ESCO

ROCKY FLATS 1999

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Data Report
Rocky Flats Bluestem Grassland Study
1999

Jefferson & Boulder Counties, Colorado

Prepared by:

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INTRODUCTION

Grasslands of the Rocky Flats alluvial surface have attracted interest for some time because of the distinctive plant species compostion that includes big bluestem and little bluestem, both grasses with their central distribution in the eastern Great Plains and both requiring greater moisture than is typically present in the western Great Plains. Branson et al. (1965) studied these areas along with grasslands growing on different soils nearby and documented the baisc nature and distinction of these grasslands. They pointed out the paradox of coincidental occurrence of mountain and plains species on the grasslands occupying the surface of the Rocky Flats alluvium and speculated on the reasons that these species requiring more moisture than climate would normally provide would occur here. The general nature of this ecosystem has also been acknowledged by the U.S. Soil Conservation Service (now Natural Resources Conservation Service) in the description for Cobbly Foothill range site (December 1975) in which co-dominance of big bluestem, little bluestem, and mountain muhly is acknowledged. Also set forth in the range site description is the dependence of the type on the occurrence of soils in which 1) high rock volume reduces the volume of effective soil and magnifies incident moisture and 2) argillic B horizons (heavy-textured subsoils) accompany high moisture-holding capacities. Similar observations were made previously by Branson et al. (1965).

The Rocky Flats alluvial surface has been the subject of geomorphic/quaternary stratigraphic studies for some time also. Many researchers have examined the age of the surface and its relationship to other terraces along the east slope of the Front Range. In one of the most recent studies, Birkeland et al. (1996) placed the age at something older than 1.69 to 1.82 million years, making it one of the oldest, if not the oldest geological surface in Colorado.

In late October 1994, ESCO Associates undertook an examination of a part of the subject grassland area in W2 Sec. 16, R70W, T2S. Purposes of this examination were 1) to begin to assess the extent and distinguishing characteristics of the grassland, 2) to document through limited quantitative sampling the species composition/density in the proposed Phase 2 mining area in W2 Sec. 16, and the upper portions of the Woman Creek drainage, and 3) to set forth the critical features of a reclamation plan for the Sec. 16 grassland were it to be mined and reclaimed. Comparison of the Section 16 Phase 2 proposed mining area and the Woman Creek drainage was undertaken to provide some technical basis for discussion of the degree to which conservation of the Woman Creek drainage would protect plant community characteristics that may be deemed important in the Section 16 Phase 2 mining area, especially warm season grass abundance and overall species composition and richness.

The grassland area in question in the Section 16 Phase 2 proposed mining area is dominated by warm season grasses, especially big and little bluestem, more well known for their dominance of lowland prairie in the eastern Great Plains where average annual precipitation is often two to three times greater than that of the Colorado eastern plains. In addition to these grasses, dominance is shared with mountain muhly and some forbs more typical of lower montane environments, also usually recipient of greater average annual precipitation than the plains. The 1994 studies were reported in detail in ESCO (1994).

Since that time, interest has continued in the degree to which this grassland ecosystem in general, and its representation in the school section (Section 16), constitutes a valuable resource that should have that value perpetuated into the future even to the exclusion of other resources that may be represented on the site such as gravel resources, development area, or

other uses.

In 1996, ESCO Associates undertook the data collection portion of a study of these grasslands as they occur in Section 16 on Rocky Flats, in adjacent areas of the Rocky Flats surface, and elsewhere in northern Jefferson County and adjacent Boulder County. This study was part of a joint effort between Jefferson County Open Space Department, Jefferson County Nature Association, the Jefferson County Soil Conservation District, the Colorado State Land Board, and Western Aggregates, which mines gravel on Rocky Flats in the area where these grasslands occur. Data have been collected from a total of 33 sample sites in both 1996, 1997, and 1998. In 1999, the opportunity to place samples on a large area occupied by this ecosystem that lies west of Highway 93 and north of Highway 72 arose (sections 5, 8, 17, and 18). Seven additional samples were placed in this area. Also samples were added in the east 1/2 of section 16 where disturbed conditions had previously discouraged sampling. It became apparent that for the most complete picture of the status of this ecosystem, information from that area should also be available. In total, 15 more samples were added in 1999, bringing the total number sampled to 48. Note that data for samples 37 and 39 are not shown on data tables; these data are being kept from public view at the request of the private landowner. The presently reported studies represent the fourth year's contribution to a body of knowledge on this ecosystem that we have termed the "Rocky Flats Bluestem Grassland." The present study is scheduled to terminate after the fifth year's data are collected in 2000. In early 2001, the five year data set will be the basis for an evaluation of the degree to which this ecosystem differs from other grasssland ecosystems, along with recommendations for the management and stewardship of these areas, if they have been determined to merit such special attention.

METHODS

Quantitative data from the sample sites were collected in May 1999 and August 1999. May sampling consisted of presence tabulation for the purpose of establishing the presence of spring ephemeral species that might be non-apparent in August sampling. In 1999, the August sampling included both cover and frequency sampling. Frequency sampling, which is much more time-consuming was undertaken again in August 1999(it had been done in August 1996 and April/May1997)because additional new samples had been added and a round of sampling including all samples at the most detailed level was deemed necessary. Cover sampling has provided reliable estimates of the abundance of the more abundant species at each of the sites, while frequency data have provided a look at details of the distribution of the less common as well as the dominant species.

Sample Location

Samples have been located subjectively with consideration of incorporating the variability of each site. A few samples thought to be clearly different were included to provide a context for the other sites. Sample locations are shown on Maps 1, 2, and 3. At each location, the end points of the sample transect were marked with a rebar stake driven flush with the ground (for subsequent use with a metal detector), a fiberglass post, and a cairn of rocks. Jefferson County Open Space personnel surveyed the endpoints of samples identified in 1996 with high resolution Global Positioning System (GPS) equipment to establish permanent record of them. Coordinates of additional samples located in 1999 were established using a consumer-grade Garmin II GPS (i.e. accuracy plus or minus 15 m).

Cover

For assessment of cover, the point intercept cover method was chosen because it provides superior objectivity and repeatability; the inherent tendency to encounter only the more abundant species has been compensated through use of a total vascular species inventory along the sample transect (see below). In addition, frequency plot data have been collected in one late summer and one spring sampling to provide further details of the abundance of less common species.

Point intercept cover sampling was developed early in the history of plant ecology (Levy and Madden 1933), and translated into varying forms by subsequent researchers (Goodall 1952, Winkworth and Goodall 1962).

Cover data were tabulated as interceptions of a point with plant species, soil, standing dead plant material (produced in a previous year but still erect), litter (fallen dead plant material), or rock. Plant material produced during the sample year and still standing was tallied by species. The point was optically projected using a Cover-Point Model 5 Optical Point Projector. The sample was taken along a 50 m transect; each sample consisted of 100 projected points.

Species Presence

At each occasion of sampling, all species present within a 2m x 50m belt transect (quadrat) oriented along and centered on the 50 m permanent transect were tallied. In addition to documenting the full spectrum of species present, such data offer the opportunity to compare the "packing" or density of species within a consistent and fairly large unit of landscape (100 square meters).

Frequency

Frequency data were collected in addition to cover data in August 1999. These data were taken in each of ten 1m x 1m plots located at 5m intervals along each 50m transect. In each plot, all species present were tallied. For each species, the number of plots in which the plant was observed was divided by the number of plots observed (10). Thus, for example, if Species A occurred in seven plots, its frequency for the transect is 7/10, or 70 percent. Frequency data offer the opportunity to view the uniformity of distribution of plant species present. This is important for assesment of details of plant community composition.

RESULTS

All species that were encountered in May 1999 species presence sampling are tabulated in Table 99-1. Cover data from August 1999 are present in Table 99-2. Frequency data from August 1999 are present in Tables 99-3 through 99-48.

DISCUSSION

Based on evaluation of the data in the above-referenced tables, it is clear that, as had been supposed in the earlier reviews (ESCO 1995, 1998,1999), that the major distinguishing feature of the Rocky Flats Grasslands is the local abundance of big bluestem, little bluestem, mountain muhly, and Porter's aster simultaneously. The former two being characteristic of the Tallgrass Prairie of central North America, and the latter two characteristic of mountain environments, this combination is unusual by itself. These tentative interpretations were presented in ESCO (1998). Final interpretations will be drawn in the report following the

collection of the final year's data in 2000. Items of discussion based on 1999 data are as follows:

Apparent Nature of Areas Newly Sampled in 1999

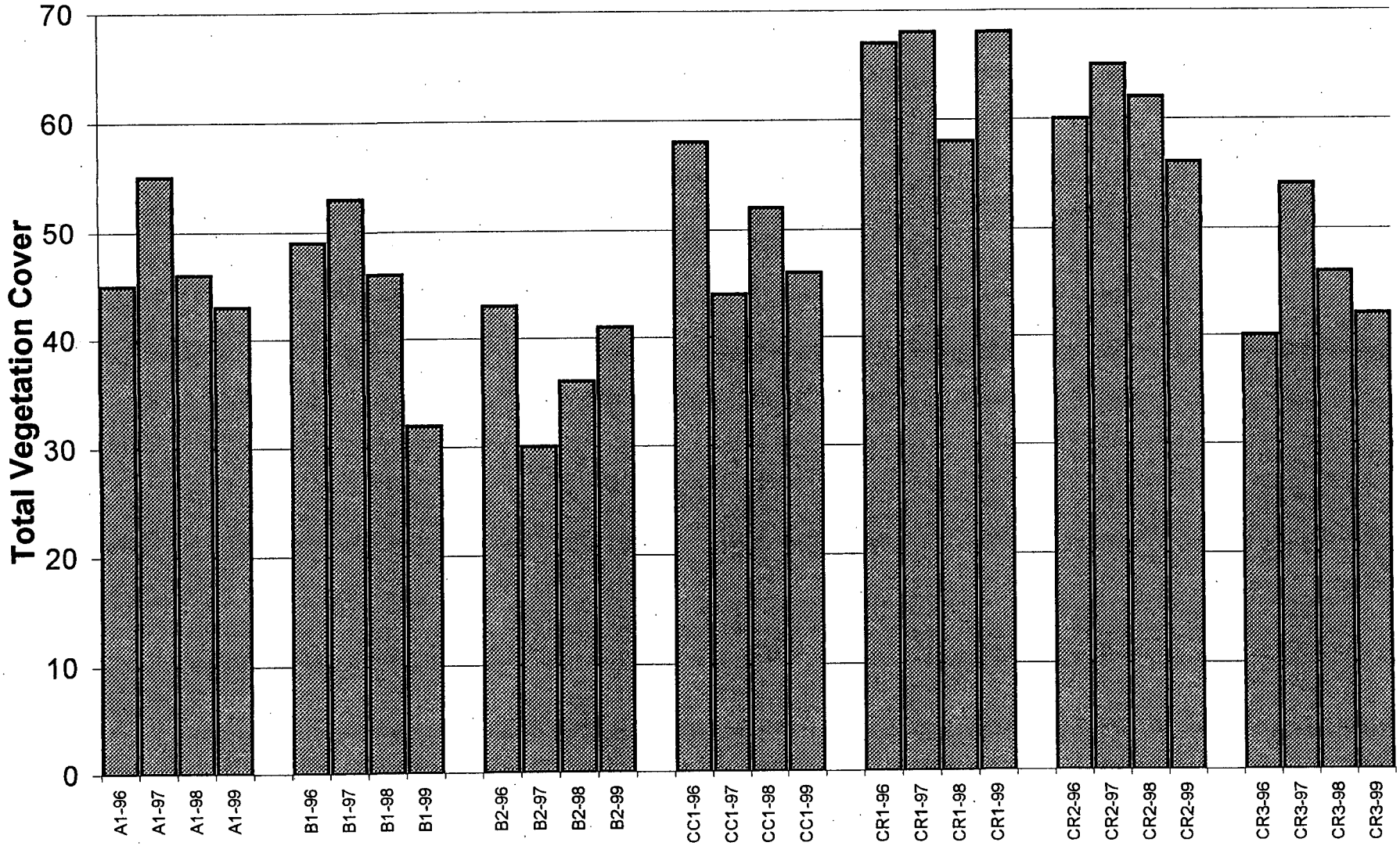
Areas that have been added for the 1999 (and 2000) sampling (numbers 25 through 39) are variable in their resemblance to the areas in the W1/2 Sec. 16 that originated the interest in the Rocky Flats Bluestem Grassland ecosystem. In general, it is apparent that the highest representation of what have been taken to be diagnostic species for the type (big bluestem, little bluestem, mountain muhly, and Porter's aster)occurs in the E1/2 Sec. 17. Another area of high quality seems to be located in a band extending from NE4 Sec. 8 to the northeast into NW4 Sec. 3. The portion of this band in the SE4 Sec. 4 would have been narrow due to impingement of tributaries of Coal Creek from the northeast, but in any case has long been disturbed. These areas represent what would appear to be those portions of the Rocky Flats alluvial surface that have experienced the least erosional thinning.

Additional samples in 2000 are planned to fill in the knowledge base for other portions of the area in anticipation that the final report should include such details for purposes of providing input to future management decisions.

Effects of Tordon Spraying on Rocky Flats Buffer Zone Samples

Samples 15,16,18, 19, and 20 in the Rocky Flats Buffer Zone appear to reflect the effects of spraying for knapweed that took place in May 1999. Species density values on these permanent plots dropped distinctly in August 1999 data, compared to the previous three years' values. The response in 2000 will be of interest.

Figure 1. Total Vegetation Cover by Transect and Year of Sample - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., - CO, 1996-1999



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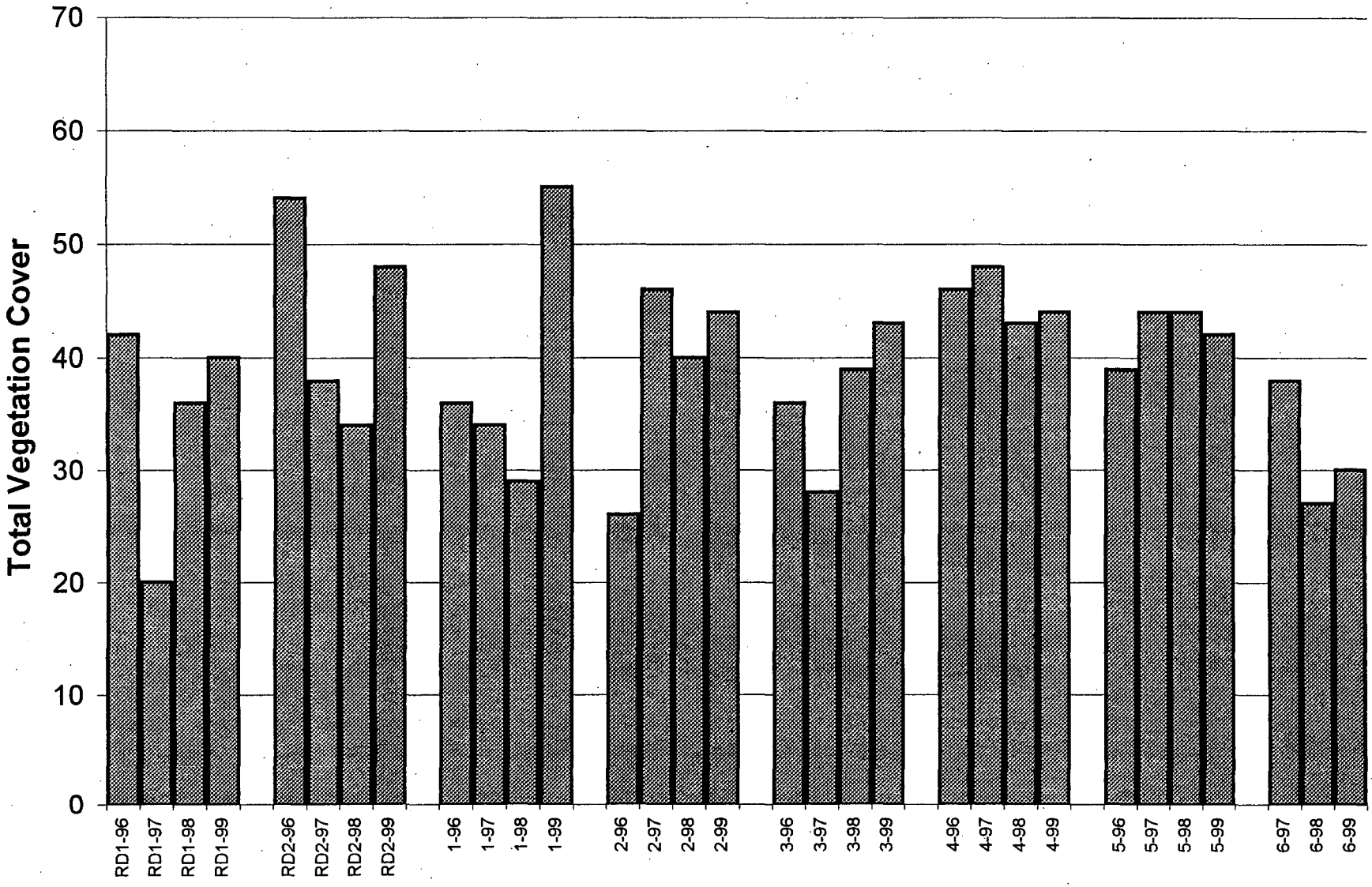

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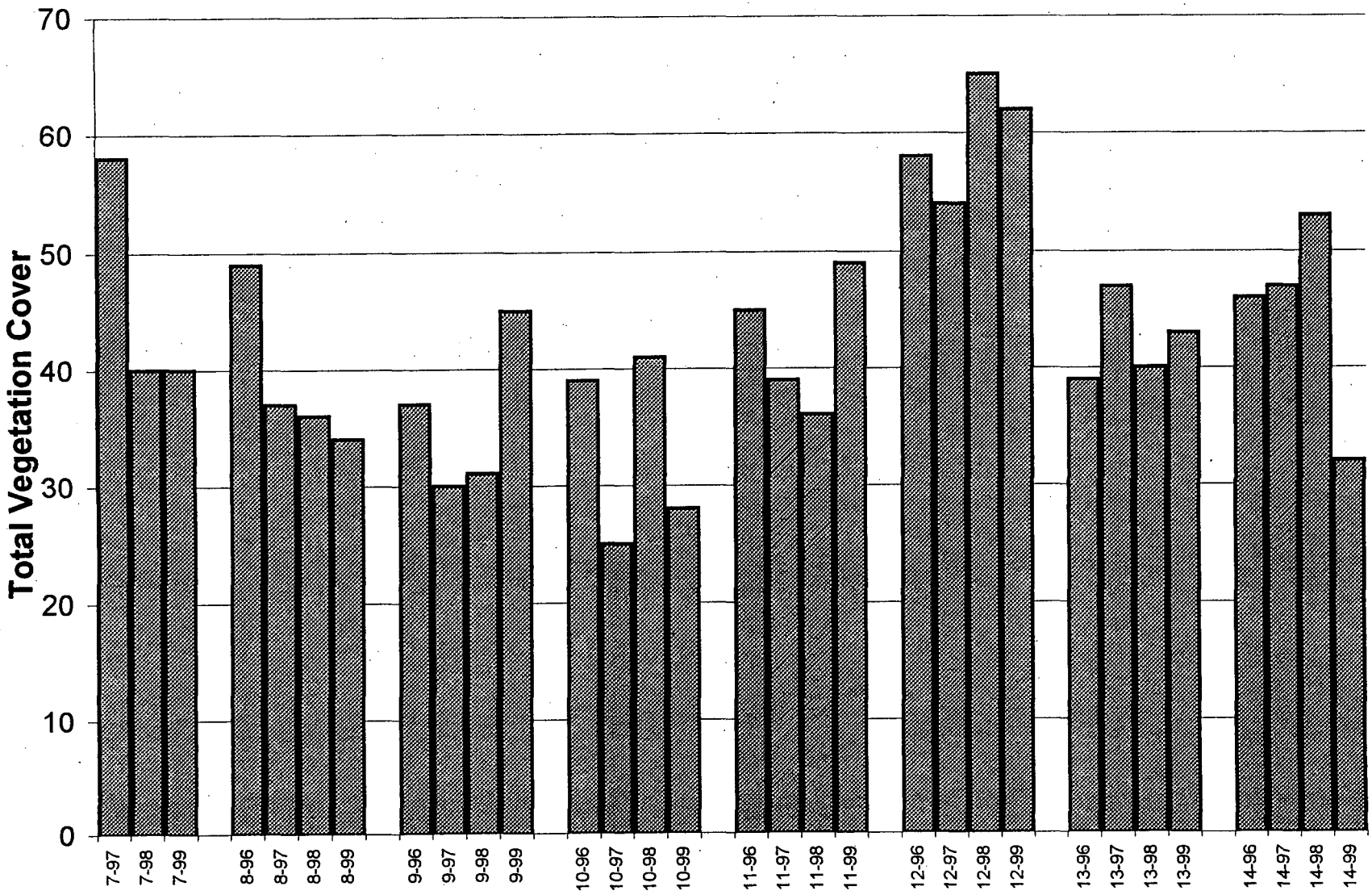

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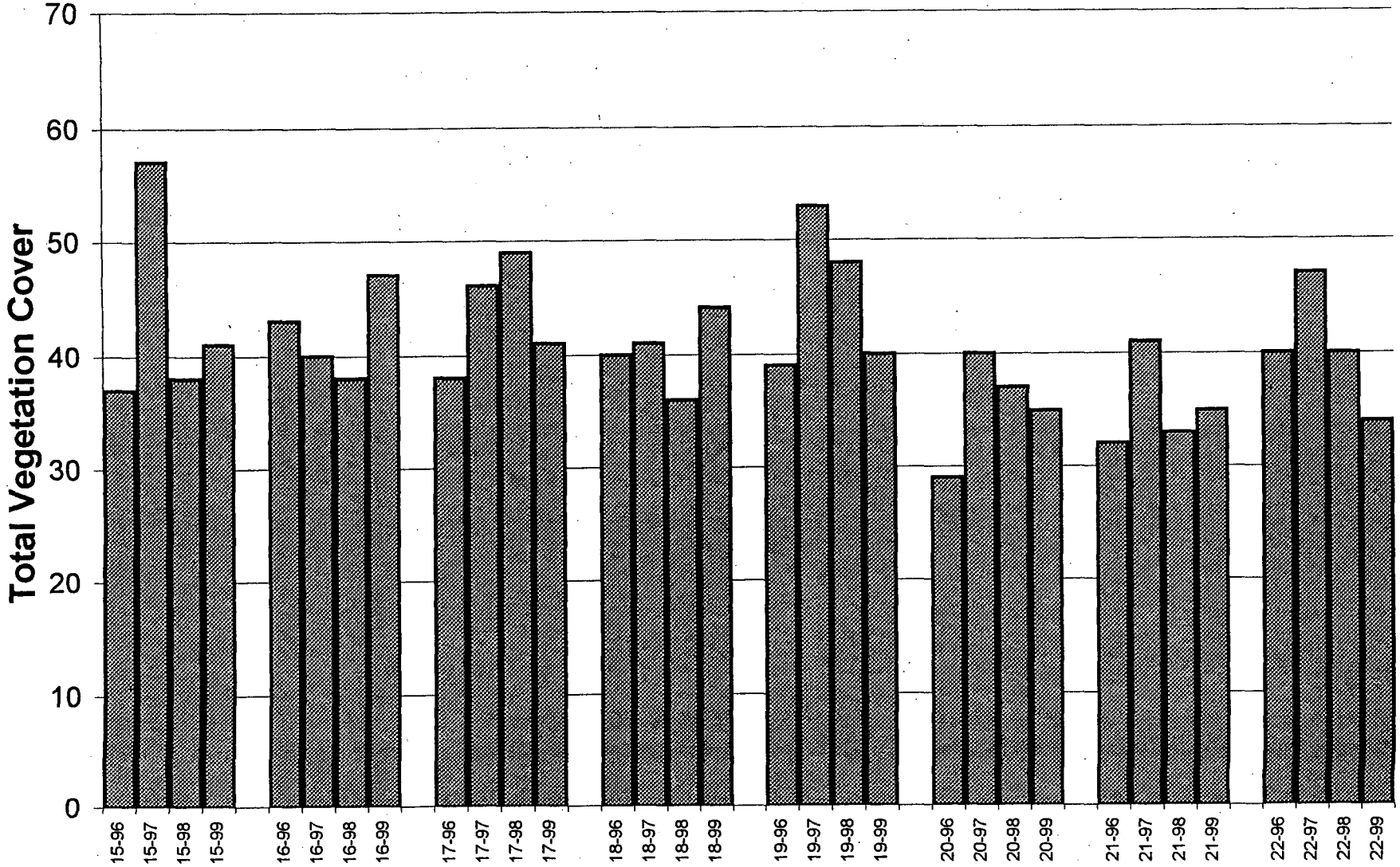

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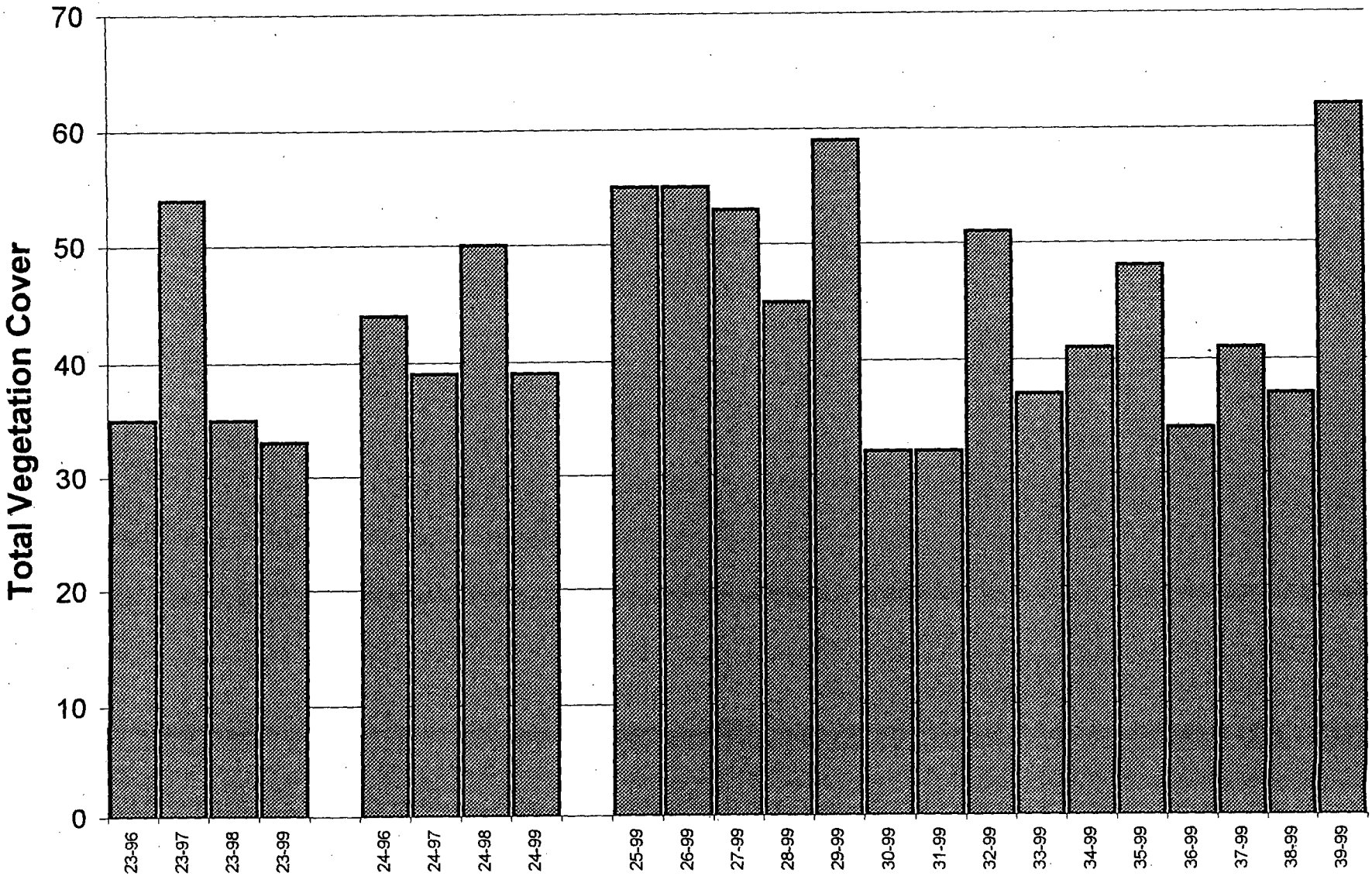
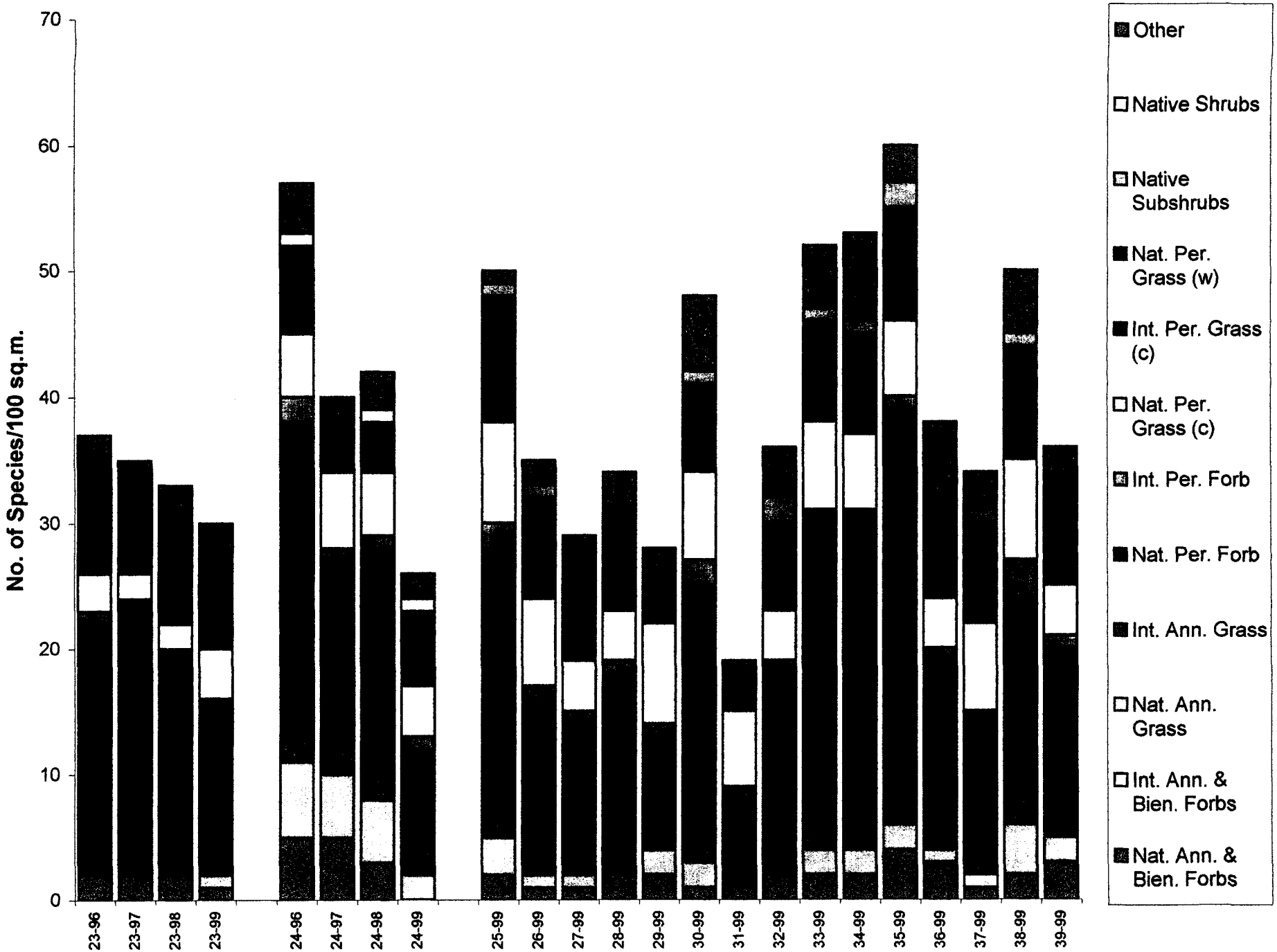


Figure 2. Species Density by Lifeform by Transect and Year of Sample-
All Sites, Fall Sample Dates. Bluestem Grassland Study, Jeff. and Bldr. Co., - CO, 1996-1998



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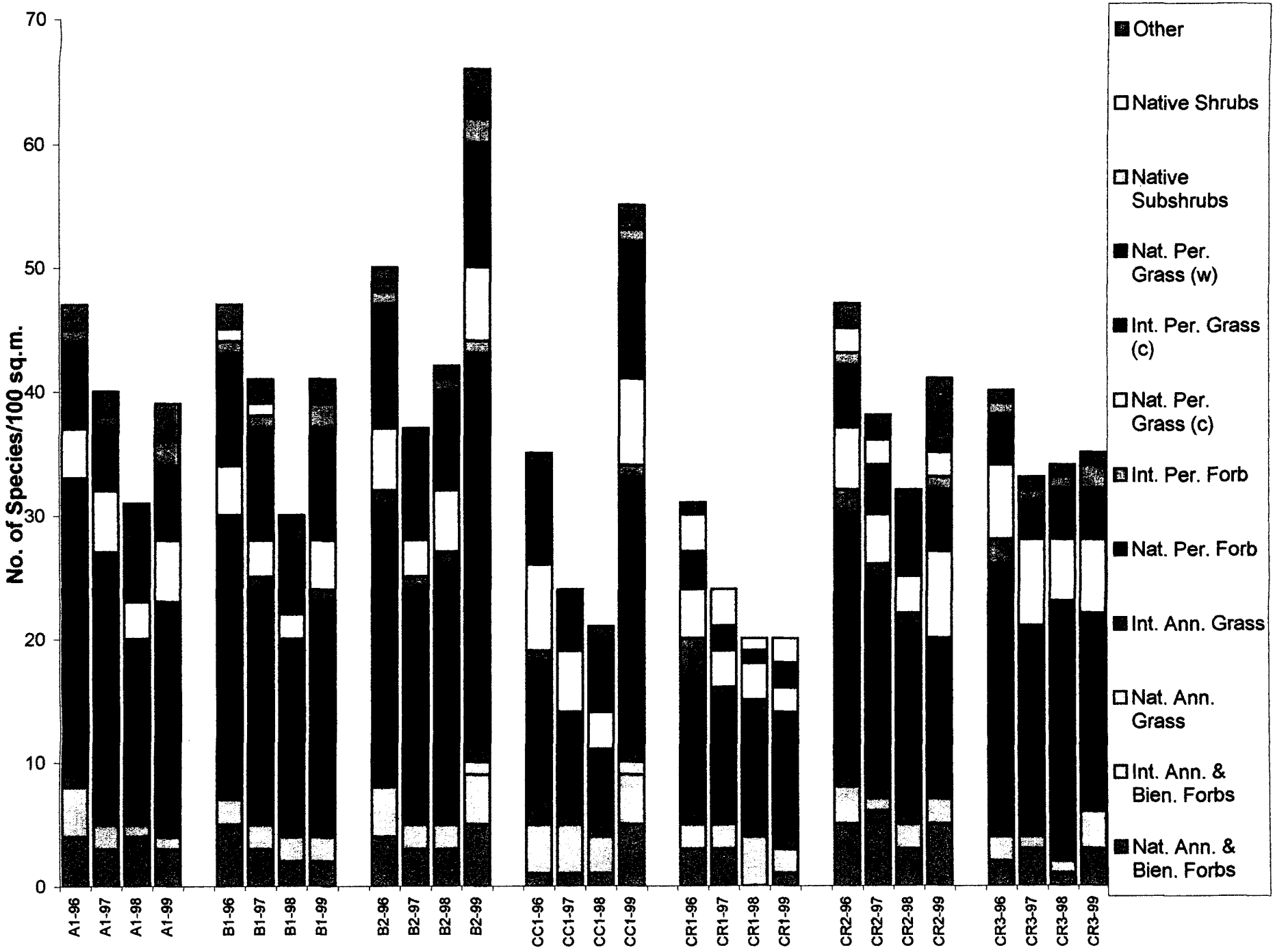

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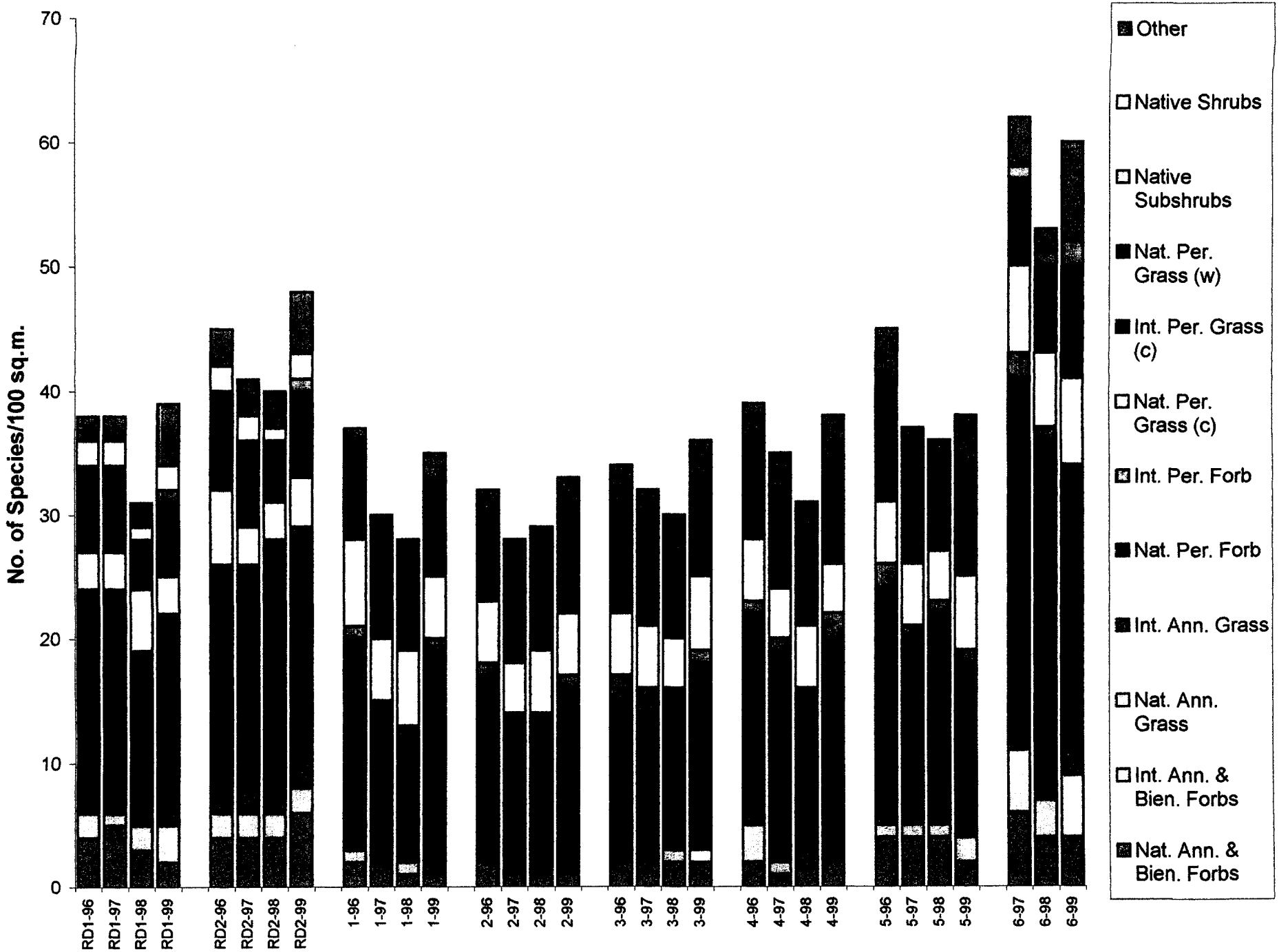

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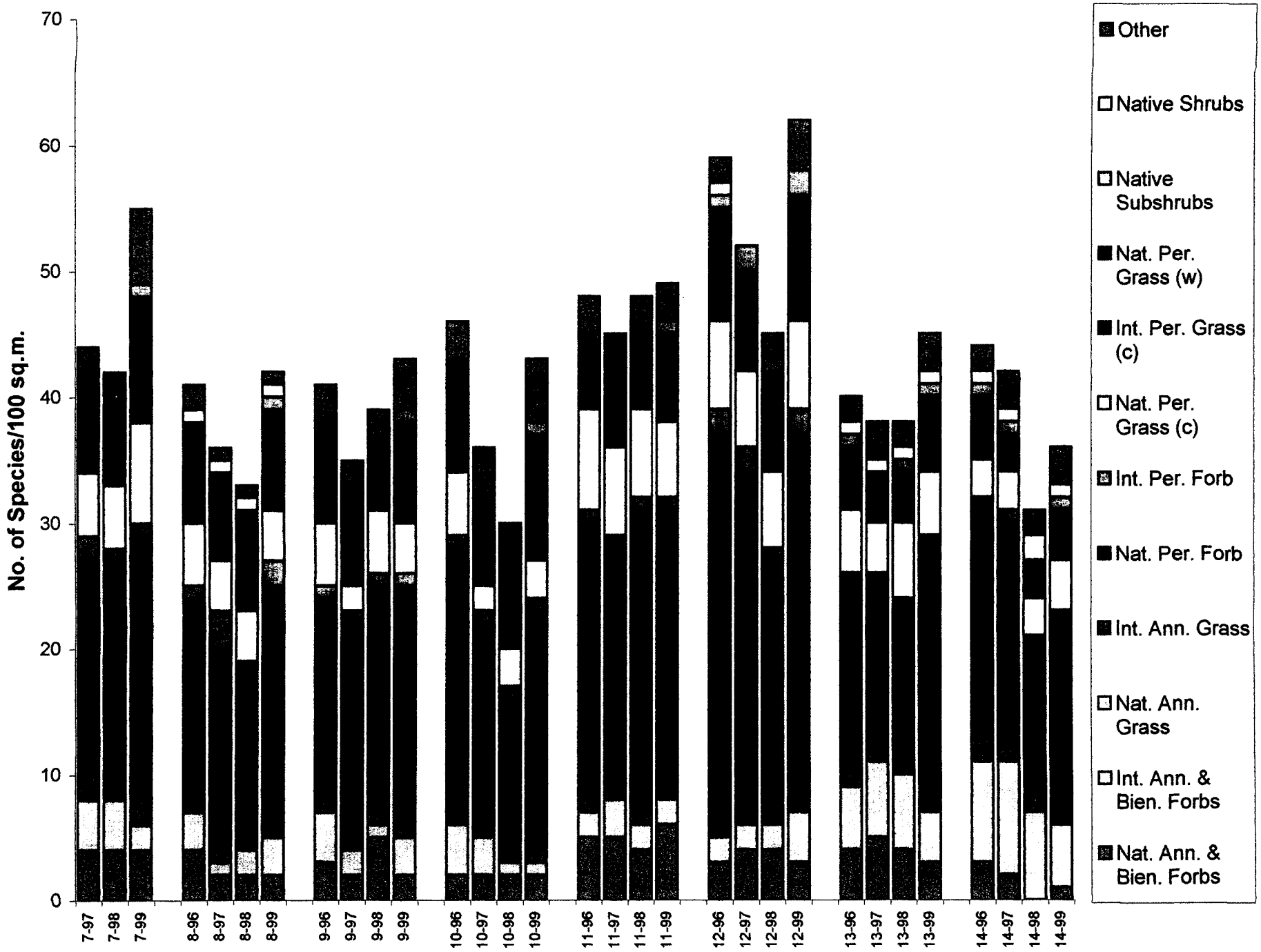

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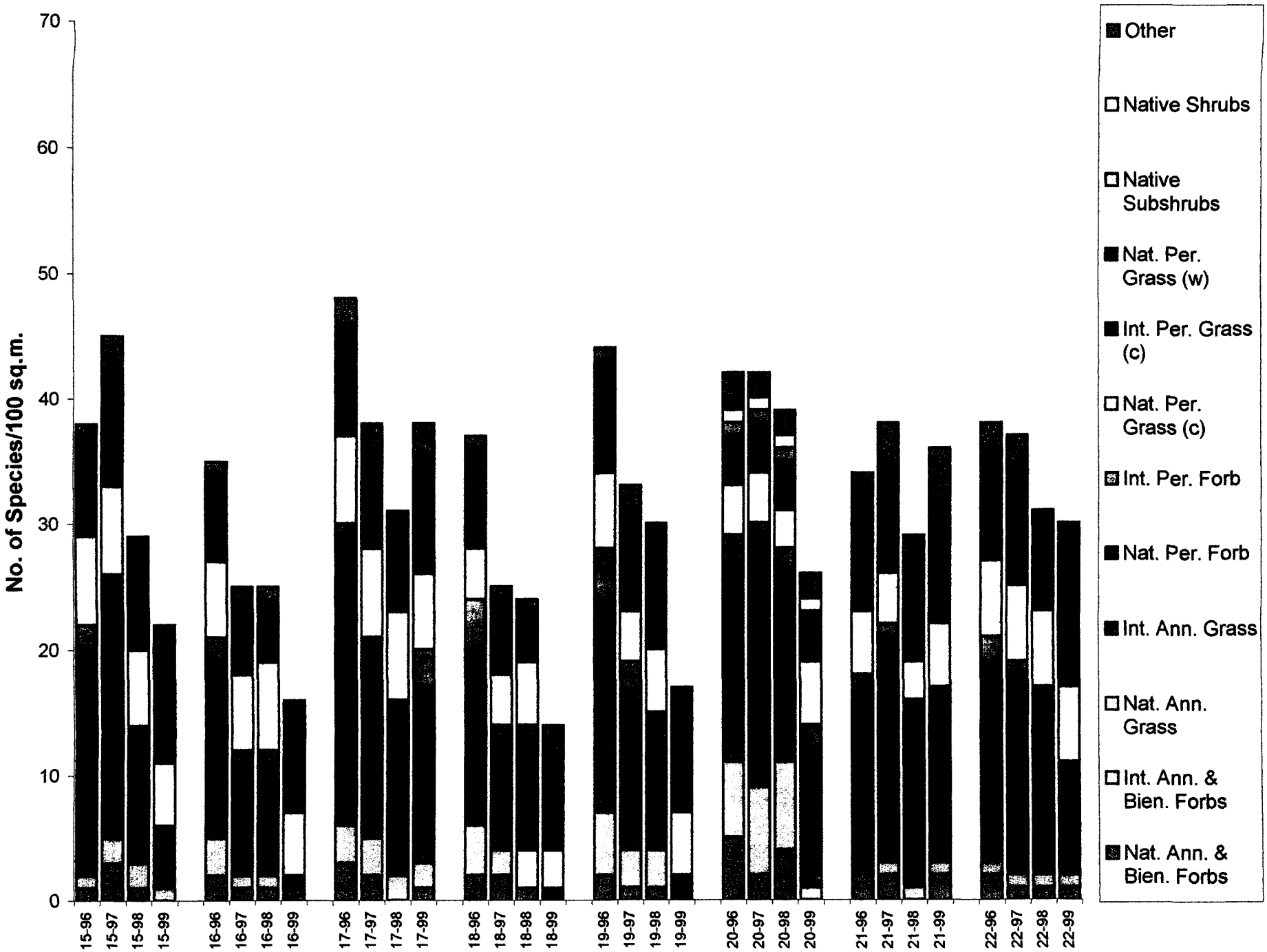
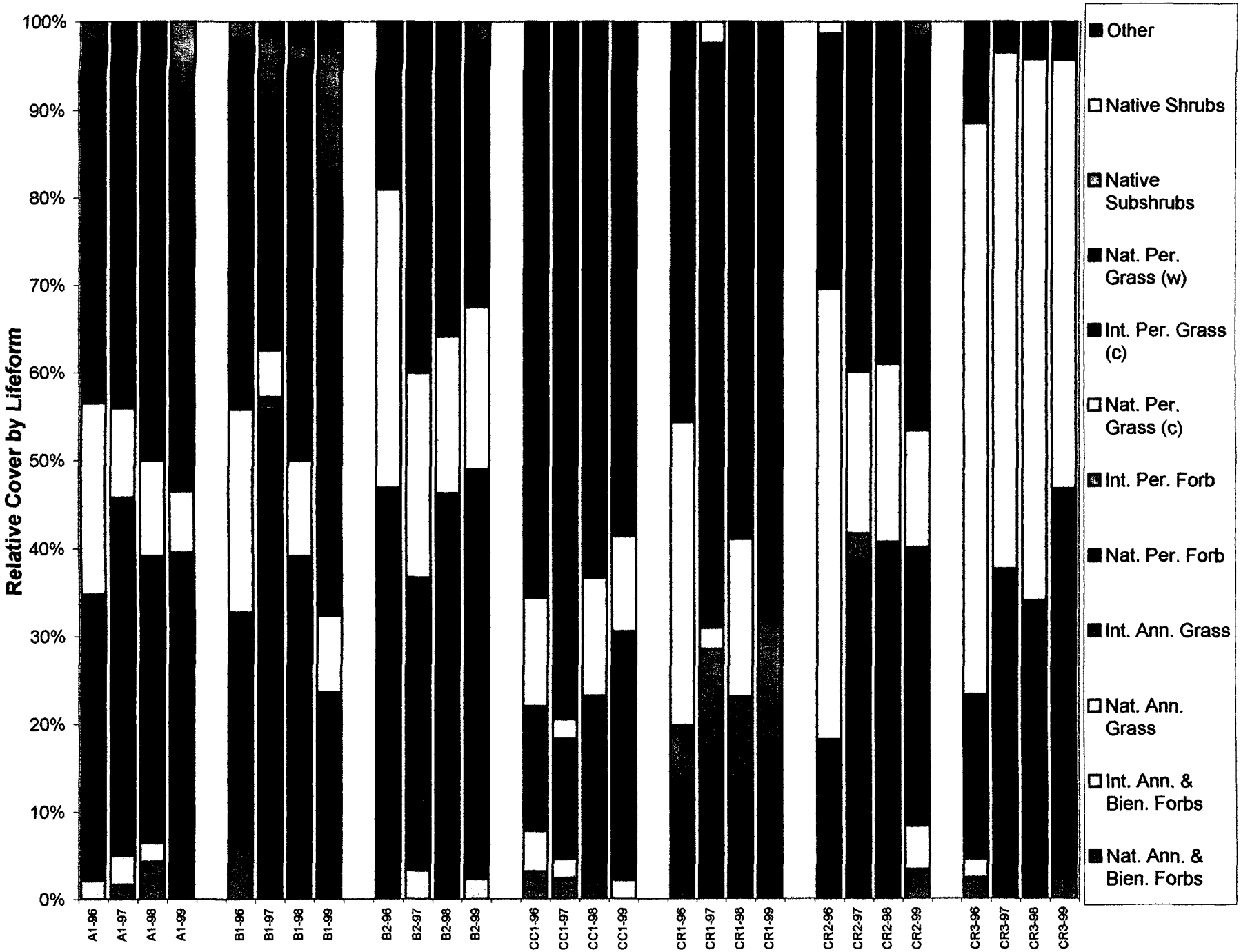


Figure 3. Relative Cover by Lifeform by Transect and Year of Sample- All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., - CO, 1996-1999



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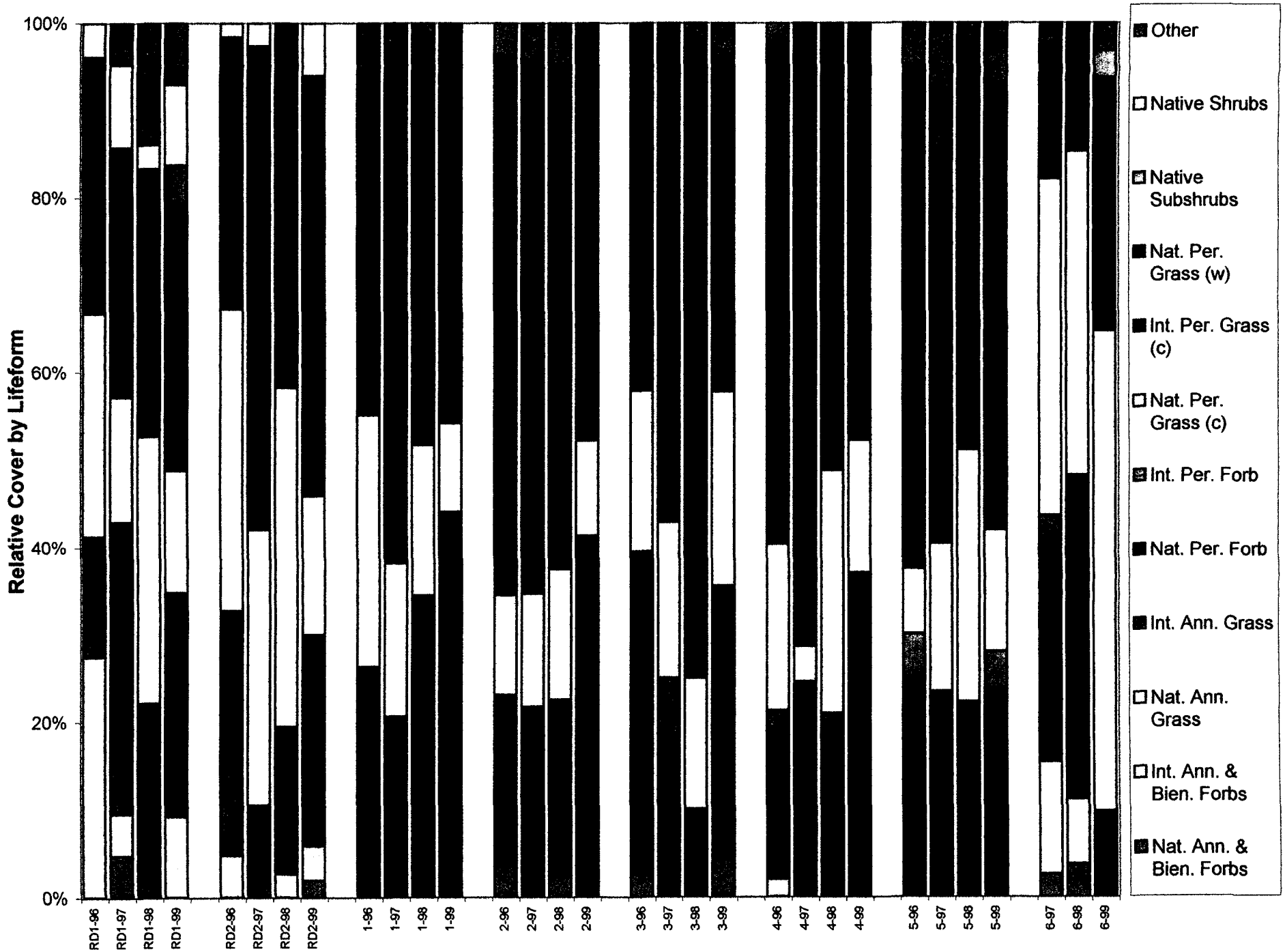

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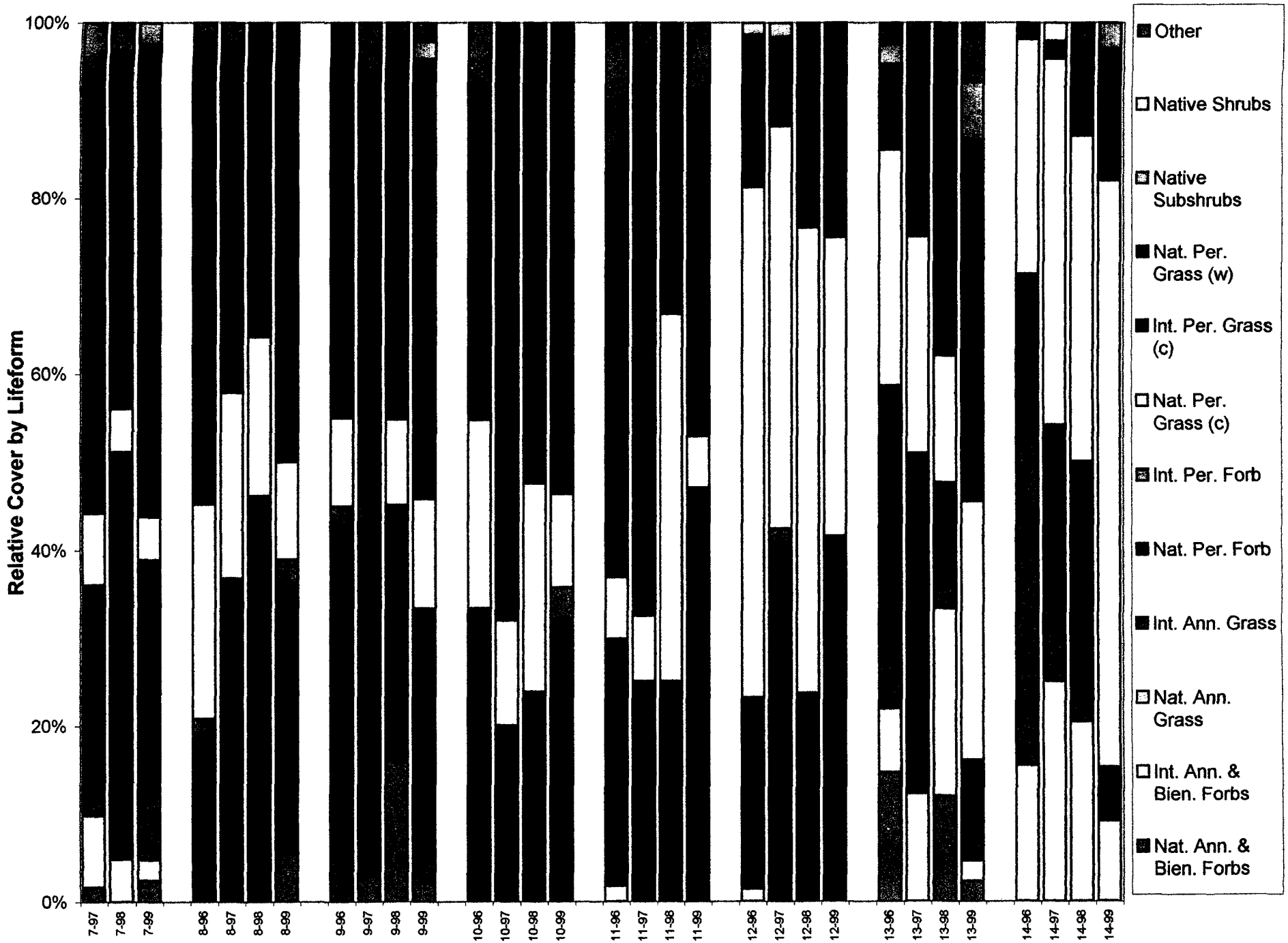

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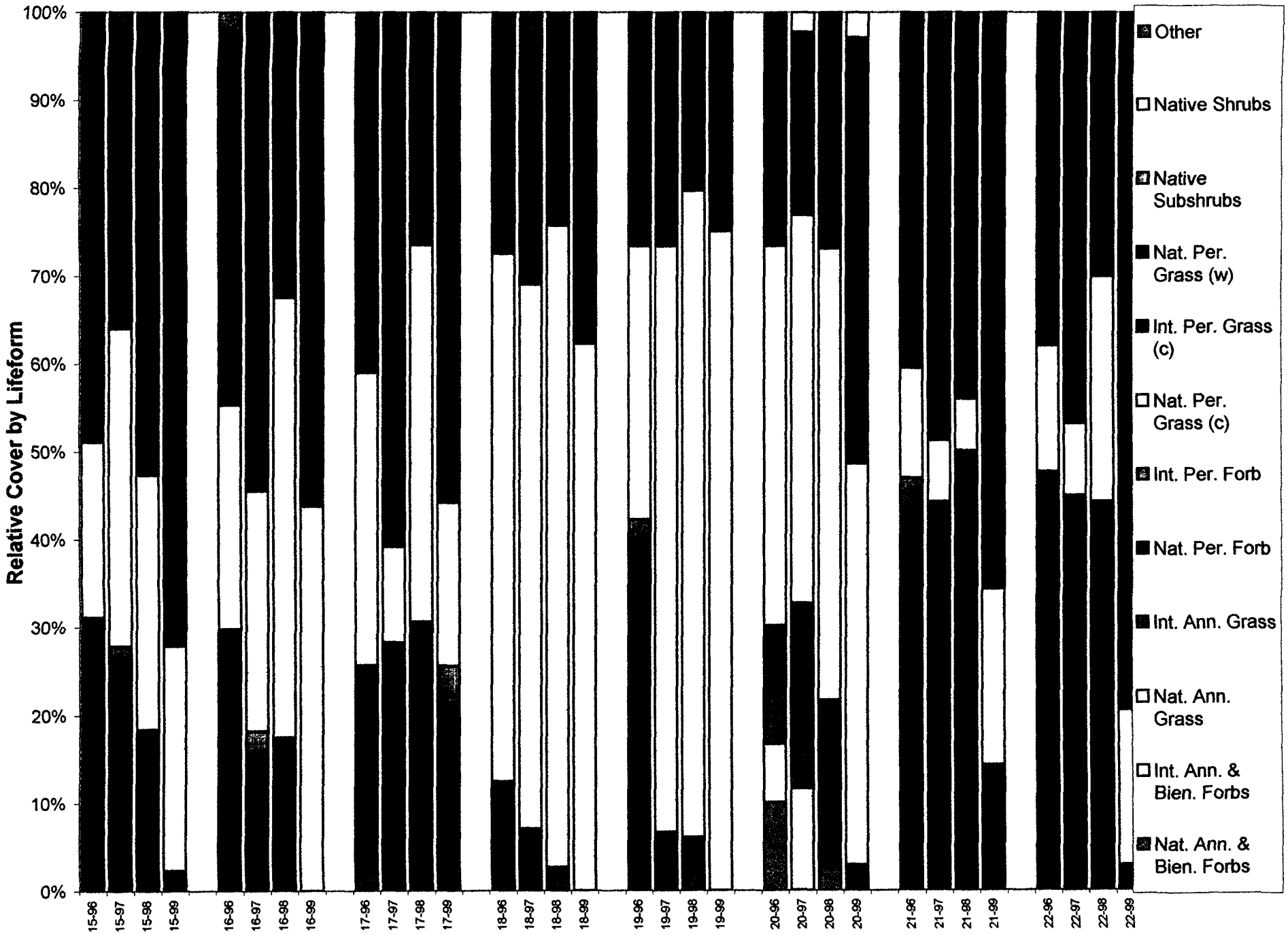

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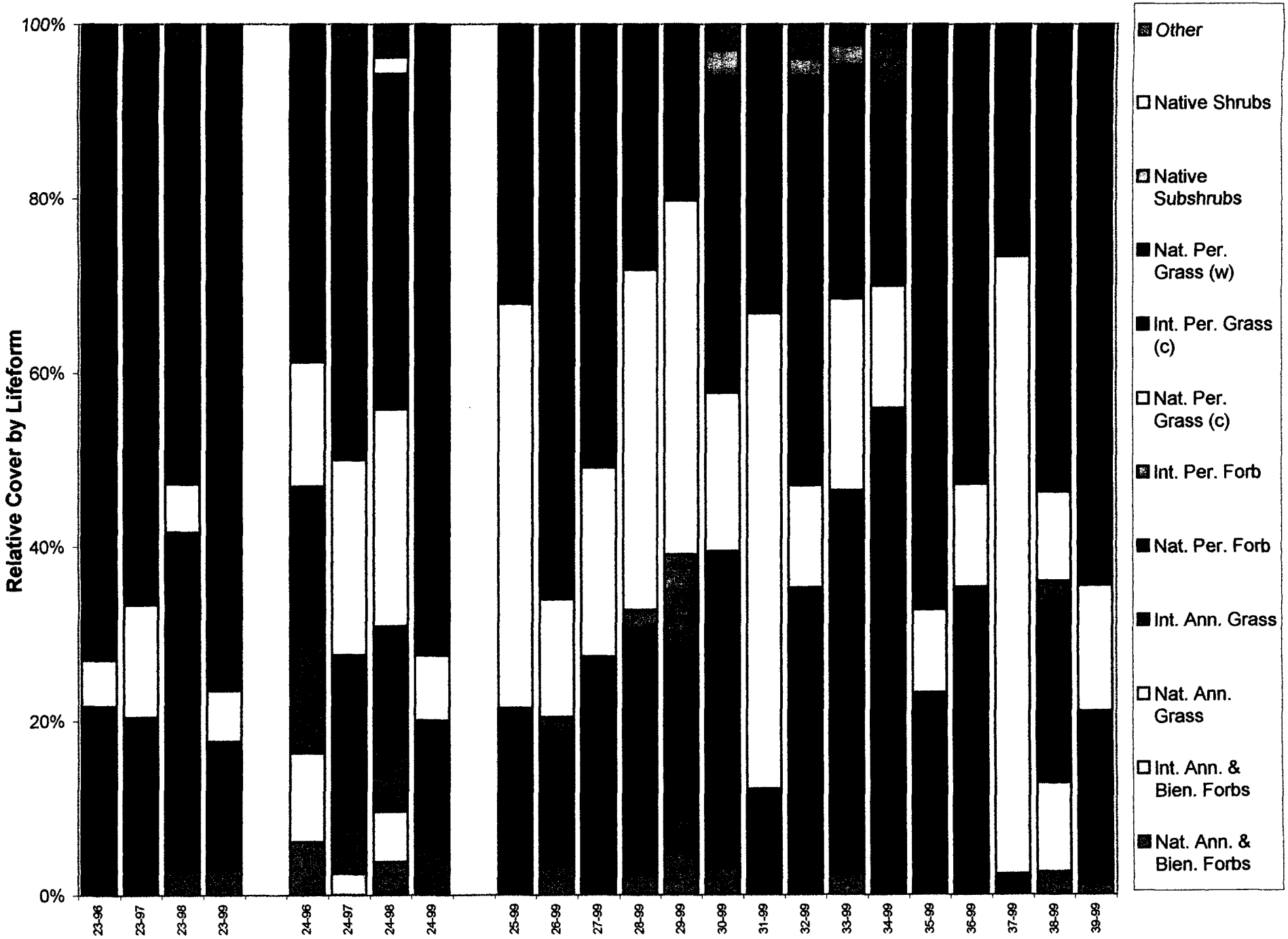
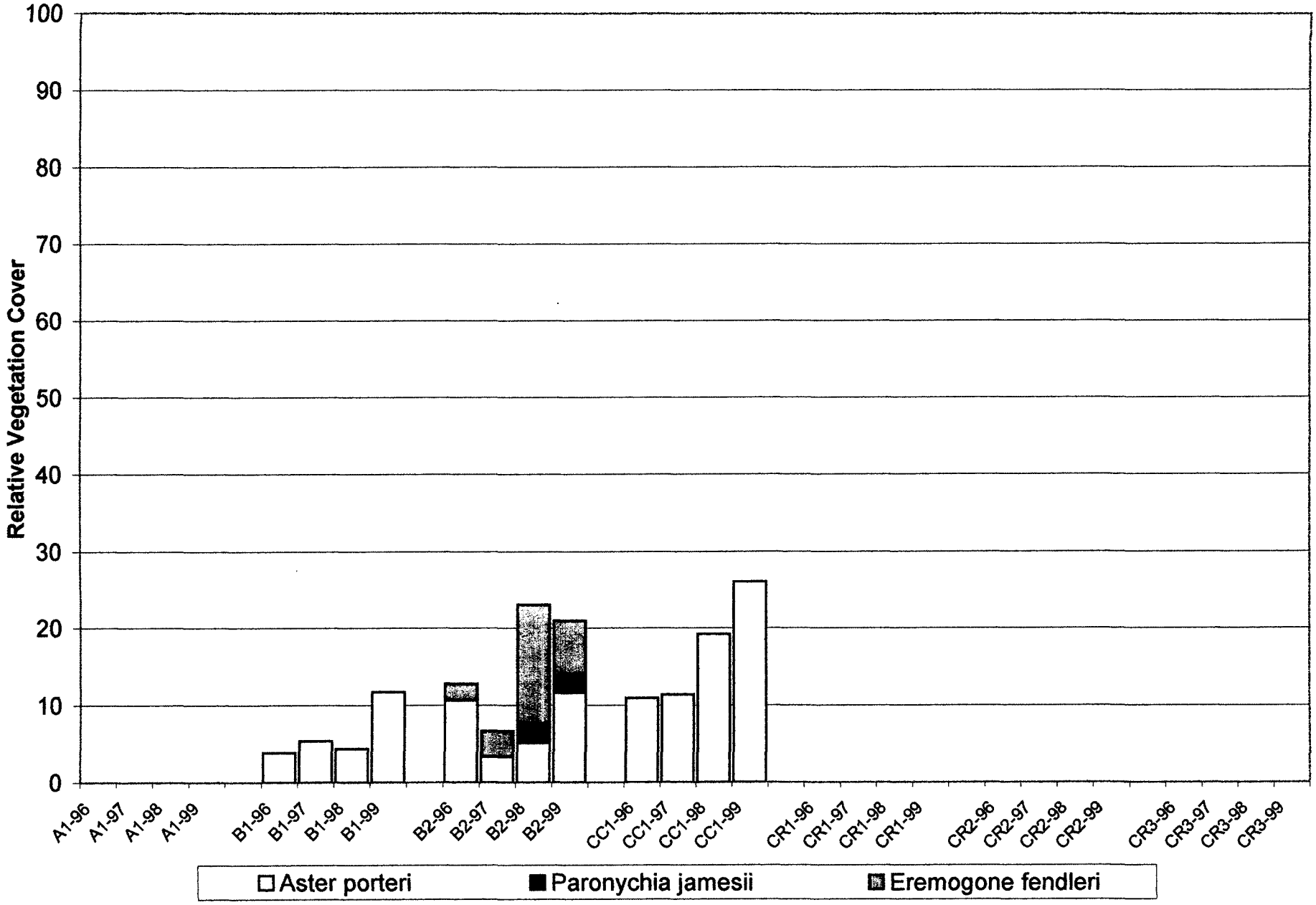


Figure 4. Relative Vegetation Cover of Select Forbs- All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO- 1996-1998



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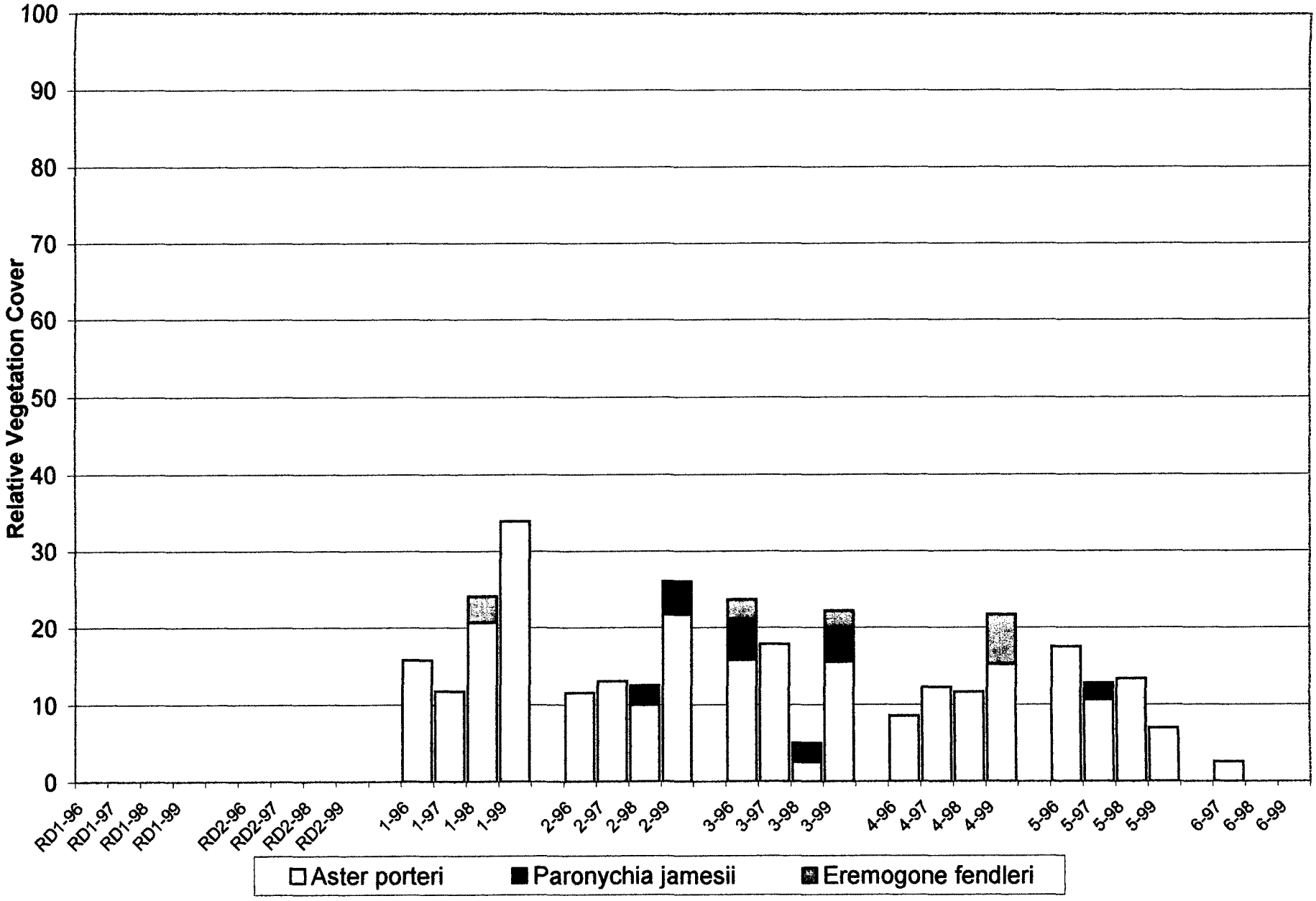

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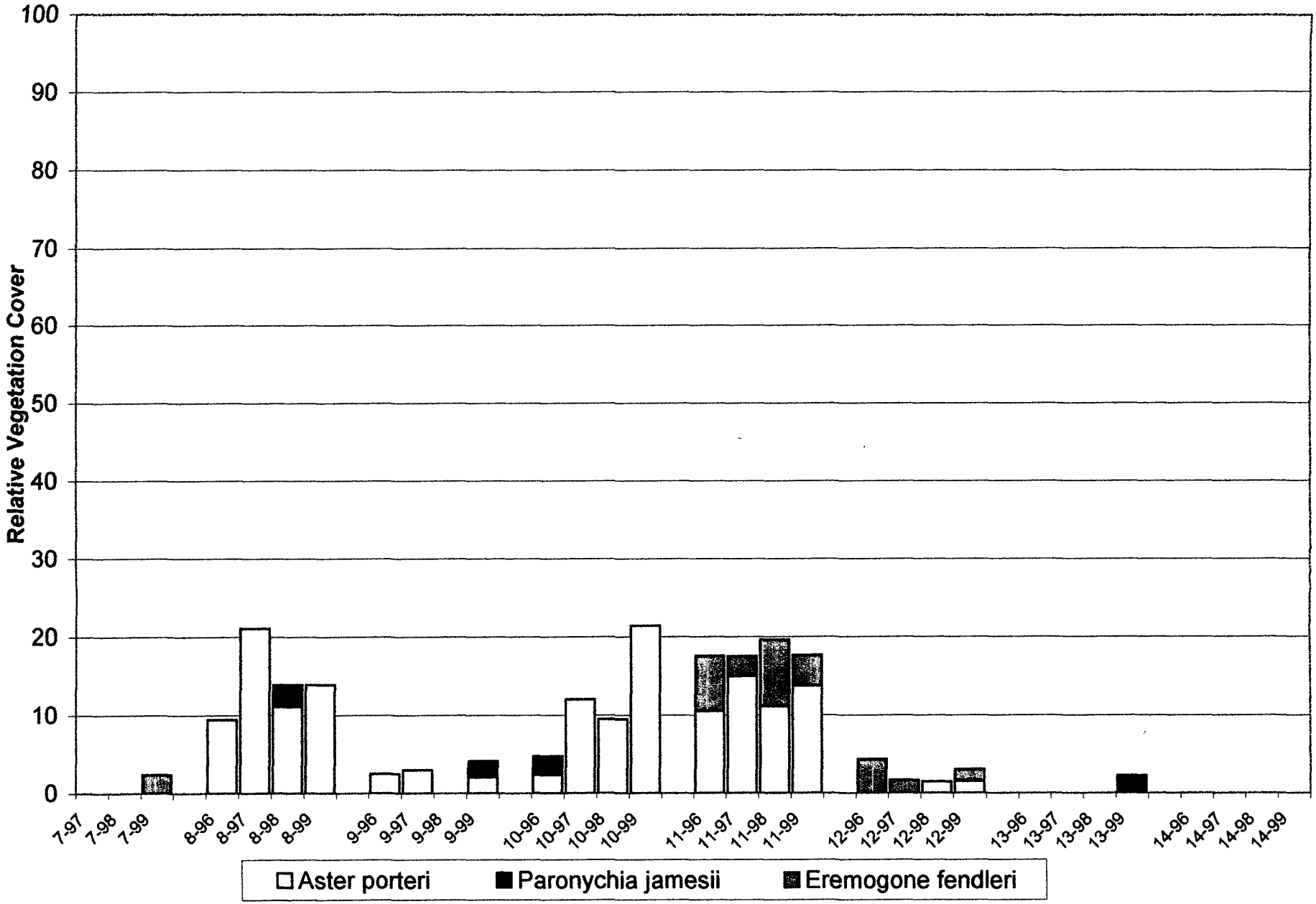

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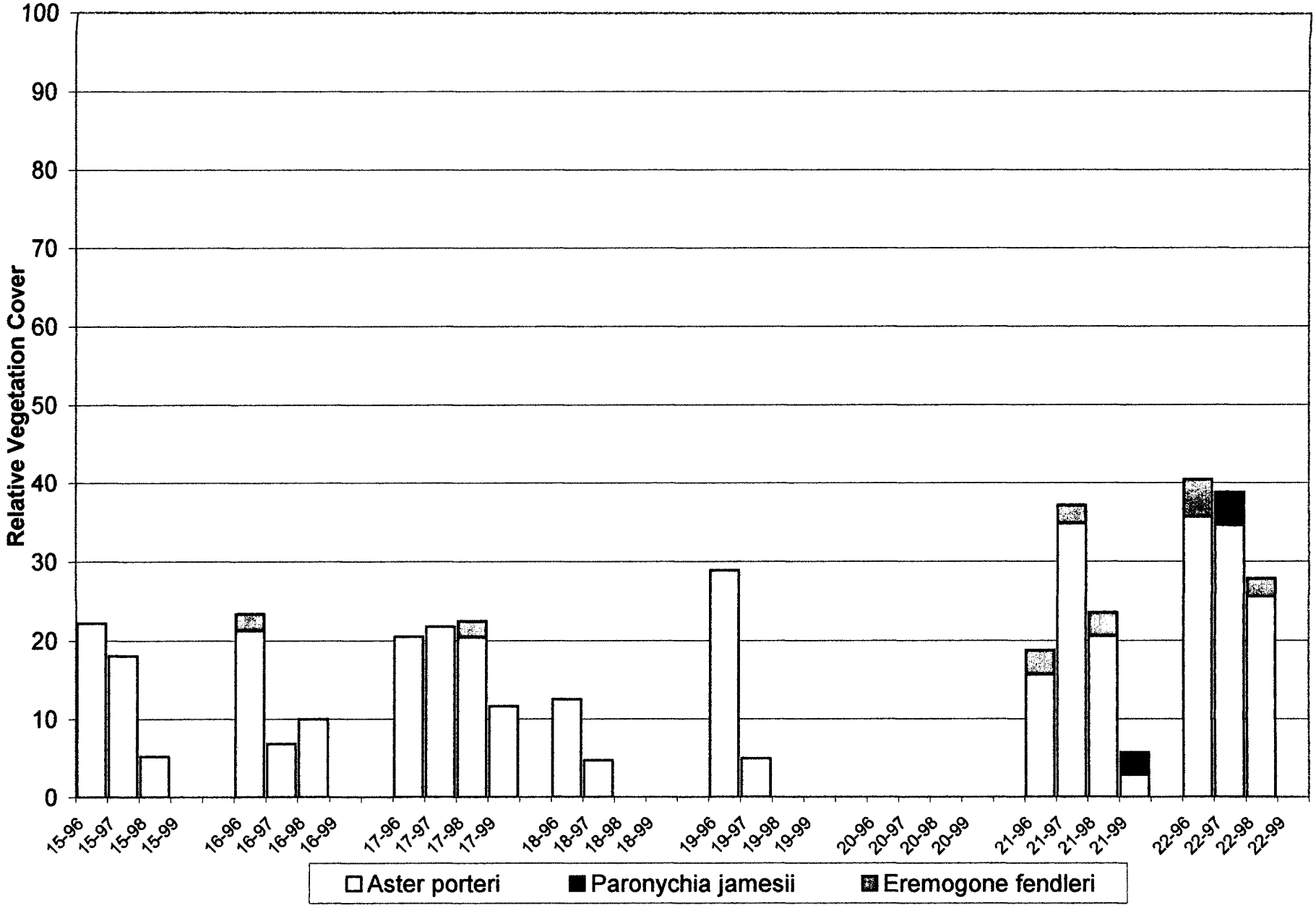

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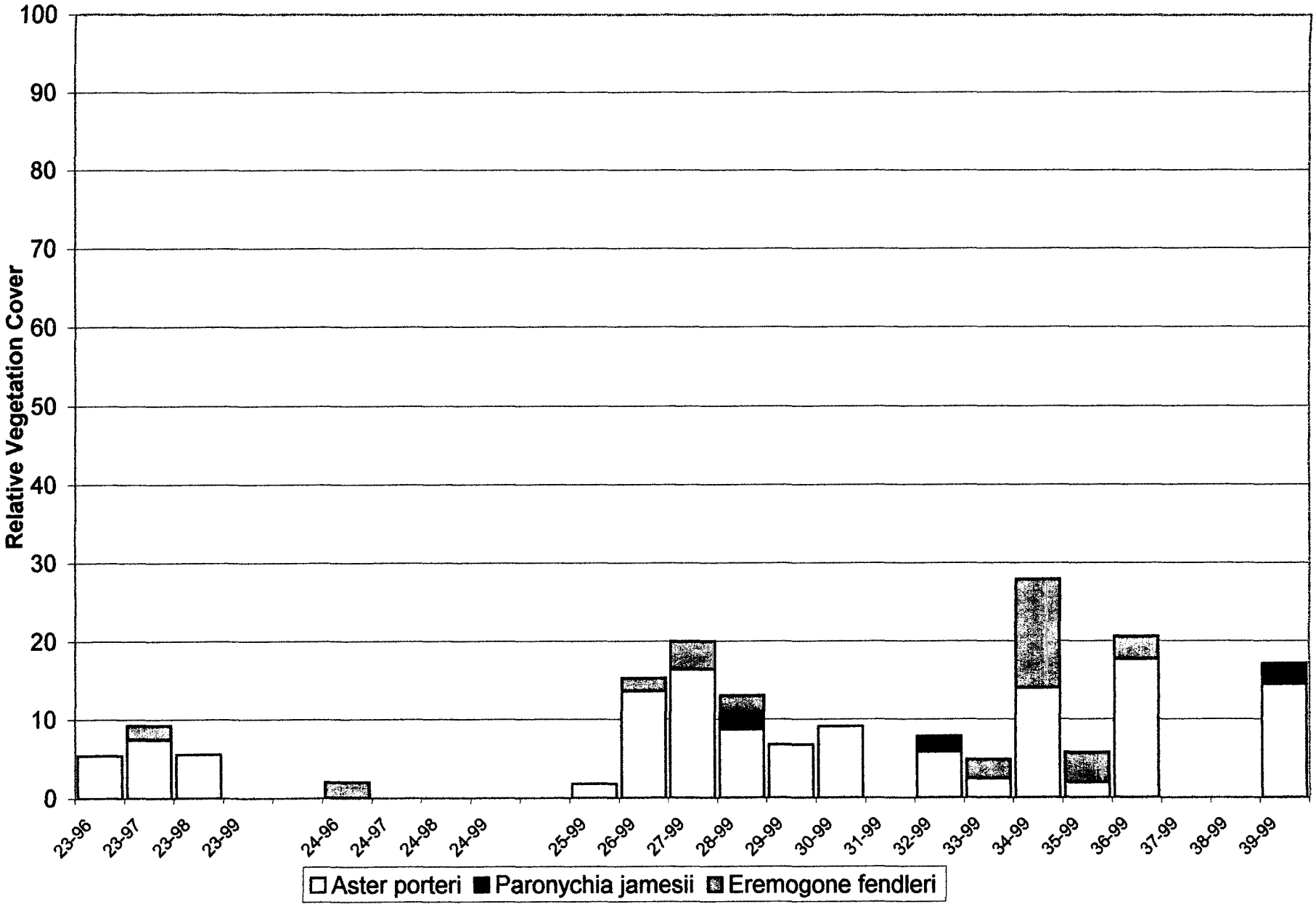
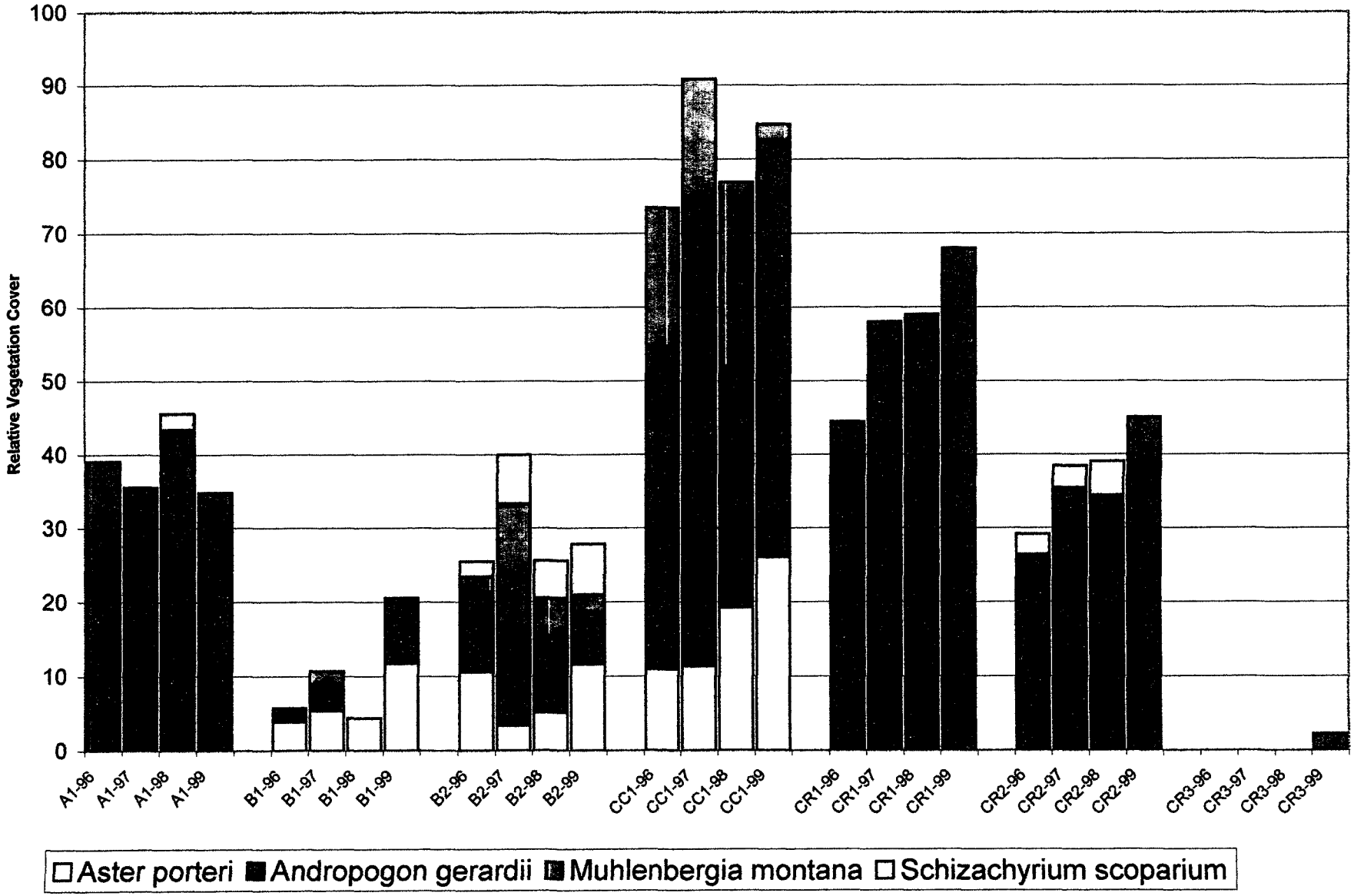


Figure 5. Relative Vegetation Cover of a Forb and Selected Grasses- All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - 1996-1999



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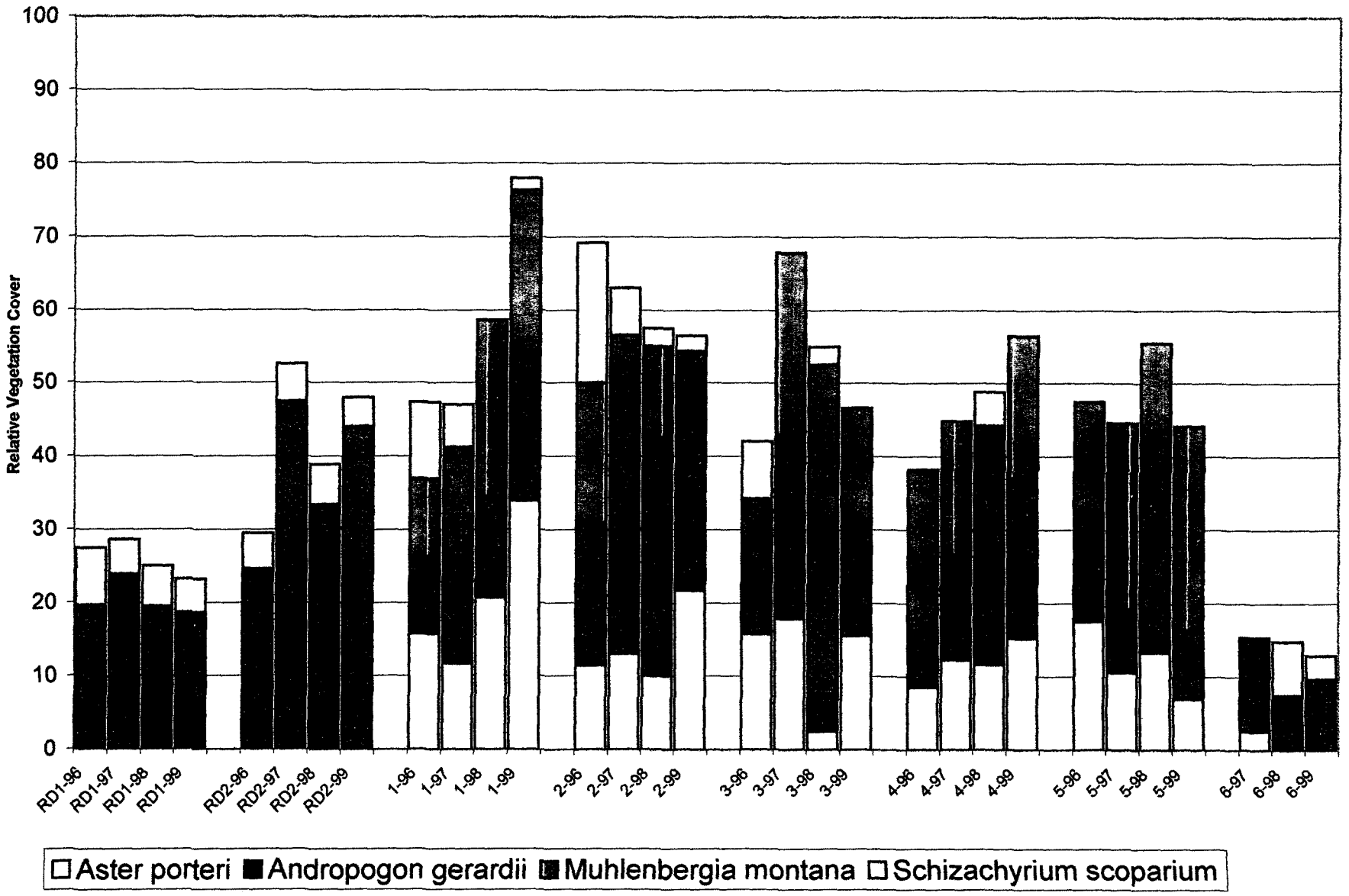

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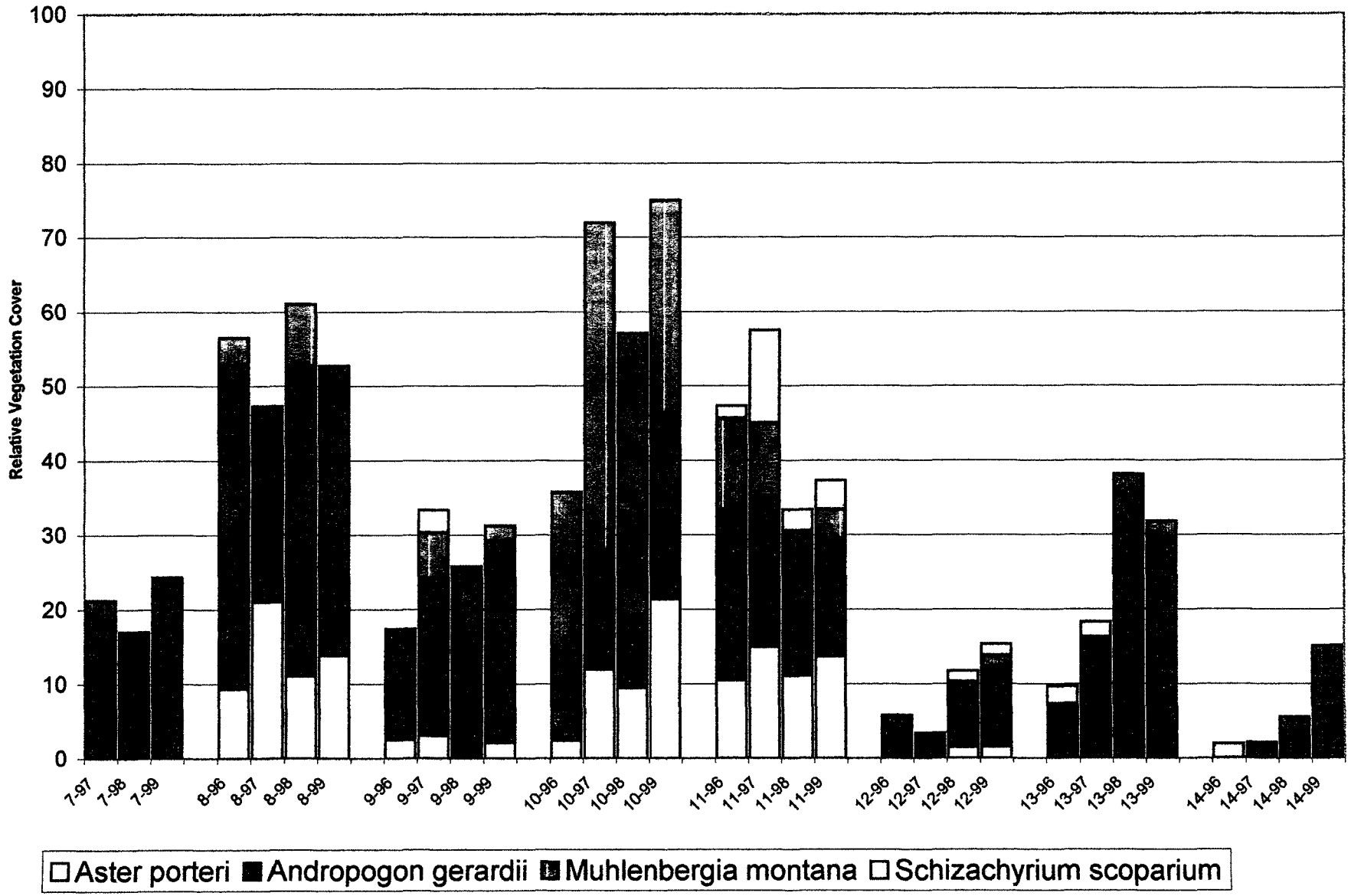

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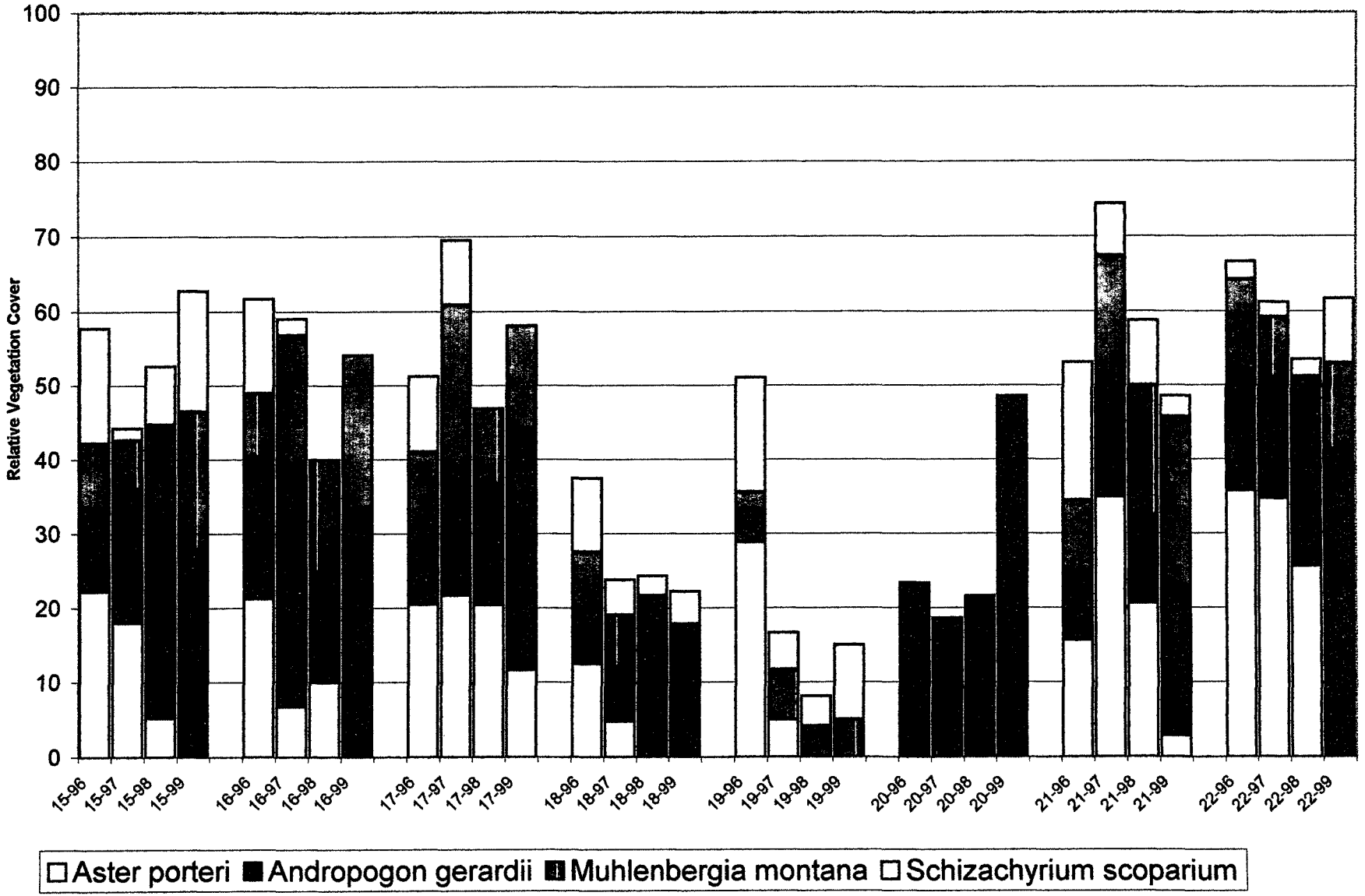

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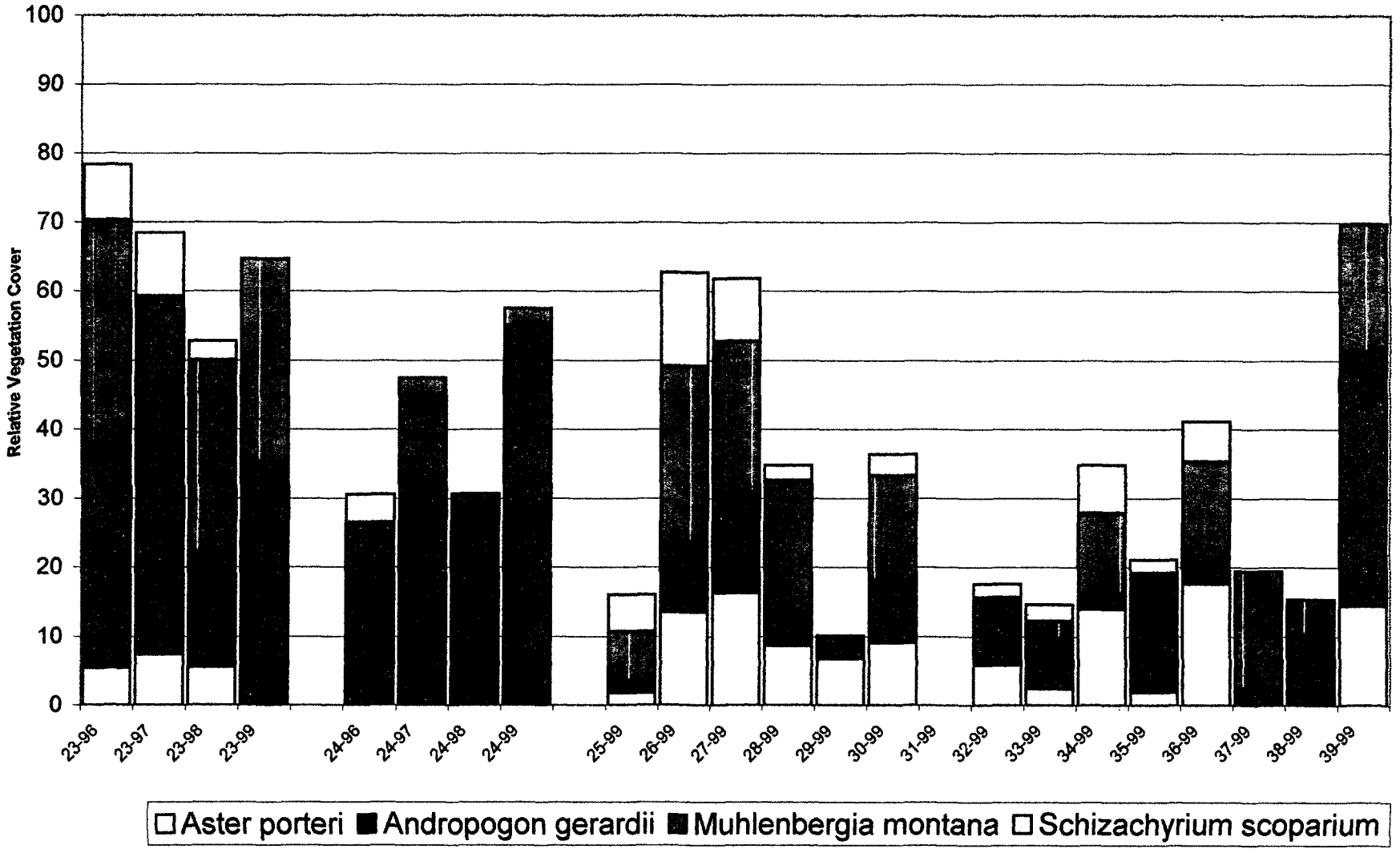
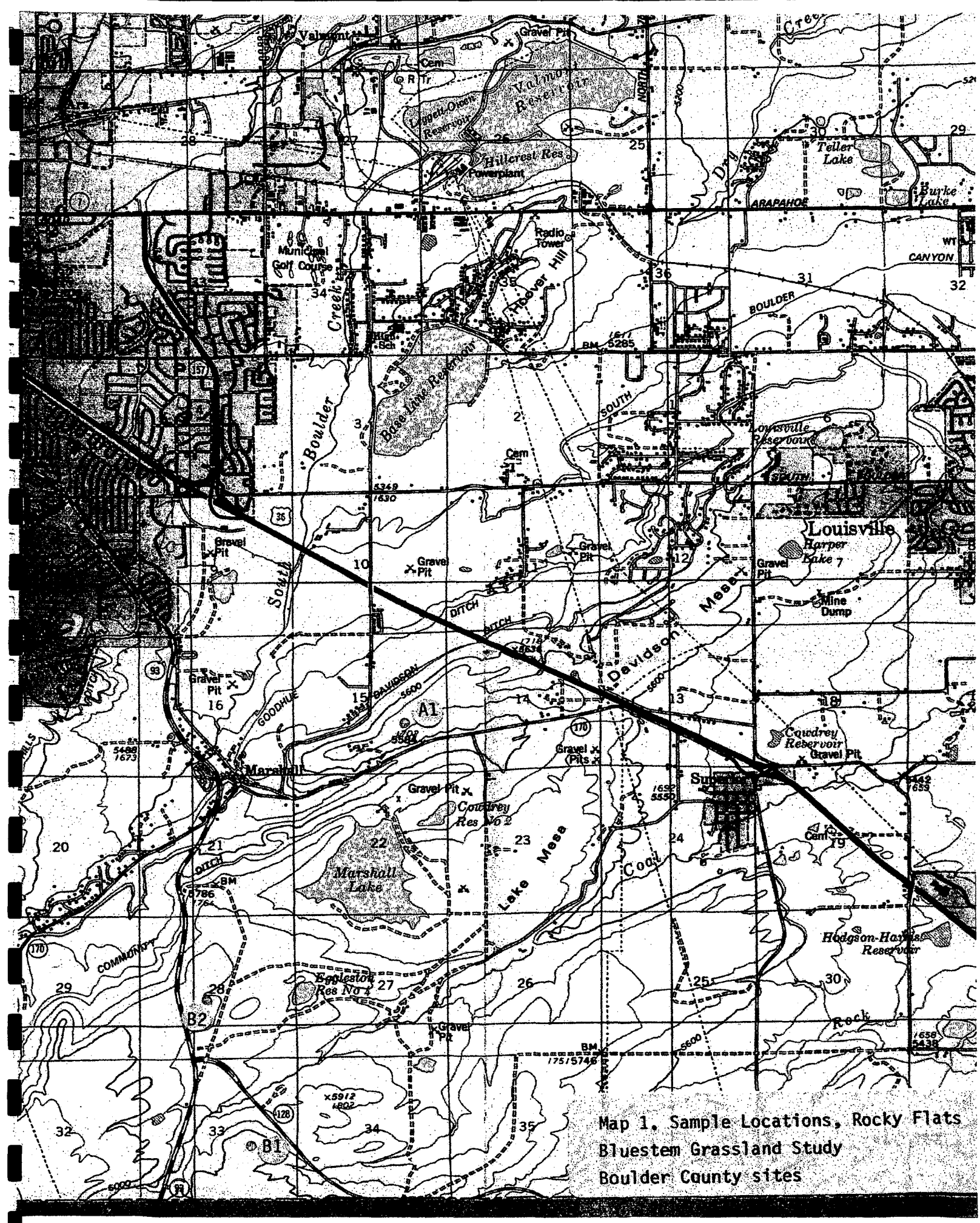
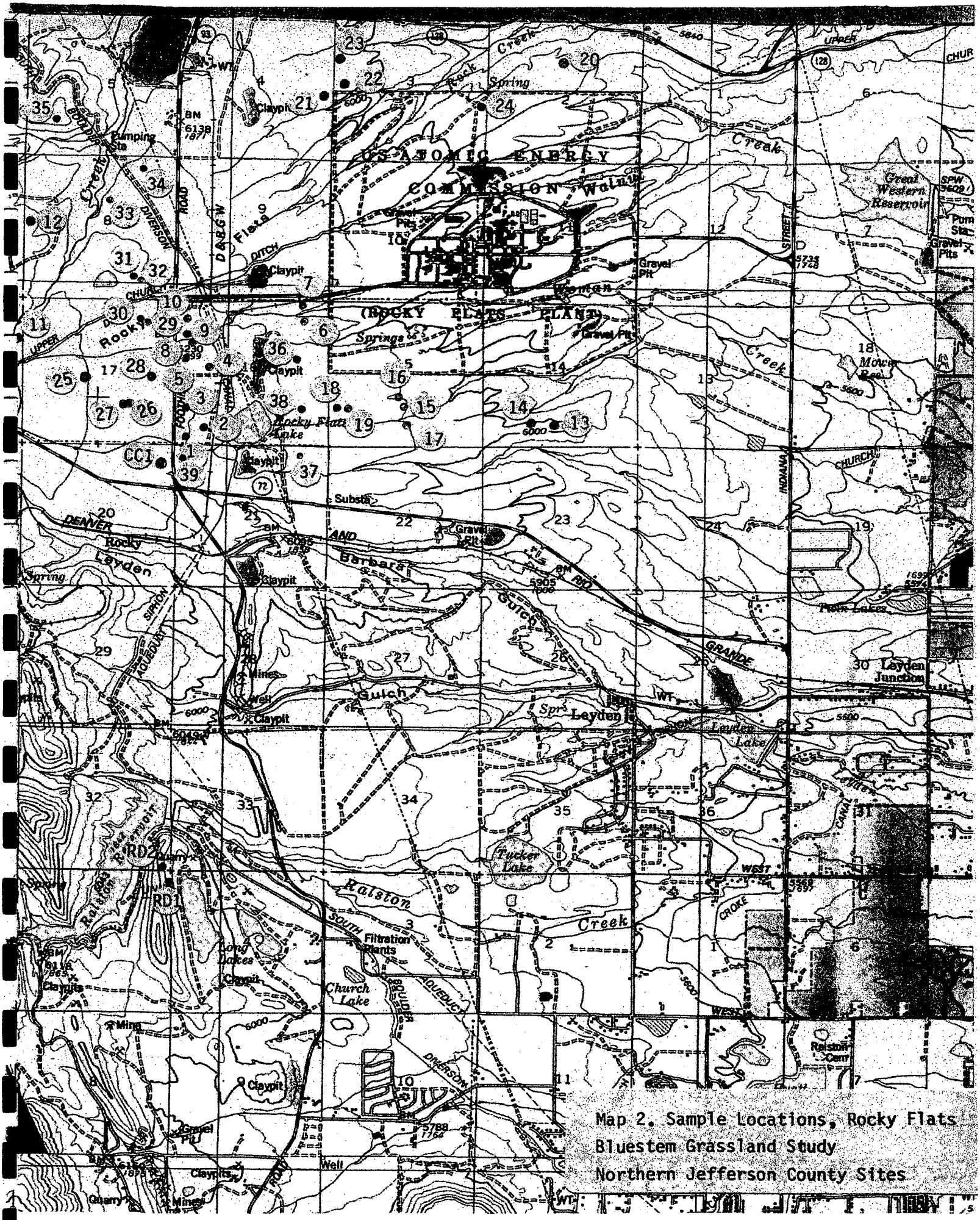
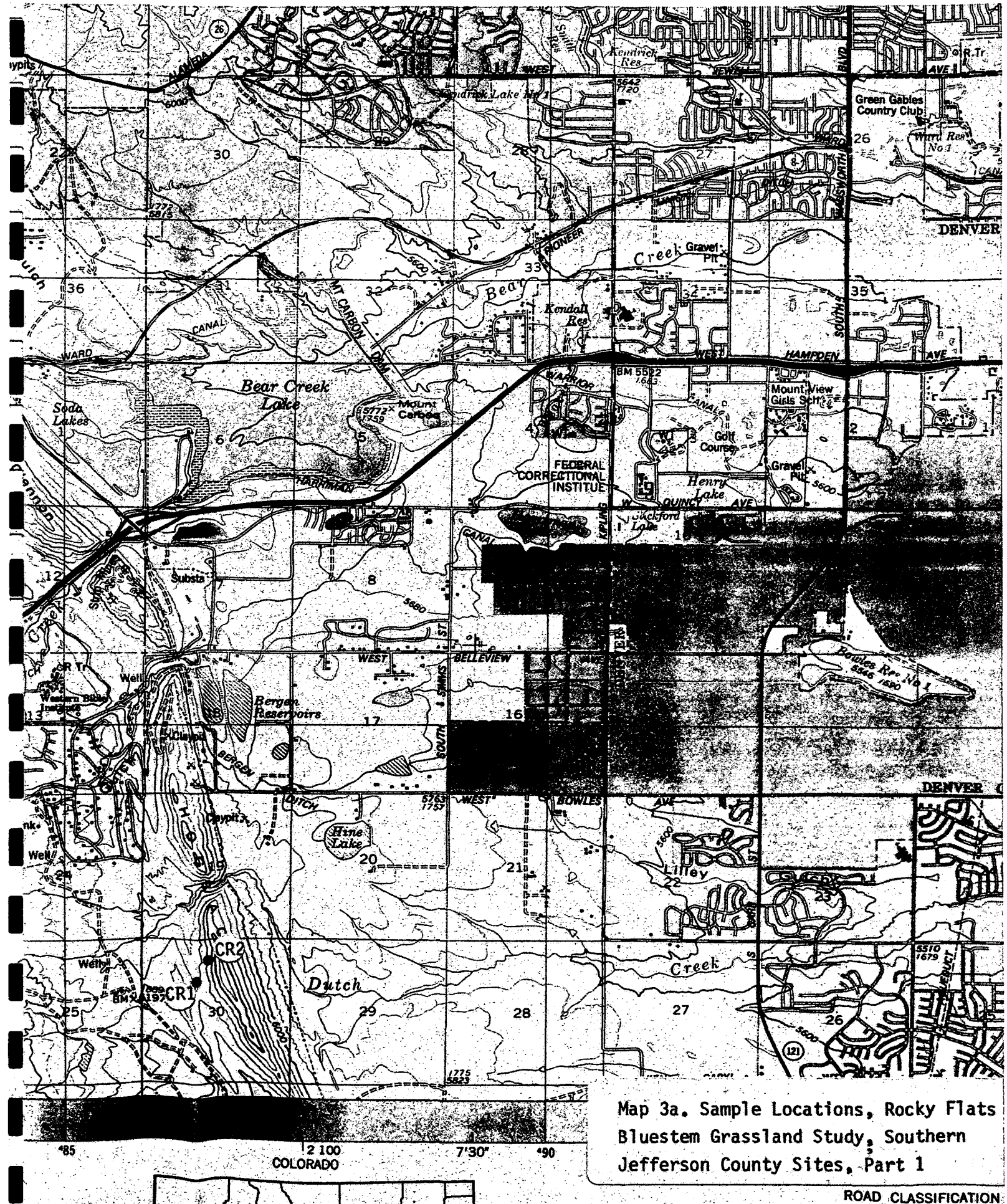


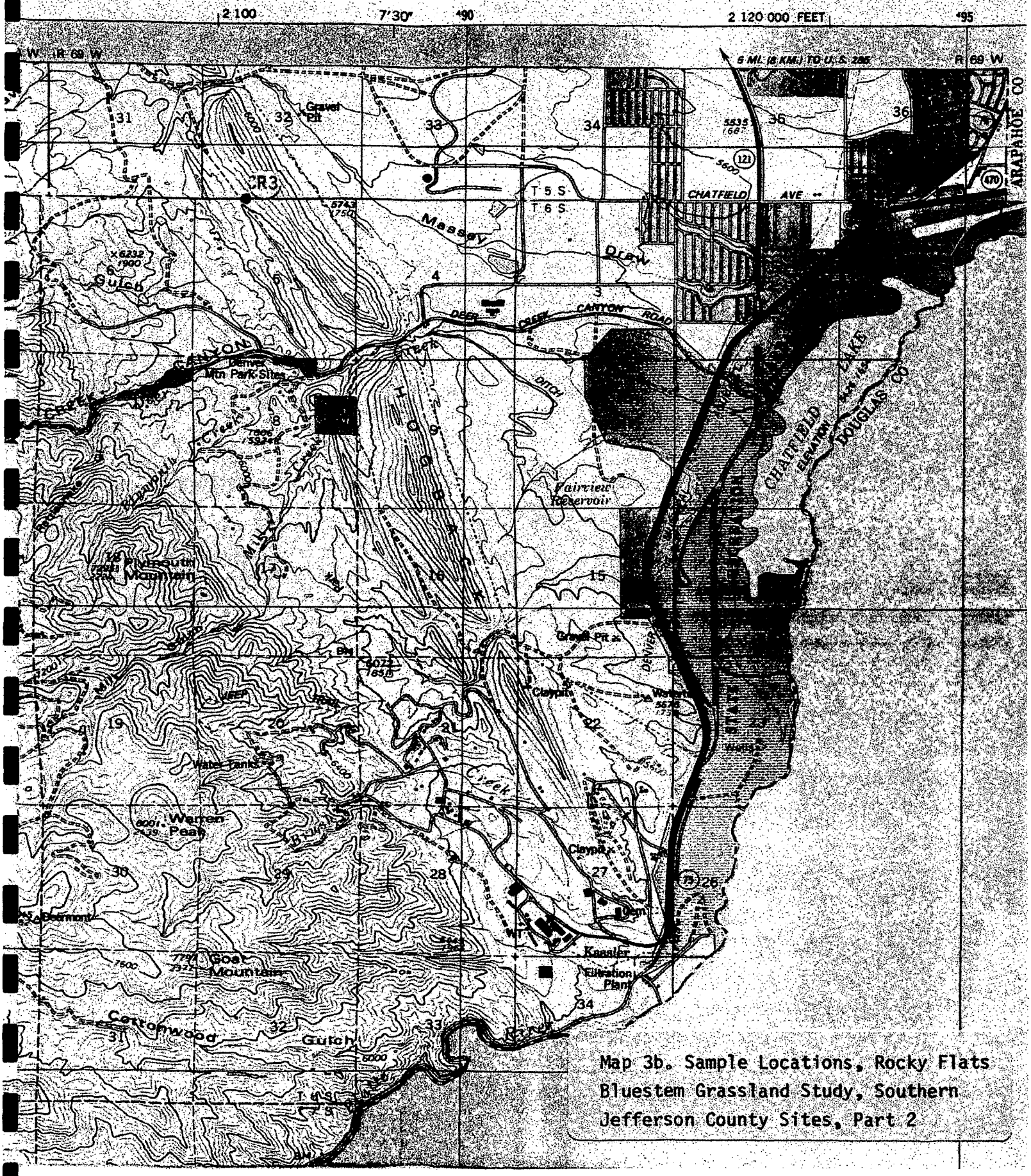


Map 1. Sample Locations, Rocky Flats Bluestem Grassland Study Boulder County sites



Map 2. Sample Locations, Rocky Flats Bluestem Grassland Study Northern Jefferson County Sites


Green Gables Country Club
Ward Res No 1
DENVER
Creek Gravel Pit
Kendall Res
Bear
Mount Carbon
Bear Creek Lake
Soda Lakes
Mount View Girls Sch
Golf Course
FEDERAL CORRECTIONAL INSTITUE
Henry Lake
Gravel Pit
Substa
BELLEVIEW
Bergen Reservoirs
Western Bible Institute
Hine Lake
Lilley
Creek
Dutch
CR1
CR2
Well
Pipelines
Bowles Res No 1
HAMPDEN AVE
QUINCY AVE
BOWLES AVE
WARD
CANAL
PIONEER
MT CARBON
HARRIMAN
WARRIOR
KIPLING
SOUTH SIMMS ST
WEST
Map 3a. Sample Locations, Rocky Flats Bluestem Grassland Study, Southern Jefferson County Sites, Part 1
ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty ro
improved sur
4 MILES
2 100
7'30"
COLORADO



Map 3b. Sample Locations, Rocky Flats Bluestem Grassland Study, Southern Jefferson County Sites, Part 2

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	FREQUENCY (%)	Species Present within 1 m. on either side of the transect. ----Sample Number---- A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE ANNUAL & BIENNIAL FORBS										
Cirsium undulatum	29.79			P	P		P		P	P
Collinsia parviflora	2.13					P				
Draba reptans	2.13				P					
Erigeron divergens	25.53	P	P				P			
Erysimum asperum	40.43		P	P			P	P	P	
Grindelia squarrosa	25.53		P							
Lactuca canadensis	2.13					P				
Oligosporus pacificus	27.66	P							P	P
Oreocarya virgata	4.26									
Pterogonum alatum	68.09		P	P	P					
TOTAL NATIVE ANN. & BIEN. FORBS	93.6	P	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS										
Acosta diffusa	19.15		P							
Alyssum parviflorum	44.68			P	P		P	P	P	P
Camelina microcarpa	12.77									
Capsella bursa-pastoris	2.13									
Carduus nutans ssp. macrolepis	12.77							P		
Chorispora tenella	2.13					P				
Erodium cicutarium	2.13									
Lactuca serriola	2.13									
Podospermum laciniatum	14.89									
Portulaca oleracea	2.13									
Tragopogon dubius ssp. major	34.04				P	P	P			
Turritis glabra	2.13			P						
Verbascum blattaria	4.26									
Verbascum thapsus	2.13									
TOTAL INTRO. ANN. & BIEN. FORBS	61.7	---	P	P	P	P	P	P	P	P
NATIVE ANNUAL GRASSES										
Critesion pusillum	2.13									
TOTAL NATIVE ANN. GRASSES	2.1	---	---	---	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES										
Anisantha tectorum	17.02								P	P
Bromus japonicus	4.26									
Poa bulbosa	2.13									
TOTAL INTRO. ANN. GRASSES	23.4	---	---	---	---	---	---	---	P	P
NATIVE PERENNIAL FORBS										
Acetosella vulgaris	4.26									
Achillea lanulosa	27.66									
Adenolinum lewisii	10.64	P					P	P		
Allium cernuum	6.38									
Allium textile	42.55	P		P	P					P
Ambrosia psilostachya var. coronopifolia	57.45	P		P			P	P	P	
Amerosedum lanceolatum	8.51									
Antennaria corymbosa	29.79		P							
Antennaria rosea	4.26									
Aphyllon fasciculatum	25.53									P
Apocynum cannabinum	4.26									
Arnica fulgens	23.40									
Artemisia ludoviciana	72.34			P		P	P		P	P

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	FREQUENCY (%)	Species Present within 1 m. on either side of the transect. ----Sample Number---- A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE PERENNIAL FORBS (continued)										
Aster porteri	70.21		P	P	P					
Astragalus agrestis	4.26							P		
Astragalus flexuosus	2.13									
Astragalus shortianus	21.28			P			P			
Astragalus spp.	2.13									
Calylophus serrulatus	10.64	P		P						
Campanula rotundifolia	2.13			P						
Castilleja chromosa	4.26									
Castilleja sessiliflora	25.53		P	P						
Cerastium strictum	21.28					P	P			P
Claytonia rosea	2.13									
Comandra umbellata ssp. pallida	29.79									
Cymopterus spp.	2.13									
Dalea candida var. oligophylla	2.13		P							
Dalea purpurea	6.38								P	P
Delphinium nuttallianum	14.89					P	P		P	
Drymocallis fissa	14.89									
Eremogone fendleri	53.19			P						
Erigeron flagellaris	6.38									
Erigeron pumilus	2.13									
Erigeron vetensis	12.77									
Eriogonum flavum var. flavum	10.64								P	P
Frasera speciosa	6.38		P							
Gaillardia aristata	53.19						P			
Gaura coccinea	2.13									
Geranium richardsonii	2.13									
Harbouria trachypleura	10.64			P						
Helianthus pumilus	4.26									
Helianthus rigidus ssp. subrhomboideus	2.13									
Heterotheca fulcrata	31.91		P	P	P		P	P	P	
Heterotheca villosa	61.70	P	P	P			P	P	P	P
Ipomopsis spicata	19.15	P		P						
Lesquerella montana	74.47	P	P	P	P		P		P	P
Leucocrinum montanum	34.04		P	P			P	P	P	P
Liatris punctata	57.45		P	P			P	P	P	P
Lomatium orientale	78.72		P	P	P	P	P			
Mertensia lanceolata	48.94		P	P		P	P			
Musineon divaricatum	2.13		P							
Nothocalais cuspidata	40.43	P		P		P				
Oenothera villosa	10.64									
Oligoneuron rigidum	4.26						P			
Oligosporus dracunculus ssp. glaucus	6.38					P	P			
Onosmodium molle ssp. occidentale	6.38					P				
Orobanche ludoviciana	2.13									
Oxytropis sericea	4.26					P	P			
Oxytropis x sericea	23.40	P		P				P	P	
Paronychia jamesii	42.55		P	P					P	P
Penstemon secundiflorus	12.77						P	P	P	
Penstemon virens	42.55			P			P			
Phacelia heterophylla	17.02								P	P
Pneumonanthe bigelovii	12.77				P					
Potentilla hippiana	14.89			P						
Psoralidium tenuiflorum	34.04	P	P				P		P	P

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	FREQUENCY (%)	Species Present within 1 m. on either side of the transect. ----Sample Number---- A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE PERENNIAL FORBS (concluded)										
Pulsatilla patens ssp. hirsutissima	2.13									
Ratibida columnifera	21.28		P			P	P			
Rumex triangulivalvis	2.13									
Senecio integerrimus	51.06		P		P	P				
Senecio spartioides	10.64									
Solidago mollis	34.04			P						
Sphaeralcea coccinea	2.13									
Talinum parviflorum	2.13									
Thelesperma megapotamicum	4.26								P	
Thermopsis montana	2.13									
Tithymalus brachyceras	10.64			P						
Townsendia hookeri	6.38		P							
Tradescantia occidentalis	14.89								P	P
Viola nuttallii	29.79			P			P			
Virgulus falcatus	2.13									
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS										
Arabis hirsuta	12.77					P				P
Astragalus argophyllus var. martinii	2.13									
Cardaria chalepensis	2.13				P					
Convolvulus arvensis	4.26									
Daucus carota	2.13									
Hypericum perforatum	34.04									
Linaria genistifolia ssp. dalmatica	14.89									P
Potentilla recta	10.64									
Taraxacum officinale	34.04					P		P		
Tithymalus esula	2.13									
TOTAL INTRO. PERENNIAL FORBS	78.7	---	---	---	P	P	---	P	---	P
NATIVE PERENNIAL GRASSES (cool)										
Carex douglasii	10.64									
Carex eleocharis	6.38									
Carex pensylvanica ssp. heliophila	68.09	P	P			P	P		P	P
Elymus lanceolatus fm. dasystachya	2.13							P		
Elymus longifolius	14.89			P						
Hesperostipa comata	10.64								P	P
Juncus arcticus ssp. ater	4.26									
Juncus interior	12.77									
Koeleria macrantha	63.83		P	P					P	P
Pascopyrum smithii	19.15		P					P		
Poa agassizensis	21.28									
Poa arida	2.13									
Poa compressa	72.34	P			P					
Poa secunda	23.40					P	P			P
Poa tracyi	2.13									
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)										
Bromopsis inermis	4.26				P					
Festuca ovina var. duriuscula	2.13									
TOTAL INTRO. PERENNIAL GRASSES (c)	6.4	---	---	---	P	---	---	---	---	---

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	FREQUENCY (%)	Species Present within 1 m. on either side of the transect. ----Sample Number---- A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE PERENNIAL GRASSES (warm)										
Andropogon gerardii	85.11	P	P	P	P	P	P		P	P
Aristida purpurea	29.79		P						P	
Bouteloua curtipendula	34.04	P	P	P					P	
Buchloe dactyloides	19.15		P							
Chondrosum gracile	57.45		P	P	P			P	P	P
Muhlenbergia montana	63.83				P				P	
Panicum virgatum	2.13									
Schizachyrium scoparium	63.83	P		P			P		P	P
Sorghastrum avenaceum	6.38									
Sporobolus heterolepis	34.04		P	P	P					
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS										
Artemisia frigida	46.81	P	P	P			P	P	P	P
Gutierrezia sarothrae	14.89		P				P	P		
TOTAL NATIVE SUBSHRUBS	48.9	P	P	P	---	---	P	P	P	P
NATIVE SHRUBS										
Chrysothamnus nauseosus	2.13									
Eriogonum effusum	6.38								P	P
Rhus aromatica ssp. trilobata	2.13									
Rosa sayi	4.26					P				
Yucca glauca	8.51						P			P
TOTAL NATIVE SHRUBS	21.3	---	---	---	---	P	P	---	P	P
FERNS and FERN-LIKE										
Selaginella densa	12.77									
TOTAL FERNS & FERN-LIKE	12.8	---	---	---	---	---	---	---	---	---
BRYOPHYTES										
Moss	4.26									
TOTAL BRYOPHYTES	4.3	---	---	---	---	---	---	---	---	---
LICHEN										
Cladonia spp.	19.15	P								
Lecidea spp.	2.13									
Lichen	2.13									
Xanthoparmelia chlorochroa	2.13									
TOTAL LICHEN	23.4	P	---	---	---	---	---	---	---	---
SUCCULENT										
Coryphantha missouriensis	8.51									
Echinocereus viridiflorus	40.43			P			P			P
Opuntia fragilis	2.13									
Opuntia macrorhiza	76.60	P	P	P			P	P	P	P
Opuntia polyacantha	8.51								P	P
TOTAL SUCCULENT	85.1	P	P	P	---	---	P	P	P	P
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 31.3 Std.Dev.= 9.9)		20	35	41	19	21	36	19	35	33

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE ANNUAL & BIENNIAL FORBS													
Cirsium undulatum					P	P	P					P	P
Collinsia parviflora													
Draba reptans													
Erigeron divergens						P	P	P	P			P	
Erysimum asperum			P					P	P		P		P
Grindelia squarrosa				P		P		P					
Lactuca canadensis													
Oligosporus pacificus						P	P	P	P		P		P
Oreocarya virgata						P	P						
Pterogonum alatum	P	P	P	P	P	P		P	P	P	P		P
TOTAL NATIVE ANN. & BIEN. FORBS	P	P	P	P	P	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS													
Acosta diffusa						P							
Alyssum parviflorum						P	P	P	P		P		P
Camelina microcarpa													
Capsella bursa-pastoris													
Carduus nutans ssp. macrolepis													
Chorispora tenella													
Erodium cicutarium													
Lactuca serriola													
Podospermum laciniatum						P	P						
Portulaca oleracea													
Tragopogon dubius ssp. major						P		P	P				P
Turritis glabra													
Verbascum blattaria													
Verbascum thapsus													
TOTAL INTRO. ANN. & BIEN. FORBS	---	---	---	---	---	P	P	P	P	---	P	---	P
NATIVE ANNUAL GRASSES													
Critesion pusillum													
TOTAL NATIVE ANN. GRASSES	---	---	---	---	---	---	---	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES													
Anisantha tectorum							P		P				
Bromus japonicus													P
Poa bulbosa													
TOTAL INTRO. ANN. GRASSES	---	---	---	---	---	---	P	---	P	---	---	---	P
NATIVE PERENNIAL FORBS													
Acetosella vulgaris													
Achillea lanulosa						P	P	P		P		P	
Adenolinum lewisii													
Allium cernuum													P
Allium textile			P	P						P	P	P	
Ambrosia psilostachya var. coronopifolia			P	P	P		P		P			P	
Amerosedum lanceolatum					P			P		P	P		
Antennaria corymbosa		P	P			P						P	
Antennaria rosea													
Aphyllon fasciculatum		P	P	P		P				P			
Apocynum cannabinum						P							
Arnica fulgens								P			P	P	
Artemisia ludoviciana	P	P	P		P		P	P	P	P	P	P	P

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE PERENNIAL FORBS (continued)													
Aster porteri	P	P		P	P			P	P	P	P	P	
Astragalus agrestis													
Astragalus flexuosus												P	
Astragalus shortianus						P	P					P	
Astragalus spp.													
Calylophus serrulatus							P						
Campanula rotundifolia													
Castilleja chromosa													
Castilleja sessiliflora			P									P	
Cerastium strictum						P					P	P	
Claytonia rosea										P			
Comandra umbellata ssp. pallida						P				P	P	P	
Cymopterus spp.													
Dalea candida var. oligophylla													
Dalea purpurea									P				
Delphinium nuttallianum					P								
Drymocallis fissa				P		P	P	P		P			
Eremogone fendleri	P	P	P	P	P	P	P		P	P	P		
Erigeron flagellaris													P
Erigeron pumilus													P
Erigeron vetensis			P										
Eriogonum flavum var. flavum						P					P		
Frasera speciosa												P	
Gaillardia aristata	P	P	P	P	P	P	P			P	P	P	
Gaura coccinea													
Geranium richardsonii													
Harbouria trachypleura						P					P	P	
Helianthus pumilus													
Helianthus rigidus ssp. subrhomboideus													
Heterotheca fulcrata		P	P	P	P	P		P			P		P
Heterotheca villosa				P	P	P	P			P	P	P	P
Ipomopsis spicata			P										
Lesquerella montana	P		P	P	P		P	P	P	P	P		P
Leucocrinum montanum						P	P				P		P
Liatris punctata	P	P	P		P	P	P		P		P		
Lomatium orientale	P	P	P	P	P	P	P	P		P	P	P	P
Mertensia lanceolata		P	P	P	P	P					P	P	
Musineon divaricatum													
Nothocalais cuspidata							P			P	P		P
Oenothera villosa					P								
Oligoneuron rigidum													
Oligosporus dracunculus ssp. glaucus													
Onosmodium molle ssp. occidentale												P	
Orobanche ludoviciana													
Oxytropis sericea													
Oxytropis x sericea					P		P				P		
Paronychia jamesii			P	P				P	P	P	P		
Penstemon secundiflorus						P	P						
Penstemon virens		P		P	P	P	P	P	P	P		P	
Phacelia heterophylla						P	P		P				P
Pneumonanthe bigelovii											P	P	
Potentilla hippiana												P	
Psoralidium tenuiflorum		P	P			P		P	P				

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE PERENNIAL FORBS (concluded)													
Pulsatilla patens ssp. hirsutissima											P		
Ratibida columnifera												P	
Rumex triangulivalvis													
Senecio integerrimus	P	P	P	P		P		P		P		P	
Senecio spartioides													P
Solidago mollis	P		P	P					P	P			
Sphaeralcea coccinea													
Talinum parviflorum													
Thelesperma megapotamicum													
Thermopsis montana													
Tithymalus brachyceras						P	P					P	
Townsendia hookeri													
Tradescantia occidentalis						P			P				
Viola nuttallii			P	P		P						P	P
Virgulus falcatus													
TOTAL NATIVE PERENNIAL FORBS	P	P	P	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS													
Arabis hirsuta			P	P							P		
Astragalus argophyllus var. martinii													P
Cardaria chalepensis													
Convolvulus arvensis													
Daucus carota													
Hypericum perforatum	P		P	P	P	P	P	P					
Linaria genistifolia ssp. dalmatica													
Potentilla recta										P		P	
Taraxacum officinale						P		P				P	P
Tithymalus esula													
TOTAL INTRO. PERENNIAL FORBS	P	---	P	P	P	P	P	P	---	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)													
Carex douglasii													
Carex eleocharis													
Carex pensylvanica ssp. heliophila	P	P	P	P	P	P	P	P	P	P	P	P	P
Elymus lanceolatus fm. dasystachya													
Elymus longifolius				P			P						
Hesperostipa comata						P							P
Juncus arcticus ssp. ater						P							
Juncus interior													
Koeleria macrantha		P	P	P	P	P	P		P	P	P	P	P
Pascopyrum smithii													P
Poa agassizensis				P	P	P		P					
Poa arida													
Poa compressa	P		P	P	P	P		P		P	P	P	
Poa secunda													P
Poa tracyi												P	
TOTAL NATIVE PERENNIAL GRASSES (c)	P	P	P	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)													
Bromopsis inermis												P	
Festuca ovina var. duriuscula													
TOTAL INTRO. PERENNIAL GRASSES (c)	---	---	---	---	---	---	---	---	---	---	---	P	---

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE PERENNIAL GRASSES (warm)													
Andropogon gerardii	P	P	P	P	P	P	P	P	P	P	P		P
Aristida purpurea	P			P		P	P		P				P
Bouteloua curtipendula	P	P	P	P	P	P	P						
Buchloe dactyloides													
Chondrosum gracile		P		P	P	P		P	P	P	P		P
Muhlenbergia montana	P	P	P	P	P	P	P		P	P	P		
Panicum virgatum													
Schizachyrium scoparium		P		P		P		P	P	P	P	P	P
Sorghastrum avenaceum												P	
Sporobolus heterolepis					P	P		P			P	P	
TOTAL NATIVE PERENNIAL GRASSES (w)	P	P	P	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS													
Artemisia frigida		P				P	P	P	P		P		P
Gutierrezia sarothrae						P						P	
TOTAL NATIVE SUBSHRUBS	---	P	---	---	---	P	P	P	P	---	P	P	P
NATIVE SHRUBS													
Chrysothamnus nauseosus													
Eriogonum effusum													
Rhus aromatica ssp. trilobata								P					
Rosa sayi													
Yucca glauca													P
TOTAL NATIVE SHRUBS	---	---	---	---	---	---	---	P	---	---	---	---	P
FERNS and FERN-LIKE													
Selaginella densa			P		P					P	P		
TOTAL FERNS & FERN-LIKE	---	---	P	---	P	---	---	---	---	P	P	---	---
BRYOPHYTES													
Moss						P							
TOTAL BRYOPHYTES	---	---	---	---	---	P	---	---	---	---	---	---	---
LICHEN													
Cladonia spp.										P	P		
Lecidea spp.													
Lichen													
Xanthoparmelia chlorochroa													
TOTAL LICHEN	---	---	---	---	---	---	---	---	---	P	P	---	---
SUCCULENT													
Coryphantha missouriensis													
Echinocereus viridiflorus						P	P		P		P		P
Opuntia fragilis						P							
Opuntia macrorhiza	P	P	P	P		P	P	P	P	P		P	P
Opuntia polyacantha						P							
TOTAL SUCCULENT	P	P	P	P	---	P	P	P	P	P	P	P	P
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 31.3 Std.Dev.= 9.9)	18	23	32	33	29	58	37	32	30	31	40	40	35

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE ANNUAL & BIENNIAL FORBS													
Cirsium undulatum	P										P		
Collinsia parviflora													
Draba reptans													
Erigeron divergens	P						P						
Erysimum asperum	P	P					P	P	P		P		
Grindelia squarrosa		P				P						P	
Lactuca canadensis													
Oligosporus pacificus	P							P		P	P		
Oreocarya virgata													
Pterogonum alatum	P		P					P	P	P	P	P	P
TOTAL NATIVE ANN. & BIEN. FORBS	P	P	P	---	---	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS													
Acosta diffusa		P	P	P	P	P	P						
Alyssum parviflorum	P		P				P				P	P	
Camelina microcarpa		P	P	P		P	P				P		
Capsella bursa-pastoris													
Carduus nutans ssp. macrolepis	P					P	P				P		
Chorispora tenella													
Erodium cicutarium	P												
Lactuca serriola	P												
Podospermum laciniatum	P										P		
Portulaca oleracea						P							
Tragopogon dubius ssp. major	P		P	P	P	P	P						
Turritis glabra													
Verbascum blattaria			P	P									
Verbascum thapsus	P												
TOTAL INTRO. ANN. & BIEN. FORBS	P	P	P	P	P	P	P	---	---	---	P	P	---
NATIVE ANNUAL GRASSES													
Critesion pusillum													
TOTAL NATIVE ANN. GRASSES	---	---	---	---	---	---	---	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES													
Anisantha tectorum													
Bromus japonicus											P		
Poa bulbosa													
TOTAL INTRO. ANN. GRASSES	---	---	---	---	---	---	---	---	---	---	P	---	---
NATIVE PERENNIAL FORBS													
Acetosella vulgaris					P							P	
Achillea lanulosa		P				P						P	
Adenolinum lewisii							P				P		
Allium cernuum								P			P		
Allium textile	P								P			P	P
Ambrosia psilostachya var. coronopifolia	P	P	P	P	P			P				P	
Amerosedum lanceolatum													
Antennaria corymbosa				P						P			P
Antennaria rosea								P			P		
Aphyllon fasciculatum													
Apocynum cannabinum													
Arnica fulgens												P	
Artemisia ludoviciana	P	P	P	P	P	P	P	P			P	P	

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE PERENNIAL FORBS (continued)													
Aster porteri		P	P	P	P	P		P	P	P	P	P	P
Astragalus agrestis													
Astragalus flexuosus													
Astragalus shortianus							P		P		P		
Astragalus spp.	P												
Calylophus serrulatus										P			
Campanula rotundifolia													
Castilleja chromosa	P												
Castilleja sessiliflora								P	P	P			
Cerastium strictum													P
Claytonia rosea													
Comandra umbellata ssp. pallida								P	P	P	P	P	P
Cymopterus spp.											P		
Dalea candida var. oligophylla													
Dalea purpurea													
Delphinium nuttallianum													
Drymocallis fissa													P
Eremogone fendleri						P	P	P	P	P		P	P
Erigeron flagellaris		P									P		
Erigeron pumilus													
Erigeron vetensis												P	P
Eriogonum flavum var. flavum													
Frasera speciosa													
Gaillardia aristata		P	P	P				P		P		P	P
Gaura coccinea											P		
Geranium richardsonii													
Harbouria trachypleura													
Helianthus pumilus							P						
Helianthus rigidus ssp. subrhomboideus		P											
Heterotheca fulcrata													
Heterotheca villosa	P			P				P	P	P	P	P	
Ipomopsis spicata								P	P	P			
Lesquerella montana	P	P					P	P	P	P		P	P
Leucocrinum montanum	P	P		P			P				P		
Liatris punctata		P							P	P	P	P	P
Lomatium orientale	P	P	P	P		P	P		P	P	P	P	P
Mertensia lanceolata	P							P		P	P		P
Musineon divaricatum													
Nothocalais cuspidata		P		P	P	P	P	P					
Oenothera villosa			P		P	P							
Oligoneuron rigidum													
Oligosporus dracunculus ssp. glaucus							P						
Onosmodium molle ssp. occidentale	P												
Orobanche ludoviciana								P					
Oxytropis sericea													
Oxytropis x sericea										P			
Paronychia jamesii								P	P			P	
Penstemon secundiflorus							P						
Penstemon virens											P		
Phacelia heterophylla	P										P		
Pneumonanthe bigelovii										P			
Potentilla hippiana				P		P		P		P		P	
Psoralidium tenuiflorum	P												

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE PERENNIAL FORBS (concluded)													
Pulsatilla patens ssp. hirsutissima													
Ratibida columnifera	P	P		P			P				P		
Rumex triangulivalvis						P							
Senecio integerrimus			P	P		P		P	P	P			P
Senecio spartioides		P	P						P				
Solidago mollis				P					P	P		P	P
Sphaeralcea coccinea	P												
Talinum parviflorum						P							
Thelesperma megapotamicum							P						
Thermopsis montana												P	
Tithymalus brachyceras													
Townsendia hookeri													
Tradescantia occidentalis													
Viola nuttallii	P						P			P	P		
Virgulus falcatus			P										
TOTAL NATIVE PERENNIAL FORBS	P	P	P	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS													
Arabis hirsuta													
Astragalus argophyllus var. martinii													
Cardaria chalepensis													
Convolvulus arvensis				P									
Daucus carota						P							
Hypericum perforatum		P	P	P		P							P
Linaria genistifolia ssp. dalmatica		P		P			P			P			
Potentilla recta													
Taraxacum officinale	P		P		P	P					P	P	
Tithymalus esula											P		
TOTAL INTRO. PERENNIAL FORBS	P	P	P	P	P	P	P	---	---	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)													
Carex douglasii												P	P
Carex eleocharis			P										
Carex pensylvanica ssp. heliophila	P	P	P	P		P	P	P		P	P		
Elymus lanceolatus fm. dasystachya													
Elymus longifolius		P			P						P		
Hesperostipa comata											P		
Juncus arcticus ssp. ater													
Juncus interior			P	P	P	P							
Koeleria macrantha		P						P	P	P		P	P
Pascopyrum smithii		P	P									P	
Poa agassizensis	P		P								P		
Poa arida	P												
Poa compressa	P	P	P	P	P	P	P		P		P	P	P
Poa secunda											P	P	
Poa tracyi													
TOTAL NATIVE PERENNIAL GRASSES (c)	P	P	P	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)													
Bromopsis inermis													
Festuca ovina var. duriuscula	P												
TOTAL INTRO. PERENNIAL GRASSES (c)	P	---	---	---	---	---	---	---	---	---	---	---	---

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

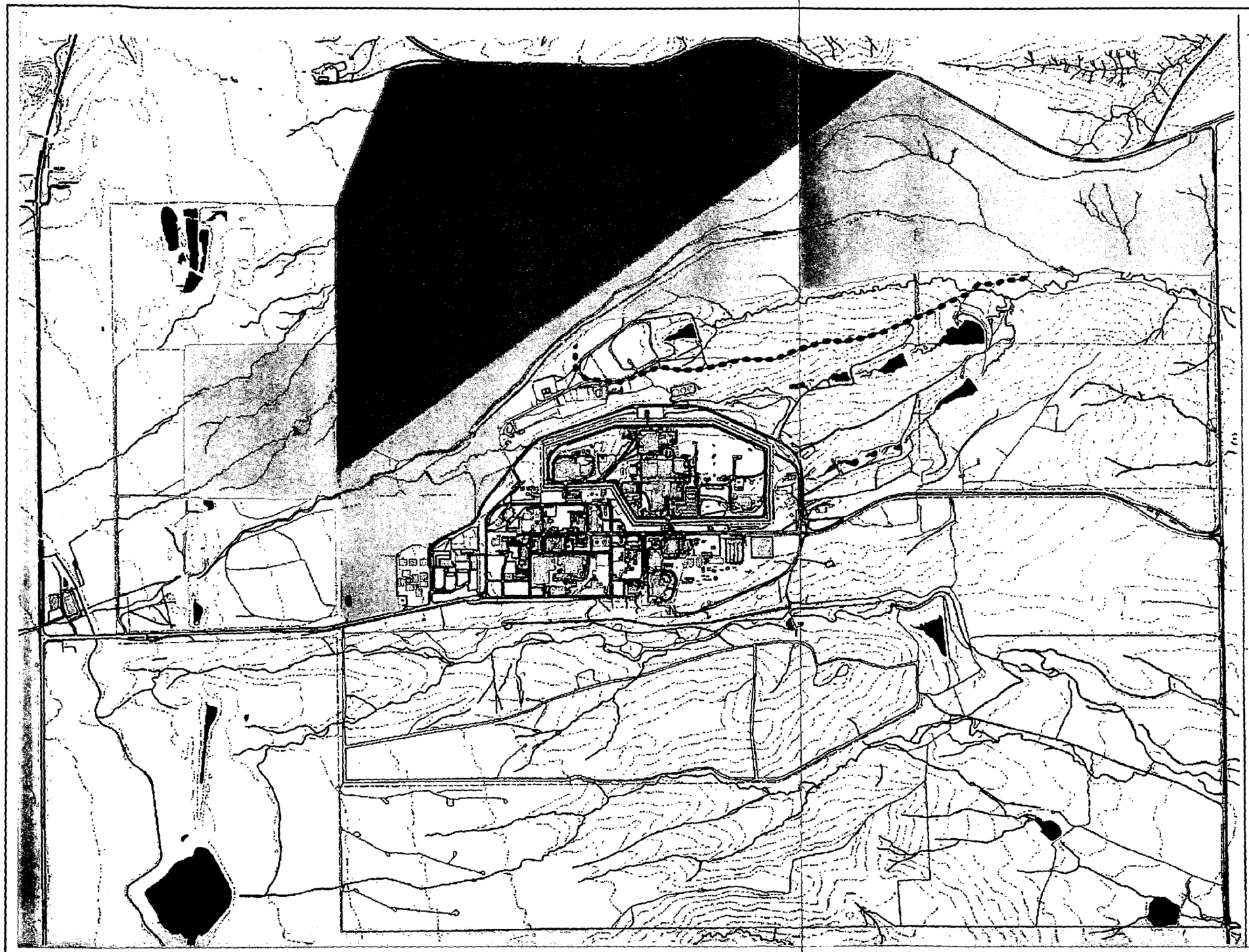
PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE PERENNIAL GRASSES (warm)													
Andropogon gerardii	P	P	P		P	P	P	P	P	P	P		P
Aristida purpurea	P	P				P					P		
Bouteloua curtipendula		P						P			P		
Buchloe dactyloides						P						P	
Chondrosum gracile			P			P		P			P		P
Muhlenbergia montana		P	P	P	P	P		P	P	P	P	P	P
Panicum virgatum		P											
Schizachyrium scoparium		P	P	P	P	P					P		P
Sorghastrum avenaceum				P	P								
Sporobolus heterolepis				P					P			P	
TOTAL NATIVE PERENNIAL GRASSES (w)	P	P	P	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS													
Artemisia frigida	P						P				P	P	
Gutierrezia sarothrae							P						
TOTAL NATIVE SUBSHRUBS	P	---	---	---	---	---	P	---	---	---	P	P	---
NATIVE SHRUBS													
Chrysothamnus nauseosus											P		
Eriogonum effusum		P											
Rhus aromatica ssp. trilobata													
Rosa sayi							P						
Yucca glauca	P												
TOTAL NATIVE SHRUBS	P	P	---	---	---	---	P	---	---	---	P	---	---
FERNS and FERN-LIKE													
Selaginella densa													
TOTAL FERNS & FERN-LIKE	---	---	---	---	---	---	---	---	---	---	---	---	---
BRYOPHYTES													
Moss													
TOTAL BRYOPHYTES	---	---	---	---	---	---	---	---	---	---	---	---	---
LICHEN													
Cladonia spp.		P		P						P			
Lecidea spp.								P					
Lichen													
Xanthoparmelia chlorochroa													
TOTAL LICHEN	---	P	---	P	---	---	---	P	---	P	---	---	---
SUCCULENT													
Coryphantha missouriensis							P				P		
Echinocereus viridiflorus	P	P					P	P	P	P	P		
Opuntia fragilis													
Opuntia macrorhiza	P	P	P	P	P	P	P	P	P	P	P	P	
Opuntia polyacantha													
TOTAL SUCCULENT	P	P	P	P	P	P	P	P	P	P	P	P	---
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 31.3 Std.Dev.= 9.9)	40	35	28	29	17	30	31	30	24	29	47	33	24

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----											
	27	28	29	30	31	32	33	34	35	36	37	38
NATIVE PERENNIAL FORBS (continued)												
Aster porteri	P	P	P	P		P	P	P	P	P		
Astragalus agrestis									P			
Astragalus flexuosus												
Astragalus shortianus						P			P			
Astragalus spp.												
Calylophus serrulatus									P			
Campanula rotundifolia												
Castilleja chromosa							P					
Castilleja sessiliflora		P		P			P	P	P			
Cerastium strictum							P	P	P			
Claytonia rosea												
Comandra umbellata ssp. pallida	P			P			P		P			
Cymopterus spp.												
Dalea candida var. oligophylla												
Dalea purpurea												
Delphinium nuttallianum				P		P	P					
Drymocallis fissa							P					
Eremogone fendleri	P	P		P			P	P	P			
Erigeron flagellaris												
Erigeron pumilus												
Erigeron vetensis	P	P							P			
Eriogonum flavum var. flavum							P					
Frasera speciosa									P			
Gaillardia aristata	P	P					P	P	P	P		P
Gaura coccinea												
Geranium richardsonii									P			
Harbouria trachypleura									P			
Helianthus pumilus									P			
Helianthus rigidus ssp. subrhomboideus												
Heterotheca fulcrata									P			
Heterotheca villosa	P	P		P		P	P	P		P		
Ipomopsis spicata								P	P	P		
Lesquerella montana	P	P		P		P	P	P	P	P		P
Leucocrinum montanum									P			
Liatris punctata		P				P	P	P	P	P		
Lomatium orientale	P	P		P		P	P	P	P	P		
Mertensia lanceolata	P	P		P		P		P	P	P		
Musineon divaricatum												
Nothocalais cuspidata				P		P	P	P	P			
Oenothera villosa									P			
Oligoneuron rigidum				P								
Oligosporus dracunculus ssp. glaucus												
Onosmodium molle ssp. occidentale												
Orobanche ludoviciana												
Oxytropis sericea												
Oxytropis x sericea							P	P	P			
Paronychia jamesii		P				P	P	P	P	P		
Penstemon secundiflorus												
Penstemon virens		P		P		P	P	P	P	P		
Phacelia heterophylla												
Pneumonanthe bigelovii								P	P			
Potentilla hippiana												
Psoralidium tenuiflorum						P	P		P	P		P

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----											
	27	28	29	30	31	32	33	34	35	36	37	38
NATIVE PERENNIAL FORBS (concluded)												
Pulsatilla patens ssp. hirsutissima												
Ratibida columnifera									P			
Rumex triangulivalvis												
Senecio integerrimus		P				P	P	P	P	P		
Senecio spartioides									P			
Solidago mollis	P	P		P					P	P		
Sphaeralcea coccinea												
Talinum parviflorum												
Thelesperma megapotamicum												
Thermopsis montana												
Tithymalus brachyceras									P			
Townsendia hookeri								P	P			
Tradescantia occidentalis				P		P			P			
Viola nuttallii						P				P		
Virgulus falcatus												
TOTAL NATIVE PERENNIAL FORBS	P	P	P	P	P	P	P	P	P	P		P
INTRODUCED PERENNIAL FORBS												
Arabis hirsuta		P										
Astragalus argophyllus var. martinii												
Cardaria chalepensis												
Convolvulus arvensis												P
Daucus carota												
Hypericum perforatum	P	P								P		
Linaria genistifolia ssp. dalmatica				P								
Potentilla recta								P	P			P
Taraxacum officinale			P		P	P						P
Tithymalus esula												
TOTAL INTRO. PERENNIAL FORBS	P	P	P	P	P	P	---	P	P	P		P
NATIVE PERENNIAL GRASSES (cool)												
Carex douglasii	P			P			P					
Carex eleocharis					P							P
Carex pensylvanica ssp. heliophila						P		P	P	P		
Elymus lanceolatus fm. dasystachya												
Elymus longifolius									P			
Hesperostipa comata												
Juncus arcticus ssp. ater			P									
Juncus interior		P			P							
Koeleria macrantha	P	P		P		P	P	P	P	P		P
Pascopyrum smithii					P	P						P
Poa agassizensis										P		P
Poa arida												
Poa compressa	P	P	P	P	P	P	P	P	P	P		P
Poa secunda			P	P	P		P		P			
Poa tracyi												
TOTAL NATIVE PERENNIAL GRASSES (c)	P	P	P	P	P	P	P	P	P	P		P
INTRODUCED PERENNIAL GRASSES (cool)												
Bromopsis inermis												
Festuca ovina var. duriuscula												
TOTAL INTRO. PERENNIAL GRASSES (c)	---	---	---	---	---	---	---	---	---	---		---



The Rock Creek Reserve

MAP LEGEND

- Existing reserve extent (852 acres)
- Proposed Rock Creek Reserve boundary (1,793 acres)
- Possible extension with completion of landfill capping (+178 acres)

Standard Map Features

- Buildings
- Ponds
- Streams & ditches
- Fences
- Paved roads
- Dirt roads
- Contours (25 ft)

NOTE: The Reserve boundary is an estimate only and does not represent a legal boundary.

DATA SOURCE:
Rock Creek Reserve boundary provided by Exponent, 1998.
Buildings, fences, hydrography, roads and other structures from 1994 aerial flyover data captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs, 1:95
Hypsography derived from digital elevation model (DEM) data by Morrison Knudsen (MK) using ESRI Arc TIN and LATTICE to process the DEM data to create 5-foot contours.
The DEM data was captured by the Remote Sensing Lab, Las Vegas, NV, 1994 Aerial Flyover at ~10 meter resolution.
The DEM post-processing performed by MK, Winter 1997.

N

1:16633

1000 0 1000 2000 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: Exponent

For: Kaiser-Hill

Table 99-1. Species Present - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - May 1999

PLANT SPECIES	Species Present within 1 m. on either side of the transect. ----Sample Number----											
	27	28	29	30	31	32	33	34	35	36	37	38
NATIVE PERENNIAL GRASSES (warm)												
Andropogon gerardii	P	P		P		P	P	P	P	P		P
Aristida purpurea		P		P								
Bouteloua curtipendula	P								P			
Buchloe dactyloides		P			P	P			P			P
Chondrosum gracile	P		P	P			P	P	P			P
Muhlenbergia montana	P			P		P	P	P	P	P		
Panicum virgatum												
Schizachyrium scoparium	P	P		P			P	P	P	P		P
Sorghastrum avenaceum												
Sporobolus heterolepis	P	P						P	P	P		
TOTAL NATIVE PERENNIAL GRASSES (w)	P	P	P	P	P	P	P	P	P	P		P
NATIVE SUBSHRUBS												
Artemisia frigida				P		P	P		P			
Gutierrezia sarothrae									P			
TOTAL NATIVE SUBSHRUBS	---	---	---	P	---	P	P	---	P	---		---
NATIVE SHRUBS												
Chrysothamnus nauseosus												
Eriogonum effusum												
Rhus aromatica ssp. trilobata												
Rosa sayi												
Yucca glauca												
TOTAL NATIVE SHRUBS	---	---	---	---	---	---	---	---	---	---		---
FERNS and FERN-LIKE												
Selaginella densa							P					P
TOTAL FERNS & FERN-LIKE	---	---	---	---	---	---	P	---	---	---		P
BRYOPHYTES												
Moss		P										
TOTAL BRYOPHYTES	---	P	---	---	---	---	---	---	---	---		---
LICHEN												
Cladonia spp.		P						P		P		
Lecidea spp.												
Lichen								P				
Xanthoparmelia chlorochroa						P						
TOTAL LICHEN	---	P	---	---	---	P	---	P	---	P		---
SUCCULENT												
Coryphantha missouriensis										P		P
Echinocereus viridiflorus				P		P	P	P				
Opuntia fragilis												
Opuntia macrorhiza	P		P				P		P	P		P
Opuntia polyacantha				P								
TOTAL SUCCULENT	P	---	P	P	---	P	P	P	P	P		P
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 31.3 Std.Dev.= 9.9)	25	34	17	34	12	32	42	39	64	28		29

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
NATIVE ANNUAL & BIENNIAL FORBS					
Boechera fendleri	0.00	2.08	0.00	0.00	0.00
Cerastium nutans var. brachypodum	0.00	2.08	0.00	0.00	0.00
Cirsium undulatum	0.02	27.08	0.05	0.02	0.05
Draba reptans	0.00	2.08	0.00	0.00	0.00
Erigeron divergens	0.00	8.33	0.00	0.00	0.00
Erysimum asperum	0.00	12.50	0.00	0.00	0.00
Grindelia squarrosa	0.08	31.25	0.19	0.08	0.18
Helianthus petiolaris	0.04	8.33	0.10	0.04	0.09
Oligosporus pacificus	0.04	25.00	0.10	0.06	0.14
Oreocarya virgata	0.00	8.33	0.00	0.00	0.00
Orthocarpus luteus	0.00	4.17	0.00	0.00	0.00
Polygonum douglasii	0.00	4.17	0.00	0.00	0.00
Pterogonum alatum	0.21	66.67	0.48	0.25	0.55
Silene antirrhina	0.00	8.33	0.00	0.00	0.00
TOTAL NATIVE ANN. & BIEN. FORBS	0.4	87.5	0.9	0.5	1.0
INTRODUCED ANNUAL & BIENNIAL FORBS					
Acosta diffusa	0.08	14.58	0.19	0.08	0.18
Alyssum parviflorum	0.25	58.33	0.58	0.29	0.64
Camelina microcarpa	0.00	2.08	0.00	0.00	0.00
Conyza canadensis	0.00	2.08	0.00	0.00	0.00
Erodium cicutarium	0.02	2.08	0.05	0.02	0.05
Lactuca serriola	0.00	18.75	0.00	0.00	0.00
Lepidium densiflorum	0.00	8.33	0.00	0.00	0.00
Neolepia campestre	0.00	2.08	0.00	0.00	0.00
Plantago lanceolata	0.00	4.17	0.00	0.00	0.00
Podospermum laciniatum	0.00	2.08	0.00	0.00	0.00
Sisymbrium spp.	0.00	2.08	0.00	0.00	0.00
Tragopogon dubius ssp. major	0.00	56.25	0.00	0.00	0.00
Verbascum thapsus	0.00	4.17	0.00	0.00	0.00
TOTAL INTRO. ANN. & BIEN. FORBS	0.4	77.1	0.8	0.4	0.9
NATIVE ANNUAL GRASSES					
Panicum capillare	0.02	6.25	0.05	0.02	0.05
Vulpia octoflora	0.00	2.08	0.00	0.00	0.00
TOTAL NATIVE ANN. GRASSES	0.0	8.3	0.0	0.0	0.0
INTRODUCED ANNUAL GRASSES					
Anisantha tectorum	0.00	18.75	0.00	0.00	0.00
Bromus japonicus	0.21	56.25	0.48	0.21	0.46
TOTAL INTRO. ANN. GRASSES	0.2	58.3	0.5	0.2	0.5
NATIVE PERENNIAL FORBS					
Acetosella vulgaris	0.00	2.08	0.00	0.00	0.00
Achillea lanulosa	0.04	20.83	0.10	0.04	0.09
Adenolinum lewisii	0.02	10.42	0.05	0.02	0.05
Allium cernuum	0.00	2.08	0.00	0.00	0.00
Ambrosia psilostachya var. coronopifolia	1.67	83.33	3.85	1.77	3.91
Amerosedum lanceolatum	0.00	8.33	0.00	0.00	0.00
Antennaria corymbosa	0.00	22.92	0.00	0.02	0.05
Antennaria rosea	0.00	10.42	0.00	0.00	0.00
Antennaria spp.	0.00	2.08	0.00	0.02	0.05
Aphyllon fasciculatum	0.00	2.08	0.00	0.00	0.00
Apocynum androsaemifolium	0.00	2.08	0.00	0.00	0.00
Apocynum cannabinum	0.00	4.17	0.00	0.00	0.00
Artemisia ludoviciana	0.79	83.33	1.83	0.85	1.89

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
NATIVE PERENNIAL FORBS (continued)					
Asclepias stenophylla	0.00	10.42	0.00	0.00	0.00
Asclepias viridiflora	0.02	20.83	0.05	0.02	0.05
Aster porteri	3.00	68.75	6.93	3.15	6.95
Astragalus agrestis	0.00	6.25	0.00	0.00	0.00
Astragalus crassicarpus	0.00	2.08	0.00	0.00	0.00
Astragalus shortianus	0.00	14.58	0.00	0.00	0.00
Astragalus spatulatus	0.00	2.08	0.00	0.00	0.00
Brickellia eupatorioides	0.00	4.17	0.00	0.00	0.00
Calochortus nuttallii	0.00	4.17	0.00	0.00	0.00
Calylophus serrulatus	0.04	8.33	0.10	0.04	0.09
Campanula rotundifolia	0.02	4.17	0.05	0.02	0.05
Castilleja integra	0.00	4.17	0.00	0.00	0.00
Castilleja spp.	0.00	2.08	0.00	0.00	0.00
Cerastium strictum	0.00	12.50	0.00	0.00	0.00
Comandra umbellata ssp. pallida	0.04	33.33	0.10	0.04	0.09
Dalea candida var. oligophylla	0.02	12.50	0.05	0.02	0.05
Dalea purpurea	0.08	62.50	0.19	0.08	0.18
Drymocallis fissa	0.00	12.50	0.00	0.00	0.00
Eremogone fendleri	0.48	64.58	1.11	0.52	1.15
Erigeron flagellaris	0.08	22.92	0.19	0.08	0.18
Eriogonum flavum var. flavum	0.02	10.42	0.05	0.02	0.05
Eriogonum umbellatum	0.00	4.17	0.00	0.00	0.00
Evolvulus nuttallianus	0.00	6.25	0.00	0.00	0.00
Frasera speciosa	0.00	4.17	0.00	0.00	0.00
Gaillardia aristata	0.02	33.33	0.05	0.02	0.05
Gastrolychnis drummondii	0.00	4.17	0.00	0.00	0.00
Gaura coccinea	0.00	6.25	0.00	0.00	0.00
Geranium viscosissimum ssp. *nervosum*	0.00	2.08	0.00	0.00	0.00
Harbouria trachypleura	0.00	6.25	0.00	0.00	0.00
Helianthella uniflora	0.00	8.33	0.00	0.00	0.00
Helianthus pumilus	0.00	2.08	0.00	0.00	0.00
Heterotheca fulcrata	0.25	60.42	0.58	0.27	0.60
Heterotheca villosa	1.10	52.08	2.55	1.15	2.53
Hymenopappus filifolius	0.00	2.08	0.00	0.00	0.00
Ipomopsis spicata	0.00	2.08	0.00	0.00	0.00
Lesquerella montana	0.08	70.83	0.19	0.08	0.18
Leucocrinum montanum	0.00	4.17	0.00	0.00	0.00
Liatris punctata	0.92	85.42	2.12	0.98	2.16
Lithospermum incisum	0.00	12.50	0.00	0.00	0.00
Lithospermum ruderale	0.00	4.17	0.00	0.00	0.00
Lomatium orientale	0.00	6.25	0.00	0.00	0.00
Lygodesmia juncea	0.00	2.08	0.00	0.00	0.00
Mertensia lanceolata	0.00	2.08	0.00	0.00	0.00
Microseris nutans	0.00	4.17	0.00	0.00	0.00
Noccaea montana	0.00	2.08	0.00	0.00	0.00
Oenothera howardii	0.00	4.17	0.00	0.00	0.00
Oenothera villosa	0.00	4.17	0.00	0.00	0.00
Oligoneuron rigidum	0.00	2.08	0.00	0.00	0.00
Oligosporus dracunculus ssp. glaucus	0.06	10.42	0.14	0.06	0.14
Onosmodium molle ssp. occidentale	0.00	2.08	0.00	0.00	0.00
Oxalis dillenii	0.00	2.08	0.00	0.00	0.00
Oxybaphus hirsutus	0.00	8.33	0.00	0.00	0.00
Oxybaphus linearis	0.00	18.75	0.00	0.00	0.00
Oxybaphus nyctagineus	0.00	2.08	0.00	0.00	0.00
Oxytropis lambertii	0.00	2.08	0.00	0.00	0.00
Oxytropis sericea	0.00	4.17	0.00	0.00	0.00

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
NATIVE PERENNIAL FORBS (concluded)					
Oxytropis x sericea	0.04	22.92	0.10	0.06	0.14
Paronychia jamesii	0.19	60.42	0.43	0.21	0.46
Penstemon secundiflorus	0.00	14.58	0.00	0.00	0.00
Penstemon strictus	0.00	4.17	0.00	0.00	0.00
Penstemon virens	0.00	31.25	0.00	0.00	0.00
Phacelia heterophylla	0.00	18.75	0.00	0.00	0.00
Pneumonanthe bigelovii	0.17	16.67	0.38	0.17	0.37
Potentilla effusa	0.00	2.08	0.00	0.00	0.00
Potentilla hippiana	0.00	18.75	0.00	0.00	0.00
Potentilla pulcherrima	0.00	2.08	0.00	0.00	0.00
Psoralidium tenuiflorum	0.94	77.08	2.17	1.00	2.21
Pulsatilla patens ssp. hirsutissima	0.00	2.08	0.00	0.00	0.00
Ratibida columnifera	0.06	22.92	0.14	0.06	0.14
Rumex crispus	0.00	4.17	0.00	0.00	0.00
Senecio integerrimus	0.00	8.33	0.00	0.00	0.00
Senecio spartioides	0.02	29.17	0.05	0.02	0.05
Solidago missouriensis	0.02	2.08	0.05	0.02	0.05
Solidago mollis	0.00	8.33	0.00	0.00	0.00
Solidago simplex	0.10	50.00	0.24	0.13	0.28
Sphaeralcea coccinea	0.00	4.17	0.00	0.00	0.00
Talinum parviflorum	0.00	37.50	0.00	0.02	0.05
Thelesperma megapotamicum	0.02	6.25	0.05	0.02	0.05
Thermopsis divaricarpa	0.02	2.08	0.05	0.02	0.05
Tithymalus brachyceras	0.00	12.50	0.00	0.00	0.00
Townsendia grandiflora	0.00	2.08	0.00	0.00	0.00
Townsendia hookeri	0.02	6.25	0.05	0.02	0.05
Toxicoscordion venenosum	0.00	10.42	0.00	0.00	0.00
Tradescantia occidentalis	0.00	2.08	0.00	0.00	0.00
Virgulus falcatus	0.15	18.75	0.34	0.15	0.32
TOTAL NATIVE PERENNIAL FORBS	10.5	100.0	24.3	11.2	24.7
INTRODUCED PERENNIAL FORBS					
Arabis hirsuta	0.00	2.08	0.00	0.02	0.05
Breea arvensis	0.00	2.08	0.00	0.00	0.00
Cichorium intybus	0.00	2.08	0.00	0.00	0.00
Convolvulus arvensis	0.00	6.25	0.00	0.00	0.00
Hypericum perforatum	0.35	56.25	0.82	0.40	0.87
Linaria genistifolia ssp. dalmatica	0.00	8.33	0.00	0.00	0.00
Potentilla recta	0.00	2.08	0.00	0.00	0.00
Taraxacum officinale	0.13	12.50	0.29	0.13	0.28
TOTAL INTRO. PERENNIAL FORBS	0.5	66.7	1.1	0.5	1.2
NATIVE PERENNIAL GRASSES (cool)					
Carex douglasii	0.02	4.17	0.05	0.02	0.05
Carex filifolia	0.02	4.17	0.05	0.02	0.05
Carex pensylvanica ssp. heliophila	1.65	91.67	3.80	1.71	3.77
Carex spp.	0.00	2.08	0.00	0.00	0.00
Critesion jubatum	0.02	2.08	0.05	0.02	0.05
Elymus elymoides	0.00	4.17	0.00	0.00	0.00
Elymus lanceolatus fm. dasystachya	0.00	4.17	0.00	0.00	0.00
Elymus longifolius	0.08	58.33	0.19	0.08	0.18
Festuca rubra	0.00	2.08	0.00	0.00	0.00
Hesperostipa comata	1.40	52.08	3.22	1.42	3.13
Juncus arcticus ssp. ater	0.15	4.17	0.34	0.15	0.32
Juncus interior	0.13	39.58	0.29	0.13	0.28
Koeleria macrantha	0.69	89.58	1.59	0.71	1.56

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
NATIVE PERENNIAL GRASSES (cool)- concluded					
Nassella viridula	0.15	8.33	0.34	0.17	0.37
Pascopyrum smithii	0.10	16.67	0.24	0.10	0.23
Poa agassizensis	0.90	56.25	2.07	0.92	2.02
Poa compressa	4.98	87.50	11.50	5.13	11.32
Poa secunda	0.00	4.17	0.00	0.00	0.00
Schedonnardus paniculatus	0.00	2.08	0.00	0.00	0.00
TOTAL NATIVE PERENNIAL GRASSES (c)	10.3	100.0	23.7	10.6	23.3
INTRODUCED PERENNIAL GRASSES (cool)					
Bromopsis inermis	0.02	4.17	0.05	0.02	0.05
Dactylis glomerata	0.02	2.08	0.05	0.02	0.05
Phleum pratense	0.00	2.08	0.00	0.00	0.00
Poa pratensis	0.04	4.17	0.10	0.04	0.09
TOTAL INTRO. PERENNIAL GRASSES (c)	0.1	12.5	0.2	0.1	0.2
NATIVE PERENNIAL GRASSES (warm)					
Andropogon gerardii	9.48	95.83	21.90	10.02	22.14
Aristida purpurea	0.19	72.92	0.43	0.19	0.41
Bouteloua curtipendula	1.58	87.50	3.66	1.60	3.54
Buchloe dactyloides	0.60	39.58	1.40	0.60	1.33
Chondrosum gracile	1.15	95.83	2.65	1.25	2.76
Chondrosum hirsutum	0.38	64.58	0.87	0.40	0.87
Muhlenbergia cuspidata	0.02	4.17	0.05	0.02	0.05
Muhlenbergia montana	3.75	79.17	8.66	3.85	8.51
Muhlenbergia spp.	0.00	2.08	0.00	0.00	0.00
Muhlenbergia wrightii	0.00	2.08	0.00	0.00	0.00
Panicum virgatum	0.00	2.08	0.00	0.00	0.00
Schizachyrium scoparium	1.17	79.17	2.69	1.17	2.58
Sorghastrum avenaceum	0.71	64.58	1.64	0.71	1.56
Sporobolus asper	0.04	6.25	0.10	0.04	0.09
Sporobolus cryptandrus	0.04	10.42	0.10	0.04	0.09
Sporobolus heterolepis	0.60	37.50	1.40	0.60	1.33
TOTAL NATIVE PERENNIAL GRASSES (w)	19.7	100.0	45.5	20.5	45.3
NATIVE SUBSHRUBS					
Artemisia frigida	0.29	52.08	0.67	0.31	0.69
Gutierrezia sarothrae	0.13	18.75	0.29	0.13	0.28
TOTAL NATIVE SUBSHRUBS	0.4	54.2	1.0	0.4	1.0
NATIVE SHRUBS					
Chrysothamnus nauseosus	0.00	2.08	0.00	0.00	0.00
Eriogonum effusum	0.06	6.25	0.14	0.06	0.14
Rhus aromatica ssp. trilobata	0.00	2.08	0.00	0.00	0.00
Rosa sayi	0.02	6.25	0.05	0.02	0.05
Yucca glauca	0.08	10.42	0.19	0.08	0.18
TOTAL NATIVE SHRUBS	0.2	18.8	0.4	0.2	0.4
FERNS and FERN-LIKE					
Selaginella densa	0.23	14.58	0.53	0.23	0.51
TOTAL FERNS & FERN-LIKE	0.2	14.6	0.5	0.2	0.5
BRYOPHYTES					
Moss	0.00	8.33	0.00	0.00	0.00
TOTAL BRYOPHYTES	0.0	8.3	0.0	0.0	0.0

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
LICHEN					
Cladonia spp.	0.17	41.67	0.38	0.17	0.37
Lichen	0.00	10.42	0.00	0.00	0.00
Xanthoparmelia chlorochroa	0.08	33.33	0.19	0.10	0.23
TOTAL LICHEN	0.3	60.4	0.6	0.3	0.6
SUCCULENT					
Coryphantha missouriensis	0.00	4.17	0.00	0.00	0.00
Coryphantha vivipara var. vivipara	0.00	2.08	0.00	0.00	0.00
Echinocereus viridiflorus	0.06	54.17	0.14	0.06	0.14
Opuntia fragilis	0.00	25.00	0.00	0.00	0.00
Opuntia macrorhiza	0.13	91.67	0.29	0.15	0.32
Opuntia phaeacantha	0.00	4.17	0.00	0.00	0.00
Opuntia polyacantha	0.00	12.50	0.00	0.00	0.00
Opuntia spp.	0.00	4.17	0.00	0.00	0.00
Pediocactus simpsonii	0.00	4.17	0.00	0.00	0.00
TOTAL SUCCULENT	0.2	97.9	0.4	0.2	0.5
MUSHROOMS					
Fungus	0.00	18.75	0.00	0.00	0.00
TOTAL MUSHROOMS	0.0	18.8	0.0	0.0	0.0
Standing dead	0.56	33.33		0.56	
Litter	37.92	100.00		37.92	
Bare soil	11.75	97.92		11.75	
Rock	6.48	89.58		6.48	
TOTALS	100.0			102.0	
TOTAL VEGETATION COVER	43.3 (s=9.2)		100.0	45.3 (s=10.8)	100.0
GROUND COVER (Litter+Rock+Veg+St.Dead)	88.3			90.2	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 38.6 Std.Dev.= 12.4)					

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----								
	A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE ANNUAL & BIENNIAL FORBS									
Boechera fendleri									
Cerastium nutans var. brachypodum						P			
Cirsium undulatum			P	P	P	1	P		P
Draba reptans									
Erigeron divergens									
Erysimum asperum			P	P			P		P
Grindelia squarrosa		P	P	P		P			
Helianthus petiolaris						1	1		
Oligosporus pacificus	P		P	P				P	(1)
Oreocarya virgata	P								P
Orthocarpus luteus									
Polygonum douglasii									
Pterogonum alatum	P	P	P	P					P
Silene antirrhina						P		P	P
TOTAL NATIVE ANN. & BIEN. FORBS	P	P	P	P	P	2	1	P	(1)
INTRODUCED ANNUAL & BIENNIAL FORBS									
Acosta diffusa		P							
Alyssum parviflorum	P	P	P	1		2(1)	P	3(1)	2
Camelina microcarpa									
Conyza canadensis									
Erodium cicutarium									
Lactuca serriola			P	P	P		P		
Lepidium densiflorum			P	P				P	
Neolepia campestre									
Plantago lanceolata									
Podospermum laciniatum									
Sisymbrium spp.									
Tragopogon dubius ssp. major			P	P	P	P	P	P	P
Verbascum thapsus									
TOTAL INTRO. ANN. & BIEN. FORBS	P	P	P	1	P	2(1)	P	3(1)	2
NATIVE ANNUAL GRASSES									
Panicum capillare			1	P					
Vulpia octoflora									
TOTAL NATIVE ANN. GRASSES	---	---	1	P	---	---	---	---	---
INTRODUCED ANNUAL GRASSES									
Anisantha tectorum								P	P
Bromus japonicus	P		P	P	P	P	P	P	P
TOTAL INTRO. ANN. GRASSES	P	---	P	P	P	P	P	P	P
NATIVE PERENNIAL FORBS									
Acetosella vulgaris									
Achillea lanulosa									
Adenolinum lewisii	1		P	P		P	P		
Allium cernuum									
Ambrosia psilostachya var. coronopifolia	1	P	2	1	4(1)	4(1)	8(1)	3	P
Amerosedum lanceolatum									
Antennaria corymbosa		P							
Antennaria rosea									
Antennaria spp.									
Aphyllon fasciculatum									
Apocynum androsaemifolium									
Apocynum cannabinum									
Artemisia ludoviciana	1	P	1	P	P	1	5	P	(1)

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----								
	A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE PERENNIAL FORBS (continued)									
Asclepias stenophylla							P		
Asclepias viridiflora			P	P			P	P	
Aster porteri		4	5	12					
Astragalus agrestis									
Astragalus crassicarpus			P						
Astragalus shortianus	P							P	P
Astragalus spatulatus			P						
Brickellia eupatorioides									
Calochortus nuttallii									
Calylophus serrulatus			2						
Campanula rotundifolia			1						
Castilleja integra									
Castilleja spp.									
Cerastium strictum									P
Comandra umbellata ssp. pallida	P		P	P					P
Dalea candida var. oligophylla		P							
Dalea purpurea		P	P	P		P		2	P
Drymocallis fissa									
Eremogone fendleri		P	3	P					
Erigeron flagellaris	1	P	P	P					
Eriogonum flavum var. flavum								P	P
Eriogonum umbellatum									
Evolvulus nuttallianus									
Frasera speciosa									
Gaillardia aristata			P	P					P
Gastrolychnis drummondii			P						
Gaura coccinea					P		P		
Geranium viscosissimum ssp. nervosum									
Harbouria trachypleura									
Helianthella uniflora									
Helianthus pumilus									
Heterotheca fulcrata		P	P	P					
Heterotheca villosa	9		3	P	P	3	P	2	3
Hymenopappus filifolius									
Ipomopsis spicata			P						
Lesquerella montana	P	P	P	P		P		P	P
Leucocrinum montanum								P	
Liatris punctata	1	2	P	P	1	P	P	P	4
Lithospermum incisum		P					P		
Lithospermum ruderale									
Lomatium orientale									
Lygodesmia juncea									
Mertensia lanceolata									
Microseris nutans									
Noccaea montana									
Oenothera howardii		P							
Oenothera villosa									
Oligoneuron rigidum									
Oligosporus dracunculus ssp. glaucus					1	2			
Onosmodium molle ssp. occidentale					P				
Oxalis dillenii									
Oxybaphus hirsutus									
Oxybaphus linearis	P		P			P			P
Oxybaphus nyctagineus									
Oxytropis lambertii			P						
Oxytropis sericea							P		

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----								
	A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE PERENNIAL FORBS (concluded)									
Oxytropis x sericea	P		1					(1)	
Paronychia jamesii	P	P	1	P					P
Penstemon secundiflorus	P						P		P
Penstemon strictus			P						
Penstemon virens									
Phacelia heterophylla			P	P				P	P
Pneumonanthe bigelovii				P					
Potentilla effusa									
Potentilla hippiana									
Potentilla pulcherrima									
Psoralidium tenuiflorum	2	1	P	P	4(3)	6	6	2	4
Pulsatilla patens ssp. hirsutissima									
Ratibida columnifera		1	P	P	P	2	P		
Rumex crispus									
Senecio integerrimus									
Senecio spartioides	P		P	P				1	P
Solidago missouriensis									
Solidago mollis									
Solidago simplex	P	P	P	P		P			
Sphaeralcea coccinea							P		
Talinum parviflorum			(1)	P					
Thelesperma megapotamicum	1								P
Thermopsis divaricarpa									
Tithymalus brachyceras	P		P						
Townsendia grandiflora							P		
Townsendia hookeri		P							
Toxicoscordion venenosum								P	
Tradescantia occidentalis									
Virgulus falcatus		P							
TOTAL NATIVE PERENNIAL FORBS	17	8	19(1)	13	10(4)	18(1)	19(1)	10(1)	11(1)
INTRODUCED PERENNIAL FORBS									
Arabis hirsuta									
Breea arvensis									
Cichorium intybus									
Convolvulus arvensis									
Hypericum perforatum		P	P	P	11				
Linaria genistifolia ssp. dalmatica									P
Potentilla recta									
Taraxacum officinale									
TOTAL INTRO. PERENNIAL FORBS	---	P	P	P	11	---	---	---	P
NATIVE PERENNIAL GRASSES (cool)									
Carex douglasii									
Carex filifolia									
Carex pensylvanica ssp. heliophila	2	2	4	P		P		1	P
Carex spp.									
Critesion jubatum									
Elymus elymoides									
Elymus lanceolatus fm. dasystachya									
Elymus longifolius	P		P	P		P			P
Festuca rubra									
Hesperostipa comata	P		2	P		P	14(1)	5	7
Juncus arcticus ssp. ater									
Juncus interior				P					
Koeleria macrantha	1	1	2	P	P	P		P	1

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----								
	A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
NATIVE PERENNIAL GRASSES (cool)- concluded									
Nassella viridula						P	5(1)		
Pascopyrum smithii						P	P		
Poa agassizensis		P	P	1	P	8	1		
Poa compressa	P		P	4			P		
Poa secunda							P		
Schedonnardus paniculatus		P							
TOTAL NATIVE PERENNIAL GRASSES (c)	3	3	8	5	P	8	20(2)	6	8
INTRODUCED PERENNIAL GRASSES (cool)									
Bromopsis inermis				P					
Dactylis glomerata									
Phleum pratense									
Poa pratensis									
TOTAL INTRO. PERENNIAL GRASSES (c)	---	---	---	P	---	---	---	---	---
NATIVE PERENNIAL GRASSES (warm)									
Andropogon gerardii	15	2(1)	3	26	47(6)	25(2)	1	8	22
Aristida purpurea	P	P	P	P		P		1	P
Bouteloua curtipendula	4	6	2	P		P	P	1	P
Buchloe dactyloides		2	P	P					
Chondrosum gracile	P	5	(1)	P		P	1	1	P
Chondrosum hirsutum	P	P	P	P				P	P
Muhlenbergia cuspidata									
Muhlenbergia montana			1	1			P		
Muhlenbergia spp.									
Muhlenbergia wrightii		P							
Panicum virgatum									
Schizachyrium scoparium	P		3	P		P		2	2
Sorghastrum avenaceum			2	P					
Sporobolus asper		1							
Sporobolus cryptandrus					P				P
Sporobolus heterolepis		P	1	P					
TOTAL NATIVE PERENNIAL GRASSES (w)	19	16(1)	12(1)	27	47(6)	25(2)	2	13	24
NATIVE SUBSHRUBS									
Artemisia frigida	4	P	P	P		P	P	2	P
Gutierrezia sarothrae	P	5	P				P		
TOTAL NATIVE SUBSHRUBS	4	5	P	P	---	P	P	2	P
NATIVE SHRUBS									
Chrysothamnus nauseosus									
Eriogonum effusum					P			3	P
Rhus aromatica ssp. trilobata									
Rosa sayi					P	P			
Yucca glauca						P		1	3
TOTAL NATIVE SHRUBS	---	---	---	---	P	P	---	4	3
FERNS and FERN-LIKE									
Selaginella densa									
TOTAL FERNS & FERN-LIKE	---	---	---	---	---	---	---	---	---
BRYOPHYTES									
Moss									
TOTAL BRYOPHYTES	---	---	---	---	---	---	---	---	---

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	Percent Foliar Cover* ----Sample Number----								
	A1	B1	B2	CC1	CR1	CR2	CR3	RD1	RD2
LICHEN									
Cladonia spp.	P					1		2	
Lichen						P			
Xanthoparmelia chlorochroa			1			P		(1)	
TOTAL LICHEN	P	---	1	---	---	1	---	2(1)	---
SUCCULENT									
Coryphantha missouriensis									P
Coryphantha vivipara var. vivipara									
Echinocereus viridiflorus	P		P	P		P			P
Opuntia fragilis								P	
Opuntia macrorhiza	P	(1)	P	P		P	P	P	P
Opuntia phaeacantha									P
Opuntia polyacantha		P				P		P	P
Opuntia spp.									
Pediocactus simpsonii									
TOTAL SUCCULENT	P	(1)	P	P	---	P	P	P	P
MUSHROOMS									
Fungus			P						
TOTAL MUSHROOMS	---	---	P	---	---	---	---	---	---
Standing dead			1					1	
Litter	42	40	36	41	32	31	56	33	33
Bare soil	11	25	17	12		4	2	9	4
Rock	4	3	5	1		9		17	15
TOTALS	100	100	100	100	100	100	100	100	100
TOTAL VEGETATION COVER	43	32(2)	41(2)	46	68(10)	56(4)	42(3)	40(3)	48(2)
GROUND COVER (Litter+Rock+Veg+St.Dead)	89	75(2)	83(2)	88	100(10)	96(4)	98(3)	91(3)	96(2)
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 38.6 Std.Dev.= 12.4)	39	41	66	55	20	41	35	39	48

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	Percent Foliar Cover* ----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE ANNUAL & BIENNIAL FORBS													
Boechera fendleri											P		
Cerastium nutans var. brachypodum													
Cirsium undulatum					P	P	P					P	P
Draba reptans											P		
Erigeron divergens						P							P
Erysimum asperum													
Grindelia squarrosa				P						P	P		
Helianthus petiolaris													
Oligosporus pacificus							1	P	1		P	P	
Oreocarya virgata						P	P						
Orthocarpus luteus			P								P		
Polygonum douglasii													
Pterogonum alatum	P	P	2	P	P	P	P	1(1)	P	P	P	P	1
Silene antirrhina													
TOTAL NATIVE ANN. & BIEN. FORBS	P	P	2	P	P	P	1	1(1)	1	P	P	P	1
INTRODUCED ANNUAL & BIENNIAL FORBS													
Acosta diffusa						P						P	
Alyssum parviflorum						P	1	P	P	P	P	P	1
Camelina microcarpa													
Conyza canadensis						P							
Erodium cicutarium													
Lactuca serriola												P	P
Lepidium densiflorum									P				
Neolepia campestre													
Plantago lanceolata					P								
Podospermum laciniatum						P							
Sisymbrium spp.								P					
Tragopogon dubius ssp. major					P	P	P	P	P		P	P	P
Verbascum thapsus													P
TOTAL INTRO. ANN. & BIEN. FORBS	---	---	---	---	P	P	1	P	P	P	P	P	1
NATIVE ANNUAL GRASSES													
Panicum capillare			P										
Vulpia octoflora													
TOTAL NATIVE ANN. GRASSES	---	---	P	---	---	---	---	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES													
Anisantha tectorum						P	P						
Bromus japonicus	P					P	3		2	P	P	P	1
TOTAL INTRO. ANN. GRASSES	P	---	---	---	---	P	3	---	2	P	P	P	1
NATIVE PERENNIAL FORBS													
Acetosella vulgaris													
Achillea lanulosa	P							P				2	
Adenolinum lewisii													
Allium cernuum													
Ambrosia psilostachya var. coronopifolia	3	P	2	2	2	P	1	P	2	P		9	P
Amerosedum lanceolatum					P					P	P		
Antennaria corymbosa		P	P	P						P		P	
Antennaria rosea						P							
Antennaria spp.													
Aphyllon fasciculatum													P
Apocynum androsaemifolium													
Apocynum cannabinum						P							
Artemisia ludoviciana	P	P	P	2	4	P	1	4	4	P	6(1)	1	(1)

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE PERENNIAL FORBS (continued)													
Asclepias stenophylla	P							P					
Asclepias viridiflora	P						1						
Aster porteri	18(2)	10	6(1)	7	3		P	5	1	6	7	1	P
Astragalus agrestis												P	
Astragalus crassicarpus													
Astragalus shortianus						P	P				P	P	
Astragalus spatulatus													
Brickellia eupatorioides													
Calochortus nuttallii											P		
Calylophus serrulatus							P						
Campanula rotundifolia						P							
Castilleja integra													
Castilleja spp.													
Cerastium strictum						P					P	P	
Comandra umbellata ssp. pallida						P					P	P	
Dalea candida var. oligophylla		P	1		P				P				
Dalea purpurea		P	P	P		P		P	P	1		P	P
Drymocallis fissa				P		P	P	P		P			
Eremogone fendleri	P	P	1	3	P	P	1	P		P	1(1)	1	
Erigeron flagellaris							P		1		P	1	P
Eriogonum flavum var. flavum						P					P		
Eriogonum umbellatum													
Evolvulus nuttallianus							P						
Frasera speciosa												P	
Gaillardia aristata	P			P		P		P		P	P	P	
Gastrolychnis drummondii													
Gaura coccinea													
Geranium viscosissimum ssp. nervosum													
Harbouria trachypleura						P					P		
Helianthella uniflora													
Helianthus pumilus													
Heterotheca fulcrata	(1)	2	P	1	1	P		P	2	2	1	P	P
Heterotheca villosa						2	6		P		3	4	2
Hymenopappus filifolius													
Ipomopsis spicata													
Lesquerella montana	2	P	P	P	P	P	P	P	1	P	1		P
Leucocrinum montanum		P											
Liatris punctata	P	1	P	1	P	P	1		P	P	P	P	P
Lithospermum incisum							P	P				P	
Lithospermum ruderale													P
Lomatium orientale				P						P			
Lygodesmia juncea													
Mertensia lanceolata													
Microseris nutans											P		
Noccaea montana													
Oenothera howardii													
Oenothera villosa								P					
Oligoneuron rigidum													
Oligosporus dracunculus ssp. glaucus												P	P
Onosmodium molle ssp. occidentale													
Oxalis dillenii								P					
Oxybaphus hirsutus				P		P		P		P			
Oxybaphus linearis							P		P				
Oxybaphus nyctagineus	P												
Oxytropis lambertii													
Oxytropis sericea													

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	Percent Foliar Cover* ----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE PERENNIAL FORBS (concluded)													
Oxytropis x sericea	P						P				1	P	
Paronychia jamesii		2	1(1)		P		P	P	1	P	P		1
Penstemon secundiflorus							P						
Penstemon strictus													P
Penstemon virens	P			P		P		P	P	P			
Phacelia heterophylla							P		P			P	P
Pneumonanthe bigelovii											2	4	
Potentilla effusa													
Potentilla hippiana					P				P			P	
Potentilla pulcherrima												P	
Psoralidium tenuiflorum	P	4	1	P	P	1	P	2	1			2	P
Pulsatilla patens ssp. hirsutissima											P		
Ratibida columnifera												P	
Rumex crispus													
Senecio integerrimus	P			P				P		P			
Senecio spartioides						P	P		P				P
Solidago missouriensis												1	
Solidago mollis		P	P		P				P				
Solidago simplex	P	P	P	1					P	P	P		
Sphaeralcea coccinea													
Talinum parviflorum				P	P			P		P			
Thelesperma megapotamicum													P
Thermopsis divaricarpa													
Tithymalus brachyceras						P						P	P
Townsendia grandiflora													
Townsendia hookeri													
Toxicoscordion venenosum			P										P
Tradescantia occidentalis													
Virgulus falcatus												1	P
TOTAL NATIVE PERENNIAL FORBS	23(3)	19	12(2)	17	10	3	11	11	13	9	22(2)	27	3(1)
INTRODUCED PERENNIAL FORBS													
Arabis hirsuta													
Breea arvensis													
Cichorium intybus								P					
Convolvulus arvensis													
Hypericum perforatum	P	P	P	P	1(1)		P	(1)	P	1	P	P	
Linaria genistifolia ssp. dalmatica													
Potentilla recta													
Taraxacum officinale				P								P	
TOTAL INTRO. PERENNIAL FORBS	P	P	P	P	1(1)	---	P	(1)	P	1	P	P	---
NATIVE PERENNIAL GRASSES (cool)													
Carex douglasii													
Carex filifolia													
Carex pensylvanica ssp. heliophila	3	2	3	P	2	2	P	1	3	1	P	1	6
Carex spp.													
Critesion jubatum													
Elymus elymoides													
Elymus lanceolatus fm. dasystachya							P						
Elymus longifolius	P	P	P	P	P	1	P		1		P	P	P
Festuca rubra													
Hesperostipa comata					P	1	2				1	P	6
Juncus arcticus ssp. ater						P							
Juncus interior	P	P	P								P		
Koeleria macrantha	P	2	2	P	P	P	P	P	1	P	1	2(1)	

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
NATIVE PERENNIAL GRASSES (cool)- concluded													
Nassella viridula												1	
Pascopyrum smithii							P						P
Poa agassizensis			P		P	2	P	1				4	
Poa compressa	3	1	5	7	4	10(1)	P	2	1	2	1	11(2)	1
Poa secunda													
Schedonnardus paniculatus													
TOTAL NATIVE PERENNIAL GRASSES (c)	6	5	10	7	6	16(1)	2	4	6	3	3	19(3)	13
INTRODUCED PERENNIAL GRASSES (cool)													
Bromopsis inermis												1	
Dactylis glomerata													
Phleum pratense								P					
Poa pratensis					2								
TOTAL INTRO. PERENNIAL GRASSES (c)	---	---	---	---	2	---	---	P	---	---	---	1	---
NATIVE PERENNIAL GRASSES (warm)													
Andropogon gerardii	11(1)	12(2)	7	10	4	3	10	14	12(1)	7	8	7	13
Aristida purpurea	P	P	P	P	P	P	P	P	4	P		P	P
Bouteloua curtipendula	P	2	P	1	1	1	4		1	P	1	1	3
Buchloe dactyloides		1			P								P
Chondrosum gracile	1	1	P	1	2	P	6(1)	P	3	P	1	1	1
Chondrosum hirsutum	P	P	2	1	1		P	P	(1)	P	P	2	
Muhlenbergia cuspidata													
Muhlenbergia montana	13	1	7	7(2)	12	P	P	P	1	8	2	1	1
Muhlenbergia spp.													
Muhlenbergia wrightii													
Panicum virgatum							P						
Schizachyrium scoparium	1	1	P	P		1	P		P	P	2	1	
Sorghastrum avenaceum	P	2	1	P	P	P	P	2	1	P		2	
Sporobolus asper						1							
Sporobolus cryptandrus							1						
Sporobolus heterolepis						3		1			4	P	
TOTAL NATIVE PERENNIAL GRASSES (w)	26(1)	20(2)	17	20(2)	20	9	21(1)	17	22(2)	15	18	15	18
NATIVE SUBSHRUBS													
Artemisia frigida						1	1	P	(1)	P	P	P	3
Gutierrezia sarothrae						P						P	
TOTAL NATIVE SUBSHRUBS	---	---	---	---	---	1	1	P	(1)	P	P	P	3
NATIVE SHRUBS													
Chrysothamnus nauseosus													
Eriogonum effusum													
Rhus aromatica ssp. trilobata								P					
Rosa sayi													
Yucca glauca													P
TOTAL NATIVE SHRUBS	---	---	---	---	---	---	---	P	---	---	---	---	P
FERNS and FERN-LIKE													
Selaginella densa			2	P	3	P				P	6		
TOTAL FERNS & FERN-LIKE	---	---	2	P	3	P	---	---	---	P	6	---	---
BRYOPHYTES													
Moss						P	P						
TOTAL BRYOPHYTES	---	---	---	---	---	P	P	---	---	---	---	---	---

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	1	2	3	4	5	6	7	8	9	10	11	12	13
LICHEN													
Cladonia spp.		P	P			P	P			P	P		
Lichen												P	
Xanthoparmelia chlorochroa						P			P	P			
TOTAL LICHEN	---	P	P	---	---	P	P	---	P	P	P	P	---
SUCCULENT													
Coryphantha missouriensis							P						
Coryphantha vivipara var. vivipara													
Echinocereus viridiflorus				P	P	P	P		P	P	P		3
Opuntia fragilis					P		P					P	P
Opuntia macrorhiza	P	P	P	P	P	1	P	1	1	P		P	
Opuntia phaeacantha									P				
Opuntia polyacantha													
Opuntia spp.													
Pediocactus simpsonii						P							
TOTAL SUCCULENT	P	P	P	P	P	1	P	1	1	P	P	P	3
MUSHROOMS													
Fungus	P			P		P						P	P
TOTAL MUSHROOMS	P	---	---	P	---	P	---	---	---	---	---	P	P
Standing dead		1	1		2								3
Litter	24	24	31	35	27	40	32	46	23	43	43	35	41
Bare soil	20	26	20	12	23	11	12	7	8	18	6	1	12
Rock	1	5	5	9	6	19	16	13	24	11	2	2	1
TOTALS	100	100	100	100	100	100	100	100	100	100	100	100	100
TOTAL VEGETATION COVER	55(4)	44(2)	43(2)	44(2)	42(1)	30(1)	40(1)	34(2)	45(3)	28	49(2)	62(3)	43(1)
GROUND COVER (Litter+Rock+Veg+St.Dead)	80(4)	74(2)	80(2)	88(2)	77(1)	89(1)	88(1)	93(2)	92(3)	82	94(2)	99(3)	88(1)
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 38.6 Std.Dev.= 12.4)	35	33	36	38	38	60	55	42	43	41	49	62	45

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE ANNUAL & BIENNIAL FORBS													
Boechera fendleri													
Cerastium nutans var. brachypodum													
Cirsium undulatum													
Draba reptans													
Erigeron divergens	P												
Erysimum asperum								P					
Grindelia squarrosa												P	
Helianthus petiolaris													
Oligosporus pacificus													
Oreocarya virgata													
Orthocarpus luteus													
Polygonum douglasii													
Pterogonum alatum								P	P	(1)		P	2
Silene antirrhina				P									
TOTAL NATIVE ANN. & BIEN. FORBS	P	---	---	P	---	---	---	P	P	(1)	---	P	2
INTRODUCED ANNUAL & BIENNIAL FORBS													
Acosta diffusa		P		P									
Alyssum parviflorum	2							P			P	P	P
Camelina microcarpa													
Conyza canadensis													
Erodium cicutarium	1												
Lactuca serriola	P											P	
Lepidium densiflorum													
Neolepia campestre													
Plantago lanceolata													
Podospermum laciniatum													
Sisymbrium spp.													
Tragopogon dubius ssp. major	P			P			P		P	P	P	P	
Verbascum thapsus	P												
TOTAL INTRO. ANN. & BIEN. FORBS	3	P	---	P	---	---	P	P	P	P	P	P	P
NATIVE ANNUAL GRASSES													
Panicum capillare													
Vulpia octoflora													
TOTAL NATIVE ANN. GRASSES	---	---	---	---	---	---	---	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES													
Anisantha tectorum											P	P	
Bromus japonicus	P		P	P			P				2	P	
TOTAL INTRO. ANN. GRASSES	P	---	P	P	---	---	P	---	---	---	2	P	---
NATIVE PERENNIAL FORBS													
Acetosella vulgaris													
Achillea lanulosa												P	P
Adenolinum lewisii													
Allium cernuum													
Ambrosia psilostachya var. coronopifolia	P	P		2	P							8(1)	P
Amerosedum lanceolatum													
Antennaria corymbosa								P	P	P			
Antennaria rosea													P
Antennaria spp.													
Aphyllon fasciculatum													
Apocynum androsaemifolium													P
Apocynum cannabinum										P			
Artemisia ludoviciana	2	P	P	1		P	P	P			P	P	

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE PERENNIAL FORBS (continued)													
Asclepias stenophylla													
Asclepias viridiflora													
Aster porteri	P			5				1	P	P		1	6(2)
Astragalus agrestis												P	
Astragalus crassicarpus													
Astragalus shortianus													
Astragalus spatulatus													
Brickellia eupatorioides	P										P		
Calochortus nuttallii											P		
Calylophus serrulatus				P									
Campanula rotundifolia													
Castilleja integra										P			
Castilleja spp.													P
Cerastium strictum													
Comandra umbellata ssp. pallida				P						P	P		P
Dalea candida var. oligophylla													
Dalea purpurea							P	P	P	P		P	
Drymocallis fissa													P
Eremogone fendleri		P		P				P				P	1
Erigeron flagellaris													
Eriogonum flavum var. flavum													
Eriogonum umbellatum													
Evolvulus nuttallianus	P			P									
Frasera speciosa													
Gaillardia aristata				1				P				P	
Gastrolychnis drummondii													
Gaura coccinea	P												
Geranium viscosissimum ssp. nervosum													
Harbouria trachypleura													
Helianthella uniflora													
Helianthus pumilus							P						
Heterotheca fulcrata				P				P				P	P
Heterotheca villosa	P							P		P			
Hymenopappus filifolius									P				
Ipomopsis spicata													
Lesquerella montana	P							P	P	P		P	P
Leucocrinum montanum													
Liatris punctata		P		P			1	3	1	5	6	1	P
Lithospermum incisum													
Lithospermum ruderale	P												
Lomatium orientale													
Lygodesmia juncea	P												
Mertensia lanceolata													
Microseris nutans													
Noccaea montana													
Oenothera howardii													
Oenothera villosa													
Oligoneuron rigidum													
Oligosporus dracunculus ssp. glaucus							P						
Onosmodium molle ssp. occidentale													
Oxalis dillenii													
Oxybaphus hirsutus													
Oxybaphus linearis							P						
Oxybaphus nyctagineus													
Oxytropis lambertii													
Oxytropis sericea													

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE PERENNIAL FORBS (concluded)													
Oxytropis x sericea													
Paronychia jamesii								1	P	P		P	P
Penstemon secundiflorus							P				P		
Penstemon strictus													
Penstemon virens	P			P									
Phacelia heterophylla	P												
Pneumonanthe bigelovii										P		P	
Potentilla effusa												P	
Potentilla hippiana						P		P		P			
Potentilla pulcherrima													
Psoralidium tenuiflorum	P	1		P			P	P	P	P	P	P	
Pulsatilla patens ssp. hirsutissima													
Ratibida columnifera	P						P				P		
Rumex crispus												P	
Senecio integerrimus													
Senecio spartioides	P						P						
Solidago missouriensis													
Solidago mollis													
Solidago simplex				P						P		P	P
Sphaeralcea coccinea	P												
Talinum parviflorum								P	P			P	
Thelesperma megapotamicum													
Thermopsis divaricarpa												1	
Tithymalus brachyceras													
Townsendia grandiflora													
Townsendia hookeri													
Toxicoscordion venenosum													
Tradescantia occidentalis												P	
Virgulus falcatus												P	
TOTAL NATIVE PERENNIAL FORBS	2	1	P	9	P	P	1	5	1	5	6	11(1)	7(2)
INTRODUCED PERENNIAL FORBS													
Arabis hirsuta				(1)									
Breea arvensis							P						
Cichorium intybus													
Convolvulus arvensis												P	
Hypericum perforatum				1							P	P	1
Linaria genistifolia ssp. dalmatica				P			P						
Potentilla recta													
Taraxacum officinale													
TOTAL INTRO. PERENNIAL FORBS	---	---	---	1(1)	---	---	P	---	---	---	P	P	1
NATIVE PERENNIAL GRASSES (cool)													
Carex douglasii													1
Carex filifolia													
Carex pensylvanica ssp. heliophila	1	1	P	P		P	9	2	P	2	1	1	3(2)
Carex spp.													
Critesion jubatum													
Elymus elymoides													P
Elymus lanceolatus fm. dasystachya												P	
Elymus longifolius	P			P				P	P				
Festuca rubra													
Hesperostipa comata	21			P			3		1	P	2	P	
Juncus arcticus ssp. ater													
Juncus interior		2	2	1	P	P						P	P
Koeleria macrantha		P	1	P		P	P	4	2	P	P	P	P

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
NATIVE PERENNIAL GRASSES (*cool*)- *concluded*													
Nassella viridula													
Pascopyrum smithii												P	
Poa agassizensis	P	P	7		5(1)	5	4	P	P			1	P
Poa compressa		8	11	7	22	25	P	1	3	P	P	24	2
Poa secunda													
Schedonnardus paniculatus													
TOTAL NATIVE PERENNIAL GRASSES (*c*)	22	11	21	8	27(1)	30	16	7	6	2	3	26	6(2)
INTRODUCED PERENNIAL GRASSES (cool)													
Bromopsis inermis													
Dactylis glomerata													
Phleum pratense													
Poa pratensis													
TOTAL INTRO. PERENNIAL GRASSES (*c*)	---	---	---	---	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (warm)													
Andropogon gerardii	4(1)	10(2)	15(1)	13(1)	8		17	7	14	12	21(1)	1	6
Aristida purpurea	P	P		1			P	P	P	P	P	P	
Bouteloua curtipendula	P	P		1		P	P	2	2	3	5	P	4
Buchloe dactyloides		P	P	P	P	P		1				1	
Chondrosum gracile	P	P	P	1	P	1	P	P	2	P	1	6	2
Chondrosum hirsutum								P	P	1		P	P
Muhlenbergia cuspidata			P			1							
Muhlenbergia montana		8	10	6	P	2		8	4	10	1	4	15
Muhlenbergia spp.													
Muhlenbergia wrightii													
Panicum virgatum													
Schizachyrium scoparium		7	P	P	2	4		1	3	P	P	3	8
Sorghastrum avenaceum		4	1	1	6	2		1	2	P		1	P
Sporobolus asper					P								
Sporobolus cryptandrus									P				
Sporobolus heterolepis		P	P	P		P		2				2	4
TOTAL NATIVE PERENNIAL GRASSES (w)	4(1)	29(2)	26(1)	23(1)	16	10	17	22	27	26	28(1)	18	39
NATIVE SUBSHRUBS													
Artemisia frigida	1											P	P
Gutierrezia sarothrae													
TOTAL NATIVE SUBSHRUBS	1	---	---	---	---	---	---	---	---	---	---	P	P
NATIVE SHRUBS													
Chrysothamnus nauseosus											P		
Eriogonum effusum													
Rhus aromatica ssp. trilobata													
Rosa sayi							1						
Yucca glauca	P												
TOTAL NATIVE SHRUBS	P	---	---	---	---	---	1	---	---	---	P	---	---
FERNS and FERN-LIKE													
Selaginella densa													
TOTAL FERNS & FERN-LIKE	---	---	---	---	---	---	---	---	---	---	---	---	---
BRYOPHYTES													
Moss													
TOTAL BRYOPHYTES	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

PLANT SPECIES	Percent Foliar Cover* ----Sample Number----												
	14	15	16	17	18	19	20	21	22	23	24	25	26
LICHEN													
Cladonia spp.		P		P				1	P	P			
Lichen													
Xanthoparmelia chlorochroa					P	P		P	P				
TOTAL LICHEN	---	P	---	P	P	P	---	1	P	P	---	---	---
SUCCULENT													
Coryphantha missouriensis													
Coryphantha vivipara var. vivipara													
Echinocereus viridiflorus	P			P			P	P	P	P	P		
Opuntia fragilis	P				P								
Opuntia macrorhiza	P	P	P	P	1	P	P	P	P		P	P	P
Opuntia phaeacantha													
Opuntia polyacantha													
Opuntia spp.													P
Pediocactus simpsonii													
TOTAL SUCCULENT	P	P	P	P	1	P	P	P	P	P	P	P	P
MUSHROOMS													
Fungus													
TOTAL MUSHROOMS	---	---	---	---	---	---	---	---	---	---	---	---	---
Standing dead				1		2							5
Litter	64	49	44	54	44	51	58	38	44	58	51	17	22
Bare soil	2	8	9	1	11	4	7	18	10	3	9	21	12
Rock	2	2		3	1	3		9	12	6	1	7	6
TOTALS	100	100	100	100	100	100	100	100	100	100	100	100	100
TOTAL VEGETATION COVER	32(1)	41(2)	47(1)	41(2)	44(1)	40	35	35	34	33(1)	39(1)	55(1)	55(4)
GROUND COVER (Litter+Rock+Veg+St.Dead)	98(1)	92(2)	91(1)	99(2)	89(1)	96	93	82	90	97(1)	91(1)	79(1)	88(4)
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 38.6 Std.Dev.= 12.4)	36	22	16	38	14	17	26	36	30	30	26	50	35

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	27	28	29	30	31	32	33	34	35	36	37	38	39
NATIVE ANNUAL & BIENNIAL FORBS													
Boechera fendleri													
Cerastium nutans var. brachypodum													
Cirsium undulatum							P		P				
Draba reptans													
Erigeron divergens									P				
Erysimum asperum								P					
Grindelia squarrosa			3		P	P			P	P		1	
Helianthus petiolaris		P							P				
Oligosporus pacificus										P			
Oreocarya virgata													
Orthocarpus luteus													
Polygonum douglasii			P									P	
Pterogonum alatum	P	1		1		P	1	P		P			
Silene antirrhina													
TOTAL NATIVE ANN. & BIEN. FORBS	P	1	3	1	P	P	1	P	P	P		1	
INTRODUCED ANNUAL & BIENNIAL FORBS													
Acosta diffusa										P		4	
Alyssum parviflorum	P		P	P			P	P	P			P	
Camelina microcarpa													
Conyza canadensis													
Erodium cicutarium													
Lactuca serriola												P	
Lepidium densiflorum													
Neolepia campestre			P										
Plantago lanceolata												P	
Podospermum laciniatum													
Sisymbrium spp.													
Tragopogon dubius ssp. major				P			P	P	P				
Verbascum thapsus													
TOTAL INTRO. ANN. & BIEN. FORBS	P	---	P	P	---	---	P	P	P	P		4	
NATIVE ANNUAL GRASSES													
Panicum capillare													
Vulpia octoflora													
TOTAL NATIVE ANN. GRASSES	---	---	---	---	---	---	---	---	---	---		---	
INTRODUCED ANNUAL GRASSES													
Anisantha tectorum							P					P	
Bromus japonicus			2	P		P	P					P	
TOTAL INTRO. ANN. GRASSES	---	---	2	P	---	P	P	---	---	---		P	
NATIVE PERENNIAL FORBS													
Acetosella vulgaris			P										
Achillea lanulosa		P	P	P		P						P	
Adenolinum lewisii													
Allium cernuum									P				
Ambrosia psilostachya var. coronopifolia	1	1	5	2	2	8	P	1	P	P		5(1)	
Amerosedum lanceolatum							P						
Antennaria corymbosa				P				(1)					
Antennaria rosea	P	P							P				
Antennaria spp.													
Aphyllon fasciculatum													
Apocynum androsaemifolium													
Apocynum cannabinum													
Artemisia ludoviciana	P	P		4		1	P	P	P			P	

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	27	28	29	30	31	32	33	34	35	36	37	38	39
NATIVE PERENNIAL FORBS (continued)													
Asclepias stenophylla		P						P					
Asclepias viridiflora		P					P		P				
Aster porteri	9	4	4	3		3	1	6	(1)	6		P	
Astragalus agrestis									P				
Astragalus crassicarpus													
Astragalus shortianus													
Astragalus spatulatus													
Brickellia eupatorioides													
Calochortus nuttallii													
Calylophus serrulatus									P				
Campanula rotundifolia													
Castilleja integra							P						
Castilleja spp.													
Cerastium strictum							P	P					
Comandra umbellata ssp. pallida	P			P			1	P	1				
Dalea candida var. oligophylla													
Dalea purpurea	P	P		P		P	P	P	P	1			
Drymocallis fissa													
Eremogone fendleri	2	1		P	P	P	(1)	6	2	1		P	
Erigeron flagellaris									P			1	
Eriogonum flavum var. flavum					1								
Eriogonum umbellatum							P	P					
Evolvulus nuttallianus													
Frasera speciosa									P				
Gaillardia aristata		P						P					
Gastrolychnis drummondii									P				
Gaura coccinea													
Geranium viscosissimum ssp. nervosum									P				
Harbouria trachypleura									P				
Helianthella uniflora				P			P	P		P			
Helianthus pumilus													
Heterotheca fulcrata	P	P		P	P	2	P	1	P	P			
Heterotheca villosa				P		P	13(2)	2	P	P		1	
Hymenopappus filifolius													
Ipomopsis spicata													
Lesquerella montana		P		P		P	P	P	P	P		P	
Leucocrinum montanum													
Liatris punctata	P	4(1)		2		1	P	5(1)	(1)	3		P	
Lithospermum incisum				P									
Lithospermum ruderale													
Lomatium orientale													
Lygodesmia juncea													
Mertensia lanceolata													
Microseris nutans	P												
Noccaea montana													
Oenothera howardii												P	
Oenothera villosa									P				
Oligoneuron rigidum									P				
Oligosporus dracunculus ssp. glaucus													
Onosmodium molle ssp. occidentale													
Oxalis dillenii													
Oxybaphus hirsutus													
Oxybaphus linearis				P			P						
Oxybaphus nyctagineus													
Oxytropis lambertii													
Oxytropis sericea								P					

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	27	28	29	30	31	32	33	34	35	36	37	38	39
NATIVE PERENNIAL FORBS (concluded)													
Oxytropis x sericea				P			P	P	P				
Paronychia jamesii	P	1		P		1	P	P	P	P			
Penstemon secundiflorus				P									
Penstemon strictus													
Penstemon virens				P		P	P	P	P	P			
Phacelia heterophylla													
Pneumonanthe bigelovii		P						P	2				
Potentilla effusa													
Potentilla hippiana					P		P					P	
Potentilla pulcherrima													
Psoralidium tenuiflorum						P	P	P	5	1		P	
Pulsatilla patens ssp. hirsutissima													
Ratibida columnifera									P				
Rumex crispus												P	
Senecio integerrimus													
Senecio spartioides							P			P		P	
Solidago missouriensis													
Solidago mollis													
Solidago simplex	2(1)	1		1				P	P	P		P	
Sphaeralcea coccinea													
Talinum parviflorum			P	P	P	P	P	P	P			P	
Thelesperma megapotamicum													
Thermopsis divaricarpa													
Tithymalus brachyceras									P				
Townsendia grandiflora													
Townsendia hookeri								1	P				
Toxicoscordion venenosum							P			P			
Tradescantia occidentalis													
Virgulus falcatus			3		1	2		P	P				
TOTAL NATIVE PERENNIAL FORBS	14(1)	12(1)	12	12	4	18	15(3)	22(2)	10(2)	12		7(1)	
INTRODUCED PERENNIAL FORBS													
Arabis hirsuta													
Breea arvensis													
Cichorium intybus													
Convolvulus arvensis			P									P	
Hypericum perforatum	P	1		P				P	P	P		1	
Linaria genistifolia ssp. dalmatica				P									
Potentilla recta			P										
Taraxacum officinale			6		P	P						P	
TOTAL INTRO. PERENNIAL FORBS	P	1	6	P	P	P	---	P	P	P		1	
NATIVE PERENNIAL GRASSES (cool)													
Carex douglasii	P												
Carex filifolia					P			1					
Carex pensylvanica ssp. heliophila	4	2		1	P	P	2	4	P	4		1	
Carex spp.			P										
Critesion jubatum			1										
Elymus elymoides													
Elymus lanceolatus fm. dasystachya													
Elymus longifolius			P	P			1	P	1	P		P	
Festuca rubra				P									
Hesperostipa comata				P			2		P			P	
Juncus arcticus ssp. ater			7										
Juncus interior		P	P		P		1	P				P	
Koeleria macrantha	1	1		P	P	1	2	1	2	P		1	

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	27	28	29	30	31	32	33	34	35	36	37	38	39
NATIVE PERENNIAL GRASSES (cool)- concluded													
Nassella viridula				1									
Pascopyrum smithii					4	1						P	
Poa agassizensis			2				1		P			P	
Poa compressa	6(1)	15	14	4	13(1)	4	P	P	2	P		2	
Poa secunda			P										
Schedonnardus paniculatus													
TOTAL NATIVE PERENNIAL GRASSES (c)	11(1)	18	24	6	17(1)	6	9	6	5	4		4	
INTRODUCED PERENNIAL GRASSES (cool)													
Bromopsis inermis													
Dactylis glomerata					1								
Phleum pratense													
Poa pratensis												P	
TOTAL INTRO. PERENNIAL GRASSES (c)	---	---	---	---	1	---	---	---	---	---		P	
NATIVE PERENNIAL GRASSES (warm)													
Andropogon gerardii	8	2	2	3		5	3	1	8(1)	1		3(1)	
Aristida purpurea				P			1	P	1	P			
Bouteloua curtipendula	P	P		1		12	2	P	10(1)	2		1	
Buchloe dactyloides			10		9	4	P					1	
Chondrosum gracile	1	P	P	1(1)	1	2	1(1)		P	P		9	
Chondrosum hirsutum		P		P		P	1	P	1	7		1	
Muhlenbergia cuspidata													
Muhlenbergia montana	12	9		5		P	1	5	P	5		2	
Muhlenbergia spp.	P												
Muhlenbergia wrightii													
Panicum virgatum													
Schizachyrium scoparium	5	1		1		1	1	3	1	2		P	
Sorghastrum avenaceum	P	1						P	1	1		2	
Sporobolus asper													
Sporobolus cryptandrus	1												
Sporobolus heterolepis	1	P						P	11				
TOTAL NATIVE PERENNIAL GRASSES (w)	28	13	12	11(1)	10	24	10(1)	9	33(2)	18		19(1)	
NATIVE SUBSHRUBS													
Artemisia frigida				1		P	1	P	P				
Gutierrezia sarothrae						1			P			P	
TOTAL NATIVE SUBSHRUBS	---	---	---	1	---	1	1	P	P	---		P	
NATIVE SHRUBS													
Chrysothamnus nauseosus													
Eriogonum effusum													
Rhus aromatica ssp. trilobata													
Rosa sayi													
Yucca glauca													
TOTAL NATIVE SHRUBS	---	---	---	---	---	---	---	---	---	---		---	
FERNS and FERN-LIKE													
Selaginella densa		P											
TOTAL FERNS & FERN-LIKE	---	P	---	---	---	---	---	---	---	---		---	
BRYOPHYTES													
Moss			P			P							
TOTAL BRYOPHYTES	---	---	P	---	---	P	---	---	---	---		---	

Table 99-2. Cover Data - All Sites, Bluestem Grassland Study, Jeff. and Bldr. Co., CO - Aug. and Sept., 1999

Percent Foliar Cover*

PLANT SPECIES	----Sample Number----												
	27	28	29	30	31	32	33	34	35	36	37	38	39
LICHEN													
Cladonia spp.		P	P					4	P	P			
Lichen								P		P		P	
Xanthoparmelia chlorochroa				1		1	1	P		P		P	
TOTAL LICHEN	---	P	P	1	---	1	1	4	P	P		P	
SUCCULENT													
Coryphantha missouriensis													
Coryphantha vivipara var. vivipara				P									
Echinocereus viridiflorus				P		P	P	P				P	
Opuntia fragilis				P			P	P		P		P	
Opuntia macrorhiza	P	P	P	P	P	1	P	P	P	P		1	
Opuntia phaeacantha													
Opuntia polyacantha				P					P				
Opuntia spp.													
Pediocactus simpsonii													
TOTAL SUCCULENT	P	P	P	P	P	1	P	P	P	P		1	
MUSHROOMS													
Fungus							P	P		P			
TOTAL MUSHROOMS	---	---	---	---	---	---	P	P	---	P		---	
Standing dead	2			2	1		1			1		1	
Litter	29	44	28	36	29	29	35	38	36	37		35	
Bare soil	12	6	13	20	36	11	10	10	11	16		20	
Rock	4	5		10	2	9	17	11	5	12		7	
TOTALS	100	100	100	100	100	100	100	100	100	100		100	
TOTAL VEGETATION COVER	53(2)	45(1)	59	32(1)	32(1)	51	37(4)	41(2)	48(4)	34		37(2)	
GROUND COVER (Litter+Rock+Veg+St.Dead)	88(2)	94(1)	87	80(1)	64(1)	89	90(4)	90(2)	89(4)	84		80(2)	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 38.6 Std.Dev.= 12.4)	29	34	28	48	19	36	52	53	60	38		50	

Table 99-3. Frequency Data - Permanent Transect A1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Oligosporus pacificus	40.00	P	P					P		P	
Pterogonum alatum	50.00	P	P		P	P				P	
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	P	P	---	P	P	---	P	---	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	10.00							P			
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	---	---	---	---	---	P	---	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	50.00					P		P	P	P	P
TOTAL INTRO. ANN. GRASSES	50.0	---	---	---	---	P	---	P	P	P	P
NATIVE PERENNIAL FORBS											
Adenolinum lewisii	10.00					P					
Ambrosia psilostachya var. coronopifolia	50.00					P	P	P	P		P
Comandra umbellata ssp. pallida	10.00										P
Erigeron flagellaris	20.00							P			P
Heterotheca villosa	100.00	P	P	P	P	P	P	P	P	P	P
Lesquerella montana	20.00		P	P							
Liatris punctata	80.00		P	P	P	P	P	P	P		P
Oxybaphus linearis	10.00								P		
Oxytropis x sericea	10.00				P						
Paronychia jamesii	10.00									P	
Psoralidium tenuiflorum	80.00		P	P	P		P	P	P	P	P
Senecio spartioides	10.00				P						
Thelesperma megapotamicum	40.00			P	P		P	P			
Tithymalus brachyceras	10.00										P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	70.00	P	P	P		P	P		P		P
Elymus longifolius	40.00			P			P	P			P
Hesperostipa comata	30.00		P				P			P	
Koeleria macrantha	70.00	P	P	P	P	P	P	P			
Poa compressa	20.00						P		P		
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P	P	P	P	P	P	P	P		P
Aristida purpurea	10.00							P			
Bouteloua curtipendula	90.00		P	P	P	P	P	P	P	P	P
Chondrosum gracile	80.00		P	P	P	P	P	P		P	P
Chondrosum hirsutum	10.00								P		
Schizachyrium scoparium	20.00			P	P						
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	100.00	P	P	P	P	P	P	P	P	P	P
Gutierrezia sarothrae	10.00										P
TOTAL NATIVE SUBSHRUBS	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	10.00		P								
TOTAL LICHEN	10.0	---	P	---	---	---	---	---	---	---	---

Table 99-3. Frequency Data - Permanent Transect A1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
SUCCULENT											
Echinocereus viridiflorus	70.00	P	P	P	P			P		P	P
Opuntia macrorhiza	80.00	P	P		P	P	P	P	P		P
TOTAL SUCCULENT	100.0	P	P	P	P	P	P	P	P	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 14.1 Std.Dev.= 2.7)		9	16	14	15	13	15	18	13	11	17

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-4. Frequency Data - Permanent Transect B1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	30.00				P	P					P
Pterogonum alatum	40.00		P			P		P		P	
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	---	P	---	P	P	---	P	---	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Acosta diffusa	20.00		P	P							
Alyssum parviflorum	20.00		P	P							
TOTAL INTRO. ANN. & BIEN. FORBS	20.0	---	P	P	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Antennaria corymbosa	10.00							P			
Artemisia ludoviciana	20.00		P						P		
Aster porteri	90.00	P	P		P	P	P	P	P	P	P
Dalea candida var. oligophylla	20.00			P		P					
Dalea purpurea	50.00	P		P	P	P	P				
Eremogone fendleri	20.00				P			P			
Erigeron flagellaris	60.00	P	P	P				P		P	P
Lesquerella montana	20.00				P					P	
Liatris punctata	60.00		P	P		P	P	P		P	
Lithospermum incisum	10.00			P							
Oenothera howardii	10.00		P								
Paronychia jamesii	40.00		P					P	P	P	
Psoralidium tenuiflorum	30.00			P					P	P	
Ratibida columnifera	70.00	P	P		P	P	P	P	P		
Solidago simplex	10.00				P						
Townsendia hookeri	10.00							P			
Virgulus falcatus	20.00			P			P				
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	20.00						P		P		
TOTAL INTRO. PERENNIAL FORBS	20.0	---	---	---	---	---	P	---	P	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	90.00		P	P	P	P	P	P	P	P	P
Koeleria macrantha	80.00		P	P		P	P	P	P	P	P
Poa agassizensis	10.00						P				
Schedonnardus paniculatus	10.00									P	
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	---	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	20.00						P		P		
Aristida purpurea	70.00			P	P	P	P	P	P	P	
Bouteloua curtipendula	100.00	P	P	P	P	P	P	P	P	P	P
Buchloe dactyloides	80.00	P	P			P	P	P	P	P	P
Chondrosum gracile	90.00		P	P	P	P	P	P	P	P	P
Chondrosum hirsutum	10.00					P					
Sporobolus asper	10.00							P			
Sporobolus heterolepis	20.00	P	P								
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	50.00	P			P			P		P	P
Gutierrezia sarothrae	70.00	P	P		P	P			P	P	P
TOTAL NATIVE SUBSHRUBS	80.0	P	P	---	P	P	---	P	P	P	P

Table 99-4. Frequency Data - Permanent Transect B1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
SUCCULENT											
Opuntia macrorhiza	20.00					P				P	
TOTAL SUCCULENT	20.0	---	---	---	---	P	---	---	---	P	---
SPECIES DENSITY (# of species/ sq.m.) (AVERAGE= 14.1 Std.Dev.= 2.8)		9	17	14	13	16	14	17	14	17	10

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-5. Frequency Data - Permanent Transect B2, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Erysimum asperum	20.00							P		P	
Pterogonum alatum	50.00	P		P	P			P		P	
TOTAL NATIVE ANN. & BIEN. FORBS	50.0	P	---	P	P	---	---	P	---	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	10.00					P					
Lepidium densiflorum	10.00							P			
Tragopogon dubius ssp. major	10.00			P							
TOTAL INTRO. ANN. & BIEN. FORBS	30.0	---	---	P	---	P	---	P	---	---	---
NATIVE ANNUAL GRASSES											
Panicum capillare	50.00		P				P	P	P	P	
TOTAL NATIVE ANN. GRASSES	50.0	---	P	---	---	---	P	P	P	P	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	80.00	P	P	P		P		P	P	P	P
Artemisia ludoviciana	40.00				P		P			P	P
Aster porteri	80.00		P	P		P	P	P	P	P	P
Astragalus spatulatus	10.00									P	
Calylophus serrulatus	20.00			P	P						
Campanula rotundifolia	20.00					P		P			
Dalea purpurea	30.00		P			P				P	
Eremogone fendleri	90.00	P	P	P	P	P	P		P	P	P
Heterotheca fulcrata	30.00						P	P		P	
Heterotheca villosa	90.00	P	P	P	P	P	P	P		P	P
Lesquerella montana	60.00			P	P		P	P	P	P	
Liatris punctata	100.00	P	P	P	P	P	P	P	P	P	P
Oxytropis x sericea	40.00			P		P			P	P	
Paronychia jamesii	60.00		P	P			P	P	P	P	
Psoralidium tenuiflorum	40.00		P		P			P			P
Solidago simplex	40.00				P		P	P		P	
Tithymalus brachyceras	10.00		P								
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	10.00	P									
TOTAL INTRO. PERENNIAL FORBS	10.0	P	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	70.00	P	P			P	P	P	P		P
Elymus longifolius	10.00					P					
Hesperostipa comata	40.00		P	P		P			P		
Koeleria macrantha	60.00		P	P		P	P			P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	P	P	P	---	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	70.00	P		P		P	P	P	P	P	
Aristida purpurea	10.00				P						
Bouteloua curtipendula	100.00	P	P	P	P	P	P	P	P	P	P
Buchloe dactyloides	10.00										P
Chondrosum gracile	20.00		P				P				
Chondrosum hirsutum	100.00	P	P	P	P	P	P	P	P	P	P
Muhlenbergia montana	40.00	P					P			P	P
Schizachyrium scoparium	40.00	P						P	P		P
Sorghastrum avenaceum	70.00		P	P	P	P		P	P	P	
Sporobolus heterolepis	40.00		P				P		P		P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-5. Frequency Data - Permanent Transect B2, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE SUBSHRUBS											
Artemisia frigida	60.00	P		P		P			P	P	P
Gutierrezia sarothrae	10.00				P						
TOTAL NATIVE SUBSHRUBS	70.0	P	---	P	P	P	---	---	P	P	P
LICHEN											
Xanthoparmelia chlorochroa	80.00		P	P		P	P	P	P	P	P
TOTAL LICHEN	80.0	---	P	P	---	P	P	P	P	P	P
SUCCULENT											
Echinocereus viridiflorus	50.00		P			P		P		P	P
TOTAL SUCCULENT	50.0	---	P	---	---	P	---	P	---	P	P
MUSHROOMS											
Fungus	20.00					P	P				
TOTAL MUSHROOMS	20.0	---	---	---	---	P	P	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 19.0 Std.Dev.= 3.6)		13	20	19	14	21	20	22	18	25	18

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-6. Frequency Data - Permanent Transect CC1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Cirsium undulatum	10.00	P									
TOTAL NATIVE ANN. & BIEN. FORBS	10.0	P	---	---	---	---	---	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	30.00				P	P				P	
TOTAL INTRO. ANN. & BIEN. FORBS	30.0	---	---	---	P	P	---	---	---	P	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	20.00						P			P	
TOTAL INTRO. ANN. GRASSES	20.0	---	---	---	---	---	P	---	---	P	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	20.00					P	P				
Asclepias viridiflora	10.00										P
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Heterotheca fulcrata	10.00					P					
Lesquerella montana	10.00		P								
Solidago simplex	10.00	P									
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	20.00				P					P	
Elymus longifolius	10.00			P							
Poa agassizensis	10.00								P		
Poa compressa	60.00	P	P			P	P		P		P
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	P	P	P	P	P	P	---	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	100.00	P	P	P	P	P	P	P	P	P	P
Bouteloua curtipendula	10.00									P	
Chondrosum gracile	10.00										P
Muhlenbergia montana	80.00		P	P	P	P	P	P	P	P	
Sorghastrum avenaceum	20.00		P							P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
SUCCULENT											
Opuntia macrorhiza	10.00								P		
TOTAL SUCCULENT	10.0	---	---	---	---	---	---	---	P	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 5.5 Std.Dev.= 1.4)		5	6	4	5	7	6	3	6	8	5

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-7. Frequency Data - Permanent Transect CR1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
INTRODUCED ANNUAL & BIENNIAL FORBS											
Tragopogon dubius ssp. major	10.00					P					
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	---	---	---	P	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	80.00	P	P	P		P		P	P	P	P
Artemisia ludoviciana	10.00							P			
Gaura coccinea	10.00	P									
Liatris punctata	50.00		P	P	P	P	P				
Oligosporus dracunculus ssp. glaucus	10.00							P			
Onosmodium molle ssp. occidentale	20.00		P				P				
Psoralidium tenuiflorum	70.00		P	P	P	P	P		P	P	
Ratibida columnifera	10.00			P							
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	60.00	P	P	P	P	P	P				
TOTAL INTRO. PERENNIAL FORBS	60.0	P	P	P	P	P	P	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Poa agassizensis	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	100.00	P	P	P	P	P	P	P	P	P	P
Sporobolus cryptandrus	10.00										P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SHRUBS											
Eriogonum effusum	10.00				P						
Rosa sayi	30.00					P	P	P			
TOTAL NATIVE SHRUBS	40.0	---	---	---	P	P	P	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 5.8 Std.Dev.= 1.5)		5	7	7	6	8	7	6	4	4	4

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-8. Frequency Data - Permanent Transect CR2, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Cerastium nutans var. brachypodum	40.00		P	P		P			P		
Cirsium undulatum	10.00									P	
Helianthus petiolaris	20.00		P						P		
Silene antirrhina	20.00				P	P					
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	---	P	P	P	P	---	---	P	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	30.00	P	P					P			
Tragopogon dubius ssp. major	10.00				P						
TOTAL INTRO. ANN. & BIEN. FORBS	40.0	P	P	---	P	---	---	P	---	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	30.00	P	P					P			
TOTAL INTRO. ANN. GRASSES	30.0	P	P	---	---	---	---	P	---	---	---
NATIVE PERENNIAL FORBS											
Adenolinum lewisii	50.00	P				P		P		P	P
Ambrosia psilostachya var. coronopifolia	90.00	P	P	P	P	P	P	P		P	P
Artemisia ludoviciana	40.00		P			P		P	P		
Dalea purpurea	20.00					P			P		
Heterotheca villosa	60.00	P	P				P	P	P		P
Lesquerella montana	10.00		P								
Oligosporus dracunculus ssp. glaucus	80.00	P	P		P		P	P	P	P	P
Oxybaphus linearis	20.00							P			P
Psoralidium tenuiflorum	70.00			P	P	P	P	P	P		P
Ratibida columnifera	30.00	P	P					P			
Solidago simplex	10.00	P									
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	90.00	P	P	P	P	P	1	P	P	P	
Hesperostipa comata	10.00								P		
Koeleria macrantha	10.00		P								
Nassella viridula	10.00								P		
Pascopyrum smithii	10.00										P
Poa agassizensis	80.00		P	P	P	P	P	P		P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	1	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	100.00	P	P	P	P	P	P	P	P	P	P
Bouteloua curtipendula	60.00	P	P					P	P	P	P
Chondrosum gracile	30.00					P		P			P
Schizachyrium scoparium	40.00	P			P	P		P			
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	10.00								P		
TOTAL NATIVE SUBSHRUBS	10.0	---	---	---	---	---	---	---	P	---	---
NATIVE SHRUBS											
Rosa sayi	10.00								P		
Yucca glauca	20.00					P				P	
TOTAL NATIVE SHRUBS	30.0	---	---	---	---	P	---	---	P	P	---

Table 99-8. Frequency Data - Permanent Transect CR2, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
LICHEN											
Cladonia spp.	30.00	P							P	P	
Xanthoparmelia chlorochroa	40.00	P	P		P					P	
TOTAL LICHEN	50.0	P	P	---	P	---	---	---	P	P	---
SUCCULENT											
Echinocereus viridiflorus	30.00						P	P	P		
Opuntia macrorhiza	10.00							P			
Opuntia polyacantha	10.00			P							
TOTAL SUCCULENT	40.0	---	---	P	---	---	P	P	P	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 12.4 Std.Dev.= 3.6)		14	16	7	10	13	8	18	16	11	11

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-9. Frequency Data - Permanent Transect CR3, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Cirsium undulatum	10.00					P					
Erysimum asperum	20.00				P		P				
Helianthus petiolaris	10.00		P								
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	---	P	---	P	P	P	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	50.00	P			P	P	P				P
TOTAL INTRO. ANN. & BIEN. FORBS	50.0	P	---	---	P	P	P	---	---	---	P
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	30.00				P			P			P
TOTAL INTRO. ANN. GRASSES	30.0	---	---	---	P	---	---	P	---	---	P
NATIVE PERENNIAL FORBS											
Adenolinum lewisii	10.00		P								
Ambrosia psilostachya var. coronopifolia	80.00	P	P	P	P	P		P	P		P
Artemisia ludoviciana	60.00	P	P			P	P	P	P		
Asclepias viridiflora	10.00					P					
Gaura coccinea	10.00						P				
Heterotheca villosa	30.00	P		P			P				
Liatris punctata	30.00					P		P			P
Lithospermum incisum	30.00						P	P	P		
Oxybaphus linearis	10.00		P								
Oxytropis sericea	10.00								P		
Penstemon secundiflorus	30.00		P			P			P		
Psoralidium tenuiflorum	60.00	P	P	P	P	P			P		
Sphaeralcea coccinea	20.00				P	P					
Townsendia grandiflora	10.00						P				
TOTAL NATIVE PERENNIAL FORBS	90.0	P	P	P	P	P	P	P	P	---	P
NATIVE PERENNIAL GRASSES (cool)											
Hesperostipa comata	90.00	P	P	P	P	P	P	P		P	P
Nassella viridula	80.00	P	P		P	P	P	P		P	P
Pascopyrum smithii	40.00		P	P	P						P
Poa agassizensis	40.00			P	P		P		P		
Poa compressa	10.00							P			
Poa secunda	10.00								P		
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Bouteloua curtipendula	40.00	P			P		P		P		
Chondrosum gracile	50.00	P	P	P	P		P				
Muhlenbergia montana	10.00			P							
TOTAL NATIVE PERENNIAL GRASSES (w)	60.0	P	P	P	P	---	P	---	P	---	---
NATIVE SUBSHRUBS											
Artemisia frigida	30.00	P			P	P					
TOTAL NATIVE SUBSHRUBS	30.0	P	---	---	P	P	---	---	---	---	---
SUCCULENT											
Opuntia macrorhiza	20.00				P		P				
TOTAL SUCCULENT	20.0	---	---	---	P	---	P	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 9.4 Std.Dev.= 3.5)		10	11	8	14	12	13	8	9	2	7

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-10. Frequency Data - Permanent Transect RD1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Oligosporus pacificus	20.00							P			P
Silene antirrhina	10.00	P									
TOTAL NATIVE ANN. & BIEN. FORBS	30.0	P	---	---	---	---	---	P	---	---	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	100.00	P	P	P	P	P	P	P	P	P	P
Lepidium densiflorum	10.00				P						
TOTAL INTRO. ANN. & BIEN. FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	90.00	P	P	P	P	P		P	P	P	P
Bromus japonicus	10.00										P
TOTAL INTRO. ANN. GRASSES	90.0	P	P	P	P	P	---	P	P	P	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	60.00					P	P	P	P	P	P
Artemisia ludoviciana	20.00			P					P		
Dalea purpurea	30.00	P					P			P	
Eriogonum flavum var. flavum	10.00	P									
Heterotheca villosa	50.00	P	P		P	P	P				
Lesquerella montana	50.00		P		P		P	P			P
Leucocrinum montanum	20.00							P	P		
Liatris punctata	50.00	P	P	P	P	P					
Oxytropis x sericea	10.00			P							
Psoralidium tenuiflorum	20.00							P		P	
Senecio spartioides	20.00	P	P								
Toxicoscordion venenosum	10.00				P						
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	20.00		P			P					
Hesperostipa comata	90.00	P		P	P	P	P	P	P	P	P
Koeleria macrantha	30.00	P	P								P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P	P	P	P	P	P	P		P	P
Aristida purpurea	50.00		P			P	P	P		P	
Bouteloua curtipendula	60.00		P	P	P		P	P	P		
Chondrosum gracile	10.00										P
Chondrosum hirsutum	10.00		P								
Schizachyrium scoparium	70.00	P		P		P	P	P	P	P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	50.00	P			P		P		P		P
TOTAL NATIVE SUBSHRUBS	50.0	P	---	---	P	---	P	---	P	---	P
NATIVE SHRUBS											
Eriogonum effusum	30.00					P	P				P
Yucca glauca	10.00			P							
TOTAL NATIVE SHRUBS	40.0	---	---	P	---	P	P	---	---	---	P
LICHEN											
Cladonia spp.	10.00								P		
Xanthoparmelia chlorochroa	90.00	P	P	P	P	P	P	P		P	P
TOTAL LICHEN	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-10. Frequency Data - Permanent Transect RD1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
SUCCULENT											
Opuntia fragilis	10.00								P		
Opuntia macrorhiza	10.00	P									
Opuntia polyacantha	20.00						P				P
TOTAL SUCCULENT	40.0	P	---	---	---	---	P	---	P	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 12.5 Std.Dev.= 1.6)		15	13	11	12	12	14	13	11	10	14

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-11. Frequency Data - Permanent Transect RD2, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Erysimum asperum	10.00			P							
Oligosporus pacificus	20.00	P								P	
Oreocarya virgata	10.00				P						
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	P	---	P	P	---	---	---	---	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	100.00	P	P	P	P	P	P	P	P	P	P
Tragopogon dubius ssp. major	10.00				P						
TOTAL INTRO. ANN. & BIEN. FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	50.00			P	P			P		P	P
Bromus japonicus	80.00	P	P			P	P	P	P	P	P
TOTAL INTRO. ANN. GRASSES	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL FORBS											
Artemisia ludoviciana	30.00				P	P			P		
Astragalus shortianus	20.00								P		P
Cerastium strictum	50.00	P	P		P	P		P			
Comandra umbellata ssp. pallida	10.00										P
Dalea purpurea	10.00							P			
Eriogonum flavum var. flavum	10.00									P	
Heterotheca villosa	100.00	P	P	P	P	P	P	P	P	P	P
Lesquerella montana	40.00			P	P					P	P
Liatris punctata	70.00			P		P	P	P	P	P	P
Oxybaphus linearis	10.00				P						
Penstemon secundiflorus	10.00					P					
Phacelia heterophylla	10.00			P							
Psoralidium tenuiflorum	20.00				P		P				
Thelesperma megapotamicum	20.00			P	P						
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	100.00	P	P	P	P	P	P	P	P	P	P
Elymus longifolius	10.00							P			
Hesperostipa comata	100.00	P	P	P	P	P	P	P	P	P	P
Koeleria macrantha	50.00		P					P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	100.00	P	P	P	P	P	P	P	P	P	P
Aristida purpurea	20.00	P									P
Bouteloua curtipendula	60.00	P			P	P			P	P	P
Chondrosum gracile	10.00							P			
Chondrosum hirsutum	10.00	P									
Schizachyrium scoparium	50.00		P	P		P	P		P		
Sporobolus cryptandrus	10.00					P					
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	30.00	P							P	P	
TOTAL NATIVE SUBSHRUBS	30.0	P	---	---	---	---	---	---	P	P	---
NATIVE SHRUBS											
Eriogonum effusum	10.00										P
Yucca glauca	10.00			P							
TOTAL NATIVE SHRUBS	20.0	---	---	P	---	---	---	---	---	---	P

Table 99-11. Frequency Data - Permanent Transect RD2, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
SUCCULENT											
Coryphantha missouriensis	10.00						P				
Opuntia phaeacantha	10.00							P			
Opuntia polyacantha	30.00			P					P	P	
TOTAL SUCCULENT	50.0	---	---	P	---	---	P	P	P	P	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 13.1 Std.Dev.= 2.1)		12	9	14	15	13	10	14	14	15	15

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-12. Frequency Data - Permanent Transect 1, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	30.00		P		P	P					
TOTAL NATIVE ANN. & BIEN. FORBS	30.0	---	P	---	P	P	---	---	---	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	10.00			P							
TOTAL INTRO. ANN. GRASSES	10.0	---	---	P	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	80.00	P	P	P	P	P	P		P	P	
Artemisia ludoviciana	20.00		P						P		
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Eremogone fendleri	90.00	P	P	P	P	P	P	P	P	P	
Gaillardia aristata	20.00	P					P				
Heterotheca fulcrata	20.00	P			P						
Lesquerella montana	30.00		P		P				P		
Liatris punctata	40.00	P	P	P					P		
Oxybaphus nyctagineus	10.00				P						
Penstemon virens	10.00										P
Psoralidium tenuiflorum	10.00		P								
Senecio integerrimus	30.00	P	P		P						
Solidago simplex	40.00	P	P	P				P			
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	70.00	P	P			P	P		P	P	P
TOTAL INTRO. PERENNIAL FORBS	70.0	P	P	---	---	P	P	---	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	100.00	P	P	P	P	P	P	P	P	P	P
Elymus longifolius	50.00	P	P	P					P		P
Juncus interior	10.00									P	
Koeleria macrantha	30.00			P		P				P	
Poa compressa	70.00		P		P	P	P	P	P		P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P	P		P	P	P	P	P	P	P
Aristida purpurea	40.00	P	P	P			P				
Bouteloua curtipendula	40.00			P		P				P	P
Chondrosum gracile	80.00	P		P	P		P	P	P	P	P
Chondrosum hirsutum	40.00	P	P	P		P					
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	60.00	P	P		P		P	P	P		
Sorghastrum avenaceum	50.00	P	P				P		P	P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
SUCCULENT											
Opuntia macrorhiza	80.00	P	P	P	P	P		P	P		P
TOTAL SUCCULENT	80.0	P	P	P	P	P	---	P	P	---	P
MUSHROOMS											
Fungus	10.00									P	
TOTAL MUSHROOMS	10.0	---	---	---	---	---	---	---	---	P	---
SPECIES DENSITY (# of species/sq.m.)		19	21	15	15	13	13	10	16	13	11
(AVERAGE= 14.6 Std.Dev.= 3.4)											

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-13. Frequency Data - Permanent Transect 2, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	80.00	P	P	P	P	P		P	P	P	
TOTAL NATIVE ANN. & BIEN. FORBS	80.0	P	P	P	P	P	---	P	P	P	---
NATIVE PERENNIAL FORBS											
Antennaria corymbosa	20.00					P				P	
Artemisia ludoviciana	50.00	P	P		P	P	P				
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Dalea candida var. oligophylla	20.00			P						P	
Dalea purpurea	10.00									P	
Eremogone fendleri	70.00	P	P		P	P	P			P	P
Heterotheca fulcrata	90.00	P	P		P	P	P	P	P	P	P
Lesquerella montana	10.00								P		
Leucocrinum montanum	10.00							P			
Liatris punctata	50.00	P			P	P	P		P		
Paronychia jamesii	50.00			P	P		P			P	P
Psoralidium tenuiflorum	40.00	P	P			P	P				
Solidago mollis	10.00				P						
Solidago simplex	20.00							P		P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	40.00				P				P	P	P
TOTAL INTRO. PERENNIAL FORBS	40.0	---	---	---	P	---	---	---	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	60.00	P	P		P		P		P		P
Elymus longifolius	20.00	P						P			
Juncus interior	10.00								P		
Koeleria macrantha	30.00			P				P			P
Poa compressa	70.00	P	P	P	P		P	P		P	
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	P	P	P	P	---	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00		P	P	P	P	P	P	P	P	P
Aristida purpurea	10.00	P									
Bouteloua curtipendula	50.00	P	P		P					P	P
Buchloe dactyloides	10.00			P							
Chondrosum gracile	70.00	P		P	P	P		P	P	P	
Chondrosum hirsutum	80.00	P	P	P	P	P	P			P	P
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	40.00	P	P						P	P	
Sorghastrum avenaceum	20.00							P			P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	10.00	P									
TOTAL LICHEN	10.0	P	---	---	---	---	---	---	---	---	---
SUCCULENT											
Opuntia macrorhiza	20.00		P	P							
TOTAL SUCCULENT	20.0	---	P	P	---	---	---	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 13.6 Std.Dev.= 2.2)		17	14	12	16	12	12	12	12	17	12

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-14. Frequency Data - Permanent Transect 3, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Orthocarpus luteus	10.00		P								
Pterogonum alatum	70.00	P	P	P		P	P		P		P
TOTAL NATIVE ANN. & BIEN. FORBS	70.0	P	P	P	---	P	P	---	P	---	P
NATIVE ANNUAL GRASSES											
Panicum capillare	10.00		P								
TOTAL NATIVE ANN. GRASSES	10.0	---	P	---	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	20.00								P	P	
Antennaria corymbosa	40.00		P			P	P		P		
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Dalea candida var. oligophylla	10.00					P					
Eremogone fendleri	70.00	P	P	P	P		P		P	P	
Heterotheca fulcrata	90.00	P	P	P	P	P		P	P	P	P
Lesquerella montana	30.00			P					P		P
Liatris punctata	90.00	P	P	P	P	P	P		P	P	P
Paronychia jamesii	90.00	P	P	P	P	P	P	P	P	P	
Psoralidium tenuiflorum	30.00						P	P			P
Solidago mollis	20.00							P	P		
Solidago simplex	10.00		P								
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	50.00	P			P	P		P		P	
TOTAL INTRO. PERENNIAL FORBS	50.0	P	---	---	P	P	---	P	---	P	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	100.00	P	P	P	P	P	P	P	P	P	P
Elymus longifolius	10.00				P						
Juncus interior	30.00				P	P	P				
Koeleria macrantha	40.00	P	P						P	P	
Poa agassizensis	10.00										P
Poa compressa	90.00	P	P	P	P	P	P	P	P	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	40.00	P			P		P	P			
Aristida purpurea	30.00				P					P	P
Bouteloua curtipendula	60.00		P		P			P	P	P	P
Chondrosum gracile	80.00	P	P		P	P	P		P	P	P
Chondrosum hirsutum	70.00	P		P	P		P	P		P	P
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	60.00		P	P		P		P	P	P	
Sorghastrum avenaceum	30.00	P				P			P		
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-14. Frequency Data - Permanent Transect 3, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
FERNS											
Selaginella densa	30.00		P	P		P					
TOTAL FERNS	30.0	---	P	P	---	P	---	---	---	---	---
LICHEN											
Cladonia spp.	10.00							P			
TOTAL LICHEN	10.0	---	---	---	---	---	---	P	---	---	---
SUCCULENT											
Opuntia macrorhiza	10.00									P	
TOTAL SUCCULENT	10.0	---	---	---	---	---	---	---	---	P	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 15.4 Std.Dev.= 1.9)		15	18	13	16	16	14	14	18	17	13

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-15. Frequency Data - Permanent Transect 4, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	10.00									P	
Pterogonum alatum	30.00	P						P			P
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	P	---	---	---	---	---	P	---	P	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	60.00		P	P	P	P	P				P
Antennaria corymbosa	10.00										P
Artemisia ludoviciana	20.00			P	P						
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Dalea purpurea	20.00			P						P	
Drymocallis fissa	10.00			P							
Eremogone fendleri	60.00			P	P	P	P		P	P	
Gaillardia aristata	20.00	P		P							
Heterotheca fulcrata	70.00	P		P	P	P	P	P			P
Lesquerella montana	20.00				P				P		
Liatris punctata	70.00	P		P	P	P	P	P		P	
Lomatium orientale	10.00								P		
Oxybaphus hirsutus	10.00							P			
Psoralidium tenuiflorum	40.00		P						P	P	P
Senecio integerrimus	40.00	P			P	P	P				
Solidago simplex	10.00										P
Talinum parviflorum	20.00							P			P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	50.00	P			P			P	P	P	
Taraxacum officinale	10.00						P				
TOTAL INTRO. PERENNIAL FORBS	60.0	P	---	---	P	---	P	P	P	P	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	40.00	P			P			P			P
Elymus longifolius	40.00		P			P	P	P			
Koeleria macrantha	10.00				P						
Poa compressa	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P	P		P	P	P	P	P	P	P
Aristida purpurea	30.00			P	P	P					
Bouteloua curtipendula	60.00		P	P	P	P	P				P
Chondrosum gracile	70.00	P	P	P	P	P		P			P
Chondrosum hirsutum	50.00	P			P				P	P	P
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	20.00	P						P			
Sorghastrum avenaceum	40.00		P	P	P					P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
FERNS											
Selaginella densa	20.00	P								P	
TOTAL FERNS	20.0	P	---	---	---	---	---	---	---	P	---
SUCCULENT											
Echinocereus viridiflorus	20.00				P			P			
Opuntia macrorhiza	60.00		P	P		P		P	P	P	
TOTAL SUCCULENT	70.0	---	P	P	P	P	---	P	P	P	---

Table 99-15. Frequency Data - Permanent Transect 4, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
MUSHROOMS											
Fungus	10.00										P
TOTAL MUSHROOMS	10.0	---	---	---	---	---	---	---	---	---	P
SPECIES DENSITY (# of species/sq.m.)		15	11	16	20	14	12	16	11	14	16
(AVERAGE= 14.5 Std.Dev.= 2.8)											

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-16. Frequency Data - Permanent Transect 5, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	30.00			P	P		P				
TOTAL NATIVE ANN. & BIEN. FORBS	30.0	---	---	P	P	---	P	---	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	100.00	P	P	P	P	P	P	P	P	P	P
Amerosedum lanceolatum	10.00									P	
Artemisia ludoviciana	60.00	P		P	P	P	P				P
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Dalea candida var. oligophylla	10.00		P								
Eremogone fendleri	40.00	P		P			P	P			
Heterotheca fulcrata	50.00	P		P	P	P					P
Lesquerella montana	10.00			P							
Liatris punctata	20.00	P	P								
Paronychia jamesii	20.00				P						P
Psoralidium tenuiflorum	30.00				P			P			P
Solidago mollis	30.00		P				P		P		
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	60.00			P	P			P	P	P	P
TOTAL INTRO. PERENNIAL FORBS	60.0	---	---	P	P	---	---	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	50.00	P	P	P			P	P			
Hesperostipa comata	10.00			P							
Poa agassizensis	10.00		P								
Poa compressa	80.00	P			P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
Poa pratensis	30.00	P					P	P			
TOTAL INTRO. PERENNIAL GRASSES (c)	30.0	P	---	---	---	---	P	P	---	---	---
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	80.00	P	P	P		P	P	P		P	P
Aristida purpurea	10.00				P						
Bouteloua curtipendula	30.00			P				P			P
Buchloe dactyloides	20.00			P							P
Chondrosum gracile	70.00	P			P	P		P	P	P	P
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Sorghastrum avenaceum	10.00								P		
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
FERNS											
Selaginella densa	50.00	P		P	P	P	P				
TOTAL FERNS	50.0	P	---	P	P	P	P	---	---	---	---
SUCCULENT											
Opuntia macrorhiza	20.00			P			P				
TOTAL SUCCULENT	20.0	---	---	P	---	---	P	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 11.4 Std.Dev.= 2.7)		13	9	16	13	9	13	12	8	8	13

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-17. Frequency Data - Permanent Transect 6, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Erigeron divergens	20.00			P	P						
Pterogonum alatum	20.00	P	P								
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	P	P	P	P	---	---	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Conyza canadensis	10.00							P			
Tragopogon dubius ssp. major	10.00			P							
TOTAL INTRO. ANN. & BIEN. FORBS	20.0	---	---	P	---	---	---	P	---	---	---
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	10.00										P
Bromus japonicus	40.00		P		P			P			P
TOTAL INTRO. ANN. GRASSES	40.0	---	P	---	P	---	---	P	---	---	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	10.00					P					
Antennaria rosea	20.00			P		P					
Artemisia ludoviciana	10.00										P
Campanula rotundifolia	10.00		P								
Cerastium strictum	30.00		P		P						P
Comandra umbellata ssp. pallida	40.00				P			P	P		P
Dalea purpurea	10.00			P							
Eremogone fendleri	30.00			P	P		P				
Eriogonum flavum var. flavum	10.00	P									
Gaillardia aristata	10.00								P		
Harbouria trachypleura	10.00			P							
Heterotheca fulcrata	20.00		P							P	
Heterotheca villosa	30.00				P	P	P				
Lesquerella montana	20.00						P			P	
Liatris punctata	50.00		P		P	P			P	P	
Oxybaphus hirsutus	10.00			P							
Penstemon virens	20.00				P		P				
Psoralidium tenuiflorum	20.00					P	P				
Senecio spartioides	10.00				P						
Tithymalus brachyceras	10.00			P							
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	60.00		P	P	P			P	P		P
Elymus longifolius	20.00						P				P
Hesperostipa comata	40.00		P	P	P						P
Juncus arcticus ssp. ater	10.00	P									
Koeleria macrantha	20.00		P							P	
Poa agassizensis	30.00	P		P							P
Poa compressa	90.00	P	P		P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	70.00	P		P	P	P		P	P	P	
Aristida purpurea	30.00			P	P		P				
Bouteloua curtipendula	80.00	P	P	P		P	P		P	P	P
Chondrosum gracile	80.00	P	P	P	P		P	P	P		P
Muhlenbergia montana	50.00		P	P				P	P	P	
Schizachyrium scoparium	40.00		P	P	P					P	
Sorghastrum avenaceum	20.00					P			P		
Sporobolus asper	30.00				P		P	P			
Sporobolus heterolepis	20.00								P	P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-17. Frequency Data - Permanent Transect 6, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE SUBSHRUBS											
Gutierrezia sarothrae	10.00						P				
TOTAL NATIVE SUBSHRUBS	10.0	---	---	---	---	---	P	---	---	---	---
FERNS											
Selaginella densa	20.00				P	P					
TOTAL FERNS	20.0	---	---	---	P	P	---	---	---	---	---
BRYOPHYTES											
Moss	10.00	P									
TOTAL BRYOPHYTES	10.0	P	---	---	---	---	---	---	---	---	---
LICHEN											
Cladonia spp.	30.00			P		P				P	
Xanthoparmelia chlorochroa	10.00								P		
TOTAL LICHEN	40.0	---	---	P	---	P	---	---	P	P	---
SUCCULENT											
Opuntia macrorhiza	30.00		P						P	P	
TOTAL SUCCULENT	30.0	---	P	---	---	---	---	---	P	P	---
MUSHROOMS											
Fungus	10.00					P					
TOTAL MUSHROOMS	10.0	---	---	---	---	P	---	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 13.0 Std.Dev.= 3.2)		9	15	18	18	12	12	9	13	12	12

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-18. Frequency Data - Permanent Transect 7, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Cirsium undulatum	10.00						P				
Oreocarya virgata	10.00		P								
Pterogonum alatum	40.00						P	P		P	P
TOTAL NATIVE ANN. & BIEN. FORBS	50.0	---	P	---	---	---	P	P	---	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	60.00	P	P	P	P					P	P
Tragopogon dubius ssp. major	40.00	P					P		P	P	
TOTAL INTRO. ANN. & BIEN. FORBS	80.0	P	P	P	P	---	P	---	P	P	P
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	20.00				P		P				
Bromus japonicus	80.00	P	P	P	P	P			P	P	P
TOTAL INTRO. ANN. GRASSES	90.0	P	P	P	P	P	P	---	P	P	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	40.00	P			P	P				P	
Artemisia ludoviciana	50.00		P	P	P					P	P
Aster porteri	10.00			P							
Astragalus shortianus	20.00							P			P
Calylophus serrulatus	20.00		P	P							
Drymocallis fissa	10.00										P
Eremogone fendleri	10.00										P
Erigeron flagellaris	10.00	P									
Heterotheca villosa	100.00	P	P	P	P	P	P	P	P	P	P
Lesquerella montana	50.00	P			P	P	P		P		
Liatris punctata	10.00								P		
Lithospermum incisum	10.00								P		
Oxybaphus linearis	20.00		P						P		
Oxytropis x sericea	20.00			P						P	
Penstemon secundiflorus	10.00							P			
Phacelia heterophylla	10.00						P				
Psoralidium tenuiflorum	40.00		P		P					P	P
Senecio spartioides	10.00							P			
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	10.00							P			
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	---	---	---	---	P	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	50.00		P	P			P	P	P		
Elymus lanceolatus fm. dasystachya	10.00							P			
Elymus longifolius	20.00				P				P		
Hesperostipa comata	70.00		P	P	P	P	P	P	P		
Koeleria macrantha	10.00					P					
Pascopyrum smithii	10.00									P	
Poa agassizensis	10.00			P							
Poa compressa	10.00							P			
TOTAL NATIVE PERENNIAL GRASSES (c)	80.0	---	P	P	P	P	P	P	P	P	---

Table 99-18. Frequency Data - Permanent Transect 7, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P	P	P	P	P		P	P	P	P
Aristida purpurea	30.00	P	P				P				
Bouteloua curtipendula	60.00	P		P	P		P	P			P
Chondrosum gracile	90.00		P	P	P	P	P	P	P	P	P
Chondrosum hirsutum	10.00						P				
Muhlenbergia montana	20.00	P		P							
Panicum virgatum	10.00				P						
Schizachyrium scoparium	10.00	P									
Sorghastrum avenaceum	10.00						P				
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	50.00		P	P			P	P	P		
TOTAL NATIVE SUBSHRUBS	50.0	---	P	P	---	---	P	P	P	---	---
BRYOPHYTES											
Moss	10.00							P			
TOTAL BRYOPHYTES	10.0	---	---	---	---	---	---	P	---	---	---
LICHEN											
Cladonia spp.	10.00						P				
TOTAL LICHEN	10.0	---	---	---	---	---	P	---	---	---	---
SUCCULENT											
Coryphantha missouriensis	10.00		P								
Echinocereus viridiflorus	80.00	P	P		P	P	P	P	P		P
Opuntia fragilis	10.00								P		
Opuntia macrorhiza	30.00	P				P	P				
TOTAL SUCCULENT	80.0	P	P	---	P	P	P	P	P	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 14.4 Std.Dev.= 2.3)		14	16	15	15	10	18	16	15	12	13

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-19. Frequency Data - Permanent Transect 8, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	60.00	P	P		P			P	P		P
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	P	P	---	P	---	---	P	P	---	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	40.00				P		P		P	P	
Tragopogon dubius ssp. major	40.00	P	P	P							P
TOTAL INTRO. ANN. & BIEN. FORBS	80.0	P	P	P	P	---	P	---	P	P	P
NATIVE PERENNIAL FORBS											
Achillea lanulosa	10.00				P						
Ambrosia psilostachya var. coronopifolia	50.00	P		P	P				P		P
Artemisia ludoviciana	40.00					P	P	P	P		
Asclepias stenophylla	10.00							P			
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Dalea purpurea	30.00		P							P	P
Drymocallis fissa	30.00		P					P	P		
Heterotheca fulcrata	30.00					P			P		P
Lesquerella montana	20.00			P				P			
Lithospermum incisum	10.00			P							
Oxalis dillenii	20.00				P						P
Oxybaphus hirsutus	10.00		P								
Paronychia jamesii	20.00								P		P
Penstemon virens	20.00							P	P		
Psoralidium tenuiflorum	80.00	P	P	P			P	P	P	P	P
Senecio integerrimus	10.00		P								
Talinum parviflorum	10.00							P			
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	50.00	P	P	P				P		P	
TOTAL INTRO. PERENNIAL FORBS	50.0	P	P	P	---	---	---	P	---	P	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	50.00					P	P	P	P		P
Koeleria macrantha	50.00		P	P				P	P		P
Poa agassizensis	40.00		P	P	P					P	
Poa compressa	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	100.00	P	P	P	P	P	P	P	P	P	P
Aristida purpurea	20.00						P				P
Chondrosum gracile	50.00	P		P	P	P			P		
Chondrosum hirsutum	20.00					P					P
Muhlenbergia montana	70.00	P		P			P	P	P	P	P
Sorghastrum avenaceum	40.00				P				P	P	P
Sporobolus heterolepis	20.00					P		P			
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	10.00	P									
TOTAL NATIVE SUBSHRUBS	10.0	P	---	---	---	---	---	---	---	---	---

Table 99-19. Frequency Data - Permanent Transect 8, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
SUCCULENT											
Opuntia macrorhiza	80.00	P	P	P	P	P	P			P	P
TOTAL SUCCULENT	80.0	P	P	P	P	P	P	---	---	P	P
SPECIES DENSITY (# of species/ sq.m.) (AVERAGE= 13.4 Std.Dev.= 2.9)		12	14	14	12	10	10	16	17	11	18

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-20. Frequency Data - Permanent Transect 9, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Oligosporus pacificus	40.00	P	P	P							P
Pterogonum alatum	60.00	P		P	P	P			P	P	
TOTAL NATIVE ANN. & BIEN. FORBS	80.0	P	P	P	P	P	---	---	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	10.00		P								
Lepidium densiflorum	10.00				P						
Tragopogon dubius ssp. major	20.00		P					P			
TOTAL INTRO. ANN. & BIEN. FORBS	30.0	---	P	---	P	---	---	P	---	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	60.00	P	P	P	P	P					P
TOTAL INTRO. ANN. GRASSES	60.0	P	P	P	P	P	---	---	---	---	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	60.00	P	P	P	P	P				P	
Artemisia ludoviciana	100.00	P	P	P	P	P	P	P	P	P	P
Aster porteri	90.00	P	P	P	P	P	P	P	P	P	
Dalea candida var. oligophylla	10.00										P
Dalea purpurea	40.00				P	P	P	P			
Erigeron flagellaris	50.00	P	P	P	P	P					
Heterotheca fulcrata	60.00					P	P	P	P	P	P
Heterotheca villosa	10.00						P				
Lesquerella montana	20.00									P	P
Liatris punctata	30.00							P		P	P
Penstemon virens	20.00					P	P				
Phacelia heterophylla	10.00	P									
Solidago mollis	10.00					P					
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	30.00	P		P				P			
TOTAL INTRO. PERENNIAL FORBS	30.0	P	---	P	---	---	---	P	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	70.00	P	P	P		P		P	P	P	
Elymus longifolius	30.00			P				P	P		
Koeleria macrantha	40.00		P			P		P	P		
Poa compressa	20.00				P						P
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	P	P	P	P	P	---	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	70.00	P	P	P	P		P		P		P
Aristida purpurea	60.00	P	P			P	P	P			P
Bouteloua curtipendula	40.00		P			P		P	P		
Chondrosum gracile	70.00	P		P	P	P	P	P		P	
Chondrosum hirsutum	40.00					P			P	P	P
Muhlenbergia montana	50.00	P	P		P	P		P			
Schizachyrium scoparium	10.00	P									
Sorghastrum avenaceum	30.00					P			P	P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	20.00						P		P		
TOTAL NATIVE SUBSHRUBS	20.0	---	---	---	---	---	P	---	P	---	---

Table 99-20. Frequency Data - Permanent Transect 9, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
LICHEN											
Xanthoparmelia chlorochroa	30.00	P							P	P	
TOTAL LICHEN	30.0	P	---	---	---	---	---	---	P	P	---
SUCCULENT											
Echinocereus viridiflorus	50.00	P				P	P	P		P	
Opuntia macrorhiza	90.00	P	P	P	P	P	P	P		P	P
TOTAL SUCCULENT	90.0	P	P	P	P	P	P	P	---	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 14.6 Std.Dev.= 2.7)		18	15	13	13	20	12	16	13	14	12

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-22. Frequency Data - Permanent Transect 11, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Boechera fendleri	10.00		P								
Draba reptans	10.00		P								
Grindelia squarrosa	10.00				P						
Oligosporus pacificus	20.00							P			P
Pterogonum alatum	10.00						P				
TOTAL NATIVE ANN. & BIEN. FORBS	50.0	---	P	---	P	---	P	P	---	---	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	50.00			P		P	P	P			P
Tragopogon dubius ssp. major	10.00					P					
TOTAL INTRO. ANN. & BIEN. FORBS	50.0	---	---	P	---	P	P	P	---	---	P
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	10.00										P
TOTAL INTRO. ANN. GRASSES	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE PERENNIAL FORBS											
Amerosedum lanceolatum	70.00	P	P	P	P	P		P			P
Artemisia ludoviciana	80.00	P	P	P	P	P	P	P		P	
Aster porteri	90.00	P		P	P	P	P	P	P	P	P
Astragalus shortianus	10.00								P		
Cerastium strictum	10.00									P	
Comandra umbellata ssp. pallida	10.00									P	
Eremogone fendleri	70.00	P		P	P	P	P		P	P	
Erigeron flagellaris	10.00					P					
Eriogonum flavum var. flavum	10.00						P				
Gaillardia aristata	30.00				P	P				P	
Harbouria trachypleura	20.00					P			P		
Heterotheca fulcrata	50.00				P	P			P	P	P
Heterotheca villosa	20.00			P			P				
Lesquerella montana	20.00			P		P					
Liatris punctata	60.00	P	P	P					P	P	P
Oxytropis x sericea	30.00					P	P	P			
Paronychia jamesii	30.00			P	P					P	
Pulsatilla patens ssp. hirsutissima	10.00									P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	10.00			P							
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	P	---	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	80.00	P	P		P	P		P	P	P	P
Elymus longifolius	20.00			P			P				
Hesperostipa comata	10.00					P					
Juncus interior	20.00	P		P							
Koeleria macrantha	80.00		P	P	P		P	P	P	P	P
Poa compressa	30.00	P		P			P				
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-22. Frequency Data - Permanent Transect 11, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P	P	P	P	P	P	P	P		P
Bouteloua curtipendula	20.00						P		P		
Chondrosum gracile	80.00		P	P	P	P	P		P	P	P
Muhlenbergia montana	90.00	P	P	P	P	P	P	P		P	P
Schizachyrium scoparium	30.00								P	P	P
Sporobolus heterolepis	20.00									P	P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	10.00						P				
TOTAL NATIVE SUBSHRUBS	10.0	---	---	---	---	---	P	---	---	---	---
FERNS											
Selaginella densa	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL FERNS	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	40.00		P	P		P				P	
TOTAL LICHEN	40.0	---	P	P	---	P	---	---	---	P	---
SUCCULENT											
Echinocereus viridiflorus	10.00							P			
TOTAL SUCCULENT	10.0	---	---	---	---	---	---	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 15.0 Std.Dev.= 3.1)		11	12	19	14	19	17	12	13	18	15

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-23. Frequency Data - Permanent Transect 12, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Oligosporus pacificus	10.00			P							
Pterogonum alatum	20.00			P					P		
TOTAL NATIVE ANN. & BIEN. FORBS	20.0	---	---	P	---	---	---	---	P	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	30.00	P				P	P				
TOTAL INTRO. ANN. GRASSES	30.0	P	---	---	---	P	P	---	---	---	---
NATIVE PERENNIAL FORBS											
Achillea lanulosa	30.00		P			P				P	
Ambrosia psilostachya var. coronopifolia	90.00	P	P	P	P	P	P	P		P	P
Antennaria corymbosa	20.00	P				P					
Artemisia ludoviciana	50.00				P		P	P		P	P
Aster porteri	30.00		P	P	P						
Astragalus agrestis	20.00				P		P				
Cerastium strictum	60.00	P	P	P	P	P					P
Comandra umbellata ssp. pallida	20.00		P						P		
Dalea purpurea	10.00								P		
Eremogone fendleri	60.00	P		P	P	P			P	P	
Erigeron flagellaris	10.00				P						
Gaillardia aristata	20.00				P		P				
Heterotheca fulcrata	10.00				P						
Heterotheca villosa	90.00	P		P	P	P	P	P	P	P	P
Liatris punctata	50.00	P	P	P	P					P	
Lithospermum incisum	10.00						P				
Oligosporus dracunculus ssp. glaucus	10.00										P
Oxytropis x sericea	10.00										P
Pneumonanthe bigelovii	60.00	P	P	P	P	P	P				
Psoralidium tenuiflorum	80.00	P	P	P	P	P		P	P	P	
Virgulus falcatus	10.00					P					
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	20.00							P	P		
Taraxacum officinale	20.00	P				P					
TOTAL INTRO. PERENNIAL FORBS	40.0	P	---	---	---	P	---	P	P	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	30.00		P				P				P
Elymus longifolius	20.00					P	P				
Koeleria macrantha	60.00	P		P	P		P		P		P
Poa agassizensis	70.00	P		P		P	P	P	P		P
Poa compressa	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
Bromopsis inermis	10.00										P
TOTAL INTRO. PERENNIAL GRASSES (c)	10.0	---	---	---	---	---	---	---	---	---	P

Table 99-23. Frequency Data - Permanent Transect 12, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	50.00			P			P	P	P	P	
Bouteloua curtipendula	70.00		P			P	P	P	P	P	P
Chondrosum gracile	70.00		P	P	P	P	P	P			P
Muhlenbergia montana	30.00						P		P	P	
Schizachyrium scoparium	30.00		P		P			P			
Sorghastrum avenaceum	10.00		P								
Sporobolus heterolepis	30.00		P		P					P	
TOTAL NATIVE PERENNIAL GRASSES (w)	90.0	---	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	40.00				P		P			P	P
Gutierrezia sarothrae	10.00						P				
TOTAL NATIVE SUBSHRUBS	40.0	---	---	---	P	---	P	---	---	P	P
LICHEN											
Lichen spp.	10.00							P			
TOTAL LICHEN	10.0	---	---	---	---	---	---	P	---	---	---
SUCCULENT											
Opuntia fragilis	10.00							P			
TOTAL SUCCULENT	10.0	---	---	---	---	---	---	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 15.0 Std.Dev.= 2.4)		13	15	15	19	16	19	13	13	13	14

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-24. Frequency Data - Permanent Transect 13, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	40.00	P			P	P	P				
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	P	---	---	P	P	P	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	80.00			P	P	P	P	P	P	P	P
Tragopogon dubius ssp. major	30.00			P		P				P	
TOTAL INTRO. ANN. & BIEN. FORBS	80.0	---	---	P	P	P	P	P	P	P	P
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	90.00	P	P		P	P	P	P	P	P	P
TOTAL INTRO. ANN. GRASSES	90.0	P	P	---	P	P	P	P	P	P	P
NATIVE PERENNIAL FORBS											
Aphyllon fasciculatum	10.00				P						
Artemisia ludoviciana	30.00					P	P				P
Aster porteri	10.00					P					
Erigeron flagellaris	40.00	P	P		P	P					
Heterotheca fulcrata	10.00				P						
Heterotheca villosa	40.00	P		P		P	P				
Lesquerella montana	50.00	P	P		P	P	P				
Liatris punctata	20.00		P	P							
Oligosporus dracunculus ssp. glaucus	10.00			P							
Phacelia heterophylla	20.00		P		P						
Psoralidium tenuiflorum	20.00			P							P
Senecio spartioides	20.00					P	P				
Toxicoscordion venenosum	10.00					P					
Virgulus falcatus	10.00						P				
TOTAL NATIVE PERENNIAL FORBS	70.0	P	P	P	P	P	P	---	---	---	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	90.00	P	P	P	P	P	P	P	P		P
Elymus longifolius	70.00	P	P	P	P	P	P		P		
Hesperostipa comata	90.00	P	P	P		P	P	P	P	P	P
Pascopyrum smithii	20.00								P	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	50.00		P		P	P	P	P			
Aristida purpurea	20.00					P					P
Bouteloua curtipendula	50.00			P		P	P		P		P
Buchloe dactyloides	10.00					P					
Chondrosum gracile	70.00			P	P		P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (w)	90.0	---	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	40.00			P	P	P		P			
TOTAL NATIVE SUBSHRUBS	40.0	---	---	P	P	P	---	P	---	---	---
SUCCULENT											
Echinocereus viridiflorus	100.00	P	P	P	P	P	P	P	P	P	P
Opuntia fragilis	10.00							P			
TOTAL SUCCULENT	100.0	P	P	P	P	P	P	P	P	P	P
MUSHROOMS											
Fungus	10.00							P			
TOTAL MUSHROOMS	10.0	---	---	---	---	---	---	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 11.7 Std.Dev.= 3.8)		9	10	13	14	20	15	10	9	7	10

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-25. Frequency Data - Permanent Transect 14, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Erigeron divergens	10.00			P							
TOTAL NATIVE ANN. & BIEN. FORBS	10.0	---	---	P	---	---	---	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	80.00	P	P	P	P	P		P		P	P
Erodium cicutarium	20.00					P	P				
Tragopogon dubius ssp. major	10.00						P				
Verbascum thapsus	30.00			P	P						P
TOTAL INTRO. ANN. & BIEN. FORBS	90.0	P	P	P	P	P	P	P	---	P	P
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	80.00		P	P	P	P		P	P	P	P
TOTAL INTRO. ANN. GRASSES	80.0	---	P	P	P	P	---	P	P	P	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	10.00			P							
Artemisia ludoviciana	20.00			P	P						
Evolvulus nuttallianus	10.00				P						
Gaura coccinea	10.00						P				
Heterotheca villosa	10.00						P				
Lesquerella montana	50.00			P				P	P	P	P
Lithospermum ruderale	10.00	P									
Psoralidium tenuiflorum	10.00							P			
Sphaeralcea coccinea	40.00			P	P	P	P				
TOTAL NATIVE PERENNIAL FORBS	90.0	P	---	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	20.00	P	P								
Elymus longifolius	10.00				P						
Hesperostipa comata	90.00		P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	10.00	P									
Bouteloua curtipendula	10.00					P					
Chondrosum gracile	60.00				P	P	P	P		P	P
TOTAL NATIVE PERENNIAL GRASSES (w)	70.0	P	---	---	P	P	P	P	---	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	10.00	P									
TOTAL NATIVE SUBSHRUBS	10.0	P	---	---	---	---	---	---	---	---	---
SUCCULENT											
Echinocereus viridiflorus	40.00		P	P	P						P
Opuntia macrorhiza	10.00								P		
TOTAL SUCCULENT	50.0	---	P	P	P	---	---	---	P	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 6.6 Std.Dev.= 2.1)		5	5	10	10	7	7	6	4	5	7

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-26. Frequency Data - Permanent Transect 15, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
INTRODUCED ANNUAL & BIENNIAL FORBS											
Acosta diffusa	10.00	P									
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	P	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	10.00		P								
Artemisia ludoviciana	10.00	P									
Liatris punctata	10.00		P								
TOTAL NATIVE PERENNIAL FORBS	20.0	P	P	---	---	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	60.00	P	P		P	P				P	P
Juncus interior	90.00	P		P	P	P	P	P	P	P	P
Koeleria macrantha	60.00				P	P	P	P	P		P
Poa agassizensis	10.00			P							
Poa compressa	80.00	P	P	P	P	P		P	P	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	60.00			P	P	P		P		P	P
Aristida purpurea	20.00		P					P			
Bouteloua curtipendula	30.00	P			P			P			
Buchloe dactyloides	10.00								P		
Chondrosum gracile	50.00	P		P			P	P			P
Muhlenbergia montana	70.00	P	P	P	P	P	P				P
Schizachyrium scoparium	80.00	P	P	P	P	P	P	P		P	
Sorghastrum avenaceum	30.00				P		P				P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	10.00										P
TOTAL LICHEN	10.0	---	---	---	---	---	---	---	---	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 7.0 Std.Dev.= 1.6)		9	7	7	9	7	6	8	4	5	8

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-27. Frequency Data - Permanent Transect 16, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	20.00		P	P							
TOTAL INTRO. ANN. GRASSES	20.0	---	P	P	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Artemisia ludoviciana	10.00								P		
TOTAL NATIVE PERENNIAL FORBS	10.0	---	---	---	---	---	---	---	P	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	40.00	P	P		P			P			
Juncus interior	80.00	P	P	P		P	P	P		P	P
Koeleria macrantha	80.00	P	P	P	P	P	P	P			P
Poa agassizensis	40.00			P	P	P	P				
Poa compressa	60.00			P		P		P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	60.00	P	P	P	P		P				P
Chondrosum gracile	20.00	P		P							
Muhlenbergia montana	50.00	P	P		P					P	P
Schizachyrium scoparium	20.00					P			P		
Sorghastrum avenaceum	30.00								P	P	P
Sporobolus heterolepis	10.00			P							
TOTAL NATIVE PERENNIAL GRASSES (w)	90.0	P	P	P	P	P	P	---	P	P	P
SUCCULENT											
Opuntia macrorhiza	30.00	P	P						P		
TOTAL SUCCULENT	30.0	P	P	---	---	---	---	---	P	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 5.5 Std.Dev.= 1.4)		7	7	8	5	5	4	4	5	4	6

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-28. Frequency Data - Permanent Transect 17, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Silene antirrhina	10.00						P				
TOTAL NATIVE ANN. & BIEN. FORBS	10.0	---	---	---	---	---	P	---	---	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	10.00										P
TOTAL INTRO. ANN. GRASSES	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	60.00		P	P	P	P	P	P			
Artemisia ludoviciana	30.00			P			P	P			
Aster porteri	30.00					P	P	P			
Eremogone fendleri	10.00									P	
Gaillardia aristata	10.00				P						
Liatris punctata	20.00							P	P		
Penstemon virens	10.00		P								
Psoralidium tenuiflorum	10.00						P				
Solidago simplex	10.00							P			
TOTAL NATIVE PERENNIAL FORBS	80.0	---	P	P	P	P	P	P	P	P	---
INTRODUCED PERENNIAL FORBS											
Arabis hirsuta	10.00				P						
Hypericum perforatum	10.00			P							
TOTAL INTRO. PERENNIAL FORBS	20.0	---	---	P	P	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	40.00		P		P				P	P	
Elymus longifolius	20.00				P		P				
Hesperostipa comata	20.00									P	P
Juncus interior	20.00							P			P
Koeleria macrantha	40.00		P						P	P	P
Poa compressa	90.00		P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	---	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	40.00	P	P					P	P		
Aristida purpurea	40.00					P	P	P	P		
Bouteloua curtipendula	70.00				P	P	P	P	P	P	P
Buchloe dactyloides	10.00								P		
Chondrosum gracile	30.00							P	P		P
Muhlenbergia montana	50.00	P	P	P	P	P					
Schizachyrium scoparium	60.00				P	P	P	P	P		P
Sorghastrum avenaceum	20.00					P			P		
Sporobolus heterolepis	30.00				P			P			P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	20.00						P			P	
TOTAL LICHEN	20.0	---	---	---	---	---	P	---	---	P	---
SUCCULENT											
Echinocereus viridiflorus	20.00					P					P
Opuntia macrorhiza	60.00	P		P	P	P	P		P		
TOTAL SUCCULENT	70.0	P	---	P	P	P	P	---	P	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 9.1 Std.Dev.= 3.2)		3	7	6	11	10	12	13	12	7	10

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-29. Frequency Data - Permanent Transect 18, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	10.00	P									
TOTAL NATIVE PERENNIAL FORBS	10.0	P	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Juncus interior	80.00	P	P	P		P	P		P	P	P
Poa agassizensis	70.00	P	P	P		P	P	P		P	
Poa compressa	80.00		P	P	P	P		P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	30.00						P	P			P
Muhlenbergia montana	50.00		P			P	P		P		P
Schizachyrium scoparium	20.00	P							P		
Sorghastrum avenaceum	60.00		P	P	P	P	P			P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
SUCCULENT											
Opuntia macrorhiza	20.00	P			P						
TOTAL SUCCULENT	20.0	P	---	---	P	---	---	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 4.2 Std.Dev.= 0.8)		5	5	4	3	5	5	3	4	4	4

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-30. Frequency Data - Permanent Transect 19, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE PERENNIAL FORBS											
Artemisia ludoviciana	10.00										P
TOTAL NATIVE PERENNIAL FORBS	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	20.00						P				P
Juncus interior	60.00	P	P		P	P			P		P
Koeleria macrantha	10.00					P					
Poa agassizensis	60.00		P	P	P				P	P	P
Poa compressa	90.00	P	P		P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Bouteloua curtipendula	20.00			P	P						
Chondrosum gracile	40.00		P	P			P		P		
Muhlenbergia montana	40.00				P			P		P	P
Schizachyrium scoparium	60.00	P		P		P	P	P			P
Sorghastrum avenaceum	20.00		P								P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Xanthoparmelia chlorochroa	10.00		P								
TOTAL LICHEN	10.0	---	P	---	---	---	---	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 4.4 Std.Dev.= 1.6)		3	6	4	5	4	4	3	4	3	8

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-31. Frequency Data - Permanent Transect 20, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	50.00	P	P		P	P		P			
TOTAL INTRO. ANN. GRASSES	50.0	P	P	---	P	P	---	P	---	---	---
NATIVE PERENNIAL FORBS											
Artemisia ludoviciana	20.00	P								P	
Dalea purpurea	10.00										P
Helianthus pumilus	10.00										P
Liatris punctata	20.00		P						P		
Oligosporus dracunculus ssp. glaucus	40.00	P	P					P		P	
Oxybaphus linearis	10.00	P									
Psoralidium tenuiflorum	40.00					P		P		P	P
TOTAL NATIVE PERENNIAL FORBS	70.0	P	P	---	---	P	---	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Linaria genistifolia ssp. dalmatica	10.00										P
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	100.00	P	P	P	P	P	P	P	P	P	P
Hesperostipa comata	100.00	P	P	P	P	P	P	P	P	P	P
Koeleria macrantha	10.00							P			
Poa agassizensis	20.00	P		P							
Poa compressa	20.00			P				P			
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	70.00	P	P		P	P	P	P	P		
Aristida purpurea	40.00				P		P			P	P
Bouteloua curtipendula	30.00		P		P					P	
Chondrosum gracile	10.00								P		
TOTAL NATIVE PERENNIAL GRASSES (w)	90.0	P	P	---	P	P	P	P	P	P	P
NATIVE SHRUBS											
Rosa sayi	10.00							P			
TOTAL NATIVE SHRUBS	10.0	---	---	---	---	---	---	P	---	---	---
SUCCULENT											
Echinocereus viridiflorus	10.00							P			
Opuntia macrorhiza	10.00			P							
TOTAL SUCCULENT	20.0	---	---	P	---	---	---	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 6.4 Std.Dev.= 1.8)		8	7	5	6	5	4	10	5	7	7

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-32. Frequency Data - Permanent Transect 21, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	10.00				P						
TOTAL NATIVE ANN. & BIEN. FORBS	10.0	---	---	---	P	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Antennaria corymbosa	10.00								P		
Artemisia ludoviciana	10.00										P
Aster porteri	30.00	P	P				P				
Dalea purpurea	20.00				P			P			
Eremogone fendleri	20.00	P	P								
Lesquerella montana	50.00	P	P	P	P	P					
Liatris punctata	100.00	P	P	P	P	P	P	P	P	P	P
Paronychia jamesii	40.00				P	P		P	P		
Psoralidium tenuiflorum	30.00	P	P		P						
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	80.00			P	P	P	P	P	P	P	P
Elymus longifolius	50.00		P	P	P		P				P
Koeleria macrantha	70.00	P	P	P		P	P			P	P
Poa agassizensis	10.00	P									
Poa compressa	20.00					P				P	
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	60.00			P		P	P	P	P	P	
Aristida purpurea	10.00										P
Bouteloua curtipendula	70.00	P	P		P		P	P		P	P
Chondrosum gracile	50.00	P		P	P		P	P			
Chondrosum hirsutum	30.00					P	P		P		
Muhlenbergia montana	90.00	P	P	P	P	P	P	P	P	P	
Schizachyrium scoparium	50.00				P	P	P	P			P
Sporobolus heterolepis	20.00	P					P				
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	40.00						P	P		P	P
TOTAL LICHEN	40.0	---	---	---	---	---	P	P	---	P	P
SUCCULENT											
Echinocereus viridiflorus	40.00			P	P	P		P			
Opuntia macrorhiza	20.00							P			P
TOTAL SUCCULENT	50.0	---	---	P	P	P	---	P	---	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 10.3 Std.Dev.= 2.1)		11	9	9	13	11	13	12	7	8	10

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-33. Frequency Data - Permanent Transect 22, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	10.00							P			
TOTAL NATIVE ANN. & BIEN. FORBS	10.0	---	---	---	---	---	---	P	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Tragopogon dubius ssp. major	10.00						P				
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	---	---	---	---	P	---	---	---	---
NATIVE PERENNIAL FORBS											
Antennaria corymbosa	10.00				P						
Aster porteri	30.00	P			P		P				
Dalea purpurea	10.00								P		
Lesquerella montana	40.00		P		P	P				P	
Liatris punctata	80.00		P	P	P	P	P		P	P	P
Paronychia jamesii	60.00		P	P	P	P	P	P			
Psoralidium tenuiflorum	50.00		P		P	P			P		P
Talinum parviflorum	10.00									P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	70.00	P	P	P		P		P	P	P	
Elymus longifolius	10.00									P	
Hesperostipa comata	20.00							P	P		
Koeleria macrantha	60.00		P	P	P		P	P		P	
Poa compressa	30.00								P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	80.00	P		P	P	P	P	P	P		P
Aristida purpurea	10.00									P	
Bouteloua curtipendula	80.00			P	P	P	P	P	P	P	P
Chondrosum gracile	80.00		P	P	P	P	P	P	P	P	
Chondrosum hirsutum	20.00	P					P				
Muhlenbergia montana	70.00	P	P	P	P	P		P		P	
Schizachyrium scoparium	60.00		P	P	P	P		P		P	
Sorghastrum avenaceum	40.00	P	P	P			P				
Sporobolus cryptandrus	10.00									P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	30.00		P				P	P			
Xanthoparmelia chlorochroa	20.00		P					P			
TOTAL LICHEN	30.0	---	P	---	---	---	P	P	---	---	---
SUCCULENT											
Echinocereus viridiflorus	50.00	P	P		P	P		P			
Opuntia macrorhiza	20.00				P	P					
TOTAL SUCCULENT	50.0	P	P	---	P	P	---	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 10.7 Std.Dev.= 2.9)		7	13	10	14	12	11	13	9	13	5

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-34. Frequency Data - Permanent Transect 23, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	20.00				P		P				
TOTAL NATIVE ANN. & BIEN. FORBS	20.0	---	---	---	P	---	P	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Tragopogon dubius ssp. major	10.00										P
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE PERENNIAL FORBS											
Antennaria corymbosa	20.00							P		P	
Aster porteri	20.00					P					P
Castilleja integra	10.00								P		
Comandra umbellata ssp. pallida	10.00									P	
Dalea purpurea	10.00					P					
Heterotheca villosa	10.00										P
Lesquerella montana	20.00					P					P
Liatris punctata	100.00	P	P	P	P	P	P	P	P	P	P
Paronychia jamesii	40.00					P	P		P	P	
Pneumonanthe bigelovii	10.00			P							
Potentilla hippiana	10.00	P									
Psoralidium tenuiflorum	40.00	P		P			P			P	
Solidago simplex	10.00										P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	50.00	P	P	P	P					P	
Hesperostipa comata	10.00										P
Koeleria macrantha	60.00			P		P		P	P	P	P
Poa compressa	10.00					P					
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	P	P	P	P	P	---	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	70.00		P	P	P	P	P		P	P	
Aristida purpurea	40.00				P	P			P		P
Bouteloua curtipendula	60.00		P				P	P	P	P	P
Chondrosum gracile	40.00		P	P		P				P	
Chondrosum hirsutum	50.00			P		P		P	P	P	
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	60.00	P			P	P	P	P		P	
Sorghastrum avenaceum	10.00			P							
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	70.00	P	P		P			P	P	P	P
TOTAL LICHEN	70.0	P	P	---	P	---	---	P	P	P	P
SUCCULENT											
Echinocereus viridiflorus	60.00	P					P	P	P	P	P
TOTAL SUCCULENT	60.0	P	---	---	---	---	P	P	P	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 10.3 Std.Dev.= 2.6)		8	7	10	8	13	9	9	11	15	13

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-35. Frequency Data - Permanent Transect 24, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	10.00		P								
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	P	---	---	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	20.00		P				P				
Bromus japonicus	40.00					P		P		P	P
TOTAL INTRO. ANN. GRASSES	60.0	---	P	---	---	P	P	P	---	P	P
NATIVE PERENNIAL FORBS											
Brickellia eupatorioides	10.00										P
Calochortus nuttallii	10.00								P		
Comandra umbellata ssp. pallida	10.00		P								
Liatris punctata	60.00	P		P	P			P	P		P
Penstemon secundiflorus	20.00				P			P			
Psoralidium tenuiflorum	20.00			P						P	
Ratibida columnifera	10.00							P			
TOTAL NATIVE PERENNIAL FORBS	80.0	P	P	P	P	---	---	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	10.00				P						
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	---	P	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	70.00	P	P	P		P	P	P			P
Hesperostipa comata	70.00	P	P	P	P		P	P			P
Koeleria macrantha	20.00	P							P		
Poa compressa	20.00				P				P		
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	P	P	P	P	P	P	P	P	---	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	60.00	P	P	P	P			P		P	
Aristida purpurea	10.00							P			
Bouteloua curtipendula	50.00			P	P	P				P	P
Chondrosum gracile	70.00		P	P	P	P	P	P			P
Muhlenbergia montana	10.00					P					
Schizachyrium scoparium	30.00	P		P					P		
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
SUCCULENT											
Echinocereus viridiflorus	60.00	P	P		P	P	P			P	
Opuntia macrorhiza	10.00										P
TOTAL SUCCULENT	70.0	P	P	---	P	P	P	---	---	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 7.0 Std.Dev.= 1.6)		7	8	8	9	6	5	9	5	5	8

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-36. Frequency Data - Permanent Transect 25, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	70.00	P	P		P	P		P	P		P
Pterogonum alatum	30.00	P	P							P	
TOTAL NATIVE ANN. & BIEN. FORBS	80.0	P	P	---	P	P	---	P	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	10.00		P								
Lactuca serriola	10.00		P								
Tragopogon dubius ssp. major	10.00								P		
TOTAL INTRO. ANN. & BIEN. FORBS	20.0	---	P	---	---	---	---	---	P	---	---
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	10.00		P								
Bromus japonicus	10.00		P								
TOTAL INTRO. ANN. GRASSES	10.0	---	P	---	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Achillea lanulosa	50.00	P					P	P		P	P
Ambrosia psilostachya var. coronopifolia	90.00	P	P	P	P	P	P	P	P		P
Artemisia ludoviciana	10.00			P							
Aster porteri	80.00	P		P	P	P	P	P	P		P
Astragalus agrestis	10.00				P						
Eremogone fendleri	30.00					P	P		P		
Lesquerella montana	10.00	P									
Liatris punctata	60.00		P	P		P			P	P	P
Paronychia jamesii	20.00									P	P
Potentilla effusa	10.00									P	
Psoralidium tenuiflorum	10.00									P	
Solidago simplex	10.00										P
Talinum parviflorum	30.00					P		P		P	
Thermopsis divaricarpa	40.00			P	P	P	P				
Tradescantia occidentalis	10.00		P								
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Convolvulus arvensis	10.00				P						
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	---	P	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	30.00				P	P		P			
Elymus lanceolatus fm. dasystachya	10.00		P								
Hesperostipa comata	10.00	P									
Koeleria macrantha	20.00	P						P			
Pascopyrum smithii	20.00		P	P							
Poa compressa	80.00			P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	20.00			P	P						
Aristida purpurea	10.00						P				
Bouteloua curtipendula	10.00										P
Chondrosum gracile	60.00	P	P	P		P		P		P	
Chondrosum hirsutum	30.00	P	P		P						
Muhlenbergia montana	70.00				P	P	P	P	P	P	P
Schizachyrium scoparium	50.00						P	P	P	P	P
Sorghastrum avenaceum	10.00									P	
Sporobolus heterolepis	20.00						P		P		
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-36. Frequency Data - Permanent Transect 25, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE SUBSHRUBS											
Artemisia frigida	20.00	P	P								
TOTAL NATIVE SUBSHRUBS	20.0	P	P	---	---	---	---	---	---	---	---
SUCCULENT											
Opuntia macrorhiza	30.00		P				P				P
TOTAL SUCCULENT	30.0	---	P	---	---	---	P	---	---	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 11.3 Std.Dev.= 1.6)		11	15	9	11	11	11	11	10	12	12

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-37. Frequency Data - Permanent Transect 26, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	80.00	P	P	P		P	P	P		P	P
TOTAL NATIVE ANN. & BIEN. FORBS	80.0	P	P	P	---	P	P	P	---	P	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	10.00	P									
Antennaria rosea	20.00			P				P			
Apocynum androsaemifolium	10.00		P								
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Castilleja spp.	10.00								P		
Comandra umbellata ssp. pallida	20.00			P	P						
Drymocallis fissa	10.00		P								
Eremogone fendleri	80.00	P	P	P		P	P	P	P	P	
Heterotheca fulcrata	40.00			P	P				P		P
Lesquerella montana	10.00					P					
Liatris punctata	50.00	P	P	P		P				P	
Paronychia jamesii	20.00								P	P	
Solidago simplex	60.00	P			P	P		P	P	P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	40.00		P				P		P	P	
TOTAL INTRO. PERENNIAL FORBS	40.0	---	P	---	---	---	P	---	P	P	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	100.00	P	P	P	P	P	P	P	P	P	P
Elymus elymoides	10.00							P			
Juncus interior	10.00									P	
Koeleria macrantha	30.00					P	P		P		
Poa agassizensis	10.00					P					
Poa compressa	70.00	P	P	P	P			P	P		P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	100.00	P	P	P	P	P	P	P	P	P	P
Bouteloua curtipendula	50.00				P	P	P	P		P	
Chondrosum gracile	80.00	P		P	P	P	P	P	P		P
Chondrosum hirsutum	20.00									P	P
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	60.00			P	P	P		P		P	P
Sorghastrum avenaceum	20.00						P	P			
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	10.00								P		
TOTAL NATIVE SUBSHRUBS	10.0	---	---	---	---	---	---	---	P	---	---
SUCCULENT											
Opuntia spp.	10.00									P	
TOTAL SUCCULENT	10.0	---	---	---	---	---	---	---	---	P	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 12.4 Std.Dev.= 1.8)		11	11	13	11	14	11	14	14	15	10

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-38. Frequency Data - Permanent Transect 27, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	40.00	P					P	P		P	
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	P	---	---	---	---	P	P	---	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	10.00		P								
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	P	---	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	20.00	P									P
Antennaria rosea	10.00						P				
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Comandra umbellata ssp. pallida	30.00	P					P	P			
Dalea purpurea	20.00				P	P					
Eremogone fendleri	90.00	P		P	P	P	P	P	P	P	P
Heterotheca fulcrata	10.00								P		
Liatris punctata	30.00	P					P			P	
Paronychia jamesii	10.00							P			
Solidago simplex	40.00			P	P	P			P		
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	20.00				P	P					
TOTAL INTRO. PERENNIAL FORBS	20.0	---	---	---	P	P	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex douglasii	10.00					P					
Carex pensylvanica ssp. heliophila	90.00	P	P	P	P	P	P	P	P		P
Koeleria macrantha	30.00				P					P	P
Poa compressa	80.00		P	P	P	P	P	P	P		P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	80.00	P	P	P	P	P	P	P	P		
Bouteloua curtipendula	40.00		P	P			P			P	
Chondrosum gracile	90.00		P	P	P	P	P	P	P	P	P
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Muhlenbergia spp.	10.00										P
Schizachyrium scoparium	70.00			P	P	P	P	P	P	P	
Sorghastrum avenaceum	10.00						P				
Sporobolus heterolepis	20.00									P	P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
SUCCULENT											
Opuntia macrorhiza	20.00		P				P				
TOTAL SUCCULENT	20.0	---	P	---	---	---	P	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 10.8 Std.Dev.= 1.8)		9	9	10	12	12	15	11	10	10	10

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-39. Frequency Data - Permanent Transect 28, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Helianthus petiolaris	10.00								P		
Pterogonum alatum	80.00	P	P	P	P		P	P	P	P	
TOTAL NATIVE ANN. & BIEN. FORBS	80.0	P	P	P	P	---	P	P	P	P	---
NATIVE PERENNIAL FORBS											
Achillea lanulosa	10.00	P									
Ambrosia psilostachya var. coronopifolia	30.00	P	P		P						
Antennaria rosea	10.00			P							
Artemisia ludoviciana	30.00	P								P	P
Asclepias stenophylla	10.00		P								
Asclepias viridiflora	10.00			P							
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Dalea purpurea	40.00	P			P	P			P		
Eremogone fendleri	90.00	P	P	P	P	P	P	P		P	P
Gaillardia aristata	20.00	P	P								
Heterotheca fulcrata	20.00			P					P		
Lesquerella montana	50.00		P		P	P		P		P	
Liatris punctata	100.00	P	P	P	P	P	P	P	P	P	P
Paronychia jamesii	80.00	P		P	P	P	P	P	P	P	
Solidago simplex	80.00			P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	70.00	P	P	P	P			P	P		P
TOTAL INTRO. PERENNIAL FORBS	70.0	P	P	P	P	---	---	P	P	---	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	50.00			P	P	P			P	P	
Juncus interior	50.00			P		P	P	P		P	
Koeleria macrantha	40.00					P		P	P		P
Poa compressa	90.00	P	P	P	P	P	P	P	P	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	50.00	P		P	P				P		P
Bouteloua curtipendula	20.00	P	P								
Chondrosum gracile	60.00		P	P	P		P			P	P
Chondrosum hirsutum	40.00	P			P	P				P	
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	70.00		P		P		P	P	P	P	P
Sorghastrum avenaceum	20.00							P		P	
Sporobolus heterolepis	20.00						P				P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
FERNS											
Selaginella densa	10.00								P		
TOTAL FERNS	10.0	---	---	---	---	---	---	---	P	---	---

Table 99-39. Frequency Data - Permanent Transect 28, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
LICHEN											
Cladonia spp.	30.00				P		P			P	
TOTAL LICHEN	30.0	---	---	---	P	---	P	---	---	P	---
SUCCULENT											
Opuntia macrorhiza	20.00			P		P					
TOTAL SUCCULENT	20.0	---	---	P	---	P	---	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 15.1 Std.Dev.= 2.0)		16	14	17	18	14	13	14	16	17	12

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-40. Frequency Data - Permanent Transect 29, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	60.00	P	P	P	P	P	P				
Polygonum douglasii	20.00		P	P							
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	P	P	P	P	P	P	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	10.00							P			
Neolepia campestre	10.00		P								
TOTAL INTRO. ANN. & BIEN. FORBS	20.0	---	P	---	---	---	---	P	---	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	90.00	P	P	P		P	P	P	P	P	P
TOTAL INTRO. ANN. GRASSES	90.0	P	P	P	---	P	P	P	P	P	P
NATIVE PERENNIAL FORBS											
Acetosella vulgaris	10.00		P								
Achillea lanulosa	10.00							P			
Ambrosia psilostachya var. coronopifolia	70.00	P	P	P	P	P				P	P
Artemisia ludoviciana	10.00								P		
Aster porteri	40.00	P	P	P				P			
Microseris nutans	10.00				P						
Talinum parviflorum	20.00	P			P						
Virgulus falcatus	50.00					P	P	P	P	P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Convolvulus arvensis	20.00									P	P
Potentilla recta	10.00							P			
Taraxacum officinale	50.00						P	P	P	P	P
TOTAL INTRO. PERENNIAL FORBS	50.0	---	---	---	---	---	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex spp.	10.00								P		
Critesion jubatum	30.00			P	P	P					
Elymus longifolius	10.00									P	
Juncus arcticus ssp. ater	50.00						P	P	P	P	P
Juncus interior	10.00					P					
Poa agassizensis	10.00							P			
Poa compressa	100.00	P	P	P	P	P	P	P	P	P	P
Poa secunda	20.00					P					P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	30.00	P	P	P							
Buchloe dactyloides	20.00			P		P					
Chondrosum gracile	20.00	P	P								
TOTAL NATIVE PERENNIAL GRASSES (w)	40.0	P	P	P	---	P	---	---	---	---	---
BRYOPHYTES											
Moss	10.00				P						
TOTAL BRYOPHYTES	10.0	---	---	---	P	---	---	---	---	---	---
LICHEN											
Cladonia spp.	10.00					P					
TOTAL LICHEN	10.0	---	---	---	---	P	---	---	---	---	---

Table 99-40. Frequency Data - Permanent Transect 29, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
SUCCULENT											
Opuntia macrorhiza	40.00	P				P		P		P	
TOTAL SUCCULENT	40.0	P	---	---	---	P	---	P	---	P	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 8.6 Std.Dev.= 1.8)		9	10	9	7	11	6	11	7	9	7

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-41. Frequency Data - Permanent Transect 30, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	70.00	P	P		P			P	P	P	P
TOTAL NATIVE ANN. & BIEN. FORBS	70.0	P	P	---	P	---	---	P	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	20.00	P			P						
TOTAL INTRO. ANN. & BIEN. FORBS	20.0	P	---	---	P	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	10.00	P									
TOTAL INTRO. ANN. GRASSES	10.0	P	---	---	---	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Achillea lanulosa	10.00	P									
Ambrosia psilostachya var. coronopifolia	50.00	P	P	P	P	P					
Antennaria corymbosa	10.00							P			
Artemisia ludoviciana	40.00			P	P		P				P
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Dalea purpurea	50.00	P	P	P		P		P			
Eremogone fendleri	60.00		P	P	P	P				P	P
Helianthella uniflora	20.00				P			P			
Heterotheca fulcrata	70.00		P	P		P	P		P	P	P
Heterotheca villosa	10.00										P
Lesquerella montana	10.00								P		
Liatris punctata	50.00			P				P	P	P	P
Oxybaphus linearis	20.00			P			P				
Oxytropis x sericea	10.00							P			
Paronychia jamesii	20.00			P		P					
Penstemon secundiflorus	10.00							P			
Penstemon virens	10.00								P		
Solidago simplex	50.00	P			P				P	P	P
Talinum parviflorum	10.00									P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Linaria genistifolia ssp. dalmatica	10.00										P
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	---	---	---	---	---	---	---	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	90.00	P	P	P	P	P		P	P	P	P
Elymus longifolius	20.00					P	P				
Festuca rubra	10.00						P				
Hesperostipa comata	10.00						P				
Koeleria macrantha	30.00						P	P		P	
Nassella viridula	10.00					P					
Poa compressa	60.00		P	P	P	P			P		P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P	P	P	P		P	P	P	P	P
Aristida purpurea	10.00								P		
Bouteloua curtipendula	30.00				P	P	P				
Chondrosum gracile	90.00	P	P	P		P	P	P	P	P	P
Chondrosum hirsutum	10.00									P	
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	60.00	P	P		P		P		P		P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-41. Frequency Data - Permanent Transect 30, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE SUBSHRUBS											
Artemisia frigida	10.00									P	
TOTAL NATIVE SUBSHRUBS	10.0	---	---	---	---	---	---	---	---	P	---
LICHEN											
Xanthoparmelia chlorochroa	10.00	P									
TOTAL LICHEN	10.0	P	---	---	---	---	---	---	---	---	---
SUCCULENT											
Coryphantha vivipara var. vivipara	10.00	P									
Echinocereus viridiflorus	20.00									P	P
Opuntia fragilis	10.00										P
Opuntia macrorhiza	80.00	P	P	P	P	P	P	P			P
TOTAL SUCCULENT	90.0	P	P	P	P	P	P	P	---	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 14.8 Std.Dev.= 1.4)		16	13	15	15	14	14	14	14	15	18

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-42. Frequency Data - Permanent Transect 31, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	50.00	P					P	P	P		P
TOTAL NATIVE ANN. & BIEN. FORBS	50.0	P	---	---	---	---	P	P	P	---	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	90.00	P	P	P	P	P	P	P		P	P
Aster porteri	50.00	P				P	P		P	P	
Eremogone fendleri	10.00								P		
Heterotheca fulcrata	10.00										P
Potentilla hippiana	10.00	P									
Talinum parviflorum	10.00								P		
Virgulus falcatus	50.00			P	P	P	P				P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex filifolia	10.00									P	
Carex pensylvanica ssp. heliophila	50.00	P	P					P	P	P	
Juncus interior	40.00						P	P	P		P
Koeleria macrantha	10.00					P					
Pascopyrum smithii	90.00	P	P	P	P	P	P	P		P	P
Poa compressa	100.00	P	P	P	P	P	P	P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
Dactylis glomerata	80.00	P	P	P	P		P	P	P	P	
TOTAL INTRO. PERENNIAL GRASSES (c)	80.0	P	P	P	P	---	P	P	P	P	---
NATIVE PERENNIAL GRASSES (warm)											
Buchloe dactyloides	90.00	P	P	P	P	P	P	P	P	P	
Chondrosum gracile	20.00		P	P							
TOTAL NATIVE PERENNIAL GRASSES (w)	90.0	P	P	P	P	P	P	P	P	P	---
SUCCULENT											
Opuntia macrorhiza	40.00			P				P		P	P
TOTAL SUCCULENT	40.0	---	---	P	---	---	---	P	---	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 8.1 Std.Dev.= 1.1)		9	7	8	6	7	9	9	9	9	8

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-43. Frequency Data - Permanent Transect 32, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	20.00	P			P						
Pterogonum alatum	30.00	P	P								P
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	P	P	---	P	---	---	---	---	---	P
INTRODUCED ANNUAL GRASSES											
Bromus japonicus	10.00				P						
TOTAL INTRO. ANN. GRASSES	10.0	---	---	---	P	---	---	---	---	---	---
NATIVE PERENNIAL FORBS											
Achillea lanulosa	10.00										P
Ambrosia psilostachya var. coronopifolia	80.00	P	P	P	P	P	P		P	P	
Artemisia ludoviciana	70.00	P	P				P	P	P	P	P
Aster porteri	60.00		P	P	P	P	P		P		
Dalea purpurea	30.00						P	P			P
Eremogone fendleri	20.00							P			P
Heterotheca fulcrata	20.00								P		P
Heterotheca villosa	50.00	P					P	P		P	P
Lesquerella montana	10.00										P
Liatris punctata	60.00	P	P				P		P	P	P
Paronychia jamesii	20.00		P				P				
Psoralidium tenuiflorum	20.00	P							P		
Talinum parviflorum	30.00					P		P	P		
Virgulus falcatus	30.00	P							P		P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Taraxacum officinale	10.00				P						
TOTAL INTRO. PERENNIAL FORBS	10.0	---	---	---	P	---	---	---	---	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	60.00	P	P				P		P	P	P
Koeleria macrantha	70.00	P	P			P	P	P	P		P
Pascopyrum smithii	40.00	P		P	P	P					
Poa compressa	70.00		P	P	P	P		P		P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	70.00	P	P		P		P		P	P	P
Bouteloua curtipendula	50.00	P					P	P		P	P
Buchloe dactyloides	60.00	P		P	P		P	P	P		
Chondrosum gracile	90.00	P	P	P	P	P	P	P	P	P	
Chondrosum hirsutum	20.00									P	P
Muhlenbergia montana	60.00		P				P	P	P	P	P
Schizachyrium scoparium	10.00										P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	20.00									P	P
Gutierrezia sarothrae	60.00	P		P	P	P	P	P			
TOTAL NATIVE SUBSHRUBS	80.0	P	---	P	P	P	P	P	---	P	P
BRYOPHYTES											
Moss	10.00			P							
TOTAL BRYOPHYTES	10.0	---	---	P	---	---	---	---	---	---	---

Table 99-43. Frequency Data - Permanent Transect 32, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
LICHEN											
Xanthoparmelia chlorochroa	50.00		P					P	P	P	P
TOTAL LICHEN	50.0	---	P	---	---	---	---	P	P	P	P
SUCCULENT											
Echinocereus viridiflorus	10.00									P	
Opuntia macrorhiza	30.00		P							P	P
TOTAL SUCCULENT	30.0	---	P	---	---	---	---	---	---	P	P
SPECIES DENSITY (# of species/sq.m.)		16	14	8	11	8	15	13	15	15	21
(AVERAGE= 13.6 Std.Dev.= 3.9)											

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-44. Frequency Data - Permanent Transect 33, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	30.00				P		P				P
TOTAL NATIVE ANN. & BIEN. FORBS	30.0	---	---	---	P	---	P	---	---	---	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	40.00	P			P	P			P		
Tragopogon dubius ssp. major	20.00	P			P						
TOTAL INTRO. ANN. & BIEN. FORBS	40.0	P	---	---	P	P	---	---	P	---	---
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	20.00							P			P
Bromus japonicus	40.00	P		P	P						P
TOTAL INTRO. ANN. GRASSES	50.0	P	---	P	P	---	---	P	---	---	P
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	40.00			P	P	P	P				
Amerosedum lanceolatum	10.00			P							
Artemisia ludoviciana	10.00			P							
Aster porteri	80.00		P	P	P	P	P	P		P	P
Castilleja integra	10.00			P							
Cerastium strictum	10.00				P						
Dalea purpurea	20.00								P		P
Eremogone fendleri	60.00				P	P	P	P		P	P
Eriogonum umbellatum	60.00	P	P	P	P					P	P
Heterotheca fulcrata	10.00						P				
Heterotheca villosa	90.00	P	P	P	P	P		P	P	P	P
Lesquerella montana	10.00		P								
Liatris punctata	50.00		P			P	P	P		P	
Oxytropis x sericea	30.00						P		P		P
Paronychia jamesii	60.00			P		P	P	P	P		P
Penstemon virens	10.00								P		
Psoralidium tenuiflorum	30.00	P					P	P			
Senecio spartioides	10.00										P
Talinum parviflorum	60.00	P		P	P	P	P				P
Toxicoscordion venenosum	10.00	P									
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	90.00	P	P	P	P		P	P	P	P	P
Elymus longifolius	20.00			P						P	
Hesperostipa comata	50.00	P	P					P		P	P
Juncus interior	20.00					P	P				
Koeleria macrantha	100.00	P	P	P	P	P	P	P	P	P	P
Poa agassizensis	50.00		P		P				P	P	P
Poa compressa	30.00					P	P	P			
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	60.00		P	P			P		P	P	P
Aristida purpurea	30.00			P				P	P		
Bouteloua curtipendula	50.00	P		P					P	P	P
Buchloe dactyloides	30.00		P	P			P				
Chondrosum gracile	10.00										P
Chondrosum hirsutum	90.00	P	P	P	P	P	P	P	P	P	
Muhlenbergia montana	40.00	P				P		P			P
Schizachyrium scoparium	60.00	P	P		P		P	P	P		
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-44. Frequency Data - Permanent Transect 33, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE SUBSHRUBS											
Artemisia frigida	50.00		P			P	P		P	P	
TOTAL NATIVE SUBSHRUBS	50.0	---	P	---	---	P	P	---	P	P	---
LICHEN											
Xanthoparmelia chlorochroa	90.00	P	P	P	P	P	P	P	P		P
TOTAL LICHEN	90.0	P	P	P	P	P	P	P	P	---	P
SUCCULENT											
Echinocereus viridiflorus	50.00		P	P		P				P	P
Opuntia fragilis	10.00		P								
Opuntia macrorhiza	20.00		P								P
TOTAL SUCCULENT	50.0	---	P	P	---	P	---	---	---	P	P
MUSHROOMS											
Fungus	10.00		P								
TOTAL MUSHROOMS	10.0	---	P	---	---	---	---	---	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 17.8 Std.Dev.= 2.6)		16	19	20	17	16	20	16	16	15	23

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-45. Frequency Data - Permanent Transect 34, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Erysimum asperum	10.00		P								
Pterogonum alatum	70.00	P	P	P		P		P	P	P	
TOTAL NATIVE ANN. & BIEN. FORBS	70.0	P	P	P	---	P	---	P	P	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	20.00			P						P	
Tragopogon dubius ssp. major	20.00	P		P							
TOTAL INTRO. ANN. & BIEN. FORBS	30.0	P	---	P	---	---	---	---	---	P	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	30.00	P	P	P							
Antennaria corymbosa	20.00				P		P				
Artemisia ludoviciana	10.00					P					
Aster porteri	70.00	P	P	P	P	P	P	P			
Cerastium strictum	20.00						P	P			
Eremogone fendleri	100.00	P	P	P	P	P	P	P	P	P	P
Eriogonum umbellatum	10.00						P				
Gaillardia aristata	40.00	P	P		P					P	
Helianthella uniflora	20.00							P	P		
Heterotheca fulcrata	20.00	P			P						
Heterotheca villosa	100.00	P	P	P	P	P	P	P	P	P	P
Lesquerella montana	30.00				P				P		P
Liatris punctata	100.00	P	P	P	P	P	P	P	P	P	P
Oxytropis sericea	10.00								P		
Oxytropis x sericea	40.00			P	P	P		P			
Paronychia jamesii	40.00	P				P		P		P	
Penstemon virens	20.00					P		P			
Pneumonanthe bigelovii	10.00			P							
Psoralidium tenuiflorum	60.00	P	P	P		P		P		P	
Solidago simplex	10.00			P							
Talinum parviflorum	40.00			P	P	P	P				
Townsendia hookeri	20.00			P					P		
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	50.00		P	P	P			P		P	
TOTAL INTRO. PERENNIAL FORBS	50.0	---	P	P	P	---	---	P	---	P	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	40.00		P	P	P		P				
Elymus longifolius	10.00									P	
Juncus interior	10.00				P						
Koeleria macrantha	60.00	P			P	P	P		P	P	
Poa compressa	60.00	P	P	P	P		P			P	
TOTAL NATIVE PERENNIAL GRASSES (c)	80.0	P	P	P	P	P	P	---	P	P	---
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	40.00		P		P		P				P
Aristida purpurea	10.00							P			
Chondrosum hirsutum	100.00	P	P	P	P	P	P	P	P	P	P
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	90.00	P		P	P	P	P	P	P	P	P
Sorghastrum avenaceum	20.00							P		P	
Sporobolus heterolepis	10.00	P									
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P

Table 99-45. Frequency Data - Permanent Transect 34, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE SUBSHRUBS											
Artemisia frigida	10.00										P
TOTAL NATIVE SUBSHRUBS	10.0	---	---	---	---	---	---	---	---	---	P
LICHEN											
Cladonia spp.	100.00	P	P	P	P	P	P	P	P	P	P
Lichen spp.	20.00	P				P					
Xanthoparmelia chlorochroa	90.00	P	P	P	P	P	P	P		P	P
TOTAL LICHEN	100.0	P	P	P	P	P	P	P	P	P	P
SUCCULENT											
Echinocereus viridiflorus	30.00				P					P	P
Opuntia fragilis	10.00									P	
Opuntia macrorhiza	10.00										P
TOTAL SUCCULENT	30.0	---	---	---	P	---	---	---	---	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 18.1 Std.Dev.= 3.2)		20	17	22	22	18	17	19	13	20	13

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-46. Frequency Data - Permanent Transect 35, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PRESENCE*

PLANT SPECIES	FREQUENCY (%)	----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Cirsium undulatum	20.00				P		P				
Erigeron divergens	40.00		P		P		P			P	
Grindelia squarrosa	20.00		P								P
Helianthus petiolaris	10.00					P					
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	---	P	---	P	P	P	---	---	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS											
Alyssum parviflorum	30.00	P			P	P					
Tragopogon dubius ssp. major	30.00	P	P					P			
TOTAL INTRO. ANN. & BIEN. FORBS	50.0	P	P	---	P	P	---	P	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	80.00	P	P	P	P	P	P	P			P
Artemisia ludoviciana	10.00										P
Aster porteri	70.00	P		P	P	P	P		P		P
Astragalus agrestis	10.00		P								
Calylophus serrulatus	50.00	P	P	P			P	P			
Comandra umbellata ssp. pallida	20.00		P								P
Dalea purpurea	20.00	P	P								
Eremogone fendleri	100.00	P	P	P	P	P	P	P	P	P	P
Erigeron flagellaris	40.00							P	P	P	P
Gastrolychnis drummondii	10.00							P			
Geranium viscosissimum ssp. nervosum	20.00					P	P				
Harbouria trachypleura	10.00							P			
Heterotheca fulcrata	30.00		P		P				P		
Heterotheca villosa	50.00					P		P	P	P	P
Lesquerella montana	30.00						P	P			P
Liatris punctata	30.00				P					P	P
Oligoneuron rigidum	10.00						P				
Oxytropis x sericea	10.00						P				
Paronychia jamesii	70.00			P	P	P	P		P	P	P
Penstemon virens	10.00									P	
Pneumonanthe bigelovii	30.00			P	P						P
Psoralidium tenuiflorum	90.00	P	P	P	P	P	P		P	P	P
Ratibida columnifera	50.00		P	P	P			P			P
Solidago simplex	10.00					P					
Talinum parviflorum	10.00			P							
Townsendia hookeri	40.00					P	P			P	P
Virgulus falcatus	10.00									P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	20.00							P	P		
TOTAL INTRO. PERENNIAL FORBS	20.0	---	---	---	---	---	---	P	P	---	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	80.00	P	P			P	P	P	P	P	P
Elymus longifolius	70.00	P	P			P	P	P	P	P	
Hesperostipa comata	20.00		P					P			
Koeleria macrantha	50.00		P	P		P				P	P
Poa agassizensis	40.00	P					P	P	P		
Poa compressa	10.00			P							
TOTAL NATIVE PERENNIAL GRASSES (c)	90.0	P	P	P	---	P	P	P	P	P	P

Table 99-46. Frequency Data - Permanent Transect 35, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	90.00	P		P	P	P	P	P	P	P	P
Bouteloua curtipendula	80.00	P			P	P	P	P	P	P	P
Chondrosum gracile	10.00		P								
Chondrosum hirsutum	60.00		P		P	P	P			P	P
Muhlenbergia montana	50.00			P	P	P			P		P
Schizachyrium scoparium	70.00		P	P	P	P			P	P	P
Sporobolus heterolepis	50.00				P			P	P	P	P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	30.00	P					P		P		
Gutierrezia sarothrae	10.00		P								
TOTAL NATIVE SUBSHRUBS	40.0	P	P	---	---	---	P	---	P	---	---
LICHEN											
Cladonia spp.	10.00							P			
TOTAL LICHEN	10.0	---	---	---	---	---	---	P	---	---	---
SUCCULENT											
Opuntia macrorhiza	20.00	P		P							
Opuntia polyacantha	10.00							P			
TOTAL SUCCULENT	30.0	P	---	P	---	---	---	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 18.5 Std.Dev.= 2.5)		15	20	15	18	19	20	20	17	18	23

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-47. Frequency Data - Permanent Transect 36, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	10.00							P			
Pterogonum alatum	60.00	P				P	P	P	P	P	
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	P	---	---	---	P	P	P	P	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Acosta diffusa	10.00						P				
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	---	---	---	---	P	---	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	20.00	P	P								
Aster porteri	100.00	P	P	P	P	P	P	P	P	P	P
Eremogone fendleri	60.00	P		P	P	P	P	P			
Helianthella uniflora	40.00	P	P		P	P					
Heterotheca fulcrata	40.00	P		P					P		P
Heterotheca villosa	10.00						P				
Lesquerella montana	40.00		P	P						P	P
Liatris punctata	90.00	P	P	P	P	P		P	P	P	P
Paronychia jamesii	80.00	P	P	P	P	P			P	P	P
Psoralidium tenuiflorum	50.00	P	P	P				P		P	
Senecio spartioides	10.00										P
Solidago simplex	60.00	P		P	P	P				P	P
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	60.00	P	P	P			P	P		P	
TOTAL INTRO. PERENNIAL FORBS	60.0	P	P	P	---	---	P	P	---	P	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	80.00	P	P	P	P	P		P		P	P
Elymus longifolius	10.00				P						
Poa compressa	60.00	P	P	P	P	P					P
TOTAL NATIVE PERENNIAL GRASSES (c)	80.0	P	P	P	P	P	---	P	---	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	30.00			P						P	P
Aristida purpurea	10.00									P	
Bouteloua curtipendula	80.00	P	P		P	P	P	P	P	P	
Chondrosum gracile	50.00		P	P	P		P	P			
Chondrosum hirsutum	60.00	P	P			P			P	P	P
Muhlenbergia montana	90.00		P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	70.00	P	P	P	P		P	P	P		
Sorghastrum avenaceum	50.00				P	P	P		P		P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Cladonia spp.	10.00	P									
TOTAL LICHEN	10.0	P	---	---	---	---	---	---	---	---	---
SUCCULENT											
Opuntia fragilis	10.00							P			
Opuntia macrorhiza	20.00			P				P			
TOTAL SUCCULENT	20.0	---	---	P	---	---	---	P	---	---	---
MUSHROOMS											
Fungus	10.00									P	
TOTAL MUSHROOMS	10.0	---	---	---	---	---	---	---	---	P	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 13.8 Std.Dev.= 2.1)		17	15	16	14	13	11	14	10	15	13

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-48. Frequency Data - Permanent Transect 37, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	60.00	P	P	P	P		P			P	
TOTAL NATIVE ANN. & BIEN. FORBS	60.0	P	P	P	P	---	P	---	---	P	---
NATIVE ANNUAL GRASSES											
Vulpia octoflora	10.00			P							
TOTAL NATIVE ANN. GRASSES	10.0	---	---	P	---	---	---	---	---	---	---
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	50.00	P		P		P	P	P			
TOTAL INTRO. ANN. GRASSES	50.0	P	---	P	---	P	P	P	---	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	10.00									P	
Dalea purpurea	10.00							P			
Eremogone fendleri	10.00										P
Heterotheca villosa	20.00									P	P
Liatris punctata	80.00	P	P		P	P	P	P		P	P
Lomatium orientale	10.00							P			
Paronychia jamesii	20.00		P							P	
Psoralidium tenuiflorum	20.00						P		P		
Talinum parviflorum	10.00	P									
TOTAL NATIVE PERENNIAL FORBS	90.0	P	P	---	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	100.00	P	P	P	P	P	P	P	P	P	P
Elymus longifolius	40.00			P			P	P			P
Hesperostipa comata	20.00						P		P		
Juncus interior	10.00			P							
Koeleria macrantha	70.00			P		P	P	P	P	P	P
Poa agassizensis	10.00					P					
Poa compressa	70.00		P	P	P		P	P	P	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	60.00	P	P			P			P	P	P
Bouteloua curtipendula	80.00	P	P		P	P	P	P	P	P	
Buchloe dactyloides	10.00	P									
Chondrosum gracile	100.00	P	P	P	P	P	P	P	P	P	P
Muhlenbergia montana	20.00	P	P								
Schizachyrium scoparium	50.00	P			P				P	P	P
Sorghastrum avenaceum	10.00										P
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE SUBSHRUBS											
Artemisia frigida	30.00			P						P	P
TOTAL NATIVE SUBSHRUBS	30.0	---	---	P	---	---	---	---	---	P	P
LICHEN											
Cladonia spp.	10.00								P		
TOTAL LICHEN	10.0	---	---	---	---	---	---	---	P	---	---

Table 99-48. Frequency Data - Permanent Transect 37, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
SUCCULENT											
Opuntia macrorhiza	30.00		P			P		P			
TOTAL SUCCULENT	30.0	---	P	---	---	P	---	P	---	---	---
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 10.3 Std.Dev.= 1.6)		11	10	10	7	9	11	11	10	13	11

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

Table 99-49. Frequency Data - Permanent Transect 38, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Grindelia squarrosa	40.00		P				P		P	P	
Polygonum douglasii	10.00						P				
TOTAL NATIVE ANN. & BIEN. FORBS	40.0	---	P	---	---	---	P	---	P	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Acosta diffusa	70.00	P		P	P	P	P	P	P		
Alyssum parviflorum	30.00	P	P							P	
Lactuca serriola	10.00	P									
Plantago lanceolata	20.00					P			P		
TOTAL INTRO. ANN. & BIEN. FORBS	90.0	P	P	P	P	P	P	P	P	P	---
INTRODUCED ANNUAL GRASSES											
Anisantha tectorum	10.00							P			
Bromus japonicus	60.00	P		P		P	P	P			P
TOTAL INTRO. ANN. GRASSES	60.0	P	---	P	---	P	P	P	---	---	P
NATIVE PERENNIAL FORBS											
Achillea lanulosa	10.00										P
Ambrosia psilostachya var. coronopifolia	90.00	P	P	P	P		P	P	P	P	P
Artemisia ludoviciana	40.00			P		P			P		P
Aster porteri	30.00						P	P	P		
Eremogone fendleri	20.00	P					P				
Heterotheca villosa	30.00		P		P	P					
Lesquerella montana	20.00						P		P		
Oenothera howardii	10.00					P					
Potentilla hippiana	10.00					P					
Psoralidium tenuiflorum	30.00					P		P	P		
Senecio spartioides	20.00			P			P				
Solidago simplex	10.00								P		
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	70.00	P	P	P			P	P	P	P	
TOTAL INTRO. PERENNIAL FORBS	70.0	P	P	P	---	---	P	P	P	P	---
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	60.00	P			P	P	P	P		P	
Elymus longifolius	30.00		P	P	P						
Hesperostipa comata	20.00	P				P					
Juncus interior	40.00				P		P	P	P		
Pascopyrum smithii	20.00	P	P								
Poa agassizensis	10.00									P	
Poa compressa	80.00	P		P	P	P	P		P	P	P
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL GRASSES (cool)											
Poa pratensis	10.00						P				
TOTAL INTRO. PERENNIAL GRASSES (c)	10.0	---	---	---	---	---	P	---	---	---	---

Table 99-49. Frequency Data - Permanent Transect 38, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

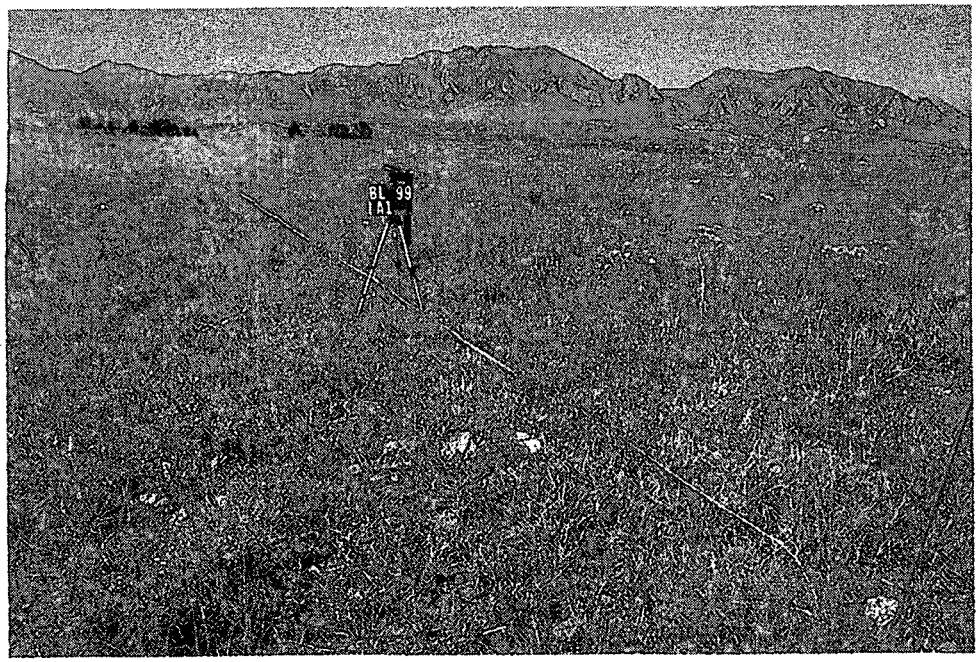
PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	70.00	P	P	P		P	P			P	P
Bouteloua curtipendula	60.00				P	P	P	P	P		P
Buchloe dactyloides	60.00		P	P	P	P			P	P	
Chondrosum gracile	100.00	P	P	P	P	P	P	P	P	P	P
Chondrosum hirsutum	20.00		P				P				
Muhlenbergia montana	30.00					P				P	P
Schizachyrium scoparium	20.00	P						P			
Sorghastrum avenaceum	20.00							P		P	
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
LICHEN											
Lichen spp.	10.00				P						
Xanthoparmelia chlorochroa	10.00	P									
TOTAL LICHEN	20.0	P	---	---	P	---	---	---	---	---	---
SUCCULENT											
Echinocereus viridiflorus	10.00									P	
Opuntia macrorhiza	80.00	P		P	P	P		P	P	P	P
TOTAL SUCCULENT	80.0	P	---	P	P	P	---	P	P	P	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 14.0 Std.Dev.= 2.7)		16	11	12	12	17	18	14	16	14	10

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

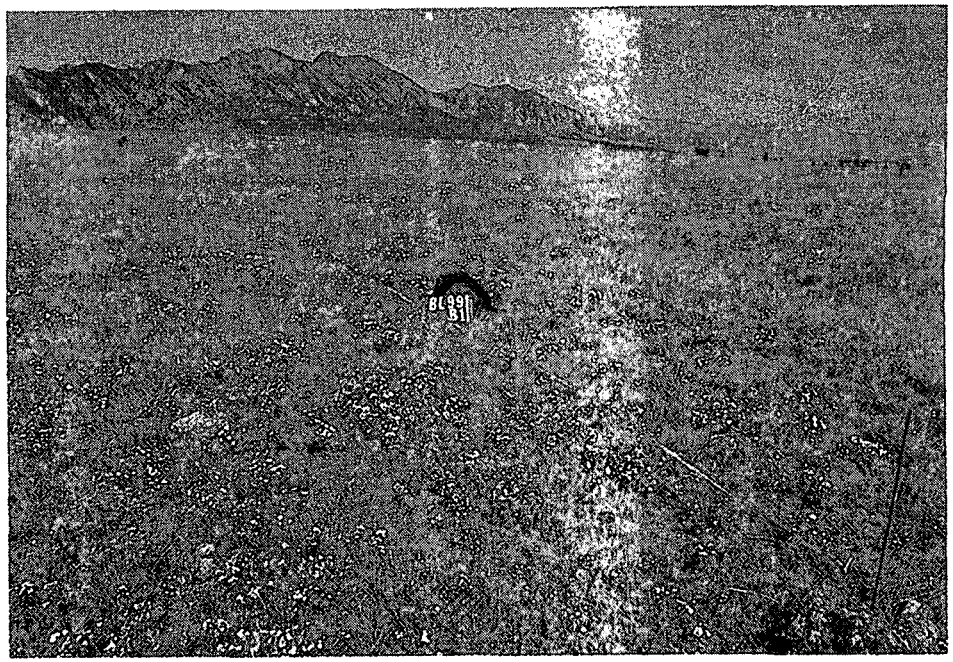
Table 99-50. Frequency Data - Permanent Transect 39, Bluestem Grassland Study, Jeff. and Bldr. Co., Aug. and Sept., - 1999

PLANT SPECIES	FREQUENCY (%)	PRESENCE* ----Plot Number---- 1	2	3	4	5	6	7	8	9	10
NATIVE ANNUAL & BIENNIAL FORBS											
Pterogonum alatum	20.00		P	P							
TOTAL NATIVE ANN. & BIEN. FORBS	20.0	---	P	P	---	---	---	---	---	---	---
INTRODUCED ANNUAL & BIENNIAL FORBS											
Camelina microcarpa	10.00								P		
TOTAL INTRO. ANN. & BIEN. FORBS	10.0	---	---	---	---	---	---	---	P	---	---
NATIVE PERENNIAL FORBS											
Ambrosia psilostachya var. coronopifolia	30.00	P			P						P
Aster porteri	90.00	P	P	P	P		P	P	P	P	P
Eremogone fendleri	80.00		P	P	P	P	P	P		P	P
Heterotheca fulcrata	50.00		P					P	P	P	P
Lesquerella montana	20.00							P		P	
Liatris punctata	40.00		P	P				P			P
Mertensia lanceolata	20.00						P				P
Paronychia jamesii	30.00	P					P	P			
Psoralidium tenuiflorum	70.00		P	P	P	P	P			P	P
Solidago simplex	10.00									P	
TOTAL NATIVE PERENNIAL FORBS	100.0	P	P	P	P	P	P	P	P	P	P
INTRODUCED PERENNIAL FORBS											
Hypericum perforatum	90.00	P	P	P		P	P	P	P	P	P
TOTAL INTRO. PERENNIAL FORBS	90.0	P	P	P	---	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)											
Carex pensylvanica ssp. heliophila	30.00	P	P				P				
Elymus elymoides	30.00						P		P		P
Koeleria macrantha	20.00								P	P	
Poa compressa	90.00	P	P	P	P	P	P	P	P	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	100.0	P	P	P	P	P	P	P	P	P	P
NATIVE PERENNIAL GRASSES (warm)											
Andropogon gerardii	100.00	P	P	P	P	P	P	P	P	P	P
Aristida purpurea	30.00		P	P		P					
Bouteloua curtipendula	60.00	P				P	P	P	P	P	
Chondrosum gracile	40.00					P		P	P	P	
Chondrosum hirsutum	10.00	P									
Muhlenbergia montana	100.00	P	P	P	P	P	P	P	P	P	P
Schizachyrium scoparium	20.00			P							P
Sorghastrum avenaceum	10.00							P			
TOTAL NATIVE PERENNIAL GRASSES (w)	100.0	P	P	P	P	P	P	P	P	P	P
SUCCULENT											
Opuntia macrorhiza	30.00			P	P						P
Pediocactus simpsonii	10.00										P
TOTAL SUCCULENT	30.0	---	---	P	P	---	---	---	---	---	P
SPECIES DENSITY (# of species/sq.m.) (AVERAGE= 11.4 Std.Dev.= 1.9)		10	12	12	8	9	12	13	11	13	14

*P= Present within 1m X 1m plot on right side (when standing at origin and facing the endpoint) of the cover transect.

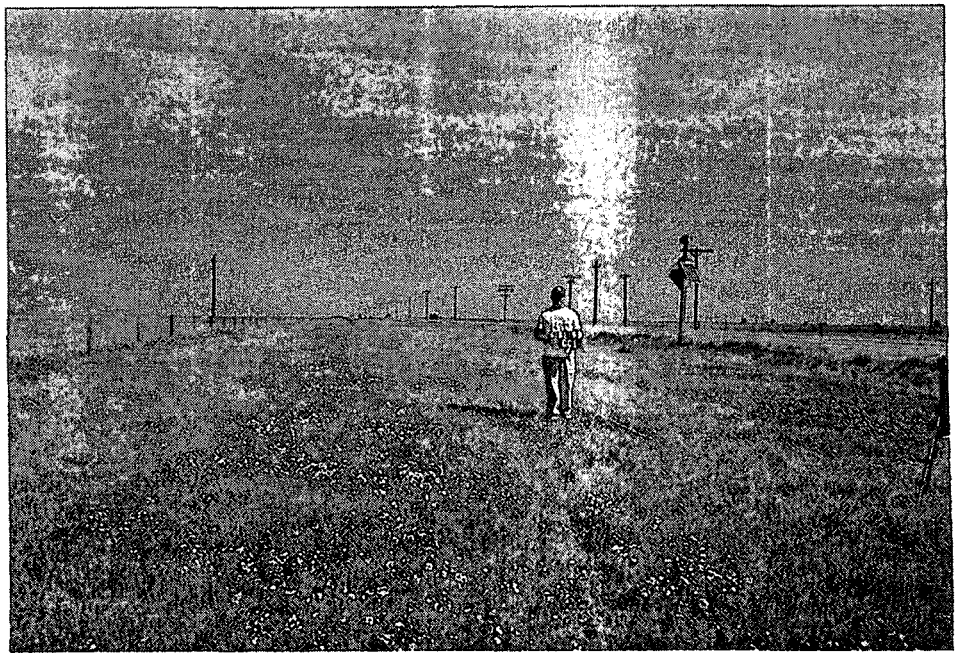


Photograph 1. 1999 Bluestem Grassland Study, Sample A1.

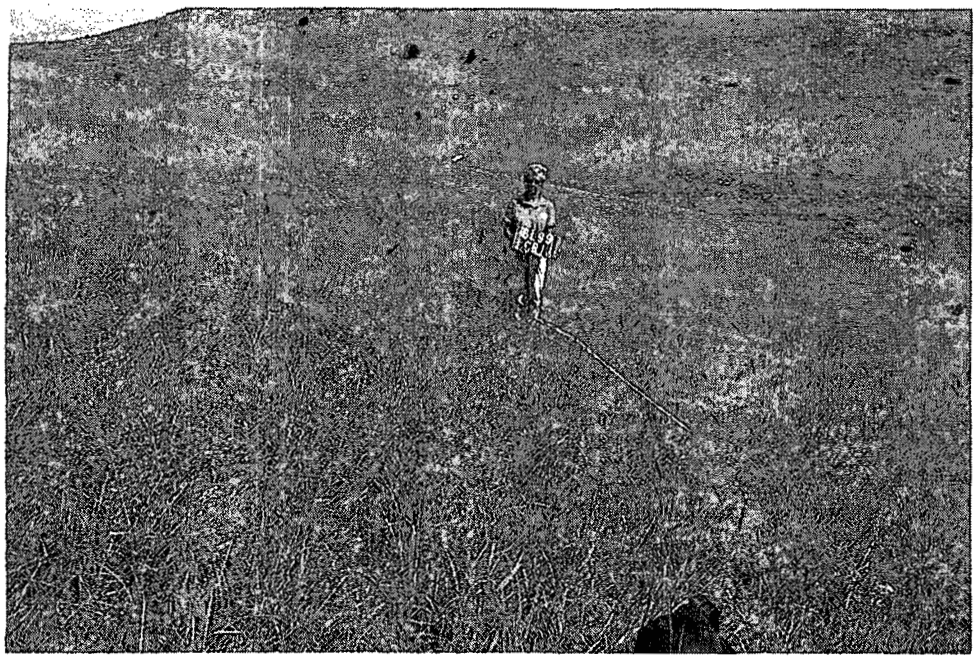


Photograph 2. 1999. Bluestem Grassland Study, Sample B1.

Photograph 3. 1999 Bluestem Grassland Study, Sample B2.

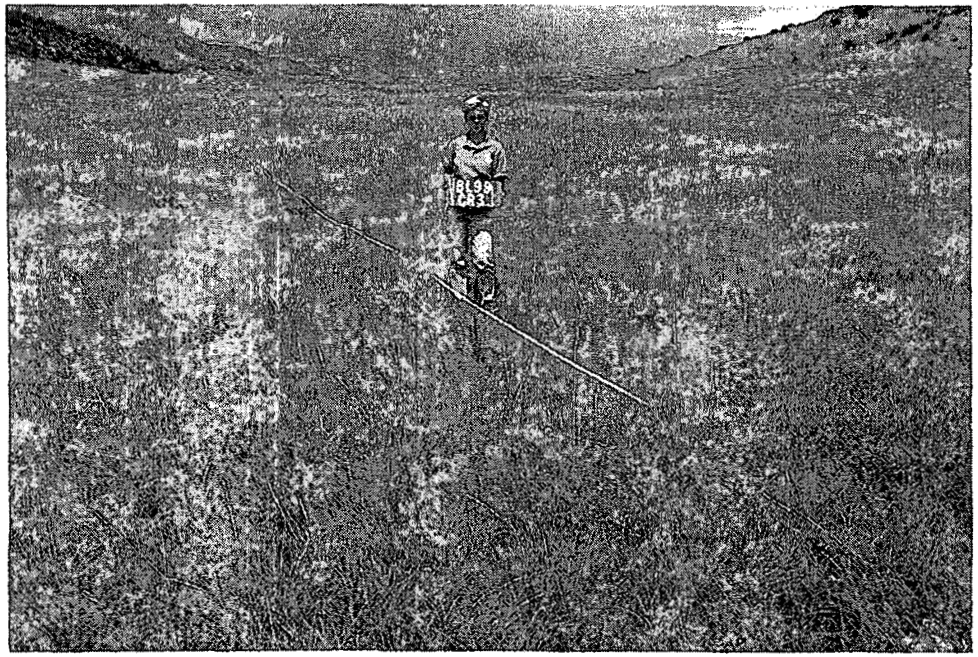


Photograph 4. 1999 Bluestem Grassland Study, Sample CC1.

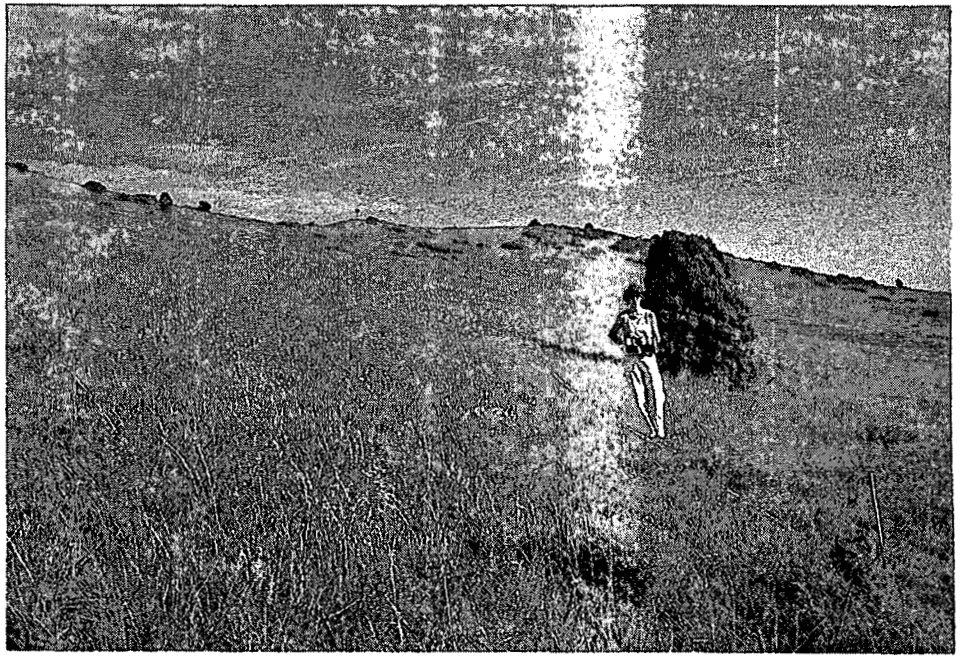


Photograph 5. 1999 Bluestem Grassland Study, Sample CR1.

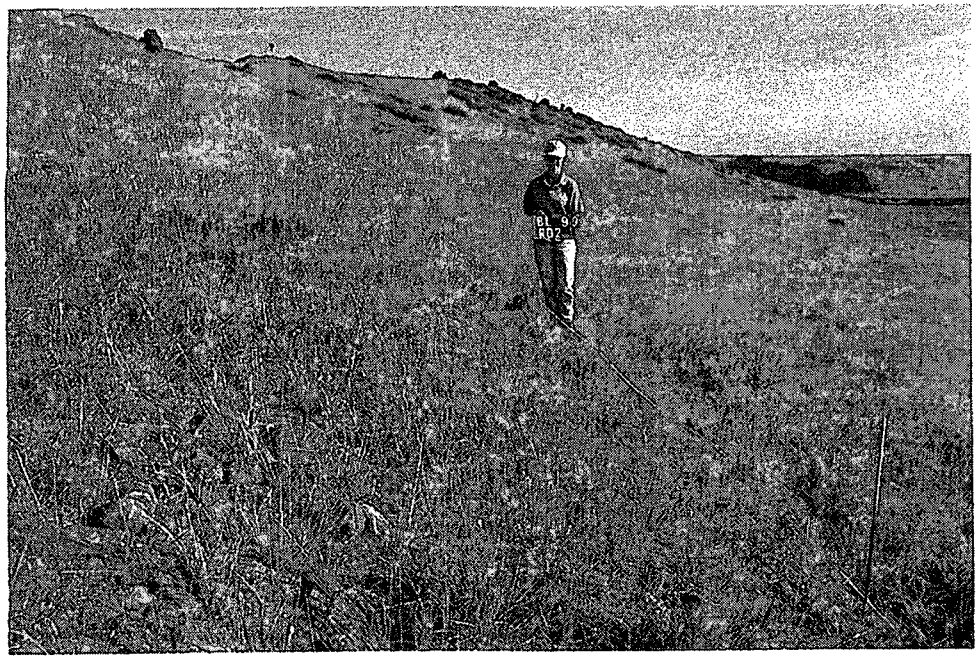
Photograph 6. 1999 Bluestem Grassland Study, Sample CR2.



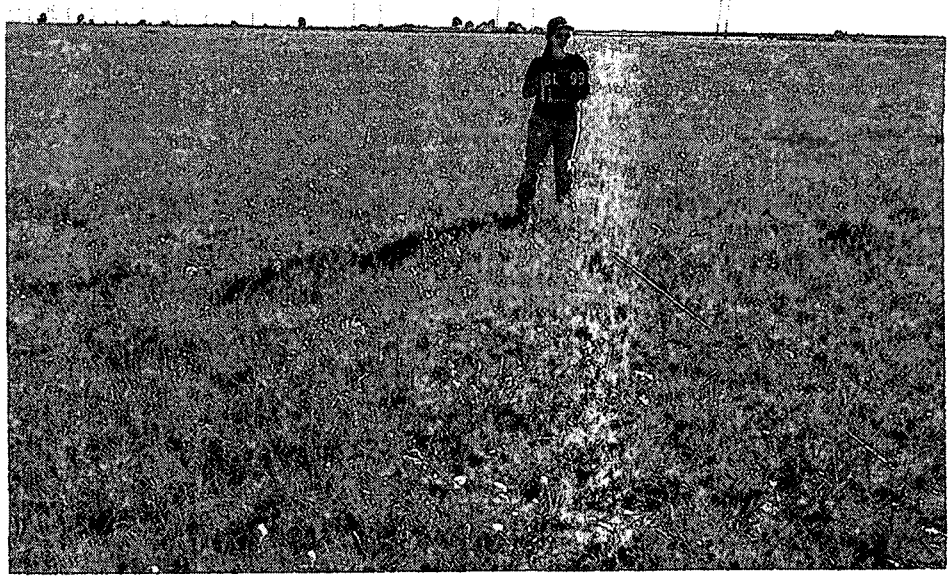
Photograph 7. 1999 Bluestem Grassland Study, Sample CR3.



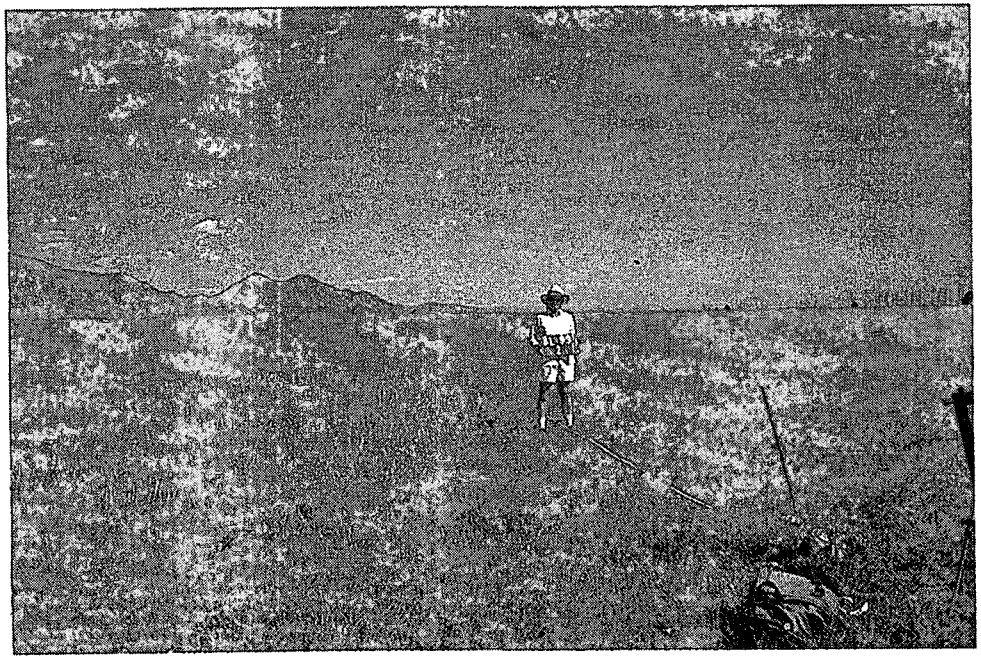
Photograph 8. 1999 Bluestem Grassland Study, Sample RD1.



Photograph 9. 1999 Bluestem Grassland Study, Sample RD2.

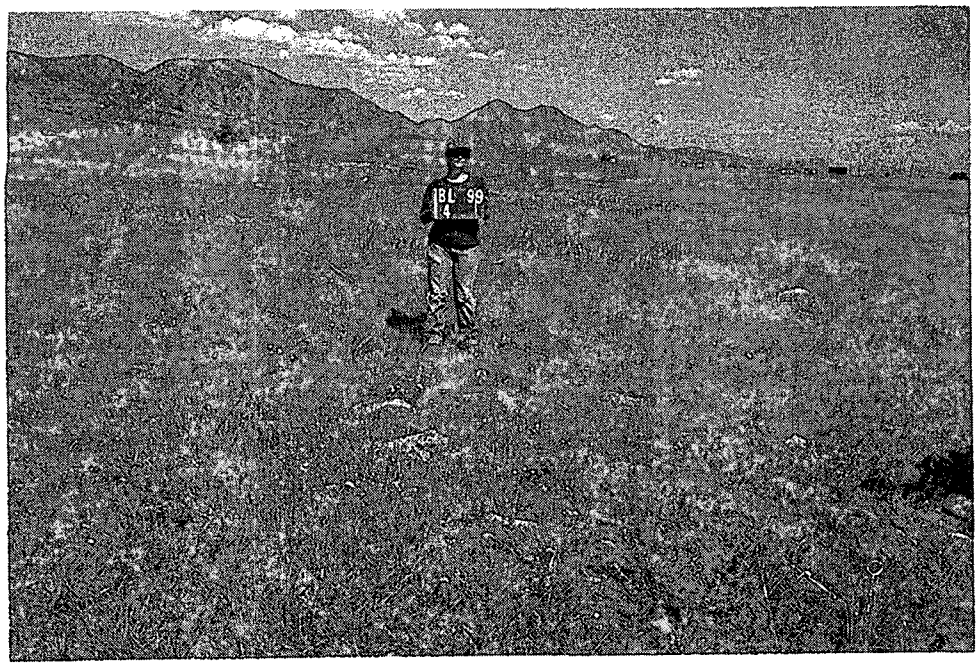


Photograph 10. 1999 Bluestem Grassland Study, Sample 1.

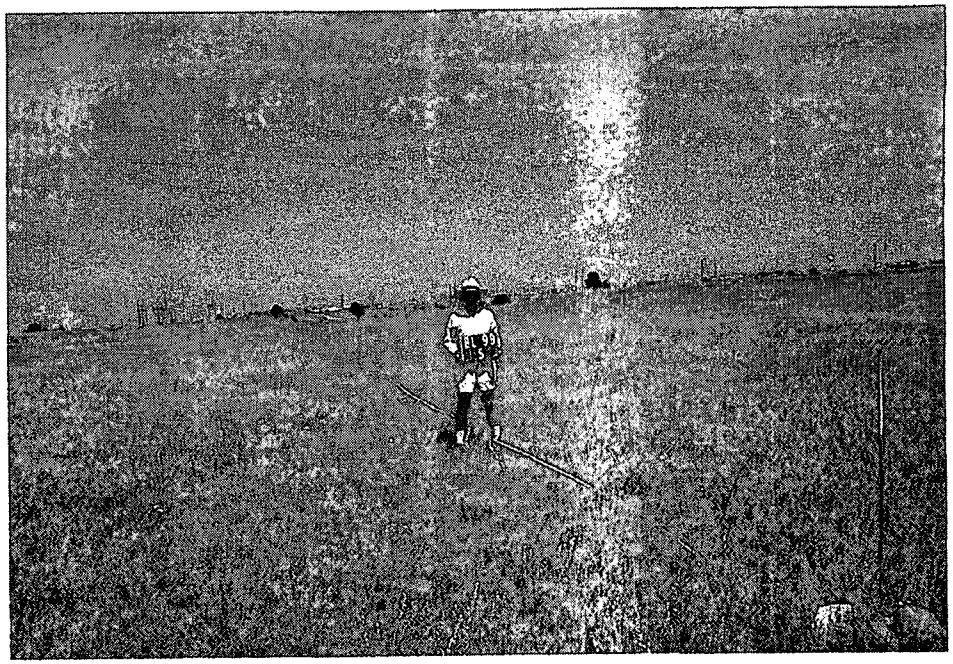


Photograph 11. 1999 Bluestem Grassland Study, Sample 2.

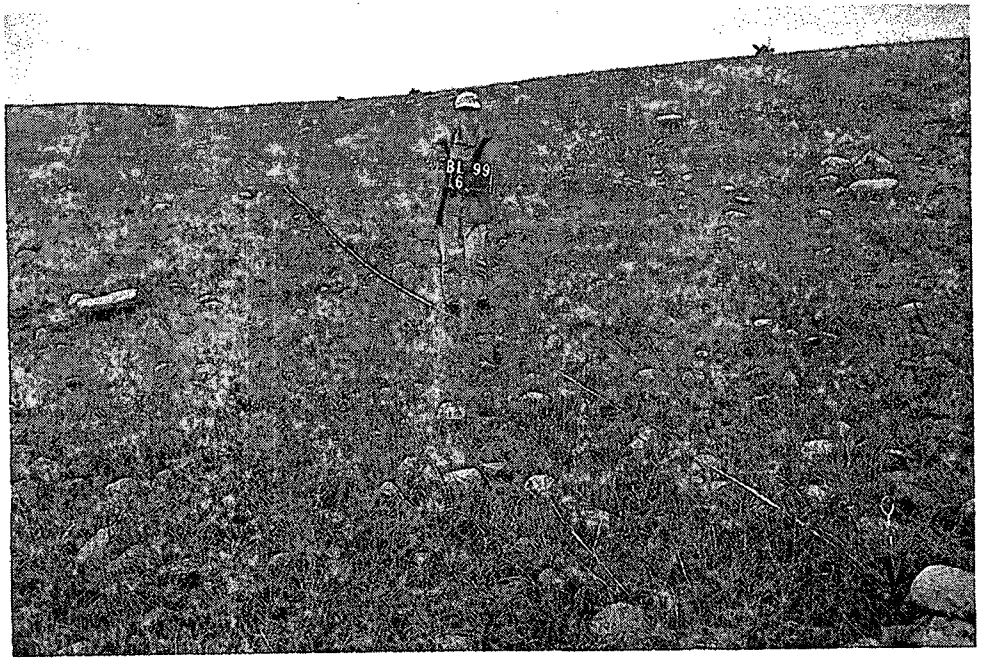
Photograph 12. 1999 Bluestem Grassland Study, Sample 3.



Photograph 13. 1999 Bluestem Grassland Study, Sample 4.



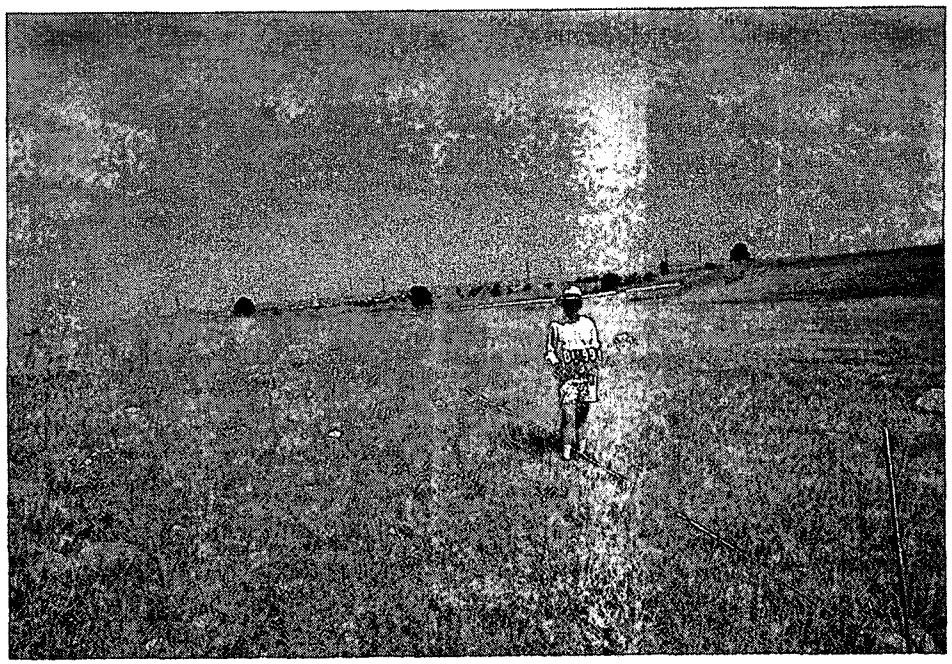
Photograph 14. 1999 Bluestem Grassland Study, Sample 5.



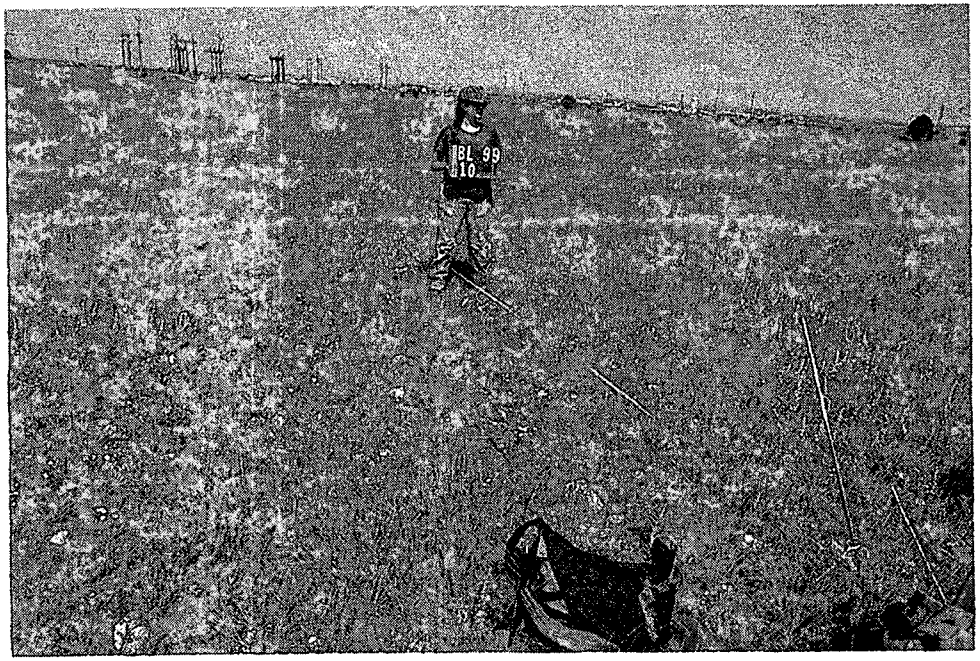
Photograph 15. 1999 Bluestem Grassland Study, Sample 6.

Photograph 16. 1999 Bluestem Grassland Study, Sample 7.

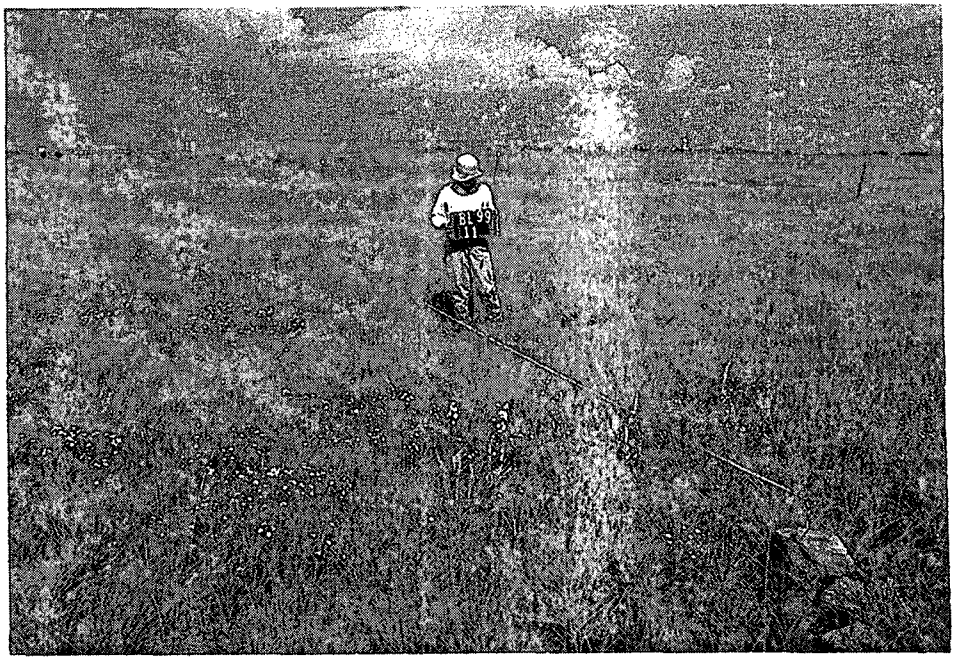
Photograph 17. 1999 Bluestem Grassland Study, Sample 8.



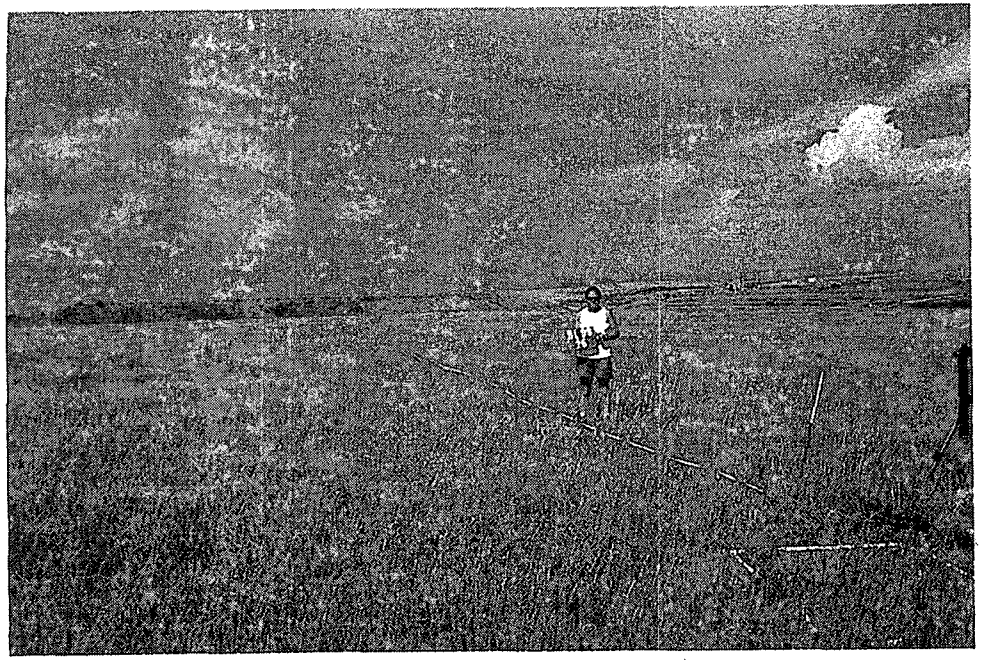
Photograph 18. 1999 Bluestem Grassland Study, Sample 9.



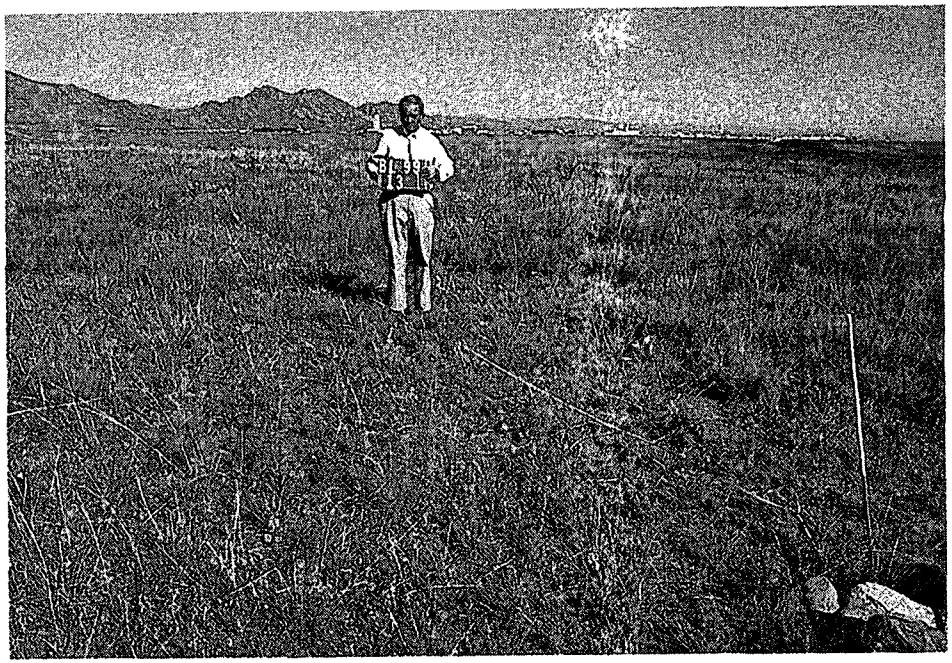
Photograph 19. 1999 Bluestem Grassland Study, Sample 10.



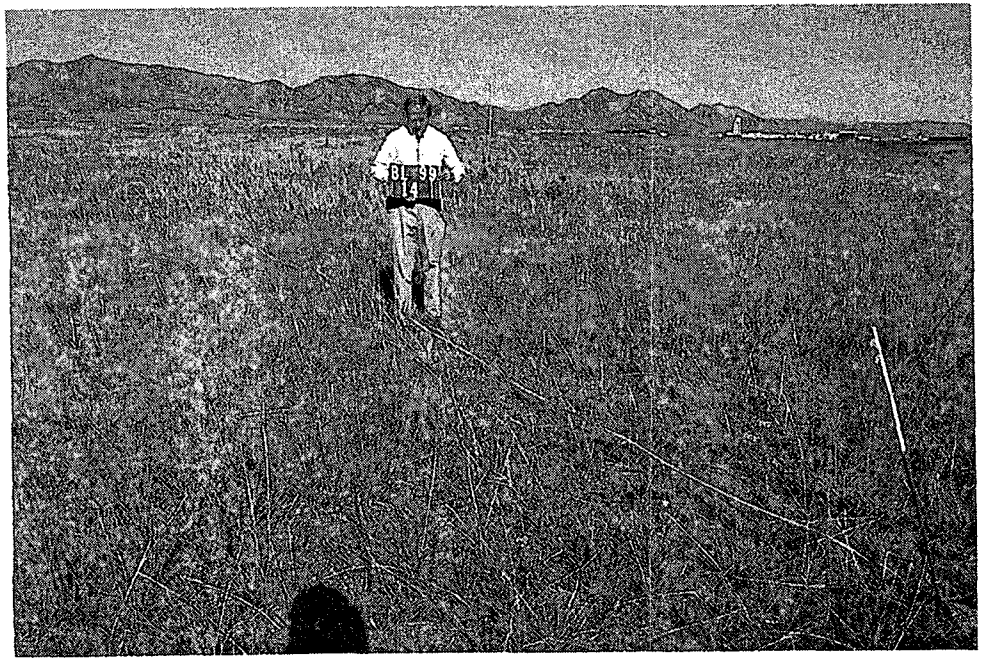
Photograph 20. 1999 Bluestem Grassland Study, Sample 11.



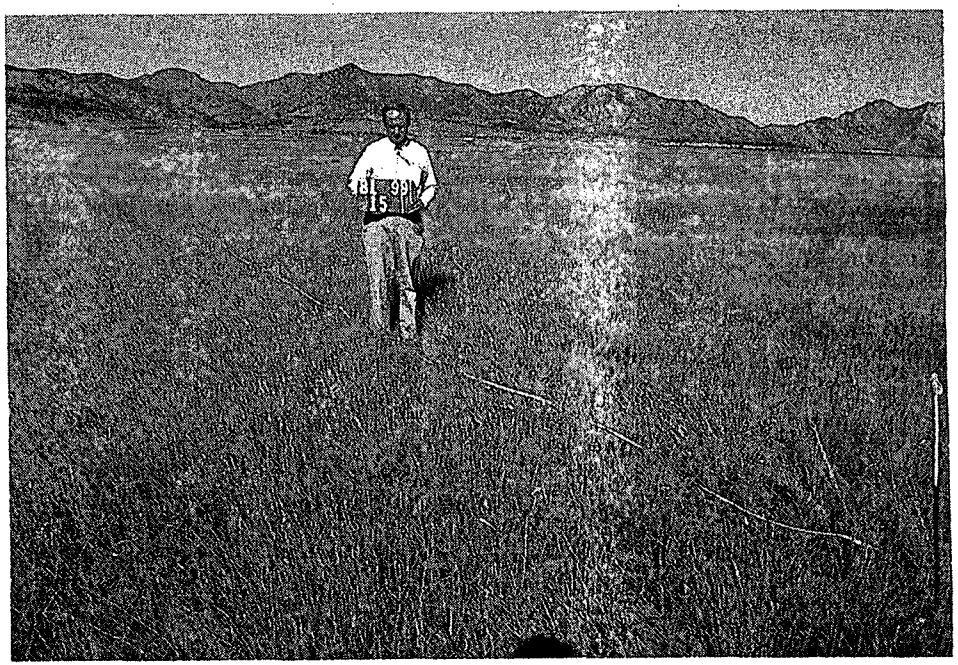
Photograph 21. 1999 Bluestem Grassland Study, Sample 12.



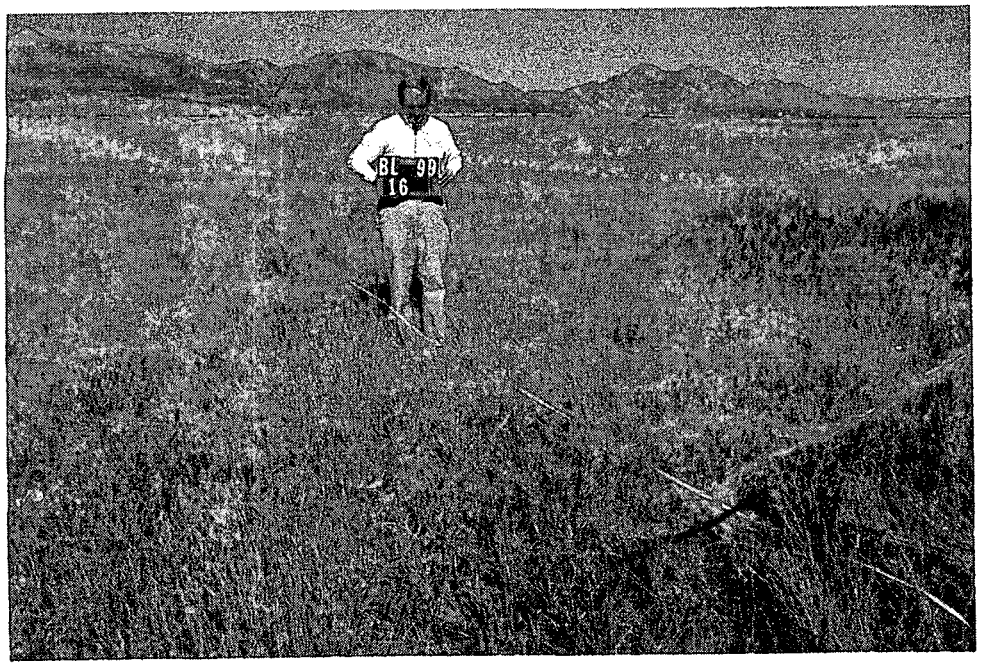
Photograph 22. 1999 Bluestem Grassland Study, Sample 13.



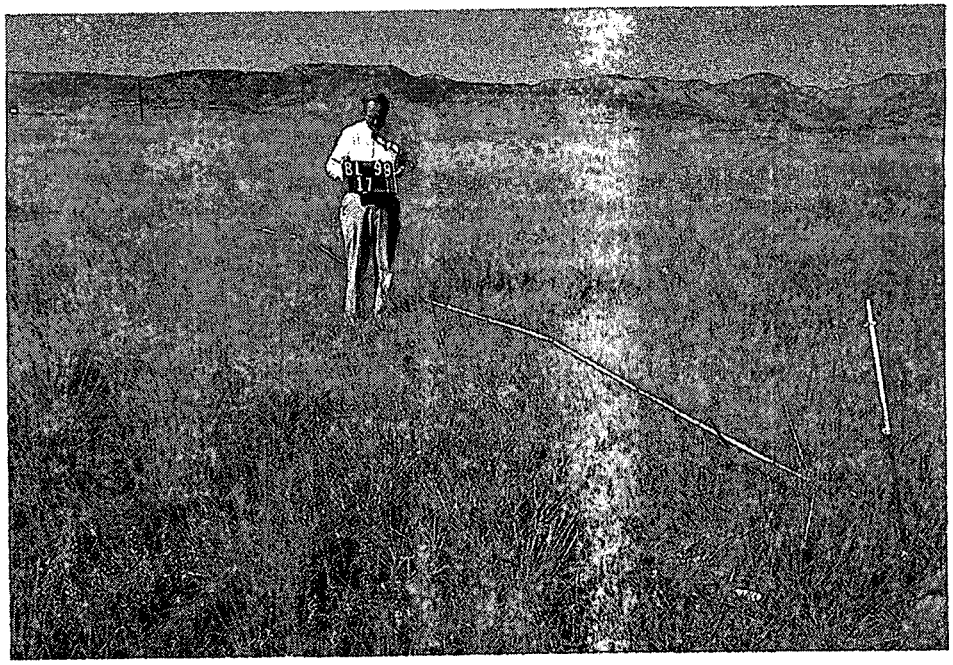
Photograph 23. 1999 Bluestem Grassland Study, Sample 14.



Photograph 24. 1999 Bluestem Grassland Study, Sample 15.

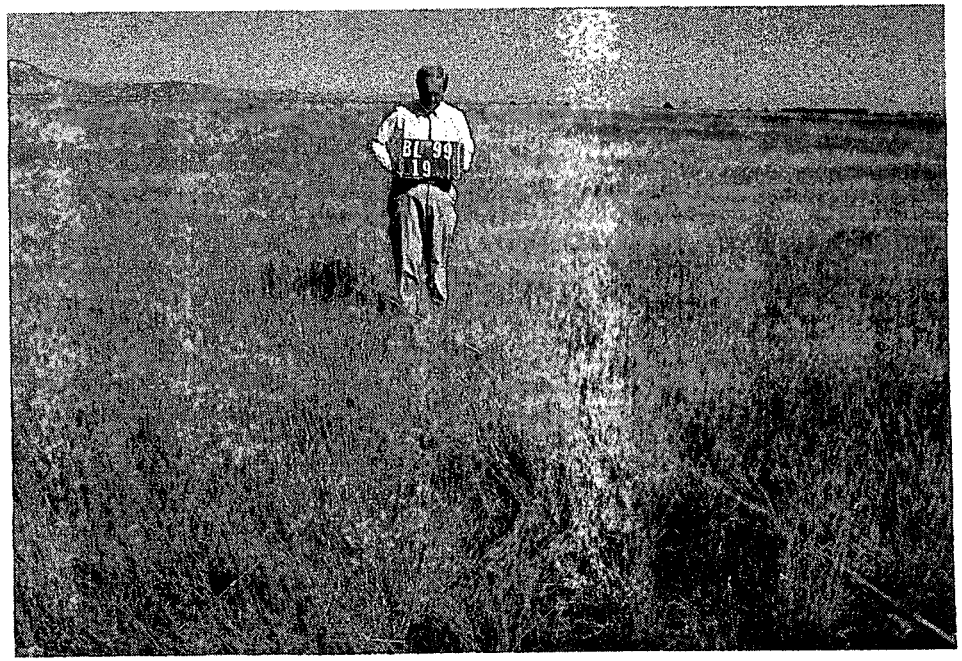


Photograph 25. 1999 Bluestem Grassland Study, Sample 16.



Photograph 26. 1999 Bluestem Grassland Study, Sample 17.

Photograph 27. 1999 Bluestem Grassland Study, Sample 18.



Photograph 28. 1999 Bluestem Grassland Study, Sample 19.

Photograph 29. 1999 Bluestem Grassland Study, Sample 20.

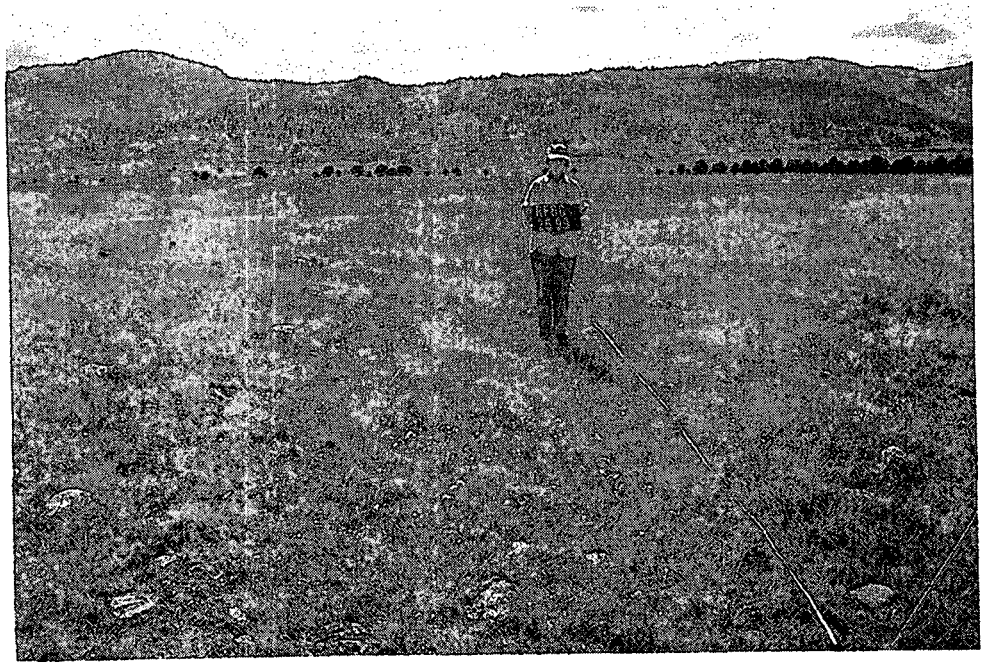
Photograph 30. 1999 Bluestem Grassland Study, Sample 21.

Photograph 31. 1999 Bluestem Grassland Study, Sample 22.

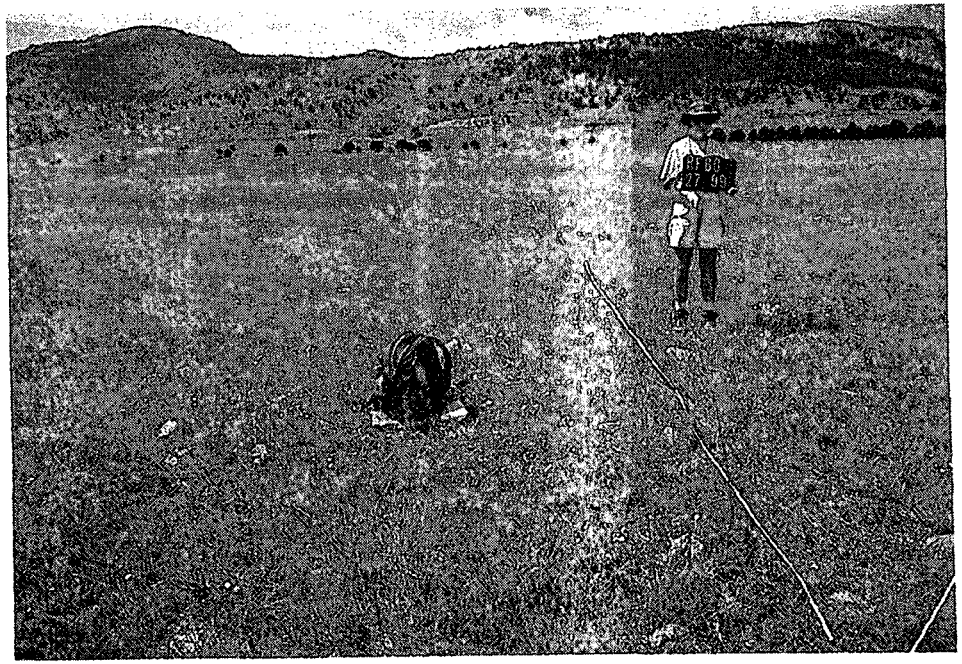
Photograph 32. 1999 Bluestem Grassland Study, Sample 23.

Photograph 33. 1999 Bluestem Grassland Study, Sample 24.

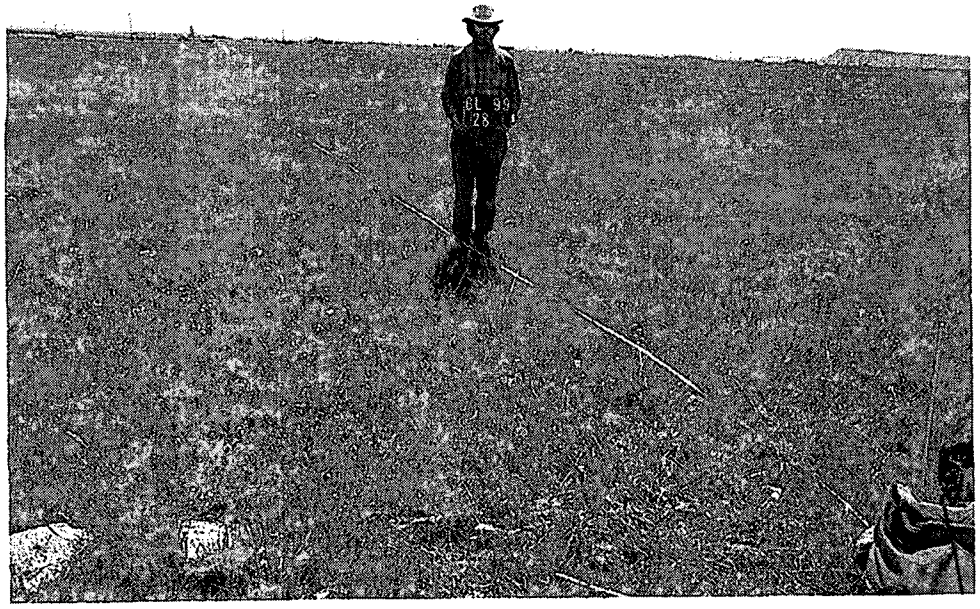
Photograph 34. 1999 Bluestem Grassland Study, Sample 25.



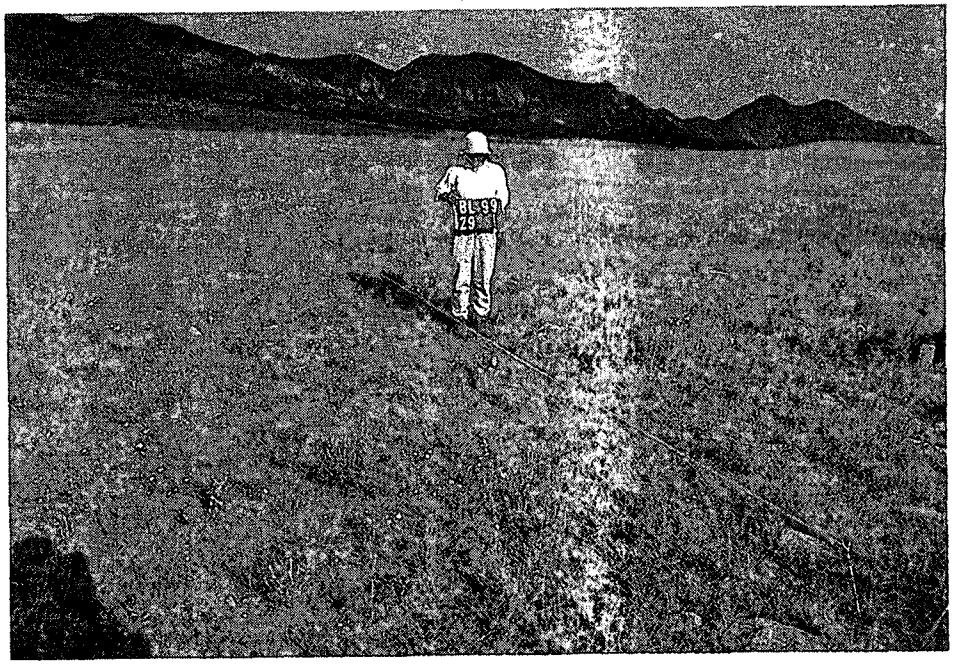
Photograph 35. 1999 Bluestem Grassland Study, Sample 26.



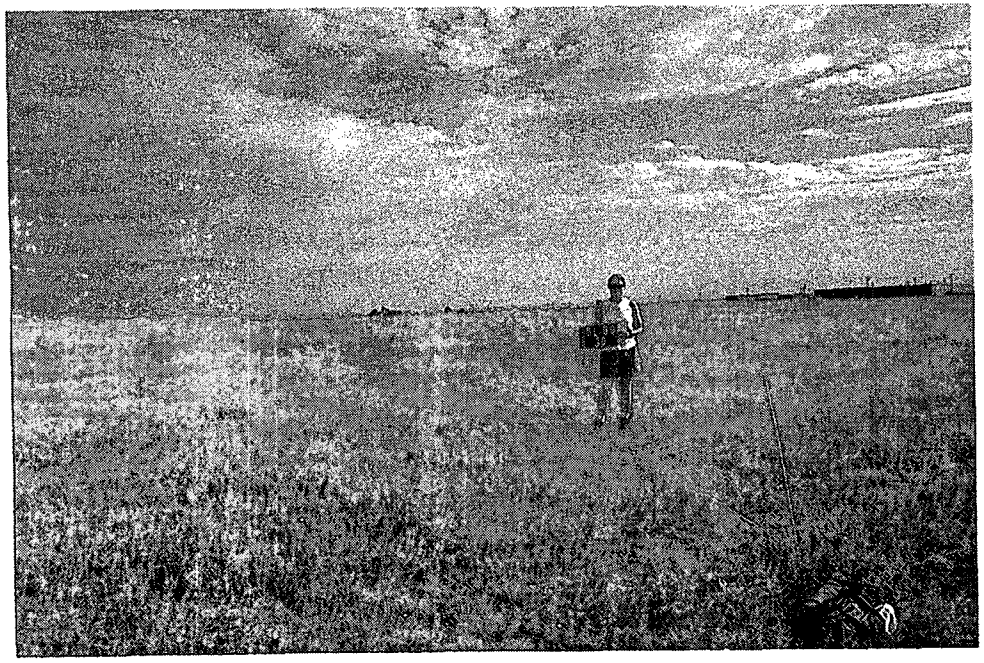
Photograph 36. 1999 Bluestem Grassland Study, Sample 27.



Photograph 37. 1999 Bluestem Grassland Study, Sample 28.



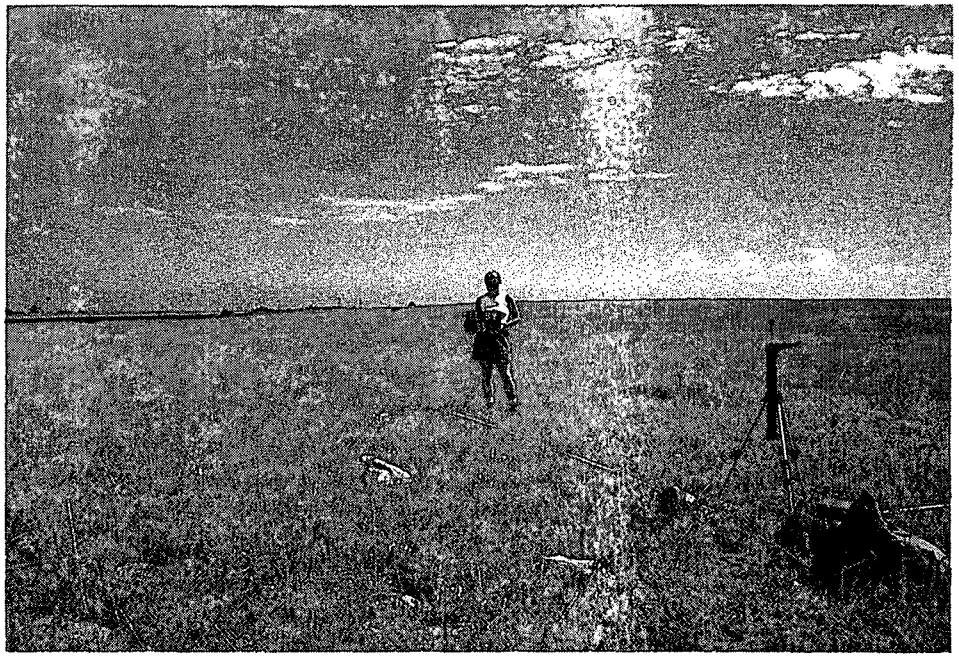
Photograph 38. 1999 Bluestem Grassland Study, Sample 29.



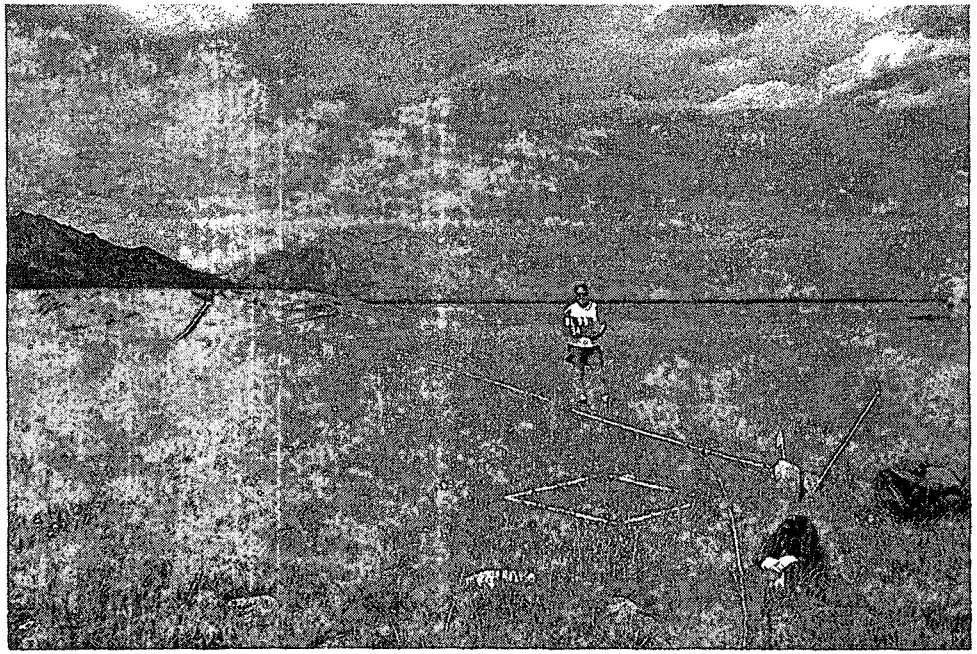
Photograph 39. 1999 Bluestem Grassland Study, Sample 30.

Photograph 40. 1999 Bluestem Grassland Study, Sample 31.

Photograph 41. 1999 Bluestem Grassland Study, Sample 32.



Photograph 42. 1999 Bluestem Grassland Study, Sample 33.



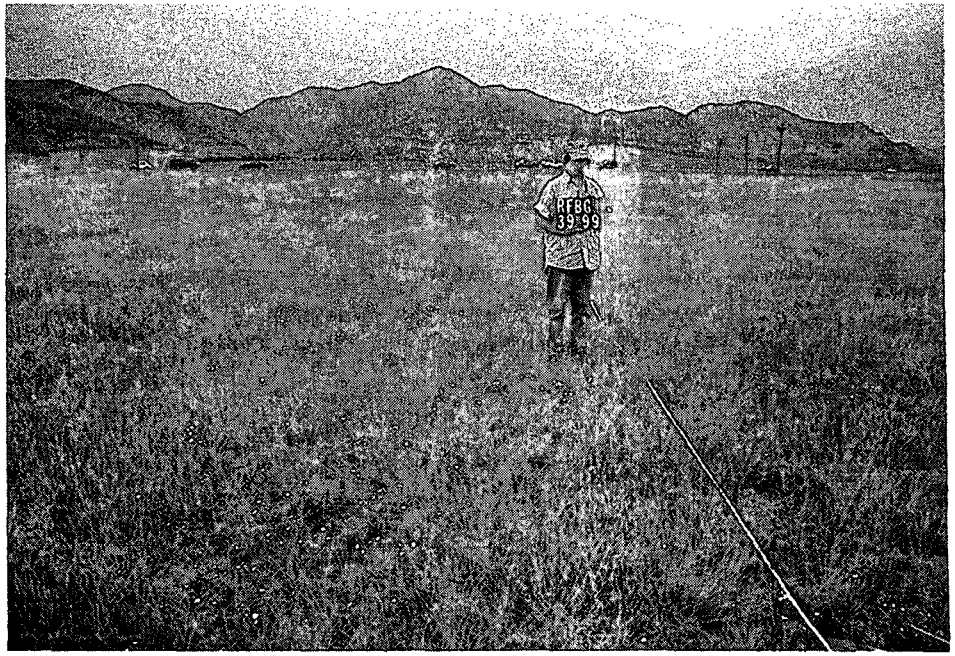
Photograph 43. 1999 Bluestem Grassland Study, Sample 34.

Photograph 44. 1999 Bluestem Grassland Study, Sample 35.

Photograph 45. 1999 Bluestem Grassland Study, Sample 36.

Photograph 46. 1999 Bluestem Grassland Study, Sample 37.

Photograph 47. 1999 Bluestem Grassland Study, Sample 38.



Photograph 48. 1999 Bluestem Grassland Study, Sample 39.