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EFFECTS OF ENVIRONMENTAL STRESSES ON A SHORTGRASS PRAIRIE ECOSYSTEM, 1970 AND 1971

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ABSTRACT

This report presents 1970 and 1971 data from water and nitrogen stress experiments on the Pawnee Site. Results for aboveground herbage dynamics for 1970 and 1971, belowground plant dynamics for 1971, species composition, basal cover, small mammal species composition, soil water, and water budgets are presented.

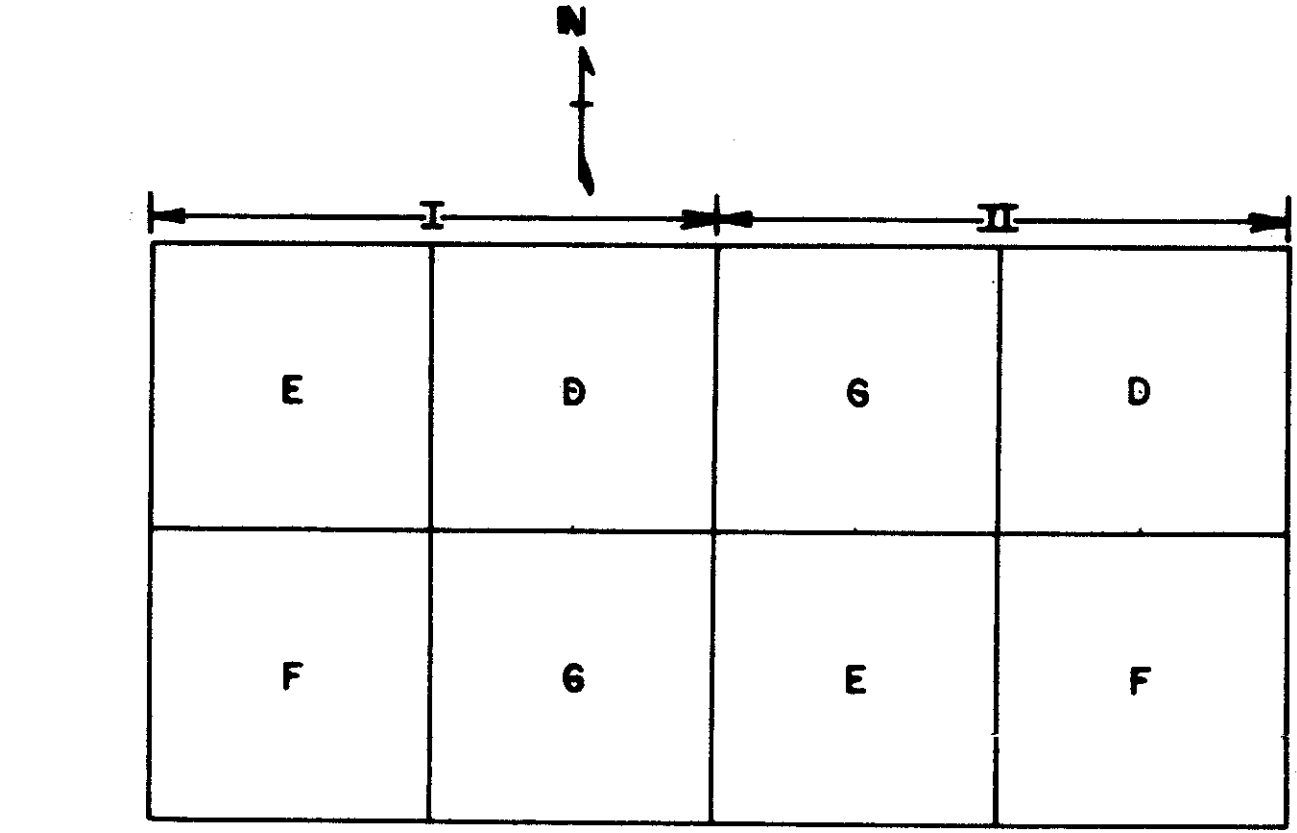
INTRODUCTION

The application of environmental stresses[1/] to ecological systems is an efficient approach to the problem of studying the interrelationships of structure and function in these systems as well as providing a statistically designed framework for testing hypotheses concerning these stresses. Two of the most important stresses influencing the shortgrass prairie are those of water and nitrogen effects on fertility.

Cosper and Thomas (1961) reported significant changes in the primary producers after application of 160 lb./acre of nitrogen and supplemental water by means of water spreaders. Forage production was increased 63% and some weedy species increased markedly. Klages and Ryerson (1965) found that an application of 100 lb./acre of nitrogen and additional water increased dry matter yield of the primary producers, but did not influence species composition during the 3 years of treatment. Subsequently, 2 dry years influenced residual effects of the treatments. Reduced yields were recorded for watered plots, and fertilized plots had an increase in undesirable species. Species composition was changed for both treatments.

To study the response of the structure and its relationship to function in the shortgrass prairie on the Pawnee Site, an ecosystem stress project was initiated in 1970 (Sims et al., 1971). The two environmental stresses applied to the system were the addition of nitrogen and supplemental water. Four treatment combinations of the two stresses are currently being investigated: control, supplemental water, nitrogen, and supplemental water and nitrogen. Fig. 1 shows the layout of the experimental area.

1/ The term "stress" is used in this report to connote environmental conditions other than those that the system evolved and normally functions under.



Treatments

- D- Control
- E- Supplemental water
- F- Nitrogen
- G- Supplemental water and nitrogen

Fig. 1. System stress study area, treatment, and replication location.

The purpose of the report is to present the data that have been collected to date on above- and belowground herbage dynamics, species composition, and small mammal populations.

ENVIRONMENTAL STRESSES

The nitrogen stress to the system consisted of 150 kg/ha of actual nitrogen applied in a single application. The objective of this stress is to maintain a difference of approximately 50 kg/ha of mineral nitrogen between the nitrogen and control plots. The treatment will be repeated on a yearly basis as often as is needed to maintain the stress.

The objective of the water stress is to maintain a lower limit on soil water potential of -0.80 bars throughout the growing season. Soil water potential was monitored at a depth of 12 cm by three tensiometers in each water-stressed plot. Tensiometers were read each morning and all additions of water were carried out at night.

METHODS

Herbage Dynamics

Above- and belowground plant yield was sampled on all stress plots during 1970 and 1971. The water stress, however, was not applied in the 1970 season. During 1970 samples were collected on 10 dates and on 6 dates in 1971. The belowground data for the 1970 season have not been processed yet.

Aboveground yield was sampled by clipping five .25-m^2 quadrats in each treatment replicate on each sample date in 1970. All species were separated in the field, and litter was collected by raking the soil surface by hand.

Belowground plant parts were sampled by removing soil cores from within the clipped quadrats. The number of cores collected per quadrat was dependent upon the depth to which they were collected.

During the 1971 growing season aboveground yield was sampled by a combination of harvesting and weight estimation. On each sample date 12 circular quadrats (2 m^2 in area) were clipped per treatment. Nested within each 2-m^2 quadrat was a 0.5-m^2 quadrat. The data from the two quadrat sizes were kept separate. All species and litter were removed from the 0.5-m^2 q-adrat, and forbs, shrubs, bunchgrasses, and cacti were clipped from the 2-m^2 quadrat. All clipped material was separated by species in the field. Litter was collected with an electric vacuum cleaner. In addition to harvesting, a number of quadrats were weight-estimated on each sample date. On the first two sample dates 24 quadrats were estimated per treatment. Of these, 12 quadrats were to be harvested on the next sample date. Previous to the July 13 sample date, it was determined that more estimated quadrats were desirable; therefore, 80 permanent quadrats (0.5 m^2 in area) that were to be estimated on each harvest date were located in each treatment.

Belowground plant parts were sampled by removing soil cores from each of the clipped quadrats. Complete sets of root samples (all quadrats for all treatments) were collected for the June 1, July 13, and September 2 sample dates. On the remaining dates varying numbers of cores were collected, but none constituted a full sample. Cores were washed over a 32-mesh sieve (0.5-mm openings), oven-dried, weighed, ashed, and weighed again to correct for any mineral material not removed by washing. Cores were taken to a depth of 60 cm, or to a point of appreciable resistance to a gasoline engine-powered jackhammer driving a 5-cm diameter soil tube on March 25,

June 1, and September 2. Cores (10-cm deep and 7.5-cm diameter) were taken on the remainder of the sample dates.

Estimates of the percentage of green and brown plant material on all plant species were made by visual estimation of percent green, percent this year's brown, and percent previous year's brown. These data are reported by Dickinson (1972).

Species Composition

Phytosociological data were collected during the 1971 growing season to characterize the various plots and treatments and to provide a basis against which subsequent data can be compared to determine changes over time. Some 500 points per plot of 1000 points per treatment were taken for basal cover, using a 10-point frame. At the same time and position that a set of 10 points was taken, a square quadrat (.25 m^2 in area) was counted for density and frequency. There were 50 quadrats counted per plot. Sampling points were selected to obtain a uniform coverage for each 1-ha plot. Basal hits were recorded for all species hit as well as bare ground and litter. Density counts excluded *Bouteloua gracilis*, *Carex heliophila*, and *Vulpia octoflora*. Frequency was recorded for all species except *Bouteloua gracilis*.

Small Mammals

Small mammal sampling was begun on the treatment areas on July 29, 1971. Three trapping periods were completed during 1971. They were July 29 to August 3, August 25 to August 29, and October 24 to October 28. On each 1-ha plot a 6 × 7 grid of live traps was established, making a total of 84 traps per treatment and 336 traps for the total area (8 ha). Trapping

and marking procedures were identical to those used for the routine small mammal sampling carried out on the Pawnee Site.

Soil Water

Soil water content (% by volume) was determined at intervals throughout the growing season by means of a neutron probe. Three samples per 1-ha plot at a depth of 150 cm were collected.

RESULTS

Water-stressed Treatment

The water-stressed treatment was not applied during the 1970 growing season. Addition of water was begun on May 15, 1971, and continued until August 15 when the treatment was terminated because of inadequate water (Table 1). Rainfall during this period was 1.73 inches, and the average amounts of supplemental water were 16.40 inches for the water-stressed treatment and 20.15 inches for the water-and-nitrogen stressed treatment. Annual precipitation for 1971 was 9.30 inches.

Nitrogen-stressed Treatment

Nitrate nitrogen levels in the various treatments on October 1, 1971, are presented in Table 2. From these data a decision was made to reapply the nitrogen treatment to the water-and-nitrogen stressed plots but not to the nitrogen-stressed plots.

Herbage Dynamics

1970. Above- and belowground yield was sampled on 10 dates during 1970. The data for belowground yield have not been analyzed to date. The aboveground data are presented in Tables 3 through 6. These data were

Table 1. Summary of water stress and treatment. Measurements of applied water and precipitation in .01 inches and tensiometer readings in negative .01 bars.

Date	Water-Stressed												Water-and-Nitrogen Stressed												Natural Precipitation
	Replicate 1						Replicate 2						Replicate 1						Replicate 2						
	Irrigation Gage			Tensiometer			Irrigation Gage			Tensiometer			Irrigation Gage			Tensiometer			Irrigation Gage			Tensiometer			
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
May 15	12	12	10				32	42	24				32	28	18				34	30	26				5
16	42	38	48				14	11	30				20	21	21				18	16	28				
19	29	38	32				17	32	33				32	40	32										
20				22	22	10				19	20					19	19					22	28	26	
21	33	30	22	8	8	6	25	30	26	12	15		30	34	26	22	12		28	34	24	14	10	23	
24				6	5	5				7	5					3	3					9	5	17	64
31				20	20	20				26	27					55	32					26	22	46	5
June 1	38	18	19	20	20	22	29	24	26	29	32		39	24	25	62	42		35	33	27	29	29	45	
2	10	12	10	14	22	23	7	10	16	30	32		8	9	16	66	45		12	15	16	27	24	48	
3	29	33	27	26	27	20	17	21	32	38	25		14	17	25	69	54		27	31	32	27	26	50	
6	91	67	65	8	34	16	60	26	51	49	14		53	36	32	0	65		86	48	48	10	37	29	2
8	57	44	44	2	34	7	48	56	48	50	12		38	52	47				64	60	49	3	34	17	
10				10	19	14				20	11											11	13	28	
12				16	32	21				30	20											16	21	45	
14	32	30	25	18	43	30	41	40	31	43	26		33	44	28				40	48	31	17	34	66	7
15	30	33	26	10	45	22	35	28	32	37	17		36	33	33				38	42	33	9	12	62	18
16				14	46	25				27	18											12	15	61	
17	30	32	19	12	42	33	28	20	14	30	26		28	29	17				32	30	20	11	23	70	
18	32	24	23	5	45	28	46	44	25	10	26		48	50	42	56	58		58	48	42	2	14	74	
19	37	41	31	4	5	8	43	48	26	0	20		49	44	38	56	64		42	56	28	1	7	28	
21				13	21	21				13	28					53	68					11	15	69	
22	36	48	43	11	15	19	48	54	30	3	39		55	44	47	56	69		52	62	38	2	10	78	
23	15	12	13	12	18	20	16	10	11	7	26		94	64	56	56	69		80	94	68	2	5	75	
24	12	20	14	16	27	30	16	12	8	12	37		87	58	48	53	77		57	80	92	2	5	24	
25	22	27	18	18	30	38	18	22	11	14	56		50	82	34	2	62		46	62	41	1	2	14	
26	21	32	30				35	26	17				34	46	32				44	52	34				
27	31	50	46				38	30	20				46	50	36				43	60	33				
28	8	11	11	32	38	22	28	15	22	10	50		64	30	34	3	8		30	24	34	2	2	16	
29	31	42	42	37	31	9	51	37	46	6	8					9	13					8	8	23	
30				27	20	12				10	13		78	38	42	2	8		67	54	78	2	5	25	2
July 1	14	19	10	31	22	17	11	12	6	12	19		13	21	10	9	11		18	13	9	2	5	30	
2				35	29	21	56	64	54	3	7					12	19		47	53	81	2	3	14	
4	38	62	42	18	14	16				12	18		49	58	40	9	11	25				11	13	29	
6	11	8	4	39	25	34	32	50	36	8	18		10	16	10	12	18	61	44	52	29	9	8	50	
7	37	58	41	32	13	32				10	21		59	60	46		4	66				11	11	60	
8				21	13	25	65	65	46	0	5					9	67		60	76	68	0	3	68	
9	42	44	38	5	3	8				5	10		36	70	58	0	0	68				5	6	70	
10				13	13	7	68	58	43	5	6					12	10	60	67	68	40	7	8	72	
11	53	64	35	10	8	14				10	13		62	60	60	8	6	50				12	10	73	
12				10	10	16				13	16					8	8	35				11	12	57	
13				14	12	29	76	62	48	0	4					12	10	46	72	80	51	0	2	1	
14	50	80	84	9	2	4				5	8		76	66	60	0	0	58				6	7	2	
15							62	52	44										72	60	44				
16	45	57	34	10	0	7				3	6		82	74	56	0	0	52				10	7	12	
17				20	7	18	51	36	30	3	10					9	6	42	64	56	58	10	2	7	
18	52	45	33	13	2	13				8	10		64	80	54	2	0	48				11	10	15	
19				9	0	11	49	43	34	0	2					0	2	21	85	100	80	1	0	2	10
20				15	5	15				6	8					4	2	28				7	2	7	
21				18	7	21				8	10					8	8	41				10		12	
22	54	38	44	10	0	1				4	8		49	41	58	0	0	45				5	5	10	4
23				14	7	9	84	51	40	1	5					7	8	10	84	64	50	5	3	5	6
24	57	70	54	5	2	13							74	68	52	3	2	8							3
25				15	2	9	66	69	105	0	3					5	3	10	80	46	50	3	1	3	
26	60	49	39	7	0	0				0	4		35	76	66	0	4	0				5	1		4
28				15	6	7	56	64	61	0	1					5	5	10	52	49	43	3	0	2	
29	32	44	77	8	0	0				0	2		67	58	55	0	0	0				5	0	5	7
30				10	1	0	64	61	63	0	2					0	0	0	46	76	51	0	0	0	
31				15	4	6				2	8					3	3	8				7	0	6	
August 1	69	30	33	8	0	0				9	6		75	44	31	0	0	10				9	2	10	
2				12	2	3	60	54	20	0	5					0	3	10	51	55	60	0	0	0	3
3	63	46	36	8	0	0				1	8		76	64	48	0	0	10				8	0	8	
4				16	5	10	50	31	18	5	10					7	7	11	44	53	40	8	2	5	
5	56	74	41	10	2	2				6	7		66	63	47	0	0	2				9	2	9	
6				15	5	6	51	57	34	0	2					5	5	9	36	36	74	6	0	2	
7	45	75	50	10	0	0				4	7		70	63	50	0	0	2				10	2	9	
8							52	51	28										45	50	76				
9	46	53	44	12	1	3				3	8		69	50	39	0	5	5				10	3	9	
10				12	3	2	74	49	42	0	1					0	3	6	62	71	54	1	0	2	10
11	19	30	21	12	3	5				5	9		32	64	52	2	2	2				12	3	9	
12				16	5	7	49	46	40	0	5					6	5	8	24	28	21	7	2	7	
13	47	42	20	11	2	2				3	6		66	62	32	0	1	3				10	4	10	
14				12	3	2	53	60	24	0	1					0	3	7	40	53	58	2	0	0	
15	40	55	46										52	66	41										
16				14	2	3	46	61	60	0	1					2	2	5	33	35	53	3	0	3	
17				16	7	9				3	5					6	3	12				9	2	10	
18				22	11	14				9	9					11	10	19				15	9	14	
19				26	12	14				10	10					13	12	27				17	10	16	
20				36	15	9				16	14					18	16	40				22	17	19	
25				68	46	36				36	32					48	40	66					58	40	18
26				67	56	22				58	41					55	48	66				68	60	50	
Total	15.94						16.85						19.76						20.54						1.73

Table 2. Nitrate nitrogen (ppm NO_3^-) by treatment and replicate for samples taken on October 1, 1971.

Treatment	Replicate	Depth							Total	
		0-5 cm	5-10 cm	10-20 cm	20-30 cm	30-40 cm	40-60 cm	60-80 cm	(ppm)	(kg/ha)
Control	1	0.8	1.2	0.8	0.6	0.4	0.4	0.2	4.4	4.8
	2	2.4	1.6	1.4	1.0	0.6	0.6	0.4	8.0	8.4
Water-Stressed	1	0.8	0.6	0.6	0.6	0.4	0.4	0.4	3.8	4.7
	2	0.8	0.6	0.4	0.4	0.4	0.2	0.2	3.0	3.2
Nitrogen-Stressed	1	3.0	2.4	4.6	6.2	6.0	4.2	1.0	27.4	35.9
	2	6.6	4.5	5.8	8.5	6.6	4.3	2.5	38.8	48.1
Water-and-Nitrogen Stressed	1	1.2	0.8	0.6	0.6	0.6	0.8	0.0	2.6	5.3
	2	0.4	0.4	0.4	0.2	0.2	0.0	0.2	1.6	1.9

Table 3. Mean yield (g/m^2) and standard deviation of major species and species groups for 1970 for the control treatment.

Species	April 26		May 12		May 26		June 6		June 22		July 6	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	42.83	25.38	29.02	26.99	62.61	51.75	9.25	12.11	37.70	39.18	42.64	39.11
BOGR	24.44	9.21	37.33	15.11	53.17	20.64	48.78	12.04	48.34	20.52	45.23	10.93
CAHE	1.81	1.93	4.06	8.90	4.18	5.44	2.63	2.89	3.64	7.41	4.39	5.02
CHLE	--	--	.02	--	.01	--	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	--	--	--	--
GUSA	1.50	3.00	--	--	20.57	45.99	4.26	9.52	9.15	20.45	10.17	19.93
LARE	--	--	--	--	.15	.33	.06	.10	.04	--	--	--
LEDE	--	--	--	--	--	--	.06	--	.06	.10	.14	.20
OEAL	--	--	--	--	--	--	--	--	--	--	--	--
OPPO	1.72	3.76	8.76	11.95	64.45	89.14	13.95	21.40	7.63	16.86	16.44	28.54
PLPU	--	--	--	--	.06	--	.36	.31	.08	.10	.25	.26
SAKA	--	--	.01	--	--	--	--	--	--	--	.02	--
SPCO	.04	--	1.02	.60	.25	.28	2.20	1.68	3.89	3.87	1.32	.90
THTR	--	--	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	--	--	1.72	2.24	1.63	1.73	.87	1.04	14.98	25.35	1.84	2.43
Other[a/]												
CSG	4.50	9.31	.96	1.52	5.74	12.84	.80	1.80	.66	1.47	--	--
WSG	11.62	11.90	17.14	9.22	1.89	2.05	6.03	10.42	29.18	23.99	15.87	7.26
CSF	.12	.22	.06	.06	--	--	.02	--	--	--	.73	.73
WSF	.02	--	.76	.88	.77	1.04	.08	.12	.68	.33	.62	.70
SUC	--	--	--	--	--	--	.19	.42	--	--	6.97	13.85
SHRUBS	3.54	7.92	--	--	--	--	--	--	.35	.79	--	--
TOTAL	92.17	43.07	92.34	24.52	215.49	123.76	89.76	34.86	156.38	44.34	146.64	78.33
LITR	208.26	264.95	189.67	100.05	203.94	153.51	114.05	55.13	197.22	170.85	205.11	78.37

Table 3 (continued).

Species	July 23		August 4		August 18		August 31		September 16	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	31.10	23.04	24.78	23.00	37.90	47.86	85.51	55.48	55.65	55.65
BOGR	46.28	19.77	38.58	5.63	34.76	12.30	37.46	18.38	29.23	13.92
CAHE	2.76	4.15	2.40	2.10	1.60	1.42	1.05	1.61	.90	.68
CHLE	--	--	.05	.10	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	--	--
GUSA	3.22	7.19	2.42	5.42	.03	--	1.53	3.43	23.02	44.53
LARE	--	--	.01	--	--	--	--	--	--	--
LEDE	.02	--	1.40	3.10	.24	.39	.03	--	.12	.17
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	6.85	12.67	25.56	42.00	23.22	27.25	38.84	61.78	105.50	153.04
PLPU	.31	.28	.36	.67	.16	.14	.24	.24	.92	1.23
SAKA	--	--	--	--	--	--	--	--	.03	--
SPCO	1.32	1.73	1.42	1.21	.98	.81	.88	.56	1.52	1.06
THTR	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	4.41	5.60	3.39	4.52	3.23	6.08	1.34	2.13	1.40	2.84
Other[a/]										
CSG	.44	.97	.58	1.30	1.23	2.75	--	--	3.13	3.50
WSG	12.78	11.01	14.10	13.84	18.14	15.06	13.29	16.01	4.30	3.55
CSF	--	--	--	--	--	--	--	--	.06	.14
WSF	.36	.34	3.59	3.46	10.19	22.78	13.51	16.94	.04	.10
SUC	1.55	2.06	.16	.35	.86	1.91	.16	.36	3.14	5.48
SHRUBS	--	--	--	--	15.62	34.92	6.65	14.87	--	--
TOTAL	111.42	19.06	118.81	50.40	148.15	51.67	200.50	71.00	228.95	147.52
LITR	109.30	79.79	178.48	176.18	231.94	161.63	165.47	71.30	150.68	102.84

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 4. Mean yield (g/m^2) and standard deviation of major species and species of groups for 1970 for the water-stressed treatment.

Species	April 26		May 12		May 26		June 6		June 22		July 6	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	15.55	16.14	40.62	45.19	14.83	16.53	38.27	50.61	27.20	28.83	47.48	54.98
BOGR	32.07	7.57	49.80	9.91	46.01	7.59	58.22	5.13	56.56	12.74	50.50	16.88
CAHE	.53	.70	1.50	2.21	.83	1.59	3.14	3.43	1.15	1.32	3.14	1.44
CHLE	--	--	.01	--	--	--	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	--	--	--	--
GUSA	5.18	9.12	.08	.17	.24	.55	.37	.83	8.02	17.92	1.59	13.84
LARE	--	--	--	--	.02	--	.03	--	.08	.10	.04	.10
LEDE	--	--	--	--	--	--	.10	.10	.22	.22	.14	.30
OEAL	--	--	--	--	--	--	--	--	--	--	--	--
OPPO	37.54	57.03	8.11	16.55	19.51	26.83	49.91	63.41	15.72	32.66	57.19	96.02
PLPU	--	--	--	--	.07	--	.24	.17	1.08	.86	.50	.99
SAKA	--	--	--	--	--	--	--	--	.01	--	.04	.10
SPCO	.90	1.80	.57	.65	.81	.46	2.48	3.01	2.04	.91	3.78	3.81
THTR	--	--	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	--	--	2.20	2.45	1.83	2.24	11.00	16.14	8.20	10.63	5.80	7.12
Other[a/]												
CSG	.01	--	.04	.10	--	--	.01	--	--	--	.57	1.28
WSG	5.70	5.32	.42	.93	.02	--	10.24	14.96	3.24	7.25	1.11	1.06
CSF	.16	.14	.20	.17	.13	.12	.36	.31	.10	.22	--	--
WSF	1.06	.69	.83	1.19	.24	.31	5.20	6.50	6.61	5.99	8.25	6.30
SUC	1.74	3.89	--	--	.88	1.98	--	--	.13	.24	.19	.42
SHRUBS	--	--	--	--	1.44	3.23	.92	2.06	2.65	5.92	--	--
TOTAL	100.42	57.85	104.36	47.63	87.00	23.81	180.49	82.96	133.09	36.96	180.33	94.43
LITR	140.42	175.69	168.33	110.28	169.01	102.27	163.86	112.06	145.46	63.96	300.52	338.23

Table 4 (continued).

Species	July 23		August 4		August 18		August 31		September 16	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	19.84	17.99	52.88	46.16	66.81	52.98	56.92	75.86	22.29	20.59
BOGR	49.39	17.78	42.09	7.89	37.44	9.21	43.99	13.65	50.12	7.18
CAHE	.77	1.31	2.95	3.75	1.69	2.32	1.86	2.63	1.99	3.18
CHLE	--	--	--	--	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	--	--
GUSA	--	--	7.07	10.56	1.28	2.86	6.06	10.32	--	--
LARE	--	--	--	--	.02	--	.01	--	.01	--
LEDE	.17	.17	.08	.10	.02	--	.03	--	.02	--
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	30.32	47.01	4.06	5.94	2.23	3.03	31.89	34.76	60.82	93.74
PLPU	.24	.22	.21	.24	.09	.14	.27	.30	.52	.78
SAKA	--	--	--	--	--	--	.40	.89	.01	--
SPCO	2.86	1.44	1.60	1.25	2.52	2.67	1.54	1.34	.76	.84
THTR	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	1.96	3.79	1.59	2.30	2.19	3.75	1.10	1.46	2.28	3.31
Other[a/]										
CSG	1.08	2.41	--	--	--	--	--	--	--	--
WSG	3.02	1.88	1.10	2.47	4.05	3.92	1.31	2.92	1.38	1.88
CSF	.37	.83	.06	.14	--	--	.02	--	.28	.62
WSF	.27	.37	6.40	5.00	1.45	1.08	.02	--	.27	.20
SUC	.72	1.27	1.37	2.24	10.48	23.22	2.19	3.48	2.89	6.39
SHRUBS	--	--	--	--	--	--	.69	1.54	6.80	15.20
TOTAL	111.01	52.46	121.46	43.91	130.33	43.00	148.32	81.06	150.72	98.88
LITR	152.17	85.17	196.74	213.73	244.84	168.49	203.29	146.84	60.06	57.18

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 5. Mean yield (g/m^2) and standard deviation for the major species and species groups for 1970 for the nitrogen-stressed treatment.

Species	April 26		May 12		May 26		June 6		June 22		July 6	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	23.80	16.39	12.52	12.66	16.26	18.71	64.11	78.46	81.46	49.61	37.04	29.00
BOGR	36.79	5.50	48.30	9.47	53.06	14.61	74.93	21.62	62.76	21.40	71.90	12.85
CAHE	1.71	2.63	2.27	3.50	1.70	2.14	3.48	7.44	4.37	9.36	.99	1.59
CHLE	--	--	--	--	--	--	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	--	--	--	--
GUSA	.44	.97	3.68	8.23	.28	.61	1.30	2.91	26.77	44.87	--	--
LARE	--	--	--	--	.10	.17	.14	.20	.20	.24	.12	--
LEDE	--	--	--	--	--	--	.09	--	.28	.20	.32	.20
OEAL	--	--	--	--	--	--	--	--	--	--	--	--
OPPO	28.31	45.43	66.94	60.01	11.34	18.92	46.08	59.01	11.31	20.33	6.87	12.42
PLPU	--	--	--	--	.04	--	.32	.48	.23	.49	1.56	1.82
SAKA	--	--	--	--	--	--	--	--	.10	.14	.26	.53
SPCO	.02	--	.50	.45	.75	.51	1.64	1.40	3.94	4.25	1.07	.91
THTR	--	--	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	--	--	.64	.87	1.51	1.68	2.65	2.09	3.51	5.21	1.75	2.19
Other[a/]												
CSG	--	--	.08	.17	--	--	2.08	4.66	--	--	--	--
WSG	1.22	2.74	1.67	3.01	4.69	6.47	3.86	4.48	4.19	9.36	--	--
CSF	.02	--	.06	--	.01	--	--	--	--	--	.04	.10
WSF	.74	1.15	.11	.14	.31	.70	.46	.26	.36	.36	.92	.90
SUC	.21	.47	3.57	5.68	2.16	4.83	1.23	1.94	--	--	1.17	2.62
SHRUBS	3.67	6.86	1.44	3.22	--	--	--	--	--	--	4.87	10.89
TOTAL	96.92	53.56	141.80	69.51	92.48	36.42	202.45	93.70	199.48	58.66	128.94	39.31
LITR	118.76	61.73	170.83	86.91	167.88	121.71	243.00	183.49	232.18	179.73	148.56	61.38

Table 5 (continued).

Species	July 23		August 4		August 18		August 31		September 16	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	43.05	53.32	39.62	33.66	22.87	29.40	25.30	23.00	45.98	49.53
BOGR	62.62	11.82	56.94	12.59	58.81	15.93	61.86	3.91	50.71	14.44
CAHE	2.61	2.82	2.24	2.48	.62	.56	.40	.46	1.01	.73
CHLE	--	--	--	--	--	--	.05	.10	--	--
CRMI	--	--	--	--	--	--	--	--	--	--
GUSA	3.26	6.25	--	--	9.53	21.31	1.00	2.23	14.11	31.55
LARE	--	--	--	--	--	--	--	--	.02	--
LEDE	.12	.14	.06	.10	.43	.59	.05	.10	.03	--
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	46.71	61.82	52.89	61.30	20.05	37.74	18.28	31.90	65.78	110.25
PLPU	.70	.85	.81	.56	.34	.22	.27	.39	1.04	1.86
SAKA	.50	.92	--	--	.22	.35	.65	1.61	.45	.41
SPCO	.80	1.16	.59	.72	1.90	2.85	1.04	.99	2.21	1.91
THTR	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	1.17	.90	1.95	1.57	.91	1.05	2.24	2.63	1.45	1.41
Other[a/]										
CSG	--	--	1.29	2.67	--	--	.16	.36	--	--
WSG	.08	.20	2.65	5.36	4.35	4.91	3.09	3.22	--	--
CSF	.02	--	.25	.56	.08	.20	--	--	.14	.32
WSF	.75	1.07	.38	.84	--	--	2.34	2.42	.02	--
SUC	--	--	2.84	6.14	.34	.75	1.21	2.43	--	--
SHRUBS	1.00	1.98	--	--	10.07	22.51	--	--	--	--
TOTAL	164.09	95.48	162.50	64.38	130.60	74.39	117.92	46.30	183.04	104.36
LITR	152.39	66.08	176.78	169.66	106.32	56.37	141.22	84.52	202.38	291.44

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 6. Mean yield (g/m^2) and standard deviation for the major species and species groups for 1970 for the water-and-nigrogen stressed treatment.

Species	April 26		May 12		May 26		June 6		June 22		July 6	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	33.59	20.79	62.49	72.75	4.04	8.99	51.42	51.53	41.18	74.10	56.21	82.89
BOGR	28.86	9.63	41.99	16.85	39.09	8.92	77.32	12.94	61.90	12.03	61.04	7.56
CAHE	.90	1.28	1.93	2.86	2.07	3.22	1.54	2.12	5.38	4.51	1.50	2.01
CHLE	--	--	--	--	--	--	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	--	--	--	--
GUSA	15.00	.33	3.75	8.38	.83	1.77	--	--	--	--	.20	.44
LARE	--	--	--	--	--	--	.09	.14	.82	1.38	.16	.30
LEDE	--	--	--	--	--	--	.17	.17	1.01	1.21	.98	1.25
OEAL	--	--	--	--	--	--	--	--	.03	--	--	--
OPPO	38.55	55.85	19.47	24.13	34.56	49.41	7.47	13.95	2.96	6.32	--	--
PLPU	--	--	--	--	.08	.10	.30	.30	1.36	1.40	.76	1.05
SAKA	--	--	--	--	--	--	--	--	.04	--	.08	.14
SPCO	.02	--	1.14	1.20	.67	.73	3.02	5.09	2.26	1.62	1.62	1.50
THTR	--	--	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	--	--	1.35	2.49	2.16	2.72	2.59	2.78	10.23	8.65	2.46	2.29
Other[a/]												
CSG	1.00	1.75	1.90	2.99	2.08	3.32	--	--	--	--	--	--
WSG	4.42	9.88	1.40	3.12	--	--	--	--	20.28	31.47	1.54	1.15
CSF	.06	.10	.16	.13	.47	.48	.49	.56	--	--	.11	.17
WSF	3.01	4.72	.16	.10	.03	--	4.11	2.47	.23	.16	2.21	1.10
SUC	.29	.64	--	--	--	--	2.68	3.36	3.56	7.97	.10	.22
SHRUBS	--	--	2.90	6.48	--	--	--	--	--	--	--	--
TOTAL	110.85	51.00	138.65	78.27	88.98	47.00	151.29	56.82	151.54	68.26	128.97	76.90
LITR	98.55	70.66	332.51	379.81	175.09	134.97	185.54	138.04	237.42	298.39	131.42	118.15

Table 6 (continued).

Species	July 23		August 4		August 18		August 31		September 16	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	43.86	44.55	41.91	32.05	21.16	33.44	81.25	68.89	58.16	79.37
BOGR	64.18	14.56	54.06	17.55	47.54	15.27	42.94	11.46	61.82	12.83
CAHE	1.60	1.24	1.88	2.33	1.45	2.71	4.58	4.67	1.51	2.57
CHLE	--	--	--	--	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	--	--
GUSA	19.08	42.65	3.81	8.52	1.73	2.97	40.92	78.24	--	--
LARE	.04	.10	.03	--	.07	.10	.22	.49	.03	--
LEDE	.35	.30	.30	.33	.08	.10	.42	.84	.11	.20
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	.92	2.01	41.69	37.23	4.04	8.80	20.32	25.54	25.14	42.24
PLPU	.82	.73	.22	.24	.17	.10	.91	1.10	.17	.20
SAKA	.07	.10	.25	.40	.10	.14	.81	1.46	.52	1.12
SPCO	2.03	1.76	2.13	1.81	1.81	1.61	3.06	3.30	1.59	1.43
THTR	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	1.66	1.62	1.00	1.33	.57	1.06	2.84	3.68	2.50	3.71
Other[a/]										
CSG	.30	.68	.82	1.82	--	--	1.02	1.70	.34	.75
WSG	9.26	19.44	5.84	12.19	5.87	11.15	7.94	6.77	5.68	12.07
CSF	.05	.10	1.34	3.00	.18	.40	.19	.28	.36	.75
WSF	14.79	15.33	.58	.45	2.58	3.26	1.33	.20	--	--
SUC	.42	.88	.24	.54	2.38	5.22	.54	1.14	1.20	2.68
SHRUBS	--	--	--	--	--	--	--	--	1.19	1.95
TOTAL	159.44	61.25	156.18	50.31	89.75	31.70	209.33	102.15	160.64	88.07
LITR	79.84	45.34	133.93	153.90	136.36	103.56	153.15	128.99	81.71	74.95

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

collected under circumstances that require explanation to facilitate interpretation. The nitrogen-stressed treatment was begun in the spring of 1970, but the water-stressed treatment was not initiated until mid-August 1970, and approximately 85 mm of additional water was applied from the middle of August to mid-September. During this same period natural precipitation was 10.5 mm.

The seasonal course of total yield is shown in Fig. 2. Except for a few extreme points, there does not appear to be a significant difference among any of the treatments. A primary reason for this is the high variability of two species, *Artemisia frigida* and *Opuntia polyacantha*. Analysis of the data with these species removed may be necessary. Yield of blue grama (Fig. 3) was much less variable than total, and there appears to be a difference between the treatments receiving the nitrogen and those not receiving it.

1971. Above- and belowground plant yield was sampled on five dates during 1971. The aboveground data is presented in Tables 7 to 14 and the belowground data in Tables 15 to 22.

Total aboveground yield for the control treatment varied little throughout the period of measurement (Fig. 4). The water-stressed treatment was more variable and reached a peak in late July of 290 g/m^2. The nitrogen-stressed treatment reached its peak total yield earlier than the other treatments and remained on a plateau for a 3-week period, then declined fairly rapidly. The water-and-nitrogen stressed treatment did not reach its peak yield of 570 g/m^2 until early September. The addition of water and nitrogen appear to have an effect in deflecting total herbage production away from the normal state of the system. The system seems to

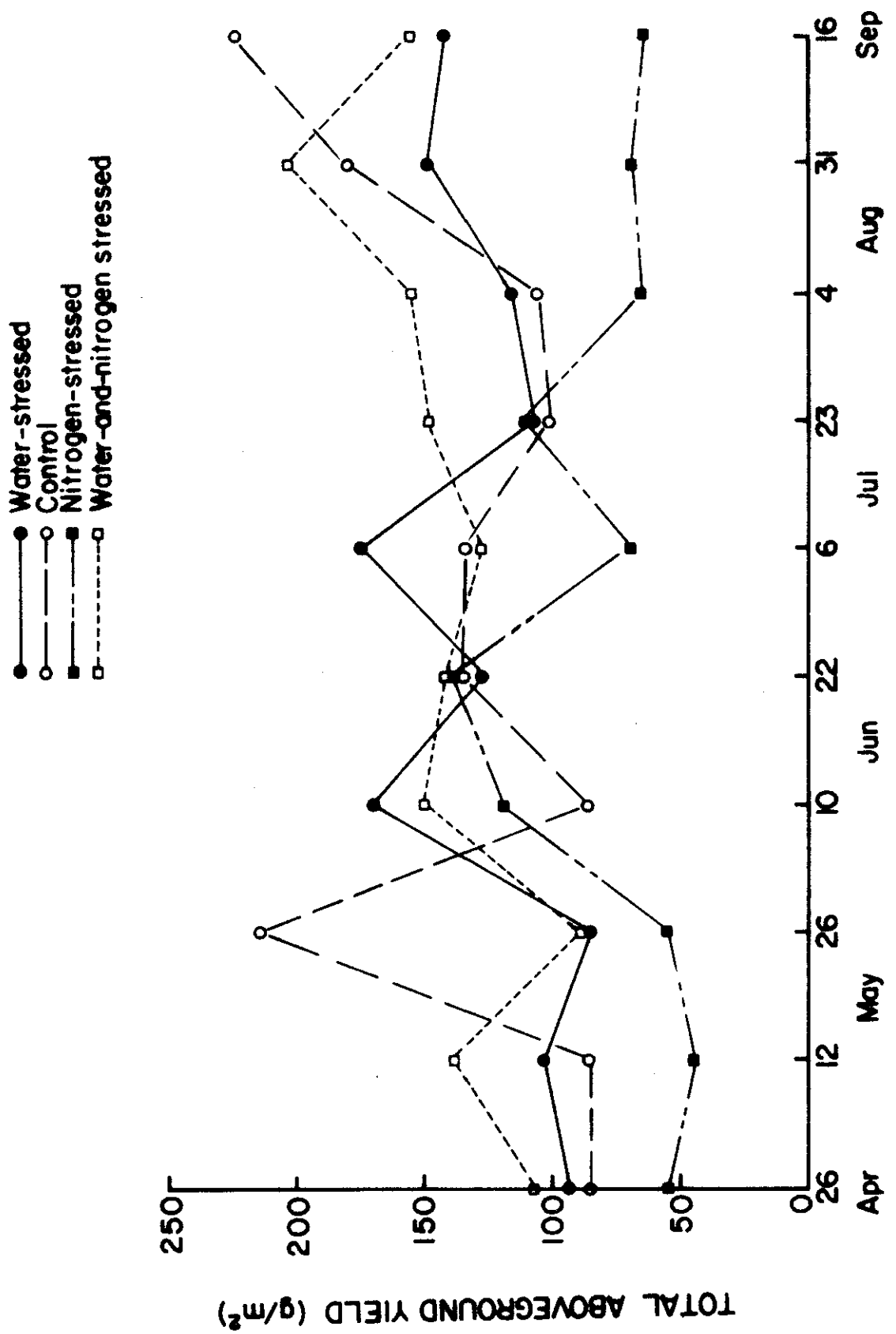


Fig. 2. Total yield dry weight by treatment for 1970.

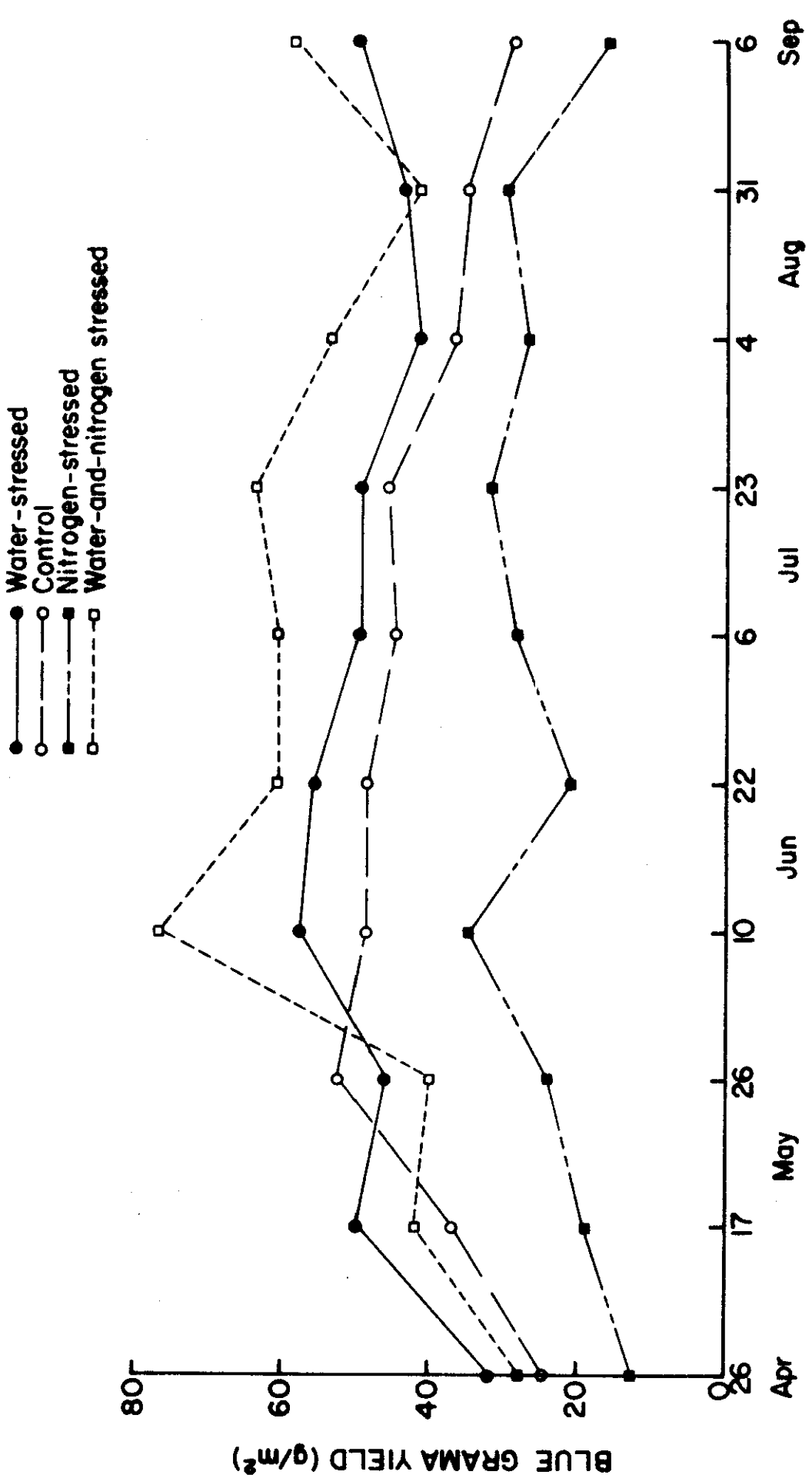


Fig. 3. Seasonal variation in blue grama dry weight by stress treatment for 1970.

Table 7. Mean yield (g/m^2) and standard deviation of major species and sepcies groups for 1971 for replicate 1 of the control treatment.

Species	April 24		May 27		July 20		September 8		December 16	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	56.85	26.98	54.07	49.27	55.23	35.26	44.27	41.13	79.27	59.96
BOGR	43.00	20.07	27.47	19.32	36.36	25.79	46.95	25.88	48.29	37.25
BUDA	--	--	26.74	28.21	11.62	20.01	--	--	--	--
CAHE	1.21	1.36	1.37	3.07	2.47	5.58	2.30	4.47	.90	1.37
CHLE	--	--	--	--	--	--	--	--	.01	--
CRMI	--	--	--	--	.01	.00	--	--	--	--
GUSA	14.56	20.77	13.02	19.18	9.69	11.25	14.22	19.80	--	--
LARE	--	--	.02	.00	.01	.00	--	--	.02	--
LEDE	--	--	.04	.00	.03	.00	.02	.00	.06	.01
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	57.75	72.86	10.41	8.23	12.65	13.00	20.63	14.03	16.36	25.75
PLPU	.09	.17	.08	.10	.11	.20	.11	.14	.11	.14
SAKA	--	--	--	--	--	--	--	--	.01	--
SPCO	.15	.26	.50	.67	1.31	.138	.48	.31	.26	.14
THTR	--	--	--	--	.04	.10	--	--	.03	.01
VUOC (FEOC)	--	--	2.08	1.97	4.48	4.84	.99	1.87	9.16	14.70
Other[a/]										
CSG	3.34	4.42	.22	.53	.86	1.34	.26	.31	1.36	3.07
WSG	.82	1.33	.01	.00	7.98	19.54	6.27	11.40	.06	2.34
CSF	.42	.31	.07	.00	--	--	--	--	.05	.01
WSF	.40	4.70	--	--	.38	.75	.01	.00	2.72	3.33
SUC	1.27	1.66	.01	.00	.77	1.23	--	--	.34	.82
SHRUBS	10.74	19.28	.49	1.21	.24	.44	1.17	1.93	--	--
TOTAL	190.60	85.38	136.60	63.62	144.24	55.20	137.68	55.75	159.01	76.75
LITR	238.10	96.72	258.58	104.43	265.09	190.13	120.22	52.09	354.72	237.93

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 8. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 2 of the control treatment.

Species	March 20		May 25		July 8		August 31		October 26	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	32.17	8.05	30.97	24.31	25.48	38.14	12.08	27.61	34.53	35.52
BOGR	61.33	95.09	34.21	14.18	49.68	23.81	45.06	22.85	51.61	16.04
BUDA	.33	.82	16.60	33.61	3.85	9.44	--	--	--	--
CAHE	1.21	2.65	3.34	5.94	8.23	10.68	.48	.99	.54	.95
CHLE	--	--	--	--	.02	.00	--	--	--	--
CRMI	--	--	--	--	.01	.00	--	--	--	--
GUSA	14.91	14.34	10.61	24.69	.96	2.35	1.15	3.91	--	--
LARE	--	--	.04	.00	.03	.00	--	--	.19	.35
LEDE	0.00	0.00	.39	.57	.93	1.19	.03	.10	.25	.40
OEAL	--	--	--	--	--	--	--	--	.01	--
OPPO	72.26	70.82	61.06	71.33	59.71	99.31	27.53	50.82	38.41	49.84
PLPU	--	--	.03	--	.18	.03	.02	--	.08	--
SAKA	.01	--	--	--	.05	.10	.02	.10	.03	--
SPCO	.22	.33	3.04	3.38	4.45	7.27	.44	.95	1.98	1.19
THTR	.06	.14	--	--	.16	.40	--	--	--	--
VUOC (FEOC)	--	--	3.20	6.30	1.13	1.97	.91	2.11	1.23	1.87
Other[a/]										
CSG	1.47	1.21	.65	1.24	.11	.28	.34	1.22	.99	1.72
WSG	19.45	28.76	.39	.43	5.37	13.47	.75	2.72	5.14	2.00
CSF	.02	--	.25	.31	.22	.33	.07	.22	.22	.33
WSF	--	--	.01	--	.15	.58	.11	.36	--	--
SUC	.57	1.11	2.92	3.70	.85	1.18	--	--	1.92	3.01
SHRUBS	--	--	.67	1.15	.42	1.02	--	--	.30	.73
TOTAL	204.01	123.15	168.38	87.88	161.99	111.06	88.99	62.43	137.43	63.45
LITR	287.17	170.41	123.01	35.08	453.52	179.65	255.02	108.57	261.07	154.47

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 9. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 1 of the water-stressed treatment.

Species	April 24		May 31		July 21		September 9		December 16	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	76.30	45.74	59.22	34.77	115.58	71.24	89.88	67.90	55.43	67.77
BOGR	43.90	11.69	29.91	18.41	25.69	17.89	83.40	23.99	66.58	15.55
BUDA	--	--	12.72	15.29	1.44	3.53	--	--	.69	16.96
CAHE	.65	.81	1.94	2.59	6.17	7.22	5.03	4.06	2.14	1.83
CHLE	--	--	--	--	--	--	--	--	--	--
CRMI	--	--	--	--	.02	.00	--	--	.01	--
GUSA	.03	--	9.35	8.78	4.29	7.97	12.65	16.14	4.01	6.55
LARE	--	--	.02	.00	.01	.00	--	--	--	--
LEDE	--	--	.27	.40	1.32	1.53	1.61	1.13	.44	.45
OEAL	--	--	--	--	.09	.22	.03	.00	--	--
OPPO	30.94	28.99	31.38	38.22	1.36	1.53	36.57	39.70	11.79	11.20
PLPU	.85	.37	.89	.69	29.40	31.71	5.99	3.26	3.15	2.35
SAKA	--	--	.01	.00	--	--	--	--	--	--
SPCO	.55	.77	1.53	.80	3.62	4.40	1.30	.77	.28	.22
THTR	--	--	1.07	1.56	5.96	10.89	4.79	4.53	4.75	4.25
VUOC (FEOC)	--	--	5.11	8.32	13.52	17.32	3.06	3.72	1.07	1.30
Other[a/]										
CSG	--	--	3.21	2.75	2.71	36.49	.11	.22	.10	.04
WSG	--	--	.68	1.19	20.81	30.23	4.42	5.17	3.26	5.58
CSF	.31	.33	24.50	4.31	.83	1.14	.16	.24	.10	.20
WSF	.47	.60	13.90	2.19	1.15	.29	1.05	2.05	3.31	4.46
SUC	4.45	4.16	1.38	2.14	3.37	6.56	--	--	.79	1.50
SHRUBS	.20	.63	.34	.61	1.11	2.60	8.17	12.08	.98	2.40
TOTAL	158.65	55.58	197.43	58.62	238.45	96.27	258.22	85.22	158.78	71.57
LITR	215.25	145.18	214.05	101.44	288.45	89.66	182.84	57.30	243.03	99.34

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 10. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 2 of the water-stressed treatment.

Species	March 20		May 26		July 13		September 2		November 26[a/]	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	10.24	19.65	52.03	46.26	100.97	60.79	92.58	88.95	98.24	6.90
BOGR	46.70	9.72	42.44	7.61	68.20	28.88	87.11	38.02	32.97	11.75
BUDA	.87	2.12	4.35	8.65	2.55	2.12	--	--	--	--
CAHE	1.80	3.06	5.56	8.24	14.13	18.81	1.42	2.66	--	--
CHLE	--	--	--	--	.01	--	--	--	--	--
CRMI	--	--	--	--	.01	--	--	--	--	--
GUSA	51.08	10.00	10.19	16.70	12.14	28.83	4.41	6.90	75.96	104.28
LARE	.01	--	.03	--	.05	.10	.07	.14	--	--
LEDE	.01	--	.25	.20	1.45	.99	.80	.75	.19	.17
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	58.19	41.33	35.61	54.81	49.68	57.44	10.71	15.65	94.23	55.01
PLPU	.02	--	1.18	1.12	3.15	2.01	9.94	8.89	.80	--
SAKA	.04	--	--	--	--	--	--	--	--	--
SPCO	.45	.54	3.94	3.72	2.45	1.87	.93	.56	.33	.47
THTR	--	--	.11	.26	.01	--	.02	--	--	--
VUOC (FEOC)	.35	.81	46.41	47.27	40.61	40.72	10.64	13.81	.25	.36
Other[b/]										
CSG	.01	--	--	--	--	--	.24	.69	.83	1.17
WSG	.08	.20	3.53	6.32	7.36	11.66	--	--	.05	.10
CSF	.03	--	.32	.57	.40	.01	.27	.28	.23	.26
WSF	.68	1.31	1.20	2.08	2.92	2.66	3.91	3.83	9.40	5.56
SUC	4.65	6.95	1.96	2.81	1.63	2.58	--	--	.42	.60
SHRUBS	3.16	81.41	2.27	3.38	35.22	5.05	6.43	3.90	.49	.69
TOTAL	178.37	94.77	211.38	89.09	342.94	104.21	229.48	99.71	314.39	118.83
LITR	169.07	116.49	194.76	130.02	269.07	122.69	171.76	70.09	307.52	82.13

a/ Based on two clipped quadrats.

b/ CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 11. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 1 of the nitrogen-stressed treatment.

Species	April 21		May 29		July 22		September 10		December 14	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	49.40	26.41	156.17	77.33	128.73	73.66	67.60	56.80	72.65	72.16
BOGR	38.40	28.10	36.55	21.22	65.91	27.04	33.02	18.30	42.45	15.31
BUDA	--	--	7.83	17.93	--	--	--	--	--	--
CAHE	2.17	4.27	7.06	11.16	2.01	4.60	.05	.10	.04	.10
CHLE	--	--	--	--	--	--	--	--	--	--
CRMI	--	--	--	--	--	--	--	--	.02	--
GUSA	3.68	4.86	3.14	6.57	2.67	4.63	8.72	12.24	2.85	4.35
LARE	--	--	.42	.42	.02	--	.07	.14	.07	--
LEDE	.46	.28	3.29	2.86	4.89	4.54	2.00	2.03	.76	.77
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	58.00	36.45	47.46	40.53	9.69	11.79	8.95	8.45	122.22	103.81
PLPU	.17	.17	1.49	1.31	.81	.63	.33	.35	.82	.62
SAKA	--	--	.06	--	.06	.14	.02	--	--	--
SPCO	.24	.17	2.50	.77	1.61	2.12	1.17	.95	.74	.58
THTR	--	--	.18	.24	.16	.26	--	--	.01	--
VUOC (FEOC)	--	--	46.57	72.99	36.90	43.36	9.89	13.57	5.69	7.45
Other[a/]										
CSG	--	--	.03	--	.55	.90	.71	1.74	--	--
WSG	.17	.42	--	--	--	--	.12	.30	--	--
CSF	.03	--	.75	.67	.07	.01	--	--	.06	.14
WSF	.47	.79	.13	.20	.72	1.50	.02	--	.09	.22
SUC	.08	.20	.17	.33	--	--	--	--	.22	.44
SHRUBS	.03	.10	--	--	1.60	3.19	7.37	18.05	4.24	10.39
TOTAL	153.30	53.46	313.80	117.90	256.40	90.87	140.04	65.58	252.93	169.70
LITR	232.13	186.88	295.83	250.22	335.21	281.38	285.98	264.92	242.67	100.49

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 12. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 2 of the nitrogen-stressed treatment.

Species	March 2		June 2		July 7		August 30		October 21	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	4.06	4.99	40.64	98.26	23.10	35.26	.67	1.63	22.23	22.49
BOGR	51.03	12.06	52.80	15.92	50.43	27.00	64.91	21.07	27.79	14.83
BUDA	--	--	--	--	14.50	22.05	--	--	10.31	22.80
CAHE	1.80	4.02	3.65	3.91	.10	.24	2.97	3.81	1.41	1.36
CHLE	--	--	--	--	.42	.28	.40	.31	.02	--
CRMI	--	--	.03	--	.17	.42	.02	--	.03	--
GUSA	4.60	5.88	.38	.93	14.13	16.99	9.12	9.47	7.46	15.50
LARE	.01	--	.06	.10	.15	.10	.01	--	.01	--
LEDE	.01	--	1.11	1.13	2.31	2.42	1.60	1.93	.93	1.2
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	27.73	30.25	45.07	36.84	89.04	100.25	29.54	34.95	17.58	26.70
PLPU	.03	--	.14	.20	.13	.14	.09	.10	.06	--
SAKA	1.01	2.43	.01	--	2.55	3.76	1.86	2.06	.22	.30
SPCO	.11	.17	3.11	2.56	4.04	2.64	3.54	3.49	6.66	4.54
THTR	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	--	--	36.80	48.61	9.77	19.72	13.39	29.53	13.95	23.90
Other[a/]										
CSG	.30	.72	3.48	7.47	.33	8.18	--	--	.03	.10
WSG	.17	.39	.38	.94	12.30	30.13	--	--	3.68	8.48
CSF	.02	--	.37	.38	--	--	.14	.20	.02	--
WSF	.03	--	.05	--	1.35	2.87	1.64	2.21	.21	.50
SUC	1.72	2.36	3.40	8.17	--	--	--	--	2.47	6.04
SHRUBS	.45	.94	.52	.91	.48	1.18	2.53	5.47	2.52	1.24
TOTAL	93.08	33.90	192.00	117.38	225.30	119.15	132.43	51.96	115.59	53.89
LITR	192.47	48.42	314.13	99.57	291.06	278.28	198.62	58.78	188.60	123.38

a/ CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 13. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 1 of the water-and-nitrogen stressed treatment.

Species	April 24		May 28		July 19		September 7		December 11	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	63.64	51.72	148.46	150.38	217.42	116.37	242.85	130.88	132.17	163.71
BOGR	36.07	42.25	77.77	29.98	82.76	46.71	184.83	78.60	150.44	51.71
BUDA	--	--	6.92	13.84	--	--	--	--	--	--
CAHE	.27	.46	3.48	5.32	.53	1.30	1.69	2.75	.81	1.26
CHLE	--	--	--	--	.01	--	--	--	--	--
CRMI	--	--	--	--	1.16	1.86	1.07	1.54	.14	.14
GUSA	--	--	21.10	22.98	2.07	2.81	4.16	4.68	.68	1.67
LARE	.10	.22	4.09	2.20	.85	1.66	.30	.44	.70	.86
LEDE	4.34	5.56	38.12	39.61	24.90	25.27	22.19	21.88	11.23	7.17
OEAL	--	--	--	--	--	--	--	--	.06	.14
OPPO	82.20	84.63	95.33	83.95	97.93	90.58	32.19	60.47	29.11	29.73
PLPU	1.16	1.56	2.71	1.30	10.98	12.08	12.53	13.31	4.72	5.85
SAKA	--	--	--	--	--	--	.01	--	.03	.10
SPCO	1.24	1.46	4.90	6.86	3.05	2.51	3.51	4.90	.38	.67
THTR	--	--	.43	.30	1.93	2.70	1.29	.93	.68	.77
VUOC (FEOC)	--	--	30.48	28.35	72.67	109.62	18.44	27.74	40.66	32.48
Other[a/]										
CSG	1.96	1.40	.98	1.56	1.36	2.17	.09	.04	--	--
WSG	--	--	--	--	15.51	31.84	.10	.24	.27	.62
CSF	.22	.26	2.00	3.52	1.92	3.86	.17	.34	.08	.17
WSF	.09	.20	2.04	3.49	.87	1.01	2.86	1.43	1.86	2.71
SUC	1.75	1.95	--	--	--	--	--	--	--	--
SHRUBS	.54	1.21	.16	.10	2.27	4.89	5.18	7.33	.06	.17
TOTAL	193.58	108.01	438.97	183.75	538.19	194.47	533.46	168.83	374.08	177.52
LITR	185.47	49.69	213.79	145.00	410.55	134.20	195.39	72.71	314.78	102.370

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 12. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 2 of the nitrogen-stressed treatment.

Species	March 2		June 2		July 7		August 30		October 21	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	4.06	4.99	40.64	98.26	23.10	35.26	.67	1.63	22.23	22.49
BOGR	51.03	12.06	52.80	15.92	50.43	27.00	64.91	21.07	27.79	14.83
BUDA	--	--	--	--	14.50	22.05	--	--	10.31	22.80
CAHE	1.80	4.02	3.65	3.91	.10	.24	2.97	3.81	1.41	1.36
CHLE	--	--	--	--	.42	.28	.40	.31	.02	--
CRMI	--	--	.03	--	.17	.42	.02	--	.03	--
GUSA	4.60	5.88	.38	.93	14.13	16.99	9.12	9.47	7.46	15.50
LARE	.01	--	.06	.10	.15	.10	.01	--	.01	--
LEDE	.01	--	1.11	1.13	2.31	2.42	1.60	1.93	.93	1.2
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	27.73	30.25	45.07	36.84	89.04	100.25	29.54	34.95	17.58	26.70
PLPU	.03	--	.14	.20	.13	.14	.09	.10	.06	--
SAKA	1.01	2.43	.01	--	2.55	3.76	1.86	2.06	.22	.30
SPCO	.11	.17	3.11	2.56	4.04	2.64	3.54	3.49	6.66	4.54
THTR	--	--	--	--	--	--	--	--	--	--
VUOC (FEOC)	--	--	36.80	48.61	9.77	19.72	13.39	29.53	13.95	23.90
Other[a/]										
CSG	.30	.72	3.48	7.47	.33	8.18	--	--	.03	.10
WSG	.17	.39	.38	.94	12.30	30.13	--	--	3.68	8.48
CSF	.02	--	.37	.38	--	--	.14	.20	.02	--
WSF	.03	--	.05	--	1.35	2.87	1.64	2.21	.21	.50
SUC	1.72	2.36	3.40	8.17	--	--	--	--	2.47	6.04
SHRUBS	.45	.94	.52	.91	.48	1.18	2.53	5.47	2.52	1.24
TOTAL	93.08	33.90	192.00	117.38	225.30	119.15	132.43	51.96	115.59	53.89
LITR	192.47	48.42	314.13	99.57	291.06	278.28	198.62	58.78	188.60	123.38

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 14. Mean yield (g/m^2) and standard deviation of major species and species groups for 1971 for replicate 2 of the water-and-nitrogen stressed treatment.

Species	March 2		May 27		July 9		September 2		November 20	
	M	SD	M	SD	M	SD	M	SD	M	SD
ARFR	31.11	28.95	80.37	119.00	250.51	190.52	259.79	145.18	132.17	88.82
BOGR	52.47	29.48	65.27	48.15	86.81	56.80	198.79	95.71	79.14	41.67
BUDA	5.07	10.08	35.09	50.02	19.04	35.49	.34	.53	--	--
CAHE	4.07	4.58	9.63	15.81	1.14	2.72	--	--	7.43	6.73
CHLE	--	--	.02	--	--	--	--	--	--	--
CRMI	--	--	--	--	.01	--	.30	.56	.14	.17
GUSA	10.75	24.76	19.20	32.49	1.87	3.12	12.95	20.47	.75	1.24
LARE	--	--	.37	.57	.06	.14	1.32	1.51	.15	.20
LEDE	--	--	13.79	17.79	30.72	37.81	37.85	23.43	5.89	6.32
OEAL	--	--	--	--	--	--	--	--	--	--
OPPO	66.86	50.95	53.36	59.22	78.67	49.53	54.94	107.35	5.82	8.24
PLPU	--	--	.56	.61	4.11	6.39	17.34	14.61	2.44	3.24
SAKA	--	--	.45	.89	.04	.10	.61	1.41	.18	.44
SPCO	1.32	2.43	2.33	3.01	9.36	6.44	7.89	5.38	.42	.56
THTR	--	--	--	--	.33	.81	1.41	2.34	.17	.33
VUOC (FEOC)	--	--	20.74	29.78	61.26	146.52	4.74	4.98	19.82	18.68
Other[a/]										
CSG	.49	1.06	1.43	2.67	1.63	3.67	--	--	--	--
WSG	.02	--	2.93	4.66	28.16	49.32	1.59	2.06	6.84	12.31
CSF	.03	--	.22	.28	1.62	3.16	.61	.53	1.18	1.21
WSF	.11	.26	.47	.72	3.15	3.43	3.87	6.77	2.09	2.46
SUC	1.53	2.41	1.24	1.78	--	--	.02	--	.32	.79
SHRUBS	.07	.17	--	--	3.07	4.71	1.37	3.21	.01	--
TOTAL	173.90	71.07	307.47	158.24	581.56	262.15	605.73	207.53	264.96	101.71
LITR	173.83	74.13	280.20	158.78	191.75	61.24	246.55	102.91	300.99	117.378

[a/] CSG = cool season grass, WSG = warm season grass, CSF = cool season forb, WSF = warm season forb, and SUC = succulents.

Table 15. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 1 of the control treatment.

Depth (cm)	June 7		July 26		September 13		December 18	
	M	SD	M	SD	M	SD	M	SD
				Crowns				
	227.70	169.72	353.50	238.60	344.85	252.26	396.41	252.88
				Roots				
0-5	184.63	87.41	380.76	146.27	410.84	188.61	344.35	117.30
5-10	86.37	50.41	149.87	52.63	121.81	37.60	8.28	34.94
10-20	91.68	46.34	--	--	195.02	153.58	--	--
20-30	70.67	41.44	--	--	108.02	42.88	--	--
30-40	50.29	32.39	--	--	109.71	49.47	--	--
40-50	36.93	29.05	--	--	88.04	47.94	--	--
50-60	47.29	35.51	--	--	72.91	45.97	--	--

Table 16. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 2 of the control treatment.

Depth (cm)	April 23[a/]		June 7		July 26		September 13		November 29	
	M	SD	M	SD	M	SD	M	SD	M	SD
					Crowns					
	--	--	252.75	174.55	393.16	223.22	230.46	199.73	385.57	164.44
					Roots					
0-5	410.23	157.89	310.47	199.36	368.02	160.46	424.50	215.46	417.54	190.11
5-10	131.15	65.95	100.38	61.29	161.14	61.96	158.52	58.89	100.92	44.83
10-20	145.15	41.69	119.48	66.63	--	--	147.70	113.19	--	--
20-30	111.59	36.62	110.99	78.56	--	--	85.73	36.81	--	--
30-40	76.40	45.55	84.67	70.25	--	--	81.27	37.25	--	--
40-50	38.71	23.78	69.75	65.30	--	--	76.17	117.80	--	--
50-60	38.20	25.21	74.52	64.41	--	--	37.53	18.38	--	--
60-70	66.21	--	30.56	18.36	--	--	--	--	--	--

[a/] Based on 12 quadrats.

Table 17. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 1 of the water-stressed treatment.

Depth (cm)	June 7		July 26		September 13		December 18	
	M	SD	M	SD	M	SD	M	SD
				Crowns				
	214.97	274.65	300.30	159.27	254.44	190.14	243.43	212.00
				Roots				
0-5	340.18	155.17	327.19	147.09	287.76	128.19	302.85	158.96
5-10	135.18	64.34	109.97	43.70	105.47	45.07	99.13	33.11
10-20	149.40	91.44	--	--	139.42	68.46	--	--
20-30	136.88	95.20	--	--	105.47	49.48	--	--
30-40	71.09	46.71	--	--	98.04	34.32	--	--
40-50	54.54	32.51	--	--	69.39	42.71	--	--
50-60	33.42	18.31	--	--	54.92	28.97	--	--

Table 18. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 2 of the water-stressed treatment.

Depth (cm)	June 7		July 26		September 13		November 29	
	M	SD	M	SD	M	SD	M	SD
				Crowns				
	301.13	272.47	411.41	207.47	328.08	182.60	272.48	98.63
				Roots				
0-5	426.34	200.39	604.29	186.81	365.78	169.60	366.42	106.57
5-10	147.28	91.82	165.15	53.09	104.30	44.53	116.86	41.83
10-20	159.80	86.12	--	--	109.93	44.27	--	--
20-30	73.64	33.07	--	--	79.58	34.44	--	--
30-40	74.06	43.16	--	--	100.80	60.24	--	--
40-50	61.97	51.78	--	--	53.90	36.48	--	--
50-60	73.16	74.38	--	--	70.03	87.58	--	--

Table 19. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 1 of the nitrogen-stressed treatment.

Depth (cm)	June 7		July 26		September 13		December 18	
	M	SD	M	SD	M	SD	M	SD
				Crowns				
	296.67	227.50	435.37	165.56	189.29	188.02	229.94	198.81
				Roots				
0-5	331.48	115.31	323.04	195.76	356.31	411.70	327.19	167.74
5-10	119.69	43.89	147.70	44.94	78.52	35.82	82.34	32.05
10-20	154.92	82.79	--	--	125.78	49.96	--	--
20-30	137.73	50.63	--	--	101.44	48.94	--	--
30-40	88.28	36.93	--	--	80.38	36.95	--	--
40-50	71.94	36.98	--	--	61.34	43.07	--	--
50-60	59.79	47.39	--	--	69.16	73.87	--	--

Table 20. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 2 of the nitrogen-stressed treatment.

Depth (cm)	April 23[a/]		June 7		July 26		September 13		November 29	
	M	SD	M	SD	M	SD	M	SD	M	SD
					Crowns					
	--	--	512.26	226.32	468.99	201.32	297.31	179.23	429.05	234.03
					Roots					
0-5	510.54	250.37	564.67	130.58	421.27	195.68	327.66	142.77	421.22	186.73
5-10	186.86	109.90	120.29	57.66	160.10	48.14	122.87	51.99	146.00	68.71
10-20	206.78	80.76	157.89	71.95	--	--	125.21	48.10	--	--
20-30	128.35	48.80	129.47	86.62	--	--	84.25	28.50	--	--
30-40	107.68	55.37	121.90	77.63	--	--	62.22	34.51	--	--
40-50	115.36	194.92	113.07	75.80	--	--	37.83	24.82	--	--
50-60	55.18	35.87	103.56	79.28	--	--	22.47	19.48	--	--
60-70	20.37	15.28	--	--	--	--	--	--	--	--

[a/] Based on 30 quadrats.

Table 21. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 1 of the water-and-nitrogen stressed treatment.

Depth (cm)	June 7		July 26		September 13		December 18	
	M	SD	M	SD	M	SD	M	SD
				Crowns				
	259.53	237.60	389.25	291.99	296.04	246.27	338.22	198.31
				Roots				
0-5	355.24	194.22	472.15	216.92	413.18	296.56	420.18	187.24
5-10	118.47	72.55	160.06	51.14	157.46	49.54	145.72	62.32
10-20	153.46	83.37	--	--	184.41	64.44	--	--
20-30	103.19	57.56	--	--	130.30	47.73	--	--
30-40	90.61	56.01	--	--	81.91	24.99	--	--
40-50	53.90	41.46	--	--	77.88	31.77	--	--
50-60	41.81	43.63	--	--	84.59	40.97	--	--

Table 22. Mean yield (g/m^2) and standard deviation of crowns and root mass for 1971 for replicate 2 of the water-and-nitrogen stressed treatment.

Depth (cm)	June 7		July 26		September 13		November 29	
	M	SD	M	SD	M	SD	M	SD
				Crowns				
	306.44	345.60	295.21	218.82	372.65	346.79	468.09	238.12
				Roots				
0-5	521.71	211.69	511.29	359.40	508.04	485.49	418.96	168.42
5-10	181.44	93.84	189.11	63.78	99.10	39.91	151.38	68.07
10-20	204.15	85.30	--	--	130.09	63.26	--	--
20-30	129.87	64.34	--	--	82.13	40.42	--	--
30-40	117.57	68.53	--	--	79.16	65.29	--	--
40-50	60.91	40.90	--	--	68.97	42.40	--	--
50-60	43.55	25.52	--	--	74.85	59.76	--	--
60-70	66.21	--	--	--	--	--	--	--

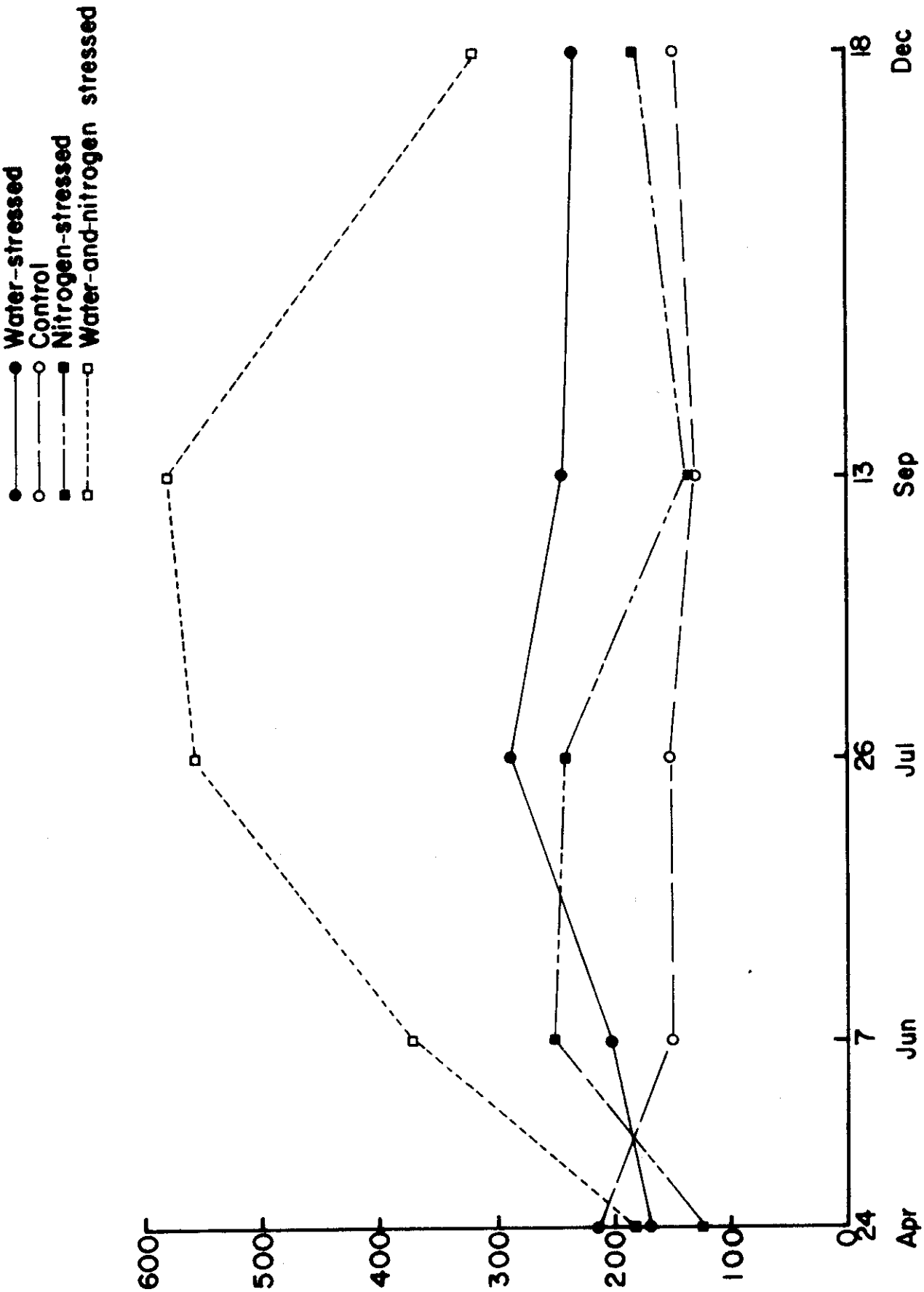


Fig. 4. Seasonal variation in total herbage yield by weight by treatment for 1971.

be relatively stable to these stresses, although the data from the water-and-nitrogen stressed treatment indicate that this stability is dependent upon extrinsic as well as intrinsic factors.

Individual species behavior would not necessarily be expected to agree with the response of herbage yield, and as an example Fig. 5 shows the seasonal response of blue grama herbage to the various stresses. Blue grama herbage yield appears to have responded very similarly to total herbage yield with the water-stressed and nitrogen-stressed treatments differing somewhat from the control, and the water-and-nitrogen stressed treatment differing greatly from all other treatments.

The belowground portions of the primary producers (Tables 15 to 22) did not respond as dramatically during the first year of full stress treatments as did the aboveground parts. The stress treatments did appear to affect the belowground portions (Fig. 6), but with only the initial year's data it is too early to interpret the results. One thing that may be said, however, is that the mass of belowground parts of the primary producers does not fluctuate as much as do the aboveground portions under water and nitrogen stresses.

Small Mammals

Three trapping periods were completed in 1971 and the results are presented in Tables 23 and 24. The species of small mammals caught during the trapping periods were *Onychomys leucogaster*, *Peromyscus maniculatus*, *Microtus ochrogaster*, *Spermophilus tridecemlineatus*, *Thomomys talpoides*, and *Dipodomys ordii*.

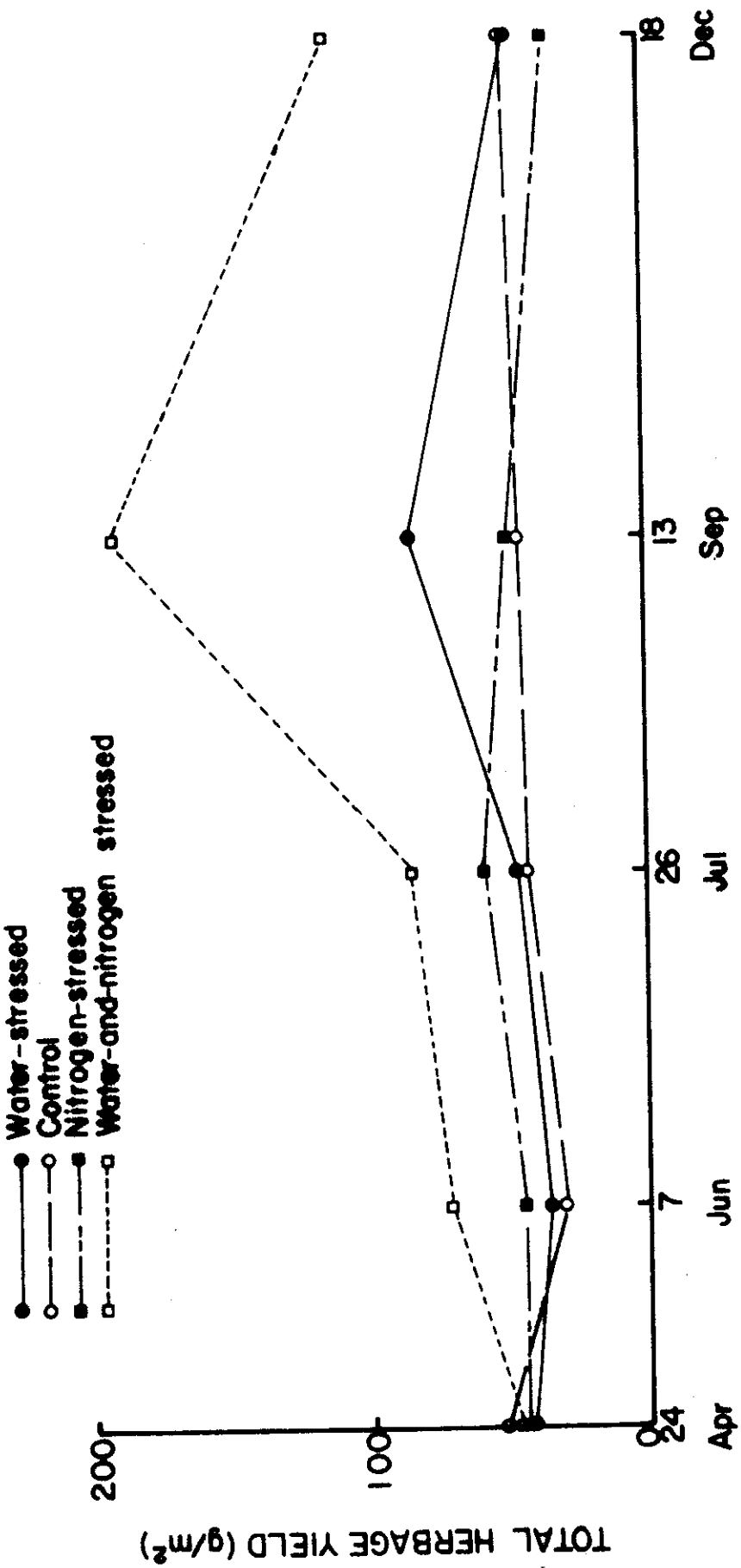


Fig. 5. Seasonal variation in herbage yield dry weight of blue grama by treatment for 1971.

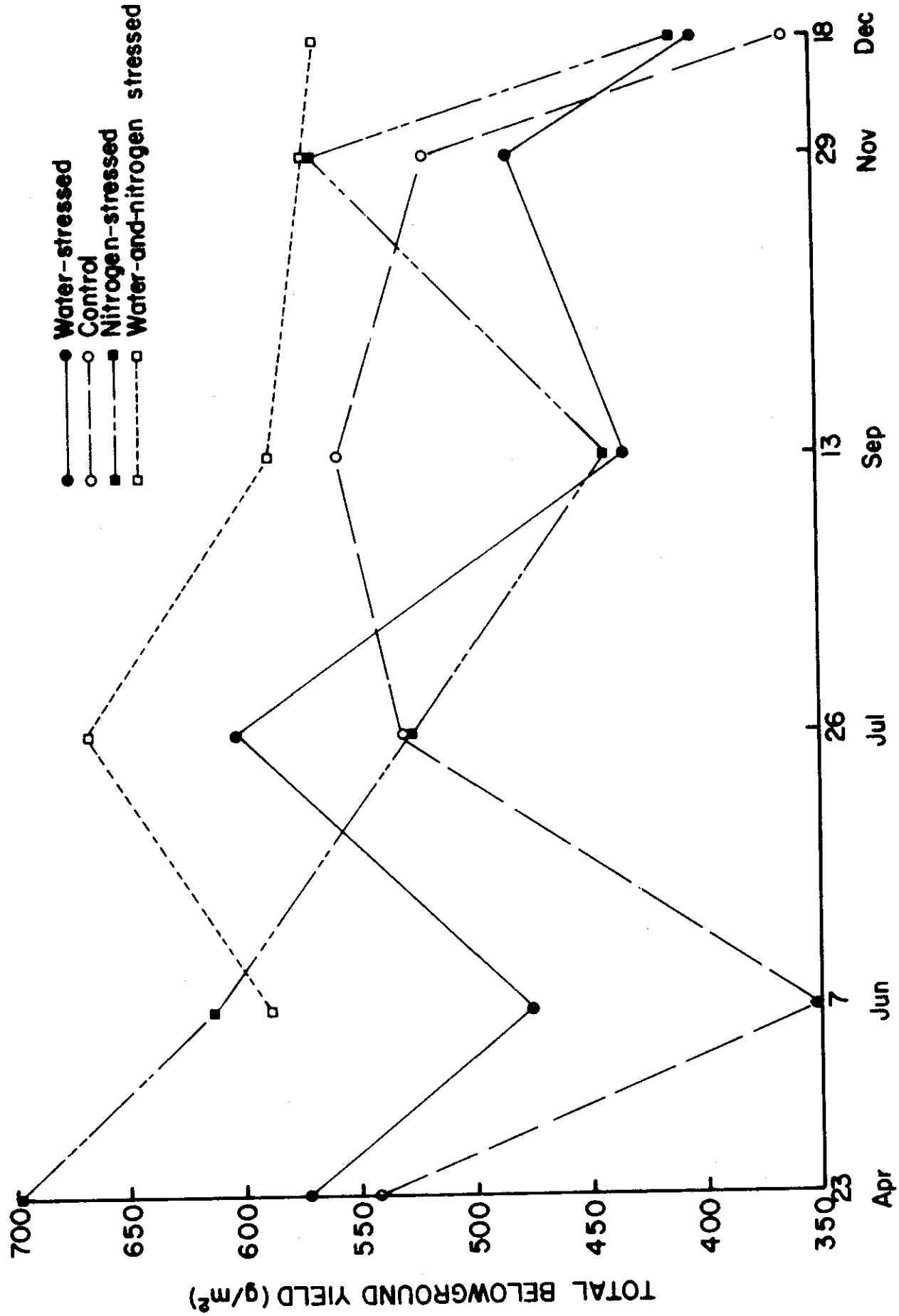


Fig. 6. Seasonal variation in belowground yield dry weight by treatment for 1971.

Table 23. Species and numbers of small mammals caught during 1971 by stress treatment and replicate (does not include recaptures).

Treatment	Replicate	Species	Trapping Period			Total
			1	2	3	
Control	1	*Onychomys leucogaster*	4	8	5	17
		Peromyscus maniculatus	2	0	0	2
		Spermophilus tridecemlineatus	0	4	2	6
	2	*Onychomys leucogaster*	10	5	3	18
		Peromyscus maniculatus	7	3	4	14
		Spermophilus tridecemlineatus	2	3	1	6
Water stressed	1	*Onychomys leucogaster*	0	0	1	1
		Peromyscus maniculatus	3	3	5	11
		Spermophilus tridecemlineatus	0	1	0	1
		Thomomys talpoides	0	0	1	1
	2	*Microtus ochrogaster*	0	0	1	1
		Onychomys leucogaster	0	2	2	4
		Peromyscus maniculatus	7	5	9	21
		Spermophilus tridecemlineatus	3	1	0	4
Nitrogen stressed	1	*Dipodomys ordii*	0	1	0	1
		Onychomys leucogaster	10	8	3	21
		Peromyscus maniculatus	1	0	1	2
		Spermophilus tridecemlineatus	4	4	0	8
	2	*Onychomys leucogaster*	4	6	5	15
		Spermophilus tridecemlineatus	1	2	0	3
Water and nitrogen stressed	1	*Microtus ochrogaster*	5	18	28	51
		Peromyscus maniculatus	5	0	14	19
	2	*Microtus ochrogaster*	2	21	22	45
		Peromyscus maniculatus	10	8	20	38

Table 24. Species and numbers of small mammals caught during 1971 by main environmental stress effects (does not include recaptures).

Treatment	Species	Trapping Period			Total
		1	2	3	
Water stressed	*Microtus ochrogaster*	7	39	51	97
	Onychomys leucogaster	0	2	3	5
	Peromyscus maniculatus	25	16	48	89
	Spermophilus tridecemlineatus	3	2	0	5
Non-water stressed	*Microtus ochrogaster*	0	0	0	0
	Onychomys leucogaster	28	27	16	71
	Peromyscus maniculatus	10	3	5	18
	Spermophilus tridecemlineatus	7	13	3	23
Nitrogen stressed	*Microtus ochrogaster*	7	39	50	96
	Onychomys leucogaster	14	14	8	36
	Peromyscus maniculatus	16	8	35	59
	Spermophilus tridecemlineatus	5	6	0	11
Non-nitrogen stressed	*Microtus ochrogaster*	0	0	0	0
	Onychomys leucogaster	14	15	11	40
	Peromyscus maniculatus	19	11	18	48
	Spermophilus tridecemlineatus	5	9	3	17

Table 24 indicates something about habitat preference as influenced by the imposed environmental stresses on the various species of small mammals captured. *Microtus ochrogaster* was entirely restricted to the water-stressed treatments; and except for one capture in the water-stressed treatment, all were found in the water-and-nitrogen stressed treatment.

Onychomys leucogaster was captured in all treatments, but a large majority of them were captured in non-water stressed treatments and, of these, the nitrogen-stressed treatment had the largest number. *Peromyscus maniculatus* was also found in all treatments, but it was most numerous in the water-stressed treatments; and more were found in the water-and-nitrogen stressed than the water-stressed treatment. The thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*) was captured in all treatments, but was most numerous in the non-water stressed treatments and was found equally in the nitrogen- and non-nitrogen stressed treatments.

Species Composition

Basal cover of *B. gracilis* ranged from 5% in one of the control plots to 11% in a water-and-nitrogen stressed plot (Table 25). Average basal cover by stress treatment ranged from 7.5% to 10.4%. Bare ground was the highest in the control treatment (23.9%) and lowest in the water-and-nitrogen stressed plots (13.7%).

The largest number of species encountered was in the water-and-nitrogen stressed treatments (Table 26) and the fewest number were found in the nitrogen-stressed plots. The control treatment and the water-stressed treatment had the same number of species, although they were not identical in species representations.

Table 25. Basal cover (%) by stress treatment and replicate based on 500 points per treatment replicate.

Species	Treatment											
	Control			Water-Stressed			Nitrogen-Stressed			Water-and-Nitrogen Stressed		
	1	2	M	1	2	M	1	2	M	1	2	M
BOGR	5.0	10.0	7.5	10.2	9.2	9.7	8.8	10.0	9.4	9.8	11.0	10.4
BUDA	--	--	--	--	0.2	0.1	--	--	--	--	0.2	0.1
MAVI	--	--	--	--	--	--	--	0.2	0.1	--	0.2	0.1
OPPO	--	1.0	0.5	--	0.2	0.1	--	--	--	--	--	--
VUOC	--	--	--	0.2	1.0	0.6	0.6	1.4	1.0	2.0	1.0	1.5
Bare ground	20.4	27.4	23.9	27.0	17.0	22.0	19.4	11.2	15.3	13.4	14.0	13.7
LITR	74.6	61.2	67.9	62.6	72.4	67.5	71.2	77.2	74.2	74.8	73.6	74.2

Table 26. Frequency (%) of plant species by stress treatment replicate.

Species	Treatment							
	Control		Water-Stressed		Nitrogen-Stressed		Water-and-Nitrogen Stressed	
	1	2	1	2	1	2	1	2
Grasses								
AGSM	--	2.0	--	2.0	--	6.0	--	--
ARLO	2.0	12.0	2.0	4.0	--	--	--	12.0
BUDA	10.0	4.0	18.0	16.0	--	2.0	14.0	24.0
CAHE	58.0	50.0	56.0	46.0	26.0	40.0	18.0	36.0
SIHY	--	4.0	12.0	8.0	14.0	--	12.0	16.0
SPCR	2.0	--	6.0	2.0	--	--	6.0	14.0
STCO	--	2.0	--	2.0	--	--	--	8.0
VUOC	95.0	64.0	74.0	100.0	94.0	88.0	94.0	84.0
Forbs								
ALTE	--	--	--	--	--	2.0	--	2.0
ASMO	--	--	--	--	--	--	--	--
ASTA	8.0	8.0	--	6.0	--	--	8.0	4.0
CHLE	4.0	6.0	--	8.0	14.0	38.0	2.0	8.0
CIUN	2.0	--	--	--	--	--	2.0	--
COCA	--	--	--	--	--	--	16.0	4.0
CRMI	16.0	14.0	--	18.0	20.0	10.0	32.0	20.0
DESO	--	--	--	4.0	2.0	2.0	6.0	--
EVNU	--	--	--	--	--	--	2.0	4.0
GACO	18.0	4.0	4.0	12.0	2.0	2.0	12.0	12.0
HASP	--	--	4.0	--	--	--	4.0	2.0
HEVI	--	--	4.0	--	--	--	4.0	2.0
LARE	2.0	18.0	--	4.0	6.0	32.0	44.0	36.0
LEDE	52.0	62.0	92.0	82.0	38.0	62.0	98.0	86.0
LEMO	--	4.0	--	--	--	--	--	2.0
LIPU	--	--	--	--	--	4.0	--	--
LIIN	--	2.0	--	--	--	--	--	--
LOOR	--	6.0	--	2.0	--	--	--	--
LUPU	2.0	2.0	--	4.0	--	--	--	--
MILI	--	--	--	--	4.0	--	4.0	--
OEAL	--	4.0	18.0	12.0	--	--	30.0	20.0
ORLU	--	--	6.0	--	--	--	6.0	2.0
PEAL	--	--	--	--	2.0	--	--	4.0
PEAN	--	--	--	--	--	--	--	2.0
PLPU	54.0	42.0	96.0	86.0	72.0	26.0	84.0	70.0
SAKA	2.0	16.0	24.0	6.0	16.0	24.0	--	14.0
SIAL	--	--	--	--	--	--	8.0	2.0
SOSE	2.0	--	--	8.0	--	2.0	8.0	4.0
SPCO	64.0	78.0	76.0	76.0	78.0	50.0	62.0	80.0
THTR	12.0	2.0	16.0	2.0	4.0	--	44.0	8.0
TOGR	--	--	--	2.0	--	--	--	--

Table 26 (continued).

Species	Treatment							
	Control		Water-Stressed		Nitrogen-Stressed		Water-and-Nitrogen Stressed	
	1	2	1	2	1	2	1	2
Succulents								
MAVI	8.0	12.0	2.0	12.0	2.0	14.0	--	2.0
OPPO	22.0	28.0	22.0	28.0	36.0	22.0	30.0	30.0
Shrubs								
ARFR	64.0	56.0	96.0	72.0	76.0	20.0	100.0	88.0
CHNA	4.0	--	--	10.0	4.0	2.0	10.0	2.0
EREF	--	2.0	--	4.0	--	--	--	8.0
GUSA	20.0	12.0	20.0	6.0	20.0	6.0	14.0	10.0
PSTE	--	6.0	12.0	4.0	2.0	6.0	4.0	8.0
Number of Species	23	28	21	31	21	21	32	35

The most striking differences among stress treatments were expressed in the densities (Table 27) of three species (two annuals and a perennial), i.e., *Lepidium densiflorum*, *Plantago purshii*, and *Artemisia frigida*. Maximum density for *L. densiflorum* was found in the water-and-nitrogen stressed treatments where there was an average of 75 individuals per square meter. This is in contrast with the average of 7 individuals per square meter found in the control plots. *P. purshii* reached its maximum density in the water-stressed plots with 62 individuals per square meter compared to 4 individuals per square meter in the control plots. *A. frigida* was well represented in all stress plots. It appears to be responding positively to the water-and-nitrogen stress, and the average density for the treatment was 27 individuals per square meter.

Water Balance

Water balance calculations for the 1971 growing season were made using the following simplified equation (Slatyer, 1967):

$$E = P - \Delta W$$

where E is evapotranspiration, P is precipitation or added water, and ΔW is the change in water stored in the soil. Results for the various stress treatments are presented in Tables 28, 29, 30, and 31.

Water loss by evaporation and transpiration increased in the following order: control, nitrogen stressed, water stressed, and water-and-nitrogen stressed. The value for the water-and-nitrogen stressed plot is likely to approach the maximum for the Pawnee Site for the period from May 15 to approximately August 25. The differences among stress treatments is probably attributable to a gradient in percentage ground cover.

Table 27. Density (no./.25m^2) of plant species by stress treatment replicate.

Species	Treatment							
	Control		Water-Stressed		Nitrogen-Stressed		Water-and-Nitrogen Stressed	
	1	2	1	2	1	2	1	2
Grasses								
AGSM	--	0.28	--	0.16	--	1.80	--	--
ARLO	0.10	0.18	0.02	0.04	--	--	--	0.04
SIHY	--	0.08	0.16	0.06	0.16	--	0.18	0.02
SPCR	0.02	--	0.14	0.18	--	--	0.16	--
STCO	--	0.05	--	0.02	--	--	--	0.20
Forbs								
ALTE	--	--	--	--	--	0.02	0.0	0.02
ASMO	--	--	--	--	--	--	--	--
ASTA	0.10	0.10	--	0.06	--	--	0.26	0.12
CHLE	0.04	0.02	--	0.18	0.32	1.04	0.02	0.22
CIUN	0.02	--	--	--	--	--	0.02	--
COCA	--	--	--	--	--	--	0.40	0.04
CRMI	0.16	--	0.0	0.14	0.28	0.12	0.50	0.34
DESO	--	--	--	0.04	0.02	0.02	0.16	--
EVNU	--	--	--	--	--	--	0.02	0.04
GACO	0.30	0.08	0.06	0.20	0.02	0.08	0.12	0.36
HASP	--	--	0.08	--	--	--	0.04	0.02
HEVI	--	--	0.08	--	--	--	--	0.02
LARE	0.02	0.40	--	0.04	0.08	0.64	1.04	0.56
LEDE	1.26	1.32	4.58	4.10	3.0	3.28	26.6	11.1
LEMO	--	0.04	--	--	--	--	--	0.02
LIPU	--	--	--	--	--	0.10	--	--
LIIN	--	0.04	--	--	--	--	--	--
LOOR	--	0.08	--	0.02	--	--	--	--
LUPU	0.04	0.02	--	0.04	--	--	--	--
MILI	--	--	--	--	0.04	--	0.06	--
OEAL	--	0.08	0.30	0.14	--	--	0.38	0.26
ORLU	--	--	0.06	--	--	--	0.06	0.02
PEAL	--	--	--	--	0.02	--	--	0.04
PEAN	--	--	--	--	--	--	--	0.02
PLPU	1.20	0.66	20.1	10.9	2.56	0.46	9.9	4.0
SAKA	0.02	0.20	0.36	0.10	0.18	0.32	--	0.30
SIAL	--	--	--	--	--	--	0.06	0.02
SOSE	0.06	--	--	0.14	--	0.02	--	0.06
SPCO	1.86	3.82	2.62	2.92	2.20	2.10	1.6	4.98
THTR	0.12	0.02	0.38	0.02	0.04	--	1.2	0.22
TOGR	--	--	--	0.02	--	--	--	--

Table 27 (continued).

Species	Treatment							
	Control		Water-Stressed		Nitrogen-Stressed		Water-and-Nitrogen Stressed	
	1	2	1	2	1	2	1	2
Succulents								
MAVI	0.10	0.12	0.02	0.12	0.02	0.18	--	0.02
OPPO	1.24	1.90	0.90	2.4	3.66	1.16	3.5	2.9
Shrubs								
ARFR	2.1	1.26	3.26	2.3	2.04	0.40	8.3	5.42
CHNA	0.04	--	--	0.14	0.04	0.02	0.16	0.02
EREF	--	0.02	--	0.10	--	--	--	0.08
GUSA	0.26	0.16	0.22	0.06	0.30	0.06	0.20	0.10
PSTE	--	0.10	0.12	0.10	0.02	0.24	0.04	0.12

Table 28. Water balance data (mm HOH) for the control treatment during the 1971 growing season.

Period	Precipitation Received (mm)	HOH in Soil at Start of Period (mm)	HOH in Soil at End of Period (mm)	Water Balance (mm)	Daily Evapotranspiration (mm)
May 15 to June 7	19.3	--	--	--	--
June 8 to June 30	6.8	192.3	151.3	- 47.8	-1.99
July 1 to July 6	--	151.3	145.3	- 6.0	-1.0
July 7 to July 14	--	145.3	134.3	- 11.0	-1.38
July 15 to July 20	3.8	134.3	131.9	- 6.2	-1.03
July 21 to July 26	4.3	131.9	133.6	- 2.6	-0.43
July 27 to August 2	2.5	133.6	130.9	- 5.4	-0.77
August 3 to August 9	--	130.9	123.3	- 7.6	-1.09
August 10 to August 16	2.5	123.3	120.4	- 5.4	-0.77
August 17 to August 23	--	120.4	117.8	- 2.6	-0.37
August 24 to September 9	4.6	117.8	116.9	- 5.5	-0.32
Total	43.8			-100.1	

Table 29. Water balance data (mm HOH) for the water-stressed treatment during the 1971 growing season.

Period	Precipitation Received (mm)	HOH in Soil at Start of Period (mm)	HOH in Soil at End of Period (mm)	Water Balance (mm)	Daily Evapotranspiration (mm)
May 15 to May 21	29.3	--	--	--	--
May 22 to June 7	53.5	248.6	277.3	- 24.8	1.55
June 8 to June 30	112.6	277.3	242.5	-147.4	4.69
July 1 to July 6	22.4	242.5	249.6	- 15.3	2.55
July 7 to July 14	48.6	249.6	239.9	- 58.3	7.29
July 15 to July 20	32.0	239.9	256.5	- 15.4	2.57
July 21 to July 26	41.6	256.5	282.4	- 15.7	2.62
July 27 to August 2	35.9	282.4	291.4	- 26.9	3.84
August 3 to August 9	42.4	291.4	302.4	- 31.4	4.48
August 10 to August 16	41.6	302.4	307.7	- 36.3	5.18
August 17 to August 23	--	307.7	275.3	- 32.4	4.63
August 24 to September 7	4.6	275.3	229.4	- 50.5	2.97
Total	464.4			-454.4	

Table 30. Water balance data (mm HOH) for the nitrogen-stressed treatment during the 1971 growing season.

Period	Precipitation Received (mm)	HOH in Soil at Start of Period (mm)	HOH in Soil at End of Period (mm)	Water Balance (mm)	Daily Evapotranspiration (mm)
May 15 to May 21	1.3	--	--	--	--
May 22 to June 7	18.0	195.6	168.4	- 45.2	2.67
June 8 to June 30	6.8	168.4	142.2	- 33.0	1.43
July 1 to July 6	--	142.2	138.7	- 3.5	0.58
July 7 to July 14	--	138.7	130.8	- 7.9	0.99
July 15 to July 20	3.8	130.8	129.2	- 5.4	0.90
July 21 to July 26	4.3	129.2	130.9	- 2.6	0.43
July 27 to August 2	2.5	130.9	125.8	- 7.8	1.11
August 3 to August 9	--	125.8	120.3	- 5.5	0.79
August 10 to August 16	2.5	120.3	117.3	- 5.5	0.79
August 17 to August 23	--	117.3	114.5	- 2.8	0.40
August 24 to September 7	4.6	114.3	113.3	- 5.6	0.33
Total	43.8			-124.8	

Table 31. Water balance data (mm HOH) for the water-and-nitrogen stressed treatment during the 1971 growing season.

Period	Precipitation Received (mm)	HOH in Soil at Start of Period (mm)	HOH in Soil at End of Period (mm)	Water Balance (mm)	Daily Evapotranspiration (mm)
May 15 to May 21	29.1	--	--	--	--
May 22 to June 6	48.0	195.6[a/]	185.4	- 58.2	-3.64
June 7 to June 30	174.9	185.4	204.8	-155.5	-6.48
July 1 to July 6	24.2	204.8	207.9	- 21.1	-3.52
July 7 to July 14	54.8	207.9	206.8	- 55.9	-6.99
July 15 to July 20	47.4	206.8	217.1	- 37.1	-6.18
July 21 to July 26	42.1	217.1	234.1	- 25.1	-4.18
July 27 to August 2	37.0	234.1	240.8	- 30.3	-4.34
August 3 to August 9	49.0	240.8	259.7	- 30.1	-4.30
August 10 to August 16	44.8	259.7	262.8	- 41.7	-5.96
August 17 to August 23	--	262.8	226.6	- 36.2	-5.17
August 24 to September 7	4.6	226.6	172.2	- 59.0	-3.47
Total	555.9			-550.2	

[a/] Assumed to be the same as on the nitrogen-stressed treatment.

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APPENDIX I

CODE DESIGNATIONS

AGSM	*Agropyron smithii*	Western wheatgrass
ALTE	*Allium textile*	Textile onion
ARFR	*Artemisia frigida*	Fringed sagewort
ARLO	*Aristida longiseta*	Red three-awn
ASMO	*Astragalus mollissimus*	Woolly loco
ASTA	*Aster tanacetifolius*	Tansy-leaf aster
BOGR	*Bouteloua gracilis*	Blue grama
BUDA	*Buchloe dactyloides*	Buffalo grass
CAHE	*Carex heliophila*	Sun sedge
CHLE	*Chenopodium leptophyllum*	Narrow-leaf goosefoot
CHNA	*Chrysothamnus nauseosus*	Rubber rabbit brush
CIUN	*Cirsium undulatum*	Wavy-leaf thistle
COCA	*Conyza canademsis*	Canada horseweed
CRMI	*Cryptantha minima*	
DESO	*Descurainia sophia*	Flixweed tansy mustard
EREF	*Erigonism effusum*	Spreading wild buckwheat
EVNU	*Evolvulus nuttallianus*	Nuttall evolvulus
FEOC	*Festuca octoflora*	Common six-weeks grass
GACO	*Gaura coccinea*	Scarlet gaura
GUSA	*Guteriezia sarothrae*	Broom snakeweed
HASP	*Haplopappus spinulosus*	Iron-plant goldenweed
HEVI	*Heterotheca villosa*	Hairy golden star
LARE	*Lapula redowskii*	Blue bur stickseed
LEDE	*Lepidium densiflorum*	Prairie pepperweed
LEMO	*Leucocrinum montanum*	Common star lily

LIIN	*Litho spermun*	Yellow gromwell
LIPU	*Liatris punctata*	Dotted garyfeather
LITR		Litter
LOOR	*Lomatium orientale*	Bisquitroot
LUPU	*Lupinus pusillus*	Rusty lupine
MAVI	*Mammillaria vivipara*	Purple mammilaria
MILI	*Mirabilis lincaris*	Four-o'clock
OEAL	*Oenothera albicaulis*	Prairie evening primrose
OPPO	*Opuntia polyacantha*	Plains prickly pear
ORLU	*Orobanche ludoviciana*	Louisiana broomrape
PEAL	*Penstemon albidus*	White penstemon
PEAN	*Penstemon angustifolius*	Narrow-leaf penstemon
PLPU	*Plantago purshii*	Woolly Indian wheat
PSTE	*Psoralea tenuiflora*	Slimflower scurf pea
SAKA	*Salsola kali*	Common Russian thistle
SIAL	*Sisymbrium altissinun*	Tumbling hedge mustard
SIHY	*Sitanion hystrix*	Bottlebrush squirreltail
SOSE	*Sophora sericea*	Silky sophora
SPCO	*Sphaeralcea coccinea*	Scarlet globe mallow
SPCR	*Sporobolus cryptandrus*	Sand dropseed
STCO	*Stipa comata*	Needle and thread
THTR	*Thelesperma trifidum*	
TOGR	*Townsendia grandiflora*	Townsendia
VUOC	*Vulpia octoflora*	Common six-week grass

APPENDIX II

FIELD DATA

Pawnee Aboveground Biomass

The 1970 and 1971 aboveground herbage data for the Environmental Stress Areas are included in Grassland Biome data sets A2U00UB and A2U00CB, respectively. They are recorded according to form NREL-01. A data form and a sample listing of the data from 1971 follow. The 1970 data are similar, but include only clipped data and are all from 0.5 m^2 plots.

IBP

GRASSLAND BIOME

U.S. INTERNATIONAL BIOLOGICAL PROGRAM

FIELD DATA SHEET – ABOVEGROUND BIOMASS

DATA TYPE	SITE	INITIALS	DATE			TREATMENT	REPLICATE	PLOT SIZE	QUADRAT	CLIP-EST.	GROWTH FM.	GENUS	SPECIES	SUBSPECIES	CATEGORY	WEIGHT ESTIMATE	SACK NO.	DRY WEIGHT	CROWN PLOT SIZE	CROWN WEIGHT
			DAY	MO.	YR.															
1-2	3-4	5-7	8-9	10-11	12-13	14	15	16-19	21-23	25	27	29-30	31-32	34	35	36-40	42-45	47-52	54-57	59-64
01																				

DATA TYPE
- 01 Aboveground Biomass
- 02 Litter
- 03 Belowground Biomass
- 10 Vertebrate - Live Trapping
- 11 Vertebrate - Snap Trapping
- 12 Vertebrate - Collection
- 20 Avian Flush Census
- 21 Avian Road Count
- 22 Avian Road Count Summary
- 23 Avian Collection - Internal
- 24 Avian Collection - External
- 25 Avian Collection - Plumage
- 30 Invertebrate
- 40 Microbiology - Decomposition
- 41 Microbiology - Nitrogen
- 42 Microbiology - Biomass
- 43 Microbiology - Root Decomposition
- 44 Microbiology - Respiration

SITE
- 01 Ale
- 02 Bison
- 03 Bridger
- 04 Cottonwood
- 05 Dickinson
- 06 Hays
- 07 Hopland
- 08 Jornada
- 09 Osage
- 10 Pantex
- 11 Pawnee

TREATMENT
- 1 Ungrazed
- 2 Lightly grazed
- 3 Moderately grazed
- 4 Heavily grazed
- 5 Grazed 1969, ungrazed 1970
- 6 Grazed 1970, ungrazed 1971
- 7
- 8
- 9

CLIP-ESTIMATE
- 1 Harvested
- 2 Harvest and Est.
- 3 Estimated
- 4 Est. for Insect
- 5 Est. for Reference
- 6 Est. for Future Clip

GROWTH FORM
- 1 Perennial grass
- 2 Annual grass
- 3 Sedge, rush, etc.
- 4 Annual forb
- 5 Biennial forb
- 6 Perennial forb
- 7 Half-shrub
- 8 Shrub
- 9 Tree
- 0 Miscellaneous

CATEGORY
- 1 Live
- 2 Old dead
- 3 Recent dead

*** EXAMPLE OF DATA ***

```
         1         2         3         4         5         6
1234567890123456789012345678901234567890123456789012345678901234567890

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0111JPC270571D1  02  22 2   OPPO  1    41 1782   6.60
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0111JPC270571D1  .5  22 2   LICH          1796   0.41
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0111JPC270571D1  .5  22 2   LARF        1 1800   0.01
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0111JPC270571D1  .5  22 2   HASP        1 1802   0.06
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0111JPC270571D1  .5  26 2   PLPU        1 1814   0.06
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0111JPC270571D1  .5  26 2   BOGR       14 1816  10.87
0111JPC270571D1  .5  26 2   LICH          1817   0.52
0111JPC270571D1  .5  26 2   LITR       55 1818  80.16
0111JPC270571D1  02  26 2   ASTR        1 1819   0.01
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0111JPC270571D1	.5	23	2	BOGR		29	1777	26.84
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0111JPC270571D1	.5	33	6	BOGR		27		
0111JPC270571D1	.5	35	6	ARFR		7		
0111JPC270571D1	.5	35	6	SPCO		1		
0111JPC270571D1	.5	35	6	LEMO		1		
0111JPC270571D1	.5	35	6	CAHE		1		
0111JPC270571D1	.5	35	6	FEOC		1		
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0111JPC270571D1	.5	34	6	PLPU		1		
0111JPC270571D1	.5	34	6	LEDF		1		
0111JPC270571D1	.5	34	6	SPCO		1		
0111JPC270571D1	.5	34	6	BOGR		16		

0111JPC270571D1	.5	32	6	GUSA		6		
0111JPC270571D1	.5	32	6	ARFR		11		
0111JPC270571D1	.5	32	6	SPCO		1		
0111JPC270571D1	.5	32	6	BUDA		11		
0111JPC270571D1	.5	32	6	BOGR		20		
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0111JPC240571D2	02	26	2	DEPI		1	1361	0.67
0111JPC240571D2	02	26	2	LARF		1	1362	0.33
0111JPC240571D2	02	26	2	ARFR		40	1363	62.52
0111JPC240571D2	02	26	2	ERFF		3	1364	5.59
0111JPC240571D2	02	26	2	SIHY		4	1365	6.18
0111JPC240571D2	02	26	2	OPPO	1	57	1366	50.83
0111JPC240571D2	02	26	2	OPPO	3	4	1367	9.87
0111JPC240571D2	02	26	2	LOOR		1	1368	0.41
0111JPC240571D2	02	26	2	PLPU		1	1369	0.13
0111JPC240571D2	.5	26	2	SPCO		2	1370	4.38
0111JPC240571D2	.5	26	2	ARFR		12	1371	10.04
0111JPC240571D2	.5	26	2	LEDE		1	1372	0.91
0111JPC240571D2	.5	26	2	LARF		1	1373	0.07
0111JPC240571D2	.5	26	2	FEOC		1	1374	1.38
0111JPC240571D2	.5	26	2	LOOR		1	1375	.01
0111JPC240571D2	.5	26	2	PLPU		1	1376	0.05
0111JPC240571D2	.5	26	2	BOGR		36	1377	24.81
0111JPC240571D2	.5	26	2	LITR		60	1378	38.84
0111JPC240571D2	.5	26	2	LICH			1379	0.31
0111JPC240571D2	02	26	2	OFCO		1	1380	0.02
0111JPC240571D2	02	26	2	SPCR		1	1381	1.67
0111JPC240571D2	.5	26	2	SPCR		1	1382	0.18
0111JPC240571D2	.5	26	2	DEPI		1	1383	0.11
0111JPC250571D2	02	24	2	OPPO	1	385	1463	81.36
0111JPC250571D2	02	24	2	OPPO	3	28	1464	115.46
0111JPC250571D2	02	24	2	SPCO		3	1465	3.40
0111JPC250571D2	02	24	2	LEDE		1	1466	0.26
0111JPC250571D2	02	24	2	PLPU		1	1467	0.03
0111JPC250571D2	.5	24	2	OPPO	1	35	1468	13.70
0111JPC250571D2	.5	24	2	OPPO	3	4	1469	7.32
0111JPC250571D2	.5	24	2	SPCO		1	1470	0.18
0111JPC250571D2	.5	24	2	BOGR		3	1471	5.60
0111JPC250571D2	.5	24	2	BUDA		31	1472	42.01
0111JPC250571D2	.5	24	2	FEOC		1	1473	0.05
0111JPC250571D2	.5	24	2	LICH			1474	2.66
0111JPC250571D2	.5	24	2	LITR		60	1475	51.00
0111JPC250571D2	02	24	2	LARF		1	1476	0.03
0111JPC250571D2	.5	24	2	LEDE		1	1477	0.11

0111JPC25057102	02	22	2	ARFR		65	1443	107.06
0111JPC25057102	02	22	2	SPCO		1	1444	0.42
0111JPC25057102	02	22	2	EREF		3	1445	2.45
0111JPC25057102	02	22	2	GUSA		43	1446	121.93
0111JPC25057102	02	22	2	ARLO		2	1447	0.91
0111JPC25057102	02	22	2	PLPU		1	1448	0.03
0111JPC25057102	02	22	2	LFDF		1	1449	0.19
0111JPC25057102	02	22	2	SPCR		2	1450	1.42
0111JPC25057102	02	22	2	CYAC		1	1451	0.01
0111JPC25057102	02	22	2	OPPO	3	9	1452	21.63
0111JPC25057102	02	22	2	MAVI		8		11.16
0111JPC25057102	.5	22	2	ARFR		10	1453	43.56
0111JPC25057102	.5	22	2	OPPO	3	6	1454	17.23
0111JPC25057102	.5	22	2	MAVI		8	1455	11.16
0111JPC25057102	.5	22	2	EREF		1	1456	0.29
0111JPC25057102	.5	22	2	LFDF		1	1457	0.08
0111JPC25057102	.5	22	2	BOGR		19	1458	15.55
0111JPC25057102	.5	22	2	LITR		50	1459	84.64
0111JPC25057102	.5	22	2	LICH			1460	8.13
0111JPC25057102	.5	22	2	FEOC		1	1461	0.01
0111JPC25057102	.5	22	2	CAHF		1	1462	0.32
0111JPC25057102	02	23	2	LEMO		2	1423	1.37
0111JPC25057102	02	23	2	ARFR		45	1424	99.17
0111JPC25057102	02	23	2	SPCO		2	1425	0.95
0111JPC25057102	02	23	2	OPPO	1	430	1426	107.24
0111JPC25057102	02	23	2	OPPO	3	37	1427	341.89
0111JPC25057102	02	23	2	ASMI		1	1428	0.90
0111JPC25057102	02	23	2	PLPU		1	1429	0.02
0111JPC25057102	02	23	2	LFDE		1	1430	0.04
0111JPC25057102	02	23	2	ARLO		1	1431	0.20
0111JPC25057102	.5	23	2	OPPO	1	140	1432	26.78
0111JPC25057102	.5	23	2	OPPO	3	10	1433	32.78
0111JPC25057102	.5	23	2	SPCO		1	1434	0.20
0111JPC25057102	.5	23	2	FEOC		1	1435	0.17
0111JPC25057102	.5	23	2	LFDF		1	1436	0.02
0111JPC25057102	.5	23	2	BOGR		21	1437	13.82
0111JPC25057102	.5	23	2	BUDA		11	1438	7.80
0111JPC25057102	.5	23	2	LICH			1439	4.96
0111JPC25057102	.5	23	2	LITR		48	1440	71.92
0111JPC25057102	.5	23	2	SAKA		1	1441	0.01
0111JPC25057102	.5	23	2	PLPU		1	1442	0.01
0111JPC24057102	02	25	2	SPCO		7	1384	4.95
0111JPC24057102	02	25	2	LFDE		2	1385	0.86
0111JPC24057102	02	25	2	SIHY		2	1386	1.62
0111JPC24057102	02	25	2	ARFR		6	1387	4.83
0111JPC24057102	02	25	2	MAVI		8		6.00
0111JPC24057102	02	25	2	LARF		1		0.04
0111JPC24057102	.5	25	2	MAVI		8	1388	6.00
0111JPC24057102	.5	25	2	FEOC		2	1389	7.94
0111JPC24057102	.5	25	2	LFDF		1	1390	0.08
0111JPC24057102	.5	25	2	SPCO		2	1391	1.38
0111JPC24057102	.5	25	2	LARE		1	1392	0.04
0111JPC24057102	.5	25	2	BOGR		28	1393	23.58
0111JPC24057102	.5	25	2	LICH			1394	0.20
0111JPC24057102	.5	25	2	LITR		45	1395	49.69
0111JPC24057102	.5	25	2	CAHF		3	1396	7.47

0111JPC240571D2	02	25	2	LEMO		1	1397	0.23
0111JPC240571D2	02	25	2	OECO		1	1398	0.05
0111JPC240571D2	02	25	2	DEPI		1	1399	0.07
0111JPC240571D2	02	25	2	CHLE		1	1400	0.03
0111JPC240571D2	.5	25	2	LEMO		1	1401	0.17
0111JPC250571D2	02	21	2	OECO		1	1402	0.09
0111JPC250571D2	02	21	2	AREA		40	1403	98.05
0111JPC250571D2	02	21	2	PLPU		1	1404	0.11
0111JPC250571D2	02	21	2	LEDE		1	1405	0.25
0111JPC250571D2	02	21	2	SPCO			1406	8.12
0111JPC250571D2	02	21	2	LOOR		1	1407	0.12
0111JPC250571D2	02	21	2	GUSA		3	1408	5.41
0111JPC250571D2	02	21	2	OPPO	1	22	1409	4.45
0111JPC250571D2	02	21	2	SPCR		1	1410	0.46
0111JPC250571D2	02	21	2	LARE		1	1411	0.04
0111JPC250571D2	02	21	2	LEMO		1		0.15
0111JPC250571D2	02	21	2	MAVI		25	1421	17.84
0111JPC250571D2	.5	21	2	AREA		19	1412	45.65
0111JPC250571D2	.5	21	2	SPCO		2	1413	1.37
0111JPC250571D2	.5	21	2	MAVI		25	1414	17.67
0111JPC250571D2	.5	21	2	CAHE		3	1415	2.23
0111JPC250571D2	.5	21	2	LEDE		1	1416	0.02
0111JPC250571D2	.5	21	2	LEMO		1	1417	0.15
0111JPC250571D2	.5	21	2	BOGR		31	1418	19.26
0111JPC250571D2	.5	21	2	LITR		80	1419	72.95
0111JPC250571D2	.5	21	2	LICH			1420	2.09
0111JPC250571D2	.5	21	2	FEOC		1	1422	0.05
0111JPC240571D2	.5	36	6	SPCO		2		
0111JPC240571D2	.5	36	6	CAHE		3		
0111JPC240571D2	.5	36	6	MAVI		3		
0111JPC240571D2	.5	36	6	FEOC		2		
0111JPC240571D2	.5	36	6	EREF		3		
0111JPC240571D2	.5	36	6	THME		2		
0111JPC240571D2	.5	36	6	BOGR		35		
0111JPC240571D2	.5	31	6	SPCO		2		
0111JPC240571D2	.5	31	6	LEDE		1		
0111JPC240571D2	.5	31	6	AREA		1		
0111JPC240571D2	.5	31	6	OPPO	1	47		
0111JPC240571D2	.5	31	6	BOGR		27		
0111JPC240571D2	.5	35	6	SPCO		2		
0111JPC240571D2	.5	35	6	OPPO	3	1		
0111JPC240571D2	.5	35	6	LARE		1		
0111JPC240571D2	.5	35	6	SAKA		1		
0111JPC240571D2	.5	35	6	LEDE		1		
0111JPC240571D2	.5	35	6	CHLE		1		
0111JPC240571D2	.5	35	6	BOGR		12		
0111JPC240571D2	.5	35	6	BUDA		4		

0111JPC240571D2	.5	34	6	SPCO		3		
0111JPC240571D2	.5	34	6	PLPU		1		
0111JPC240571D2	.5	34	6	ARFR		10		
0111JPC240571D2	.5	34	6	OECO		1		
0111JPC240571D2	.5	34	6	CAHF		14		
0111JPC240571D2	.5	34	6	SPCR		1		
0111JPC240571D2	.5	34	6	MAVI		1		
0111JPC240571D2	.5	34	6	FFOC		1		
0111JPC240571D2	.5	34	6	LEDF		1		
0111JPC240571D2	.5	34	6	BOGR		25		
0111JPC240571D2	.5	34	6	RUDA		3		
0111JPC250571D2	.5	32	6	ARFR		6		
0111JPC250571D2	.5	32	6	LARF		1		
0111JPC250571D2	.5	32	6	SPCO		2		
0111JPC250571D2	.5	32	6	ARLO		3		
0111JPC250571D2	.5	32	6	LEDF		1		
0111JPC250571D2	.5	32	6	CAHF		4		
0111JPC250571D2	.5	32	6	SPCR		1		
0111JPC250571D2	.5	32	6	FEOC		1		
0111JPC250571D2	.5	32	6	DEPI		1		
0111JPC250571D2	.5	32	6	BOGR		32		
0111JPC250571D2	.5	33	6	ARFR		6		
0111JPC250571D2	.5	33	6	OPPO	1	265		
0111JPC250571D2	.5	33	6	OPPO	3	31		
0111JPC250571D2	.5	33	6	ARLO		18		
0111JPC250571D2	.5	33	6	MAVI		4		
0111JPC250571D2	.5	33	6	LARF		1		
0111JPC250571D2	.5	33	6	SPCO		1		
0111JPC250571D2	.5	33	6	LEDF		1		
0111JPC250571D2	.5	33	6	CAHF		1		
0111JPC250571D2	.5	33	6	CYAC		1		
0111JPC250571D2	.5	33	6	BOGR		27		
0111JPC310571E1	02	21	2	ARFR		68	2178	164.40
0111JPC310571E1	02	21	2	SPCO		4	2179	5.8
0111JPC310571E1	02	21	2	SIHY		6	2180	12.5
0111JPC310571E1	02	21	2	THTP		2	2181	1.9
0111JPC310571E1	02	21	2	PLPU		1	2182	0.52
0111JPC310571E1	02	21	2	LEDE		1	2183	0.08
0111JPC310571E1	02	21	2	PSTE		1	2184	0.2
0111JPC310571E1	02	21	2	GACO		1	2185	0.06
0111JPC310571E1	02	21	2	MAVI		4	2186	8.85
0111JPC310571F1	02	21	2	DEPI		1	2187	0.1
0111JPC310571F1	02	21	2	LARF		1	2188	0.02
0111JPC310571E1	.5	21	2	SPCO		2	2189	1.6
0111JPC310571E1	.5	21	2	ARFR		16	2190	39.9
0111JPC310571E1	.5	21	2	THTP		1	2191	0.5
0111JPC310571E1	.5	21	2	LEDE		1	2192	0.01
0111JPC310571F1	.5	21	2	PLPU		1	2193	0.13
0111JPC310571F1	.5	21	2	CAHF		4	2194	2.5
0111JPC310571E1	.5	21	2	FFOC		3	2195	10.7
0111JPC310571E1	.5	21	2	BOGR		34	2196	21.9
0111JPC310571E1	.5	21	2	LICH			2197	1.3
0111JPC310571E1	.5	21	2	LITP		60	2198	118.67
0111JPC310571F1	.5	21	2	LARF		1	2199	0.01

0111JPC310571E1	02	24	2	ARFR		37	2200	121.6
0111JPC310571E1	02	24	2	OPPO	1	400	2201	170.78
0111JPC310571E1	02	24	2	OPPO	3	15	2202	96.73
0111JPC310571E1	02	24	2	PLPU		2	2203	3.02
0111JPC310571E1	02	24	2	LOOP		1	2204	0.1
0111JPC310571E1	02	24	2	SPCO		2	2205	3.2
0111JPC310571E1	02	24	2	LEDE		1	2206	0.13
0111JPC310571E1	02	24	2	LEMO		1	2207	0.6
0111JPC310571E1	02	24	2	LARE		1	2208	0.1
0111JPC310571E1	02	24	2	PSTE		7	2209	3.12
0111JPC310571E1	02	24	2	GUSA		9	2210	27.5
0111JPC310571E1	.5	24	2	SPCO		1	2211	1.01
0111JPC310571E1	.5	24	2	ARFR		7	2212	17.3
0111JPC310571E1	.5	24	2	CHNA		3	2213	6.9
0111JPC310571E1	.5	24	2	PLPU		1	2214	0.5
0111JPC310571E1	.5	24	2	OPPO	1	180	2215	65.36
0111JPC310571E1	.5	24	2	OPPO	3	5	2216	60.13
0111JPC310571E1	.5	24	2	CAHE		2	2217	0.6
0111JPC310571E1	.5	24	2	FFOC		1	2218	1.02
0111JPC310571E1	.5	24	2	BUDA		16	2219	9.6
0111JPC310571E1	.5	24	2	BOBR		5	2220	8.31
0111JPC310571E1	.5	24	2	LICH			2221	06.42
0111JPC310571E1	.5	24	2	LITR		120	2222	135.21
0111JPC310571E1	02	24	2	DEPI		1	2223	0.1
0111JPC310571E1	.5	24	2	LEDE		1	2224	0.03
0111JPC310571E1	.5	24	2	LARE		1	2225	0.01
0111JPC310571E1	.5	24	2	THTR		1	2226	0.02
0111JPC310571E1	02	25	2	TOGR		1	2309	00.46
0111JPC310571E1	02	25	2	LARE		1	2310	00.06
0111JPC310571E1	02	25	2	LEDE		1	2311	00.73
0111JPC310571E1	02	25	2	PLPU		1	2312	01.61
0111JPC310571E1	02	25	2	GUSA		7	2313	30.72
0111JPC310571E1	02	25	2	SPCO		2	2314	01.38
0111JPC310571E1	02	25	2	ARFR		8	2315	34.00
0111JPC310571E1	02	25	2	STCO		2	2316	01.08
0111JPC310571E1	02	25	2	MAVI		4	2317	07.70
0111JPC310571E1	02	25	2	LEMO		1	2329	00.48
0111JPC310571E1	.5	25	2	ARFR		5	2318	22.82
0111JPC310571E1	.5	25	2	GUSA		3	2319	06.69
0111JPC310571E1	.5	25	2	PLPU		1	2320	00.68
0111JPC310571E1	.5	25	2	LEDE		1	2321	00.11
0111JPC310571E1	.5	25	2	SPCO		1	2322	00.47
0111JPC310571E1	.5	25	2	LEMO		1	2323	00.18
0111JPC310571E1	.5	25	2	BOBR		11	2324	18.59
0111JPC310571E1	.5	25	2	BUDA		18	2325	18.46
0111JPC310571E1	.5	25	2	LICH			2326	01.48
0111JPC310571E1	.5	25	2	LITR		50	2327	176.06
0111JPC310571E1	02	25	2	OFCO		1	2328	00.01
0111JPC310571E1	.5	25	2	FFOC		1	2330	00.12
0111JPC310571E1	.5	25	2	LARE		1	2331	00.03
0111JPC310571E1	.5	25	2	LIPU		1	2332	00.01
0111JPC310571E1	.5	26	2	PEAN		4	2269	05.14

0111JPC310571E1	02	26	2	THTR		3	2270	8.0
0111JPC310571E1	02	26	2	PLPU		2	2271	1.9
0111JPC310571E1	02	26	2	LEDE		1	2272	2.1
0111JPC310571E1	02	26	2	SPCR		2	2274	2.3
0111JPC310571E1	02	26	2	ARFR		62	2275	208.7
0111JPC310571E1	02	26	2	LIPU		2	2276	3.5
0111JPC310571E1	02	26	2	SPCO		1	2277	1.78
0111JPC310571E1	02	26	2	STCO		3	2278	5.8
0111JPC310571E1	02	26	2	PSTF		1	2273	0.51
0111JPC310571E1	02	26	2	LIIN		1	2279	0.5
0111JPC310571E1	02	26	2	ARLO		1	2280	5.34
0111JPC310571E1	02	26	2	GUSA		5	2281	43.4
0111JPC310571E1	02	26	2	OPPO	1	1		0.70
0111JPC310571E1	02	26	2	PFAL		2	2282	4.54
0111JPC310571E1	02	26	2	HASP		2	2283	3.6
0111JPC310571E1	02	26	2	GACO		1	2284	0.6
0111JPC310571E1	02	26	2	HYFI		3	2285	9.52
0111JPC310571E1	.5	26	2	PSTF		1	2286	0.5
0111JPC310571E1	.5	26	2	OPPO	1	1	2287	00.70
0111JPC310571E1	.5	26	2	LIPU		1	2288	2.02
0111JPC310571E1	.5	26	2	ARLO		1	2289	2.6
0111JPC310571E1	.5	26	2	PLPU		2	2290	0.28
0111JPC310571E1	.5	26	2	CAFI		1	2307	0.01
0111JPC310571E1	.5	26	2	HASP		2	2292	3.22
0111JPC310571E1	.5	26	2	GUSA		3	2293	15.4
0111JPC310571E1	.5	26	2	THTR		1	2294	0.64
0111JPC310571E1	.5	26	2	SPCR		1	2295	0.2
0111JPC310571E1	.5	26	2	ARFR		6	2297	24.0
0111JPC310571E1	.5	26	2	FFOC		1	2298	0.3
0111JPC310571E1	.5	26	2	BOGR		1	2399	00.99
0111JPC310571E1	.5	26	2	LICH			2300	1.68
0111JPC310571E1	.5	26	2	LITR		20	2301	71.49
0111JPC310571E1	02	26	2	OPPO	1	1	2302	00.93
0111JPC310571E1	02	26	2	SAKA	1	1	2303	0.06
0111JPC310571E1	02	26	2	LARE		1	2304	0.01
0111JPC310571E1	.5	26	2	STCO		1	2305	1.55
0111JPC310571E1	.5	26	2	SAKA		1	2306	0.02
0111JPC310571E1	.5	26	2	GACO		1	2291	0.02
0111JPC310571E1	.5	26	2	LEDE		1	2308	0.4
0111JPC310571E1	02	23	2	ARFR		55	2227	142.3
0111JPC310571E1	02	23	2	GUSA		2	2228	4.4
0111JPC310571E1	02	23	2	DFPI		1	2229	0.24
0111JPC310571E1	02	23	2	PLPU		2	2230	3.6
0111JPC310571E1	02	23	2	SPCO		2	2231	2.51
0111JPC310571E1	02	23	2	OPPO	1	175	2232	48.00
0111JPC310571E1	02	23	2	OPPO	3	2	2233	14.54
0111JPC310571E1	02	23	2	THTR		4	2234	3.0
0111JPC310571E1	02	23	2	LEDE		1	2235	0.21
0111JPC310571E1	02	23	2	PSTF		1		0.22
0111JPC310571E1	02	23	2	LOOR		1	2236	0.01
0111JPC310571E1	.5	23	2	THTR		2	2237	0.5
0111JPC310571E1	.5	23	2	SPCO		1	2238	0.94
0111JPC310571E1	.5	23	2	ARFR		13	2239	29.5
0111JPC310571E1	.5	23	2	PLPU		1	2240	0.7
0111JPC310571E1	.5	23	2	LEDE		1	2241	0.15
0111JPC310571E1	.5	23	2	CAHE		3	2242	02.73
0111JPC310571E1	.5	23	2	FFOC		2	2243	3.2
0111JPC310571E1	.5	23	2	BOGR		36	2244	26.0
0111JPC310571E1	.5	23	2	LICH			2245	1.1
0111JPC310571E1	.5	23	2	LITR		85	2246	110.45
0111JPC310571E1	.5	23	2	PSTF		1	2247	00.22
0111JPC310571E1	02	23	2	LARF		1	2248	00.01
0111JPC310571E1	02	23	2	HASP		1	2249	00.15
0111JPC310571E1	.5	23	2	ASMO		1	2250	0.01

0111JPC310571F1	02	22	2	SIHY		3	2251	2.6
0111JPC310571E1	02	22	2	LARE		1	2252	0.09
0111JPC310571E1	02	22	2	SPCO		2	2253	03.73
0111JPC310571E1	02	22	2	OPPO	1	78	2254	22.95
0111JPC310571E1	02	22	2	OPPO	3	2	2255	21.98
0111JPC310571E1	02	22	2	ARFR		12	2256	39.64
0111JPC310571E1	02	22	2	GUSA		3	2257	6.2
0111JPC310571E1	02	22	2	PEAL		1	2258	01.07
0111JPC310571E1	02	22	2	PLPU		1	2259	0.02
0111JPC310571E1	.5	22	2	SPCO		1	2260	00.98
0111JPC310571E1	.5	22	2	ARFR		4	2261	09.32
0111JPC310571F1	.5	22	2	BOGR		28	2262	13.93
0111JPC310571E1	.5	22	2	BUDA		2	2263	10.11
0111JPC310571E1	.5	22	2	LICH			2264	2.7
0111JPC310571F1	.5	22	2	LITR		40	2265	30.27
0111JPC310571E1	02	22	2	ECVI	4	1	2266	0.75
0111JPC310571F1	.5	22	2	LARE		1	2267	0.01
0111JPC310571E1	.5	22	2	PLPU		1	2268	0.01
0111JPC310571E1	.5	31	6	ARLO		10		
0111JPC310571E1	.5	31	6	ARFR		20		
0111JPC310571E1	.5	31	6	LARE		1		
0111JPC310571E1	.5	31	6	LEDE		1		
0111JPC310571E1	.5	31	6	PLPU		2		
0111JPC310571E1	.5	31	6	SPCO		1		
0111JPC310571E1	.5	31	6	CAHE		8		
0111JPC310571E1	.5	31	6	FEOC		3		
0111JPC310571E1	.5	31	6	BOGR		12		
0111JPC310571E1	.5	34	6	ARFR		20		
0111JPC310571E1	.5	34	6	SPCO		2		
0111JPC310571E1	.5	34	6	LARE		1		
0111JPC310571E1	.5	34	6	THTR		1		
0111JPC310571E1	.5	34	6	LEDE		1		
0111JPC310571E1	.5	34	6	PLPU		2		
0111JPC310571E1	.5	34	6	CAHE		2		
0111JPC310571E1	.5	34	6	FEOC		4		
0111JPC310571E1	.5	34	6	BOGR		12		
0111JPC310571E1	.5	34	6	BUDA		17		
0111JPC310571E1	.5	33	6	PSTE		1		
0111JPC310571E1	.5	33	6	LEDE		1		
0111JPC310571E1	.5	33	6	PLPU		2		
0111JPC310571E1	.5	33	6	SPCO		1		
0111JPC310571E1	.5	33	6	ARFR		5		
0111JPC310571E1	.5	33	6	LIPU		1		
0111JPC310571E1	.5	33	6	SPCR		1		
0111JPC310571E1	.5	33	6	THTR		1		
0111JPC310571E1	.5	33	6	FEOC		5		
0111JPC310571E1	.5	33	6	BUDA		35		
0111JPC310571E1	.5	32	6	ASRI		1		
0111JPC310571E1	.5	32	6	GUSA		4		
0111JPC310571E1	.5	32	6	ARFR		24		
0111JPC310571E1	.5	32	6	GACO		1		
0111JPC310571F1	.5	32	6	LEDE		1		
0111JPC310571E1	.5	32	6	PLPU		1		
0111JPC310571F1	.5	32	6	SPCO		1		
0111JPC310571E1	.5	32	6	LOOR		1		
0111JPC310571E1	.5	32	6	CAHE		1		
0111JPC310571E1	.5	32	6	FEOC		1		
0111JPC310571E1	.5	32	6	BOGR		21		

0111JPC310571E1	.5	36	6	ARFR		19		
0111JPC310571E1	.5	36	6	CAHF		2		
0111JPC310571E1	.5	36	6	BOGR		31		
0111JPC310571E1	.5	35	6	ARFR		37		
0111JPC310571E1	.5	35	6	GACO		1		
0111JPC310571E1	.5	35	6	ARLO		1		
0111JPC310571E1	.5	35	6	SPCO		1		
0111JPC310571E1	.5	35	6	CAHF		2		
0111JPC310571E1	.5	35	6	FEOC		1		
0111JPC310571E1	.5	35	6	BOGR		13		
0111JPC260571E2	02	25	2	ARFR		36	1562	53.40
0111JPC260571E2	02	25	2	PLPU		9	1563	6.30
0111JPC260571E2	02	25	2	SPCO		3	1564	2.29
0111JPC260571E2	02	25	2	LEDF		1	1565	1.12
0111JPC260571E2	02	25	2	OPPO	1	350	1566	129.50
0111JPC260571E2	02	25	2	OPPO	3	42	1567	242.54
0111JPC260571E2	02	25	2	TOGR		2	1568	2.80
0111JPC260571E2	02	25	2	GUSA		3	1569	7.20
0111JPC260571E2	02	25	2	LARF		1	1570	0.10
0111JPC260571E2	.5	25	2	ARFR		11	1571	26.41
0111JPC260571E2	.5	25	2	PLPU		4	1572	2.92
0111JPC260571E2	.5	25	2	OPPO	1	12	1573	6.02
0111JPC260571E2	.5	25	2	OPPO	3	3	1574	12.47
0111JPC260571E2	.5	25	2	LEDF		1	1575	0.70
0111JPC260571E2	.5	25	2	LARF		1	1576	0.05
0111JPC260571E2	.5	25	2	FEOC		6	1577	5.72
0111JPC260571E2	.5	25	2	BOGR		32	1578	19.96
0111JPC260571E2	.5	25	2	LICH			1579	0.33
0111JPC260571E2	.5	25	2	LITR		78	1580	212.81
0111JPC260571E2	02	25	2	LOOR		1	1581	0.12
0111JPC260571E2	02	25	2	MAVI		2	1582	1.96
0111JPC260571E2	.5	25	2	BUDA		4	1583	2.23
0111JPC260571E2	.5	25	2	MAVI		1	1584	0.93
0111JPC260571E2	.5	25	2	MILI		1	1585	0.03
0111JPC260571E2	.5	25	2	SPCO			1586	0.18
0111JPC250571E2	02	21	2	TAOF		1	1540	0.47
0111JPC250571E2	02	21	2	SPCO		6	1541	8.05
0111JPC250571E2	02	21	2	ARFR		147	1542	259.88
0111JPC250571E2	02	21	2	ARLO		3	1543	11.18
0111JPC250571E2	02	21	2	GUSA		18	1544	85.95
0111JPC250571E2	02	21	2	ASMI		1	1545	0.86
0111JPC250571E2	02	21	2	PLPU		1	1546	0.29
0111JPC250571E2	02	21	2	LEDF		1	1548	0.72
0111JPC250571E2	02	21	2	OFCO		1	1549	0.10
0111JPC250571E2	02	21	2	DEPI		1	1550	0.08
0111JPC250571E2	.5	21	2	ARFR		26	1551	44.84
0111JPC250571E2	.5	21	2	SPCO		4	1552	2.00
0111JPC250571E2	.5	21	2	CHNA		13	1553	11.15
0111JPC250571E2	.5	21	2	LEDF		1	1554	0.21
0111JPC250571E2	.5	21	2	CAHF		4	1555	10.53
0111JPC250571E2	.5	21	2	FEOC		5	1556	3.02
0111JPC250571E2	.5	21	2	PLPU		1	1557	0.09
0111JPC250571E2	.5	21	2	BOGR		28	1558	16.53
0111JPC250571E2	.5	21	2	BUDA		4	1559	10.81
0111JPC250571E2	.5	21	2	LITR		85	1560	132.86
0111JPC250571E2	.5	21	2	LICH			1561	1.41

0111JPC250571E2	02	23	2	ARFR		84	1518	112.28
0111JPC250571E2	02	23	2	ARLO		12	1519	31.21
0111JPC250571E2	02	23	2	SPCO		6	1520	22.04
0111JPC250571E2	02	23	2	ASMI		3	1521	2.08
0111JPC250571E2	02	23	2	PLPU		2	1522	2.88
0111JPC250571E2	02	23	2	OFPI		1	1523	0.25
0111JPC250571E2	02	23	2	LEDE		1	1524	0.14
0111JPC250571E2	02	23	2	GUSA		2		4.36
0111JPC250571E2	02	23	2	MAVI		2		0.48
0111JPC250571E2	.5	23	2	GUSA		2	1525	4.36
0111JPC250571E2	.5	23	2	ARFR		24	1526	66.58
0111JPC250571E2	.5	23	2	MAVI		2	1527	0.48
0111JPC250571E2	.5	23	2	ARLO		5	1528	20.07
0111JPC250571E2	.5	23	2	ASMI		1	1529	0.37
0111JPC250571E2	.5	23	2	LEDE		1	1530	0.05
0111JPC250571E2	.5	23	2	SPCO		4	1531	4.16
0111JPC250571E2	.5	23	2	PLPU		1	1532	0.73
0111JPC250571E2	.5	23	2	FEOC		18	1533	54.86
0111JPC250571E2	.5	23	2	CAHF		3	1534	4.28
0111JPC250571E2	.5	23	2	BOGR		18	1535	28.80
0111JPC250571E2	.5	23	2	LICH			1536	0.55
0111JPC250571E2	.5	23	2	LITR		95	1537	72.64
0111JPC250571E2	02	23	2	SIHY		1	1538	0.53
0111JPC250571E2	02	23	2	OECO		1	1539	0.05
0111JPC250571E2	02	24	2	SPCO		2	1498	0.99
0111JPC250571E2	02	24	2	PLPU		1	1499	0.54
0111JPC250571E2	02	24	2	CIUN		10		10.0
0111JPC250571E2	02	24	2	ARFR		23	1500	47.70
0111JPC250571E2	02	24	2	OPPO	1	12	1501	4.55
0111JPC250571E2	02	24	2	OPPO	3	7	1502	22.86
0111JPC250571E2	02	24	2	LARE		1	1503	0.12
0111JPC250571E2	02	24	2	MAVI		10	1504	14.07
0111JPC250571E2	02	24	2	PSTE		1		0.03
0111JPC250571E2	02	24	2	LEDE		1	1505	0.30
0111JPC250571E2	.5	24	2	CIUN		10	1506	10.00
0111JPC250571E2	.5	24	2	PSTE		1	1507	0.03
0111JPC250571E2	.5	24	2	ARFR		1	1508	0.38
0111JPC250571E2	.5	24	2	PLPU		1	1509	0.12
0111JPC250571E2	.5	24	2	SPCO		1	1510	0.42
0111JPC250571E2	.5	24	2	LEDE		1	1511	0.17
0111JPC250571E2	.5	24	2	FEOC		10	1512	30.04
0111JPC250571E2	.5	24	2	CAHF		2	1513	1.40
0111JPC250571E2	.5	24	2	BOGR		24	1514	19.36
0111JPC250571E2	02	24	2	ASMO		1	1515	0.09
0111JPC250571E2	.5	24	2	LICH			1516	0.49
0111JPC250571E2	.5	24	2	LITR		57	1517	72.73

0111JPC260571E2	02	26	2	GUSA		8	1587	24.83
0111JPC260571E2	02	26	2	ARFR		84	1588	150.02
0111JPC260571E2	02	26	2	PLPU		6	1589	2.98
0111JPC260571E2	02	26	2	LEDF		1	1590	0.61
0111JPC260571E2	02	26	2	SPCO		3	1591	5.79
0111JPC260571E2	02	26	2	DEPI		1	1592	0.07
0111JPC260571E2	02	26	2	THTR		2	1593	1.34
0111JPC260571E2	02	26	2	OECO		1	1594	0.27
0111JPC260571E2	02	26	2	MAVI		1	1595	6.99
0111JPC260571E2	02	26	2	OPPO	1	58	1596	17.25
0111JPC260571E2	02	26	2	OPPO	3	2	1597	9.85
0111JPC260571E2	.5	26	2	ARFR		54	1598	101.95
0111JPC260571E2	.5	26	2	CHNA		4	1599	11.38
0111JPC260571E2	.5	26	2	LEDF		1	1600	0.18
0111JPC260571E2	.5	26	2	OECO		1	1601	0.08
0111JPC260571E2	.5	26	2	SPCO		1	1602	0.09
0111JPC260571E2	.5	26	2	PLPU		1	1603	0.38
0111JPC260571E2	.5	26	2	THTR		1	1604	0.32
0111JPC260571E2	.5	26	2	CAHE		1	1605	0.48
0111JPC260571E2	.5	26	2	FEOC		1	1606	0.09
0111JPC260571E2	.5	26	2	BOGR		19	1607	21.08
0111JPC260571E2	.5	26	2	LICH			1608	2.01
0111JPC260571E2	.5	26	2	LITR		110	1609	37.21
0111JPC260571E2	02	26	2	MILI		1	1610	0.07
0111JPC250571E2	02	22	2	SPCO		6	1478	8.11
0111JPC250571E2	02	22	2	ASMI		1	1479	0.50
0111JPC250571E2	02	22	2	PLPU		1	1480	1.16
0111JPC250571E2	02	22	2	ARFR		1	1481	1.08
0111JPC250571E2	02	22	2	OPPO	1	4	1482	0.70
0111JPC250571E2	02	22	2	LEDF		1	1483	0.09
0111JPC250571E2	02	22	2	LARF		1	1484	0.15
0111JPC250571E2	02	22	2	OECO		1	1485	0.15
0111JPC250571E2	.5	22	2	ARFR		1	1486	0.31
0111JPC250571E2	.5	22	2	ASMI		1	1487	0.21
0111JPC250571E2	.5	22	2	SAKA		1	1488	0.08
0111JPC250571E2	.5	22	2	PLPU		1	1489	0.43
0111JPC250571E2	.5	22	2	SPCO		3	1490	2.45
0111JPC250571E2	.5	22	2	BOGR		21	1491	19.60
0111JPC250571E2	.5	22	2	FEOC		17	1492	45.51
0111JPC250571E2	.5	22	2	LITR		42	1493	56.03
0111JPC250571E2	.5	22	2	LICH			1494	0.27
0111JPC250571E2	.5	22	2	DEPI		1	1495	0.01
0111JPC250571E2	.5	22	2	LARF		1	1496	0.06
0111JPC250571E2	.5	22	2	LEDF		1	1497	0.06
0111JPC250571E2	.5	34	6	SPCO		2		
0111JPC250571E2	.5	34	6	LEDE		1		
0111JPC250571E2	.5	34	6	LARF		1		
0111JPC250571E2	.5	34	6	PLPU		1		
0111JPC250571E2	.5	34	6	OPPO	3	2		
0111JPC250571E2	.5	34	6	FEOC		3		
0111JPC250571E2	.5	34	6	BOGR		36		
0111JPC250571E2	.5	32	6	ARFR		10		
0111JPC250571E2	.5	32	6	OPPO	1	89		
0111JPC250571E2	.5	32	6	OPPO	3	2		
0111JPC250571E2	.5	32	6	PLPU		2		
0111JPC250571E2	.5	32	6	LEDF		1		
0111JPC250571E2	.5	32	6	LARF		1		
0111JPC250571E2	.5	32	6	CAHE		27		
0111JPC250571E2	.5	32	6	FEOC		13		
0111JPC250571E2	.5	32	6	BOGR		20		

0111JPC250571E2	.5	31	6	ARFR		16		
0111JPC250571E2	.5	31	6	LEDF		1		
0111JPC250571E2	.5	31	6	SPCO		2		
0111JPC250571E2	.5	31	6	PLPU		1		
0111JPC250571E2	.5	31	6	FFOC		10		
0111JPC250571E2	.5	31	6	BOGR		23		
0111JPC250571E2	.5	31	6	BUDA		5		
0111JPC250571E2	.5	31	6	CAMF		1		
0111JPC250571E2	.5	35	6	OECO		1		
0111JPC250571F2	.5	35	6	SPCO		1		
0111JPC250571E2	.5	35	6	PLPU		1		
0111JPC250571E2	.5	35	6	LARF		1		
0111JPC250571E2	.5	35	6	LEDF		1		
0111JPC250571E2	.5	35	6	FFOC		10		
0111JPC250571E2	.5	35	6	LOOR		1		
0111JPC250571E2	.5	35	6	BOGR		26		
0111JPC250571E2	.5	35	6	ARFR		39		
0111JPC260571E2	.5	33	6	GUSA		3		
0111JPC260571E2	.5	33	6	ARFR		7		
0111JPC260571E2	.5	33	6	OPPO	1	25		
0111JPC260571E2	.5	33	6	OPPO	3	10		
0111JPC260571E2	.5	33	6	MASP		3		
0111JPC260571E2	.5	33	6	LIIN		4		
0111JPC260571E2	.5	33	6	PLPU		1		
0111JPC260571E2	.5	33	6	OECO		1		
0111JPC260571E2	.5	33	6	CAMF		3		
0111JPC260571E2	.5	33	6	LEDF		1		
0111JPC260571E2	.5	33	6	BUDA		2		
0111JPC260571E2	.5	33	6	BOGR		34		
0111JPC260571E2	.5	33	6	LOOR		1		
0111JPC260571E2	.5	36	6	SPCO		1		
0111JPC260571E2	.5	36	6	ARFR		24		
0111JPC260571E2	.5	36	6	LARF		1		
0111JPC260571E2	.5	36	6	PLPU		1		
0111JPC260571E2	.5	36	6	LEDF		1		
0111JPC260571E2	.5	36	6	OPPO	1	28		
0111JPC260571E2	.5	36	6	OPPO	3	6		
0111JPC260571E2	.5	36	6	FFOC		1		
0111JPC260571E2	.5	36	6	CAMF		8		
0111JPC260571E2	.5	36	6	BUDA		14		
0111JPC260571E2	.5	36	6	BOGR		12		
0111JPC290571F1	02	23	2	ARFR		205	2051	380.65
0111JPC290571F1	02	23	2	LEDF		3	2052	04.53
0111JPC290571F1	02	23	2	PLPU		3	2053	02.39
0111JPC290571F1	02	23	2	SPCO		3	2054	03.86
0111JPC290571F1	02	23	2	GACO		1	2055	00.44
0111JPC290571F1	02	23	2	OPPO	1	230	2056	55.87
0111JPC290571F1	02	23	2	OPPO	3	7	2057	85.38
0111JPC290571F1	02	23	2	LARF		1	2058	00.48
0111JPC290571F1	02	23	2	DEPT		1	2059	00.31
0111JPC290571F1	02	23	2	THTR		1	2060	00.05
0111JPC290571F1	.5	23	2	ARFR		60	2061	212.41
0111JPC290571F1	.5	23	2	LARF		1	2062	00.07
0111JPC290571F1	.5	23	2	OPPO	1	130	2063	34.20
0111JPC290571F1	.5	23	2	OPPO	3	4	2064	78.17
0111JPC290571F1	.5	23	2	PLPU		1	2065	00.22
0111JPC290571F1	.5	23	2	SPCO		1	2066	00.58
0111JPC290571F1	.5	23	2	LEDF		1	2067	00.08
0111JPC290571F1	.5	23	2	FFOC		3	2068	06.60

0111JPC290571F1	.5	23	2	CAHF		6	2069	14.84
0111JPC290571F1	.5	23	2	BOGR		9	2070	09.95
0111JPC290571F1	.5	23	2	LICH			2071	03.05
0111JPC290571F1	.5	23	2	LITR		155	2077	376.14
0111JPC290571F1	02	23	2	CHAL		1	2074	00.32
0111JPC290571F1	02	23	2	OFCO		1	2075	00.07
0111JPC290571F1	02	23	2	SAKA		1	2076	00.03
0111JPC290571F1	02	24	2	LEDF		12	2077	14.71
0111JPC290571F1	02	24	2	ARFR		65	2078	259.66
0111JPC290571F1	02	24	2	PLPU		4	2079	04.16
0111JPC290571F1	02	24	2	LARF		3	2080	02.06
0111JPC290571F1	02	24	2	SPCO		2	2081	05.37
0111JPC290571F1	02	24	2	TOGR		1	2082	00.47
0111JPC290571F1	02	24	2	DFPI		3	2083	01.80
0111JPC290571F1	02	24	2	OFCO		1	2084	00.30
0111JPC290571F1	02	24	2	THTR		1	2085	01.29
0111JPC290571F1	.5	24	2	LEDF		3	2086	02.71
0111JPC290571F1	.5	24	2	ARFR		12	2087	36.24
0111JPC290571F1	.5	24	2	PLPU		1	2088	01.21
0111JPC290571F1	.5	24	2	LARF		1	2089	00.60
0111JPC290571F1	.5	24	2	SPCO		1	2090	02.54
0111JPC290571F1	.5	24	2	FEOC		18	2091	37.70
0111JPC290571F1	.5	24	2	BOGR		26	2092	33.73
0111JPC290571F1	.5	24	2	LICH			2093	00.76
0111JPC290571F1	.5	24	2	LITR		65	2094	42.95
0111JPC290571F1	02	24	2	SIHY		1	2095	00.31
0111JPC290571F1	02	24	2	TRA		1	2096	00.07
0111JPC290571F1	.5	24	2	THTR		1	2097	00.13
0111JPC290571F1	.5	24	2	OFCO		1	2098	00.04
0111JPC290571F1	.5	24	2	DFPI		1	2099	00.02
0111JPC290571F1	02	22	2	LEDF		11	2100	11.77
0111JPC290571F1	02	22	2	ARFR		90	2101	230.06
0111JPC290571F1	02	22	2	SPCO		2	2102	04.42
0111JPC290571F1	02	22	2	PLPU		2	2103	02.21
0111JPC290571F1	02	22	2	LARF		1	2104	00.21
0111JPC290571F1	02	22	2	GACO		1	2105	00.60
0111JPC290571F1	02	22	2	GUSA		3	2106	04.85
0111JPC290571F1	02	22	2	OPPO	1	305	2107	114.40
0111JPC290571F1	02	22	2	OPPO	3	11	2108	52.53
0111JPC290571F1	02	22	2	CYAC		2		2.48
0111JPC290571F1	02	22	2	MAVI		3		1.65
0111JPC290571F1	02	22	2	SAKA		1	2109	00.15
0111JPC290571F1	02	22	2	THTR		1	2100	00.11
0111JPC290571F1	02	22	2	HASP		1	2111	00.87
0111JPC290571F1	.5	22	2	ARFR		30	2112	40.49
0111JPC290571F1	.5	22	2	SPCO		1	2113	00.43
0111JPC290571F1	.5	22	2	PLPU		1	2114	00.76
0111JPC290571F1	.5	22	2	LARF		1	2115	00.17
0111JPC290571F1	.5	22	2	CYAC		2	2116	02.44
0111JPC290571F1	.5	22	2	MAVI		3	2117	01.65
0111JPC290571F1	.5	22	2	CAHF		2	2118	01.93
0111JPC290571F1	.5	22	2	FEOC		2	2119	02.39
0111JPC290571F1	.5	22	2	BOGR		17	2120	07.62
0111JPC290571F1	.5	22	2	BUDA		15	2121	22.20
0111JPC290571F1	.5	22	2	LEDF		1	2122	01.29
0111JPC290571F1	.5	22	2	LICH			2123	05.20
0111JPC290571F1	.5	22	2	LITR		80	2124	80.42
0111JPC290571F1	.5	22	2	THTR		1	2125	700.06

0111JPC310571F1	02	26	2	ARFR		125	2125	290.96
0111JPC310571F1	02	26	2	LFDE		7	2126	06.72
0111JPC310571F1	02	26	2	TOGR		2	2127	01.02
0111JPC310571F1	02	26	2	SPCO		3	2128	07.93
0111JPC310571F1	02	26	2	LARF		1	2129	00.49
0111JPC310571F1	02	26	2	PLPU		1	2130	01.56
0111JPC310571F1	02	26	2	GACO		1	2131	00.28
0111JPC310571F1	02	26	2	OPPO	1	465	2132	137.01
0111JPC310571F1	02	26	2	OPPO	3	10	2133	122.73
0111JPC310571F1	.5	26	2	PLPU		1	2134	00.64
0111JPC310571F1	.5	26	2	ARFR		15	2135	11.78
0111JPC310571F1	.5	26	2	LFDE		2	2136	01.80
0111JPC310571F1	.5	26	2	SPCO		1	2137	00.51
0111JPC310571F1	.5	26	2	OPPO	1	50	2138	11.49
0111JPC310571F1	.5	26	2	OPPO	3	2	2139	22.77
0111JPC310571F1	.5	26	2	LARF		1	2140	00.04
0111JPC310571F1	.5	26	2	CAHF		2	2141	01.71
0111JPC310571F1	.5	26	2	FFOC		1	2142	00.45
0111JPC310571F1	.5	26	2	RUDA		1	2143	00.31
0111JPC310571F1	.5	26	2	BOGR		32	2144	28.88
0111JPC310571F1	.5	26	2	LICH			2145	02.03
0111JPC310571F1	.5	26	2	LITR		70	2146	59.67
0111JPC310571F1	02	26	2	CHLF		1	2152	00.04
0111JPC310571F1	02	26	2	SAKA		1	2149	00.21
0111JPC310571F1	02	26	2	CYAC		1	2150	00.24
0111JPC310571F1	.5	26	2	GACO		1	2151	00.03
0111JPC310571F1	.5	26	2	THTP		1	2153	00.03
0111JPC310571F1	.5	26	2	BAOP		1	2554	00.05
0111JPC310571F1	02	25	2	ARFR		290	2155	583.22
0111JPC310571F1	02	25	2	LFDE		2	2156	01.42
0111JPC310571F1	02	25	2	LARF		2	2157	01.76
0111JPC310571F1	02	25	2	GUSA		14	2158	32.85
0111JPC310571F1	02	25	2	SPCO		3	2159	04.51
0111JPC310571F1	02	25	2	GACO		2	2160	00.41
0111JPC310571F1	02	25	2	THTR		1	2162	00.09
0111JPC310571F1	02	25	2	LFMO		1	2163	00.36
0111JPC310571F1	02	25	2	OFCO		1		0.33
0111JPC310571F1	.5	25	2	OFCO		1	2164	00.33
0111JPC310571F1	.5	25	2	ARFR		60	2165	196.08
0111JPC310571F1	.5	25	2	LFDE		1	2166	00.18
0111JPC310571F1	.5	25	2	SPCO		1	2167	00.93
0111JPC310571F1	.5	25	2	LARF		1	2168	00.39
0111JPC310571F1	.5	25	2	GACO		1	2169	00.04
0111JPC310571F1	.5	25	2	CAHF		1	2170	01.11
0111JPC310571F1	.5	25	2	FFOC		1	2171	00.68
0111JPC310571F1	.5	25	2	BOGR		16	2172	16.16
0111JPC310571F1	.5	25	2	LICH			2173	01.44
0111JPC310571F1	.5	25	2	LITR		125	2174	197.98
0111JPC310571F1	.5	25	2	MAVI		1	2176	00.25
0111JPC310571F1	02	25	2	OPPO		1	2177	00.22

0111JPC290571F1	02	21	2	SPCO		4	2033	03.91
0111JPC290571F1	02	21	2	PLPU		5	2034	07.57
0111JPC290571F1	02	21	2	LEDF		1	2035	00.28
0111JPC290571F1	02	21	2	ARFR		79	2036	129.51
0111JPC290571F1	02	21	2	CHLE		1	2037	00.01
0111JPC290571F1	02	21	2	OPPO	1	3	2038	01.44
0111JPC290571F1	02	21	2	THTR		1	2050	00.60
0111JPC290571F1	02	21	2	MAVI		1	2039	00.37
0111JPC290571F1	.5	21	2	THTR		1	2040	00.54
0111JPC290571F1	.5	21	2	SPCO		1	2041	00.41
0111JPC290571F1	.5	21	2	PLPU		1	2042	00.84
0111JPC290571F1	.5	21	2	CAHF		1	2043	01.58
0111JPC290571F1	.5	21	2	FEOC		55	2044	91.88
0111JPC290571F1	.5	21	2	BUDA		7	2045	00.99
0111JPC290571F1	.5	21	2	BOGR		4	2046	13.32
0111JPC290571F1	.5	21	2	LICH			2047	00.31
0111JPC290571F1	.5	21	2	LITR		75	2048	130.33
0111JPC290571F1	02	21	2	SAKA		1	2049	00.30
0111JPC290571F1	.5	21	2	SAKA		1	2073	00.02
0111JPC290571F1	.5	31	6	LEDF		8		
0111JPC290571F1	.5	31	6	ARFR		29		
0111JPC290571F1	.5	31	6	PLPU		1		
0111JPC290571F1	.5	31	6	SPCO		1		
0111JPC290571F1	.5	31	6	SAKA		1		
0111JPC290571F1	.5	31	6	FEOC		3		
0111JPC290571F1	.5	31	6	BUDA		17		
0111JPC290571F1	.5	31	6	BOGR		16		
0111JPC290571F1	.5	34	6	LEDF		18		
0111JPC290571F1	.5	34	6	CYAC		1		
0111JPC290571F1	.5	34	6	PLPU		2		
0111JPC290571F1	.5	34	6	LARE		1		
0111JPC290571F1	.5	34	6	ARFR		11		
0111JPC290571F1	.5	34	6	OPPO	1	4		
0111JPC290571F1	.5	34	6	SPCO		1		
0111JPC290571F1	.5	34	6	THTR		1		
0111JPC290571F1	.5	34	6	CAHF		1		
0111JPC290571F1	.5	34	6	FEOC		3		
0111JPC290571F1	.5	34	6	BOGR		31		
0111JPC290571F1	.5	33	6	ARFR		64		
0111JPC290571F1	.5	33	6	DFPI		2		
0111JPC290571F1	.5	33	6	LARE		1		
0111JPC290571F1	.5	33	6	SPCO		6		
0111JPC290571F1	.5	33	6	PLPU		1		
0111JPC290571F1	.5	33	6	LEDF		3		
0111JPC290571F1	.5	33	6	OFCO		1		
0111JPC290571F1	.5	33	6	FEOC		2		
0111JPC290571F1	.5	33	6	BOGR		25		
0111JPC290571F1	.5	32	6	LEDF		9		
0111JPC290571F1	.5	32	6	CIUN		1		
0111JPC290571F1	.5	32	6	PLPU		1		
0111JPC290571F1	.5	32	6	LARE		1		
0111JPC290571F1	.5	32	6	ARFR		13		
0111JPC290571F1	.5	32	6	OPPO	1	12		
0111JPC290571F1	.5	32	6	SPCO		1		
0111JPC290571F1	.5	32	6	CAHF		1		
0111JPC290571F1	.5	32	6	FEOC		8		
0111JPC290571F1	.5	32	6	OPPO	3	1		
0111JPC290571F1	.5	32	6	SAKA		1		
0111JPC290571F1	.5	32	6	BOGR		38		

0111JPC290571F1	.5	35	6	LEDF		2		
0111JPC290571F1	.5	35	6	PLPU		1		
0111JPC290571F1	.5	35	6	ARFR		40		
0111JPC290571F1	.5	35	6	SIHY		1		
0111JPC290571F1	.5	35	6	OPPO	1	33		
0111JPC290571F1	.5	35	6	OPPO	3	2		
0111JPC290571F1	.5	35	6	CAHE		2		
0111JPC290571F1	.5	35	6	FEOC		36		
0111JPC290571F1	.5	35	6	BOGR		9		
0111JPC290571F1	.5	35	6	BUDA		6		
0111JPC290571F1	.5	36	6	SPCO		1		
0111JPC290571F1	.5	36	6	PLPU		1		
0111JPC290571F1	.5	36	6	GACO		1		
0111JPC290571F1	.5	36	6	ARFR		19		
0111JPC290571F1	.5	36	6	SIHY		1		
0111JPC290571F1	.5	36	6	OECO		1		
0111JPC290571F1	.5	36	6	CAHE		4		
0111JPC290571F1	.5	36	6	FEOC		35		
0111JPC290571F1	.5	36	6	BUDA		8		
0111JPC290571F1	.5	36	6	BOGR		8		
0111JPC030671F2	02	23	2	OPPO	1	175	2703	64.4
0111JPC030671F2	02	23	2	OPPO	3	4	2704	17.2
0111JPC030671F2	02	23	2	SIHY		2	2705	4.9
0111JPC030671F2	02	23	2	CYAC		3	2706	0.98
0111JPC030671F2	02	23	2	PLPU		1	2707	0.15
0111JPC030671F2	02	23	2	MILI		1	2708	0.1
0111JPC030671F2	02	23	2	LEMO		1		0.9
0111JPC030671F2	.5	23	2	LEMO		1	2709	0.9
0111JPC030671F2	.5	23	2	CYAC		1	2710	0.45
0111JPC030671F2	.5	23	2	OPPO	1	95	2711	38.8
0111JPC030671F2	.5	23	2	OPPO	3	2	2712	14.1
0111JPC030671F2	.5	23	2	PLPU		1	2713	0.01
0111JPC030671F2	.5	23	2	FEOC		42	2714	59.3
0111JPC030671F2	.5	23	2	BOGR		12	2715	23.2
0111JPC030671F2	.5	23	2	LICH			2716	0.4
0111JPC030671F2	.5	23	2	LITR		70	2717	156.26
0111JPC030671F2	.5	23	2	SAKA		1	2718	0.1
0111JPC020671F2	02	22	2	AGSM		20	2650	36.30
0111JPC020671F2	02	22	2	SPCO		4	2651	8.01
0111JPC020671F2	02	22	2	LEDF		8	2652	6.16
0111JPC020671F2	02	22	2	LARF		3	2653	0.54
0111JPC020671F2	02	22	2	CHAL		1	2654	0.27
0111JPC020671F2	02	22	2	OPPO	1	80	2655	42.39
0111JPC020671F2	02	22	2	ARFR		3	2656	5.25
0111JPC020671F2	02	22	2	MAVI		1	2657	0.40
0111JPC020671F2	02	22	2	PSTF		1	2658	0.24
0111JPC020671F2	02	22	2	LOOR			2659	0.02
0111JPC020671F2	.5	22	2	LARF		1	2660	0.25
0111JPC020671F2	.5	22	2	LEDF		3	2661	2.25
0111JPC020671F2	.5	22	2	SPCO		1	2662	1.77
0111JPC020671F2	.5	22	2	SETR		1	2663	0.01
0111JPC020671F2	.5	22	2	CHAL		1	2664	0.17
0111JPC020671F2	.5	22	2	FEOC		3	2665	9.03
0111JPC020671F2	.5	22	2	BOGR		30	2666	27.82
0111JPC020671F2	.5	22	2	LICH			2667	1.50
0111JPC020671F2	.5	22	2	LITR		65	2668	136.59
0111JPC020671F2	.5	22	2	AGSM		7	2669	10.71
0111JPC020671F2	02	22	2	OPPO	3	1	2670	2.05
0111JPC020671F2	.5	22	2	CAHE		1	2671	0.98

0111JPC020671F2	02	21	2	CHNA		2	2632	4.1
0111JPC020671F2	02	21	2	SPCO		7	2633	15.2
0111JPC020671F2	02	21	2	LEDE		2	2634	3.02
0111JPC020671F2	02	21	2	PLPU		2	2635	1.0
0111JPC020671F2	02	21	2	ERFF		2	2636	1.8
0111JPC020671F2	02	21	2	DEPI		1		0.08
0111JPC020671F2	02	21	2	ASMI		2		0.6
0111JPC020671F2	02	21	2	OPPO	1	3	2648	3.02
0111JPC020671F2	02	21	2	SAKA		1	2637	0.1
0111JPC020671F2	.5	21	2	PLPU		1	2638	0.3
0111JPC020671F2	.5	21	2	SPCO		4	2639	5.05
0111JPC020671F2	.5	21	2	LEDE		2	2640	0.4
0111JPC020671F2	.5	21	2	ASMI		2	2641	0.6
0111JPC020671F2	.5	21	2	DEPI		1	2642	0.08
0111JPC020671F2	.5	21	2	OPPO	1	3	2643	1.3
0111JPC020671F2	.5	21	2	FFOC		2	2644	1.2
0111JPC020671F2	.5	21	2	BOGR		36	2645	34.8
0111JPC020671F2	.5	21	2	LICH			2646	3.6
0111JPC020671F2	.5	21	2	LITR		60	2647	71.03
0111JPC020671F2	.5	21	2	CRMI			2649	0.03
0111JPC020671F2	02	25	2	LFDF		4	2606	2.29
0111JPC020671F2	02	25	2	CHAL		1	2607	0.61
0111JPC020671F2	02	25	2	BAOP		3	2608	0.24
0111JPC020671F2	02	25	2	OPPO	1	335	2609	94.17
0111JPC020671F2	02	25	2	OPPO	3	10	2610	73.53
0111JPC020671F2	02	25	2	SPCO		5	2611	3.95
0111JPC020671F2	02	25	2	ARLO		2	2612	4.62
0111JPC020671F2	02	25	2	PLPU		1	2613	0.50
0111JPC020671F2	02	25	2	CRMI		1	2627	0.14
0111JPC020671F2	02	25	2	OFCO		1		0.04
0111JPC020671F2	.5	25	2	BAOP		1	2614	0.12
0111JPC020671F2	.5	25	2	CRMI		1	2615	0.03
0111JPC020671F2	.5	25	2	OPPO	1	195	2616	47.66
0111JPC020671F2	.5	25	2	OFCO		1	2617	0.04
0111JPC020671F2	.5	25	2	CHAL		1	2618	0.25
0111JPC020671F2	.5	25	2	OPPO	3	1	2619	11.69
0111JPC020671F2	.5	25	2	PLPU		1	2620	0.24
0111JPC020671F2	.5	25	2	CAHF		5	2621	5.02
0111JPC020671F2	.5	25	2	FFOC		2	2622	3.3
0111JPC020671F2	.5	25	2	BOGR		39	2633	29.95
0111JPC020671F2	.5	25	2	LICH			2624	0.39
0111JPC020671F2	.5	25	2	LITR		100	2626	201.48
0111JPC020671F2	.5	25	2	LFDF		1	2626	0.70
0111JPC020671F2	02	25	2	CHIN		1	2628	0.22
0111JPC020671F2	.5	25	2	CHIN		1	2629	0.09
0111JPC020671F2	.5	25	2	MAVI		1	2630	0.06
0111JPC020671F2	.5	25	2	SAKA		1	2631	0.11

0111JPC020671F2	02	24	2	LARE		2	2677	0.2
0111JPC020671F2	02	24	2	SPCO		3	2673	5.65
0111JPC020671F2	02	24	2	ARFR		280	2674	482.4
0111JPC020671F2	02	24	2	GUSA		7	2675	4.6
0111JPC020671F2	02	24	2	OPPO	1	300	2676	95.0
0111JPC020671F2	02	24	2	OPPO	3	15	2677	149.2
0111JPC020671F2	02	24	2	GACO		1	2678	0.13
0111JPC020671F2	02	24	2	LEDE		3	2679	1.5
0111JPC020671F2	02	24	2	CRMI		1	2680	0.1
0111JPC020671F2	02	24	2	SAKA		1	2681	0.02
0111JPC020671F2	02	24	2	CHAL		1	2682	0.3
0111JPC020671F2	02	24	2	PSTE		1	2683	0.1
0111JPC020671F2	02	24	2	MAVI		1	2697	0.2
0111JPC020671F2	.5	24	2	OPPO	1	100	2685	48.4
0111JPC020671F2	.5	24	2	OPPO	3	2	2686	54.0
0111JPC020671F2	.5	24	2	GUSA		5	2687	25.2
0111JPC020671F2	.5	24	2	ARFR		65	2688	142.7
0111JPC020671F2	.5	24	2	LARE		1	2689	0.6
0111JPC020671F2	.5	24	2	LEDE		1	2690	0.41
0111JPC020671F2	.5	24	2	GACO		1	2691	0.6
0111JPC020671F2	.5	24	2	CAHE		1	2692	1.9
0111JPC020671F2	.5	24	2	FFOC		1	2693	0.5
0111JPC020671F2	.5	24	2	BOGR		7	2694	12.1
0111JPC020671F2	.5	24	2	LICH			2695	0.5
0111JPC020671F2	.5	24	2	LITR		170	2696	206.14
0111JPC020671F2	.5	24	2	SAKA		1	2698	0.01
0111JPC020671F2	.5	24	2	CHAL		1	2699	0.01
0111JPC020671F2	.5	24	2	MILI		1	2700	0.05
0111JPC020671F2	.5	24	2	SPCO		2	2701	1.1
0111JPC020671F2	.5	24	2	PLPU		1	2702	0.01
0111JPC020671F2	02	26	2	LARE		1	2590	0.01
0111JPC020671F2	02	26	2	LEDE		2	2591	0.30
0111JPC020671F2	02	26	2	GACO		2	2592	1.22
0111JPC020671F2	02	26	2	SPCO		3	2593	4.52
0111JPC020671F2	02	26	2	SAKA		1	2594	0.01
0111JPC020671F2	02	26	2	MAVI		4	2595	40.16
0111JPC020671F2	02	26	2	CRMI		1		0.14
0111JPC020671F2	.5	26	2	CRMI		1	2596	0.14
0111JPC020671F2	.5	26	2	SPCO		1	2597	1.98
0111JPC020671F2	.5	26	2	LEDE		1	2598	0.14
0111JPC020671F2	.5	26	2	GACO		1	2599	0.26
0111JPC020671F2	.5	26	2	CAHE		5	2600	3.06
0111JPC020671F2	.5	26	2	FFOC		20	2601	37.08
0111JPC020671F2	.5	26	2	BOGR		31	2602	30.52
0111JPC020671F2	.5	26	2	LICH			2603	2.78
0111JPC020671F2	.5	26	2	LITR		65	2604	170.89
0111JPC020671F2	.5	26	2	MILI		1	2605	0.09
0111JPC020671F2	.5	36	6	GUSA		10		
0111JPC020671F2	.5	36	6	SPCO		5		
0111JPC020671F2	.5	36	6	OFCO		2		
0111JPC020671F2	.5	36	6	CRMI		1		
0111JPC020671F2	.5	36	6	SAKA		1		
0111JPC020671F2	.5	36	6	CRY		2		
0111JPC020671F2	.5	36	6	OPPO	1	200		
0111JPC020671F2	.5	36	6	OPPO	3	12		
0111JPC020671F2	.5	36	6	FFOC		1		
0111JPC020671F2	.5	36	6	BOGR		36		

0111JPC020671F2	.5	33	6	GUSA		2		
0111JPC020671F2	.5	33	6	LEDF		1		
0111JPC020671F2	.5	33	6	PLPU		1		
0111JPC020671F2	.5	33	6	SPCO		1		
0111JPC020671F2	.5	33	6	OPPO	1	55		
0111JPC020671F2	.5	33	6	FEOC		1		
0111JPC020671F2	.5	33	6	BUDA		1		
0111JPC020671F2	.5	33	6	BOGR		33		
0111JPC020671F2	.5	31	6	LEDF		4		
0111JPC020671F2	.5	31	6	LARF		1		
0111JPC020671F2	.5	31	6	SPCO		1		
0111JPC020671F2	.5	31	6	BUDA		20		
0111JPC020671F2	.5	31	6	BOGR		12		
0111JPC020671F2	.5	31	6	FEOC		1		
0111JPC020671F2	.5	35	6	ARFR		5		
0111JPC020671F2	.5	35	6	ASMI		2		
0111JPC020671F2	.5	35	6	SPCO		2		
0111JPC020671F2	.5	35	6	CHLF		2		
0111JPC020671F2	.5	35	6	CRMI		1		
0111JPC020671F2	.5	35	6	CAHF		1		
0111JPC020671F2	.5	35	6	FEOC		1		
0111JPC020671F2	.5	35	6	MAVI		2		
0111JPC020671F2	.5	35	6	PLPU		1		
0111JPC020671F2	.5	35	6	BUDA		35		
0111JPC020671F2	.5	34	6	LARF		1		
0111JPC020671F2	.5	34	6	CHLF		1		
0111JPC020671F2	.5	34	6	LEDF		1		
0111JPC020671F2	.5	34	6	PLPU		1		
0111JPC020671F2	.5	34	6	FEOC		8		
0111JPC020671F2	.5	34	6	BOGR		25		
0111JPC020671F2	.5	34	6	BUDA		6		
0111JPC020671F2	.5	32	6	ARFR		2		
0111JPC020671F2	.5	32	6	LEDF		2		
0111JPC020671F2	.5	32	6	PSTF		1		
0111JPC020671F2	.5	32	6	CHAL		1		
0111JPC020671F2	.5	32	6	PLPU		1		
0111JPC020671F2	.5	32	6	SPCO		1		
0111JPC020671F2	.5	32	6	MAVI		4		
0111JPC020671F2	.5	32	6	FEOC		1		
0111JPC020671F2	.5	32	6	BOGR		37		
0111JPC29057161	02	22	2	ARFR		43	1924	81.68
0111JPC29057161	02	22	2	LEDF		175	1925	105.38
0111JPC29057161	02	22	2	OFCO		14	1926	14.43
0111JPC29057161	02	22	2	LARF		19	1927	10.77
0111JPC29057161	02	22	2	OPPO	1	810	1928	245.3
0111JPC29057161	02	22	2	OPPO	3	35	1929	287.2
0111JPC29057161	02	22	2	GUSA		4	1930	20.50
0111JPC29057161	02	22	2	SPCO		8	1931	30.31
0111JPC29057161	02	22	2	PLPU		3	1932	05.59
0111JPC29057161	02	22	2	OEPI		6	1933	07.00
0111JPC29057161	02	22	2	LIPU		1	1934	00.12
0111JPC29057161	.5	22	2	LEDF		45	1935	35.23
0111JPC29057161	.5	22	2	PLPU		1	1936	01.74
0111JPC29057161	.5	22	2	SPCO		4	1937	11.00

0111JPC29057IG1	.5	22	?	OFCO		5	1938	05.60
0111JPC29057IG1	.5	22	?	LARE		3	1939	02.02
0111JPC29057IG1	.5	22	?	ARFR		?	1940	06.32
0111JPC29057IG1	.5	22	?	GACO		1	1941	00.22
0111JPC29057IG1	.5	22	?	CAHE		1	1942	00.28
0111JPC29057IG1	.5	22	?	FFOC		32	1943	32.84
0111JPC29057IG1	.5	22	?	OPPO	1	12	1944	14.5
0111JPC29057IG1	.5	22	?	OPPO	3	1	1945	18.1
0111JPC29057IG1	.5	22	?	BOGR		27	1946	48.43
0111JPC29057IG1	.5	22	?	LICH			1947	00.49
0111JPC29057IG1	.5	22	?	LITR		95	1948	206.95
0111JPC29057IG1	.5	22	?	SAKA		1	1949	00.07
0111JPC29057IG1	.5	22	?	LIPU		1	1950	00.06
0111JPC28057IG1	02	24	?	ARFR		185	1973	641.7
0111JPC28057IG1	02	24	?	SPCO		?	1971	3.5
0111JPC28057IG1	02	24	?	LARE		3	1975	1.9
0111JPC28057IG1	02	24	?	PLPU		4	1976	8.9
0111JPC28057IG1	02	24	?	GACO		1	1977	1.15
0111JPC28057IG1	02	24	?	LEDE		4	1978	1.2
0111JPC28057IG1	02	24	?	GUSA		6	1979	42.2
0111JPC28057IG1	02	24	?	OFCO		1	1980	0.1
0111JPC28057IG1	02	24	?	OPPO	1	100	1981	83.9
0111JPC28057IG1	02	24	?	OPPO	3	4	1982	24.1
0111JPC28057IG1	02	24	?	PSTF		1		0.4
0111JPC28057IG1	02	24	?	THTR		1		0.33
0111JPC28057IG1	02	24	?	BRTF		1	1983	0.7
0111JPC28057IG1	02	24	?	CYAC		1		0.1
0111JPC28057IG1	02	24	?	SIHY		1	1984	0.4
0111JPC28057IG1	02	24	?	DEPI		1	2000	0.2
0111JPC28057IG1	02	24	?	THTR		1	2001	0.4
0111JPC28057IG1	02	24	?	PSTF		1	2002	0.5
0111JPC28057IG1	.5	24	?	OFCO		1	2003	0.01
0111JPC28057IG1	.5	24	?	LEDE		1	1985	0.7
0111JPC28057IG1	.5	24	?	PLPU		1	1986	5.3
0111JPC28057IG1	.5	24	?	LARE		1	1987	0.4
0111JPC28057IG1	.5	24	?	GUSA		2	1988	22.6
0111JPC28057IG1	.5	24	?	THTR		1	1989	0.33
0111JPC28057IG1	.5	24	?	PSTF		1	1990	0.4
0111JPC28057IG1	.5	24	?	CYAC		1	1991	0.1
0111JPC28057IG1	.5	24	?	OPPO	3	1	1992	1.8
0111JPC28057IG1	.5	24	?	SPCO		1	1993	1.5
0111JPC28057IG1	.5	24	?	CAHE		1	1994	1.0
0111JPC28057IG1	.5	24	?	FFOC		10	1995	2.5
0111JPC28057IG1	.5	24	?	ARFR		42	1996	144.7
0111JPC28057IG1	.5	24	?	BOGR		30	1997	44.7
0111JPC28057IG1	.5	24	?	LICH			1998	1.2
0111JPC28057IG1	.5	24	?	LITR		130	1999	43.51
0111JPC28057IG1	02	23	?	LEDE		155	1951	174.34
0111JPC28057IG1	02	23	?	PLPU		?	1952	02.68
0111JPC28057IG1	02	23	?	ARFR		5	1953	11.04
0111JPC28057IG1	02	23	?	LARE		16	1954	11.66
0111JPC28057IG1	02	23	?	THTR		1	1955	01.61
0111JPC28057IG1	02	23	?	OFCO		?	1956	00.93
0111JPC28057IG1	02	23	?	OPPO	1	47	1957	3.6
0111JPC28057IG1	02	23	?	PSTF		1	1958	00.04
0111JPC28057IG1	02	23	?	ASMO		?		0.32
0111JPC28057IG1	02	23	?	SPCO		1	1959	01.12
0111JPC28057IG1	02	23	?	UNKF		1	1971	00.12
0111JPC28057IG1	02	23	?	DEPI		1	1972	00.32
0111JPC28057IG1	.5	23	?	LEDE		32	1960	36.63
0111JPC28057IG1	.5	23	?	ASMO		?	1961	00.32
0111JPC28057IG1	.5	23	?	LARE		8	1967	05.11

0111CFD01067111	02	93	?	SETR		3	2506	1.75
0111JPC28057161	.5	23	?	ARFR		?	1965	03.18
0111JPC28057161	.5	23	?	PLPU		1	1966	00.61
0111JPC28057161	.5	23	?	FEOC		19	1967	20.53
0111JPC28057161	.5	23	?	BOGR		33	1968	45.90
0111JPC28057161	.5	23	?	LICH			1969	00.39
0111JPC28057161	.5	23	?	LITR		85	1970	111.67
0111JPC28057161	.5	25	?	BUDA		22	1893	13.84
0111JPC28057161	.5	25	?	LICH			1894	01.23
0111JPC28057161	.5	25	?	LITR		145	1895	65.46
0111JPC28057161	02	25	?	ARFR		260	1860	453.27
0111JPC28057161	02	25	?	DEPI		4	1861	04.75
0111JPC28057161	02	25	?	LFDF		31	1862	24.04
0111JPC28057161	02	25	?	PLPU		7	1863	04.52
0111JPC28057161	02	25	?	OPPO	1	290	1864	67.5
0111JPC28057161	02	25	?	OPPO	3	20	1865	51.0
0111JPC28057161	02	25	?	GUSA		28	1866	106.12
0111JPC28057161	02	25	?	LARF		13	1867	08.42
0111JPC28057161	02	25	?	TRA		1	1868	00.08
0111JPC28057161	02	25	?	SPCO		5	1869	04.28
0111JPC28057161	02	25	?	LFMO		1	1870	01.79
0111JPC28057161	02	25	?	SIHY		6	1871	06.38
0111JPC28057161	02	25	?	OFCO		?	1872	00.43
0111JPC28057161	02	25	?	THTR		1	1873	01.08
0111JPC28057161	02	25	?	GACO		1	1879	00.49
0111JPC28057161	02	25	?	PSTF		1		0.34
0111JPC28057161	02	25	?	HASP		?	1875	00.22
0111JPC28057161	.5	25	?	PLPU		?	1876	01.36
0111JPC28057161	.5	25	?	ARFR		39	1877	71.11
0111JPC28057161	.5	25	?	LFMO		?	1878	01.48
0111JPC28057161	.5	25	?	OPPO	1	50	1879	8.2
0111JPC28057161	.5	25	?	OPPO	3	3	1880	2.2
0111JPC28057161	.5	25	?	SPCO		1	1881	01.06
0111JPC28057161	.5	25	?	DEPI		1	1882	00.74
0111JPC28057161	.5	25	?	PSTF		1	1883	00.34
0111 JPC28057161	.5	25	?	LFDF		6	1884	09.18
0111JPC28057161	.5	25	?	THTR		1	1885	00.13
0111JPC28057161	.5	25	?	GACO		1	1886	00.39
0111JPC28057161	.5	25	?	OFCO		1	1887	00.18
0111JPC28057161	.5	25	?	LARF		9	1888	04.88
0111JPC28057161	.5	25	?	SIHY		?	1889	00.18
0111JPC28057161	.5	25	?	CAHF		11	1890	05.68
0111JPC28057161	.5	25	?	FEOC		26	1891	05.10
0111JPC28057161	.5	25	?	BOGR		14	1892	16.52
0111JPC28057161	02	26	?	ARFR		220	1896	360.72
0111JPC28057161	02	26	?	SPCO		13	1897	41.44
0111JPC28057161	02	26	?	LFDF		3	1898	02.12
0111JPC28057161	02	26	?	PLPU		?	1899	00.50
0111JPC28057161	02	26	?	SIHY		4	1900	05.00
0111JPC28057161	02	26	?	LARF		1	1901	00.26
0111JPC28057161	02	26	?	OPPO	1	400	1902	116.4
0111JPC28057161	02	26	?	OPPO	3	15	1903	107.5
0111JPC28057161	02	26	?	GUSA		20	1904	54.84
0111JPC28057161	02	26	?	LITR		5	1905	11.41

0111JPC28057IG1	02	26	2	SPCR		1	1906	00.82
0111JPC28057IG1	02	26	2	LEMO		1	1907	00.55
0111JPC28057IG1	02	26	2	MAVI		11	1908	11.5
0111JPC28057IG1	.5	26	2	MAVI		8	1909	10.2
0111JPC28057IG1	.5	26	2	SIHY		1	1910	00.42
0111JPC28057IG1	.5	26	2	SPCO		6	1911	09.79
0111JPC28057IG1	.5	26	2	LEDE		2	1912	01.37
0111JPC28057IG1	.5	26	2	LARE		1	1913	00.03
0111JPC28057IG1	.5	26	2	OPPO	1	170	1914	43.4
0111JPC28057IG1	.5	26	2	ARFR		65	1915	122.25
0111JPC28057IG1	.5	26	2	GUSA		2	1916	05.27
0111JPC28057IG1	.5	26	2	OPPO	3	6	1917	41.9
0111JPC28057IG1	.5	26	2	CAME		8	1918	06.57
0111JPC28057IG1	.5	26	2	PLPU		1	1919	00.04
0111JPC28057IG1	.5	26	2	BOGR		30	1920	25.35
0111JPC28057IG1	.5	26	2	LITR		110	1921	209.07
0111JPC28057IG1	.5	26	2	LICH			1922	00.50
0111JPC28057IG1	02	26	2	TOGR		1	1923	00.12
0111JPC29057IG1	02	21	2	GUSA		12	2005	66.7
0111JPC29057IG1	02	21	2	PLPU		1	2006	0.6
0111JPC29057IG1	02	21	2	LARE		2	2007	1.23
0111JPC29057IG1	02	21	2	SPCO		5	2008	8.2
0111JPC29057IG1	02	21	2	LEDE		3	2009	2.8
0111JPC29057IG1	02	21	2	DEPI		2	2010	1.1
0111JPC29057IG1	02	21	2	OPPO	1	195	2011	98.8
0111JPC29057IG1	02	21	2	ARFR		135	2012	398.20
0111JPC29057IG1	02	21	2	OPPO	3	9	2013	69.0
0111JPC29057IG1	02	21	2	ASTR		1	2014	0.1
0111JPC29057IG1	02	21	2	SIHY		1	2015	1.4
0111JPC29057IG1	02	21	2	CYAC		1	2016	0.1
0111JPC29057IG1	02	21	2	GACO		1	2017	0.01
0111JPC29057IG1	.5	21	2	CHNA		5	2018	27.3
0111JPC29057IG1	.5	21	2	PLPU		1	2019	0.5
0111JPC29057IG1	.5	21	2	LARE		1	2020	0.5
0111JPC29057IG1	.5	21	2	SPCO		2	2021	2.8
0111JPC29057IG1	.5	21	2	LEDE		3	2022	0.95
0111JPC29057IG1	.5	21	2	DEPI		1	2023	0.7
0111JPC29057IG1	.5	21	2	OPPO	1	8	2024	1.6
0111JPC29057IG1	.5	21	2	ARFR		9	2025	34.4
0111JPC29057IG1	.5	21	2	BOGR		3	2026	24.3
0111JPC29057IG1	.5	21	2	BUDA		34	2027	26.9
0111JPC29057IG1	.5	21	2	LICH			2028	0.35
0111JPC29057IG1	.5	21	2	LITR		80	2029	146.27
0111JPC29057IG1	.5	21	2	FEOC		1	2030	0.5
0111JPC29057IG1	02	21	2	OFCO		1	2031	0.2
0111JPC29057IG1	.5	21	2	MAVI		1	2030	0.2
0111JPC29057IG1	.5	33	6	LEDE		12		
0111JPC29057IG1	.5	33	6	THTR		1		
0111JPC29057IG1	.5	33	6	LARE		6		
0111JPC29057IG1	.5	33	6	OFCO		2		
0111JPC29057IG1	.5	33	6	PLPU		2		
0111JPC29057IG1	.5	33	6	ARFR		20		
0111JPC29057IG1	.5	33	6	SPCO		1		
0111JPC29057IG1	.5	33	6	OPPO	1	65		
0111JPC29057IG1	.5	33	6	OPPO	3	1		
0111JPC29057IG1	.5	33	6	SIHY		2		
0111JPC29057IG1	.5	33	6	FEOC		19		
0111JPC29057IG1	.5	33	6	BUDA		2		
0111JPC29057IG1	.5	33	6	BOGR		12		
0111JPC29057IG1	.5	33	6	DEPI		1		
0111JPC29057IG1	.5	33	6	GUSA		5		

0111JPC29057161	.5	36	6	SIHY		2		
0111JPC29057161	.5	36	6	OPPO	1	95		
0111JPC29057161	.5	36	6	OPPO	3	9		
0111JPC29057161	.5	36	6	SPCO		3		
0111JPC29057161	.5	36	6	CYAC		1		
0111JPC29057161	.5	36	6	CAHF		3		
0111JPC29057161	.5	36	6	BUDA		20		
0111JPC29057161	.5	36	6	BOGR		14		
0111JPC28057161	.5	32	6	ARFR		50		
0111JPC28057161	.5	32	6	LEDE		4		
0111JPC28057161	.5	32	6	OPPO	1	480		
0111JPC28057161	.5	32	6	OPPO	3	15		
0111JPC28057161	.5	32	6	GUSA		4		
0111JPC28057161	.5	32	6	SPCO		2		
0111JPC28057161	.5	32	6	OECO		1		
0111JPC28057161	.5	32	6	FEOC		1		
0111JPC28057161	.5	32	6	BOGR		10		
0111JPC28057161	.5	32	6	LARE		1		
0111JPC28057161	.5	34	6	PLPU		1		
0111JPC28057161	.5	34	6	ARFR		35		
0111JPC28057161	.5	34	6	LEDE		21		
0111JPC28057161	.5	34	6	OPPO	1	2		
0111JPC28057161	.5	34	6	THTR		1		
0111JPC28057161	.5	34	6	FEOC		10		
0111JPC28057161	.5	34	6	BUDA		20		
0111JPC28057161	.5	31	6	LARF		5		
0111JPC28057161	.5	31	6	LEDE		9		
0111JPC28057161	.5	31	6	ARFR		4		
0111JPC28057161	.5	31	6	DEPI		1		
0111JPC28057161	.5	31	6	PLPU		2		
0111JPC28057161	.5	31	6	SPCO		1		
0111JPC28057161	.5	31	6	OECO		1		
0111JPC28057161	.5	31	6	FEOC		68		
0111JPC28057161	.5	31	6	BOGR		5		
0111JPC28057161	.5	35	6	ARFR		55		
0111JPC28057161	.5	35	6	OPPO	1	115		
0111JPC28057161	.5	35	6	OPPO	3	5		
0111JPC28057161	.5	35	6	FEOC		47		
0111JPC28057161	.5	35	6	BOGR		10		
0111JPC27057162	02	23	2	ARFR		150	1699	272.45
0111JPC27057162	02	23	2	OPPO	1	400	1700	110.30
0111JPC27057162	02	23	2	OPPO	3	30	1701	193.62
0111JPC27057162	02	23	2	LEDE		3	1702	1.73
0111JPC27057162	02	23	2	ASMI		2	1703	1.50
0111JPC27057162	02	23	2	SCRR		2	1704	1.39
0111JPC27057162	02	23	2	SAKA		2	1705	4.46
0111JPC27057162	02	23	2	LIPU		1	1706	0.05
0111JPC27057162	02	23	2	LOOR		1	1707	0.01
0111JPC27057162	02	23	2	SPCO		3	1708	2.99
0111JPC27057162	02	23	2	GUSA		1	1709	6.59
0111JPC27057162	02	23	2	LARF		1	1710	0.11
0111JPC27057162	02	23	2	GACO		1	1711	0.09
0111JPC27057162	02	23	2	ALTF		1		0.07
0111JPC27057162	02	23	2	PLPU		1	1712	0.16

0111JPC27057162	.5	23 2	ARFR		65	1713	140.11
0111JPC27057162	.5	23 2	LEDF		1	1714	0.67
0111JPC27057162	.5	23 2	ALTE		1	1715	0.07
0111JPC27057162	.5	23 2	OPPO	1	75	1716	23.72
0111JPC27057162	.5	23 2	OPPO	3	7	1717	26.28
0111JPC27057162	.5	23 2	SAKA		1	1718	1.46
0111JPC27057162	.5	23 2	SPCO		1	1719	0.74
0111JPC27057162	.5	23 2	ASMI		1	1720	1.04
0111JPC27057162	.5	23 2	MAVI		2	1721	0.01
0111JPC27057162	.5	23 2	CAHF		11	1722	6.61
0111JPC27057162	.5	23 2	BUDA		10	1723	20.26
0111JPC27057162	.5	23 2	ROGR		22	1724	28.48
0111JPC27057162	.5	23 2	LICH			1725	0.58
0111JPC27057162	.5	23 2	LITR		95	1726	247.33
0111JPC27057162	.5	23 2	PLPU		1	1727	0.08
0111JPC27057162	02	21 2	STHY		6	1728	12.96
0111JPC27057162	02	21 2	GUSA		22	1729	168.13
0111JPC27057162	02	21 2	ARFR		295	1730	599.41
0111JPC27057162	02	21 2	SPCO		10	1731	16.47
0111JPC27057162	02	21 2	LEDF		1	1732	0.07
0111JPC27057162	02	21 2	ARLO		12	1733	14.23
0111JPC27057162	02	21 2	PLPU		1	1734	0.24
0111JPC27057162	02	21 2	LARF		1	1735	0.10
0111JPC27057162	02	21 2	TRA		1	1736	0.63
0111JPC27057162	.5	21 2	ARLO		10	1737	12.37
0111JPC27057162	.5	21 2	ARFR		75	1738	159.25
0111JPC27057162	.5	21 2	PLPU		1	1739	0.20
0111JPC27057162	.5	21 2	SPCO		3	1740	5.35
0111JPC27057162	.5	21 2	LARF		1	1741	0.09
0111JPC27057162	.5	21 2	CAHF		25	1742	20.12
0111JPC27057162	.5	21 2	FFOC		24	1743	15.82
0111JPC27057162	.5	21 2	ROGR		17	1744	9.65
0111JPC27057162	.5	21 2	LITR		145	1745	205.68
0111JPC27057162	02	21 2	ASMO		1	1746	0.01
0111JPC27057162	.5	21 2	GUSA		5	1747	17.38
0111JPC27057162	02	22 2	LEDF		17	1678	16.78
0111JPC27057162	02	22 2	PLPU		1	1679	0.15
0111JPC27057162	02	22 2	GUSA		10	1680	20.78
0111JPC27057162	02	22 2	DEPI		1	1681	0.10
0111JPC27057162	02	22 2	SPCO		1	1682	0.24
0111JPC27057162	02	22 2	MAVI		8	1683	9.13
0111JPC27057162	02	22 2	LARF		1	1684	0.16
0111JPC27057162	02	22 2	LOOP		1	1685	0.44
0111JPC27057162	02	22 2	OPPO	1	17	1686	2.52
0111JPC27057162	.5	22 2	MAVI		11	1687	22.75
0111JPC27057162	.5	22 2	LEDE		8	1688	5.48
0111JPC27057162	.5	22 2	SPCO		1	1689	0.17
0111JPC27057162	.5	22 2	LIPU		1	1690	0.09
0111JPC27057162	.5	22 2	FFOC		1	1691	0.06
0111JPC27057162	.5	22 2	CAHF		1	1692	0.47
0111JPC27057162	.5	22 2	BUDA		35	1693	64.32
0111JPC27057162	.5	22 2	LITR		68	1694	114.94
0111JPC27057162	.5	22 2	LICH			1695	0.66
0111JPC27057162	.5	22 2	MILI		1	1696	0.18
0111JPC27057162	.5	22 2	ARFR		1	1697	0.03
0111JPC27057162	.5	22 2	ALTE			1698	0.02

0111JPC26057162	02	24	2	LEDE		50	1648	56.60
0111JPC26057162	02	24	2	LARE		4	1649	3.00
0111JPC26057162	02	24	2	GUSA		10	1650	34.87
0111JPC26057162	02	24	2	ARLO		10		20.91
0111JPC26057162	02	24	2	SPCO		3	1651	4.67
0111JPC26057162	02	24	2	PLPU		1	1652	0.92
0111JPC26057162	02	24	2	ALTE		1	1653	0.09
0111JPC26057162	02	24	2	SAKA		2	1654	0.95
0111JPC26057162	02	24	2	CHLE		1	1655	0.22
0111JPC26057162	02	24	2	MAVI		2	1656	2.58
0111JPC26057162	02	24	2	GACO		1	1657	1.27
0111JPC26057162	02	24	2	DEPI		1	1658	0.16
0111JPC26057162	02	24	2	OPPO	3	2	1659	12.07
0111JPC26057162	02	24	2	ARFR		16	1660	26.75
0111JPC26057162	.5	24	2	ARLO		10	1661	20.91
0111JPC26057162	.5	24	2	LEDE		11	1662	12.63
0111JPC26057162	.5	24	2	SPCO		1	1663	1.18
0111JPC26057162	.5	24	2	GACO		1	1664	0.22
0111JPC26057162	.5	24	2	CAME		3	1665	1.68
0111JPC26057162	.5	24	2	FFOC		1	1666	1.31
0111JPC26057162	.5	24	2	PLPU		1	1667	0.16
0111JPC26057162	.5	24	2	BOGR		38	1668	45.01
0111JPC26057162	.5	24	2	LICH			1669	0.97
0111JPC26057162	.5	24	2	LITR		65	1670	162.09
0111JPC26057162	02	24	2	LIPU		1	1671	0.42
0111JPC26057162	02	24	2	LOOR		1	1672	0.12
0111JPC26057162	.5	24	2	SAKA		1	1673	0.11
0111JPC26057162	.5	24	2	LIPU		1	1674	0.04
0111JPC26057162	.5	24	2	MAVI		1	1675	1.02
0111JPC26057162	.5	24	2	LARE		1	1676	0.01
0111JPC26057162	.5	24	2	BUDA		16	1677	20.68
0111JPC26057162	02	25	2	LEDE		4	1611	4.34
0111JPC26057162	02	25	2	PLPU		4	1612	2.30
0111JPC26057162	02	25	2	ARFR		27	1613	63.12
0111JPC26057162	02	25	2	ASMI		2	1614	2.18
0111JPC26057162	02	25	2	OFCO		3	1615	3.31
0111JPC26057162	02	25	2	MAVI		2	1616	3.18
0111JPC26057162	02	25	2	LARE		1	1617	0.21
0111JPC26057162	02	25	2	SPCO		1	1618	0.66
0111JPC26057162	02	25	2	CHLE		1	1619	0.01
0111JPC26057162	.5	25	2	MAVI		2	1620	0.74
0111JPC26057162	.5	25	2	PLPU		1	1621	0.70
0111JPC26057162	.5	25	2	SPCO		1	1622	0.01
0111JPC26057162	.5	25	2	OFCO		1	1623	0.39
0111JPC26057162	.5	25	2	LEDE		1	1624	0.36
0111JPC26057162	.5	25	2	FFOC		32	1625	38.13
0111JPC26057162	.5	25	2	BOGR		29	1626	54.01
0111JPC26057162	.5	25	2	ARFR		6	1627	18.74
0111JPC26057162	.5	25	2	LITR		125	1628	65.57
0111JPC26057162	02	26	2	LARE		2	1629	0.89
0111JPC26057162	02	26	2	LEDE		44	1630	85.95
0111JPC26057162	02	26	2	ARFR		3	1631	2.69
0111JPC26057162	02	26	2	OFCO		1	1632	0.38
0111JPC26057162	02	26	2	OPPO	1	320	1633	105.40
0111JPC26057162	02	26	2	OPPO	3	26	1634	216.51
0111JPC26057162	02	26	2	PLPU		3	1635	3.01
0111JPC26057162	02	26	2	SPCO		1	1636	2.94

0111JPC26057162	.5	26	2	LEDF	7	1637	16.28
0111JPC26057162	.5	26	2	PLPU	1	1638	0.78
0111JPC26057162	.5	26	2	ARFR	1	1639	0.55
0111JPC26057162	.5	26	2	LARE	1	1640	0.37
0111JPC26057162	.5	26	2	FEOC	4	1641	6.89
0111JPC26057162	.5	26	2	BOGR	39	1642	58.66
0111JPC26057162	.5	26	2	LICH		1643	0.17
0111JPC26057162	.5	26	2	LITR	85	1644	45.00
0111JPC26057162	.5	26	2	MAVI	2	1645	2.10
0111JPC26057162	02	26	2	SIHY	1	1646	0.45
0111JPC26057162	02	26	2	LOOR	1	1647	0.45
0111JPC26057162	.5	36	6	LEDF	3		
0111JPC26057162	.5	36	6	LARE	3		
0111JPC26057162	.5	36	6	ARFR	9		
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0111JPC26057162	.5	36	6	SIHY	2		
0111JPC26057162	.5	36	6	FEOC	34		
0111JPC26057162	.5	36	6	BUDA	20		
0111JPC26057162	.5	36	6	BOGR	27		
0111JPC26057162	.5	35	6	SPCO	5		
0111JPC26057162	.5	35	6	LEDF	5		
0111JPC26057162	.5	35	6	ARFR	100		
0111JPC26057162	.5	35	6	PLPU	3		
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0111JPC26057162	.5	35	6	FEOC	1		
0111JPC26057162	.5	35	6	SPCR	3		
0111JPC26057162	.5	35	6	BOGR	27		
0111JPC26057162	.5	31	6	PLPU	1		
0111JPC26057162	.5	31	6	ARFR	50		
0111JPC26057162	.5	31	6	SPCO	1		
0111JPC26057162	.5	31	6	GUSA	1		
0111JPC26057162	.5	31	6	SPCR	1		
0111JPC26057162	.5	31	6	CAHE	1		
0111JPC26057162	.5	31	6	LEDF	1		
0111JPC26057162	.5	31	6	OPPO 1	24		
0111JPC26057162	.5	31	6	PSTE	1		
0111JPC26057162	.5	31	6	LARE	1		
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0111JPC27057162	.5	33	6	ARFR	215		
0111JPC27057162	.5	33	6	SPCO	4		
0111JPC27057162	.5	33	6	LEDF	1		
0111JPC27057162	.5	33	6	GUSA	2		
0111JPC27057162	.5	33	6	BOGR	30		
0111JPC27057162	.5	32	6	LEDF	9		
0111JPC27057162	.5	32	6	ALTE	1		
0111JPC27057162	.5	32	6	SPCO	2		
0111JPC27057162	.5	32	6	LIPU	1		
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0111JPC27057162	.5	32	6	PLPU	1		
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0111JPC27057162	.5	32	6	OPPO 3	5		

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0111JPC27057162	.5	32	6	CAHF		1		
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0111JPC27057162	.5	34	6	SAKA		1		
0111JPC27057162	.5	34	6	THTP		1		
0111JPC27057162	.5	34	6	MAVI		1		
0111JPC27057162	.5	34	6	ARLO		3		
0111JPC27057162	.5	34	6	CAHF		2		
0111JPC27057162	.5	34	6	CAFI		3		
0111JPC27057162	.5	34	6	OPPO	3	4		
0111JPC27057162	.5	34	6	SIHY		2		
0111JPC27057162	.5	34	6	BOBP		10		
0111JPC27057162	.5	34	6	BUDA		21		
0111JPC28057161	.5	23	2	SPCO		1	1963	00.40
0111JPC28057161	.5	23	2	THTP		1	1964	00.23

Pawnee Belowground Biomass

The Pawnee belowground biomass data for 1971 for the Environmental Stress Areas were taken on data forms NREL-04, NREL-05, and NREL-06 and then converted to the form of NREL-03. The NREL-03 form and the final data are exemplified on the following pages. The IBP designation for this data is A2U000B.

IBP

GRASSLAND BIOME

U.S. INTERNATIONAL BIOLOGICAL PROGRAM

FIELD DATA SHEET - BELOWGROUND BIOMASS

DATA TYPE	SITE	INITIALS	DATE			TREATMENT	REPLICATE	PLOT SIZE	QUADRAT	CORE DIAM.	HORIZON	TOP DEPTH	BOTTOM DEP.	LENGTH	WASH WT.	DRY WT.	ASH WT.	CROWN DRY WT.
			Day	Mo	Yr													
1-2	3-4	5-7	8-9	10-11	12-13	14	15	16-19	21-23	25-27	29	31-33	35-37	39-41	43-47	48-54	56-61	63-68

DATA TYPE

01 Aboveground Biomass
02 Litter
03 Belowground Biomass
10 Vertebrate - Live Trapping
11 Vertebrate - Snap Trapping
12 Vertebrate - Collection
20 Avian Flush Census
21 Avian Road Count
22 Avian Road Count Summary
23 Avian Collection - Internal
24 Avian Collection - External
25 Avian Collection - Plumage
30 Invertebrate
40 Microbiology - Decomposition
41 Microbiology - Nitrogen
42 Microbiology - Biomass
43 Microbiology - Root Decomposition
44 Microbiology - Respiration

SITE

01 Ale
02 Bison
03 Bridger
04 Cottonwood
05 Dickinson
06 Hays
07 Hopland
08 Jornada
09 Osage
10 Pantex
11 Pawnee

TREATMENT

1 Ungrazed
2 Lightly grazed
3 Moderately grazed
4 Heavily grazed
5 Grazed 1969, ungrazed 1970
6
7
8
9

HORIZON

1 AO
2 A
3 B
4 C

EXAMPLE OF DATA

```
        1         2         3         4         5         6
123456789012345678901234567890123456789012345678901234567890

311CED13 971D1    043A 5.0     0    0    0    1.    .97
311CED13 971D1    043A 5.0     0    5    5    3.   1.24
311CED13 971D1    043A 5.0     5   10    5    3.    .29
311CED13 971D1    043A 5.0    10   20   10    3.   1.35
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311CED13 971D1    043B 5.0     0    0    0    1.    .63
311CED13 971D1    043B 5.0     0    5    5    3.    .72
311CED13 971D1    043B 5.0     5   10    5    3.    .18
311CED13 971D1    043B 5.0    10   20   10    3.    .31
311CED13 971D1    043B 5.0    20   30   10    3.    .40
311CED13 971D1    043B 5.0    30   40   10    3.    .49
311CED13 971D1    043B 5.0    40   50   10    3.    .43
311CED13 971D1    043B 5.0    50   60   10    3.    .41
311CED13 971D1    043C 5.0     0    0    0    1.    .25
311CED13 971D1    043C 5.0     0    5    5    3.    .55
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311CED13 971D1    043D 5.0    10   20   10    3.    .26
311CED13 971D1    043D 5.0    20   30   10    3.    .16
311CED13 971D1    043D 5.0    30   40   10    3.    .19
311CED13 971D1    043D 5.0    40   50   10    3.    .11
311CED13 971D1    043D 5.0    50   60   10    3.    .06
311CED13 971D1    041A 5.0     0    0    0    1.    .50
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311CED13 971D1    041A 5.0     5   10    5    3.    .28
311CED13 971D1    041A 5.0    10   20   10    3.    .37
311CED13 971D1    041A 5.0    20   30   10    3.    .23
311CED13 971D1    041A 5.0    30   40   10    3.    .19
311CED13 971D1    041A 5.0    40   50   10    3.    .08
311CED13 971D1    041A 5.0    50   55    5    3.    .02
311CED13 971D1    041B 5.0     0    0    0    1.    .72
311CED13 971D1    041B 5.0     0    5    5    3.    .87
311CED13 971D1    041B 5.0     5   10    5    3.    .26
311CED13 971D1    041B 5.0    10   20   10    3.    .62
311CED13 971D1    041B 5.0    20   30   10    3.    .30
311CED13 971D1    041B 5.0    30   40   10    3.    .19
311CED13 971D1    041B 5.0    40   50   10    3.    .17
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311CED13 971D1	041B 5.0	50	60	10	3.	.09
311CED13 971D1	041C 5.0	0	0	0	1.	1.14
311CED13 971D1	041C 5.0	0	5	5	3.	1.46
311CED13 971D1	041C 5.0	5	10	5	3.	.31
311CED13 971D1	041C 5.0	10	20	10	3.	.25
311CED13 971D1	041C 5.0	20	30	10	3.	.09
311CED13 971D1	041C 5.0	30	40	10	3.	.22
311CED13 971D1	041C 5.0	40	50	10	3.	.10
311CED13 971D1	041C 5.0	50	60	10	3.	.21
311CED13 971D1	041D 5.0	0	0	0	1.	.59
311CED13 971D1	041D 5.0	0	5	5	3.	1.00
311CED13 971D1	041D 5.0	5	10	5	3.	.16
311CED13 971D1	041D 5.0	10	20	10	3.	.43
311CED13 971D1	041D 5.0	20	30	10	3.	.34
311CED13 971D1	041D 5.0	30	40	10	3.	.22
311CED13 971D1	041D 5.0	40	50	10	3.	.18
311CED13 971D1	041D 5.0	50	60	10	3.	.09
311CED13 971D1	046A 5.0	0	0	0	1.	0.00
311CED13 971D1	046A 5.0	0	5	5	3.	.25
311CED13 971D1	046A 5.0	5	10	5	3.	.10
311CED13 971D1	046A 5.0	10	20	10	3.	.09
311CED13 971D1	046A 5.0	20	30	10	3.	.06
311CED13 971D1	046A 5.0	30	40	10	3.	.03
311CED13 971D1	046A 5.0	40	50	10	3.	.08
311CED13 971D1	046A 5.0	50	60	10	3.	.04
311CED13 971D1	046B 5.0	0	0	0	1.	.23
311CED13 971D1	046B 5.0	0	5	5	3.	.51
311CED13 971D1	046B 5.0	5	10	5	3.	.18
311CED13 971D1	046B 5.0	10	20	10	3.	1.27
311CED13 971D1	046B 5.0	20	30	10	3.	.14
311CED13 971D1	046B 5.0	30	40	10	3.	.12
311CED13 971D1	046B 5.0	40	50	10	3.	.13
311CED13 971D1	046B 5.0	50	60	10	3.	.08
311CED13 971D1	046C 5.0	0	0	0	1.	.64
311CED13 971D1	046C 5.0	0	5	5	3.	.71
311CED13 971D1	046C 5.0	5	10	5	3.	.20
311CED13 971D1	046C 5.0	10	20	10	3.	.23
311CED13 971D1	046C 5.0	20	30	10	3.	.07
311CED13 971D1	046C 5.0	30	40	10	3.	.09
311CED13 971D1	046C 5.0	40	50	10	3.	.06
311CED13 971D1	046C 5.0	50	60	10	3.	.19
311CED13 971D1	046D 5.0	0	0	0	1.	.98
311CED13 971D1	046D 5.0	0	5	5	3.	.74
311CED13 971D1	046D 5.0	5	10	5	3.	.21
311CED13 971D1	046D 5.0	10	20	10	3.	.29
311CED13 971D1	046D 5.0	20	30	10	3.	.18
311CED13 971D1	046D 5.0	30	40	10	3.	.13
311CED13 971D1	046D 5.0	40	50	10	3.	.16
311CED13 971D1	046D 5.0	50	60	10	3.	.09
311CED13 971D1	045A 5.0	0	0	0	1.	.62
311CED13 971D1	045A 5.0	0	5	5	3.	1.54
311CED13 971D1	045A 5.0	5	10	5	3.	.24
311CED13 971D1	045A 5.0	10	20	10	3.	.26
311CED13 971D1	045A 5.0	20	30	10	3.	.28

311CED13	971D1	045A	5.0	30	40	10	3.	.34
311CED13	971D1	045A	5.0	40	50	10	3.	.25
311CED13	971D1	045A	5.0	50	60	10	3.	.08
311CED13	971D1	045B	5.0	0	0	0	1.	.75
311CED13	971D1	045B	5.0	0	5	5	3.	.92
311CED13	971D1	045B	5.0	5	10	5	3.	.22
311CED13	971D1	045B	5.0	10	20	10	3.	.23
311CED13	971D1	045B	5.0	20	30	10	3.	.29
311CED13	971D1	045B	5.0	30	40	10	3.	.20
311CED13	971D1	045C	5.0	0	0	0	1.	1.18
311CED13	971D1	045C	5.0	0	5	5	3.	.62
311CED13	971D1	045C	5.0	5	10	5	3.	.32
311CED13	971D1	045C	5.0	10	20	10	3.	.35
311CED13	971D1	045C	5.0	20	30	10	3.	.19
311CED13	971D1	045C	5.0	30	40	10	3.	.26
311CED13	971D1	045C	5.0	40	50	10	3.	.19
311CED13	971D1	045C	5.0	50	60	10	3.	.17
311CED13	971D1	045D	5.0	0	0	0	1.	.02
311CED13	971D1	045D	5.0	0	5	5	3.	.53
311CED13	971D1	045D	5.0	5	10	5	3.	.19
311CED13	971D1	045D	5.0	10	20	10	3.	.25
311CED13	971D1	045D	5.0	20	30	10	3.	.21
311CED13	971D1	045D	5.0	30	40	10	3.	.34
311CED13	971D1	045D	5.0	40	50	10	3.	.22
311CED13	971D1	045D	5.0	50	60	10	3.	.08
311CED13	971D1	044A	5.0	0	0	0	1.	.65
311CED13	971D1	044A	5.0	0	5	5	3.	.81
311CED13	971D1	044A	5.0	5	10	5	3.	.23
311CED13	971D1	044A	5.0	10	20	10	3.	.31
311CED13	971D1	044A	5.0	20	30	10	3.	.36
311CED13	971D1	044A	5.0	30	40	10	3.	.17
311CED13	971D1	044A	5.0	40	50	10	3.	.10
311CED13	971D1	044B	5.0	0	0	0	1.	.86
311CED13	971D1	044B	5.0	0	5	5	3.	1.20
311CED13	971D1	044B	5.0	5	10	5	3.	.45
311CED13	971D1	044B	5.0	10	20	10	3.	.30
311CED13	971D1	044B	5.0	20	30	10	3.	.21
311CED13	971D1	044B	5.0	30	40	10	3.	.14
311CED13	971D1	044B	5.0	40	50	10	3.	.15
311CED13	971D1	044B	5.0	50	60	10	3.	.25
311CED13	971D1	044C	5.0	0	0	0	1.	1.15
311CED13	971D1	044C	5.0	0	5	5	3.	1.12
311CED13	971D1	044C	5.0	5	10	5	3.	.31
311CED13	971D1	044C	5.0	10	20	10	3.	.22
311CED13	971D1	044C	5.0	20	30	10	3.	.19
311CED13	971D1	044C	5.0	30	40	10	3.	.18
311CED13	971D1	044C	5.0	40	50	10	3.	.26
311CED13	971D1	044C	5.0	50	60	10	3.	.22
311CED13	971D1	044D	5.0	0	0	0	1.	2.14
311CED13	971D1	044D	5.0	0	5	5	3.	1.31
311CED13	971D1	044D	5.0	5	10	5	3.	.23
311CED13	971D1	044D	5.0	10	20	10	3.	.22
311CED13	971D1	044D	5.0	20	30	10	3.	.22
311CED13	971D1	044D	5.0	30	40	10	3.	.28

311CED13	971D1	044D	5.0	40	50	10	3.	.36
311CED13	971D1	044D	5.0	50	60	10	3.	.09
311CED13	971D1	042A	5.0	0	0	0	1.	1.19
311CED13	971D1	042A	5.0	0	5	5	3.	.47
311CED13	971D1	042A	5.0	5	10	5	3.	.32
311CED13	971D1	042A	5.0	10	20	10	3.	.36
311CED13	971D1	042A	5.0	20	30	10	3.	.18
311CED13	971D1	042A	5.0	30	40	10	3.	.14
311CED13	971D1	042A	5.0	40	43	3	3.	.08
311CED13	971D1	042B	5.0	0	0	0	1.	0.00
311CED13	971D1	042B	5.0	0	5	5	3.	.20
311CED13	971D1	042B	5.0	5	10	5	3.	.24
311CED13	971D1	042B	5.0	10	20	10	3.	.25
311CED13	971D1	042B	5.0	20	30	10	3.	.20
311CED13	971D1	042B	5.0	30	40	10	3.	.19
311CED13	971D1	042B	5.0	40	50	10	3.	.22
311CED13	971D1	042B	5.0	50	60	10	3.	.06
311CED13	971D1	042C	5.0	0	0	0	1.	.72
311CED13	971D1	042C	5.0	0	5	5	3.	.84
311CED13	971D1	042C	5.0	5	10	5	3.	.15
311CED13	971D1	042C	5.0	10	20	10	3.	.28
311CED13	971D1	042C	5.0	20	30	10	3.	.18
311CED13	971D1	042C	5.0	30	40	10	3.	.23
311CED13	971D1	042C	5.0	40	50	10	3.	.18
311CED13	971D1	042C	5.0	50	60	10	3.	.19
311CED13	971D1	042D	5.0	0	0	0	1.	.25
311CED13	971D1	042D	5.0	0	5	5	3.	.39
311CED13	971D1	042D	5.0	5	10	5	3.	.24
311CED13	971D1	042D	5.0	10	20	10	3.	.36
311CED13	971D1	042D	5.0	20	30	10	3.	.21
311CED13	971D1	042D	5.0	30	40	10	3.	.31
311CED13	971D1	042D	5.0	40	47	7	3.	.24
311CED13	971D1	042D	5.0	47	60	13	3.	.21
311CED 8	971D2	043A	5.0	0	0	0	1.	0.00
311CED 8	971D2	043A	5.0	0	5	5	3.	.03
311CED 8	971D2	043A	5.0	5	10	5	3.	.63
311CED 8	971D2	043A	5.0	10	20	10	3.	.17
311CED 8	971D2	043A	5.0	20	30	10	3.	.07
311CED 8	971D2	043A	5.0	30	35	5	3.	.13
311CED 8	971D2	043B	5.0	0	0	0	1.	.11
311CED 8	971D2	043B	5.0	0	5	5	3.	.47
311CED 8	971D2	043B	5.0	5	10	5	3.	.28
311CED 8	971D2	043B	5.0	10	20	10	3.	.26
311CED 8	971D2	043B	5.0	20	30	10	3.	.16
311CED 8	971D2	043B	5.0	30	40	10	3.	.21
311CED 8	971D2	043B	5.0	40	50	10	3.	.19
311CED 8	971D2	043B	5.0	50	60	10	3.	.11
311CED 8	971D2	043C	5.0	0	0	0	1.	.51
311CED 8	971D2	043C	5.0	0	5	5	3.	.31
311CED 8	971D2	043C	5.0	5	10	5	3.	.18
311CED 8	971D2	043C	5.0	10	20	10	3.	1.28
311CED 8	971D2	043C	5.0	20	30	10	3.	.36
311CED 8	971D2	043C	5.0	30	40	10	3.	.10
311CED 8	971D2	043C	5.0	40	50	10	3.	.04

311CED	A	971D2	043C	5.0	50	60	10	3.	.02
311CED	A	971D2	043D	5.0	0	0	0	1.	1.10
311CED	A	971D2	043D	5.0	0	5	5	3.	.81
311CED	A	971D2	043D	5.0	5	10	5	3.	.29
311CED	A	971D2	043D	5.0	10	20	10	3.	.28
311CED	A	971D2	043D	5.0	20	30	10	3.	.24
311CED	A	971D2	043D	5.0	30	40	10	3.	.18
311CED	A	971D2	043D	5.0	40	50	10	3.	1.15
311CED	A	971D2	043D	5.0	50	60	10	3.	.11
311CED	A	971D2	042A	5.0	0	0	0	1.	.22
311CED	A	971D2	042A	5.0	0	5	5	3.	.44
311CED	A	971D2	042A	5.0	5	10	5	3.	.26
311CED	A	971D2	042A	5.0	10	20	10	3.	.10
311CED	A	971D2	042A	5.0	20	30	10	3.	.13
311CED	A	971D2	042A	5.0	30	40	10	3.	.28
311CED	A	971D2	042A	5.0	40	50	10	3.	.03
311CED	A	971D2	042A	5.0	50	58	8	3.	.00
311CED	A	971D2	042B	5.0	0	0	0	1.	.42
311CED	A	971D2	042B	5.0	0	5	5	3.	-.17
311CED	A	971D2	042B	5.0	5	10	5	3.	.27
311CED	A	971D2	042B	5.0	10	20	10	3.	.20
311CED	A	971D2	042B	5.0	20	30	10	3.	.12
311CED	A	971D2	042B	5.0	30	40	10	3.	.10
311CED	A	971D2	042B	5.0	40	50	10	3.	.05
311CED	A	971D2	042B	5.0	50	60	10	3.	.03
311CED	A	971D2	042C	5.0	0	0	0	1.	.76
311CED	A	971D2	042C	5.0	0	5	5	3.	.94
311CED	A	971D2	042C	5.0	5	10	5	3.	.31
311CED	A	971D2	042C	5.0	10	20	10	3.	.26
311CED	A	971D2	042C	5.0	20	30	10	3.	.19
311CED	A	971D2	042C	5.0	30	40	10	3.	.29
311CED	A	971D2	042C	5.0	40	50	10	3.	.26
311CED	A	971D2	042C	5.0	50	60	10	3.	.06
311CED	A	971D2	042D	5.0	0	0	0	1.	.17
311CED	A	971D2	042D	5.0	0	5	5	3.	.75
311CED	A	971D2	042D	5.0	5	10	5	3.	.27
311CED	A	971D2	042D	5.0	10	20	10	3.	.38
311CED	A	971D2	042D	5.0	20	30	10	3.	.18
311CED	A	971D2	042D	5.0	30	40	10	3.	.22
311CED	A	971D2	042D	5.0	40	50	10	3.	.04
311CED	A	971D2	042D	5.0	50	60	10	3.	.03
311CED	A	971D2	044A	5.0	0	0	0	1.	.12
311CED	A	971D2	044A	5.0	0	5	5	3.	1.41
311CED	A	971D2	044A	5.0	5	10	5	3.	.33
311CED	A	971D2	044A	5.0	10	20	10	3.	.24
311CED	A	971D2	044A	5.0	20	30	10	3.	.18
311CED	A	971D2	044A	5.0	30	40	10	3.	.28
311CED	A	971D2	044A	5.0	40	50	10	3.	.14
311CED	A	971D2	044A	5.0	50	60	10	3.	.04
311CED	A	971D2	044B	5.0	0	0	0	1.	.24
311CED	A	971D2	044B	5.0	0	5	5	3.	1.14
311CED	A	971D2	044B	5.0	5	10	5	3.	.26
311CED	A	971D2	044B	5.0	10	20	10	3.	.27
311CED	A	971D2	044B	5.0	20	30	10	3.	.15

311CED	8	971D2	044B	5.0	30	40	10	3.	.14
311CED	8	971D2	044B	5.0	40	50	10	3.	.11
311CED	8	971D2	044B	5.0	50	60	10	3.	.08
311CED	8	971D2	044C	5.0	0	0	0	1.	.48
311CED	8	971D2	044C	5.0	0	5	5	3.	1.28
311CED	8	971D2	044C	5.0	5	10	5	3.	.49
311CED	8	971D2	044C	5.0	10	20	10	3.	.13
311CED	8	971D2	044C	5.0	20	30	10	3.	.29
311CED	8	971D2	044C	5.0	30	40	10	3.	.16
311CED	8	971D2	044C	5.0	40	50	10	3.	.05
311CED	8	971D2	044C	5.0	50	60	10	3.	.06
311CED	8	971D2	044D	5.0	0	0	0	1.	.03
311CED	8	971D2	044D	5.0	0	5	5	3.	.32
311CED	8	971D2	044D	5.0	5	10	5	3.	.22
311CED	8	971D2	044D	5.0	10	20	10	3.	.22
311CED	8	971D2	044D	5.0	20	30	10	3.	.11
311CED	8	971D2	044D	5.0	30	40	10	3.	.19
311CED	8	971D2	044D	5.0	40	49	9	3.	.03
311CED	8	971D2	046A	5.0	0	0	0	1.	.27
311CED	8	971D2	046A	5.0	0	5	5	3.	1.05
311CED	8	971D2	046A	5.0	5	10	5	3.	.38
311CED	8	971D2	046A	5.0	10	20	10	3.	.26
311CED	8	971D2	046A	5.0	20	30	10	3.	.20
311CED	8	971D2	046A	5.0	30	40	10	3.	.22
311CED	8	971D2	046A	5.0	40	50	10	3.	.10
311CED	8	971D2	046A	5.0	50	62	12	3.	.02
311CED	8	971D2	046B	5.0	0	0	0	1.	1.07
311CED	8	971D2	046B	5.0	0	5	5	3.	.90
311CED	8	971D2	046B	5.0	5	10	5	3.	.23
311CED	8	971D2	046B	5.0	10	20	10	3.	.29
311CED	8	971D2	046B	5.0	20	30	10	3.	.08
311CED	8	971D2	046B	5.0	30	40	10	3.	.09
311CED	8	971D2	046B	5.0	40	50	10	3.	.09
311CED	8	971D2	046B	5.0	50	60	10	3.	.09
311CED	8	971D2	046C	5.0	0	0	0	1.	.61
311CED	8	971D2	046C	5.0	0	5	5	3.	1.67
311CED	8	971D2	046C	5.0	5	10	5	3.	.40
311CED	8	971D2	046C	5.0	10	20	10	3.	.28
311CED	8	971D2	046C	5.0	20	30	10	3.	.15
311CED	8	971D2	046C	5.0	30	40	10	3.	.13
311CED	8	971D2	046C	5.0	40	50	10	3.	.16
311CED	8	971D2	046C	5.0	50	60	10	3.	.11
311CED	8	971D2	046D	5.0	0	0	0	1.	.30
311CED	8	971D2	046D	5.0	0	5	5	3.	1.21
311CED	8	971D2	046D	5.0	5	10	5	3.	.42
311CED	8	971D2	046D	5.0	10	20	10	3.	.35
311CED	8	971D2	046D	5.0	20	30	10	3.	.25
311CED	8	971D2	046D	5.0	30	40	10	3.	.16
311CED	8	971D2	046D	5.0	40	50	10	3.	.17
311CED	8	971D2	046D	5.0	50	61	11	3.	.12
311CED	8	971D2	045A	5.0	0	0	0	1.	1.24
311CED	8	971D2	045A	5.0	0	5	5	3.	.87
311CED	8	971D2	045A	5.0	5	10	5	3.	.13
311CED	8	971D2	045A	5.0	10	20	10	3.	.14

311CFD	8	971D2	045A	5.0	20	30	10	3.	.04
311CED	8	971D2	045A	5.0	30	40	10	3.	.04
311CFD	8	971D2	045A	5.0	40	50	10	3.	.06
311CFD	8	971D2	045A	5.0	50	60	10	3.	.05
311CFD	8	971D2	045B	5.0	0	0	0	1.	1.11
311CFD	8	971D2	045B	5.0	0	5	5	3.	1.16
311CFD	8	971D2	045B	5.0	5	10	5	3.	.38
311CFD	8	971D2	045B	5.0	10	20	10	3.	.24
311CFD	8	971D2	045B	5.0	20	30	10	3.	.22
311CFD	8	971D2	045B	5.0	30	40	10	3.	.07
311CFD	8	971D2	045B	5.0	40	50	10	3.	.05
311CFD	8	971D2	045B	5.0	50	60	10	3.	.07
311CFD	8	971D2	045C	5.0	0	0	0	1.	0.00
311CED	8	971D2	045C	5.0	0	5	5	3.	.35
311CED	8	971D2	045C	5.0	5	10	5	3.	.18
311CED	8	971D2	045C	5.0	10	20	10	3.	.25
311CED	8	971D2	045C	5.0	20	30	10	3.	.10
311CED	8	971D2	045C	5.0	30	40	10	3.	.07
311CED	8	971D2	045C	5.0	40	50	10	3.	.08
311CFD	8	971D2	045C	5.0	50	60	10	3.	.06
311CED	8	971D2	045D	5.0	0	0	0	1.	.95
311CED	8	971D2	045D	5.0	0	5	5	3.	1.10
311CED	8	971D2	045D	5.0	5	10	5	3.	.29
311CED	8	971D2	045D	5.0	10	20	10	3.	.26
311CED	8	971D2	045D	5.0	20	30	10	3.	.11
311CED	8	971D2	045D	5.0	30	40	10	3.	.06
311CED	8	971D2	045D	5.0	40	50	10	3.	.08
311CFD	8	971D2	045D	5.0	50	60	10	3.	.10
311CED	8	971D2	041A	5.0	0	0	0	1.	.30
311CED	8	971D2	041A	5.0	0	5	5	3.	.73
311CED	8	971D2	041A	5.0	5	10	5	3.	.48
311CFD	8	971D2	041A	5.0	10	20	10	3.	.39
311CED	8	971D2	041A	5.0	20	30	10	3.	.20
311CED	8	971D2	041A	5.0	30	40	10	3.	.13
311CFD	8	971D2	041A	5.0	40	50	10	3.	.08
311CED	8	971D2	041A	5.0	50	60	10	3.	.03
311CFD	8	971D2	041B	5.0	0	0	0	1.	.30
311CED	8	971D2	041B	5.0	0	5	5	3.	.47
311CED	8	971D2	041B	5.0	5	10	5	3.	.27
311CED	8	971D2	041B	5.0	10	20	10	3.	.23
311CFD	8	971D2	041B	5.0	20	30	10	3.	.19
311CFD	8	971D2	041B	5.0	30	40	10	3.	.22
311CFD	8	971D2	041B	5.0	40	50	10	3.	.16
311CFD	8	971D2	041B	5.0	50	60	10	3.	.08
311CED	8	971D2	041C	5.0	0	0	0	1.	.55
311CFD	8	971D2	041C	5.0	0	5	5	3.	1.31
311CFD	8	971D2	041C	5.0	5	10	5	3.	.35
311CED	8	971D2	041C	5.0	10	20	10	3.	.28
311CED	8	971D2	041C	5.0	20	30	10	3.	.14
311CFD	8	971D2	041C	5.0	30	40	10	3.	.20
311CFD	8	971D2	041C	5.0	40	50	10	3.	.15
311CFD	8	971D2	041C	5.0	50	60	10	3.	.13
311CFD	8	971D2	041D	5.0	0	0	0	1.	0.00
311CFD	8	971D2	041D	5.0	0	5	5	3.	.45
311CED	8	971D2	041D	5.0	5	10	5	3.	.17
311CED	8	971D2	041D	5.0	10	20	10	3.	.20
311CFD	8	971D2	041D	5.0	20	30	10	3.	.18
311CFD	8	971D2	041D	5.0	30	40	10	3.	.13
311CFD	8	971D2	041D	5.0	40	50	10	3.	.05
311CFD	8	971D2	041D	5.0	50	60	10	3.	.14

Small Mammal Live Trapping

Small mammal live trapping data collected at the Pawnee Site were recorded on form NREL-10. A data set number has been added in columns 69-70. These data are stored as Grassland Biome data set A2U10BB. A sample data form and an example of the data follow.

*** EXAMPLE OF DATA ***

```
        1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901

1011WEG300771F1  ONLF  0  0300    5        01 07                        11
1011WEG300771F1  ONLF  0  1000 0           02 04                        11
1011WEG300771G1  MIOC  0  2000    3        01 05                        11
1011WEG300771G1  PEMA  0  3000 2           01 01                        11
1011WEG300771D2  ONLE  0  1300 2           05 02                        11
1011WEG300771D2  PEMA  0  1500    3        06 02                        11
1011WEG300771D1  ONLE  0  0032 0           05 04 0030                   11
1011WEG300771D1  ONLE  0  0050    9        05 07 0050                   11
1011WEG300771G1  PEMA  0  0001 2           04 01 0001                   11
1011WEG300771G1  PEMA  0                   03 04                        11
1011WEG300771F1  SPRT  0  0100    1        03 01                        11
1011WEG300771F1  ONLY  0  0200    9        04 05                        11
1011WEG300771E1  PEMA  0  0400 0           02 01                        11
1011WEG300771D2  ONLF  0  4000 0           03 05                        11
1011WEG300771D2  PEMA  0  0011 0           04 04                        11
1011WEG300771D2  PEMA  0  0012 0           04 06                        11
1011WEG300771G2  PEMA  0  0014 0           03 05                        11
1011WEG300771E1  PEMA  0  0021 0           04 07                        11
1011WEG300771E1  PEMA  0  0023    9        06 02                        11
1011WEG310771F2  ONLF  0  0033    9        03 03 0033                   11
1011WEG310771G1  PEMA  0  0001             04 01                        11
1011WEG310771G1  MIOC  0  0041 0           03 04                        11
1011WEG310771F1  SPTR  0  0100    0        03 01 0100                   11
1011WEG310771F1  ONLE  0  1003 0           04 03                        11
1011WEG310771F1  ONLE  0  0042 0           04 04                        11
1011WEG310771F1  ONLE  0  0043 0           04 05                        11
1011WEG310771F1  SPTR  0  0044 0           05 06                        11
1011WEG310771F1  ONLE  0  0045    0        04 06                        11
1011WEG310771F1  ONLE  0  0200    0        02 05 0200                   11
1011WEG310771F1  PEMA  0  0300    3        01 07                        11
1011WEG310771G1  PEMA  0  0051 2           02 06                        11
1011WEG310771G1  PEMA  0                   02 02                        11
1011WEG310771G2  PEMA  0  0054 0           06 02                        11
1011WEG310771E2  PEMA  0  0034 2           05 05                        11
1011WEG310771E2  PEMA  0  0035 2           06 07                        11
1011WEG310771G1  MIOC  0  0051 0           01 05                        11
1011WEG310771G1  PEMA  0  0053 0           01 01                        11
1011WEG310771F2  PEMA  0  0052 0           01 03                        11
1011WEG310771D2  SPTR  0                   04 03                        11
1011WEG310771D2  ONLE  0  4020 0           04 06                        11
1011WEG310771G2  PEMA  0  0011 0           03 01 0011                   11
1011WEG310771G2  PEMA  0  0014 0           03 03 0014                   11
1011WEG310771D1  ONLF  0  0050    9        03 06 0050                   11
1011WEG310771E1  PEMA  0  0023    9        06 02 0023                   11
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1011WFG31077IG2     PFMA  0   0055 4          06 05                  11
1011WFG010871F2     ONLE  0   0102 0          04 05                  11
1011WFG010871G1     PEMA  0   0001 0          04 01 0001             11
1011WFG010871F1     ONLE  0   0004 0          03 06 0004             11
1011WFG010871D1     PEMA  0   0002 0          01 02 0002             11
1011WFG010871G2     PEMA  0   0011 0          04 01 0011             11
1011WFG010871G2     MIOC  0   0105 0          03 01                  11
1011WFG010871D1     ONLE  0   0112    3       03 03                  11
1011WFG010871E1     PFMA  0   0023    9       06 05 0023             11
1011WFG010871G2     PEMA  0   0114 0          06 06                  11
1011WFG010871G2     PFMA  0   0019 0                                 11
1011WFG010871G2     PFMA  0   0095    1       05 03                  11
1011WFG010871G2     PEMA  0   0054 0          06 01 0054             11
1011WFG010871D2     ONLE  0   0121 0          06 07                  11
1011WFG010871E2     PEMA  0   0034 2          06 07 0034             11
1011WFG010871F1     ONLE  0   0103 2          05 05                  11
1011WFG010871F1     ONLE  0   1003 2          05 06 1003             11
1011WFG010871F1     SPTR  0   0104    3       02 03                  11
1011WFG010871G1     MIOC  0   2000    3       02 06 2000             11
1011WFG010871G1     MIOC  0   0110 0          02 02                  11
1011WFG010871E2     PEMA  0   0052 2          01 04 0052             11
1011WFG010871E2     PEMA  0   0113 2          01 04                  11
1011WFG010871E2     PEMA  0   0115 2          02 01                  11
1011WFG010871D2     ONLE  0   0032 0          05 01                  11
1011WFG29077IG1     PFMA  0   0001            04 01                  11
1011WFG290771F1     ONLE  0   0004 0          04 05                  11
1011WFG29077ID2     PEMA  0   0005 0          06 03                  11
1011WFG29077ID1     ONLE  0   0050 9          04 01                  11
1011WFG020871F2     ONLE  0   0102 0          04 05 0102             11
1011WFG020871G1     PEMA  0   0002 0          03 02 0002             11
1011WFG020871F1     ONLE  0   0043    3       03 03 0043             11
1011WFG020871F1     ONLE  0   0300    0       01 07 0300             11
1011WFG020871F1     SPTR  0   0100    0       02 05 0100             11
1011WFG020871E2     PEMA  0   0052 0          02 07 0052             11
1011WFG020871D2     PEMA  0   0131    9       04 03                  11
1011WFG020871D2     PEMA  0   0019 0          04 04 0019             11
1011WFG020871D2     SPTR  0   0133    0       04 05                  11
1011WFG020871D2     ONLE  0   4020 0          04 06 4020             11
1011WFG020871D2     PEMA  0   0011 3          04 07 0011             11
1011WFG020871G2     MIOC  0   0105 0          03 01 0105             11
1011WFG020871D1     PEMA  0   0135    0       03 03                  11
1011WFG020871E1     PEMA  0   0141 0          03 05                  11
1011WFG29077IG1     PFMA  0   0002 2          06 06                  11
1011WFG290771F1     ONLY  0   0003 6          06 01                  11
1011WFG29077ID2     SPTR  0   0010 0          04 03                  11
1011WFG29077ID2     ONLY  0   0020 2          04 04                  11
1011WFG29077ID2     ONLY  0   0030 3          04 07                  11
1011WFG29077IG2     PEMA  0   0040    3       04 02                  11
1011WFG020871F2     ONLE  0   0122    0       06 06                  11
1011WFG020871F2     ONLE  0   0123    9       06 07                  11
1011WFG020871E2     PEMA  0   0301 0          06 04                  11
1011WFG020871G1     PEMA  0   0051 2          02 07 0051             11
1011WFG020871F1     ONLE  0   1003 0          05 05 1003             11
1011WFG020871F1     ONLE  0   0004 0          05 06 0004             11
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1011WFG020871G2     PEMA  0     0014  2          01 03 0014      11
1011WFG020871G2     PEMA  0           2          01 01           11
1011WFG020871D2     ONLE  0     0132     9       02 03           11
1011WEG020871D2     ONLE  0     0134  0          05 03           11
1011WFG020871D2     ONLE  0     0032  0          06 03 0032      11
1011WFG020871D2     ONLE  0     0121  2          06 07 0121      11
1011WEG020871G2     PEMA  0     0054  6          06 03 0054      11
1011WEG030871F2     ONLE  0     0102  0          03 02 0102      11
1011WEG030871F2     ONLE  0     0123     3       04 05 0123      11
1011WFG030871G1     PEMA  0     0002  0          04 01 0002      11
1011WFG030871G1     PEMA  0     0001  0          04 02 0001      11
1011WFG030871G1     MIOC  0     2000     0       03 05 2000      11
1011WFG030871F1     SPTR  0     0100     0       03 01 0100      11
1011WFG030871F1     ONLE  0     1003  0          04 04 1003      11
1011WFG030871F1     ONLE  0     0043     3       04 05 0043      11
1011WFG030871F1     SPTR  0     0104     0       03 07 0104      11
1011WEG030871F1     PEMA  0     0023     9       01 07 0023      11
1011WEG030871D1     ONLE  0     0050     9       02 07 0050      11
1011WFG030871D2     ONLE  0     4020  0          04 04 4020      11
1011WFG030871G2     MIOC  0     0105  0          03 01 0105      11
1011WFG030871G2     PEMA  0     0054  3          04 03 0054      11
1011WFG030871G2     PEMA  0     4455  2          03 03           11
1011WFG030871G2     MIOC  0     4454     9       03 07           11
1011WEG030871D1     ONLE  0     4453  0          05 05           11
1011WEG030871D1     ONLE  0     0112     3       06 03 0112      11
1011WFG030871G2     PEMA  0     4952  0          06 06           11
1011WFG030871F2     SPTR  0     0142  2          06 07           11
1011WFG030871E2     SPTR  0     0143     3       06 03           11
1011WFG030871E2     SPTR  0     0144  2          06 07           11
1011WFG030871E2     SPTR  0     0145     0       06 06           11
1011WFG030871F1     ONLE  0     0300     0       02 05 0300      11
1011WEG030871F1     ONLE  0     0200     9       01 04 0200      11
1011WFG030871F1     ONLF  0     0103  2          02 01 0103      11
1011WEG030871G1     MIOC  0     0150  0          02 06           11
1011WFG030871G1     MIOC  0     0041  0          02 05 0041      11
1011WFG030871G1     PEMA  0                      02 04           11
1011WFG030871D2     PEMA  0     0151     2       02 05           11
1011WFG030871D2     PEMA  0     0012  0          05 01 0012      11
1011WEG030871D2     ONLE  0     0013  2          05 02           11
1011WEG030871D2     ONLE  0     0032  0          06 07 0032      11
1011WFG030871G2     PEMA  0     0011  6          05 01 0011      11
1011WFG030871G2     PEMA  0     0114  0          06 03 0114      11
1011WFG030871G2     PEMA  0     0055  0          06 03 0055      11
1011WFG020871F1     SPTR  0     11111    3       05 02           11
1011WFG030871F1     SPTR  0     11111    0       06 06 1111      11
```

Soil Water Transect Data

Soil water transect data were taken during the 1971 and 1972 field seasons on Environmental Stress Area plots. The Grassland Biome data set number is A2U70EB. The soil water was sampled weekly during each field season for Treatments D, E, F, and G. Two replicates of each treatment were taken. The data were recorded on data form number NREL-53. A copy of the data form and an example of the data follow.

IBP

GRASSLAND BIOME

U.S. INTERNATIONAL BIOLOGICAL PROGRAM

FIELD DATA SHEET--SOIL WATER TRANSECTS

Data Type	Site	Treatment	Transect or Replicate	Date			Initials	Deep Tube	Probe Number	Tube Number	Shield Count	15 or 180 cm	30 or 210 cm	45 or 240 cm	60 or 270 cm	75 or 300 cm	90 cm	120 cm	150 cm	10 cm	20 cm	40 cm
				Day	Month	Year																
1-2	3-4	5	6	7-8	9-10	11-12	13-15	16	17-18	19-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80
53																						

Data Type

53 Soil water transects

Site

11 Pawnee

Treatment

1 Ungrazed
2 Lightly grazed
3 Moderately grazed
4 Heavily grazed
5 Grazed 69, Ungrazed 70
A Diet light
B Diet moderate
C Diet heavy
D ESA - O
E ESA - W
F ESA - N
G ESA - WN
H Lynn Lake
J Winter grazed

Deep Tube Code

0 Regular tube
1 Deep tube

EXAMPLE OF THE DATA

```
        1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890

5311D1200472RS  3401164710 2694 3554 4761 3546 2491 2340 2975 2892
5311D1200472RS  3402166034 3194 4212 3020 2244 1872 1916 1940 3046
5311D1200472RS  3403165764 4344 4617 3930 2472 2144 2058 2111 3051
5311D2200472RS  3401164455 4130 4290 2747 2202 2348 2603 3504 3919
5311D2200472RS  3402163333 4501 4799 3300 2101 2045 2043 2546
5311D2200472RS  3403159995 3680 4454 3333 2525
5311F1200472RS  3401164485 2863 4537 4396 3129 2594 2426 2893 3979
5311F1200472RS  3402159995 2627 3476 5221 5040 3449 3155 3517 5603
5311F1200472RS  3403164475 2644 3557 3701 3505 3172 4584 6091
5311F2200472RS  3401162759 3496 4793 5031 6012 6523 7359 6254 6856
5311F2200472RS  3402163953 4557 4448 4370 4994 6275
5311F2200472RS  3403161177 5256 4938 4473 3801 3032 3097 4714
5311F1200472RS  3401164842 4306 4234 2558 2032 1781 1888 2061
5311F1200472RS  3402164422 4470 5523 2937 2045
5311F1200472RS  3403164460 3907 3746 2634 2208 2025 2506 3126 3688
5311F2200472RS  3401162201 4904 4249 2774 2164 2054 2394 2607 3504
5311F2200472RS  3402164506 3227 3859 3358 3098 3148 3039 3304 3616
5311F2200472RS  3403164431 4303 4515 2625 2202 2252 2695 2694 2677
5311G1200472RS  3401163464 4841 4071 3223 2942 3106 3521 3688 3974
5311G1200472RS  3402163219 4170 4729 5235 3854 4118 3230 2654
5311G1200472RS  3403163219 4452 3199 4294 3642 3158 3163 4356 3557
5311G2200472RS  3401164431 3688 3422 2448 2417 2476 2616 2972
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