R	630	0	1	0	0
		R	633	1	0	0	0
		R	634	2	0	0	0
		R	635	1	1	0	0
		R	641	2	2	0	0
		R	645	2	2	2	0
		R	647	2	2	0	0
		R	649	2	2	2	0
		R	650	0	2	2	2
		R	651	2	2	2	0
		R	652	0	2	2	2
		R	653	3	2	2	0
		R	654	0	1	0	1

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

Table J-1. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2011 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Ulmus pumila (cont.)	Siberian elm	R	655	2	3	3	0
		R	656	0	2	2	2
		R	657	2	2	2	0
		R	659	1	2	2	0
		R	660	0	2	2	0
		R	661	0	2	2	2
		R	662	0	1	1	0
		R	663	0	2	2	0
		R	664	0	1	2	2
		R	665	0	2	2	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data, X = not detectable due to terrain.

J.2 Panel 2 - June 2010

Figure J.2. Individual vector blocks sampled, Panel 2, Washita Battlefield NHS, 2010.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Albizia julibrissin	Mimosa	R	201	0	2	2	0
		R	202	0	2	1	0
		R	203	1	0	0	0
		R	206	1–2	0	0	–
		R	207	1–2	0	0	0
		R	208	1	0	0	0
		R	209	1	0	0	0
		R	214	1	0	0	–
		R	217	2	1	2	0
Bromus japonicus	Japanese brome	R	201	2	2	2	0
		R	202	2	2	0	0
		R	203	2	2	0	0
		R	204	2	2	0	0
		L	201	2	2	0	0
		L	202	2	2	0	0
		L	203	2	2	0	0
		L	204	2	2	0	0
		R	205	2	2	0	–
		R	206	2	2	0	–
		R	207	2	2	2	0
		R	208	2	2	2	0
		R	209	2	2	1–2	0
		R	210	2	2	2	2
		R	211	2	2	2	0
		R	213	2	2	2	2
		R	214	2–3	2–3	2–3	–
		R	215	3	3	3	–
		R	216	3	3	3	3
		R	217	3	3	3	3
		R	218	2	2	2	1
		L	205	2	0	0	0
		L	206	2	2	–	–
		L	207	2	2	0	0
		L	208	2	2	2	0
		L	209	2	2	2	0
		L	210	2	2	0	–
		L	211	3	3	3	3
		L	212	0	0	3	3
		L	213	3	3	3	3
		L	214	3	3	3	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	L	215	3	3	3	3
		L	216	2	3	3	3
		L	217	3	3	3	3
		L	218	3	3	–	–
		R	221	3	3	2	2
		R	222	2	2	2	2
		R	223	2	2	2	0
		R	224	2	2	2	0
		R	225	2–3	2–3	2	0
		R	226	2	2	2	0
		R	227	2	2	2	0
		R	228	2	2	2	2
		R	229	2	2	2	2
		R	230	2	2	2	2
		R	231	2	2	2	2
		R	232	2	2	2	2
		R	233	2	2	2	2
		R	234	1–2	1–2	0	0
		R	235	2	2	2	0
		R	236	2	2	0	0
		R	237	2	2	0	0
		L	221	3	3	3	0
		L	222	3	3	3	0
		L	223	2	2	2	2
		L	224	2	3	3	0
		L	225	2	2	0	0
		L	226	2	2	2	0
		L	227	2	2	0	0
		L	228	2	2	0	0
		L	229	2	2	0	0
		L	230	2	2	2	0
		L	232	2	2	0	0
		L	233	2	2	0	0
		L	234	2	2	0	0
		L	235	2	2	2	0
		L	236	2	2	2	0
		L	237	2	2	2	0
Bromus tectorum	Cheatgrass	R	202	1	2	2	0
		R	203	2	2	2	2
		R	204	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	Cheatgrass	L	202	2	2	0	0
		L	203	2	2	0	0
		L	204	2	2	0	0
		R	205	0	2	2	–
		R	207	0	0	2	2
		R	208	0	2	0	2
		R	209	0	2	0	0
		R	210	2–3	2–3	3	3
		R	211	2	2–3	2–3	0
		R	213	2	2	3	2
		R	214	2–3	2–3	2–3	–
		R	215	2	2	2	–
		R	216	2–3	2–3	2–3	2–3
		R	217	2–3	2–3	2–3	2–3
		R	218	2	2	2	2
		L	205	2	2	0	0
		L	206	2	2	–	–
		L	207	0	0	2	0
		L	208	0	3	3	0
		L	209	1	2	3	3
		L	210	2	3	3	–
		L	211	3	3	3	3
		L	212	0	0	3	3
		L	213	3	3	3	3
		L	214	0	2	3	0
		L	215	3	3	2	2
		L	216	0	0	3	2
		L	217	2	3	3	2
		L	218	3	3	–	–
		R	221	3	3	2	2
		R	222	2	2	2	2
		R	223	0	2	0	0
		R	224	2	0	0	0
		R	225	0	1–2	2	0
		R	226	0	2	0	0
		R	230	2	2	2	0
		R	231	1–2	1–2	0	0
		R	232	2	2	0	0
		R	233	2	2	0	0
		R	235	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus tectorum (cont.)	Cheatgrass	R	236	1–2	2	0	0
		R	237	2	2	2	2
		L	221	3	3	3	3
		L	222	3	3	3	3
		L	223	2	2	0	0
		L	224	2	3	3	0
		L	225	2	2	0	0
		L	226	2	2	0	0
		L	228	2	2	0	0
		L	229	0	2	2	0
		L	230	1	2	2	0
		L	232	2	2	0	0
		L	235	2	2	3	0
		L	236	2	2	2	0
		L	237	2	3	3	0
Chenopodium album	Common lambsquarters	R	201	2	2	2	0
		L	201	0	1	1	0
		R	211	0	2	0	0
		R	237	1	2	0	0
Cirsium vulgare	Bull thistle	L	204	0	2	0	2
		R	207	1	0	0	0
		R	208	1–2	0	0	0
		R	209	1	0	0	0
		R	210	1	0	–	–
		R	213	1	1	0	0
		R	214	0	1	0	–
		R	215	1	2	0	–
		L	205	2	0	0	0
		L	207	1	2	0	0
		L	208	1	1	0	0
		L	209	2	0	0	0
		L	213	0	2	2	0
		L	214	2	2	2	0
		L	215	1	2	2	0
		L	216	2	2	0	0
		R	222	0	1	0	0
		R	223	0	0	2	0
		R	224	0	2	0	0
		R	225	1	2	0	0
		R	226	0	0	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Cirsium vulgare (cont.)	Bull thistle	R	227	0	1	0	0
		R	228	1	1	0	0
		R	232	0	1	0	0
		R	233	1	2	0	0
		L	222	1	1	0	0
		L	225	1	2	0	0
		L	226	1	1	0	0
		L	227	1	1	0	0
		L	228	1	2	0	0
		L	233	2	2	0	0
		L	234	1	2	0	0
		L	236	0	1	0	0
Cynodon dactylon	Bermuda grass	R	201	1	0	0	0
		L	201	1	0	0	0
Euphorbia dentata	Toothed spurge	R	202	1	0	0	0
		L	202	0	1	0	0
		L	203	1	1	0	0
		R	205	1	0	0	–
		R	209	1	0	0	0
		R	215	0	2	0	–
		L	206	1	0	–	–
		L	211	0	1	0	0
		L	215	2	2	2	0
		L	223	1	2	0	0
		L	224	0	2	0	0
Kochia scoparia	Kochia	R	201	2	1	0	0
		R	202	2	0	0	0
		R	203	2	2	0	0
		R	204	1	0	0	0
		L	201	2	0	2	2
		L	202	1	2	0	0
		L	203	2	0	0	0
		R	205	1	0	0	–
		R	206	2	0	0	–
		R	207	0	1–2	0	0
		R	208	2	2–3	0	0
		R	209	1	2–3	0	0
		R	211	3–4	3–4	3–4	3–4
		R	212	4	4	4	4
		R	213	1–2	1–2	1–2	1–2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Kochia scoparia (cont.)	Kochia	R	214	0	0	2	–
		L	205	0	2	0	0
		L	207	2	0	0	0
		L	208	1	1	0	0
		L	209	1	2	3	3
		L	210	0	2	2	–
		L	211	2	4	4	4
		L	212	4	4	4	3
		L	213	0	2	3	0
		L	214	0	2	0	3
		L	216	2	2	3	4
		L	217	0	2	3	4
		L	218	1	2	–	–
		R	221	2	2	2	0
		R	223	2	2	0	0
		R	224	2	2	0	0
		R	225	1	2	0	0
		R	226	2	2	1–2	1–2
		R	228	1	0	1	0
		R	232	2	2	0	0
		R	233	2	2	0	0
		R	236	2	2	0	0
		R	237	0	1	0	0
		L	221	2	3	0	0
		L	222	2	3	3	0
		L	223	2	2	0	0
		L	224	1	2	0	0
		L	225	2	0	0	0
		L	226	1	0	0	0
		L	232	1	2	0	0
		L	233	1	1	0	0
		L	236	2	0	0	0
Lactuca serriola	Prickly lettuce	R	208	0	1–2	0	0
		L	207	0	1	0	0
		L	208	0	1	0	0
Lolium perenne	Perennial ryegrass	L	202	0	2	0	0
Medicago lupulina	Black medic clover	R	201	1	0	0	0
Medicago minima	Burr medic clover	R	208	1–2	0	0	0
		R	213	2–3	2–3	2–3	0
		R	214	2	2	0	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Medicago minima (cont.)	Burr medic clover	L	208	2	0	0	0
		L	209	2	0	0	0
		L	213	3	2	0	0
Melilotus officinalis	Yellow sweetclover	R	202	0	0	1	0
		R	203	2	2	2–3	2
		R	204	2–3	3	3	2–3
		L	201	0	1	1	0
		L	203	0	2	0	0
		L	204	2	3	2	2
		R	205	2	2	0	–
		R	207	1	0	0	0
		R	208	2	0	0	0
		R	209	2	2	2	1–2
		R	213	0	2	2–3	2
		R	215	0	2	2	–
		R	216	1	2	2	1
		R	217	2	2	2	2
		R	218	1	2	1	1
		L	205	2	2	3	0
		L	207	2	2	0	0
		L	208	2	2	0	0
		L	209	2	2	3	2
		L	213	0	1	1	0
		L	214	1	1	0	0
		L	215	1	2	2	0
		L	216	1	2	2	0
		L	217	3	3	3	0
		R	221	0	1	0	0
		R	224	0	1	0	0
		R	229	0	1	0	0
		R	230	0	2	2	0
		R	231	2	2	2	2
		R	232	0	1	1	0
		R	233	0	2	0	0
		R	234	2	2	2	2
		L	231	1	2	2	0
		L	232	0	1	0	0
		L	233	1	1	0	0
		L	234	2	2	0	0
		L	235	0	1	1	0
		L	236	0	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense	Johnsongrass	R	201	0	2	2	2
		R	203	2	2	2	2
		L	201	0	2	2	0
		L	203	0	2	0	0
		R	205	2	2	0	–
		R	206	2	2	1–2	–
		R	207	2	2	0	0
		R	208	2	2	0	0
		R	209	2	2	1–2	1–2
		R	210	2	2	–	–
		R	211	0	2	0	0
		R	213	2	2	0	0
		R	214	2	2	2	–
		R	215	2	2	2	–
		R	216	2	2	2	2
		R	217	2	2	2	2
		R	218	1	2	2	2
		L	205	2	2	2	0
		L	206	2	3	–	–
		L	207	2	2	2	2
		L	208	3	3	3	3
		L	209	3	3	3	3
		L	210	3	3	0	–
		L	213	0	2	2	2
		L	214	2	3	3	3
		L	215	2	3	3	3
		L	216	0	3	3	3
		L	217	3	3	3	3
		L	218	2	3	–	–
		R	221	1	2	2	2
		R	222	2	2	2	2
		R	223	2	2	2	2
		R	224	1	2	2	2
		R	225	2	2	2	2
		R	226	2	2	2	2
		R	227	0	2	2	0
		R	228	2	2	2	0
		R	229	2	2	2	2
		R	231	2	2	0	0
		R	232	2	2–3	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense (cont.)	Johnsongrass	R	233	2	2	0	0
		R	234	2	2	0	2
		R	235	2	2	2	2
		R	236	1	2	2	2
		R	237	0	2	2	2
		L	221	2	2	3	3
		L	222	2	3	3	0
		L	223	0	3	3	0
		L	224	0	3	3	0
		L	225	2	3	3	3
		L	226	2	3	3	3
		L	227	0	2	3	3
		L	228	0	3	3	0
		L	229	2	3	3	2
		L	230	0	0	3	3
		L	231	2	2	3	3
		L	232	1	2	3	3
		L	233	2	2	3	3
		L	234	0	0	3	3
		L	235	2	2	2	0
		L	236	0	3	3	0
		L	237	2	3	3	3
Tamarix chinensis	Tamarisk	L	207	0	0	0	2
		L	208	0	0	2	2
		L	231	0	0	0	1
Taraxacum officinale	Dandelion	L	201	1	0	0	0
Tragopogon dubius	Western salsify	R	201	0	1	0	0
		R	202	0	1	0	0
		L	201	0	2	1	0
		L	202	1	1	0	0
		R	208	1	1	0	0
		R	209	1	0	0	0
		R	213	0	2	0	0
		R	214	0	1	0	–
		L	205	1	1	0	0
		L	206	1	0	–	–
		L	207	1	2	0	0
		L	208	2	2	0	0
		L	209	1	2	0	0
		L	210	1	0	0	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	Western salsify	L	213	2	2	2	0
		L	214	1	2	0	0
		R	221	0	2	0	0
		R	222	1	1	0	0
		R	224	1	0	0	0
		R	229	0	1	0	0
		R	231	0	1	1	0
		R	232	0	1	1	1
		R	233	1	1	0	0
		R	234	1	2	0	0
		R	235	1	1	1	0
		R	237	0	1	0	0
		L	222	0	1	0	0
		L	224	1	1	0	0
		L	230	0	1	0	0
		L	232	0	1	0	0
		L	233	1	1	0	0
		L	234	1	1	0	0
		L	235	1	0	0	0
		L	237	0	1	0	0
Ulmus pumila	Siberian elm	R	216	2	2	2	2
		R	217	2	2	2	2
		R	218	1–2	1–2	1–2	1–2
		R	223	0	0	0	1
		R	224	1	1	0	1
		R	225	0	2	0	0
		R	226	1	2	2	2
		R	227	0	2	0	1
		R	228	1	1	0	0
		R	229	0	1	0	0
		R	230	0	1	0	0
		R	233	1	1	2	1
		R	234	0	0	1	0
		L	222	0	1	1	0
		L	223	0	2	0	0
		L	224	0	1	1	0
		L	225	0	2	2	0
		L	226	2	2	2	0
		L	227	2	2	2	0
		L	228	2	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-2. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2010 (continued)

Scientific name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Ulmus pumila (cont.)	Siberian elm	L	229	0	2	2	0
		L	230	0	2	2	0
		L	231	0	2	2	2
		L	232	0	2	3	0
		L	234	1	2	2	0
		L	237	2	2	2	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

J.3 Panel 1 - July 2009

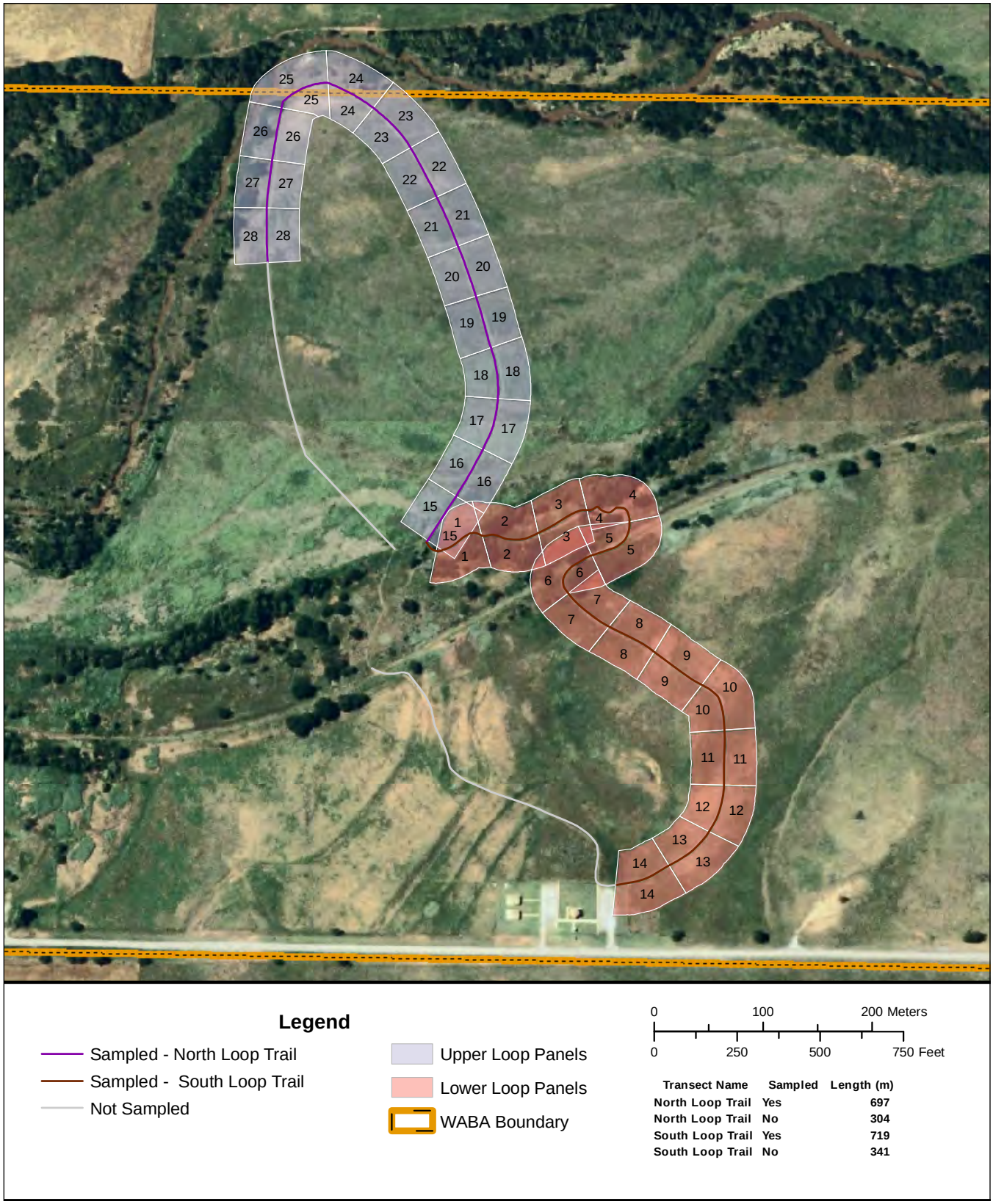


Figure J.3. Individual vector blocks sampled, Panel 1, Washita Battlefield NHS, 2009.

Table J-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2009.

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bothriochloa ischaemum	K.R. bluestem	L	17	1	0	0	0
		R	17	2	2	2	0
		L	18	2	0	0	0
		R	18	2	2	0	0
		L	19	1	0	0	0
		L	21	0	1	0	0
Bromus japonicus	Japanese brome	L	1	1	2	2	–
		R	1	2	3	2	–
		L	2	2	3	3	3
		R	2	2	3	3	–
		L	3	3	3	3	3
		R	3	3	3	2	–
		L	4	3	–	–	–
		R	4	0	3	0	–
		L	5	0	2	–	–
		L	6	2	3	3	–
		R	6	0	3	0	–
		L	7	2	3	2	0
		R	7	3	3	3	3
		L	8	3	3	3	3
		R	8	3	3	3	3
		L	9	2	3	3	3
		R	9	2	2	2	2
		L	14	0	3	3	3
		R	14	3	3	3	3
		L	15	0	3	3	2
		R	15	3	3	3	0
		L	16	0	3	2	2
		R	16	3	3	3	3
		L	17	0	3	3	0
		R	17	3	3	3	3
		L	18	2	2	2	0
		R	18	3	3	3	3
		L	19	0	3	2	0
		R	19	3	3	0	0
		L	20	3	2	2	0
		R	20	3	3	0	0
		L	21	0	2	0	0
		R	21	3	3	0	0
		L	22	2	2	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Bromus japonicus (cont.)	Japanese brome	R	22	3	3	0	0
		L	23	0	2	0	0
		R	23	3	3	0	0
		L	24	0	3	0	0
		R	24	3	3	0	0
		L	25	0	2	0	0
		L	26	0	2	0	0
		R	26	3	3	0	–
		L	27	0	2	0	0
		R	27	0	2	0	0
		L	28	0	2	0	0
		R	28	1	2	0	–
Cirsium arvense	Canadian thistle	L	22	1	0	0	0
Convolvulus arvensis	field bindweed	R	18	1	1	0	0
Eupatorium dentata	toothed spurge	R	1	1	0	0	–
Kochia scoparia	kochia	L	15	3	3	2	0
		R	15	2	2	2	0
		L	16	3	2	0	0
		R	16	2	2	2	2
		L	17	2	2	0	0
		R	17	0	2	2	0
		L	18	2	0	0	0
Melilotus alba	white sweetclover	L	5	2	–	–	–
		L	9	1	0	0	0
		L	19	1	0	0	0
		R	20	1	0	0	0
		L	21	1	0	0	0
		R	21	1	0	0	0
		R	23	1	0	0	0
		R	24	1	0	0	0
		L	26	2	0	0	0
Melilotus officinalis	yellow sweetclover	L	24	0	1	0	0
None	No exotics found	L	10	0	0	0	0
		R	10	0	0	0	0
		L	11	0	0	0	0
		R	11	0	0	0	0
		L	12	0	0	0	0
		R	12	0	0	0	0
		L	13	0	0	0	0
		R	13	0	0	0	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Rumex crispus	curly dock	L	1	0	2	3	–
		L	3	0	2	2	2
		R	15	0	1	0	0
Salsola tragus	prickly Russian thistle	L	7	1	1	0	0
		L	8	2	2	0	0
		L	9	0	1	0	0
		L	14	0	1	0	0
		R	14	0	1	0	0
Sonchus asper	spiny sowthistle	L	1	0	1	0	–
		L	6	1	1	0	–
		R	7	2	2	0	0
		L	15	2	2	0	0
		R	15	1	0	0	0
		L	16	2	2	0	0
		R	16	1	1	0	0
		L	17	2	0	0	0
		R	17	1	1	0	0
		L	18	2	2	0	0
		R	18	1	1	0	0
		L	19	2	0	0	0
		R	19	1	1	0	0
		L	20	2	2	0	0
		R	20	1	0	0	0
		L	21	0	2	0	0
		L	22	2	0	0	0
		L	23	0	2	0	0
		R	24	0	1	0	0
		L	27	0	2	0	0
		R	27	0	1	0	0
		L	28	1	2	0	0
		R	28	1	1	0	–
Sorghum halepense	Johnsongrass	L	1	0	0	2	–
		L	3	0	0	0	2
		L	6	0	1	0	–
		R	6	0	2	0	–
		L	14	0	1	0	0
		R	14	2	2	0	0
		L	15	0	2	2	2
		R	15	0	2	2	0
		L	16	0	2	2	2

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Sorghum halepense (cont.)	Johnsongrass	L	17	0	2	2	2
		R	17	2	2	2	2
		L	18	0	0	0	2
		R	18	0	2	2	2
		L	19	0	0	2	0
		R	19	2	2	0	2
		L	20	0	0	0	2
		R	20	0	1	0	0
		R	21	0	0	2	2
		L	22	0	1	1	0
		R	22	0	0	2	2
		R	23	0	0	0	2
		R	24	0	0	0	2
		L	25	0	1	0	0
		R	25	0	0	0	2
		L	26	0	0	0	2
		L	27	0	2	2	0
		R	27	0	2	0	2
		L	28	0	2	2	2
Tamarix ramosissima	saltcedar	R	25	0	0	0	1
Tragopogon dubius	western salsify	L	1	1	0	0	–
		R	1	2	2	0	–
		R	2	0	1	0	–
		L	3	0	2	2	0
		R	3	1	1	0	–
		R	4	0	1	0	–
		R	5	0	1	0	–
		L	6	0	1	0	–
		R	6	0	1	0	–
		L	7	0	2	2	0
		R	7	1	0	0	0
		L	8	0	2	0	0
		R	8	0	1	0	0
		L	9	0	1	0	0
		L	17	1	1	0	0
		L	18	2	1	0	0
		R	18	1	1	0	0
		L	19	2	2	0	0
		R	19	1	1	1	0
		L	20	2	2	1	0

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

Table J-3. Sample locations (vector blocks) of exotic plant species observations with density class observed at each distance class, Washita Battlefield NHS, 2009 (continued).

Scientfic name	Common name	Vector side	Vector block	Distance class[a, b]			
				1	2	3	4
Tragopogon dubius (cont.)	western salsify	R	20	1	1	0	0
		L	22	1	0	0	0
		R	23	0	1	0	0
		L	28	1	0	0	0
Ulmus pumila	Siberian elm	L	18	0	1	0	0
		L	20	0	1	0	0
		R	20	0	1	0	0
		R	21	0	1	0	0
		L	22	0	1	0	0
		L	23	0	2	0	0
		R	23	0	1	0	0
		L	27	0	2	0	0
		L	28	0	2	0	0
		R	28	0	1	0	–

[a]Distance class: 1 = from edge of vector to 1.5 or 2 meters in; 2 = from transect (at 1.5–2 meters in) to 10 meters; 3 = 10–20 meters ; 4 = over 20 meters into the landscape.

[b]Density class: 1 = 1–5 plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; 0 = species not seen in distance class; – = no data.

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National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
1201 Oak Ridge Drive, Suite 150
Fort Collins, Colorado 80525

www.nature.nps.gov