



Lyndon B. Johnson National Historical Park

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



ON THE COVER

Pawnee River channel at Fort Larned NHS. NPS Photo.

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Contents

	Page
Introduction	1
Grassland Monitoring Results	1
Exotic Monitoring Results.....	7
Literature Cited	19

Figures

	Page
Figure 1. Layout of plots within each permanent transect.	1
Figure 2. Location of each permanent plot at LYJO monitored in 2014.....	2
Figure 3. Layout of Vector Blocks and Distance Classes along a vector.	7
Figure 4. Panel 3 numbered vector blocks monitored at LYJO in both 2011 and 2014.	8
Figure 5. Comparison of exotics detected in 2011 and 2014 grassland monitoring permanent transects at LYJO.....	10

Tables

	Page
Table 1. Plant community and sampling dates for each transect at Fort Larned NHS in 2014. ...	1
Table 2. Ground strata type and percentage for each transect monitored at LYJO in 2014.....	3
Table 3. Species cover sum and frequency for each permanent transect monitored at LYJO in 2014. Exotic species are highlighted in pink.....	4
Table 4. All plant species detected during grassland monitoring in 2011 and exotic monitoring in 2011 and 2014 at LYJO. Exotic species are highlighted in pink.	5
Table 5. Number and percentage comparison of unit detections of exotic species found in repeated monitoring of vector blocks and permanent transects at LYJO.....	9
Table 6. A comparison of the number of blocks containing a given density in 2011 and 2014 in two Distance Classes.....	11
Table 7. Comparison of 2011 vs. 2014 detections for each individual Vector Block, detailing the given Density Code for each Distance Class.	13

Introduction

This report contains a data summary of results from all vegetation monitoring conducted by the Southern Plains I&M Network (SOPN) during 2014 at Lyndon B. Johnson National Historical Park (LYJO). 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 during September of 2014 (Table 1). Data from two (2) 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.

Table 1. Plant community and sampling dates for each transect at Fort Larned NHS in 2014.

Group	Transect	Plant community	Date
Restoration	REST-LT01	Old Field	10/01
	REST-LT02	Old Field	09/30

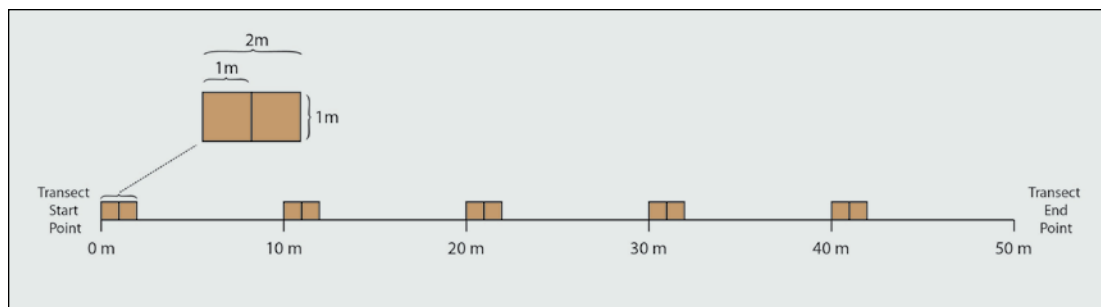


Figure 1. Layout of plots within each permanent transect.



Figure 2. Location of each permanent plot at LYJO 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 LYJO in 2014 can be found in Table 2.

Table 3 contains numerical results of 2014 grassland monitoring at LYJO. 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 LYJO in 2014.

Cover	Restoration	
	REST-LT01	REST-LT02
SOIOPEN	11.6	9
SOILUNDER	10.4	3.2
LITTER	73.6	87.8
WOOD	4.4	0
ROCKSM	0	0
ROCKLG	0	0
LICHEN	0	0
MOSS	0	0
CRUST	0	0

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

Species Code	REST-LT01		REST-LT02	
	Cover Sum	Frequency	Cover Sum	Frequency
Forb				
ACAOST	1.5	2		
AGAHET	4	5	12	4
AMBPSI	0.5	1		
CALINV	5	1		
CROMON	47.5	5	60.5	4
DESILL	4.5	3		
DICCAR	8	2	6	2
ENGPOR	1.5	2		
EUPMAR	0.5	1		
GAIPUL			15	2
GAUCOC	0.5	1		
GLABIP	4	2		
GRINUD	1.5	2		
GUTTEX	1	2	5.5	2
HEDNIG	2	3		
IVAANG	175	5	20.5	2
LEPVIR			5	1
OENSPE	0.5	1	6	2
OXASTR			17	2
PHYPOL	11	3	7	3
RATCOL			5	3
RUBABO	13.5	4	0.5	1
SIDABU	0.5	1	0.5	1
SOLELA			10	1
TEUCAN			3	1
TRARAM	1.5	2	25	3
Grass				
ARIPUR			0.5	1
BOTISC			8	2
BOTLAG			1	1
BOUCUR	19	5	31	3
CARPLA	4	2	6	2
DICOLI	5	4		
NASLEU	57	5	95	4
PASDIL			3	1
SCHSCO	1	1	55	2
SORHAL			65	2
SORNUT	7	1		
SPOCOM	1	1	13	2
Vine				
SMIBON	1	1	5	1
VITMUS			26	3

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

Species Code	LifeForm	Scientific Name	Common Name	Primary Duration
ACAOST	Forb	<i>Acalypha ostryifolia</i>	hop hornbeam copperleaf	Annual
AGAHET	Forb	<i>Agalinis heterophylla</i>	prairie false foxglove	Annual
AMBPSI	Forb	<i>Ambrosia psilostachya</i>	western ragweed	Perennial
ARIPUR	Grass	<i>Aristida purpurea</i>	purple threeawn	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
BROCAT	Grass	<i>Bromus catharticus</i>	rescue grass	Annual/Perennial
BROJAP	Grass	<i>Bromus japonicus</i>	Japanese brome	Annual
CALINV	Forb	<i>Callirhoe involucrata</i>	winecup	Perennial
CALVIA	Forb	<i>Calyptocarpus vialis</i>	straggler daisy	Perennial
CARNUT	Forb	<i>Carduus nutans</i>	nodding musk thistle	Biennial/Perennial
CARPLA	Grass	<i>Carex planostachys</i>	cedar sedge	Perennial
CENMEL	Forb	<i>Centaurea melitensis</i>	malta starthistle	Annual/Biennial
CONARV	Forb	<i>Convolvulus arvensis</i>	field bindweed	Perennial
CONMAC	Forb	<i>Conium maculatum</i>	poison hemlock	Biennial
CROMON	Forb	<i>Croton monanthogynus</i>	oneseede croton	Annual
CYNDAC	Grass	<i>Cynodon dactylon</i>	Bermudagrass	Perennial
DAUCAR	Forb	<i>Daucus carota</i>	queen anne's lace	Biennial
DESILL	Forb	<i>Desmanthus illinoensis</i>	illinois bundleflower	Perennial
DICCAR	Forb	<i>Dichondra carolinensis</i>	carolina ponysfoot	Perennial
DICOLI	Grass	<i>Dichanthelium oligosanthos</i>	heller's panicgrass	Perennial
ENGPER	Forb	<i>Engelmannia peristenia</i>	engelmann's daisy	Perennial
EUPMAR	Forb	<i>Euphorbia marginata</i>	snow-on-the-mountain	Annual
GAIPUL	Forb	<i>Gaillardia pulchella</i>	indian blanket	Annual
GAUCOC	Forb	<i>Gaura coccinea</i>	scarlet guara	Perennial
GLABIP	Forb	<i>Glandularia bipinnatifida</i>	dakota mock vervain	Annual
GRINUD	Forb	<i>Grindelia nuda</i>	curlytop gumweed	Annual
GUTTEX	Forb	<i>Gutierrezia texana</i>	texas snakeweed	Annual/Perennial
HEDNIG	Forb	<i>Hedyotis nigricans</i>	diamond flowers	Perennial
IVAANG	Forb	<i>Iva angustifolia</i>	narrowleaf marshelder	Annual
LEPVIR	Forb	<i>Lepidium virginicum</i>	virginia pepperweed	Annual
LOLPER	Grass	<i>Lolium perenne</i>	perennial ryegrass	Annual/Perennial
LONJAP	Vine	<i>Lonicera japonica</i>	Japanese honeysuckle	Perennial
MEDLUP	Forb	<i>Medicago lupulina</i>	black medic clover	Annual/Perennial
MEDMIN	Forb	<i>Medicago minima</i>	burr medic clover	Annual
MEDPOL	Forb	<i>Medicago polymorpha</i>	bur clover	Annual/Perennial
NASLEU	Grass	<i>Nassella leucotricha</i>	texas wintergrass	Perennial
OENSPE	Forb	<i>Oenothera speciosa</i>	showy evening primrose	Perennial
OXASTR	Forb	<i>Oxalis stricta</i>	sheep sorrel	Perennial
PASDIL	Grass	<i>Paspalum dilatatum</i>	dallisgrass	Perennial

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

Species Code	LifeForm	Scientific Name	Common Name	Primary Duration
PHYPOL	Forb	<i>Phyllanthus polygonoides</i>	knotted leafflower	Perennial
POAANN	Grass	<i>Poa annua</i>	annual bluegrass	Annual
RATCOL	Forb	<i>Ratibida columnifera</i>	redspike mexican hat	Perennial
RUBABO	Forb	<i>Rubus aboriginum</i>	garden dewberry	Perennial
SCHSCO	Grass	<i>Schizachyrium scoparium</i>	little bluestem	Perennial
SHEARV	Forb	<i>Sherardia arvensis</i>	blue fieldmadder	Annual
SIDABU	Forb	<i>Sida abutifolia</i>	prostrate sida	Annual
SMIBON	Vine	<i>Smilax bona-nox</i>	saw greenbriar	Perennial
SOLELA	Forb	<i>Solanum elaeagnifolium</i>	silverleaf nightshade	Perennial
SONASP	Forb	<i>Sonchus asper</i>	spiny sowthistle	Annual
SORHAL	Grass	<i>Sorghum halepense</i>	johnsongrass	Perennial
SORNUT	Grass	<i>Sorghastrum nutans</i>	indiangrass	Perennial
SPOCOM	Grass	<i>Sporobolus compositus</i>	tall dropseed	Perennial
TAROFF	Forb	<i>Taraxacum officinale</i>	dandelion	Perennial
TEUCAN	Forb	<i>Teucrium canadense</i>	american germander	Perennial
TORARV	Forb	<i>Torilis arvensis</i>	spreading hedgeparsley	Annual
TORNOD	Forb	<i>Torilis nodosa</i>	knotted hedgeparsley	Annual
TRARAM	Forb	<i>Tragia ramosa</i>	branched noseburn	Perennial
VITMUS	Vine	<i>Vitis mustangensis</i>	mustang grape	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 May 21, 2014 and included the restoration loop trail (Figure 4). These vectors have been previously monitored late May, 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.

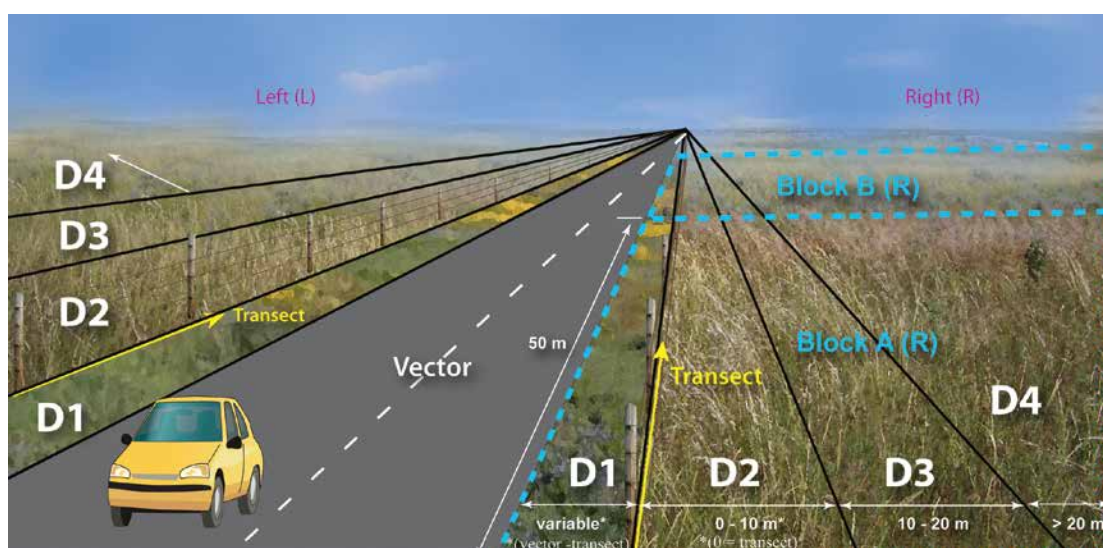


Figure 3. Layout of Vector Blocks and Distance Classes along a vector.

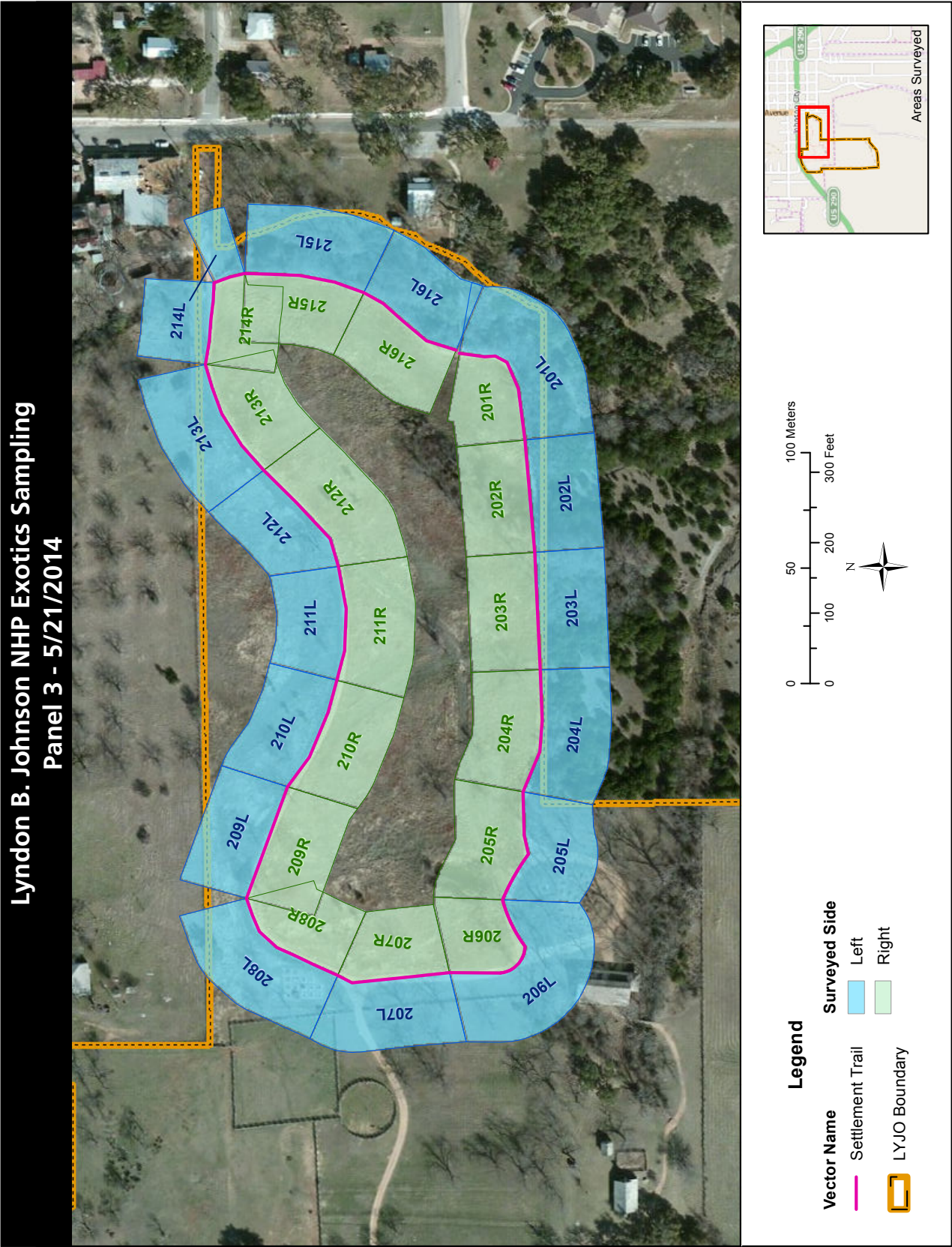


Figure 4. Panel 3 numbered vector blocks monitored at LYJO in both 2011 and 2014.

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=32) and transects (N=2)(Figure 5) 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 LYJO.

Scientific Name	Common Name	2011		2014		2011		2014	
		Primary Blocks (N=30)		Primary Blocks (N=32)		Secondary Transects (N=2)		Secondary Transects (N=2)	
		Total	% Blocks	Total	% Blocks	Total	% Blocks	Total	% Blocks
<i>Bothriochloa ischaemum</i>	kr bluestem	29	96.67%	31	96.88%	2	100.00%	1	50.00%
<i>Bromus catharticus</i>	rescue grass	-	-	8	25.00%	-	-	-	-
<i>Bromus japonicus</i>	Japanese brome	7	23.33%	17	53.13%	-	-	-	-
<i>Calypocarpus vialis</i>	straggler daisy	-	-	22	68.75%	-	-	-	-
<i>Carduus nutans</i>	nodding musk thistle	-	-	1	3.13%	-	-	-	-
<i>Centaurea melitensis</i>	malta starthistle	-	-	3	9.38%	-	-	-	-
<i>Convolvulus arvensis</i>	field bindweed	1	3.33%	-	-	-	-	-	-
<i>Conium maculatum</i>	poison hemlock	5	16.67%	-	-	-	-	-	-
<i>Cynodon dactylon</i>	Bermudagrass	5	16.67%	23	71.88%	-	-	-	-
<i>Daucus carota</i>	queen anne's lace	-	-	2	6.25%	-	-	-	-
<i>Lolium perenne</i>	perennial ryegrass	1	3.33%	5	15.63%	-	-	-	-
<i>Lonicera japonica</i>	Japanese honeysuckle	1	3.33%	3	9.38%	-	-	-	-
<i>Medicago lupulina</i>	black medic clover	16	53.33%	10	31.25%	-	-	-	-
<i>Medicago minima</i>	burr medic clover	-	-	31	96.88%	-	-	-	-
<i>Medicago polymorpha</i>	bur clover	-	-	1	3.13%	-	-	-	-
<i>Paspalum dilatatum</i>	dallisgrass	-	-	18	56.25%	-	-	1	50.00%
<i>Poa annua</i>	annual bluegrass	-	-	8	25.00%	-	-	-	-
<i>Sherardia arvensis</i>	blue fieldmadder	-	-	3	9.38%	-	-	-	-
<i>Sida abutifolia</i>	prostrate sida	-	-	-	-	2	100.00%	2	100.00%
<i>Sonchus asper</i>	spiny sowthistle	-	-	1	3.13%	-	-	-	-
<i>Sorghum halepense</i>	Johnsongrass	23	76.67%	18	56.25%	1	50.00%	1	50.00%
<i>Taraxacum officinale</i>	dandelion	-	-	9	28.13%	-	-	-	-
<i>Torilis arvensis</i>	spreading hedgeparsley	-	-	16	50.00%	-	-	-	-
<i>Torilis nodosa</i>	knotted hedgeparsley	-	-	3	9.38%	-	-	-	-

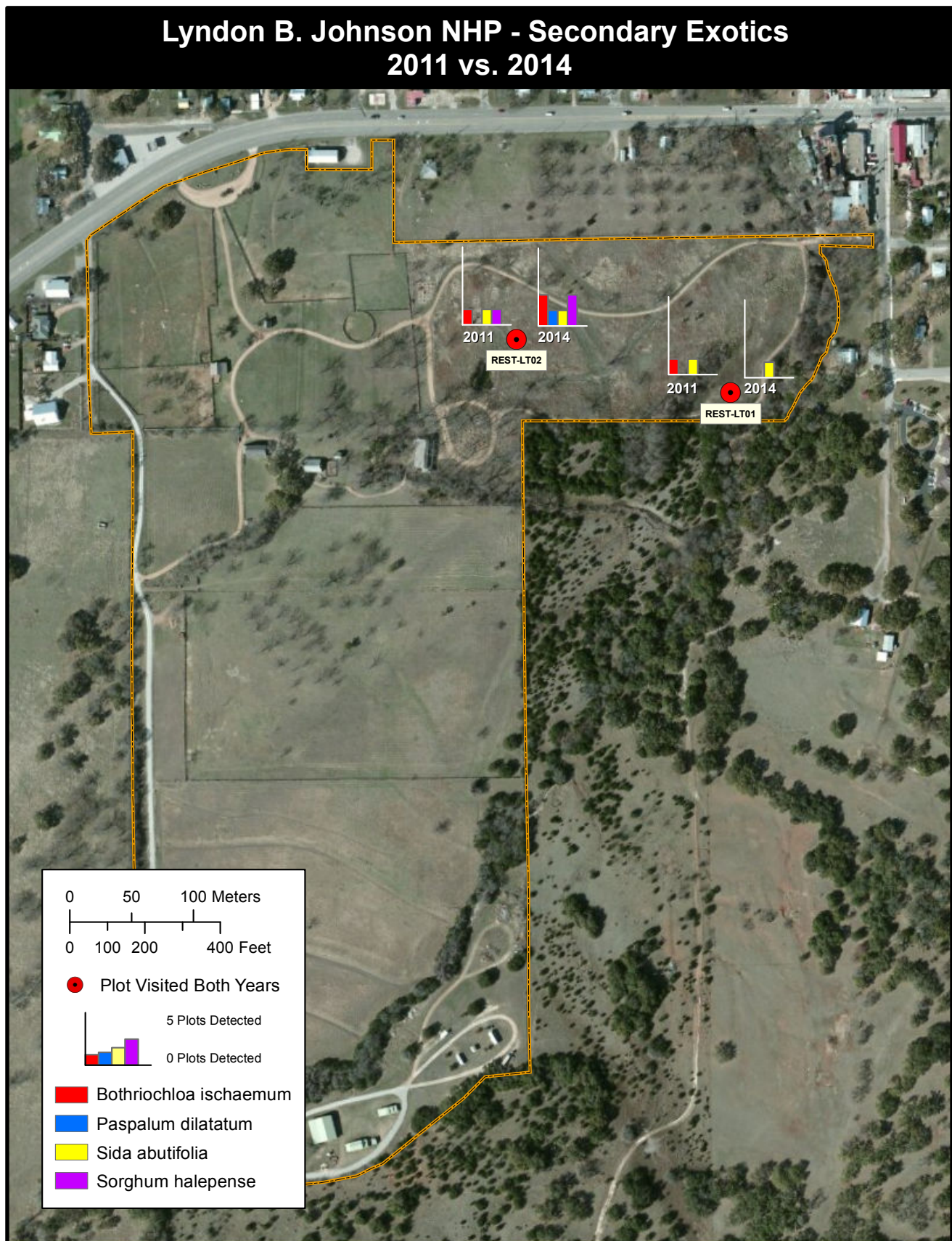


Figure 5. Comparison of exotics detected in 2011 and 2014 grassland monitoring permanent transects at LYJO.

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
BOTISC	<i>Bothriochloa ischaemum</i>	kr bluestem	1	2	4	1	2
			2	26	27	18	14
BROCAT	<i>Bromus catharticus</i>	rescue grass	1		2		2
			2		5		2
BROJAP	<i>Bromus japonicus</i>	Japanese brome	1	3	4	1	1
			2	4	12	1	14
CALVIA	<i>Calyptocarpus vialis</i>	straggler daisy	1		3		
			2		17		5
			3		2		
CARNUT	<i>Carduus nutans</i>	nodding musk thistle	1		1		
CENMEL	<i>Centaurea melitensis</i>	malta starthistle	1		1		
			2		2		1
CONARV	<i>Convolvulus arvensis</i>	field bindweed	1	1		1	
			1	5		1	
CYNDAC	<i>Cynodon dactylon</i>	Bermudagrass	1	1			
			2	4	23	1	4
DAUCAR	<i>Daucus carota</i>	queen anne's lace	1		1		1
			2		1		
LOLPER	<i>Lolium perenne</i>	perennial ryegrass	1		3		
			2	1	1		1
LONJAP	<i>Lonicera japonica</i>	Japanese honeysuckle	1		1	1	
			2				2
MEDLUP	<i>Medicago lupulina</i>	black medic clover	1	1	2		
			2	15	8	1	
MEDMIN	<i>Medicago minima</i>	burr medic clover	1		1		2
			2		28		11
			3		2		
MEDPOL	<i>Medicago polymorpha</i>	bur clover	1		1		
PASDIL	<i>Paspalum dilatatum</i>	dallisgrass	1		1		
			2		17		5
POAANN	<i>Poa annua</i>	annual bluegrass	1		5		3
			2		3		
SHEARV	<i>Sherardia arvensis</i>	blue fieldmadder	2		3		1

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

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

Species Code	Scientific Name	Common Name	Density Code	Distance Class 1		Distance Class 2	
				2011	2014	2011	2014
SONASP	<i>Sonchus asper</i>	spiny sowthistle	3		1		
SORHAL	<i>Sorghum halepense</i>	Johnsongrass	1	1	3	2	5
			2	10	4	16	11
TAROFF	<i>Taraxacum officinale</i>	dandelion	1		3	1	
			2		4		3
TORARV	<i>Torilis arvensis</i>	spreading hedgeparsley	1		3		3
			2		10		7
TORNOD	<i>Torilis nodosa</i>	knotted hedgeparsley	1		1		
			2		2		1

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
201L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	X	X	2	0	X	X
201L	<i>Lonicera japonica</i>	Japanese honeysuckle					1	0	X	X
201L	<i>Medicago lupulina</i>	black medic clover	2	0	X	X				
201L	<i>Medicago minima</i>	burr medic clover					3	0	X	X
201L	<i>Taraxacum officinale</i>	dandelion					2	0	X	X
201L	<i>Torilis arvensis</i>	spreading hedgeparsley					2	2	X	X
201R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	X	2	1	0	0
201R	<i>Bromus catharticus</i>	rescue grass					0	1	0	0
201R	<i>Bromus japonicus</i>	Japanese brome					0	2	0	0
201R	<i>Calyptocarpus vialis</i>	straggler daisy					1	0	0	0
201R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
201R	<i>Medicago lupulina</i>	black medic clover	2	0	0	X				
201R	<i>Medicago minima</i>	burr medic clover					2	1	0	0
201R	<i>Sorghum halepense</i>	Johnsongrass	0	2	2	X	0	0	1	0
201R	<i>Taraxacum officinale</i>	dandelion					1	0	0	0
202L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	X	X				
202L	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	X	X
202L	<i>Cynodon dactylon</i>	Bermudagrass					2	0	X	X
202L	<i>Lonicera japonica</i>	Japanese honeysuckle					0	2	X	X
202L	<i>Medicago lupulina</i>	black medic clover	2	0	X	X				
202L	<i>Medicago minima</i>	burr medic clover					3	0	X	X
202L	<i>Poa annua</i>	annual bluegrass					2	2	X	X
202L	<i>Taraxacum officinale</i>	dandelion					2	0	X	X
202L	<i>Torilis arvensis</i>	spreading hedgeparsley					2	0	X	X
202R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	X	2	2	0	0
202R	<i>Bromus japonicus</i>	Japanese brome	1	0	0	X	2	2	0	0
202R	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	0	0
202R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
202R	<i>Lonicera japonica</i>	Japanese honeysuckle	0	1	0	X				
202R	<i>Medicago lupulina</i>	black medic clover	2	0	0	X				
202R	<i>Medicago minima</i>	burr medic clover					2	2	0	0
202R	<i>Paspalum dilatatum</i>	dallisgrass					1	0	0	0
202R	<i>Sorghum halepense</i>	Johnsongrass	0	2	2	X				
202R	<i>Torilis arvensis</i>	spreading hedgeparsley					2	2	0	0
203L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	X	X	2	0	X	X
203L	<i>Bromus japonicus</i>	Japanese brome					2	0	X	X
203L	<i>Calyptocarpus vialis</i>	straggler daisy					2	2	X	X
203L	<i>Conium maculatum</i>	poison hemlock	1	0	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
203L	<i>Cynodon dactylon</i>	Bermudagrass					2	0	X	X
203L	<i>Lonicera japonica</i>	Japanese honeysuckle					0	2	X	X
203L	<i>Medicago lupulina</i>	black medic clover	2	0	X	X				
203L	<i>Medicago minima</i>	burr medic clover					2	2	X	X
203L	<i>Poa annua</i>	annual bluegrass					2	2	X	X
203L	<i>Taraxacum officinale</i>	dandelion					2	2	X	X
203L	<i>Torilis arvensis</i>	spreading hedgeparsley					2	0	X	X
203L	<i>Torilis nodosa</i>	knotted hedgeparsley					2	2	X	X
203R	<i>Bothriochloa ischaemum</i>	kr bluestem	0	2	2	0	2	0	0	0
203R	<i>Bromus japonicus</i>	Japanese brome					1	2	0	0
203R	<i>Calypocarpus vialis</i>	straggler daisy					2	0	0	0
203R	<i>Conium maculatum</i>	poison hemlock	1	0	0	0				
203R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
203R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0	1	0	0	0
203R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
203R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
203R	<i>Poa annua</i>	annual bluegrass					1	0	0	0
203R	<i>Sorghum halepense</i>	Johnsongrass	0	2	2	0	0	2	2	0
203R	<i>Taraxacum officinale</i>	dandelion					1	0	0	0
203R	<i>Torilis arvensis</i>	spreading hedgeparsley					1	1	0	0
203R	<i>Torilis nodosa</i>	knotted hedgeparsley					1	0	0	0
204L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	X	X	2	0	X	X
204L	<i>Bromus japonicus</i>	Japanese brome	2	0	X	X	2	2	X	X
204L	<i>Calypocarpus vialis</i>	straggler daisy					2	2	X	X
204L	<i>Conium maculatum</i>	poison hemlock	1	0	X	X				
204L	<i>Medicago minima</i>	burr medic clover					2	0	X	X
204L	<i>Paspalum dilatatum</i>	dallisgrass					2	0	X	X
204L	<i>Sorghum halepense</i>	Johnsongrass	2	0	X	X	1	0	X	X
204L	<i>Taraxacum officinale</i>	dandelion					2	0	X	X
204L	<i>Torilis arvensis</i>	spreading hedgeparsley					2	0	X	X
204L	<i>Torilis nodosa</i>	knotted hedgeparsley					2	0	X	X
204R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	0	0	2	0	0	0
204R	<i>Bromus japonicus</i>	Japanese brome	1	0	0	0	2	2	0	0
204R	<i>Calypocarpus vialis</i>	straggler daisy					2	0	0	0
204R	<i>Carduus nutans</i>	nodding musk thistle					1	0	0	0
204R	<i>Conium maculatum</i>	poison hemlock	1	1	0	0				
204R	<i>Cynodon dactylon</i>	Bermudagrass	1	0	0	0	2	0	0	0
204R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0	2	0	0	0
204R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
204R	<i>Sorghum halepense</i>	Johnsongrass	0	2	2	0	0	2	1	0
204R	<i>Torilis arvensis</i>	spreading hedgeparsley					0	2	0	0
205L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	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
205L	<i>Bromus catharticus</i>	rescue grass					2	2	0	0
205L	<i>Bromus japonicus</i>	Japanese brome	2	2	0	0				
205L	<i>Calyptocarpus vialis</i>	straggler daisy					2	2	0	0
205L	<i>Cynodon dactylon</i>	Bermudagrass					2	2	0	0
205L	<i>Medicago lupulina</i>	black medic clover	2	2	0	0				
205L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
205L	<i>Paspalum dilatatum</i>	dallisgrass					2	2	0	0
205L	<i>Sorghum halepense</i>	Johnsongrass					0	1	1	1
205R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	0	0	2	0	0	0
205R	<i>Bromus japonicus</i>	Japanese brome	2	0	0	0	2	2	0	0
205R	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	0	0
205R	<i>Cynodon dactylon</i>	Bermudagrass	2	0	0	0	2	0	0	0
205R	<i>Medicago lupulina</i>	black medic clover					2	0	0	0
205R	<i>Medicago minima</i>	burr medic clover					1	0	0	0
205R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
205R	<i>Poa annua</i>	annual bluegrass					2	2	0	0
205R	<i>Sorghum halepense</i>	Johnsongrass	0	3	2	0				
205R	<i>Taraxacum officinale</i>	dandelion					0	2	0	0
205R	<i>Torilis arvensis</i>	spreading hedgeparsley					0	1	0	0
206L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	2	0	2	2	2	0
206L	<i>Calyptocarpus vialis</i>	straggler daisy					2	2	0	0
206L	<i>Cynodon dactylon</i>	Bermudagrass	2	2	0	0	2	2	2	0
206L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
206L	<i>Paspalum dilatatum</i>	dallisgrass					2	2	0	0
206L	<i>Sorghum halepense</i>	Johnsongrass	2	2	2	0				
206R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	1	0	0	2	0	0	0
206R	<i>Bromus japonicus</i>	Japanese brome	1	1	0	0	2	2	0	0
206R	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	0	0
206R	<i>Cynodon dactylon</i>	Bermudagrass	2	0	0	0				
206R	<i>Lolium perenne</i>	perennial ryegrass					1	0	0	0
206R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0	2	0	0	0
206R	<i>Medicago minima</i>	burr medic clover					2	0	1	0
206R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
206R	<i>Poa annua</i>	annual bluegrass					1	0	1	0
206R	<i>Sherardia arvensis</i>	blue fieldmadder					2	0	0	0
206R	<i>Sorghum halepense</i>	Johnsongrass	1	2	3	0	0	2	0	0
206R	<i>Taraxacum officinale</i>	dandelion					1	0	0	0
206R	<i>Torilis arvensis</i>	spreading hedgeparsley					2	1	0	0
207L	<i>Bothriochloa ischaemum</i>	kr bluestem					2	2	0	0
207L	<i>Calyptocarpus vialis</i>	straggler daisy					2	2	0	0
207L	<i>Cynodon dactylon</i>	Bermudagrass					2	2	0	0
207L	<i>Medicago minima</i>	burr medic clover					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
207L	<i>Paspalum dilatatum</i>	dallisgrass					2	2	0	0
207L	<i>Sorghum halepense</i>	Johnsongrass					0	1	0	0
207L	<i>Taraxacum officinale</i>	dandelion					0	2	2	0
207L	<i>Torilis arvensis</i>	spreading hedgeparsley					0	2	0	0
207R	<i>Bothriochloa ischaemum</i>	kr bluestem					2	0	0	0
207R	<i>Bromus japonicus</i>	Japanese brome					1	2	0	0
207R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
207R	<i>Lolium perenne</i>	perennial ryegrass					0	2	0	0
207R	<i>Medicago lupulina</i>	black medic clover					2	0	0	0
207R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
207R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
207R	<i>Poa annua</i>	annual bluegrass					1	0	0	0
207R	<i>Sorghum halepense</i>	Johnsongrass					2	2	0	0
208L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	2	0	2	2	0	0
208L	<i>Centaurea melitensis</i>	malta starthistle					1	2	2	0
208L	<i>Cynodon dactylon</i>	Bermudagrass					2	2	0	0
208L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
208L	<i>Paspalum dilatatum</i>	dallisgrass					2	2	0	0
208L	<i>Sorghum halepense</i>	Johnsongrass	2	2	2	0	0	2	2	0
208R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	0	0	0
208R	<i>Bromus catharticus</i>	rescue grass					2	0	0	0
208R	<i>Calyptocarpus vialis</i>	straggler daisy					1	0	0	0
208R	<i>Centaurea melitensis</i>	malta starthistle					2	0	0	0
208R	<i>Conium maculatum</i>	poison hemlock	1	0	0	0				
208R	<i>Convolvulus arvensis</i>	field bindweed	1	1	0	0				
208R	<i>Cynodon dactylon</i>	Bermudagrass	2	0	0	0	2	0	0	0
208R	<i>Daucus carota</i>	queen anne's lace					2	0	0	0
208R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0	2	0	0	0
208R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
208R	<i>Sherardia arvensis</i>	blue fieldmadder					2	2	0	0
208R	<i>Sonchus asper</i>	spiny sowthistle					3	0	0	0
208R	<i>Sorghum halepense</i>	Johnsongrass	0	2	0	0	0	1	0	0
209L	<i>Bothriochloa ischaemum</i>	kr bluestem					1	2	0	0
209L	<i>Bromus japonicus</i>	Japanese brome					2	2	0	0
209L	<i>Daucus carota</i>	queen anne's lace					1	1	0	0
209L	<i>Medicago minima</i>	burr medic clover					2	0	0	0
209L	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
209L	<i>Sorghum halepense</i>	Johnsongrass	2	2	0	0	0	2	2	0
209L	<i>Torilis arvensis</i>	spreading hedgeparsley					1	0	0	0
209R	<i>Bothriochloa ischaemum</i>	kr bluestem	1	2	0	0	1	2	0	0
209R	<i>Bromus japonicus</i>	Japanese brome	2	0	0	0	1	1	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
209R	<i>Calyptracarpus vialis</i>	straggler daisy					2	0	0	0
209R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	1	0
209R	<i>Lolium perenne</i>	perennial ryegrass	2	0	0	0	1	0	0	0
209R	<i>Medicago lupulina</i>	black medic clover					2	0	0	0
209R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
209R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
209R	<i>Sherardia arvensis</i>	blue fieldmadder					2	0	0	0
209R	<i>Sorghum halepense</i>	Johnsongrass					0	2	0	0
210L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	0	0	2	2	2	0
210L	<i>Bromus japonicus</i>	Japanese brome					2	2	0	0
210L	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
210L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
210L	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
210L	<i>Sorghum halepense</i>	Johnsongrass	2	0	0	0	2	2	0	0
210R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	2	0	0
210R	<i>Calyptracarpus vialis</i>	straggler daisy					2	0	0	0
210R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
210R	<i>Medicago lupulina</i>	black medic clover	1	0	0	0	1	0	0	0
210R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
210R	<i>Sorghum halepense</i>	Johnsongrass	0	2	2	3	1	1	0	0
211L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	0	0	0
211L	<i>Bromus japonicus</i>	Japanese brome					2	2	0	0
211L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
211L	<i>Sorghum halepense</i>	Johnsongrass	2	2	2	0	2	2	2	0
211R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	2	0	0
211R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
211R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0				
211R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
211R	<i>Sorghum halepense</i>	Johnsongrass	0	1	2	3	0	1	0	0
212L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	0	0	2	2	0	0
212L	<i>Bromus catharticus</i>	rescue grass					2	1	0	0
212L	<i>Bromus japonicus</i>	Japanese brome					1	2	0	0
212L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
212L	<i>Paspalum dilatatum</i>	dallisgrass					2	2	0	0
212L	<i>Sorghum halepense</i>	Johnsongrass	2	2	2	0				
212R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	1	0	0
212R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	1	0
212R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
212R	<i>Medicago polymorpha</i>	bur clover					1	0	0	0
212R	<i>Poa annua</i>	annual bluegrass					1	0	0	0
212R	<i>Sorghum halepense</i>	Johnsongrass	0	1	2	2				

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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
213L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	2	0	0
213L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
213R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	0	0	0
213R	<i>Bromus japonicus</i>	Japanese brome					2	2	0	0
213R	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	0	0
213R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
213R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
213R	<i>Torilis arvensis</i>	spreading hedgeparsley					2	0	0	0
214L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	2	2	0
214L	<i>Bromus catharticus</i>	rescue grass					1	0	0	0
214L	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	0	0
214L	<i>Centaurea melitensis</i>	malta starthistle					2	0	0	0
214L	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
214L	<i>Medicago minima</i>	burr medic clover					2	2	0	0
214L	<i>Sorghum halepense</i>	Johnsongrass	2	2	0	0	2	2	0	0
214L	<i>Torilis arvensis</i>	spreading hedgeparsley					2	2	2	0
214R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	2	0	0
214R	<i>Bromus catharticus</i>	rescue grass					1	0	0	0
214R	<i>Calyptocarpus vialis</i>	straggler daisy					1	0	0	0
214R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
214R	<i>Lolium perenne</i>	perennial ryegrass					1	0	0	0
214R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0				
214R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
214R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
214R	<i>Poa annua</i>	annual bluegrass					1	0	0	0
214R	<i>Sorghum halepense</i>	Johnsongrass	0	2	2	2				
215L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	X	X	2	0	X	X
215L	<i>Bromus catharticus</i>	rescue grass					2	0	X	X
215L	<i>Bromus japonicus</i>	Japanese brome					2	0	X	X
215L	<i>Calyptocarpus vialis</i>	straggler daisy					3	0	X	X
215L	<i>Medicago minima</i>	burr medic clover					2	0	X	X
215L	<i>Sorghum halepense</i>	Johnsongrass	2	2	X	X				
215L	<i>Torilis arvensis</i>	spreading hedgeparsley					2	2	X	X
215R	<i>Bothriochloa ischaemum</i>	kr bluestem	1	2	0	0	1	0	0	0
215R	<i>Bromus catharticus</i>	rescue grass					2	2	0	0
215R	<i>Bromus japonicus</i>	Japanese brome					2	2	0	0
215R	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	0	0
215R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
215R	<i>Lolium perenne</i>	perennial ryegrass					2	0	0	0
215R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0	2	0	0	0
215R	<i>Medicago minima</i>	burr medic clover					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
215R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
215R	<i>Sorghum halepense</i>	Johnsongrass	0	2	2	0				
215R	<i>Torilis arvensis</i>	spreading hedgeparsley					2	2	0	0
216L	<i>Bothriochloa ischaemum</i>	kr bluestem	2	0	X	X	2	0	X	X
216L	<i>Calyptocarpus vialis</i>	straggler daisy					3	0	X	X
216L	<i>Medicago lupulina</i>	black medic clover	2	0	X	X				
216L	<i>Medicago minima</i>	burr medic clover					2	1	X	X
216L	<i>Sorghum halepense</i>	Johnsongrass	2	0	X	X				
216L	<i>Torilis arvensis</i>	spreading hedgeparsley					1	0	X	X
216R	<i>Bothriochloa ischaemum</i>	kr bluestem	2	2	0	0	2	2	0	0
216R	<i>Calyptocarpus vialis</i>	straggler daisy					2	0	0	0
216R	<i>Cynodon dactylon</i>	Bermudagrass					2	0	0	0
216R	<i>Medicago lupulina</i>	black medic clover	2	0	0	0	2	0	0	0
216R	<i>Medicago minima</i>	burr medic clover					2	0	0	0
216R	<i>Paspalum dilatatum</i>	dallisgrass					2	0	0	0
216R	<i>Sorghum halepense</i>	Johnsongrass	0	0	2	3	1	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

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