



Lake Meredith National Recreation Area

Southern Plains Network and Southern Plains Fire Group 2014 Vegetation Monitoring Data Summary



ON THE COVER

Overlook at Lake Meredith NRA. NPS Photo.

Lake Meredith National Recreation Area

Southern Plains Network and Southern Plains Fire Group 2014 Vegetation Monitoring Data Summary

Authors

Tomye Folts-Zettner¹
Richard Gatewood²
Heidi Sosinski¹

¹National Park Service
Southern Plains Inventory and Monitoring Network
PO Box 329
Johnson City, Texas

²Fire Ecologist - National Park Service
Chihuahuan Desert & Southern Plains Ecoregions
PO Box 987
Artesia, NM 88211

Contents

	Page
Introduction	1
Grassland Monitoring Results	1
Exotic Monitoring Results.....	15
Literature Cited	34

Figures

	Page
Figure 1. Layout of plots within each permanent transect.	1
Figure 2. Location of each upper region permanent plot at LAMR monitored in 2014.....	2
Figure 3. Location of each lower region permanent plot at LAMR monitored in 2014.	3
Figure 4. Layout of Vector Blocks and Distance Classes along a vector.	15
Figure 5. Panel 3 numbered vector blocks monitored at LAMR in both 2011 and 2014.	16
Figure 5. Comparison of exotics detected in 2011 and 2014 upper region grassland monitoring permanent transects at LAMR.	18
Figure 6. Comparison of exotics detected in 2011 and 2014 lower region grassland monitoring permanent transects at LAMR.	19
Figure 7. Exotics detected in 2014 at fire monitoring permanent transects at LAMR.	20

Tables

	Page
Table 1. Plant community and sampling dates for each transect at Lake Meredith NRA in 2014.....	1
Table 2. Ground strata type and percentage for each transect monitored at LAMR in 2014.....	4
Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink.....	5
Table 4. All plant species detected during grassland monitoring in 2011 and exotic monitoring in 2011 and 2014 at LAMR. Exotic species are highlighted in pink.	12
Table 5. Number and percentage comparison of unit detections of exotic species found in repeated monitoring of vector blocks and permanent transects at LAMR.....	17
Table 6. A comparison of the number of blocks containing a given density in 2011 and 2014 in two Distance Classes.....	21
Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class.	23

Introduction

This report contains a data summary of results from all vegetation monitoring conducted by the Southern Plains I&M Network (SOPN) and the Southern Plains Fire Group (SPFG) during 2014 at Lake Meredith National Recreation Area (LAMR). Data summaries are used to impart current monitoring data until enough years of data have been collected to facilitate trend analysis. More detailed synthesis reports will be produced in 2015-2017.

Grassland Monitoring Results

Grassland monitoring occurred throughout the summer of 2014 (Table 1). Data from nineteen (19) permanent transects (Figure 2) were collected following the established monitoring protocol Grassland Monitoring Protocol and Standard Operating Procedures for the Southern Plains I&M Network and Fire Group (Folts-Zettner et al.)(Figure 1). The protocol calls for a series of permanent 50-meter transects containing five 2x1-meter plots. Species composition, relative cover and ground strata are collected during annual visits. Additional data is collected during visits that support the SPFG program.

Table 1. Plant community and sampling dates for each transect at Lake Meredith NRA in 2014.

Group	Transect	Plant community	Date
Cottonwood	CWOOD-LT02	Cottonwood	08/15
	CWOOD-LT04	Cottonwood	08/15
Fire Program	FPRGL1G0205	Honey Mesquite	06/09
	FPRGL1G0409	Honey Mesquite	06/23
	FPRGL1G0410	Honey Mesquite	06/25
	FPRGL1G0411	Honey Mesquite	06/24
	FPRGL1G0422	Honey Mesquite	06/08
	FPRGL1G0423	Honey Mesquite	06/07
	FPRGL1G0228	Upland Grass	06/11
Honey-Mesquite	HONEY-LT02	Honey Mesquite	08/16
	HONEY-LT06	Honey Mesquite	08/18
	HONEY-LT07	Honey Mesquite	08/17
	HONEY-LT10	Honey Mesquite	08/13
Upland	ULAND-03	Upland Grass	06/18
	ULAND-LT02	Upland Grass	07/16
	ULAND-LT03	Upland Grass	08/16
	ULAND-LT05	Upland Grass	08/13
	ULAND-LT06	Upland Grass	08/17
	ULAND-LT07	Upland Grass	08/14

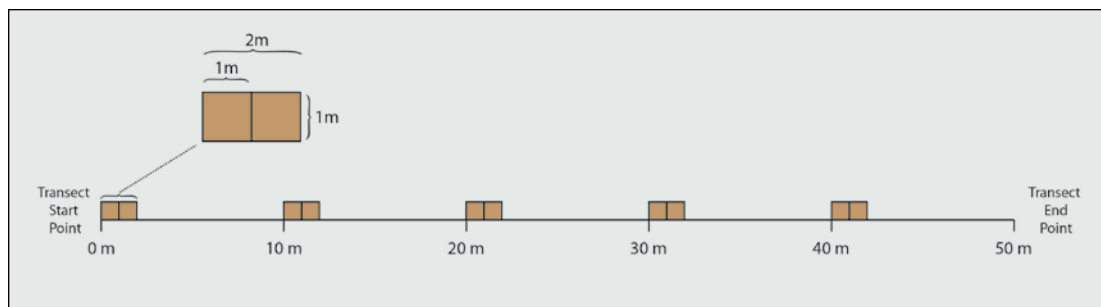


Figure 1. Layout of plots within each permanent transect.

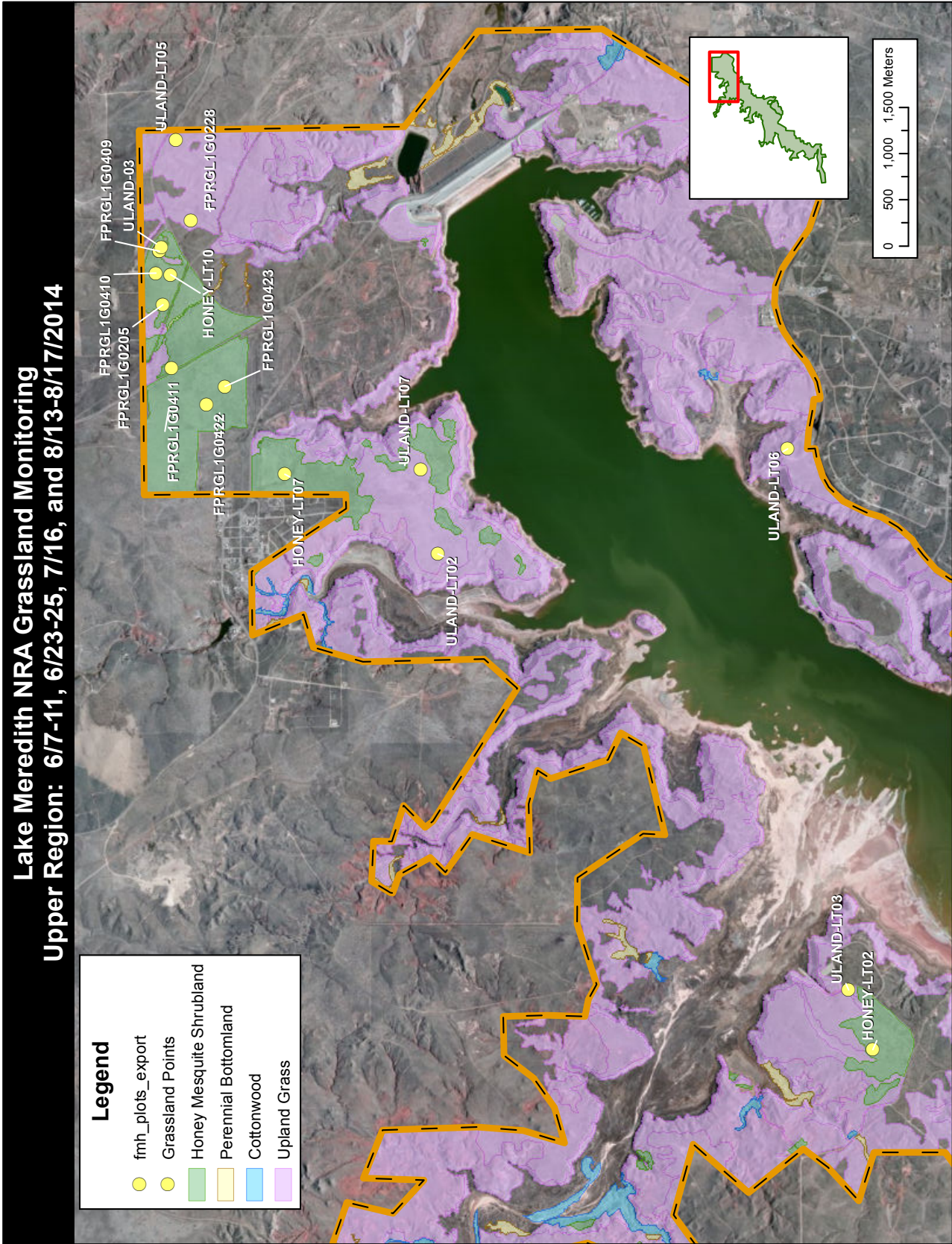


Figure 2. Location of each upper region permanent plot at LAMR monitored in 2014.

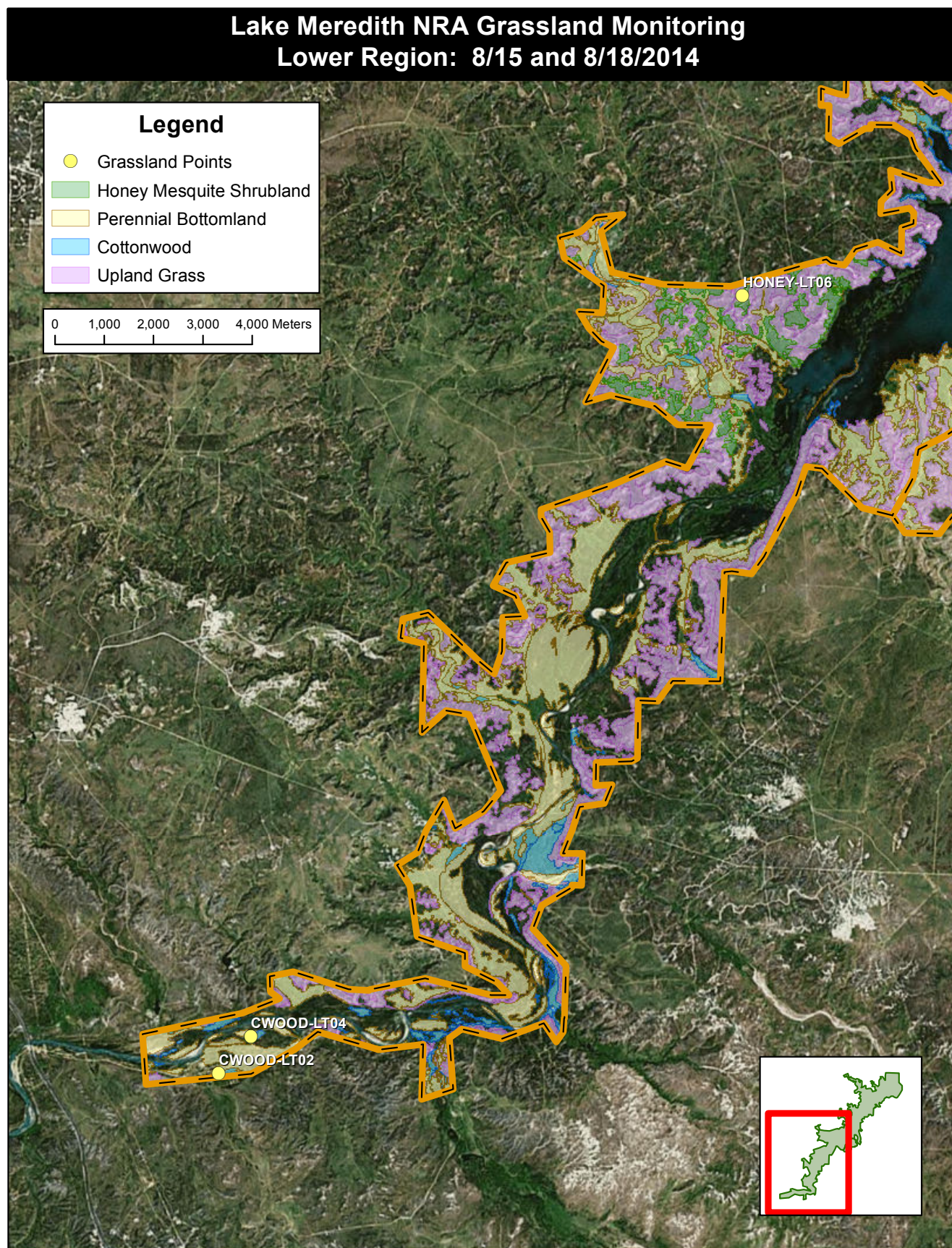


Figure 3. Location of each lower region permanent plot at LAMR monitored in 2014.

The type and amount of ground strata (bare soil, litter, rock) influences many aspects of grassland health. The benefits of these influences vary along an east-west gradient. Litter accumulation, for example is considered more beneficial in the western parts of the Southern Great Plains because it protects the soil from erosion by wind and rain, and keeps soil root-zones cooler. These same benefits accrue in the eastern area, but because higher rainfall results in higher vegetative production, the greater accumulation of litter can negatively impact a grassland by limiting seedling recruitment. Ground strata estimates for each transect monitored at LAMR in 2014 can be found in Table 2.

Table 3 contains numerical results of 2014 grassland monitoring at LAMR. Each transect contains five plots. Frequency reflects the number of plots in each transect where a particular species was detected. Exotic plant species are highlighted in pink. Scientific and common names for each plant code, as well as that species attributes can be found in Table 4.

Table 2. Ground strata type and percentage for each transect monitored at LAMR in 2014.

Cover	Cottonwood		Fire Program				
	CWOOD-LT02	CWOOD-LT04	FPRGL1G0205	FPRGL1G0409	FPRGL1G0410	FPRGL1G0411	FPRGL1G0422
SOIOPEN	17	37	57.6	27	19.2	67.2	49.2
SOILUNDER	7	16	8.4	5.25	4.2	6.2	5.2
LITTER	75.4	47	40	65.75	75.2	24	42.2
WOOD	0.6	0	2.2	1.25	0.4	1.4	2.2
ROCKSM	0	0	1.4	0.75	0.4	1.2	0.6
ROCKLG	0	0	0	0	0	0	0
LICHEN	0	0	0	0	0	0	0
MOSS	0	0	0	0	0	0	0
CRUST	0	0	0	0	1.2	0	0.6

Cover	Fire Program		Honey Mesquite			
	FPRGL1G0423	FPRGL1G0228	HONEY-LT02	HONEY-LT06	HONEY-LT07	HONEY-LT10
SOIOPEN	36.2	74	32	20	45.4	46
SOILUNDER	5.8	15	19	18	12	32
LITTER	52.4	10.8	47	46	37	14
WOOD	5	0.2	0	1	5.6	8
ROCKSM	0.6	0	2	10.2	0	0
ROCKLG	0	0	0	2.2	0	0
LICHEN	0	0	0	0	0	0
MOSS	0	0	0	0	0	0
CRUST	0	0	0	2.6	0	0

Cover	Upland Grass					
	ULAND-03	ULAND-LT02	ULAND-LT03	ULAND-LT05	ULAND-LT06	ULAND-LT07
SOIOPEN	71.2	35.2	44	49	28	60
SOILUNDER	11.4	7.4	19	27	6	20
LITTER	15.4	54	39	18	15	19.4
WOOD	1.4	2.6	8	0	2	0.6
ROCKSM	0.4	0.8	0	5	41	0
ROCKLG	0	0	0	0	5	0
LICHEN	0	0	0	0	0	0
MOSS	0	0	0	0	0	0
CRUST	0.2	0	0	1	3	0

Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink.

Species Code	Cottonwood			
	CWOOD-LT02		CWOOD-LT04	
	Cover Sum	Fre-quency	Cover Sum	Fre-quency
Forb				
AMBPSI	45	2	25	4
ASTMIS	11	3		
CHAERI				
CHAFEN				
CHAGLY				
CHALAT				
CHAMAC				
CHAMIS			18	2
CHELEP				
CHEPRA				
CIRUND	10	1	2	2
COMERE				
CROGLA				
CROTEX				
ERIANN				
ERILON				
EUPDAV				
EUPDEN				
EUPHEX			1	1
EVONUT				
GAUCOC				
GLYLEP			3	1
GUTSAR				
HELANN	1	1		
HETSTE				
HOFGLA				
IPOLEP				
KOCSCO				
KRALAN				
MELALB			4	2
MIRGLA				
MOLVER				
PARJAM				
PHYHIS				
POLALB				
POROLE				
PORPIL				
RATCOL				
SALTRA	13	5	23	2
SOLELA				
SOLROS				
SPHCOC				
Species Code	Cottonwood			
	CWOOD-LT02		CWOOD-LT04	
	Cover Sum	Fre-quency	Cover Sum	Fre-quency
SYMERI	60	4	17	5
TETSCA				
TRARAM				
TRITER				
ZINGRA				
Grass				
ANDGER			88	5
ARIPUR			10	1
BOTLAG	5	1		
BOUCUR	115	4	10	2
BOUGRA				
BOUHIR				
BUCDAC				
DISSPI			18	2
ELYSAN	2	2		
ELYELY				
EQULAE			9	5
ERASES				
ERASPE			3	1
ERIPIL				
LOLARU				
MUHASP			1	1
MUHTOR				
PANCAP				
PANHAL	7	1		
PANOBT	15	1		
PANVIR			3	1
SCHSCO	8	2	34	4
SORNUT			4	2
SPOAIR	18	2	46	5
SPOCRY				
TRIALB				
TRIMUT				
Shrub				
ARTFIL				
MIMBOR				
YUCGLA				
Subshrub				
ECHREI				
OPUPHA				
OPUPOL			3	1
Tree				
POPDEL	16	2		
Species Code	Cottonwood			
	CWOOD-LT02		CWOOD-LT04	
	Cover Sum	Fre-quency	Cover Sum	Fre-quency
PROGLA				
RHUMIC				
Vine				
STRLEI	1	1		

Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink (continued).

Species Code	Fire Program													
	FPRGL1G0205		FPRGL1G0409		FPRGL1G0410		FPRGL1G0411		FPRGL1G0422		FPRGL1G0423		FPRGL1G0228	
	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency
Forb														
AMBPSI					1	1	1.5	3						
ASTMIS														
CHAERI	1	2			1	2	0.5	1	0.5	1				
CHAFEN													2.5	5
CHAGLY	0.5	1												
CHALAT	2	2					0.5	1						
CHAMAC			2.5	5										
CHAMIS														
CHELEP			1	2					0.5	1	1	2		
CHEPRA					3.5	4	3	5						
CIRUND														
COMERE														
CROGLA														
CROTEX														
ERIANN					1	1								
ERILON														
EUPDAV			4.5	4									1.5	3
EUPDEN														
EUPHEX														
EVONUT	0.5	1	1.5	3	0.5	1	1.5	3						
GAUCOC			0.5	1										
GLYLEP														
GUTSAR													4	3
HELANN														
HETSTE														
HOFGLA														
IPOLEP	0.5	1	1	1										
KOCSCO														
KRALAN	4	2			9.5	4			2.5	3	3	1	1.5	2
MELALB														
MIRGLA														
MOLVER			1	2									1	2
PARJAM														
PHYHIS														
POLALB														
POROLE					0.5	1	2.5	5	0.5	1	0.5	1		
PORPIL					0.5	1								
RATCOL														
SALTRA	1.5	3	15	5	39	5	3	5	2.5	5	2.5	4	3.5	5
SOLELA			1	1	1	1	2.5	4	0.5	1	0.5	1	6	5
SOLROS									1	2	0.5	1		
SPHCOC							1.5	3	0.5	1	2.5	3	1	2
SYMERI														
TETSCA														

Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink (continued).

Species Code	Fire Program													
	FPRGL1G0205		FPRGL1G0409		FPRGL1G0410		FPRGL1G0411		FPRGL1G0422		FPRGL1G0423		FPRGL1G0228	
	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency	Cover Sum	Fre-quency
TRARAM														
TRITER			1	2										
ZINGRA											0.5	1		
Grass														
ANDGER														
ARIPUR							2	2	0.5	1			4	3
BOTLAG														
BOUCUR			48.5	5										
BOUGRA	37	5			42	4	15	5	99	5	41	4		
BOUHIR														
BUCDAC					20	4	3.5	2	1.5	2	4.5	4		
DISSPI														
ELYSAN														
ELYELY														
EQUAE														
ERASES														
ERASPE														
ERIPIL														
LOLARU									6	2				
MUHASP														
MUHTOR									1	1				
PANCAP													0.5	1
PANHAL														
PANOBT					15.5	2							25	2
PANVIR														
SCHSCO														
SORNUT														
SPOAIR														
SPOCRY	4	2	6	5	8	4	18.5	5			8	2	42	5
TRIALB														
TRIMUT														
Shrub														
ARTFIL			14	4			1	1						
MIMBOR														
YUCGLA	5.5	4	5	3	3	1								
Subshrub														
ECHREI														
OPUPHA													20	1
OPUPOL														
Tree														
POPDEL														
PROGLA	20	2	35	1	1	1	1	1			16	2		
RHUMIC														
Vine														
STRLEI														

Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink (continued).

Species Code	Honey Mesquite							
	HONEY-LT02		HONEY-LT06		HONEY-LT07		HONEY-LT10	
	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency
Forb								
AMBPSI								
ASTMIS								
CHAERI					3.5	2		
CHAFEN								
CHAGLY								
CHALAT	0.5	1	4	3				
CHAMAC								
CHAMIS								
CHELEP					2.5	4		
CHEPRA							9.5	4
CIRUND								
COMERE								
CROGLA								
CROTEX			0.5	1				
ERIANN								
ERILON			3	3				
EUPDAV	0.5	1			1	1		
EUPDEN								
EUPHEX								
EVONUT								
GAUCOC								
GLYLEP								
GUTSAR								
HELANN								
HETSTE							3.5	2
HOFGLA					5	1		
IPOLEP								
KOCSCO					0.5	1		
KRALAN								
MELALB								
MIRGLA								
MOLVER								
PARJAM								
PHYHIS								
POLALB								
POROLE								
PORPIL								
RATCOL								
SALTRA	175	5	230	5	29	5	250	5
SOLELA	3	5	0.5	1				
SOLROS					0.5	1		
SPHCOC	5.5	2			4	2		
SYMERI								
TETSCA			2	3				
TRARAM			16	4				

Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink (continued).

Species Code	Honey Mesquite							
	HONEY-LT02		HONEY-LT06		HONEY-LT07		HONEY-LT10	
	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency
TRITER								
ZINGRA							1	1
Grass								
ANDGER								
ARIPUR			5	1			3	1
BOTLAG								
BOUCUR			112.5	5	10	1	3	1
BOUGRA	67	5	25	2	205	5	36	5
BOUHIR							13	2
BUCDAC	9	3						
DISSPI								
ELYSAN								
ELYELY								
EQUJAE								
ERASES					0.5	1		
ERASPE								
ERIPIL								
LOLARU								
MUHASP								
MUHTOR								
PANCAP								
PANHAL	51	4						
PANOBT								
PANVIR								
SCHSCO								
SORNUT								
SPOAIR								
SPOCRY	18	4	5	1	28	4	10	2
TRIALB			6.5	3				
TRIMUT								
Shrub								
ARTFIL								
MIMBOR			87	3				
YUCGLA	59	3	19	3	1	1		
Subshrub								
ECHREI			0.5	1				
OPUPHA	10	2	23	2				
OPUPOL	30	1						
Tree								
POPDEL								
PROGLA	25	1	5	1	65	2	100	3
RHUMIC								
Vine								
STRLEI								

Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink (continued).

Species Code	Upland Grass											
	ULAND-03		ULAND-LT02		ULAND-LT03		ULAND-LT05		ULAND-LT06		ULAND-LT07	
	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency
Forb												
AMBPSI	1	2										
ASTMIS												
CHAERI	1.5	3					0.5	1	0.5	1		
CHAFEN												
CHAGLY												
CHALAT			0.5	1	0.5	1			0.5	1	0.5	
CHAMAC	1	2										
CHAMIS											1	
CHELEP	3	5			0.5	1			0.5	1		
CHEPRA			4	5			1.5	3				
CIRUND												
COMERE							1.5	2				
CROGLA							1	1				
CROTEX			0.5	1								
ERIANN												
ERILON									1.5	2		
EUPDAV					0.5	1						
EUPDEN							8	5				
EUPHEX							2	4				
EVONUT									1	1		
GAUCOC												
GLYLEP												
GUTSAR					5	1						
HELANN												
HETSTE							1	1				
HOFGLA												
IPOLEP												
KOCSCO			0.5	1								
KRALAN												
MELALB												
MIRGLA									30.5	3		
MOLVER	1	2										
PARJAM									3	1		
PHYHIS			5	1								
POLALB							0.5	1				
POROLE							1	1				
PORPIL												
RATCOL			1	1								
SALTRA	10.5	5	5	4	68.5	5	55	5	22	5	158	
SOLELA	1	2	6.5	3	9.5	4						
SOLROS												
SPHCOC			2	3	6	4						
SYMERI												
TETSCA												
TRARAM												

Table 3. Species cover sum and frequency for each permanent transect monitored at LAMR in 2014. Exotic species are highlighted in pink (continued).

Species Code	Upland Grass											
	ULAND-03		ULAND-LT02		ULAND-LT03		ULAND-LT05		ULAND-LT06		ULAND-LT07	
	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency	Cover Sum	Frequency
TRITER	1	2							3	1		
ZINGRA									0.5	1		
Grass												
ANDGER												
ARIPUR	10.5	2			3	1	9	3	85	3	1	
BOTLAG												
BOUCUR	5	1			25	1	70	3	12	4		
BOUGRA	0	1	67	5	44	3	6	2	113	3	122.5	
BOUHIR												
BUCDAC	3	1										
DISSPI												
ELYSAN												
ELYELY			1	1								
EQUAE												
ERASES												
ERASPE									1	1		
ERIPIL									4	3		
LOLARU												
MUHASP							33	3			7	
MUHTOR					3	1						
PANCAP												
PANHAL					8.5	3						
PANOBT	12	5			110	2						
PANVIR												
SCHSCO							0.5	1				
SORNUT												
SPOAIR												
SPOCRY	2.5	4	19	4	38	3	47.5	5	3	3	3.5	
TRIALB												
TRIMUT					1	1						
Shrub												
ARTFIL	2.5	4					1.5	2				
MIMBOR									55	2		
YUCGLA					25	3	49	4	1	1	6	
Subshrub												
ECHREI												
OPUPHA					3	1						
OPUPOL												
Tree												
POPDEL												
PROGLA	1	1			10	1						
RHUMIC									17	3		
Vine												
STRLEI												

Table 4. All plant species detected during grassland monitoring in 2011 and exotic monitoring in 2011 and 2014 at LAMR. Exotic species are highlighted in pink.

Species Code	LifeForm	Scientific Name	Common Name	Primary Duration
AMARET	Forb	<i>Amaranthus retroflexus</i>	redroot pigweed	Annual
AMBPSI	Forb	<i>Ambrosia psilostachya</i>	western ragweed	Perennial
ANDGER	Grass	<i>Andropogon gerardii</i>	big bluestem	Perennial
ARIPUR	Grass	<i>Aristida purpurea</i>	purple threeawn	Perennial
ARTFIL	Shrub	<i>Artemisia filifolia</i>	sand sagebrush	Perennial
ASTMIS	Forb	<i>Astragalus missouriensis</i>	missouri milkvetch	Perennial
BOTISC	Grass	<i>Bothriochloa ischaemum</i>	kr bluestem	Perennial
BOTLAG	Grass	<i>Bothriochloa laguroides</i>	silver bluestem	Perennial
BOUCUR	Grass	<i>Bouteloua curtipendula</i>	sideoats grama	Perennial
BOUGRA	Grass	<i>Bouteloua gracilis</i>	blue grama	Perennial
BOUHIR	Grass	<i>Bouteloua hirsuta</i>	hairy grama	Perennial
BROCAT	Grass	<i>Bromus catharticus</i>	rescue grass	Annual/Perennial
BROJAP	Grass	<i>Bromus japonicus</i>	Japanese brome	Annual
BROTEC	Grass	<i>Bromus tectorum</i>	cheatgrass	Annual
BUCDAC	Grass	<i>Buchloe dactyloides</i>	buffalograss	Perennial
CHAERI	Forb	<i>Chaetopappa ericoides</i>	baby white aster	Perennial
CHAFEN	Forb	<i>Chamaesyce fendleri</i>	fendler's sandmat	Perennial
CHAGLY	Forb	<i>Chamaesyce glyptosperma</i>	rib-seed sandmat	Annual
CHALAT	Forb	<i>Chamaesyce lata</i>	hoary sandmat	Perennial
CHAMAC	Forb	<i>Chamaesyce maculata</i>	spotted sandmat	Annual
CHAMIS	Forb	<i>Chamaesyce missurica</i>	prairie sandmat	Annual
CHEALB	Forb	<i>Chenopodium album</i>	common lambsquarters	Annual
CHELEP	Forb	<i>Chenopodium leptophyllum</i>	narrowleaf goosefoot	Annual
CHEPRA	Forb	<i>Chenopodium pratericola</i>	desert goosefoot	Annual
CIRARV	Forb	<i>Cirsium arvense</i>	canada thistle	Perennial
CIRUND	Forb	<i>Cirsium undulatum</i>	wavyleaf thistle	Biennial
COMERE	Forb	<i>Commelina erecta</i>	erect dayflower	Perennial
CONARV	Forb	<i>Convolvulus arvensis</i>	field bindweed	Perennial
CROGLA	Forb	<i>Croton glandulosus</i>	vente conmigo	Annual
CROTEX	Forb	<i>Croton texensis</i>	texas croton	Annual
CYNDAC	Grass	<i>Cynodon dactylon</i>	Bermudagrass	Perennial
DISSPI	Grass	<i>Distichlis spicata</i>	inland saltgrass	Perennial
ECHREI	Subshrub	<i>Echinocereus reichenbachii</i>	lace hedgehog cactus	Perennial
ELYSAN	Grass	<i>Elymus canadensis</i>	canada wildrye	Perennial
ELYELY	Grass	<i>Elymus elymoides</i>	bottlebrush squirreltail	Perennial
EQUAE	Grass	<i>Equisetum laevigatum</i>	smooth scouting rush	Perennial
ERASES	Grass	<i>Eragrostis sessilispica</i>	tumble lovegrass	Perennial
ERASPE	Grass	<i>Eragrostis spectabilis</i>	purple lovegrass	Perennial
ERIANN	Forb	<i>Erigeron annuus</i>	annual fleabane	Annual
ERILON	Forb	<i>Eriogonum longifolium</i>	longleaf buckwheat	Perennial
ERIPIL	Grass	<i>Erioneuron pilosum</i>	hairy tridens	Perennial
EUPDAV	Forb	<i>Euphorbia davidii</i>	davids spurge	Annual

Table 4. All plant species detected during grassland monitoring in 2011 and exotic monitoring in 2011 and 2014 at LAMR. Exotic species are highlighted in pink. (continued).

Species Code	LifeForm	Scientific Name	Common Name	Primary Duration
EUPDEN	Forb	<i>Euphorbia dentata</i>	toothed spurge	Annual
EUPHEX	Forb	<i>Euphorbia hexagona</i>	sixangle spurge	Annual
EVONUT	Forb	<i>Evolvulus nuttallianus</i>	shaggy dwarf morning glory	Perennial
GAUCOC	Forb	<i>Gaura coccinea</i>	scarlet guara	Perennial
GLYLEP	Forb	<i>Glycyrrhiza lepidota</i>	wild licorice	Perennial
GUTSAR	Forb	<i>Gutierrezia sarothrae</i>	broom snakeweed	Perennial
HELANN	Forb	<i>Helianthus annuus</i>	common sunflower	Annual
HETSTE	Forb	<i>Heterotheca stenophylla</i>	stiffleaf false goldenaster	Perennial
HOFGLA	Forb	<i>Hoffmannseggia glauca</i>	hog potato	Perennial
IPOLEP	Forb	<i>Ipomoea leptophylla</i>	bush morning glory	Perennial
KOCSCO	Forb	<i>Kochia scoparia</i>	kochia	Annual
KRALAN	Forb	<i>Krameria lanceolata</i>	trailing ratany	Perennial
LACSER	Forb	<i>Lactuca serriola</i>	prickly lettuce	Annual
LOLARU	Grass	<i>Lolium arundinaceum</i>	tall fescue	Perennial
MELALB	Forb	<i>Melilotus officinalis</i>	white sweetclover	Annual
MELOFF	Forb	<i>Melilotus officinalis</i>	yellow sweetclover	Annual
MIMBOR	Shrub	<i>Mimosa borealis</i>	fragrant mimosa	Perennial
MIRGLA	Forb	<i>Mirabilis glabra</i>	smooth four o'clock	Perennial
MOLVER	Forb	<i>Mollugo verticillata</i>	carpetweed	Annual
MUHASP	Grass	<i>Muhlenbergia asperifolia</i>	alkali muhly	Perennial
MUHTOR	Grass	<i>Muhlenbergia torreyi</i>	ring muhly	Perennial
OPUPHA	Subshrub	<i>Opuntia phaeacantha</i>	brwnspine pricklypear cactus	Perennial
OPUPOL	Subshrub	<i>Opuntia polyacantha</i>	plains pricklypear cactus	Perennial
PANCAP	Grass	<i>Panicum capillare</i>	annual witchgrass	Annual
PANHAL	Grass	<i>Panicum hallii</i>	hall's panicgrass	Perennial
PANOBT	Grass	<i>Panicum obtusum</i>	vine mesquite	Perennial
PANVIR	Grass	<i>Panicum virgatum</i>	switchgrass	Perennial
PARJAM	Forb	<i>Paronychia jamesii</i>	james nailwort	Perennial
PHYHIS	Forb	<i>Physalis hispida</i>	prairie groundcherry	Perennial
POLALB	Forb	<i>Polygala alba</i>	white milkwort	Perennial
POLARE	Forb	<i>Polygonum arenastrum</i>	prostrate knotweed	Annual/Perennial
POPDEL	Tree	<i>Populus deltoides</i>	plains cottonwood	Perennial
POROLE	Forb	<i>Portulaca oleracea</i>	common purslane	Annual
PORPIL	Forb	<i>Portulaca pilosa</i>	chisme	Annual/Perennial
PROGLA	Tree	<i>Prosopis glandulosa</i>	honey mesquite	Perennial
RATCOL	Forb	<i>Ratibida columnifera</i>	redspike mexican hat	Perennial
RHUMIC	Tree	<i>Rhus microphylla</i>	littleleaf sumac	Perennial
SALTRA	Forb	<i>Salsola tragus</i>	prickly Russian thistle	Annual
SCHSCO	Grass	<i>Schizachyrium scoparium</i>	little bluestem	Perennial
SOLELA	Forb	<i>Solanum elaeagnifolium</i>	silverleaf nightshade	Perennial
SOLROS	Forb	<i>Solanum rostratum</i>	buffalobur	Annual
SORHAL	Grass	<i>Sorghum halepense</i>	Johnsongrass	Perennial

Table 4. All plant species detected during grassland monitoring in 2011 and exotic monitoring in 2011 and 2014 at LAMR. Exotic species are highlighted in pink. (continued).

Species Code	LifeForm	Scientific Name	Common Name	Primary Duration
SORNUT	Grass	<i>Sorghastrum nutans</i>	indiangrass	Perennial
SPHCOC	Forb	<i>Sphaeralcea coccinea</i>	scarlet globemallow	Perennial
SPOAIR	Grass	<i>Sporobolus airoides</i>	alkali sacaton	Perennial
SPOCRY	Grass	<i>Sporobolus cryptandrus</i>	sand dropseed	Perennial
STRLEI	Vine	<i>Strophostyles leiosperma</i>	slickseed fuzzybean: slick-seed fuzzy-bean	Annual
SYMERI	Forb	<i>Symphyotrichum ericoides</i>	white heath aster	Perennial
TAMCHI	Tree	<i>Tamarix chinensis</i>	chinese saltcedar	Perennial
TAMRAM	Tree	<i>Tamarix ramosissima</i>	saltcedar	Perennial
TETSCA	Forb	<i>Tetaneuris scaposa</i>	stemmy four-nerve daisy	Perennial
TRADUB	Forb	<i>Tragopogon dubius</i>	western salsify	Annual
TRARAM	Forb	<i>Tragia ramosa</i>	branched noseburn	Perennial
TRIAES	Grass	<i>Triticum aestivum</i>	wheat	Annual
TRIALB	Grass	<i>Tridens albescens</i>	white tridens	Perennial
TRIMUT	Grass	<i>Tridens muticus</i>	slim tridens	Perennial
TRITER	Forb	<i>Tribulus terrestris</i>	puncturevine	Annual
YUCGLA	Shrub	<i>Yucca glauca</i>	soft soapweed yucca	Perennial
ZINGRA	Forb	<i>Zinnia grandiflora</i>	plains zinnia	Perennial

Exotic Monitoring Results

Exotic plant monitoring followed the protocol Multi-Network Exotic Plant Monitoring Protocol and Standard Operating Procedures (Folts-Zettner et al. 2013). Methodology requires a series of discrete 50-meter blocks along designated vectors chosen for high-probability of introduction. Exotic species detected within each block are assigned densities, and their proximity to the vector itself is divided into various Distance Classes (Figure 3).

Monitoring occurred June 16-18, 2014 and included the Bates Canyon, Blue West and Fritch Fortress roadsides of the park (Figure 4). These vectors have been previously monitored mid-June, 2011. It should be noted that 2011 was the beginning of years of severe to exceptional drought, including early 2014. Data summarized in this report compares the results of 2014 monitoring to that detected in 2011.

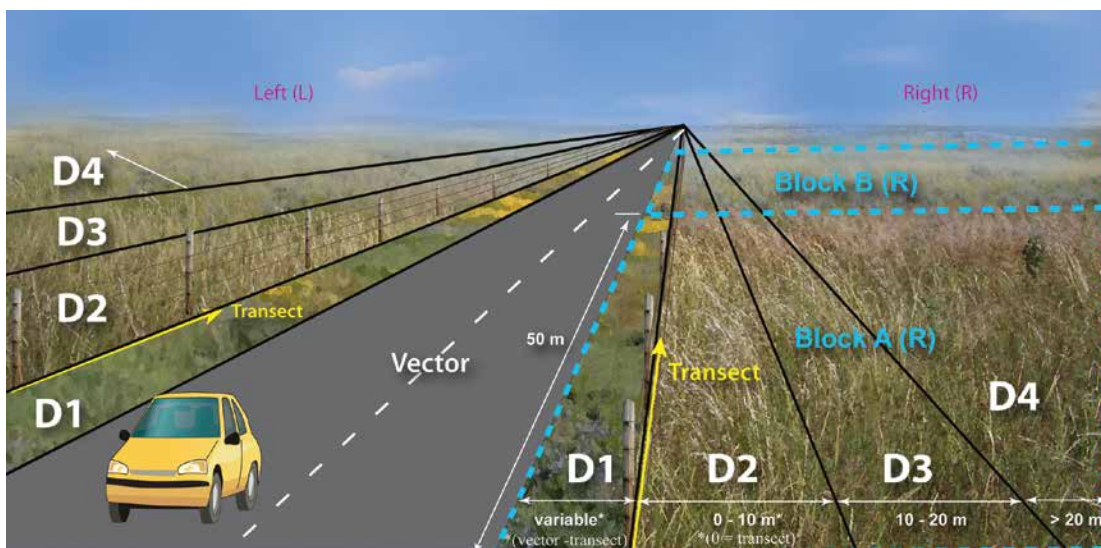


Figure 4. Layout of Vector Blocks and Distance Classes along a vector.

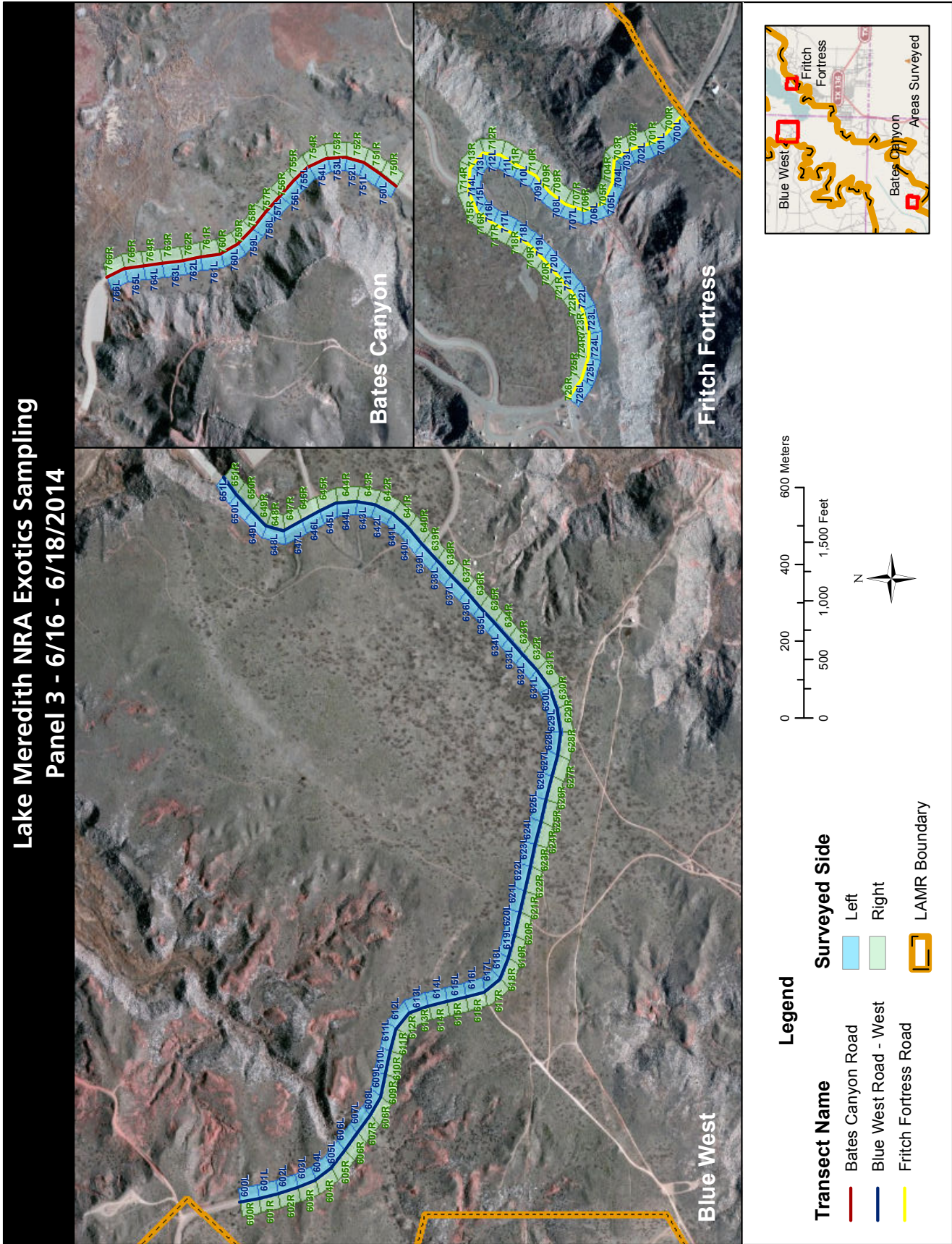


Figure 5. Panel 3 numbered vector blocks monitored at LAMR in both 2011 and 2014.

Table 5 presents all exotic species detected during both exotic and grassland (secondary transects) monitoring in both years as well as the number and percentage of vector blocks (N=192) and transects (N=19)(Figures 5-7) in which these species were found.

Table 5. Number and percentage comparison of unit detections of exotic species found in repeated monitoring of vector blocks and permanent transects at LAMR.

Scientific Name	Common Name	2011		2014		2011		2014	
		Primary Blocks (N=104)		Primary Blocks (N=192)		Secondary Transects (N=21)		Secondary Transects (N=19)	
		Total	% Blocks	Total	% Blocks	Total	% Blocks	Total	% Blocks
<i>Amaranthus retroflexus</i>	redroot pigweed	–	–	3	1.56%				
<i>Bothriochloa ischaemum</i>	kr bluestem	–	–	62	32.29%				
<i>Bromus catharticus</i>	rescue grass	–	–	4	2.08%				
<i>Bromus japonicus</i>	Japanese brome	–	–	1	0.52%				
<i>Bromus tectorum</i>	cheatgrass	10	9.62%	5	2.60%				
<i>Chenopodium album</i>	common lambsquarters	–	–	2	1.04%	1	4.76%	–	–
<i>Chenopodium glaucum</i>	oakleaf goosefoot					1	4.76%	–	–
<i>Cirsium arvense</i>	canada thistle	72	69.23%			–	–	–	–
<i>Convolvulus arvensis</i>	field bindweed	1	0.96%	5	2.60%	–	–	–	–
<i>Cynodon dactylon</i>	Bermudagrass	–	–	3	1.56%	–	–	–	–
<i>Euphorbia davidii</i>	davids spurge	–	–	1	0.52%	–	–	5	26.32%
<i>Euphorbia dentata</i>	toothed spurge					–	–	1	5.26%
<i>Kochia scoparia</i>	kochia	1	0.96%	33	17.19%	4	19.05%	2	10.53%
<i>Lactuca serriola</i>	prickly lettuce	–	–	3	1.56%	–	–	–	–
<i>Lolium arundinaceum</i>	tall fescue					–	–	1	5.26%
<i>Melilotus officinalis</i>	white sweetclover					2	9.52%	1	5.26%
<i>Melilotus officinalis</i>	yellow sweetclover	1	0.96%	–	–	–	–	–	–
No Plant	no plant	–	–	6	3.13%	9	42.86%	–	–
<i>Polygonum arenastrum</i>	prostrate knotweed	–	–	1	0.52%	–	–	–	–
<i>Salsola tragus</i>	prickly Russian thistle	28	26.92%	167	86.98%	8	38.10%	19	100.00%
<i>Sorghum halepense</i>	Johnsongrass	4	3.85%	10	5.21%	1	4.76%	–	–
<i>Tamarix chinensis</i>	chinese saltcedar	2	1.92%	–	–	–	–	–	–
<i>Tamarix ramosissima</i>	saltcedar	–	–	2	1.04%	–	–	–	–
<i>Tragopogon dubius</i>	western salsify	1	0.96%	16	8.33%	–	–	–	–
<i>Triticum aestivum</i>	wheat	2	1.92%	–	–	–	–	–	–
<i>Tribulus terrestris</i>	puncturevine	11	10.58%	8	4.17%	–	–	3	15.79%

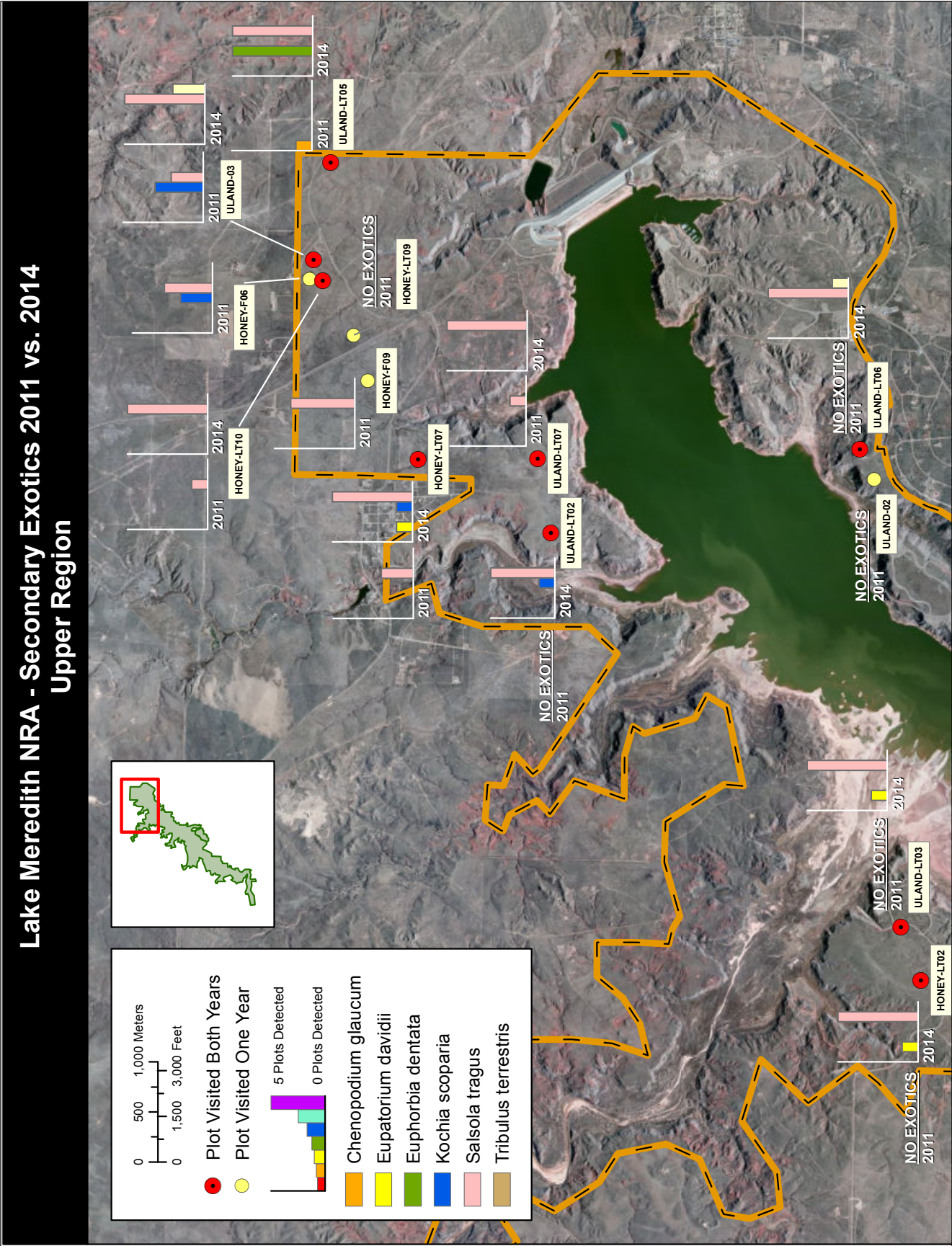


Figure 5. Comparison of exotics detected in 2011 and 2014 upper region grassland monitoring permanent transects at LAMR.

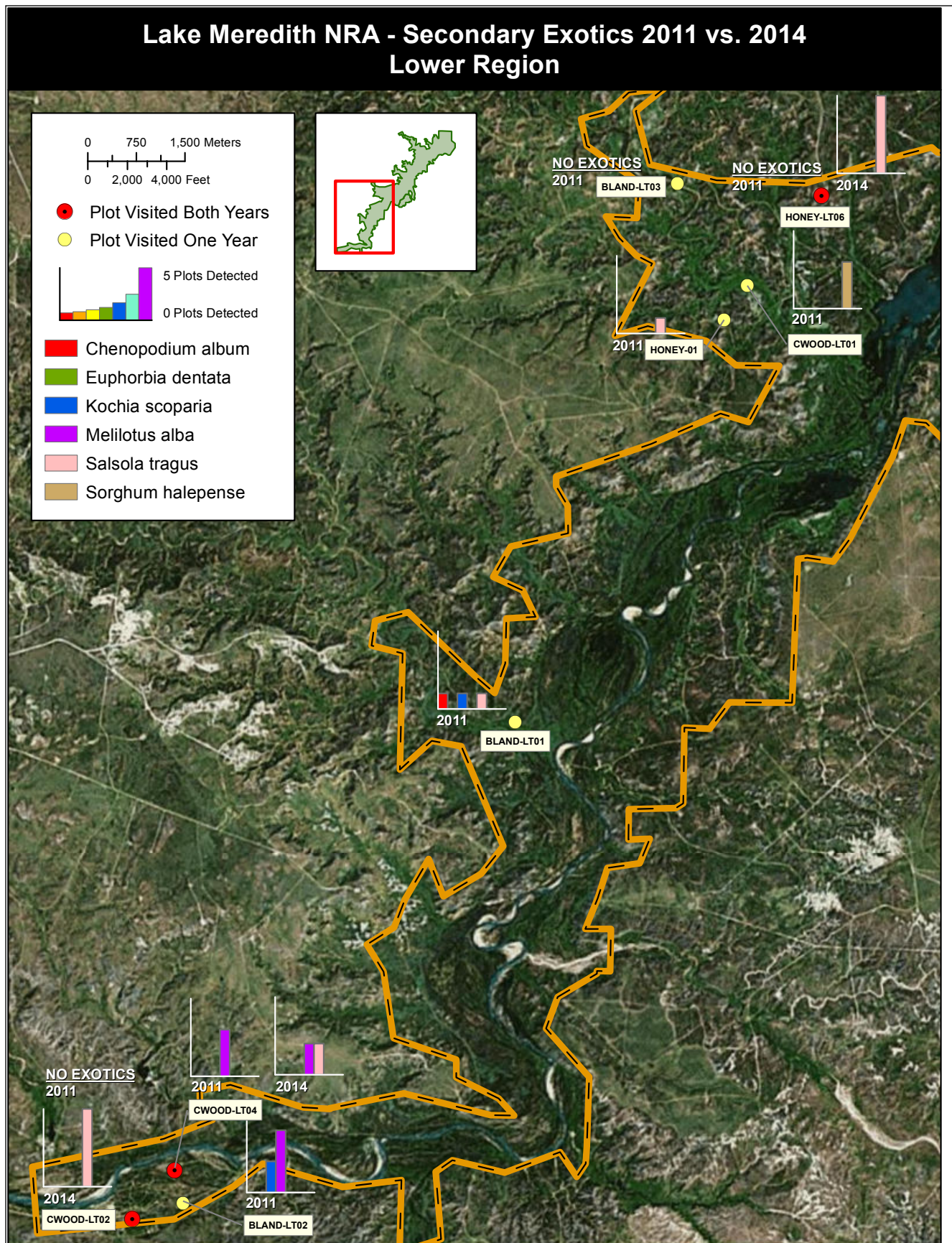


Figure 6. Comparison of exotics detected in 2011 and 2014 lower region grassland monitoring permanent transects at LAMR.

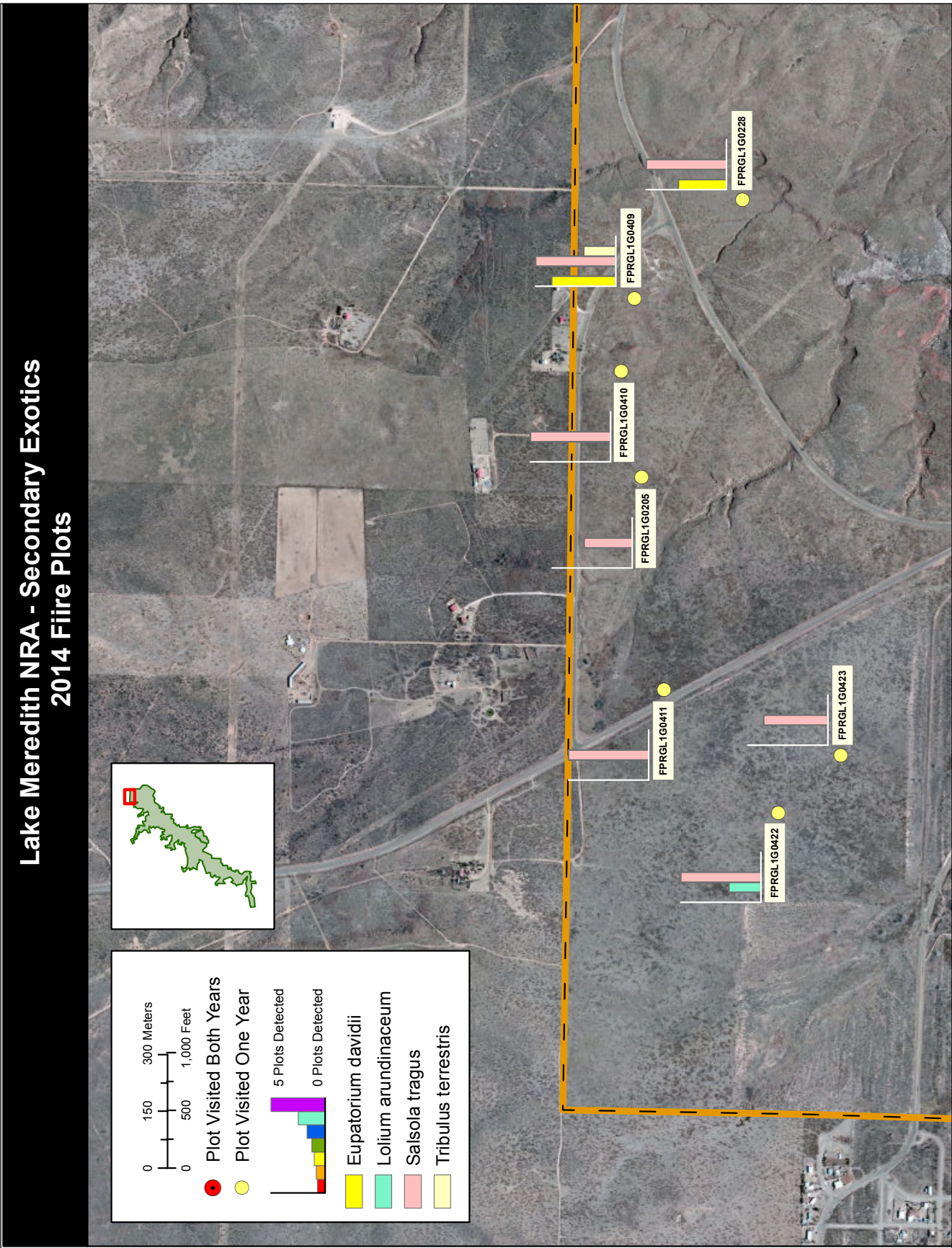


Figure 7. Exotics detected in 2014 at fire monitoring permanent transects at LAMR.

The density of a detection of any given exotic species informs us of the invasion stage of that area. A Density Code of 1 will point to either a new introduction in an area or a lack of suitable resources for that species to establish and spread. Conversely, a Density Code of 4 denotes a matrix of the exotic species that has successfully colonized the site and pushed out all native species. Table 6 is a comparison of the number of blocks containing that density in 2011 and 2014 in two Distance Classes. Distance Class 1 is from immediately along the vector to 2 meters into the landscape or the depth of the mowed verge (whichever is greater). Distance Class 2 is a constant 10 meters into the landscape beginning at the interior edge of Distance Class 1. This minimum depth of 12 meters will give the resource manager an idea of the ability of a given exotic species to invade into the interior of a landscape.

Table 6. A comparison of the number of blocks containing a given density in 2011 and 2014 in two Distance Classes.

Species Code	Scientific Name	Common Name	Density Code	Distance Class 1		Distance Class 2	
				2011	2014	2011	2014
AMARET	<i>Amaranthus retroflexus</i>	redroot pigweed	1		4		4
			2		8		
BOTISC	<i>Bothriochloa ischaemum</i>	kr bluestem	1		19		2
			2		89		42
			3		5		4
BROCAT	<i>Bromus catharticus</i>	rescue grass	1		2		
			2		2		
BROJAP	<i>Bromus japonicus</i>	Japanese brome	2		1		
BROTEC	<i>Bromus tectorum</i>	cheatgrass	1	1			
			2	6	5	9	
			3	2			
CHEALB	<i>Chenopodium album</i>	common lambsquarters	1				1
			2				1
CIRARV	<i>Cirsium arvense</i>	canada thistle	1	18		16	
			2	47		14	
CONARV	<i>Convolvulus arvensis</i>	field bindweed	1	1	4		2
			2		4		
CYNDAC	<i>Cynodon dactylon</i>	Bermudagrass	1		8		
			2		4		
EUPDAV	<i>Euphorbia davidii</i>	davids spurge	1		1		
KOCSCO	<i>Kochia scoparia</i>	kochia	1	1	12		4
			2		32		34
LACSER	<i>Lactuca serriola</i>	prickly lettuce	1		2		1
			2		1		
MELOFF	<i>Melilotus officinalis</i>	yellow sweetclover	1	1			
POLARE	<i>Polygonum arenastrum</i>	prostrate knotweed	2				1
SALTRA	<i>Salsola tragus</i>	prickly Russian thistle	1	6	32		2
			2	13	185	16	297
			3				9
SORHAL	<i>Sorghum halepense</i>	Johnsongrass	1	1	2		
			2	3	11	2	15
			3		2		

Density Code Key: 1 = one to five individual plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; X = non-detect.

Species Code	Scientific Name	Common Name	Density Code	Distance Class 1		Distance Class 2	
				2011	2014	2011	2014
TAMCHI	<i>Tamarix chinensis</i>	chinese saltcedar	1			1	
			2			1	
TAMRAM	<i>Tamarix ramosissima</i>	saltcedar	1				1
			2				1
TRADUB	<i>Tragopogon dubius</i>	western salsify	1	1	12		2
			2		4		2
TRIAES	<i>Triticum aestivum</i>	wheat	2			2	
TRITER	<i>Tribulus terrestris</i>	puncturevine	1	9	5		1
			2	2	14		6

Density Code Key: 1 = one to five individual plants; 2 = scattered patches; 3 = evenly distributed patches; 4 = matrix; X = non-detect.

Table 7 is included for the benefit of those resource managers with an active exotic management program. This table lists the specific species found in each vector block and the Density Code of that species in each Distance Class.

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class.

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
600L	<i>No Plant</i>	no plant	0	0	0	0				
600L	<i>Salsola tragus</i>	prickly Russian thistle					1	1	0	0
600R	<i>No Plant</i>	no plant	0	0	0	0				
600R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
601L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
601L	<i>Salsola tragus</i>	prickly Russian thistle	0	2	2	0	2	0	2	0
601R	<i>Cirsium arvense</i>	canada thistle	2	2	0	0				
601R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
601R	<i>Sorghum halepense</i>	Johnsongrass					0	1	0	0
602L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
602L	<i>Salsola tragus</i>	prickly Russian thistle	0	2	2	0	2	0	2	2
602R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
602R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
603L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	1	0	0
603L	<i>Cirsium arvense</i>	canada thistle	0	1	0	0				
603L	<i>Salsola tragus</i>	prickly Russian thistle					0	0	2	2
603R	<i>No Plant</i>	no plant	0	0	0	0				
603R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
604L	<i>No Plant</i>	no plant	0	0	0	0	0	0	0	0
604R	<i>No Plant</i>	no plant	0	0	X	0				
604R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	0	0
605L	<i>No Plant</i>	no plant	0	0	X	X				
605L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	X	X
605R	<i>No Plant</i>	no plant	0	0	X	0				
605R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	0	0
606L	<i>Cirsium arvense</i>	canada thistle	1	0	X	X				
606L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
606R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
606R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
607L	<i>Kochia scoparia</i>	kochia	1	0	X	X				
607L	<i>Salsola tragus</i>	prickly Russian thistle					0	2	0	0
607L	<i>Tamarix chinensis</i>	chinese saltcedar	0	1	X	X				
607L	<i>Tamarix ramosissima</i>	saltcedar					2	0	1	0
607R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
607R	<i>Tamarix chinensis</i>	chinese saltcedar	0	2	2	0				
607R	<i>Tamarix ramosissima</i>	saltcedar					1	0	0	0
608L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
608L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
608L	<i>Convolvulus arvensis</i>	field bindweed					0	1	0	0
608R	<i>Cirsium arvense</i>	canada thistle	0	1	X	X				
608R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
609L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
609L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
609R	<i>Cirsium arvense</i>	canada thistle	0	2	0	0				
609R	<i>Salsola tragus</i>	prickly Russian thistle	2	2	2	0	2	2	2	0
610L	<i>Cirsium arvense</i>	canada thistle	1	1	0	0				
610L	No Plant	no plant					0	0	0	0
610R	<i>Cirsium arvense</i>	canada thistle	2	2	0	0				
610R	No Plant	no plant					0	0	0	0
611L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
611L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	0	X
611L	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
611R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
611R	No Plant	no plant	0	0	0	0				
612L	No Plant	no plant	0	0	X	X				
612L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	X	X
612R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
612R	<i>Salsola tragus</i>	prickly Russian thistle	2	2	0	0				
613L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
613L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
613L	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
613R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
613R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
614L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
614L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
614L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
614L	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
614R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
614R	No Plant	no plant	0	0	0	0				
615L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	1	0	0
615L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
615L	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
615R	No Plant	no plant	0	0	0	0	0	0	0	0
616L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	1	0	0
616L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
616R	No Plant	no plant	0	0	0	0				
616R	<i>Salsola tragus</i>	prickly Russian thistle					2	1	0	0
617L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
617L	<i>Cirsium arvense</i>	canada thistle	2	0	X	X				
617L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
617L	<i>Tribulus terrestris</i>	puncturevine	1	0	X	X				
617R	<i>Cirsium arvense</i>	canada thistle	1	2	0	0				
617R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	2	1	0	0
618L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
618L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
618R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	1	0	0
618R	<i>Salsola tragus</i>	prickly Russian thistle	0	2	2	2	0	2	0	0
619L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
619L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
619R	<i>Bothriochloa ischaemum</i>	kr bluestem					1	1	0	0
619R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
619R	<i>Melilotus officinalis</i>	yellow sweetclover	1	0	0	0				
619R	<i>Tribulus terrestris</i>	puncturevine	2	0	0	0				
620L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
620L	<i>Salsola tragus</i>	prickly Russian thistle					2	1	2	0
620R	<i>Bothriochloa ischaemum</i>	kr bluestem					1	1	0	0
620R	No Plant	no plant	0	0	0	0				
620R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
621L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
621L	No Plant	no plant					0	0	0	0
621R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
621R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
622L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
622L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
622L	<i>Salsola tragus</i>	prickly Russian thistle					2	1	2	0
622L	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
622R	<i>Cirsium arvense</i>	canada thistle	0	2	0	0				
622R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
622R	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
623L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
623L	<i>Salsola tragus</i>	prickly Russian thistle	1	0	0	0	2	0	2	0
623R	<i>Bromus tectorum</i>	cheatgrass	2	2	0	0				
623R	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
623R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
624L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
624L	<i>Salsola tragus</i>	prickly Russian thistle					3	0	2	0
624R	<i>Bromus tectorum</i>	cheatgrass	2	2	0	0				
624R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
624R	<i>Salsola tragus</i>	prickly Russian thistle	0	2	0	0	2	0	2	2
624R	<i>Sorghum halepense</i>	Johnsongrass					0	1	0	0
624R	<i>Tribulus terrestris</i>	puncturevine	2	0	0	0				
625L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
625L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
625L	<i>Salsola tragus</i>	prickly Russian thistle					3	0	2	2
625L	<i>Sorghum halepense</i>	Johnsongrass	1	0	0	0				
625R	<i>Bromus tectorum</i>	cheatgrass	0	2	0	0				
625R	<i>Salsola tragus</i>	prickly Russian thistle					0	0	2	2
626L	<i>Bromus tectorum</i>	cheatgrass	2	2	0	0				
626L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
626L	<i>Salsola tragus</i>	prickly Russian thistle	1	0	0	0	3	1	2	2
626R	<i>Bromus tectorum</i>	cheatgrass	3	0	0	0				
626R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	1	0	2	0
627L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
627L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	3	2
627R	<i>Bromus tectorum</i>	cheatgrass	3	2	0	0				
627R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	2	0	2	2
628L	<i>Bromus tectorum</i>	cheatgrass	1	2	0	0				
628L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
628L	<i>Salsola tragus</i>	prickly Russian thistle					3	2	3	0
628R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	2	2	2	0
629L	<i>Bromus tectorum</i>	cheatgrass	2	2	0	0				
629L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
629L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	3	2
629L	<i>Sorghum halepense</i>	Johnsongrass	2	2	0	0	2	2	0	0
629R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	2	2	0	0
630L	<i>Bromus tectorum</i>	cheatgrass	2	2	0	0				
630L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
630L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	3	2
630L	<i>Sorghum halepense</i>	Johnsongrass	2	2	0	0	2	2	0	0
630L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
630R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	2	2	2	0
631L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
631L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
631L	<i>Triticum aestivum</i>	wheat	0	2	0	0				
631R	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
631R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
632L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
632L	<i>Convolvulus arvensis</i>	field bindweed					0	1	0	0
632L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
632L	<i>Tragopogon dubius</i>	western salsify	1	0	0	0				
632L	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
632R	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
632R	<i>Salsola tragus</i>	prickly Russian thistle	2	2	0	0	2	0	2	0
632R	<i>Sorghum halepense</i>	Johnsongrass	2	0	0	0				

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
633L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
633L	<i>Salsola tragus</i>	prickly Russian thistle	1	0	0	0	2	0	2	2
633L	<i>Triticum aestivum</i>	wheat	0	2	0	0				
633R	<i>Cirsium arvense</i>	canada thistle	2	2	0	X				
633R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
634L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
634L	<i>Salsola tragus</i>	prickly Russian thistle					3	0	3	2
634R	<i>Cirsium arvense</i>	canada thistle	2	2	0	0				
634R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
635L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
635L	<i>Salsola tragus</i>	prickly Russian thistle	1	2	0	0	3	2	3	2
635R	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
635R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
636L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
636L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
636L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
636R	<i>Cirsium arvense</i>	canada thistle	2	2	0	0				
636R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
637L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
637L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
637L	<i>Convolvulus arvensis</i>	field bindweed					1	1	0	0
637L	<i>Salsola tragus</i>	prickly Russian thistle	0	2	2	0	2	1	3	2
637R	<i>Cirsium arvense</i>	canada thistle	2	2	0	X				
637R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
638L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
638L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
638L	<i>Salsola tragus</i>	prickly Russian thistle	0	2	2	0	2	0	2	2
638R	<i>Cirsium arvense</i>	canada thistle	2	1	0	X				
638R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
639L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
639L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
639L	<i>Salsola tragus</i>	prickly Russian thistle	0	2	0	0	2	0	2	2
639R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
639R	<i>Cirsium arvense</i>	canada thistle	2	2	0	X				
639R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
640L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
640L	<i>Cirsium arvense</i>	canada thistle	2	2	0	0				
640L	<i>Salsola tragus</i>	prickly Russian thistle	0	2	0	0	2	0	2	2
640R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
640R	<i>No Plant</i>	no plant	0	0	0	0				
640R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
641L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
641L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
641L	<i>Salsola tragus</i>	prickly Russian thistle	0	2	0	0	3	0	3	3
641R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
641R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
642L	<i>Bromus tectorum</i>	cheatgrass	2	2	0	0				
642L	<i>Cirsium arvense</i>	canada thistle	1	0	0	0				
642L	<i>Salsola tragus</i>	prickly Russian thistle	1	2	0	0	3	0	3	2
642L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
642L	<i>Tribulus terrestris</i>	puncturevine	1	0	0	0				
642R	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
642R	<i>Salsola tragus</i>	prickly Russian thistle	2	2	0	0	2	2	2	2
643L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
643L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
643L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
643L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
643R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	2	2	2	3
644L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
644L	<i>Cirsium arvense</i>	canada thistle	2	1	0	0				
644L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
644R	No Plant	no plant	0	0	0	0				
644R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
645L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
645L	<i>Cirsium arvense</i>	canada thistle	2	0	0	0				
645L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
645L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
645R	<i>Cirsium arvense</i>	canada thistle	2	2	0	X				
645R	<i>Salsola tragus</i>	prickly Russian thistle	2	2	0	X	2	2	2	0
646L	<i>Cirsium arvense</i>	canada thistle	0	1	X	X				
646L	<i>Kochia scoparia</i>	kochia					0	1	X	X
646L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
646R	<i>Cirsium arvense</i>	canada thistle	0	2	2	2				
646R	<i>Kochia scoparia</i>	kochia					2	2	0	0
646R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
647L	<i>Cirsium arvense</i>	canada thistle	1	0	X	X				
647L	<i>Convolvulus arvensis</i>	field bindweed					1	1	X	X
647L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
647R	No Plant	no plant	0	0	X	X				
647R	<i>Salsola tragus</i>	prickly Russian thistle					0	1	X	X
648L	<i>Convolvulus arvensis</i>	field bindweed	1	0	X	X				
648L	No Plant	no plant	0	0	X	X				
648L	<i>Salsola tragus</i>	prickly Russian thistle					3	2	X	X
648R	<i>Salsola tragus</i>	prickly Russian thistle	2	0	0	0	2	2	X	X

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
649L	<i>No Plant</i>	no plant	0	0	X	X				
649L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
649R	<i>Cirsium arvense</i>	canada thistle	2	0	X	X				
649R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
650L	<i>No Plant</i>	no plant	0	0	X	X				
650L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
650R	<i>Cirsium arvense</i>	canada thistle	0	2	0	X				
650R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
651L	<i>Salsola tragus</i>	prickly Russian thistle	1	0	X	X	2	2	X	X
651R	<i>Cirsium arvense</i>	canada thistle	1	0	0	X				
651R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
700L	<i>Sorghum halepense</i>	Johnsongrass					2	2	0	0
700R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
700R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
700R	<i>Sorghum halepense</i>	Johnsongrass					2	0	0	0
701L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
701R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	1	0
701R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
702L	<i>Amaranthus retroflexus</i>	redroot pigweed					0	2	0	0
702L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
702R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
703L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
703R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	0	X
704L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
704R	<i>Amaranthus retroflexus</i>	redroot pigweed					2	2	0	0
704R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	X
705L	<i>Salsola tragus</i>	prickly Russian thistle					2	1	2	0
705R	<i>Amaranthus retroflexus</i>	redroot pigweed					0	1	0	0
705R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	0	0
706L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
706R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
707L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
707R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
708L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
708R	<i>Sorghum halepense</i>	Johnsongrass					2	2	X	X
709L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	1	X	X
709L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
709R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
710L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
710R	<i>Kochia scoparia</i>	kochia					0	2	X	X
710R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
711L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
711R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
712L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
712R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
713L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	1	X	X
713L	<i>Convolvulus arvensis</i>	field bindweed					0	2	X	X
713L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	X	X
713R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
714L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
714L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
714R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
714R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
715L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	X
715L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	X
715R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
716L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	X
716L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	X
716R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
716R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
716R	<i>Tribulus terrestris</i>	puncturevine					0	2	0	0
717L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
717L	<i>Kochia scoparia</i>	kochia					0	1	0	0
717L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	2
717R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
717R	<i>Tribulus terrestris</i>	puncturevine					0	1	0	0
718L	<i>Kochia scoparia</i>	kochia					2	2	0	0
718L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
718R	<i>Cynodon dactylon</i>	Bermudagrass					0	1	0	0
718R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
719L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
719L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
719R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
719R	<i>Salsola tragus</i>	prickly Russian thistle					2	1	2	0
720L	<i>Bothriochloa ischaemum</i>	kr bluestem					3	3	2	0
720L	<i>Kochia scoparia</i>	kochia					2	2	0	0
720L	<i>Salsola tragus</i>	prickly Russian thistle					0	0	2	2
720R	<i>Salsola tragus</i>	prickly Russian thistle					2	1	0	0
721L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
721L	<i>Kochia scoparia</i>	kochia					0	2	0	0
721L	<i>Tribulus terrestris</i>	puncturevine					0	2	0	0
721R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	0	0
722L	<i>Kochia scoparia</i>	kochia					2	2	0	0
722L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
722L	<i>Tribulus terrestris</i>	puncturevine					2	2	0	0

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
722R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
722R	<i>Cynodon dactylon</i>	Bermudagrass					0	2	0	0
722R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
723L	<i>Kochia scoparia</i>	kochia					1	1	0	X
723L	<i>Salsola tragus</i>	prickly Russian thistle					2	1	2	X
723R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	1	0	0
723R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
724L	<i>No Plant</i>	no plant					0	0	0	0
724R	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
725L	<i>Kochia scoparia</i>	kochia					0	2	0	0
725L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	0	0
725R	<i>Salsola tragus</i>	prickly Russian thistle					2	1	2	0
726L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
726L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	0	0
726R	<i>Cynodon dactylon</i>	Bermudagrass					0	1	0	0
726R	<i>Salsola tragus</i>	prickly Russian thistle					2	1	0	0
750L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
750L	<i>Lactuca serriola</i>	prickly lettuce					0	1	0	0
750L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
750L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
750R							2	2	0	0
750R	<i>Bromus tectorum</i>	cheatgrass					0	2	0	0
751L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
751L	<i>Kochia scoparia</i>	kochia					2	2	0	0
751L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
751L	<i>Sorghum halepense</i>	Johnsongrass					0	2	0	0
751L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
751R	<i>Kochia scoparia</i>	kochia					2	2	2	0
751R	<i>Tribulus terrestris</i>	puncturevine					1	2	0	0
752L	<i>Bromus catharticus</i>	rescue grass					0	2	0	0
752L	<i>Bromus japonicus</i>	Japanese brome					0	2	0	0
752L	<i>Kochia scoparia</i>	kochia					2	0	0	0
752L	<i>Lactuca serriola</i>	prickly lettuce					0	1	0	0
752L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
752L	<i>Sorghum halepense</i>	Johnsongrass					0	3	0	0
752L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
752R	<i>Kochia scoparia</i>	kochia					0	0	2	2
753L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
753L	<i>Kochia scoparia</i>	kochia					2	0	0	0
753L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
753L	<i>Sorghum halepense</i>	Johnsongrass					2	3	0	0
753R	<i>Kochia scoparia</i>	kochia					2	0	2	2

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
754L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	3	0	0
754L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	0
754R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	0	0
755L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
755L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
755R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	0	0
756L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
756L	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
756R	<i>Kochia scoparia</i>	kochia					2	0	0	0
756R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	3	0
757L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
757L	<i>Kochia scoparia</i>	kochia					2	0	2	0
757L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
757R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
757R	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
758L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
758L	<i>Bromus catharticus</i>	rescue grass					0	1	0	0
758L	<i>Bromus tectorum</i>	cheatgrass					0	2	0	0
758L	<i>Euphorbia davidii</i>	dauids spurge					0	1	0	0
758L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
758L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
758R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	1	0	0
758R	<i>Bromus catharticus</i>	rescue grass					0	1	0	0
758R	<i>Bromus tectorum</i>	cheatgrass					0	2	0	0
758R	<i>Kochia scoparia</i>	kochia					0	0	2	0
758R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
758R	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
759L	<i>Kochia scoparia</i>	kochia					2	2	0	0
759L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	0	0
759R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
759R	<i>Bromus catharticus</i>	rescue grass					0	2	0	0
759R	<i>Bromus tectorum</i>	cheatgrass					0	2	0	0
759R	<i>Chenopodium album</i>	common lambsquarters					2	0	0	0
759R	<i>Kochia scoparia</i>	kochia					2	0	0	0
759R	<i>Polygonum arenastrum</i>	prostrate knotweed					2	0	0	0
759R	<i>Tragopogon dubius</i>	western salsify					1	2	0	0
760L	<i>Kochia scoparia</i>	kochia					2	1	0	0
760L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
760R	<i>Kochia scoparia</i>	kochia					2	0	2	0
760R	<i>Tragopogon dubius</i>	western salsify					2	2	0	0
761L	<i>Kochia scoparia</i>	kochia					2	1	0	0
761L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class (continued).

Block	Scientific Name	Common Name	2011				2014			
			D1	D2	D3	D4	D1	D2	D3	D4
761L	<i>Tribulus terrestris</i>	puncturevine					0	2	0	0
761R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
761R	<i>Bromus tectorum</i>	cheatgrass					0	2	0	0
761R	<i>Chenopodium album</i>	common lambsquarters					1	0	0	0
761R	<i>Kochia scoparia</i>	kochia					2	0	2	0
761R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
761R	<i>Tragopogon dubius</i>	western salsify					2	2	0	0
762L	<i>Kochia scoparia</i>	kochia					2	2	0	0
762L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
762L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
762R	<i>Kochia scoparia</i>	kochia					2	0	0	0
762R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
762R	<i>Tribulus terrestris</i>	puncturevine					2	1	0	0
763L	<i>Kochia scoparia</i>	kochia					2	2	0	0
763L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
763R	<i>Kochia scoparia</i>	kochia					2	1	0	0
763R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
763R	<i>Tribulus terrestris</i>	puncturevine					2	0	0	0
764L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
764L	<i>Kochia scoparia</i>	kochia					2	2	0	0
764L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
764R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
764R	<i>Kochia scoparia</i>	kochia					2	0	0	0
764R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
764R	<i>Tragopogon dubius</i>	western salsify					1	2	0	0
765L	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
765L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	2	2
765L	<i>Tragopogon dubius</i>	western salsify					0	1	0	0
765R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
765R	<i>Kochia scoparia</i>	kochia					2	0	0	0
765R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0
766L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	X	X
766L	<i>Salsola tragus</i>	prickly Russian thistle					2	2	X	X
766R	<i>Bothriochloa ischaemum</i>	kr bluestem					0	2	0	0
766R	<i>Kochia scoparia</i>	kochia					2	2	0	0
766R	<i>Salsola tragus</i>	prickly Russian thistle					2	0	2	0

Distance Class Key: D1 = edge of vector to 2 meters into the landscape (or inner edge of mow line); D2 = interior edge of D1 to 10 meters; D3 & D4 = each additional 10 meters into the landscape.

Density Code Key: 0 = no plants; 1 = 1–5 plants; 2 = scattered patches; 3 = even distributed patches; 4 = matrix; X = non-detect

Literature Cited

Folts-Zettner, T., R. Gatewood, R. Bennetts and K. Cherwin No date. Grassland monitoring protocol and standard operating procedures for the Southern Plains I&M Network and Fire Group. Natural Resource Technical Report. National Park Service, Fort Collins, Colorado. In review.

Folts-Zettner, T., R. Bennetts, K. Gallo, S. Studd, M. Powell, K. Beaupre, and H. Sosinski. 2013. Multi-Network Exotic Plant Monitoring Protocol and Standard Operating Procedures : A collaboration among the Southern Plains, Chihuahuan Desert and Sonoran Desert Networks Natural Resource Technical Report NPS/SOPN/NRTR—2013/XXX. National Park Service, Fort Collins, Colorado.

National Park Service
U.S. Department of the Interior



Southern Plains Inventory and Monitoring Network

100 Ladybird Lane (physical)

P.O. Box 329 (mailing)

Johnson City, TX 78636

<http://science.nature.nps.gov/im/units/sopn/index.cfm>