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DIETS AND HABITATS OF JACKRABBITS WITHIN A SHORTGRASS ECOSYSTEM

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ABSTRACT

Black-tailed (*Lepus californicus*) and white-tailed (*Lepus townsendii*) jackrabbits play a large role in the utilization of vegetation within the shortgrass ecosystem. They affect the occurrence, abundance, and distribution of vegetation within their habitats.

Both hares demonstrated a high degree of preference for certain plant species. Western wheatgrass (*Agropyron smithii* Rydb.) was the most highly preferred plant by both species of jackrabbits. Four plant species comprised greater than 50% of the diets of hares for each season of the year. A total of 83 plant species were identified in the combined diets, and a total of 120 plant species were found in the combined habitats of the two species of jackrabbits. Fifteen plant species were intrinsic to the diets and 15 intrinsic to the habitats of black-tailed jackrabbits; 12 plant species were intrinsic to the diets and 10 intrinsic to the habitats of white-tailed jackrabbits.

INTRODUCTION

Jackrabbits, as herbivorous consumers, may play a large role in the utilization of vegetation within the shortgrass ecosystem. The purpose of studying black-tailed (*Lepus californicus*) and white-tailed (*Lepus townsendii*) jackrabbits on the Pawnee National Grasslands is to determine the year-round partitioning of herbage and energy by jackrabbits and the ecological ramifications of such partitioning.

The objectives of this study are as follows: (i) to determine the year-round dietary habits of each species of jackrabbit; (ii) to delimit habitats of occurrence for both species of jackrabbits, based on measurements taken at kill sites; (iii) to investigate interspecific competition between the two species of jackrabbits and with other herbivores; and (iv) to relate the dietary habits of these jackrabbits to the disturbing effects of man on the native vegetation of the shortgrass ecosystem.

Pursuant to these objectives, a program of research was designed and field sampling was started in August 1968; field sampling ended in September 1970.

STUDY AREA

The study was done within the western division of the Pawnee National Grasslands in the northeastern portion of Colorado. The area included roughly 208 square miles and encompassed both private and federal lands. The Central Plains Experimental Range, operated by the Agriculture Research Service, was included in the area and was located in the west-central portion of the study area. U. S. Highway 85 denoted the western boundary. The area is

classified as being within the shortgrass ecosystem. The predominate vegetation within the area typifies that of the shortgrass prairie, but some cultivated crops are grown within the study area. The most common crops grown, in order of importance, are winter or dryland wheat, crested wheatgrass, oats, alfalfa, Sudan grass, smooth bromegrass, and field corn. The area also includes much abandoned farm land. These lands support various successional stages of some of the introduced and native plant species of the shortgrass prairie.

METHODS AND MATERIALS

Reference Collections of Plants and Plant Parts

A collection of plants of the Pawnee National Grasslands was begun during the first week of August 1968. A botanical reference collection was compiled; and, by the end of September 1968, it contained some 150 species of plants. Small samples of the various parts of the plants in the reference collection were removed for preparation of a reference collection of microscope slides of tissues of plants from the study area. This reference collection and the numerous drawings made from it aided in the identification of dietary material under the microscope. New species have been added as necessary.

Sampling the Population of Jackrabbits

From September 1968 through September 1970, jackrabbits were collected within the study area on a year-round schedule of monthly collection in the summers, springs, and autumns, with bimonthly collections during the winters. Each animal was identified, weighed, and sexed prior to the removal of the stomach. Stomachs were removed and chilled soon after each animal was

killed to insure against *in vitro* changes in chemical levels of the stomach contents.

Sampling Aboveground Vegetation

After each jackrabbit was killed, the collection site was marked with two stakes; exact kill-sites were not marked when animals were killed in cultivated fields. All kill-sites for one collection period were noted on a map of the study area. These locations are accurate to about 0.1 sq mile (6.4 acres; 2.6 ha). Fields under cultivation in the study area were also noted on the map. Measurements were taken of the vegetation at each kill-site, or on a stratified random basis for each animal taken within the cultivated fields, by estimating the green biomass of each plant species in 10 450 cm^2 quadrats. This was a double sampling technique for species of plants occurring in amounts of 1 g or more per quadrat. For every 10 quadrats, samples of each plant species that had occurred in amounts of 1 g or more per quadrat were estimated by weight, then clipped, weighed, and dried in an oven at slightly less than 70°C. These samples yielded estimated to actual weight correctional factors and wet weight to dry weight correctional factors. The findings from the quadrats read each period of collection were used as measurements of the vegetational habitat of each species of jackrabbit.

Phenology of Plants

When taking measurements of the aboveground vegetation, the phenological condition of the major plants seen was also recorded. Special observations, such as evidence of hares utilizing certain parts or kinds of vegetation, were also recorded.

were compiled by dividing the percent relative dry weight of a plant species in the diet by the percent relative dry weight of that plant species in the habitat. This was done each collection period for each species of jackrabbit and for each sex within each species. The following matrix shows the kinds of dietary comparisons that were made for black-tailed (BT) and white-tailed (WT) jackrabbits using 2w/a+b(100), which is known as Kulczynski's "Index of Similarity" (Oosting 1956). The summation of the lowest values (percent dry weights) of each plant species that occurred in the diets of each category being compared equaled "w", and this was doubled to represent the least degree that the two diets shared the measured characteristic. This value divided by the sum of the percent dry weight of all plant species in both diets (a + b) determined the coefficient of similarity.

	BT ♂	BT ♀	All WT	WT ♂	Wt ♀
All BT	vs.	vs.	vs.	vs.	vs.
BT ♂		vs.	vs.	vs.	vs.
BT ♀			vs.	vs.	vs.
All WT				vs.	vs.
WT ♂					vs.

Here BT and WT refer to black-tailed and white-tailed jackrabbits.

RESULTS

Some 920 jackrabbits (Table 1) were processed according to the methods previously outlined. Fewer white-tails (437) were taken than black-tails (483). This difference is attributed to a marked decline in the population of white-tails beginning with April 1970. Sex ratios for the two species of jackrabbits closely approach a 1:1 relationship. There was a 1:1.07 ratio of males to females for black-tails and a 1:0.99 ratio of males to females for white-tails.

Diets and Habitats of Jackrabbits

In Tables 2 and 3 are presented the mean percent dry weight of the four most important plant species in the diets of black-tailed and white-tailed jackrabbits for 18 periods of collection (nine per year). These periods were divided into four seasons as follows: fall (F) includes months September and October; winter (W) includes December and February; spring (Sp) includes April, May, and June; and summer (S) includes July and August. The species of plants, including categories (a category is a number of closely related plant species grouped together, but noted as one species) and their code names (consisting of the first two letters of the genus and first two letters of the species), correspond to the following list, after Harrington (1964):

Plant Species	Code Name
(Grasses and Grass-like)	
Agropyron desertorum (Fisch.) Schult.	AGDE
Agropyron smithii Rydb.	AGSM
Bouteloua gracilis (H.B.K.) Lag.	BOGR
Bromus inermis Leyss.	BRIN
Carex heliophila Mackenz.	CAHE
Festuca octoflora Walt.	FEOC
Sporobobolus cryptandrus (Torr.) A. Gray	SPCR
Triticum aestivum L.	TRAE
(Forbs and Shrubs)	
Artemisia frigida Willd.	ARFR
Astragalus L. *Osytropis* Dc. } = category	ASTR
Atriplex canescens (Pursh) Nutt.	ATCA
Chrysothamnus nauseosus (Pall.) Britt.	CHNA
Kochia scoparia (L.) Schrad.	KOSC
Medicago sativa L.	MESA
Opuntia polycantha Haw.	OPPO
Psoralea tenuiflora Pursh.	PSTE
Sophora sericea Nutt.	SOSE
Sphaeralcea coccinea (Pursh) Rydb.	SPCO

From the totals of the percents at the bottom of Tables 2 and 3, note that for most seasons of the years four species of plants comprise considerably more than 50% of the diets of both species of jackrabbits. The right-hand

Table 1. Summary of collections of jackrabbits on the Pawnee Site.

Collection Period No.	Month	Year	No. Black-tailed Jackrabbits			No. White-tailed Jackrabbits		
			♀	♂	Total	♀	♂	Total
1	Sept.	1968	8	17	25	16	12	28
2	Oct.	1968	13	10	23	12	15	27
3	Dec.	1968	17	8	25	14	12	26
4	Feb.	1969	16	10	26	10	16	26
5	April	1969	10	17	27	9	16	25
6	May	1969	10	16	26	17	9	26
7	June	1969	13	13	26	10	15	25
8	July	1969	16	10	26	16	11	27
9	Aug.	1969	11	14	25	14	11	25
10	Sept.	1969	10	15	25	14	11	25
11	Oct.	1969	15	12	27	11	14	25
12	Dec.	1969	11	15	26	11	14	25
13	Feb.	1970	10	15	25	13	12	25
14	April	1970	16	10	26	9	10	19
15	May	1970	15	10	25	11	8	19
16	June	1970	13	12	25	7	2	9
17	July	1970	14	11	25	4	8	12
18	Aug.	1970	18	7	25	10	11	21
19	Sept.	1970	14	11	25	9	13	22
Total for Study			250	233	483	217	220	437

Table 3. Mean percent dry-weight of the four most important plant species in the diets of white-tailed jackrabbits for two years, in fall (F), winter (W), spring (Sp), and summer (S) seasons. Ranks of importance after some code names of plants.

Plant Species		Percent of Diets 1968-1969				Percent of Diets 1969-1970				Mean % for Plants
		F	W	Sp	S	F	W	Sp	S	
AGSM	(1)	35.8		20.8	16.0	42.8		6.5	37.6	27.2
BOGR									10.2	1.3
BRIN							5.8			.7
CAHE	(7)			12.0				15.0		3.4
FEOC								10.6		1.3
SPCR					21.0					2.6
TRAE	(2)		22.9	16.7			73.0	44.3		19.6
ARFR	(3)		8.4				6.1			14.5
ASTR	(5)			9.8	19.6				14.3	6.0
CHNA	(6)	18.4	28.7							5.9
KOSC	(4)	4.6			20.4	11.2			16.1	6.5
MESA			8.3			10.1	6.4			3.1
PSTE		12.2								1.5
SOSE						9.8				1.2
Total % of Diets		70.0	68.4	59.3	77.0	73.9	91.3	76.4	78.2	

columns of these tables show the mean percent dry weights for the two-year period. These values determined the ranks of importance that follow the code names of the seven most important plants in the diets of the two species of jackrabbits.

Fig. 1 shows the degree of dietary similarity between black-tailed and white-tailed jackrabbits. The degree of similarity of diets is quite constant throughout all periods of collection. The mean similarity is 53%, and the 95% confidence intervals for the true value of the mean are 48% and 57%.

The number of plant species in the diets and habitats of black-tailed and white-tailed jackrabbits, plus the over-all totals, are shown in Table 4. Fifteen plant species were intrinsic to the diets and 15 intrinsic to the habitats of black-tailed jackrabbits, while 12 plant species were intrinsic to the diets and 10 intrinsic to the habitats of white-tailed jackrabbits. A total of 83 plant species were identified in the combined diets, and a total of 120 plant species were found in the combined habitats of the two species of jackrabbits. The habitat data are recorded as data set A2U106B and the diet data are recorded as data set A2U107B in the US IBP Grassland Biome study data processing laboratory. Examples of these data sets are described and listed in Appendix II.

ORGANIZATION OF COMPUTER PRINT-OUT

Aboveground Biomass

Table 5 shows an example of the form of print-out for aboveground herbage at kill sites of jackrabbits. All weights are in kilograms per hectare. The sample number refers to one of the 19 collections. Reader

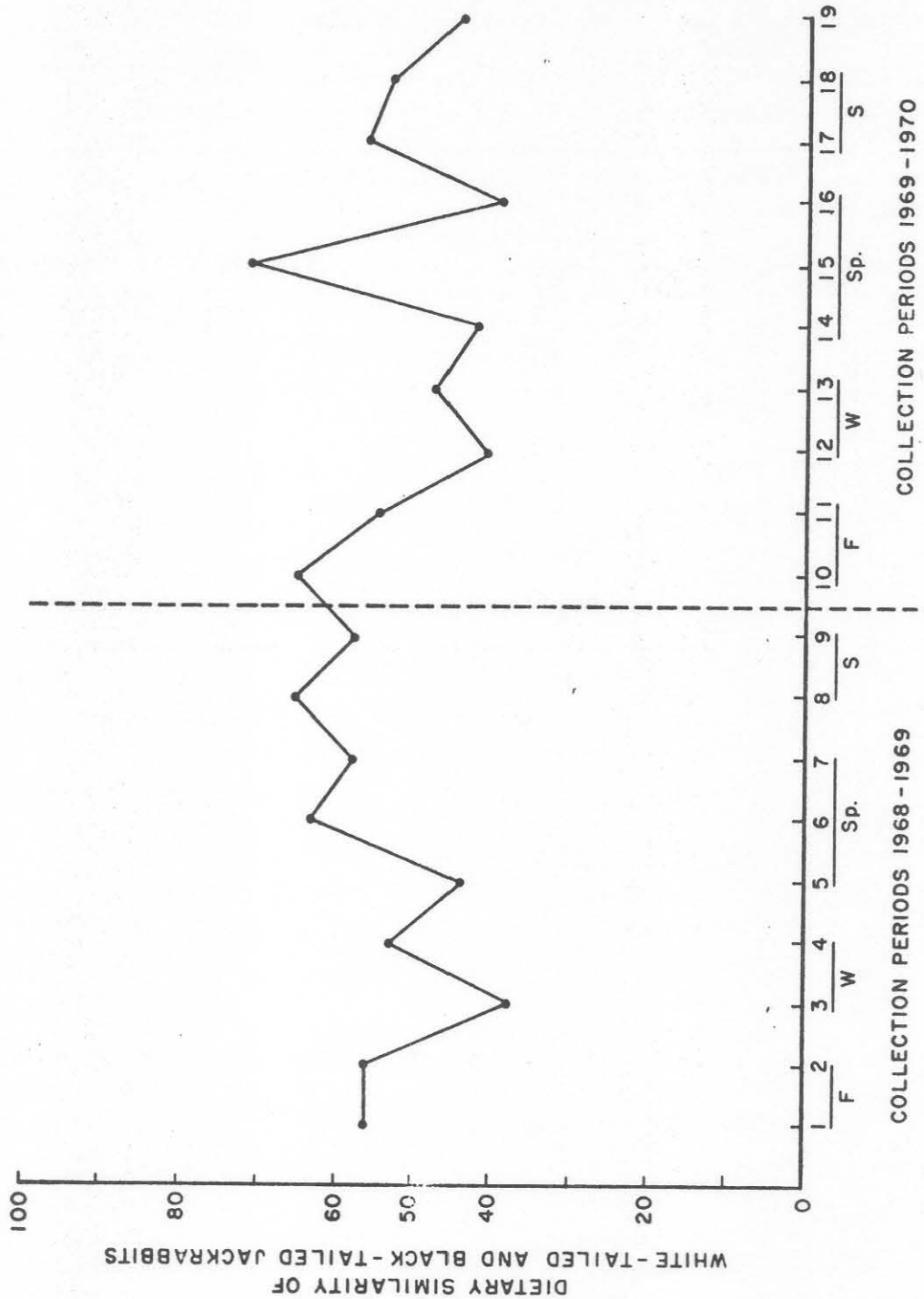

Fig. 1. Dietary similarity (Kulczynski's Index, Oosting 1956) of black-tailed and white-tailed jackrabbits for 19 periods of collection in fall (F), winter (W), spring (Sp), and summer (S) seasons.

Table 4. Comparative summary of plant species (grouped as grasses and forbs) in diets and habitats of black-tailed and white-tailed jackrabbits. Numbers in parentheses indicate number of plant species (intrinsic species) that occurred in the diets or habitats of one species of hare and not in the diets or habitats of the other species.

Species of Jackrabbits	Number Plant Species in Diets			Number Plant Species in Habitats		
	Grasses	Forbs	Total	Grasses	Forbs	Total
Black-tailed Jackrabbits	20 (4)	51 (11)	71 (15)	24 (2)	86 (13)	110 (15)
White-tailed Jackrabbits	16 (1)	51 (11)	67 (12)	24 (2)	81 (8)	105 (10)
Over-all Totals of Plant Species	21	62	83	26	94	120

Table 5. Computer print-out for aboveground herbage at kill sites of jackrabbits on the Pawnee Grasslands.

HERBAGE IN KG/HA FOR SEPTEMBER, 1968
SAMPLE 1 DATE 9/18 READER 1 HARE 286 SPECIES BT

SPECIES	FREQUENCY	WET WEIGHT	DRY WEIGHT	PERCENT DWT	RELATIVE PC DWT	HUMAN CORRECT
AGSM	1	9.4913	7.4078	.7805	.0128	1.1705
ARLO	2	72.7526	54.5644	.7500	.0943	1.0690
BOGR	6	321.7681	228.6247	.7105	.3950	.8977
BUDA	3	33.3300	24.9975	.7500	.0432	1.0000
CAHE	3	12.6483	9.4862	.7500	.0164	1.0541
FEOC	2	9.2632	9.2632	1.0000	.0160	.9595
ORHY	2	14.5505	11.6404	.8000	.0201	1.0690
SPCR	1	12.1387	9.1040	.7500	.0157	.9153
TOTG	20	485.9427	355.0884	0.0000	.6135	.9595
GUSA	3	197.1520	100.2468	.5085	.1732	.9016
OPPO	1	163.0826	112.2516	.6883	.1939	1.0900
PEAL	1	11.4382	5.7191	.5000	.0099	.9713
SPCO	3	11.7061	5.4873	.4687	.0095	1.1389
TOTF	8	383.3789	223.7048	0.0000	.3865	.9713

HERBAGE IN KG/HA FOR SEPTEMBER, 1968
SAMPLE 1 DATE 9/18 READER 1 HARE 290 SPECIES BT

SPECIES	FREQUENCY	WET WEIGHT	DRY WEIGHT	PERCENT DWT	RELATIVE PC DWT	HUMAN CORRECT
AGSM	3	18.9826	14.8157	.7805	.0136	1.1705
ARLO	2	62.3594	46.7695	.7500	.0428	1.0690
BOGR	9	227.7128	161.7959	.7105	.1481	.8977
BUDA	3	99.9900	74.9925	.7500	.0687	1.0000
CAHE	1	4.2161	3.1621	.7500	.0029	1.0541
TOTG	18	413.2609	301.5357	0.0000	.2761	.9595
ATCA	1	751.7320	370.9204	.4934	.3396	.5321
EREF	2	97.6333	54.9187	.5625	.0503	1.1379
OPPO	1	530.0183	364.8178	.6883	.3340	1.0900
TOTF	4	1379.3837	790.6570	0.0000	.7239	.9713

HERBAGE IN KG/HA FOR SEPTEMBER, 1968
SAMPLE 1 DATE 9/18 READER 1 HARE 291 SPECIES BT

refers to the individual that estimated the weights of plants in the quadrats. Hare number refers to the individual number assigned to each jackrabbit. Species BT or WT refers to black-tailed and white-tailed jackrabbits, respectively. Plant species are listed in the species column with code names. This code is composed of the first two letters of the genus and first two letters of the species. The symbols TOTG and TOTF refer to total grasses or grass-likes and total forbs, respectively. Frequency here equals the number of quadrats in which a species occurred. Percent dry weight (PERCENT DWT) refers to the dry weight divided by the net weight. The column headed by HUMAN CORRECTION refers to the estimation error that the estimated weights of a plant species must be divided by to obtain the true weight.

Table 6 is an example of the summary of the data on aboveground biomass at all kill-sites for a species of jackrabbit (BT) for one collection period. All weights are in kilograms per hectare with symbols the same as in Table 4 with some exceptions. Frequency refers to the number of quadrats in which a species occurred divided by the total number of quadrats. Relative percent dry weight is noted by REL PC DWT. There are 38 of these summary pages in the print-out.

Dietary Analyses

Table 7 shows examples of computer print-out on diets of individual jackrabbits from the Pawnee Grasslands. These data include hare's number, species, and sex, initials of the person who did the microscopic analysis of the diet, weight of animal in pounds and ounces, time of kill, location of kill-site in map co-ordinates, and number of plant species in diet.

Table 6. Form of computer print-out for summary of aboveground herbage at kill sites of jackrabbits on the Pawnee Grasslands.

HERBAGE IN KG/HA FOR KILLS MADE APRIL 2-17, 1969
SUMMARY FOR SPECIES BT

SPECIES	FREQUENCY	WET WEIGHT	DRY WEIGHT	STD ERROR	CONF INT	REL PC DWT
AGCR	.0259	6.1722	4.1148	4.1148	8.2296	.0073
AGSM	.2111	26.0486	20.3819	5.2223	10.4447	.0360
ARLO	.0667	26.4614	22.9836	9.4299	18.8598	.0406
AVSA	.0741	37.8798	19.6975	13.9264	27.8529	.0348
BOGR	.5037	278.8510	245.9374	49.5456	99.0912	.4347
BUDA	.2296	94.5584	87.0590	34.4688	68.9375	.1539
CAHE	.1556	14.3196	6.1097	1.6755	3.3510	.0108
MUTO	.0444	5.7059	4.1571	2.2461	4.4921	.0073
ORHY	.0074	.8230	.6584	.4565	.9130	.0012
SCPA	.0519	4.2794	3.5662	1.8984	3.7967	.0063
SPCR	.0519	5.1024	5.1024	2.1010	4.2020	.0090
UNKG	.0370	18.6813	16.6284	16.6284	33.2567	.0294
TOTG	1.4593	518.8829	436.3963	85.5844	171.1687	.7714
ARFR	.0037	.5290	.2751	.2751	.5502	.0005
ASTR	.0111	.4938	.3950	.2191	.4382	.0007
ATCA	.0037	3.2919	1.5801	1.5801	3.1602	.0028
BAOP	.0074	.3256	.2605	.1806	.3612	.0005
CIUN	.0074	15.3844	0.0000	0.0000	0.0000	0.0000
COUM	.0037	.1628	.1302	.1302	.2605	.0002
CYMO	.0185	4.9378	.9876	.5245	1.0490	.0017
EREF	.0037	.2057	.2057	.2057	.4115	.0004
GUSA	.0222	14.9593	3.5011	2.2086	4.4172	.0062
GRSQ	.0037	1.6459	1.3167	1.3167	2.6335	.0023
KOSC	.0111	13.1866	0.0000	0.0000	0.0000	0.0000
LEMO	.0037	.1628	.0326	.0326	.0651	.0001
LOOR	.0259	3.7856	.7571	.5014	1.0028	.0013
MAVI	.0037	.8230	.2460	.2460	.4921	.0004
MELI	.0370	14.8133	13.7023	13.7023	27.4047	.0242
MESA	.0852	423.6613	0.0000	0.0000	0.0000	0.0000
MUDI	.0074	1.2859	.2572	.2101	.4203	.0005
OPPO	.0333	323.0057	96.5631	44.2248	88.4497	.1707
SAKA	.0037	.1628	.1302	.1302	.2605	.0002
SPCO	.0222	.9768	.7814	.5734	1.1468	.0014
TAOF	.0593	27.4321	7.6810	5.3258	10.6516	.0136
TOGR	.0074	.1646	.1317	.0913	.1826	.0002
UNKF	.0111	.7326	.3929	.2437	.4874	.0007
TOTF	.3963	852.1295	129.3277	25.3633	50.7265	.2286

#12

#23

TOTAL MEAN WET WEIGHT IN KG/HA IS 918.7800 +/- SE 181.6364 +/- CI 363.2728

TOTAL MEAN DRY WEIGHT IN KG/HA IS 565.7241 +/- SE 85.1778 +/- CI 170.3556

THIS SUMMARY IS BASED ON 27 LOCATIONS

Table 7. Examples of computer print-out on diets of individual jackrabbits from the Pawnee Grasslands.

HARE 332 BT ON 10/ 3/68 SEX F READER JF WEIGHT 6 LBS 10 OZS TIME 23:15 LOC 9E,7N,SEC10,T10N,R65W, 8 SPECIES IN DIET

CODE	FIELDS
AGSM	20
BOGR	1
BUDA	2
ASTR	1
CHNA	1
MILI	1
SPCO	7
UNKN	1

HARE 333 WT ON 10/ 3/68 SEX F READER JF WEIGHT 6 LBS 0 OZS TIME 23:20 LOC 9E,0N,SEC 3,T10N,R65W, 3 SPECIES IN DIET

CODE	FIELDS
MESA	19
CHVI	3
OPPO	1

HARE 334 BT ON 10/ 3/69 SEX F READER JF WEIGHT 6 LBS 2 OZS TIME 23:30 LOC 8E,9N,SEC 6,T10N,R65W, 4 SPECIES IN DIET

CODE	FIELDS
AGSM	10
BRIN	10
KOSC	6
PSTE	6

HARE 335 WT ON 10/ 3/68 SEX F READER JF WEIGHT 6 LBS 10 OZS TIME 11:35 LOC 8E,2N,SEC31,T11N,R65W, 5 SPECIES IN DIET

CODE	FIELDS
AGSM	7
BRIN	8
MESA	8
SPCO	5
UNKN	1

"FIELDS" refers to the number of fields under the microscope that contained an identifiable portion of each plant species. Code names of plants are derived the same as in the data from aboveground biomass.

A summary of the dietary data for jackrabbits from one month's sample (SAMPLE 3) is shown in Table 8. Relative density is the same as percent relative dry-weight. Plants are coded as usual.

Indices of dietary preference are shwon in Table 9. This is a sample of the 19 pages of these data compiled for jackrabbits in this study. Table 10 shows a sample of the print-out of Kulczynski's Index of Similarity (see Methods and Materials) for diets of jackrabbits. Symbols BT and WT refer to black-tailed and white-tailed jackrabbits, respectively, as previously mentioned. Comparisons are made for each category on the left with all categories on the same horizontal plane to the right, e.g., ALL BT are compared with BT MALES, then to BT FEMALES, then to ALL WT, then to WT MALES, and finally to WT FEMALES.

Table 8. Example of computer print-out of the percent relative dry weight (RELATIVE DENSITY SUMMARY) of plant species in the diets of jackrabbits from the Pawnee Grasslands.

SAMPLE 3 DIET DATA FOR DECEMBER, 1968

RELATIVE DENSITY SUMMARY

GROUP:	BOTH SPECIES		BLACK-TAILED JACKRABBITS						WHITE-TAILED JACKRABBITS					
SEX:	BOTH		BOTH		MALES		FEMALES		BOTH		MALES		FEMALES	
NUMBER:	51.		25.		8.		17.		26.		12.		14.	
CODE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE
AGCR	.069	.029	.113	.051	.001	.001	.165	.073	.027	.027	0.000	0.000	.050	.050
AGSM	.001	.001	.001	.001	0.000	0.000	.002	.002	0.000	0.000	0.000	0.000	0.000	0.000
BRIN	.036	.021	.015	.014	.045	.045	.001	.001	.056	.040	.113	.085	.007	.006
BUDA	.005	.003	.010	.006	.018	.015	.007	.007	0.000	0.000	0.000	0.000	0.000	0.000
SPCR	.004	.003	.008	.006	.003	.003	.010	.009	0.000	0.000	0.000	0.000	0.000	0.000
TRVU	.230	.054	.010	.010	0.000	0.000	.015	.014	.442	.088	.548	.129	.351	.120
TOTG	.344	.057	.157	.051	.067	.044	.199	.070	.525	.087	.661	.122	.408	.119
ARFR	.066	.028	.016	.016	.051	.051	0.000	0.000	.114	.052	.118	.076	.110	.073
ATCA	.045	.022	.089	.043	.003	.003	.129	.061	.002	.001	0.000	0.000	.004	.003
CHNA	.332	.052	.526	.070	.694	.141	.447	.074	.146	.056	.058	.035	.221	.098
CHVI	.001	.001	0.000	0.000	0.000	0.000	0.000	0.000	.002	.002	.005	.004	0.000	0.000
KOSC	.005	.004	.001	.001	0.000	0.000	.001	.001	.010	.008	.019	.016	.001	.001
MESA	.151	.040	.147	.058	.123	.109	.158	.071	.155	.057	.044	.036	.250	.096
MILI	.017	.017	0.000	0.000	0.000	0.000	0.000	0.000	.033	.033	.071	.071	0.000	0.000
OPPO	.021	.008	.038	.016	.052	.033	.031	.018	.004	.004	.009	.009	0.000	0.000
SAKA	.001	.001	.003	.003	.009	.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SPCO	.005	.002	.005	.003	0.000	0.000	.007	.004	.005	.003	.002	.002	.007	.005
YUGL	.012	.008	.017	.015	0.000	0.000	.026	.022	.006	.006	.013	.013	0.000	0.000
UNKN	.001	.001	.001	.001	0.000	0.000	.002	.002	0.000	0.000	0.000	0.000	0.000	0.000
TOTF	.656	.057	.843	.051	.933	.044	.801	.070	.475	.087	.339	.122	.592	.119

Table 9. Example of computer print-out of the indices of dietary preference for jackrabbits on the Pawnee Grasslands.

PREFERENCE INDEX SUMMARY

GROUP:	BOTH SPECIES		BLACK-TAILED JACKRABBITS						WHITE-TAILED JACKRABBITS					
SEX:	BOTH		BOTH		MALES		FEMALES		BOTH		MALES		FEMALES	
NUMBER:	50.		23.		10.		13.		27.		15.		12.	
CODE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE	MEAN	SE
AGCR	5.528	2.563	2.376	1.407	3.055	2.253	1.854	1.854	8.212	4.570	8.533	5.609	7.811	7.811
AGSM	17.265	4.184	21.932	7.374	22.654	12.351	21.377	9.397	13.290	4.537	16.981	7.017	8.675	5.259
ARLO	.061	.061	.133	.133	0.000	0.000	.236	.236	0.000	0.000	0.000	0.000	0.000	0.000
AVSA	.020	.020	.044	.044	0.000	0.000	.077	.077	0.000	0.000	0.000	0.000	0.000	0.000
BOGR	.279	.121	.350	.180	.542	.363	.203	.157	.218	.165	.111	.110	.352	.350
BRIN	1.233	.866	1.442	1.442	0.000	0.000	2.552	2.552	1.055	1.055	0.000	0.000	2.374	2.374
BUDA	.070	.050	.151	.108	.218	.218	.100	.100	.000	.000	.000	.000	0.000	0.000
CAHE	.000	.000	.000	.000	0.000	0.000	.000	.000	0.000	0.000	0.000	0.000	0.000	0.000
ORHY	.006	.006	.000	.000	0.000	0.000	.000	.000	.012	.012	.021	.021	0.000	0.000
SIHY	.006	.006	0.000	0.000	0.000	0.000	0.000	0.000	.012	.012	.021	.021	0.000	0.000
SPCR	.001	.001	0.000	0.000	0.000	0.000	0.000	0.000	.002	.002	0.000	0.000	.005	.004
TOTG	24.470	4.762	26.430	7.506	26.469	12.008	26.399	9.978	22.801	6.189	25.668	8.593	19.218	9.173
AMCO	.003	.003	0.000	0.000	0.000	0.000	0.000	0.000	.005	.005	.009	.009	0.000	0.000
ASTR	1.614	1.559	3.419	3.389	0.000	0.000	6.049	5.993	.076	.060	0.000	0.000	.172	.133
ATCA	.487	.319	1.059	.682	2.266	1.516	.131	.130	0.000	0.000	0.000	0.000	0.000	0.000
CHNA	9.585	2.968	4.703	2.428	4.475	4.460	4.877	2.763	13.745	5.005	13.279	5.989	14.328	8.725
CHVI	.925	.466	.850	.850	0.000	0.000	1.503	1.503	.988	.486	1.150	.786	.787	.517
CIUN	.028	.028	0.000	0.000	0.000	0.000	0.000	0.000	.052	.052	.093	.093	0.000	0.000
EREF	.525	.525	0.000	0.000	0.000	0.000	0.000	0.000	.972	.972	1.749	1.749	0.000	0.000
GACO	.230	.161	.267	.267	0.000	0.000	.472	.472	.198	.198	.357	.357	0.000	0.000
GUSA	.080	.079	0.000	0.000	0.000	0.000	0.000	0.000	.148	.146	.266	.263	0.000	0.000
KOSC	1.917	1.209	3.383	2.572	5.782	5.757	1.538	1.296	.668	.451	.921	.769	.350	.350
LIPU	.857	.857	0.000	0.000	0.000	0.000	0.000	0.000	1.587	1.587	0.000	0.000	3.571	3.571
MESA	6.095	2.789	3.304	3.300	.009	.009	5.839	5.839	8.472	4.339	6.334	4.833	11.145	7.862
MILI	.552	.324	.697	.668	1.539	1.538	.050	.050	.429	.210	.277	.185	.619	.416
OPPO	.699	.551	0.000	0.000	0.000	0.000	0.000	0.000	1.295	1.014	1.818	1.818	.640	.378
PSTE	.684	.382	.805	.731	.168	.142	1.295	1.294	.581	.350	1.003	.616	.053	.044
SAKA	.038	.038	.083	.083	0.000	0.000	.147	.147	0.000	0.000	0.000	0.000	0.000	0.000
SETR	.001	.001	.002	.002	.004	.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SPCO	7.216	2.554	12.566	5.110	11.601	9.251	13.309	5.935	2.659	1.486	.828	.811	4.946	3.138
VEBR	.210	.148	0.000	0.000	0.000	0.000	0.000	0.000	.388	.273	.264	.264	.544	.530
YUGL	.458	.396	.002	.002	0.000	0.000	.003	.003	.847	.731	0.000	0.000	1.906	1.631
UNKN	.310	.134	.029	.028	.000	.000	.051	.050	.550	.239	.675	.378	.394	.270
TOTF	32.513	5.399	31.168	8.086	25.843	11.801	35.264	11.336	33.659	7.382	29.023	8.841	39.454	12.649

Table 10. Example of computer print-out of Kulczynski's Index of Similarity for diets of jackrabbits from the Pawnee Grasslands.

SIMILARITY INDICIES

	BT MALES	BT FEMALES	ALL WT	WT MALES	WT FEMALES
ALL BT	.60606	.72222	.56070	.44575	.51570
BT MALES		.71073	.37134	.46395	.52167
BT FEMALES			.48513	.50841	.63097
ALL WT				.71429	.61538
WT MALES					.68222

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APPENDIX I

SPECIES CODES

Master List of the 149 Species Codes
Used for the Jackrabbit Habitat Data:

Symbol	Scientific Name and Author	Common Name
	Grasses and Grasslikes	
AGCR	*Agropyron cristatum* (Fisch.) Schult. = *A. desertorum* (Fisch.) Schult.	Crested Wheatgrass
AGSM	*Agropyron smithii* Rydb.	Western wheatgrass
AGTR	*Agropyron trachycalum* (Link) Malte	Slender wheatgrass
ARLO	*Aristida longiseta* Steud.	Fendler three-awn
AVSA	*Avena sativa* L.	Oats
BOGR	*Bouteloua gracilis* (H.B.K.) Lag.	Blue grama
BOHI	*Bouteloua hirsuta* Lag.	Hairy grama
BOCU	*Bouteloua curtipendula* (Michx.) Torr.	Side-oats grama
BRIN	*Bromus inermis* Leyss.	Smooth brome
BRJA	*Bromus japonicus* Thunb.	Japanese brome
BRTE	*Bromus tectorum* L.	Cheatgrass brome
BUDA	*Buchloe dactyloides* (Nutt.) Engelm.	Buffalograss
CAFI	*Carex filifolia* Nutt.	Threadleaf sedge
CAHE	*Carex heliophila* Mackenz.	Sun sedge
DIST	*Distichlis stricta* (Torr.) Rydb.	Inland saltgrass
ELCA	*Elymus canadensis* L.	Canada wildrye
FEOC	*Festuca octoflora* Walt.	Six weeks fescue
HOJU	*Hordeum jubatum* L.	Foxtail barley
MUSQ	*Munroa squarrosa* (Nutt.) Torr.	False buffalograss

Symbol	Scientific Name and Author	Common Name
	Grasses and Grasslikes (Continued)	
MUTO	*Muhlenbergia torreyi* (Kunth) Hitchc.	Ring muhly
ORHY	*Oryzopsis hymenoides* (Roem. & Schult.) Ricker	Indian ricegrass
SCPA	*Schedonnardus paniculatus* (Nutt.) Trel.	Tumblegrass
SEIT	*Setaria italica* (L.) Beauv.	Foxtail millet
SIHY	*Sitanion hystrix* (Nutt.) J. G. Smith	Bottlebrush squirreltail
SOSU	*Sorghum sudanense* (Piper) Staph.	Sudan grass
SPCR	*Sporobolus cryptandrus* (Torr.) A. Gray	Sand dropseed
SPAR	*Sporobolus airoides* Torr.	Alkali sacaton
STCO	*Stipa comata* Trin. & Rupr.	Needle and thread
STVR(1)	*Stipa viridula* Trin.	Green needlegrass
TRVU	*Triticum vulgare* L.	Wheat
ZEMA	*Zea mays* L.	Corn
UNKG	Unknown grass	
TOTG	Total grass	
	Forbs and Shrubs	
ABFR	*Abronia fragrans* Nutt.	Snowball sandverbena
ABMI	*Abronia micrantha* = *Tripterocalyx micranthus* (Torr.) Hook.	
ALTE	*Allium textile* Nels. & Macbr.	Textile onion
ALDR	*Allium drummondii* Regel	Drummond onion
AMBL	*Amaranthus blitoides* S. Wats. = *A. graecizans* L.	Prostrate amaranth
AMRE	*Amaranthus retroflexus* L.	Redroot amaranth
AMCO	*Ambrosia coronopifolia* T.&G.	Ragweed

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs (Continued)	
AMTR	*Ambrosia trifida* L.	Giant ragweed
ARIN	*Argemone intermedia* Sweet	Pricklepoppy
ARDR	*Artemesia dracunculus* L.	Falsetarragon sagebrush
ARFI	*Artemesia filifolia* Torr.	Sand sagebrush
ARFR	*Artemesia frigida* Willd.	Fringed sagewort
ASPU	*Asclepias pumila* (A. Gray) Vail in Britt. & Brown	Plains milkweed
ASTA	*Aster tanacetifolius* H.B.K.	Tansyleaf aster
ASVI	*Aster viscosa*[1/]	
ASTR	*Astragalus* L. Sp. and *Oxytropis* DC. Sp.	
ATAR	*Atriplex argentea*[2/] (Nutt.)	
ATCA	*Atriplex canescens* (Pursh) Nutt.	Fourwing saltbush
BAOP	*Bahia oppositifolia* (Nutt.) DC.	Plains bahia
CHAL	*Chenopodium album* L.	Lambsquarter's goosefoot
CHLE	*Chenopodium leptophyllum* Nutt.	Slumleaf goosefoot
CHNA	*Chrysothamnus nauseosus* (Pallas) Britt.	Rubber rabbitbrush
CHVI	*Chrysopsis villosa* (Pursh) Nutt.	Hairy goldaster
CIAR	*Cirsium arvense* (L.) Scop.	Canada thistle
CIUN	*Cirsium undulatum* (Nutt.) Spreng.	Wavyleaf thistle
CLSE	*Cleome serrulata* Pursh	Bee spiderflower
COUM	*Commandra umbellatum* (L.) Nutt.	Bastard toadflax

1/ Identified as *Aster canescens* Pursh

2/ Identified as *Atriplex nuttallii* S. Wats.

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs (Continued)	
COAR	*Convolvulus arvensis* L.	Morning glory
CRYP	*Cryptantha* Lehm. Sp.	
CYMO	*Cymopterus montanus* (Nutt.) T.&G.	
DEVI	*Delphinium virescens* Nutt.	Plains larkspur
DYPA	*Dyssodia papposa* (Vent.) Hitchc.	Prairie dogweed
ERBE	*Erigeron bellidiastrum* Nutt.	
ERCA	*Erigeron canadensis* L. = *Conyza canadensis* (L.)	Horseweed fleabane
ERDI	*Erigeron divergens* T.&G.	Fleabane
EREF	*Eriogonum effusum* Nutt.	Umbrella plant
EUGL	*Euphorbia glyptosperma* Engelm.	Ridgeseed euphorbia
EULA	*Eurotia lanata* (Pursh) Moq.	Common winterfat
EVNU	*Evolvulus nuttallianus* Roem. & Schult.	Nuttall evolvulus
FRDI	*Franseria discolor* Nutt.	Skeletonleaf bursage
GACO	*Gaura coccinea* Nutt. ex Pursh	Scarlet gaura
GILA	*Gilia laxiflora* (Coult.) Osterh.	
GLLE	*Glycyrrhiza lepidota* Pursh	American licorice
GUSA	*Gutierrezia sarothrae* (Pursh) Britt. & Rusby	Broom snakeweed
GRSQ	*Grindelia squarrosa* (Pursh) Dunal	Curlycup gumweed
HASP	*Haplopappus spinulosus* (Pursh) DC.	Ironplant goldenweed
HEAN	*Helianthus annuus* L.	Common sunflower
HENU	*Helianthus nuttallii*[3/] Torr. & Gray	

[3/] Identified as *Verbesina encelioides* (Cav.) Beuth. & Hook.

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs (Continued)	
HEPE	*Helianthus petiolaris* Nutt.	Prairie sunflower
HYFI	*Hymenopappus filifolius* Hook.	
IVAX	*Iva axillaris* Pursh	Poverty sumpweed
KOSC	*Kochia scoparia* (L.) Schrad.	Belvedere summercypress
LAPU	*Lactuca pulchella* (Pursh) DC.	Chicory lettuce
LARE	*Lappula redowskii* (Hornem.) Greene	Redowski's stickseed
LASC	*Lactuca scariola* L.	Prickly lettuce
LEDE	*Lepidium densiflorum* Schrad.	Prairie pepperweed
LELU	*Lesquerella ludoviciana* (Nutt.) S. Wats.	Silver bladderpod
LEMO	*Leucocrinum montanum* Nutt.	Common starlily
LIPU	*Liatris punctata* Hook.	Dotted gayfeather
LIRI	*Linum rigidum* Pursh	Stiffstem flax
LICA	*Lithospermum caroliniensi* (Walt.) MacMill.	Gromwell
LIIN	*Lithospermum incisum* Lehm.	Gromwell
LOOR	*Lomatium orientalis* Coult. & Rose	Biscuitroot
LUPU	*Lupinus pusillus* Pursh	Rusty lupine
LYJU	*Lygodesmia juncea* (Pursh) D. Don.	Rush skeleton plant
MAVI	*Mammillaria vivipara* (Nutt.) Haw.	
MAVU	*Marrubium vulgare* L.	Common hoarhound
MELI	*Melilotus* Adans. Sp.	Sweet clover
MESA	*Medicago sativa* L.	Alfalfa
MEST	*Mentzelia stricta* (Osterh.) Stevens	Blazing star mentzelia
MILI	*Mirabilis linearis* (Pursh) Heimerl.	Purple four o'clock
MUDI	*Musineon divaricatum* (Pursh) Nutt.	

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs (Continued)	
OECO	*Oenothera coronopifolia* Torr. & Gray	
OELA	*Oenothera latifolia* (Rhydb.) Munz	
OPPO	*Opuntia polycantha* Haw.	Plains pricklypear
ORLU	*Orobanche ludoviciana* Nutt.	
PEAL	*Penstemon albidus* Nutt.	White penstemon
PEAN	*Penstemon angustifolius* Nutt.	Narrowleaf penstemon
PECA	*Petalostemon candidus* (Willd.) Michx.	White prairieclover
PHLA	*Physalis lanceolata* Michx.	Groundcherry
PHHO	*Phlox hoodii* Rich. *in* Frankl.	Phlox
PLPU	*Plantago purshii* Roem. & Schult.	Woolly Indianwheat
POTR	*Polanisia trachysperma* Torr. & Gray	Roughseed clammyweed
POAV	*Polygonum aviculare* L.	Prostrate knotweed
POOL	*Portulaca oleracea* L.	Common purslane
PSLA	*Psoralea lanceolata* Pursh	Lemon scurfpea
PSTE	*Psoralea tenuiflora* Pursh	Slimflower scurfpea
RACO	*Ratibida columnaris* (Sims.) D. Don.	Upright prairieconeflower
ROWO	*Rosa woodsi fendleri* (Crepin) Rydb.	Fendler woods rose
RUVE	*Rumex venosus* Pursh	Veiny dock
SAKA	*Salsola kali* Tausch.	Tumbling Russian thistle
SARE	*Salvia reflexa* Hornem.	Lanceleaf sage
SCBR	*Scutellaria brittonii* Porter	Brittons skullcap
SEMU	*Senecio multicapitatus* Greene	
SETR	*Senecio tridenticulata* Rydb.	Groundsel

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs (Continued)	
SIAL	*Sisymbrium altissimum* L.	Tumblemustard
SORO	*Solanum rostratum* Dunal.	Buffalobur nightshade
SOTR	*Solanum triflorum* Nutt.	Cutleaf nightshade
SOSE	*Sophora sericea* Nutt.	Silky sophora
SPCO	*Sphaeralcea coccinea* (Pursh) Rydb.	Scarlet globemallow
TAPA	*Talinum parviflorum* Nutt.	Prairie fameflower
TAOF	*Taraxacum officinale* Wiggers	Dandelion
THME	*Thelesperma megapotamicum* (Spreng.) Kuntze	
THTR	*Thelesperma trifidum* (Poir.) Britt.	
TOGR	*Townsendia grandiflora* Nutt.	
TOSE	*Townsendia sericea* Hook.	
TROC	*Tradescantia occidentalis* (Britt.) Smythe.	Prairie spiderwort
TRPR	*Tragopogen pratensis* L.	Meadow salsify
TRTE	*Tribulus terrestris* L.	Puncturevine
VEBR	*Verbena bracteata* Lag. & Rodr.	Bigbract verbena
VINU	*Viola nuttallii* Pursh	Nuttail violet
XASP	*Xanthium spinosum* L. or *X. italicum* Moretti	Cocklebur
YUGL	*Yucca glauca* Nutt.	Small soapweed
ZYGR	*Zygadenus gramineus* Rydb.	Grassy deathcamus
UNKF	Unknown forb	
TOTF	Total forb	

Master List of the 85 Species Codes
Used for the Jackrabbit Diet Data:

Symbol	Scientific Name and Author	Common Name
	Grasses and Grasslikes	
AGCR	*Agropyron cristatum* (Fisch.) Schult. = *A. desertorum* (Fisch.) Schult.	Crested wheatgrass
AGSM	*Agropyron smithii* Rydb.	Western wheatgrass
AGTR	*Agropyron trachycalum* (Link) Malte	Slender wheatgrass
ARLO	*Aristida longiseta* Steud.	Fendler three-awn
AVSA	*Avena sativa* L.	Oats
BOGR	*Bouteloua gracilis* (H.B.K.) Lag.	Blue grama
BRIN	*Bromus inermis* Leyss.	Smooth brome
BRTE	*Bromus tectorum* L.	Cheatgrass brome
BUDA	*Buchloe dactyloides* (Nutt.) Engelm.	Buffalograss
CAFI	*Carex filifolia* Nutt.	Threadleaf sedge
CAHE	*Carex heliophila* Mackenz.	Sun sedge
FEOC	*Festuca octoflora* Walt.	Six weeks fescue
MUTO	*Muhlenbergia torreyi* (Kunth) Hitchc.	Ring muhly
ORHY	*Oryzopsis hymenoides* (Roem. & Schult.) Ricker	Indian ricegrass
SCPA	*Schedonnardus paniculatus* (Nutt.) Trel.	Tumblegrass
SEIT	*Setaria italica* (L.) Beauv.	Foxtail millet
SIHY	*Sitanion hystrix* (Nutt.) J. G. Smith	Bottlebrush squirreltail
SPCR	*Sporobolus cryptandrus* (Torr.) A. Gray	Sand dropseed
STCO	*Stipa comata* Trin. & Rupr.	Needle and thread
TRVU	*Triticum vulgare* L.	Wheat
ZEMA	*Zea mays* L.	Corn
UNKG	Unknown grass	

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs	
ALTE	*Alium textile* Nels. & Macbr.	Textile onion
AMBL	*Amaranthus blitoides* S. Wats. = *A. Graecizans* L.	Prostrate amaranth
AMCO	*Ambrosia coronopifolia* T.&G.	Ragweed
ARFI	*Artemesia filifolia* Torr.	Sand sagebrush
ARFR	*Artemesia frigida* Willd.	Fringed sagewort
ASTA	*Aster tanacetifolius* H.B.K.	Tansyleaf aster
ASTR	*Astragalus* L. Sp. and *Oxytropis* DC. Sp.	
ATAR	*Atriplex argentea*[1/] Nutt. or *A. nuttallii* S. Wats.	
ATCA	*Atriplex canescens* (Pursh) Nutt.	Fourwing saltbush
BAOP	*Bahia oppositifolia* Nutt. DC.	Plains bahia
CHAL	*Chenopodium album* L.	Lambsquarters goosefoot
CHLE	*Chenopodium leptophyllum* Nutt.	Slimleaf goosefoot
CHNA	*Chrysothamnus nauseosus* (Pall.) Britt.	Rubber rabbitbrush
CHVI	*Chrysopsis villosa* (Pursh) Nutt.	Hairy goldaster
CIUN	*Cirsium undulatum* (Nutt.) Spreng.	Wavyleaf thistle
CYMO	*Cymopterus montanus* (Nutt.) T.&G.	
DYPA	*Dyssodia papposa* (Vent.) Hitchc.	Prairie dogweed
ERBE	*Erigeron bellidiastrum* Nutt.	
ERCA	*Erigeron canadensis* L. = *Conyza canadensis* (L.)	Horseweed fleabane
ERDI	*Erigeron divergens* T.&G.	Fleabane
EREF	*Eriogonum effusum* Nutt.	Umbrella plant

[1/] Identified as *Atriplex nuttallii* S. Wats.

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs (Continued)	
EULA	*Eurotia lanata* (Pursh) Moq.	Common winterfat
EVNU	*Evolvulus nuttallianus* Roem. & Schult.	Nuttall evolvus
GACO	*Gauro coccinea* Nutt. ex Pursh	Scarlet gaura
GUSA	*Gutierrezia sarothrae* (Pursh) Britt. & Rusby	Broom snakeweed
HASP	*Haplopappus spinulosus* (Pursh) DC.	Ironplant goldenweed
HEAN	*Helianthus annuus* L.	Common sunflower
HENU	*Helianthus nuttallii*[2/] Torr. & Gray	
HEPE	*Helianthus petiolaris* Nutt.	Prairie sunflower
IVAX	*Iva axillaris* Pursh	Poverty sumpweed
KOSC	*Kochia scoparia* L. & Schrad.	Belvedere summercypress
LEDE	*Lepidium densiflorum* Schrad.	Prairie pepperweed
LELU	*Lesquerella ludoviciana* (Nutt.) S. Wats.	Silver bladderpod
LEMO	*Leucocrinum montanum* Nutt.	Common starlily
LIPU	*Liatris punctata* Hook.	Dotted gayfeather
LUPU	*Lupinus pusillus* Pursh	Rusty lupine
LYJU	*Lygodesmia juncea* (Pursh) D. Don.	Rush skeletonplant
MAVI	*Mammillaria vivipara* (Nutt.) Haw.	
MELI	*Melilotus* Adans. sp.	Sweet clover
MESA	*Medicago sativa* L.	Alfalfa
MEST	*Mentzelia stricta* (Osterh.) Stevens	Blazing star mentzelia
MILI	*Mirabilis linearis* (Pursh) Heimerl.	Purple four o'clock

2/ Identified as *Verbesina enoeliodes* (Cav.) Beuth. & Hook.

Symbol	Scientific Name and Author	Common Name
	Forbs and Shrubs (Continued)	
MUDI	*Musineon divaricatum* (Pursh) Nutt.	Yellow flowers
OECO	*Oenothera coronopifolia* Torr. & Gray	
OPPO	*Opuntia polycantha* Haw.	Plains pricklypear
PEAL	*Penstemon albidus* Nutt.	White penstemon
PECA	*Petalostemon candidus* (Willd.) Michx.	White prairieclover
PLPU	*Plantago purshii* Roem. & Schult.	Woolly Indianwheat
POAV	*Polygonum aviculare* L.	Prostrate knotweed
PSLA	*Psoralea lanceolata* Pursh	Lemon scurfpea
PSTE	*Psoralea tenuiflora* Pursh	Slimflower Scurfpea
SAKA	*Salsola kali* Tausch.	Tumbling Russian thistle
SEMU	*Senecio multicapitatus* Greene	
SETR	*Senecio tridenticulata* Rydb.	Groundsel
SOSE	*Sophora sericea* Nutt.	Silky sophora
SPCO	*Sphaeralcaa coccinea* (Pursh) Rydb.	
TAOF	*Taraxacum officinale* Wiggars	Dandelion
TOGR	*Townsendia grandiflora* Nutt.	
TROC	*Tradescantia occidentalis* (Britt.) Smythe.	Prairie spiderwort
TRTE	*Tribulus terrestris* L.	Punctureviné
VEBR	*Verbena bracteata* Lag. & Rodr.	Bigbract verbena
VINU	*Viola nuttallii* Pursh	Nuttail violet
YUGL	*Yucca glauca* Nutt.	Small soapweed
UNKN	Unknown	

APPENDIX II

FIELD DATA

Jackrabbit Habitat Data

The Pawnee Site jackrabbit habitat data collected between September 1968 and 1970 is Grassland Biome data set number A2U106B. A description and sample of these data follow, including a master list of all habitat species codes used in the data set. Data description follows:

Column	Information
I.	Header card for each sampling date
1- 3	Sampling date number
4- 6	Number of habitat sample locations (one for each hare taken for diet analysis)
7- 8	Not currently used
9-10	Number of plots per location (always 10)
11-80	Alphameric heading.
II. A.	Identification card for one habitat sample location
1- 3	Number of location (same as hare number--consecutive throughout entire data set). Changed to four columns after sampling date 12.
4- 5	Month location was sampled
6- 7	Day location was sampled
8- 9	Reader code number
10-13	Alphameric hare species code
14-15	Numeric hare species code: 01 for black-tailed jackrabbits 02 for white-tailed jackrabbits

Column	Information
B. Habitat species card(s) as needed--one for each species encountered on any of the 10 plots at that location	
1- 4	Alphameric species code
5- 9	Estimated weight in grams of that species on plot 1
10-14	Estimated weight on plot 2
. . .	. . .
50-54	Estimated weight on plot 10
55-59	Estimated weight on clipped plot
60-64	Actual green weight on clipped plot
C. Trailer card	
1- 3	III = end of information for that location
Repeat II A, B, and C for each location for that date.	
III. A. Dry weight card(s) for that date--one for each species for computation of percent dry weight.	
1- 4	Alphameric species code
5- 9	Green weight for that species
10-14	Oven dry weight for that species
B. Trailer card	
1- 3	III = end of information for that date
Repeat I, II, and III for each sampling date.	
IV. Trailer card	
1- 3	999 = end of data set.

Example data from sampling date one follow:

+++ EXAMPLE OF DATA +++

```
        1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890

0010530110  HERBAGE IN KG/HA FOR SEPTEMBER, 1968
239091001  WT02
AGSM       0.5       2.0                 3.0                       6.0  8.0
ARLO                 6.0                                           7.0  7.0
BOGR 10.0  5.0  12.0  0.5   4.0   15.0  8.0   6.0   6.0   3.0     9.0  10.0
BUDA                 1.0                 0.2         0.5           3.0  3.0
CAHE       0.2                                 0.2   0.2           0.2  0.2
ARFR 8.0             2.0   8.0                                     12.0 10.0
OPPO 35.0                                              25.0        35.0 11.0
SPCO                                     1.0   0.2                 2.0  2.0
ORLU                                           0.0                 0.0
III
241091001  WT02
AGSM       0.5  0.5  0.5   0.2         1.0         4.0   1.0     3.0  3.0
BOGR 0.2   0.2       1.0   4.0   4.0   2.0   0.2   2.0   3.0     3.0  3.0
BUDA 4.0   1.0  5.0  2.0   2.0         1.0         1.0   2.0     2.0  2.0
CAHE                0.2
GUSA                                                 6.0   6.0   6.0
LYJU                1.0         0.0   2.0               2.0     3.0  2.0
PLPU 0.2
SPCO            0.2                                              0.2
III
242091101  WT02
AGSM            0.5                                    0.2   0.5   4.0  5.0
BUDA 1.0   2.0  1.0   3.0   1.0   1.0   0.5   1.0     0.5   3.0   2.0  1.0
CAHE                0.2                 0.2                 0.2
ARFR                                    8.0   2.0                 8.0  17.0
ASTR                                    0.2                       5.0  4.0
EREF                                    28.0                      28.0 21.0
GUSA 1.0   12.0 0.2                                              12.0 15.0
LYJU                0.5
MELI 0.2                                                  2.0     2.0  1.0
OPPO                16.0                                          16.0 11.0
SPCO       0.2
MAVI                                                      2.0     2.0  0.5
III
244091101  WT02
AGSM                                                      2.0
BOGR 4.0   12.0           1.0   12.0  0.5   2.0   4.0   4.0   12.0 10.0
BUDA            3.0  3.0                 5.0   2.0         1.0
CAHE 0.2            0.5         0.5   0.2                       0.5  0.5
SPCR 0.2
ARFR                0.5         3.0                             3.0  1.0
```

EREF									28.0	28.0	30.0
EUGL	0.2										
LYJU		0.5								0.5	0.5
OPPO			1.0				25.0			25.0	16.0
SPCO	1.0	1.0				0.5				1.0	0.5
VEBR	0.2										
III											
245091101		WT02									
AGSM							1.0			3.0	3.0
BOGR	4.0	4.0	3.0	5.0	3.0	3.0	4.0	4.0	2.0	4.0	4.0	4.0
CAHE	0.2		0.2	0.2							
ORHY								0.5		0.5	0.5
OPPO					18.0					18.0	19.0
PLPU						0.2					
SPCO			1.0					1.0	0.5	1.0	1.0
III											
246091101		WT02									
AGSM	3.0				1.0	1.0				1.0	1.0
ARLO							3.0			3.0	4.0
BOGR	4.0	2.0	3.0	2.0	1.0	2.0	1.0	1.0	2.0	1.0	8.0	11.0
BUDA					0.5					1.0	2.0	2.0
CAHE		0.2				0.2						
ARFR								12.0			12.0	14.0
ASTR							0.2					
CHNA										14.0	14.0	35.0
LYJU			5.0								5.0	8.0
OPPO						52.0					52.0	35.0
PLPU		0.2		0.2								
SPCO			0.2	0.5	0.2						2.0	2.0
III												
248091101		WT02									
AGSM										1.0	2.0	1.0
ARLO								4.0			4.0	4.0
BOGR	2.0	0.5	2.0	2.0	4.0	2.0	3.0	1.0	2.0	2.0	2.0	4.0
BUDA					1.0					2.0	1.0	2.0
GUSA	10.0	34.0									10.0	13.0
LYJU			7.0								7.0	5.0
OPPO				18.0	24.0						18.0	15.0
PSTE					26.0						26.0	29.0
SPCO		0.2	3.0			0.2				0.2	3.0	3.0
THME	2.0				0.0	2.0					2.0	2.0
III												
261091301		WT02									
AGSM						0.5	0.2	4.0	4.0	0.5	4.0	2.0
BOGR	5.0	3.0	2.0	4.0	4.0	1.0	3.0	2.0	2.0	2.0	6.0	7.0
CAHE		0.2	0.5	0.2								
SPCR								0.5				
CHLE					0.2							
MILI								0.2				
PLPU					0.5						0.5	0.5
SPCO						0.5	0.2			0.5		

III
270091701 WT02

ARLO								12.0			12.0	10.0
BOGR	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0		2.0	3.0	3.0
BUDA								0.2	1.0		2.0	2.0
CAHE									0.2			
ASTR									0.5			
OPPO				22.0							22.0	36.0
PLPU									0.2			
SPCO								0.2				

III
271091701 WT02

AGSM			0.5		1.0				0.5		1.0	1.0
ARLO		1.0			4.0						4.0	2.0
BOGR	2.0	1.0	0.5	3.0		1.0	2.0				4.0	7.0
BUDA					0.2			1.0	0.2		3.0	3.0
CAHE	0.2					0.2	0.2					
CAFI						0.2						
ATCA				4.0							1.0	1.0
CIUN							0.5					
PLPU									0.2			
SAKA							0.2					

III
272091701 WT02

AGSM					0.2	0.5	0.5		0.2	0.2		
ARLO				0.5								
BOGR								0.5		0.5		
BUDA	2.0	0.5	1.0		0.5	0.5	2.0	2.0	2.0	0.5	3.0	3.0
CAHE								2.0	0.0			
FEOC										0.2		
ORHY		0.2	0.0									
SPCR		0.2										
BAOP		0.2										
GUSA			0.2									
PLPU									0.2	0.2		
SPCO									0.2			
VEBR	0.2											
SETR										2.0	2.0	1.0

III
273091701 WT02

AGSM		1.0			0.5				1.0	4.0	1.0	1.0
ARLO					1.0		2.0		0.5		1.0	1.0
BOGR	0.5			0.2		1.0					2.0	2.0
BUDA	0.5		0.5		0.2							
MUTO			0.5									
SCPA							1.0				1.0	1.0
SPCR	0.0	0.2							0.5	0.5	1.0	0.5
AGCR									0.5			
ASTR				0.2			0.2	0.2		0.2		
LYJU						1.0					1.0	1.0
MELI				0.5								
SAKA					0.2							

SPCO										0.2		
THME		0.2			0.2							
HASP									1.0		1.0	0.5
PECA										0.2		
III												
274091701	WT02											
AGSM	1.0	0.2				1.0					1.0	1.0
ARLO		0.2		2.0		4.0		2.0			2.0	1.0
BOGR	1.0		0.5	0.2			2.0	1.0			2.0	2.0
BUDA		1.0			1.0				1.0	1.0	2.0	2.0
CAHE				0.2		0.2						
SPCR				0.2								
CHVI					5.0						5.0	3.0
SPCO	0.2											
SETR						0.2		0.2				
III												
275091701	WT02											
AGSM						0.5	0.5	0.5		0.5		
ARLO	2.0	0.5		0.2	0.5	1.0	2.0	0.2	1.0	0.5	8.0	7.0
BOGR		0.2										
BUDA		0.2	2.0						0.2		2.0	3.0
SCPA					0.2		0.5					
SPCR				0.2			0.2	0.2	0.2			
AGCR	0.5											
ARIN						0.2						
BAOP	0.2											
CHVI	0.2	0.5										
MELI							0.5					
SEMU			0.2									
SPCO				0.2								
VEBR						0.2						
III												
27[illegible]1701	WT02											
AGSM				0.5			1.0	3.0		4.0	1.0	1.0
ARLO	0.2		0.2		3.0		0.5				3.0	2.0
BOGR		4.0									4.0	6.0
BUDA					0.2							
CAHE			0.2	0.2								
SCPA			3.0	2.0		1.0	0.5				2.0	2.0
SPCR	0.2				1.0	1.0			1.0	0.2	1.0	1.0
PLPU			0.2									
SAKA	0.2											
SPCO	0.2				0.2	0.2		0.2		0.2		
III												
27809170[illegible]	WT02											
AGSM	0.5			1.0					3.0		1.0	1.0
ARLO	0.2	0.2	1.0			3.0		0.5	0.2		1.0	1.0
BUDA					6.0		4.0			2.0	2.0	2.0
CAHE										0.2		
ORHY		1.0	1.0								1.0	1.0
SCPA			1.0	1.0		2.0		1.0			2.0	2.0
SPCR								0.5				

AGCR								2.0	4.0		1.0	2.0
BAOP		0.2										
SPCO				0.2								
VEBR					0.2							
III												
280091701	WT02											
BOGR	1.0	1.0	0.5	5.0	0.2	0.2	0.2	3.0			4.0	5.0
BUDA	0.2					2.0	2.0		1.0	1.0	5.0	4.0
CAHE		0.2	0.2	0.2			0.2	0.2	0.2	0.2		
ATCA							4.0				4.0	3.0
OPPO					92.0				80.0		92.0	98.0
III												
281091701	WT02											
AGSM		0.5		0.5	0.5	0.5			0.5	0.2		
ARLO	0.5	5.0	0.5			0.2	2.0	0.5	0.5		5.0	3.0
BUDA								0.2		1.0	2.0	2.0
CAHE			0.2				0.2					
SPCR	0.5	0.5	0.2		0.5		0.2	0.2	0.5			
ASTR	0.5					0.2					0.5	0.5
GUSA			5.0	5.0						3.0	5.0	5.0
LYJU							0.5					
SEMU						0.2						
SETR						0.5		0.2				
III												
283091801	WT02											
BOGR			0.5	2.0	1.0						2.0	3.0
BUDA	2.0	1.0	0.2		0.2	1.0	2.0	2.0	0.5	0.5	3.0	3.0
CAHE							0.2					
OPPO									4.0		4.0	2.0
SPCO										0.2		
III												
287091801	WT02											
AGSM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
BOGR	1.0	0.2	0.2	0.5	1.0	0.0	1.0	0.5	0.0	0.5	0.0	0.0
BUDA	0.0	0.5	0.5	0.2	0.0	1.0	0.0	0.2	2.0	0.5	1.0	1.0
CAHE	0.0	0.2	0.2	0.2	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0
GUSA	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0
OPPO	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	6.0
SPCO	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0
III												
288091801	WT02											
BOGR	1.0	1.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	0.5	1.0	1.0
CAHE					0.2		0.2			0.5		
SPCO				0.5	0.5							
III												
289091801	WT02											
BOGR	0.2		0.5	0.5	2.0					1.0	1.0	1.0
BUDA	2.0	2.0		1.0		2.0	1.0	1.0	1.0		1.0	1.0
CAHE				0.2						0.2		
ASTR			1.0								1.0	1.0
GUSA		0.5										
SAKA			0.5									

SPCO						0.2					
III											
240091101	BT01										
AGSM 0.2	0.2		0.5	1.0	2.0		1.0		0.2	3.0	4.0
BOGR 3.0	6.0	4.0	6.0	2.0	3.0	4.0	3.0	2.0	0.0	4.0	5.0
BUDA									2.0	4.0	3.0
CAHE 0.2	0.2		0.2	2.0			0.2		0.2	1.0	1.0
CAFI								1.0		2.0	0.5
ARFR						8.0				7.0	5.0
EUGL						0.2					
GUSA									3.0	8.0	6.0
OECO 0.2											
OPPO				10.0	15.0		12.0			18.0	10.0
SPCO 0.2						1.0		0.2		2.0	1.0
III											
243091101	BT01										
AGSM								4.0		6.0	4.0
BOGR 8.0	2.0	3.0	2.0	3.0	4.0	4.0	8.0	5.0	3.0	5.0	5.0
CAHE	0.2	0.2	0.2	0.2	0.2	0.2				0.2	0.5
ASTR									1.0	1.0	1.0
GACO		10.0		5.0					2.0	5.0	2.0
MILI									0.2		
OPPO		66.0								66.0	68.0
SPCO 0.2	0.2	0.2	0.2	1.0	0.2				0.2	1.0	1.0
III											
247091101	BT01										
BOGR 3.0	2.0	3.0		3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0
CAHE		0.2	0.2								
ARFR						5.0				5.0	5.0
EREF			2.0							2.0	1.0
OECO									0.5	0.5	0.5
OPPO	18.0								0.2	18.0	17.0
SPCO		1.0	0.5	0.2					1.0	1.0	0.5
III											
249091101	BT01										
BOGR 2.0		3.0	1.0	2.0	3.0	2.0	4.0	5.0	3.0	4.0	4.0
SPCR						0.5					
HOJU	5.0									4.0	8.0
ATCA	45.0									45.0	115.0
EREF					3.0					3.0	2.0
GACO		2.0				0.5				2.0	2.0
GUSA							5.0			5.0	6.0
MELI									0.2		
MILI			0.2	4.0						4.0	5.0
OECO						0.2					
OPPO	12.0				2.0					12.0	7.0
SPCO				0.2		0.2			0.2		
III											
250091101	BT01										
AGSM	0.2	2.0	4.0	1.0					1.0	4.0	5.0
ARLO 0.2					1.0	0.2			5.0	5.0	3.0
BOGR 2.0	6.0					4.0				5.0	7.0

BUDA			4.0					5.0	3.0		4.0	3.0
MUTO		0.2			2.0	3.0				2.0	2.0	1.0
ORHY										0.5	2.0	2.0
ASTR				2.0							2.0	2.0
GACO						0.0	0.2					
GUSA						0.2						
SPCO	0.2	0.2				0.2			0.2	0.2		
III												
251091301		BT01										
BOGR	3.0	3.0	3.0	3.0	4.0	3.0	4.0	2.0	3.0	3.0	4.0	3.0
ATCA						2.0					2.0	1.0
EULA	5.0				2.0						5.0	2.0
ASVI							7.0				7.0	5.0
III												
252091301		BT01										
BOGR								5.0	5.0		2.0	2.0
BAOP							0.2					
EUGL										0.5	0.5	0.5
HEAN		14.0									14.0	19.0
LYJU							2.0				2.0	1.0
MELI				4.0			6.0				4.0	2.0
OPPO									22.0	14.0	22.0	26.0
SAKA				0.2								
SPCO					0.2	0.5					1.0	1.0
AMBL					18.0						18.0	17.0
HENU										4.0	4.0	2.0
III												
253091301		BT01										
BOGR	3.0	1.0	2.0	3.0	1.0	1.0	1.0	2.0	2.0	3.0	2.0	2.0
ORHY			0.2									
ARIN										1.0	1.0	1.0
ARFR					1.0						1.0	1.0
ATCA								1.0			1.0	1.0
EREF			2.0						4.0		2.0	2.0
GACO					1.0						1.0	1.0
LYJU								1.0			1.0	0.5
MELI										0.2		
SPCO		0.5			0.2						1.0	1.0
VEBR							2.0				2.0	1.0
III												
254091301		BT01										
AGSM		0.5	1.0	0.2							0.5	0.5
ARLO										6.0	6.0	6.0
BOGR	9.0				6.0	6.0	10.0					
BUDA				1.0					4.0	1.0	2.0	3.0
CAHE	0.2	0.2	0.2	0.2	0.2							
MUTO		1.0									1.0	0.5
ORHY				3.0							3.0	1.0
SPCR		1.0									1.0	1.0
STCO			6.0								6.0	7.0
ARFR	1.0							10.0			4.0	4.0
ATCA								18.0			4.0	7.0

CHVI				1.0						1.0	1.0
SPCO		1.0		0.2						1.0	1.0
III											
255091301	BT01										
AGSM									2.0	2.0	1.0
ARLO	0.2	3.0	6.0	5.0	4.0	5.0	2.0	5.0		3.0	2.0
BOGR					1.0					1.0	1.0
MUTO									5.0	5.0	9.0
SCPA								6.0		6.0	12.0
SPCR	0.5		4.0	2.0		3.0		3.0	2.0	1.0	4.0	7.0
ABFR		6.0								6.0	6.0	3.0
GUSA				0.2	0.0							
MELI					2.0						2.0	1.0
SAKA								0.2	0.2			
SPCO	0.2	0.2		1.0	0.2		1.0			0.2	1.0	0.5
HEPE						2.0				2.0	2.0	1.0
III												
256091301	BT01											
AGSM	0.2											
ARLO					5.0						5.0	7.0
BOGR	1.0	1.0	2.0	2.0		4.0	1.0	2.0	2.0	1.0	2.0	3.0
BUDA					1.0						2.0	1.0
CAME	0.2											
ARFR	4.0						0.5				4.0	3.0
EREF								3.0			3.0	2.0
OPPO					12.0	10.0			26.0		12.0	8.0
SPCO						0.2	0.5			1.0	1.0	1.0
ARDR									1.0		1.0	1.0
III												
257091301	BT01											
BOGR	4.0	5.0	2.0	6.0	4.0	5.0	4.0	6.0	4.0	0.2	5.0	4.0
BUDA			1.0								1.0	1.0
CAME	0.2	0.2	0.2		1.0		0.2			1.0	1.0	1.0
SPCO				0.2								
III												
258091301	BT01											
AGSM				2.0	3.0	2.0			5.0	0.5	2.0	1.0
BUDA								0.5		0.5	1.0	1.0
ORHY	3.0	0.2	2.0		2.0			1.0	0.2		3.0	3.0
SPCR			2.0			0.2				1.0	2.0	1.0
STCO					3.0		1.0				3.0	1.0
ABFR		0.2										
ARFR				0.2								
ASTR				2.0		0.2				0.5	2.0	1.0
GUSA			0.2	0.2		2.0	2.0				2.0	1.0
SPCO		0.2			0.2	0.2	0.2					
UNKF		0.2										
III												
259091301	BT01											
BOGR		3.0		0.5		2.0	3.0	0.5	2.0	0.5	1.0	2.0
BUDA	2.0		1.0	1.0	2.0			0.5		0.5	1.0	2.0
ASTR					0.5							

OPPO		18.0	0.5		7.0						18.0	25.0
III												
260091301	BT01											
SIHY			0.5	0.5	0.5		0.2		0.5	6.0	6.0	6.0
BRTE	1.0	2.0	1.0			2.0	0.2	0.2		1.0	2.0	1.0
LYJU								1.0			1.0	0.5
HEPE				1.0						2.0	2.0	1.0
FRDI								1.0			1.0	1.0
SARE									0.2			
III												
262091301	BT01											
AGSM		1.0			0.5					1.0	1.0	1.0
CAME					1.0						1.0	0.5
ORHY									4.0		4.0	5.0
SPCR		0.5	0.5	1.0			1.0	5.0		4.0	2.0	3.0
BAOP		1.0									1.0	0.5
KOSC	2.0		0.2	0.2		1.0	2.0		0.5		2.0	2.0
SAKA			0.2				0.5					
SPCO										1.0	1.0	1.0
GUSA					0.2		2.0	3.0	6.0	4.0	2.0	1.0
FRDI							0.5		0.2			
III												
266091701	BT01											
ARLO					4.0						4.0	2.0
BOGR	4.0	1.0	3.0	3.0	2.0	1.0	1.0	2.0	3.0	2.0	5.0	6.0
ATCA			10.0								5.0	5.0
CHLE				0.2								
OPPO					5.0						5.0	4.0
III												
276091701	BT01											
AGSM										0.5		
ARLO				0.5								
BUDA	0.2	3.0	2.0	0.2	1.0		6.0				6.0	6.0
FEOC		0.2										
ORHY						2.0		0.5			2.0	2.0
SCPA								0.5	1.0		1.0	2.0
SPCR	0.5		0.2	0.5	0.2	1.0		1.0	1.0		1.0	1.0
ATCA				4.0							3.0	3.0
POAV								1.0			1.0	1.0
III												
279091701	BT01											
BOGR		0.5	1.0	0.2	1.0	1.0	2.0	0.5		0.5	1.0	1.0
BUDA	2.0			0.5			2.0	0.2	1.0	0.2	2.0	2.0
CAME					0.2				0.2			
OPPO										28.0	28.0	22.0
III												
282091701	BT01											
ARLO										1.0	1.0	1.0
BOGR		1.0		0.2					2.0		2.0	2.0
BUDA	1.0	0.2	0.5	1.0	2.0	0.5	2.0	0.2		1.0	2.0	2.0
CAME	0.2	0.2	0.2				0.2					
ASTR				2.0								

```
SPCO                          0.2
III
286091801  BT01
BOGR 12.0 5.0  0.5                    6.0  4.0  4.0  2.0  6.0  12.0 14.0
CAHE           0.5                                                2.0  1.0
KOSC           1.0  0.2  1.0                                      6.0  5.0
MELI                    6.0                                       1.0  1.0
SAKA                0.2  1.0
III
285091801  BT01
ARLO                    0.5
BOGR 2.0       2.0  0.2  0.5  2.0  10.0 1.0  1.0  1.0  4.0  5.0
BUDA      0.5
CAHE                0.2  0.2
ORHY      0.5
SPCR                8.0                                       8.0  9.0
AGCR                                          2.0             2.0  2.0
CRYP 0.2
SPCO                                  0.2  1.0       0.2  1.0  1.0
III
286091801  BT01
AGSM 0.0       0.5
ARLO                                  3.0  0.5                 3.0  3.0
BOGR 0.5  5.0  0.5  4.0  2.0  1.0                               5.0  4.0
BUDA                                       0.5  0.5  0.5
CAHE                                  0.2  0.2  0.2
FEOC      0.2                 0.2
ORHY 0.5       0.2
SPCR                          0.5
GUSA                                  3.0  2.0  3.0            3.0  6.0
OPPO                          8.0                               8.0  8.0
PEAL           0.5
SPCO 0.2  0.2                              0.2
III
290091801  BT01
AGSM                                  0.2  0.5       0.3
ARLO 1.0                 2.0                                  1.0  1.0
BOGR 0.2  2.0  1.0  1.0  2.0  1.0      0.5  1.0       0.5  1.0  1.0
BUDA                                  0.5       2.0  2.0  2.0  2.0
CAHE      0.2
ATCA                                                 18.0 18.0 20.0
EREF           4.0                    1.0
OPPO                                            26.0      26.0 36.0
III
291091801  BT01
AGSM                                  0.2
BOGR 1.0       1.0       2.0  2.0     0.2                 1.0  2.0  2.0
BUDA      0.5  0.2       0.2          1.0  3.0                 1.0  1.0
DIST      4.0  1.0  2.0                                       4.0  7.0
ASTR                                            30.0 10.0 10.0 10.0
ASTR                                  0.5
CHNA                                  30.0                      30.0 36.0
```

```
                                                0.5
LYJU
SPCO 0.2          0.2                0.2
III
AGCR    41    32
AGSM41.0 32.0
ARLO18.0 13.5
BOGR19.0 13.5
BRTE1.0   .5
BUDA68.0 51.0
CAFI.5    .5
CAHE2.0   1.5
DIST7.0   6.0
FEOC1.0   1.0
MUTO4.0   3.5
ORHY10.0 8.0
SCPA2.0   1.5
SPCR2.0   1.5
STCO    40    35
HOJU19.0 13.5
SIHY19.0 13.0
ARFR60.0 31.0
ASTR8.5   4.3
ATCA152.075.0
BAOP.5    .5
CHLE    20    10
CHNA71.0 36.0
CHVI10.0 5.0
CIUN    10     5
CRYP    50    28
ERCA1.0   0.5
EREF8.0   4.5
EUGL4.5   2.5
EULA2.0   1.0
FRDI1.0   .5
GACO5.0   2.8
GUSA59.0 30.0
HASP.5    .5
HEAN19.0 10.0
HENU2.0   1.0
HEPE2.0   1.0
KOSC1.0   .5
LEDE2.0   1.5
LYJU18.5 10.0
MAVI    77    53
MELI9.0   4.9
MILI5.0   2.6
OECO.5    .5
OPPO77.0 53.0
PEAL    10     5
PLPU.9    .5
PSTE29.0 15.0
SAKA1.0   .5
```

```
SETR4.0  1.5
SPCO3.2  1.5
THME2.0  1.0
VEBR1.0  .5
UNKF   19    10
ORLU 8.5  4.3
PECA 9.0  4.9
ARIN10.0  5.0
SEMU 4.0  1.5
ASVI10.0  5.0
AMBL 1.0  5.0
ABFR10.0  5.0
ARDR30.0 31.0
SARE10.0  5.0
POAV10.0  5.0
III
```

Jackrabbit Diet Data

The Pawnee Site jackrabbit diet data collected between September 1968 and September 1970 is Grassland Biome data set number A2U107B. A description and sample of these data follow, including a master list of all diet species codes used in the data set. Data description follows:

Column	Information
I.	Header card for each sampling date
1- 5	Sampling date number
11-80	Alphameric heading
II.	Relative percent dry weight cards (output from program UEGTAT3--a summary of the jackrabbit habitat data).
A.	Header card for habitat information from one hare species
1-10	Alphameric identification
11-13	Sampling date number
14-17	Alphameric hare species code
B.	Relative percent dry weights by species for that sampling date. The species are given in the order of those in the habitat data master list of 149 species. Ten cards are used with 5 columns per number and 16 numbers per card with the exception of the 10th, which contains only 5.
	Section II is repeated for each of the two hare species.
III.	Diet cards
A.	Hare information card
1- 3	Hare number (four columns are used after sampling date 12)
4- 5	Alphameric species code
6-11	Date--month, day, year

Column	Information
12	Sex--M or F
13-14	Reader's initials
15-16	Weight--pounds
18-19	Weight--ounces
21-22	Time of kill--hour on 24-hour clock
24-25	Minutes after the hour
26	Location of kill--10ths of a mile E of SW corner of section
29	10ths of a mile N of SW corner of section
32-33	Section number
35-36	Township number
38-39	Range number
40-41	Number of species in diet of that hare

B. Frequency by species in that hare's stomach: Six columns for each species, with the first four for the alphameric species code, and the last two for the frequency.

Section III is repeated for each hare taken on that sampling date.

IV. Trailer card

1- 3	$$$ to signal end of information for that date
5- 6	$$ on card at the end of last sampling date only.

Example data from the first sampling date follow:

+++ EXAMPLE OF DATA +++

```
         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890123456789

    1     DIET DATA FOR SEPETEMBER, 1968
REL PC DWT   1  BT
   .2  2.3  0.0  3.9  0.0 30.4  0.0  0.0  0.0  0.0   .2  4.7   .0   .8  1.0  0
   .1   .6  0.0  1.4  1.4   .8  0.0   .5  0.0  3.4  0.0   .7  0.0  0.0  0.0  0
 52.3   .3  0.0  0.0  0.0  7.8  0.0  0.0  0.0   .0   .0  0.0  1.5  0.0  0.0
  2.0  0.0  8.3   .1  0.0   .0  2.2   .0  0.0  0.0  0.0  0.0  0.0   .0  0.0  0
  0.0  0.0  0.0  0.0   .9   .0   .1  0.0   .1   .7  0.0  0.0  1.9  0.0  0.0
   .1   .2  0.0  0.0   .3  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0
  0.0   .2  0.0  0.0   .6  0.0  0.0   .3  0.0   .1  0.0 18.0  0.0   .0  0.0  0
  0.0  0.0  0.0  0.0   .0  0.0  0.0  0.0  0.0  0.0  0.0   .1   .0  0.0  0.0  0
  0.0  0.0  0.0  0.0   .7  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0   .0  0
  0.0  0.0  0.0   .0 47.7
REL PC DWT   1  WT
   .7  4.5  0.0  6.0  0.0 31.6  0.0  0.0  0.0  0.0  0.0  9.1   .0   .9  0.0  0
   .0  0.0  0.0   .1   .2  1.5  0.0  0.0  0.0  1.7  0.0  0.0  0.0  0.0  0.0  0
 56.2  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0   .0  0.0  0.0  2.3  0.0  0.0  0
   .1  0.0   .7   .0  0.0   .0  1.1   .2  0.0   .0  0.0  0.0  0.0  0.0  0.0  0
  0.0  0.0  0.0  0.0  2.7   .0  0.0  0.0  0.0   .0  0.0  0.0  4.3  0.0   .0  0
  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0   .1  0.0  0.0  0.0  0.0  0.0  0.0  0
  0.0   .9   .0  0.0   .1  0.0  0.0   .0  0.0  0.0  0.0 28.4  0.0  0.0  0.0
  0.0  0.0   .1  0.0  0.0  0.0  0.0  1.4  0.0  0.0  0.0   .1  0.0  0.0   .0
  0.0  0.0  0.0  0.0   .7  0.0  0.0   .3  0.0  0.0  0.0  0.0  0.0  0.0   .0  0
  0.0  0.0  0.0  0.0 43.8
289WT 9 668MJF 5,08 22.355E,1N,21,10,65 6
AGSM10ASTR 2ATCA15GACO 1HEAN 1UNKN 5
291BT 9 668FJF 6,01 229450E,9N,28, 9,65 8
AGSM 4BOGR 8MUTO 1KOSC 7PSTE 3MILI10CIUN 6UNKN 3
290BT 9 668MJF 6,04 22.402E,1N,21,10,65 5
AGSM 4ASTR 1GACO 4HEAN 2PSTE14
288WT 9 668FJF 4,07 22.300E,1N,22,10,65 3
AGSM 2PSTE 1MILI20
287WT 9 668MJF 6,03 22.300E,1N,22,10,65 7
AGSM12BOGR 1BUDA 4ATCA 5PSTE 5UNKN 4MILI 5
286BT 9 668MJF 2,12 22.204E,1N,22,10,65 9
AGSM 1BOGR 8SPCR 2STCO 8GACO 1HEAN 1PSTE 1MILI 3UNKN 1
285BT 9 668MJF 3,08 22.001E,6N,35,10,65 5
AGSM 9BOGR 1CAME 1KOSC14PSTE 5
284BT 9 668FJF 5,03 22.008E,2N,34,10,65 3
AGSM15KOSC 7PSTE 4
283WT 9 668FJF 6,00 21.451E,0N, 2, 9,65 4
AGSM12AGCR 1CHNA 8PSTE19
282BT 9 668MJF 3,06 21.409E,8N,10:09,65 6
AGSM18BOGR 3SPCR 3PSTE 7MILI 2CIUN 8
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281WT 9 668FJF 4,11 21.359E,9N,15, 9,65 6
AGSM16BOGR 4ASTR 3PSTE 9MILI 2PECA 2
280WT 9 668FJF 7,04 21.209E,3N,15, 9,65 7
AGSM 6BOGR 2SPCR 2STCO 3AGCR 2PSTE11UNKN 4
279BT 9 668MJF 4,12 21.209E,3N,15, 9,65 7
AGSM 6SPCR15TRVU 3HEAN 1MESA 2PSTE 7MILI 2
278WT 9 668FJF 7,05 21.209E,2N,15, 9,65 6
AGSM10ARLO 1AGCR 5ATCA 40PPO 1PSTE12
277WT 9 668FJF 7,08 21.059E,3N,22, 9,65 6
AGSM 7BOGR 2SPCR 3ATCA 1PSTE 9UNKN 8
276BT 9 668MJF 4,14 21.001E,2N,14, 9,65 7
AGSM 1BOGR 1BUDA 1SPCR10HEAN 1PSTE11UNKN 3
275WT 9 668FJF 5,12 20.509E,3N,15, 9,65 7
AGSM 5BUDA 1CHNA20KOSC 1MESA 2PSTE 1SPCO 2
274WT 9 668MJF 5,10 20.451E,8N,14, 9,65 8
AGSM17BOGR 1MUTO 1STCO 1ASTR 1HEAN10PSTE 2MILI 2
273WT 9 668FJF 6,12 20.401E,8N,14, 9,65 5
AGSM 2SPCR 1CHNA20PSTE 1MILI 2
272WT 9 668MJF 3,02 20.401E,0N,11, 9,65 6
AGSM 7BUDA 2STCO 1CHNA14KOSC 1PSTE18
271WT 9 668MJF 6,02 20.151E,0N,11, 9,65 5
AGSM 9ASTR 1CHNA 9PSTE15UNKN 1
270WT 9 668MJF 6,08 20.151E,0N,11, 9,65 5
AGSM 7BOGR 1CHNA14PSTE13VEBR 1
269WT 9 668MJF 6,02 20.151E,1N,11, 9,65 4
AGSM11CHNA 4PSTE 8MILI 2
268WT 9 668FJF 5,10 20.151E,1N,11, 9,65 9
AGSM18ARLO 2BOGR 4BUDA 1CAHE 1ARFR 6ASTR 2PSTE 7MILI 6
267WT 9 668MJF 3,03 20.151E,1N,11, 9,65 6
AGSM20BUDA 1STCO 1MESA 1PSTE 8UNKN 1
266BT 9 668FJF 4,12 20.101E,2N,11, 9,65 7
AGSM13BOGR 1SPCR 1STCO 1AGCR 4PSLA 5UNKN 1
265WT 9 668FJF 5,11 20.101E,3N,11, 9,65 5
AGSM15AGCR 4PSTE11SPCO 1MILI 3
264WT 9 668FJF 5,09 20.051E,5N,11, 9,65 4
AGSM13AGCR 3PSTE 3UNKN 4
263WT 9 468MJF 6,07 24.009E,2N, 3, 9,65 4
AGSM20BUDA 1PSTE 3HASP 2
262BT 9 468FJF 4,08 23.403E,2N,23,10,65 5
AGSM 1BOGR 2STCO 1KOSC17MELI 3
261WT 9 468MJF 4,12 23.301E,7N,19,10,64 3
AGSM18KOSC 1HASP 4
260BT 9 468MJF 3,10 23.251E,1N,18,10,64 4
TRVU18ASTR 1KOSC 5UNKN 1
259BT 9 468MJF 5,01 23.009E,7N,32,11,64 3
SPCR17ASTR 5KOSC 1
258BT 9 468MJF 5,10 22.559E,9N, 5,10,64 5
AGSM 2BOGR 7ASTR17KOSC 8PSTE 1
257BT 9 468FJF 5,04 22.408E,9N, 1,10,65 6
AGSM 4BUDA 1AGCR 1PSTE 2MILI17EULA 2
256BT 9 468MJF 5,14 22.309E,1N,34,11,65 6
AGSM 3SPCR 2HEAN 1KOSC 3MESA 4PECA12
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