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SMALL MAMMAL STUDIES ON THE ALE RESERVE, 1972*

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ABSTRACT

Studies of small mammals were conducted on grazed and ungrazed grassland sites in southcentral Washington to quantify changes in species composition, relative abundance, biomass, and reproductive performance. During eight trapping sessions in 1972 seven species of small mammals were recorded: Perognathus parvus; Peromyscus maniculatus; Spermophilus townsendii; Onychomys leucogaster; Lagurus curtatus; Sylvilagus nuttallii and Thomomys talpoides. The first four species accounted for 98% of all captures. Pocket mice were the most numerous species (11-18/ha), and ground squirrels attained the highest biomass. The total peak biomass was 0.10-0.16 g/m^2 for both the undisturbed and grazed sites. The 15 yearling steers gained 2.4 g/m^2 in 41 days of grazing. No jackrabbits of other medium or large native herbivores were observed. Small mammals disturbed less than 1% of the total surface area by burrowing. Differences in small mammal populations that could be attributed to the impact of grazing were beginning to emerge after two years of treatment.

INTRODUCTION

The original plan for the IBP Grasslands Biome called for detailed total-system research to answer broad questions about the ecosystem. Major efforts were focused on studying intraseasonal dynamics of grasslands, particularly the flow of biomass, energy, minerals and water through the various trophic levels. It was recognized that measurements of the important driving variables would have to be made simultaneously with measurements of important system state variables on several representative sites over a period of years. Descriptive information like this is necessary for developing and testing of simulation models. The data also form the basis for posing hypotheses concerning the structure and function of the system.

Field studies which impose a minimum of treatments or stresses were designed to yield data for testing the hypotheses. Herbivory, principally by large domestic herbivores, was selected as the principal stress. The design included measurements of the abiotic, producer, consumer, and decomposer factors, as well as changes induced at each level by grazing.

Small mammal studies on Project ALE were conducted during 1972 to fulfill the research objectives of the Grasslands Biome. The major objective of the field research was to determine the species composition, relative abundance, and biomass of small mammals on grazed and undisturbed grasslands of Project ALE, and to relate changes in these parameters to seasonal variation in abiotic parameters and plant productivity.

Emphasis was placed on studies of small mammals since there are few large and medium-sized herbivores indigenous to the bunchgrass steppes of southcentral Washington. Mule deer are scarce and restricted to areas that have free water

The Comprehensive Network site was located within Project ALE, a 120-square mile ecological research area operated by Battelle-Northwest for the U.S. Atomic Energy Commission in southcentral Washington. The plots were located at the 1200 foot level of the northeast-facing slope of Rattlesnake Mountain.

Soils underlying the site are deep, stoneless Ritzville silt-loams which have a bulk density of 1.3. This soil has developed from silty, wind-laid deposits mixed with small amounts of volcanic ash (Hajek, 1966).

The vegetation is dominated by a uniform stand of the *Artemisia-Agropyron* association (Daubenmire, 1970). Big sagebrush, *Artemisia tridentata*, is the dominant shrub, although it seldom reaches 1 meter in height on the plots and has a canopy coverage of only 3-4%. Bluebunch wheatgrass, *Agropyron spicatum*, is the most important, and most abundant species of grass. The other perennial grasses include *Poa cusickii*, *Poa secunda*, and some *Stipa thurburiana*. There are a few forbs including *Crepis atrabarba*, *Antennaria dimorpha*, and *Lupinus* spp.

METHODS

Live-trapping

Four 9-hectare plots were surveyed and two were fenced to permit cattle grazing. Two grids of 144 trapping sites were established, one in a grazed and one in an ungrazed plot. The grids consisted of a 12 x 12 matrix with 15 meter spacing between trap sites.

Two Sherman live-traps were placed at each grid intersection along the periphery; one trap was placed at the remainder of the trap sites. The traps contained a sufficient quantity of seeds to prevent torpor in trapped animals, as well as dacron batting for use as a nest during confinement. The traps were shielded by a large can which provided some protection from environmental extremes. On the ungrazed plot galvanized 'tents' were placed over traps and cans to provide shade and cooler temperatures for confined mice. These 'tents' were not added to the grazed pasture until after the cattle were removed. We felt that the total area covered by the 'tents' would remove a significant portion of the pasture from grazing pressure.

Starting in January, 1972, traps were opened during eight monthly trapping sessions: January, March and April, prior to grazing; May, with cattle present; and June, July, September and November, after the cattle had been removed for the year. Traps were opened at about 1500 hours each day and a small quantity of bait (oatmeal-peanut butter mixture) was placed in the trap entrance. All traps were opened for 4 consecutive days during April through September. In January, March and November trapping was discontinued after 2-3 days because few animals were taken.

Early each morning animals were removed from traps and examined. All animals were individually marked with a series of toe amputations; their species, sex, age class, reproductive condition, pelage, general condition, location of capture, and weight were recorded. A computer diary was checked at each capture to insure that animals were not misidentified. Animals were immediately released at the site of capture.

Field data were transcribed onto computer sheets, punched, sorted, and listed. After proofreading the data were added to computer tapes for analysis and preparation of field diaries. These data were transcribed into the format prescribed by Form NREL-10, and the information is stored as Grassland Biome data set A2U10EA.

Assessment Lines

Eight assessment lines radiating out from the ungrazed live-trapping grid were established according to instructions provided by the Central Office (Fig. 1). The assessment line traps were operated for five consecutive days following the regular trapping session on the ungrazed grid during April, 1972. After the regular trapping in July the assessment lines were operated for six consecutive days:three days concurrent with the grid live-traps; and three days of assessment lines only. This schedule was used to test whether the assessment lines tended to draw residents off the grid when the radiating traps were operated alone as they were during April.

UNGRAZED TRAPPING GRID AND ASSESSMENT LINES

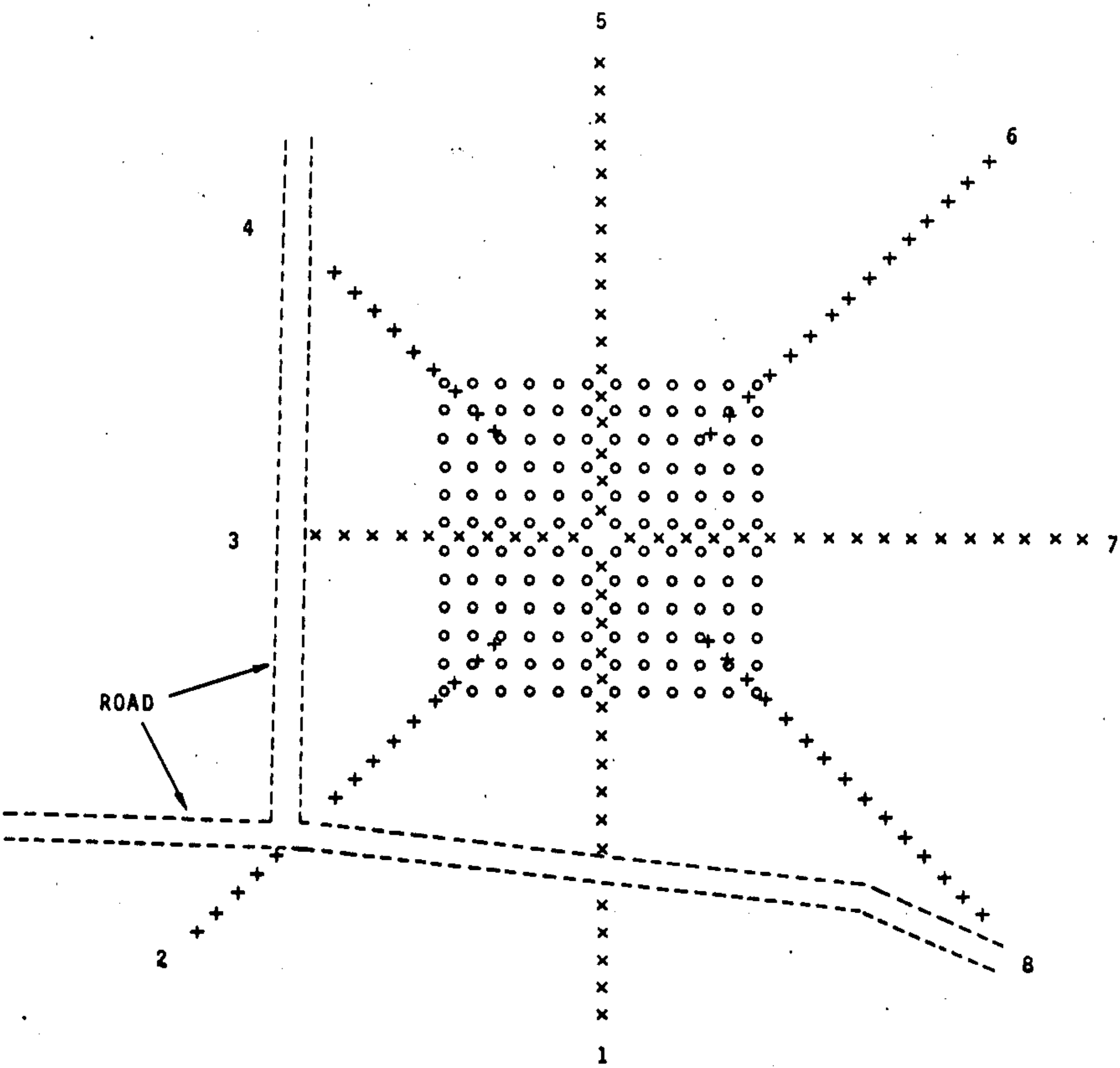

Fig. 1. Layout of the assessment lines and ungrazed trapping grid on Project ALE, 1972.

Kill-trapping

During the first two trapping sessions small mammals were collected to obtain data on food preference, reproduction, ecto- and endoparasites, and spontaneous tissue lesions. A line of 50 snap-traps, spaced approximately 15 meters apart, was placed 1 to 1-1/2 miles north of the live-trapping grids in the same vegetation type. The traps were baited with a peanut butter/oatmeal mixture late in the afternoon. The following morning the traps were checked and dead animals were removed and placed into plastic bags, one species to a bag to insure that ectoparasites would be associated with their correct host.

Few animals were taken in the kill-traps, even on nights when 40-80 *Perognathus* were being captured on the live-trapping grids. Kill-trapping was discontinued because of the poor success relative to effort expended.

Jackrabbit Transect

Jackrabbit populations were to be estimated on all comprehensive sites in 1972. A road count, using a vehicle equipped with spotlights throwing beams a measured distance perpendicular to the path of travel, was suggested as the common index technique. Project ALE has a road which traverses the grassland association for about 8 miles. It was used for preliminary road counts in late March, but no jackrabbits were seen and the transects were discontinued.

Cattle

On 5 April 1972, 15 yearling Hereford steers were introduced onto one of the two grazed pastures. A common trough provided water to both pastures, and salt blocks were made available. The trough was metered to allow measurements of water flow. A duplicate trough outside the pasture was filled with water and measurements were made of loss due to wind spillage and evaporation. Cattle were rotated between the grazed plots every 7 days until 16 May 1972 when they were removed. This pasture rotation scheme was adapted because: it is a plan commonly used by cattlemen in this region, it concentrated the herbivory in a smaller area each week; and it allowed the investigators to make measurements and sample biota on the grazed plots when the cattle were in the other pasture. The livestock were weighed at the beginning and end of the grazing season.

RESULTS

Live-trapping

Six species of small mammals were trapped on the IBP plots in 1971: Great Basin pocket mouse, *Perognathus parvus*; deer mouse, *Peromyscus maniculatus*; Townsend's ground squirrel, *Spermophilus townsendii*; northern grasshopper mouse, *Onychomys leucogaster*; sagebrush vole, *Lagurus curtatus*; and Nuttall's cottontail, *Sylvilagus nuttallii*. Fresh pocket gopher *Thomomys talpoides*, mounds were observed in a limited area on the ungrazed plot but none were trapped. The species composition and relative abundance of small mammals is summarized in Table 1. The number of each species represents the total number of individuals of that species taken during the trapping session.

Four species, *Perognathus parvus*, *Peromyscus maniculatus*, *Spermophilus townsendii*, and *Onychomys leucogaster*, accounted for 98% of the individuals live-trapped each month (Fig. 2).

Table 1. Species composition and relative abundance of small mammals live-trapped on grazed and ungrazed grasslands, Project ALE, 1972.

Species	Ungrazed Plot								Grazed Plot							
	J	M	A	M	J	J	S	N	J	M	A	M	J	J	S	N
Perognathus parvus		33	48	41	44	35	30	2		23	47	29	23	25	19	
Peromyscus maniculatus	5	11	7	2	2		1		5	9	8	3	3	1	1	
Spermophilus townsendii		12	38	20	3					7	10	30	4			
Onychomys leucogaster	1	3	1		1		1	2	1	1		2	2	2	1	2
Lagurus curtatus		4							1		1					
Sylvilagus nuttallii						1	1								1	
Thomomys talpoides	Mounds present -- not trapped								No mounds observed							
Trapping Duration (days)	2	3	4	4	4	4	4	2	2	3	4	4	4	4	4	2
Traps Set/Night	144	144[a]	188	188	188	188	188	144	144	144[a]	188	188	188	188	188	144

[a] 188 traps open first night only.

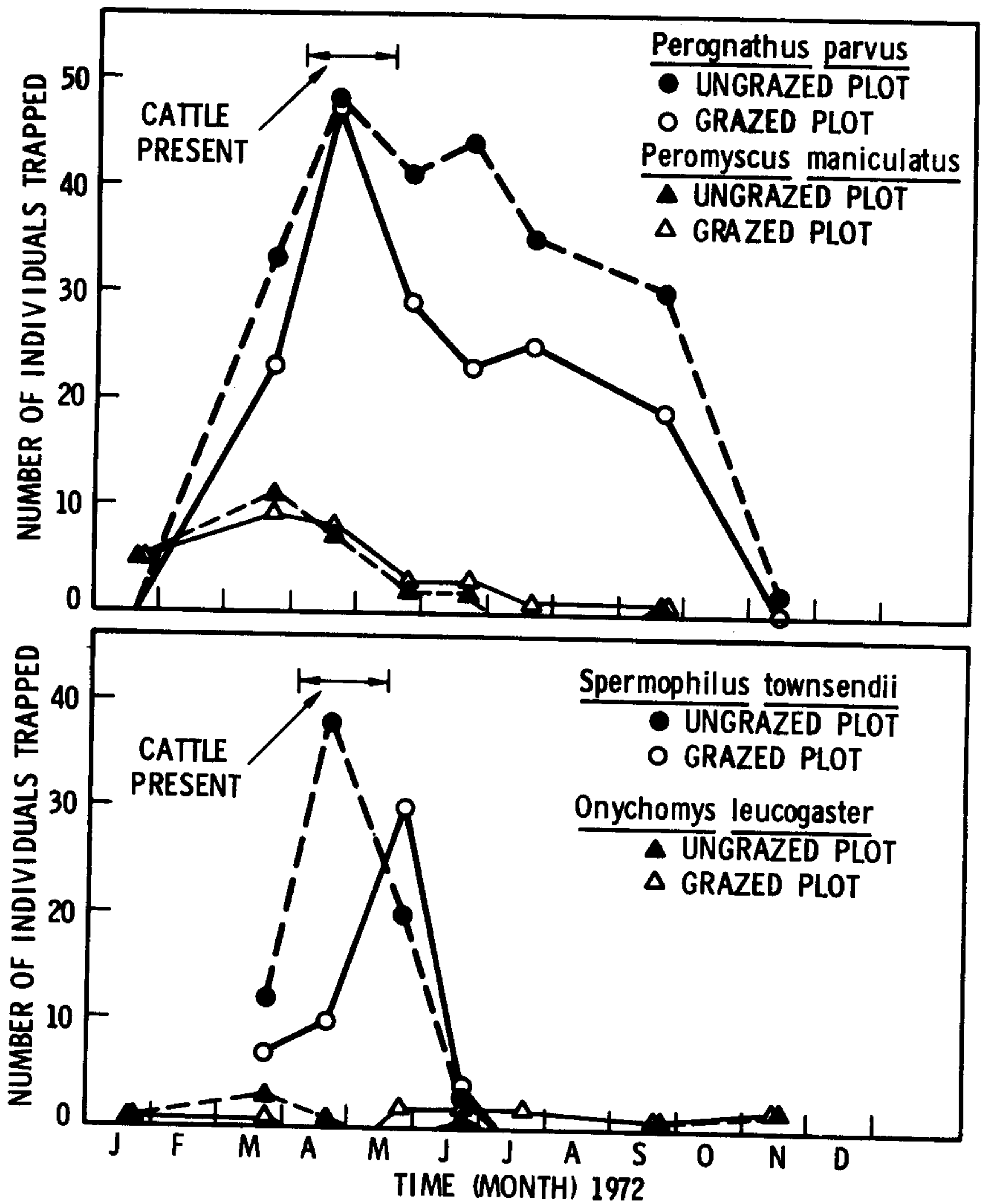

Fig. 2. Graph of species abundance as a function of time for the four most numerous small mammals trapped in 1972 on grazed and undisturbed sites.

Perognathus was usually the most numerous mammal on both plots. On the ungrazed plot from March through May 58-69% of the captures were pocket mice. From June to September 85-97% of the individuals were Perognathus. On the grazed plot 63-98% of the trapped animals were Perognathus. The estimated population size and the actual number of individuals trapped each month were almost identical during 1972. The trapping intensity and high probability of recapture demonstrated by Perognathus no doubt contributed to the similarity between the estimates.

Trapping data for Perognathus parvus (Fig. 3) indicate that the species reached its greatest density on the grazed plot during April. This is the period between arousal from torpor and commencement of breeding. From April on the population declined rapidly until it stabilized at approximately half the peak density between May and September. The mice ceased above-ground activities between September and November.

Peak densities of Perognathus parvus on the ungrazed pasture were also reached in April. However the population size was sustained at a high level through June, and declined at a low rate until September when most of the individuals entered their winter torpor. Except for April, there were always more individual pocket mice on the ungrazed pasture compared with the grazed pasture.

The data were complete enough to permit an examination of the populations based on both age- and sex-specific contributions to the total (Fig. 3). From March through May the entire trappable population was composed of adults, and from June on 35-90% of the captures were subadults. The number of juvenals did alter the negative slope of the population curves during June and July which is caused by declining numbers of adults.

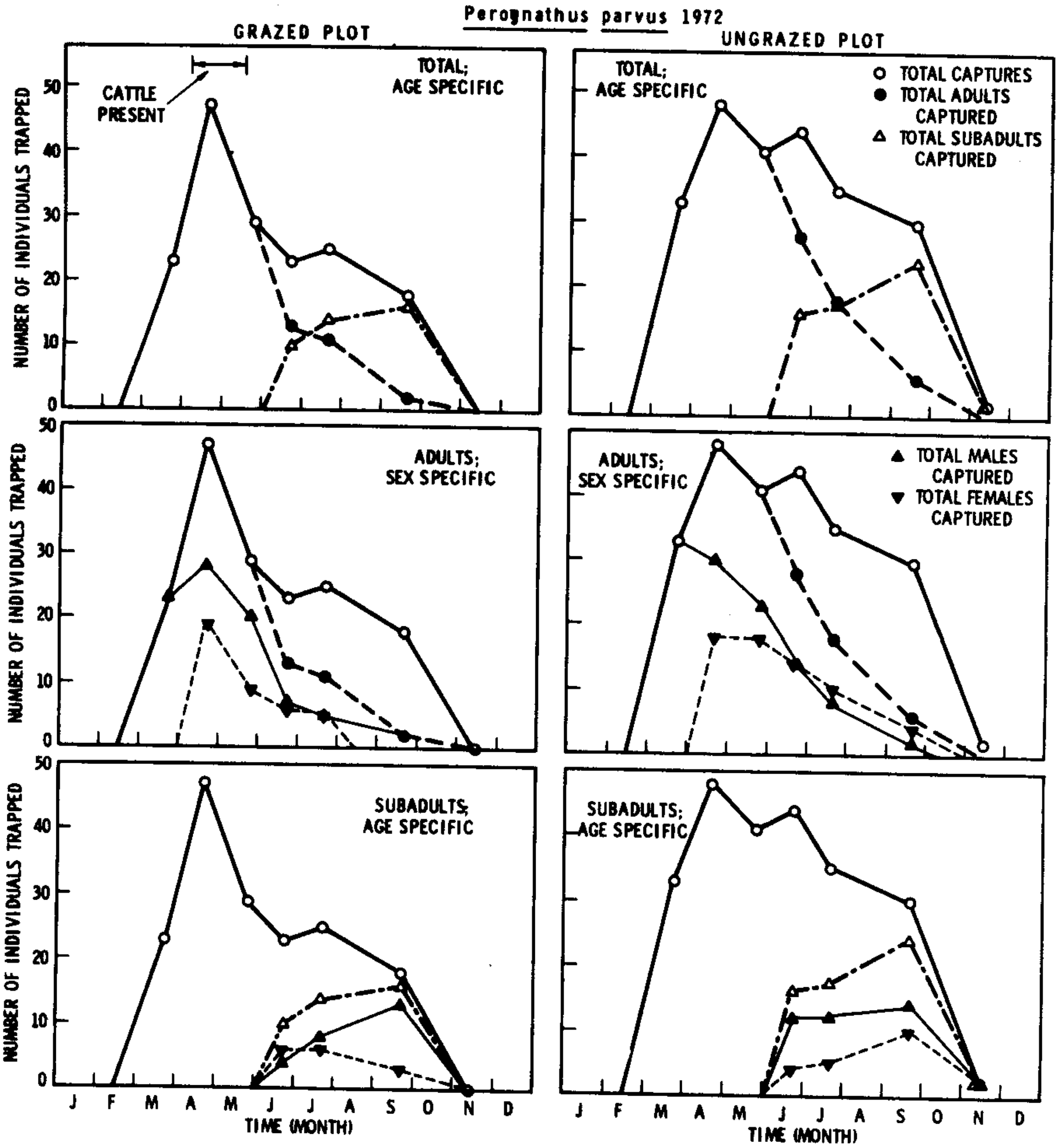

Fig. 3. Number of individual pocket mice captured as a function of time and expressed as both age- and sex-related contributions to the total population.

There were more male adults than females. The former were active above-ground one month before the females and attained their peak populations approximately one month before the females also. The numbers of both males and females declined from April-May until September.

Subadults reached peak densities in September, the fourth month of the year they were trappable, and they declined in numbers from then on. There appeared to be more male subadults than females on both plots during July, but the sample size was so small that the difference in sex ratios may not be significantly different from 1 : 1.

Deer mice, Peromyscus maniculatus, were the third most abundant mammal, and reached peak densities in March-April. Their numbers were reduced sharply during the hotter months from May through September (Fig. 2).

Ground squirrels, Spermophilus townsendii, were active on both grids between March and June, and reached peak numbers in April and May on the ungrazed and grazed grids respectively (Fig. 2). Four times as many individuals were captured on the ungrazed plot during April compared with the grazed pasture. The population density on the grazed pasture increased rapidly during May, due primarily to an influx of weaned juvenals. No squirrels were trapped after June when apparently the population began to estivate.

Only a few individual grasshopper mice, Onychomys leucogaster, were taken in 1972, but they were important owing to their consistency in contributing to the trapping success. They were one of only two species trapped in November.

Sagebrush voles, Lagurus curtatus, were taken sporadically on both grids between January and April only, but the species does not appear to be adapted to living on these sites all year.

Three Nuttall's cottontail rabbits, Sylvilagus nuttallii, squeezed into live-traps during the fall. This was the first time any lagomorphs were seen on the study sites, much less trapped. They are still considered a transient species since no observations of rabbits or their droppings have been made in past years.

Pocket gopher, Thomomys talpoides, mounds were observed on the ungrazed grid only, between March and September. There appeared to be only one individual since the mounding activity was confined to an area of less than 250 m^2. In November there was an increase in mounding on both plots, but the actual number of pocket gophers was not determined.

Biomass

All animals were weighed each trapping session and the data were used in conjunction with estimates of species population densities to estimate biomass of small mammals. Data on biomass, expressed in grams (wet weight), as a function of time are presented in Tables 2 and 3 .

If dominance, or 'importance', is defined as contribution to total biomass of an area, Perognathus, remains the most important species except during March-May when ground squirrels accounted for more total biomass on both the grazed and undisturbed grids.

Table 2 . Estimated biomass (g, wet weight) of small mammals on a grazed grassland, Project ALE, 1972.

Species	Month							
	J	M	A	M	JN	JL	S	N
Perognathus parvus		418.6	758.5	502.3	318.4	352.2	273.4	
Peromyscus maniculatus	85.0	160.6	127.4	55.5	46.0	19.0	16.0	
Spermophilus townsendii		1211.9	1550.3	3791.6	819.9			
Onychomys leucogaster	26.0	25.0		48.0	46.0	48.5	25.0	47.0
Lagurus curtatus	19.0		13.0					
Sylvilagus nuttallii							475.0	
Total	130.0	1816.1	2449.2	4379.4	1230.3	419.7	789.4	47.0

Table 3 . Estimated biomass (g, wet weight) of small mammals on an undisturbed grassland, Project ALE, 1972.

Species	Month							
	J	M	A	M	JN	JY	S	N
Perognathus parvus		590.7	786.0	699.7	660.8	539.0	437.6	35.0
Peromyscus maniculatus	101.0	189.7	133.1	43.0	36.5		15.0	
Spermophilus townsendii		2032.4	3273.7	2614.7	595.0			
Onychomys leucogaster	29.0	71.0	24.0		19.0		22.0	44.0
Lagurus curtatus		87.0						
Sylvilagus nuttallii						400.0	410.0	
Total	130.0	2970.8	4216.8	3362.4	1311.3	939.0	884.6	79.0

The results are illustrated in Figure 4 which includes a graph of total biomass in the upper illustration, and graph of total biomass excluding the contribution of Spermophilus and Sylvilagus. The peak total biomass on the ungrazed plot was 4200 g which was reached in April. The peak on the grazed plot was 4400 g which was reached in May. There was a sharp decline in estimated biomass commencing in May, the decline closely paralleling the decline in numbers of Spermophilus active on the surface (Fig. 2). We assumed that the area actually being trapped was 3.24 hectares which includes a buffer zone of half the distance to the next trap (7.5 meters) around the grid. The peak biomass on the two plots was estimated to be 0.13 g/m^2 and 0.14 g/m^2 on the ungrazed and grazed plots respectively.

The lower graph in Figure 4 illustrates estimated biomass as a function of time excluding the contribution from ground squirrels. This graph allows comparisons of the changes in biomass resulting from changes in the population sizes of the most numerous mammals. It demonstrated that the peak biomass of the other small mammals was similar (900 vs. 943 g) on the grazed and ungrazed sites, but that the peak on the latter area was sustained for two months (March-April).

Assessment Lines

Data gathered on the assessment lines was submitted to the Biome Central Office (Data Set Number A2U10EA). The manipulation and interpretation of the results are still being investigated by mathematicians at ALE and Fort Collins. We examined the movements of resident Perognathus parvus off the grid onto the assessment lines using simple graphic means. The median movement off the grid

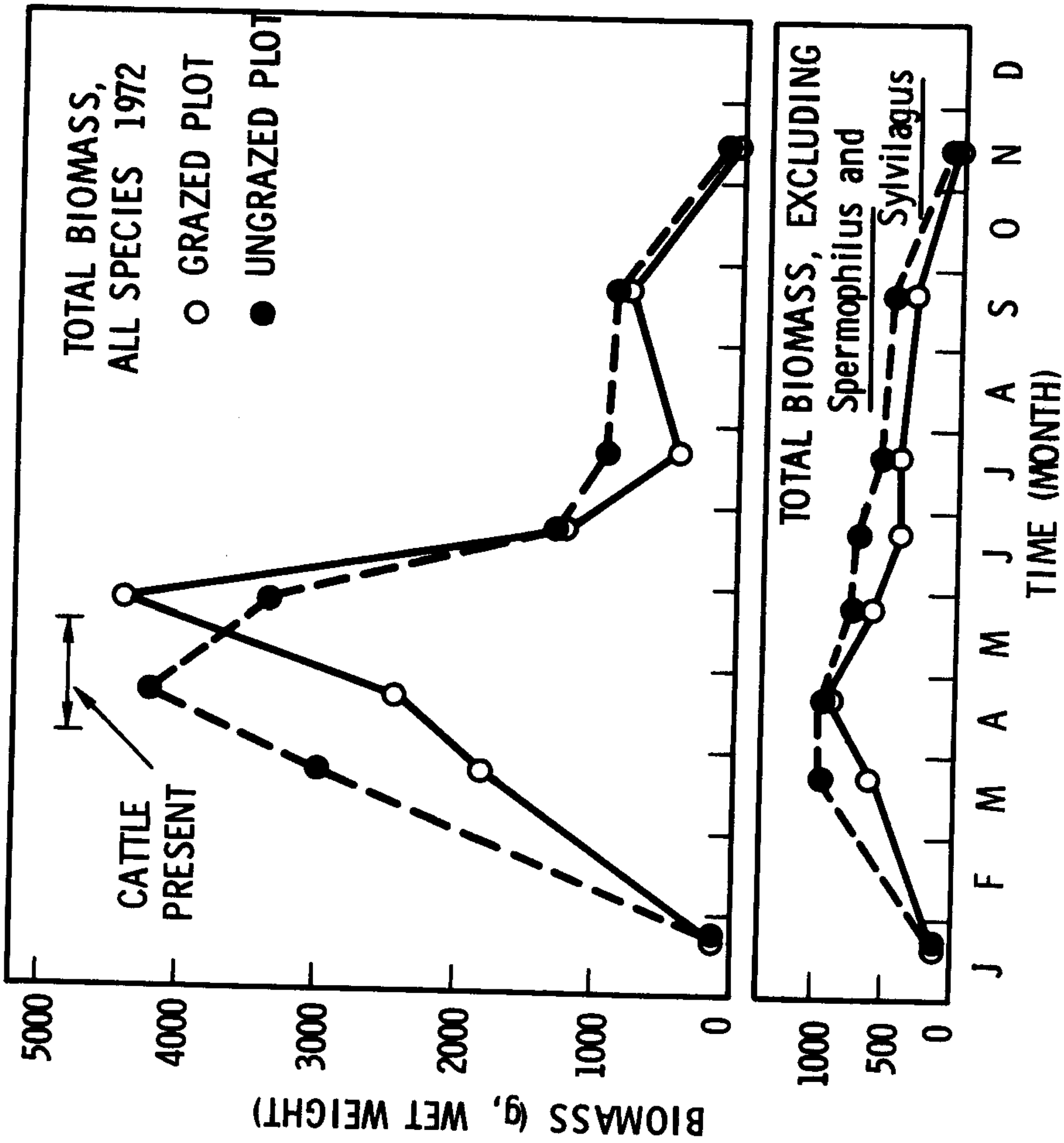

Fig. 4. Biomass of small mammals on the ALE grasslands plots during 1972 shown as a function of time. The lower graph illustrates the biomass exclusive of the contribution from ground squirrels and cottontail rabbits.

was 22.5 meters. If we assign this as a buffer zone around the IBP trapping grid we could conservatively estimate that the grid live-traps were drawing animals from an area of 4.4 hectares rather than 2.7 hectares. Estimates of small mammal density can be calculated using both areal figures, thus providing a range of values that probably contains the true density.

Cattle

On 5 April 1972, the 15 yearling steers introduced onto the site weighed a total of 3507 Kg (7742 lb). When they were removed on 16 May they had gained 431 Kg (971 lb) for an average weight gain of 680 g (1.5 lb) per animal per day, an excellent rate of gain on open range. On an area basis cattle gained 2.4 g/m^2 in 41 days or an average of 0.06 g/m^2/day in the 1972 grazing season. This was the same rate of gain per unit area as we observed in 1971.

Jackrabbits

The road censuses in late March were unsuccessful since no animals were seen. This was expected since no jackrabbits were seen in the grasslands over the past four years. None were seen by the large field crews on the area in spring and summer, and no jackrabbit pellets were observed in the many plant biomass sample plots.

Impact of Burrowing

One way that some species of small mammals affect the habitat is by churning the soil during their burrowing activities. This is especially true if the burrowing results in large surface disturbances, such as gopher mounds and squirrel warrens, which have little or no vegetation on them for several years. During 1971 all surface disturbances on the two grids were mapped and their impact in terms of total area was evaluated.

There were 682.5 m^2 and 332.5 m^2 disturbed on the ungrazed and grazed sites respectively. This amounts to between 0.4 and 0.8% of the total areas of both plots. The greater area of disturbance on the ungrazed plot was due to the denser population of ground squirrels and the presence of pocket gophers (Table 1). No increased surface disturbances were observed in 1972.

DISCUSSION

The species of small mammals trapped on the Grasslands Biome study area represent a mixture of animals common to two vegetation associations: the more xeric shrub-steppe of lower elevations; and the more mesic grasslands found at higher elevations (Rickard, 1960). The pocket mouse, which is the most numerous mammalian consumer, is ubiquitous on the ALE Reserve, but finds its most optimum habitat in the hotter, drier sites where annual grasses are more numerous. Deer mice, and ground squirrels have a scattered distribution at lower elevations, but increase in density with increasing elevation and concommitant increased annual moisture and cooler temperatures. Grasshopper mice are at the upper limit of their known distribution on the grazed site, and are more common, although they are never numerous, at lower elevations. The sagebrush vole reaches the lower limit of its distribution on the plots since it is most numerous at elevations in excess of 2000 ft. This species diversity, which resulted in the capture of at least seven small mammals, no doubt reflects the fact that the site rests in an ecotone with more xeric conditions below, and more mesic ones above.

Pocket mice, the most numerous species, are associated with the drier shrub-steppe. They are mainly grain eaters, obtaining water from the metabolism of carbohydrates, and are, therefore, not dependent upon the availability of free water. Reproduction in the species does appear to be related to the quantity and/or quality of forage available in the spring, although the exact mechanism is not clear. Soil temperatures appear to be important cues triggering entrance and cessation of torpor during extremes of both high and low temperatures.

Populations of Perognathus on the grassland site reflected the dynamics of the species during an 'average' year when the major perennial grass, Agropyron spicatum, flowered and produced seeds. Peak numbers were reached in spring and consisted entirely of adults, with a predominance of males. Adult females had one litter, after which they and the males ceased above-ground activities. The juvenals, which added to the total population size, reached peak densities in September. The juvenals born in May probably bred, adding to the annual increment seen in September. Between September and November they too ceased surface activity.

Ground squirrels, owing to their large size and rapid rate of growth, contributed the peak biomass of mammalian consumers, even though they were active for only four months. Spermophilus is mainly herbivorous, eating a variety of grasses and forbs during the green growth period of the plants. They are most numerous in the bunchgrass zones of ALE even up to the summit of Rattlesnake Mountain. They have adapted to the rigors of the region by growing rapidly in 3-4 months, depositing fat, and estivating and hibernating for 3/4 of the year. They may in fact, impact the primary producers far more than any other small mammal because of their biomass. In a short span during the plant growing season they not only maintain themselves and reproduce, but they also concentrate adequate reserves for the remainder of the year.

The remainder of the small mammals were most abundant, or at least more trappable, during the cooler, more moist portion of the year when the green vegetation was available. The deer mouse, grasshopper mouse, and sagebrush vole were seldom taken after May.

Small mammals contributed a maximum of 4200-4400 g of biomass (wet weight) during 1972, which is 0.10-0.16 g/m^2 using effective grid sizes of 4.4 or 2.72 hectares, respectively. Compared with domestic herbivores, which gained 2.4 g/m^2 in 41 days, the contribution of the small mammals appears insignificant. However, the cattle could not have survived more than a few more weeks since they had already consumed over 50% of the primary productivity in 41 days. Their gain, therefore, must be considered an annual gain for this type of range. A more meaningful understanding of the transfer of energy through the small mammals must await the description of a total energy budget for the population on an annual basis.

Assessing the influence of grazing on small mammals is premature since there are only "two data points.", 1971 and 1972. On a purely descriptive basis one can single out the following areas for scrutiny in subsequent years:

1. There were more ground squirrels on the ungrazed plot, but this was true even before the cattle were introduced. However the young-of-the-year rapidly swelled the population on the grazed pasture during May. Whether their survival will be as good remains to be seen.
2. More individual pocket mice were trapped on the undisturbed grid, and the peak population was sustained for about 3-4 months compared with the grazed plot.
3. There was a more even sex ratio of adult pocket mice after June on the ungrazed plot, and more individual juvenals were trapped on that grid.

4. There was no great difference between the total peak biomass on the two grids regardless of whether the contribution due to ground squirrels and rabbits was excluded, but the peak biomass was reached one month later on the disturbed site.

The small mammals on Project ALE do not disturb the soil surface to any significant degree. Their tailings, resulting mainly from the activities of ground squirrels, pocket gophers and their predators; badgers and coyotes, cover less than 1% of the total area. The extent of their subsurface activity is unknown, but the major impact of burrowing is no doubt underground.

Descriptive studies of the small mammals on the ALE grasslands could and should continue for at least 3-5 years so that measurements of their population responses to alterations in the driving variables of the system can be examined in the intact system.

We suggest that manipulation studies commence as soon as possible and be conducted at the same time as the present grazing experiments. Treatments including water amendments, herbicides, and fertilizer would yield the most significant data since water and nitrogen appear to be the limiting factors influencing plant productivity. Studies of the responses of the small mammals could be conducted in these test plots to determine the magnitude of responses as a function of the degree of change in the driving variables. The information should set the upper and lower limits of the responses of small mammals to purturbations in the system, especially those affecting primary production.

Studies asking why there has been limited use of this area by native herbivores such as antelope or bison would be significant. They could help define the parameters which restrict herbivory in this northern grassland to the smaller mammals.

ACKNOWLEDGEMENTS

We wish to acknowledge the contributions and support of the other members of the Battelle staff who participated in the grassland studies during 1972, particularly R. O. Gilbert and C. R. Watson of the Mathematics and Physics Research Department and R. J. Olson of the Biology Department.

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APPENDIX I

FIELD DATA

Small mammal live trapping data collected at the ALE Site in 1972 in Grassland Biome Data Set A2U10EA. Data were collected on forms NREL-10 and NREL-17. Copies of these forms and an example of the data follow.

IBP

GRASSLAND BIOME

U.S. INTERNATIONAL BIOLOGICAL PROGRAM

FIELD DATA SHEET - VERTEBRATE - LIVE TRAPPING

DATA TYPE	SITE	INITIALS	DATE			TREATMENT	REPLICATE	PLOT SIZE	GENUS	SPECIES	SUBSPECIES	CONDITION	MARK	NUMBER	MALE	FEMALE	WEIGHT	MOLT	LOCATION		PREVIOUS NO.
			Day	Mo	Yr														Row	Col	
1-2	3-4	5-7	8-9	10-11	12-13	14	15	16-19	21-22	23-24	25	27	29	31-34	36	38	40-44	46	48-49	51-52	54-57

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

FEMALE
- 0 Adult, vulva inactive
- 1 Subadult, vuvla inactive
- 2 Juvenile, vulva inactive
- 3 Adult, vulva turgid
- 4 Subadult, vulva turgid
- 5 Juvenile, vulva turgid
- 6 Adult, vulva cornified
- 7 Subadult, vulva cornified
- 8 Juvenile, vulva cornified
- 9 Pregnant

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

CONDITION
- 0 Normal
- 1 Escaped
- 2 Torpid
- 3 Dead

MOLT
- 0 No evidence
- 1 Post-juvenile
- 2 Post-subadult
- 3 Adult (vernal)
- 4 Adult (autumnal)
- 5 Molt of unknown stage
- 6 Undetermined

MALE
- 0 Adult, non-breeding
- 1 Subadult, non-breeding
- 2 Juvenile, non-breeding
- 3 Adult breeding ?
- 4 Subadult breeding ?
- 5 Juvenile breeding ?
- 6 Adult breeding
- 7 Subadult breeding
- 8 Juvenile breeding
- 9 Undetermined

MARK
- 0 Normal
- 1 Unmarked
- 2 Ear tag
- 3 Toe Clip
- 4 Ear tag and toe clip
- 5 Natural amputation

IBP

GRASSLAND BIOME

U.S. INTERNATIONAL BIOLOGICAL PROGRAM

FIELD DATA SHEET--VERTEBRATE - ASSESSMENT LINES

Data Type	Site	Initials	Date			Treatment	Replicate	Genus	Species	Subspecies	Condition	Mark	Number	Male	Female	Weight	Molt	Line Number	Trap Number	Previous Number
			Day	Month	Year															
1-2	3-4	5-7	8-9	10-11	12-13	14	15	21-22	23-24	25	27	29	31-34	36	38	40-44	46	49	51-52	54-57
17																				

Data Type
17 Vertebrate - assessment lines

Site
01 ALE
02 Bison
03 Bridger
04 Cottonwood
05 Dickinson
06 Hays
07 Annual
08 Jornada
09 Osage
10 Pantex
11 Pawnee
12

Treatment
1 Ungrazed
2 Lightly grazed
3 Moderately grazed
4 Heavily grazed
5 Ungrazed current year only
A Diet light
B Diet moderate
C Diet heavy
D ESA - O
E ESA - W
F ESA - N
G ESA - WN

Male
0 Adult, non-breeding
1 Subadult, non-breeding
2 Juvenile, non-breeding
3 Adult breeding?
4 Subadult breeding?
5 Juvenile breeding?
6 Adult breeding
7 Subadult breeding
8 Juvenile breeding
9 Undetermined

Female
0 Adult, vulva inactive
1 Subadult, vulva inactive
2 Juvenile, vulva inactive
3 Adult, vulva turgid
4 Subadult, vulva turgid
5 Juvenile, vulva turgid
6 Adult, vulva cornified
7 Subadult, vulva cornified
8 Juvenile, vulva cornified
9 Pregnant

Condition
0 Normal
1 Escaped
2 Torpid
3 Dead

Molt
0 No evidence
1 Post-juvenile
2 Post-subadult
3 Adult (vernal)
4 Adult (autumnal)
5 Molt of unknown stage
6 Undetermined

Mark
0 Normal
1 Unmarked
2 Ear tag
3 Toe clip
4 Ear tag and toe clip
5 Natural amputation

+++ EXAMPLE OF DATA +++

```
         1         2         3         4         5
12345678901234567890123456789012345678901234567890123455
1001TP018 47212 2.8 PEMA  0 2 1190 6     20.5 5  H 12
1001TP018 47212 2.8 PEMA  0 2 1195 6     23.0 5  C  1
1001TP019 47212 2.8 PEMA  0 2 1195 6          5  G 11
1001TP020 47212 2.8 PEMA  0 2 1195 0          5  A  4
1001TP021 47212 2.8 PEMA  0 2 1195 6          5  H  3
1001TP019 47212 2.8 PEMA  0 2 1210 0     19.0 5  M  6
1001TP020 47212 2.8 PEMA  0 2 1210 6          5  K  8
1001TP021 47212 2.8 PEMA  0 2 1210 6          5  D  2
1001TP020 47212 2.8 PEMA  0 2 1215 0     23.0 5  J 12
1001TP021 47212 2.8 PEMA  0 2 1215 6     23.0 5  M 11
1001TP018 47212 2.8 PEMA  0 2 1223    4  16.5 5  G  3
1001TP019 47212 2.8 PEMA  0 2 1223    3       5  J  4
1001TP020 47212 2.8 PEMA  0 2 1223    3       5  F  4
1001TP021 47212 2.8 PEMA  0 2 1223    0       5  H  7
1001TP020 47212 2.8 PEMA  0 2 1229    9  22.5 5  G  4
1001TP021 47212 2.8 PEMA  0 2 1229    9       5  F  5
1001TP021 47212 2.8 PEMA  0 2 1241 6     17.5 5  G 12
1001TP021 47212 2.8 PEMA  0 2 1242 1     12.0 5  J 10
1001TP021 47212 2.8 PEMA  0 2 1243    3  22.0 5  J  2
1001TP018 47212 2.8 PEPA  0 3 0032 0     21.0 5  G  6
1001TP019 47212 2.8 PEPA  0 3 0032 0          5  F  6
1001TP020 47212 2.8 PEPA  0 3 0032 0          5  F  5
1001TP021 47212 2.8 PEPA  0 3 0032 0          5  C  5
1001TP018 47212 2.8 PEPA  0 3 0042 0     18.5 5  D 12
1001TP019 47212 2.8 PEPA  0 3 0042 6          5  D 12
1001TP020 47212 2.8 PEPA  0 3 0042 6          5  E 12
1001TP021 47212 2.8 PEPA  0 3 0042 6          5  J 12
1001TP018 47212 2.8 PEPA  0 3 0045 0     20.0 5  M 12
1001TP019 47212 2.8 PEPA  0 3 0045 0          5  M 12
1001TP020 47212 2.8 PEPA  0 3 0045 0          5  H 10
1001TP021 47212 2.8 PEPA  0 3 0045 0          5  J  8
1001TP018 47212 2.8 PEPA  0 3 0110 6     18.5 5  A  1
1001TP019 47212 2.8 PEPA  0 3 0110 0          5  A  1
1001TP020 47212 2.8 PEPA  0 3 0110 6          5  D  3
1001TP021 47212 2.8 PEPA  0 3 0110 6          5  G  3
1001TP018 47212 2.8 PEPA  0 3 0113 0     20.0 5  A 12
1001TP019 47212 2.8 PEPA  0 3 0113 6          5  H 12
1001TP020 47212 2.8 PEPA  0 3 0113 6          5  A 12
1001TP021 47212 2.8 PEPA  0 3 0113 0          5  C 10
1001TP018 47212 2.8 PEPA  0 3 0122 6     18.0 5  G  1
1001TP019 47212 2.8 PEPA  0 3 0122 0          5  C  1
```

1001TP020	47212	2.8	PEPA	0	3	0122	6			5	D	1
1001TP021	47212	2.8	PEPA	0	3	0122	6			5	H	1
1001TP018	47212	2.8	PEPA	0	3	0123	0		21.5	5	M	1
1001TP019	47212	2.8	PEPA	0	3	0123	0			5	L	1
1001TP020	47212	2.8	PEPA	0	3	0123	0			5	M	1
1001TP021	47212	2.8	PEPA	0	3	0123	6			5	L	1
1001TP018	47212	2.8	PEPA	0	3	0131	0		18.0	5	K	2
1001TP019	47212	2.8	PEPA	0	3	0131	6			5	K	1
1001TP020	47212	2.8	PEPA	0	3	0131	0			5	M	2
1001TP021	47212	2.8	PEPA	0	3	0131	0			5	G	1
1001TP018	47212	2.8	PEPA	0	3	0133	0		21.0	5	M	10
1001TP019	47212	2.8	PEPA	0	3	0133	0			5	M	8
1001TP020	47212	2.8	PEPA	0	3	0133	6			5	M	7
1001TP021	47212	2.8	PEPA	0	3	0133	6			5	M	6
1001TP018	47212	2.8	PEPA	0	3	0155	0		18.5	5	A	8
1001TP019	47212	2.8	PEPA	0	3	0155	6			5	B	9
1001TP020	47212	2.8	PEPA	0	3	0155	0			5	A	9
1001TP021	47212	2.8	PEPA	0	3	0155	0			5	D	7
1001TP018	47212	2.8	PEPA	0	3	0204		3	13.0	5	F	9
1001TP019	47212	2.8	PEPA	0	3	0204		3		5	E	9
1001TP020	47212	2.8	PEPA	0	3	0204		0		5	G	6
1001TP021	47212	2.8	PEPA	0	3	0204		0		5	F	10
1001TP018	47212	2.8	PEPA	0	3	0205	6		18.0	5	H	11
1001TP019	47212	2.8	PEPA	0	3	0205	6			5	E	11
1001TP020	47212	2.8	PEPA	0	3	0205	6			5	G	12
1001TP021	47212	2.8	PEPA	0	3	0205	6			5	H	12
1001TP019	47212	2.8	PEPA	0	3	0212	6		15.0	5	L	7
1001TP020	47212	2.8	PEPA	0	3	0212	0			5	M	7
1001TP021	47212	2.8	PEPA	0	3	0212	6			5	L	5
1001TP019	47212	2.8	PEPA	0	3	0224	0		19.0	5	B	12
1001TP020	47212	2.8	PEPA	0	3	0224	0			5	A	11
1001TP021	47212	2.8	PEPA	0	3	0224	6			5	B	12
1001TP018	47212	2.8	PEPA	0	3	0230	6		16.5	5	A	7
1001TP019	47212	2.8	PEPA	0	3	0230	0			5	C	7
1001TP020	47212	2.8	PEPA	0	3	0230	6			5	A	6
1001TP021	47212	2.8	PEPA	0	3	0230	6			5	A	8
1001TP018	47212	2.8	PEPA	0	3	0242	0		19.0	5	M	1
1001TP019	47212	2.8	PEPA	0	3	0242	0			5	M	1
1001TP020	47212	2.8	PEPA	0	3	0242	6			5	L	1
1001TP021	47212	2.8	PEPA	0	3	0242	6			5	M	2
1001TP018	47212	2.8	PEPA	0	3	0243		0	15.0	5	L	1
1001TP019	47212	2.8	PEPA	0	3	0243		3		5	L	1
1001TP020	47212	2.8	PEPA	0	3	0243		0		5	L	1
1001TP021	47212	2.8	PEPA	0	3	0243		0		5	J	1
1001TP018	47212	2.8	PEPA	0	3	0313	6		18.0	5	A	3
1001TP019	47212	2.8	PEPA	0	3	0313	0			5	C	2
1001TP020	47212	2.8	PEPA	0	3	0313	6			5	B	1
1001TP021	47212	2.8	PEPA	0	3	0313	6			5	A	1
1001TP018	47212	2.8	PEPA	0	3	0322		3	14.5	5	F	2
1001TP019	47212	2.8	PEPA	0	3	0322		3		5	F	1

1001TP020	47212	2.8	PEPA	0	3	0322		3		5	E	1
1001TP021	47212	2.8	PEPA	0	3	0322		6		5	F	2
1001TP019	47212	2.8	PEPA	0	3	0323	6		20.0	5	L	12
1001TP020	47212	2.8	PEPA	0	3	0323	0			5	L	12
1001TP021	47212	2.8	PEPA	0	3	0323	6			5	L	12
1001TP018	47212	2.8	PEPA	0	3	0443	0		20.0	5	A	11
1001TP018	47212	2.8	PEPA	0	3	1002	0		17.0	5	H	1
1001TP019	47212	2.8	PEPA	0	3	1002	0		17.0	5	A	3
1001TP021	47212	2.8	PEPA	0	3	1002	0			5	A	3
1001TP018	47212	2.8	PEPA	0	3	1035		3	12.0	5	C	10
1001TP020	47212	2.8	PEPA	0	3	1035		3		5	C	11
1001TP021	47212	2.8	PEPA	0	3	1035		0		5	D	12
1001TP018	47212	2.8	PEPA	0	3	1044		0	14.0	5	B	11
1001TP019	47212	2.8	PEPA	0	3	1044		0		5	C	10
1001TP020	47212	2.8	PEPA	0	3	1044		3		5	B	10
1001TP021	47212	2.8	PEPA	0	3	1044		3		5	B	9
1001TP018	47212	2.8	PEPA	0	3	1102		3	14.0	5	C	9
1001TP019	47212	2.8	PEPA	0	3	1102		3		5	A	7
1001TP020	47212	2.8	PEPA	0	3	1102		3		5	C	7
1001TP021	47212	2.8	PEPA	0	3	1102		6		5	A	4
1001TP018	47212	2.8	PEPA	0	3	1110	6		18.0	5	B	10
1001TP019	47212	2.8	PEPA	0	3	1110	6			5	D	12
1001TP020	47212	2.8	PEPA	0	3	1110	6			5	A	11
1001TP021	47212	2.8	PEPA	0	3	1110	0			5	A	7
1001TP018	47212	2.8	PEPA	0	3	1112	6		18.0	5	L	8
1001TP019	47212	2.8	PEPA	0	3	1112	6			5	L	9
1001TP020	47212	2.8	PEPA	0	3	1112	0			5	M	11
1001TP021	47212	2.8	PEPA	0	3	1112	6			5	M	7
1001TP018	47212	2.8	PEPA	0	3	1122		0	13.0	5	C	4
1001TP019	47212	2.8	PEPA	0	3	1122		3		5	D	3
1001TP020	47212	2.8	PEPA	0	3	1122		3		5	D	7
1001TP021	47212	2.8	PEPA	0	3	1122		0		5	C	6
1001TP018	47212	2.8	PEPA	0	3	1123	0		18.0	5	G	2
1001TP019	47212	2.8	PEPA	0	3	1123	0			5	H	7
1001TP020	47212	2.8	PEPA	0	3	1123	0			5	C	2
1001TP021	47212	2.8	PEPA	0	3	1123	6			5	H	4
1001TP018	47212	2.8	PEPA	0	3	1131	0		16.5	5	K	1
1001TP019	47212	2.8	PEPA	0	3	1131	0			5	J	1
1001TP020	47212	2.8	PEPA	0	3	1131	6			5	J	1
1001TP021	47212	2.8	PEPA	0	3	1131	0			5	J	1
1001TP020	47212	2.8	PEPA	0	3	1135	0		14.5	5	M	2
1001TP021	47212	2.8	PEPA	0	3	1135	6			5	M	2
1001TP020	47212	2.8	PEPA	0	3	1141	6		14.0	5	B	6
1001TP020	47212	2.8	PEPA	0	3	1145	6		17.0	5	L	6
1001TP021	47212	2.8	PEPA	0	3	1145	0			5	K	5
1001TP018	47212	2.8	PEPA	0	3	1151	0		19.0	5	A	7
1001TP019	47212	2.8	PEPA	0	3	1151	6			5	A	6
1001TP020	47212	2.8	PEPA	0	3	1151	6			5	A	9
1001TP021	47212	2.8	PEPA	0	3	1151	6			5	B	6
1001TP020	47212	2.8	PEPA	0	3	1153	0		19.0	5	D	12
1001TP021	47212	2.8	PEPA	0	3	1153	0			5	D	11

1001TP018	47212	2.8	PEPA	0	3	1154	6		17.0	5	B	12
1001TP019	47212	2.8	PEPA	0	3	1154	6		17.5	5	C	12
1001TP020	47212	2.8	PEPA	0	3	1154	6			5	A	10
1001TP021	47212	2.8	PEPA	0	3	1154	0			5	C	11
1001TP020	47212	2.8	PEPA	0	3	1155	0		17.5	5	M	12
1001TP021	47212	2.8	PEPA	0	3	1155	6		16.0	5	M	10
1001TP021	47212	2.8	PEPA	0	3	1201	6		18.0	5	M	10
1001TP018	47212	2.8	PFPA	0	3	1205		0	13.0	5	F	4
1001TP019	47212	2.8	PFPA	0	3	1205		0		5	C	4
1001TP020	47212	2.8	PFPA	0	3	1205		0		5	F	3
1001TP021	47212	2.8	PFPA	0	3	1205		0		5	F	3
1001TP018	47212	2.8	PFPA	0	3	1210		0	14.0	5	K	12
1001TP019	47212	2.8	PFPA	0	3	1210		6		5	J	12
1001TP020	47212	2.8	PFPA	0	3	1210		0		5	J	12
1001TP021	47212	2.8	PFPA	0	3	1210		0		5	K	12
1001TP021	47212	2.8	PFPA	0	3	1240		0	12.5	5	A	12
1001TP021	47212	2.8	PFPA	0	3	1241		0	12.5	5	D	6
1001TP021	47212	2.8	PFPA	0	3	1242		0	15.0	5	C	2
1001TP021	47212	2.8	PFPA	0	3	1243		6	15.0	5	F	4
1001TP021	47212	2.8	PFPA	0	3	1244		3	12.5	5	J	6
1001TP021	47212	2.8	PFPA	0	3	1245		0	14.0	5	M	1
1001TP021	47212	2.8	PFPA	0	3	1250		3	13.5	5	K	12
1001TP021	47212	2.8	PFPA	0	3	1251		0	12.5	5	M	7
1001TP021	47212	2.8	PFPA	0	3	1252		0	13.0	5	M	5
1001TP018	47212	2.8	ONLF	0	2	1201	6		27.0	5	H	9
1001TP019	47212	2.8	ONLF	0	2	1201	0		24.0	5	A	9
1001TP020	47212	2.8	ONLF	0	2	1201	6			5	A	1
1001TP021	47212	2.8	ONLF	0	2	1201	6			5	H	3
1001TP021	47212	2.8	ONLF	0	2	1208	6		25.0	5	E	12
1001TP019	47212	2.8	SPTO	0	2	0010		0	170.0	5	A	2
1001TP018	47212	2.8	SPTO	0	2	0011		0	160.0	5	C	12
1001TP019	47212	2.8	SPTO	0	2	0011		9		5	D	10
1001TP020	47212	2.8	SPTO	0	2	0011		0		5	A	8
1001TP018	47212	2.8	SPTO	0	2	0015		0	162.0	5	A	2
1001TP018	47212	2.8	SPTO	0	2	0031	0		195.0	5	A	12
1001TP019	47212	2.8	SPTO	0	2	0031	0		199.0	5	A	10
1001TP018	47212	2.8	SPTO	0	2	0035		0	145.0	5	F	8
1001TP019	47212	2.8	SPTO	0	2	0035		0		5	G	9
1001TP021	47212	2.8	SPTO	0	2	0035		0		5	H	9
1001TP018	47212	2.8	SPTO	0	2	0042	0		173.0	5	H	3
1001TP018	47212	2.8	SPTO	0	2	0044		0		5	M	9
1001TP019	47212	2.8	SPTO	0	2	0044		0	134.0	5	L	2
1001TP020	47212	2.8	SPTO	0	2	0044		0		5	M	1
1001TP021	47212	2.8	SPTO	0	2	0044		0		5	M	4
1001TP018	47212	2.8	SPTO	0	2	0112		1	47.0	5	H	4
1001TP018	47212	2.8	SPTO	0	2	0113	1		49.0	5	H	6
1001TP018	47212	2.8	SPTO	0	2	0114	1		60.0	5	A	4
1001TP019	47212	2.8	SPTO	0	2	0114	1			5	A	6
1001TP020	47212	2.8	SPTO	0	2	0114	1			5	C	5

1001TP021	47212	2.8	SPTO	0	2	0114	1			5	B	5
1001TP018	47212	2.8	SPTO	0	2	0115	1		47.0	5	D	12
1001TP020	47212	2.8	SPTO	0	2	0115	1			5	C	12
1001TP018	47212	2.8	SPTO	0	2	0120		1	47.0	5	D	11
1001TP018	47212	2.8	SPTO	0	2	0121	1		50.0	5	F	3
1001TP018	47212	2.8	SPTO	0	2	0122		0	176.0	5	E	12
1001TP018	47212	2.8	SPTO	0	2	0123	1		49.0	5	D	6
1001TP020	47212	2.8	SPTO	0	2	0123	1			5	F	11
1001TP018	47212	2.8	SPTO	0	2	0124		1	45.0	5	F	4
1001TP019	47212	2.8	SPTO	0	2	0124		1		5	E	5
1001TP021	47212	2.8	SPTO	0	2	0124		1		5	G	5
1001TP018	47212	2.8	SPTO	0	2	0125		1	50.0	5	D	5
1001TP019	47212	2.8	SPTO	0	2	0125		1		5	F	4
1001TP018	47212	2.8	SPTO	0	2	0130		0	150.0	5	F	1
1001TP018	47212	2.8	SPTO	0	2	0131	1		53.0	5	F	3
1001TP019	47212	2.8	SPTO	0	2	0131	7			5	E	4
1001TP020	47212	2.8	SPTO	0	2	0131	1			5	F	3
1001TP018	47212	2.8	SPTO	0	2	0132		1	46.0	5	D	4
1001TP018	47212	2.8	SPTO	0	2	0133		1	53.0	5	F	1
1001TP019	47212	2.8	SPTO	0	2	0134		0		5	F	5
1001TP020	47212	2.8	SPTO	0	2	0134		0		5	E	7
1001TP019	47212	2.8	SPTO	0	2	0135	0		202.0	5	A	4
1001TP021	47212	2.8	SPTO	0	2	0135	6			5	A	2
1001TP018	47212	2.8	SPTO	0	2	0139	1		49.0	5	H	7
1001TP020	47212	2.8	SPTO	0	2	0139	1			5	J	7
1001TP021	47212	2.8	SPTO	0	2	0139	1			5	F	6
1001TP018	47212	2.8	SPTO	0	2	0140		1	45.0	5	G	8
1001TP018	47212	2.8	SPTO	0	2	0141	1		39.0	5	G	10
1001TP019	47212	2.8	SPTO	0	2	0143	1		54.0	5	D	8
1001TP019	47212	2.8	SPTO	0	2	0144		1	40.0	5	F	9
1001TP019	47212	2.8	SPTO	0	2	0145		1	49.0	5	E	10
1001TP021	47212	2.8	SPTO	0	2	0145		1		5	H	8
1001TP019	47212	2.8	SPTO	0	2	0150	1		42.0	5	G	10
1001TP019	47212	2.8	SPTO	0	2	0151		1	40.0	5	J	10
1001TP019	47212	2.8	SPTO	0	2	0152		1	42.0	5	K	1
1001TP019	47212	2.8	SPTO	0	2	0153		1	45.0	5	H	8
1001TP019	47212	2.8	SPTO	0	2	0154		1	52.0	5	J	3
1001TP020	47212	2.8	SPTO	0	2	0201		1	59.0	5	F	5
1001TP020	47212	2.8	SPTO	0	2	0202		1	57.0	5	H	2
1001TP021	47212	2.8	SPTO	0	2	0205	1		46.0	5	C	12
1001TP021	47212	2.8	SPTO	0	2	0210	0		190.0	5	A	12
1701TP024	47211		PFMA	0	2	0000	7			5	1	8
1701TP024	47211		PFMA	0	2	0000	1			5	6	12
1701TP024	47211		PFMA	0	2	0000	1			5	6	2
1701TP025	47211		PFMA	0	2	0000	6			5	1	12
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1701TP025	47211		PFMA	0	2	0000	7			5	8	3
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1701TP026	47211		PFMA	0	2	0000	1			5	1	13

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1701TP027	47211	PEMA	0	2	0000	6		5	2	5
1701TP027	47211	PEMA	0	2	0000	1		5	1	10
1701TP027	47211	PEMA	0	2	0000	6		5	1	12
1701TP027	47211	PEMA	0	2	0000	6		5	8	4
1701TP027	47211	PEMA	0	2	0000	6		5	7	4
1701TP027	47211	PEMA	0	2	0000		9	5	7	5
1701TP028	47211	PEMA	0	2	0000	0		5	5	9
1701TP028	47211	PEMA	0	2	0000		3	5	8	4
1701TP028	47211	PEMA	0	2	0000	6		5	8	3
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1701TP028	47211	PEMA	0	2	0000		9	5	7	7
1701TP028	47211	PEMA	0	2	0000	1		5	6	1
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1701TP028	47211	PEMA	0	2	1190	6		5	4	11
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1701TP025	47211	PEMA	0	2	1195	6		5	3	15
1701TP027	47211	PEMA	0	2/	1195	6		5	1	13
1701TP028	47211	PEMA	0	2	1195	6		5	1	13
1701TP024	47211	PEMA	0	2	1210	6		5	6	14
1701TP025	47211	PEMA	0	2	1210	6		5	1	10
1701TP028	47211	PEMA	0	2/	1210	6		5	1	10
1701TP025	47211	PEMA	0	2	1215	6		5	7	14
1701TP026	47211	PEMA	0	2	1215	6		5	7	14
1701TP027	47211	PEMA	0	2	1215	6		5	7	13
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1701TP027	47211	PEMA	0	2	1223		0	5	1	16
1701TP024	47211	PEMA	0	2	1229		9	5	6	15
1701TP025	47211	PEMA	0	2	1229		9	5	5	10
1701TP026	47211	PEMA	0	2	1229		9	5	5	10
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1701TP024	47211	PEPA	0	3	0000	0		5	7	2
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1701TP028	47211	PEPA	0	3	0243		6	5	1	7
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1701TP026	47211	PEPA	0	3	0252	0		5	1	1
1701TP027	47211	PEPA	3	3	0252	0		5	1	1
1701TP024	47211	PEPA	0	3	0313	6		5	1	12
1701TP025	47211	PEPA	0	3	0313	6		5	1	13
1701TP026	47211	PEPA	0	3	0313	0		5	1	10
1701TP027	47211	PEPA	0	3	0313	0		5	1	10
1701TP024	47211	PEPA	0	3	0322		0	5	2	10
1701TP025	47211	PEPA	0	3	0322		6	5	1	14

1701TP026	47211	PEPA	0	3	0322		0	5	1	13
1701TP027	47211	PEPA	0	3	0322		6	5	1	13
1701TP028	47211	PEPA	0	3	0322		6	5	1	14
1701TP024	47211	PEPA	0	3	0323	6		5	6	4
1701TP025	47211	PEPA	0	3	0323	6		5	6	4
1701TP026	47211	PEPA	0	3	0323	0		5	6	4
1701TP027	47211	PEPA	0	3	0323	0		5	6	4
1701TP028	47211	PEPA	0	3	0323	0		5	5	5
1701TP024	47211	PEPA	0	3	0330		0	5	7	5
1701TP025	47211	PEPA	0	3	0330		3	5	7	6
1701TP026	47211	PEPA	0	3	0330		0	5	7	6
1701TP027	47211	PEPA	0	3	0330		3	5	7	6
1701TP024	47211	PEPA	0	3	0331		6	5	6	1
1701TP025	47211	PEPA	0	3	0331		6	5	6	1
1701TP026	47211	PEPA	0	3	0331		9	5	6	1
1701TP027	47211	PEPA	0	3	0331		9	5	6	1
1701TP028	47211	PEPA	0	3	0331		9	5	6	1
1701TP024	47211	PEPA	0	3	0344	6		5	4	7
1701TP025	47211	PEPA	0	3	0344	0		5	4	11
1701TP026	47211	PEPA	0	3	0344	6		5	4	10
1701TP027	47211	PEPA	0	3	0344	6		5	4	10
1701TP028	47211	PEPA	0	3	0344	0		5	4	7
1701TP024	47211	PEPA	0	3	0352		0	5	6	6
1701TP025	47211	PEPA	0	3	0352		3	5	6	6
1701TP028	47211	PEPA	0	3	0352		9	5	6	6
1701TP024	47211	PEPA	0	3	0353	0		5	3	8
1701TP025	47211	PEPA	0	3	0353	0		5	3	11
1701TP026	47211	PEPA	0	3	0353	0		5	3	9
1701TP027	47211	PEPA	0	3	0353	6		5	3	10
1701TP028	47211	PEPA	0	3	0353	0		5	3	10
1701TP024	47211	PEPA	0	3	0421		0	5	3	14
1701TP025	47211	PEPA	0	3	0421		0	5	3	12
1701TP026	47211	PEPA	0	3	0421		9	5	3	12
1701TP027	47211	PEPA	0	3	0421		9	5	3	12
1701TP028	47211	PEPA	0	3	0421		9	5	3	12
1701TP024	47211	PEPA	0	3	0443	0		5	4	7
1701TP025	47211	PEPA	0	3	0443	0		5	4	8
1701TP026	47211	PEPA	0	3	0443	6		5	4	9
1701TP027	47211	PEPA	0	3	0443	0		5	4	7
1701TP028	47211	PEPA	0	3	0443	0		5	4	9
1701TP024	47211	PEPA	0	3	0445		6	5	4	9
1701TP025	47211	PEPA	0	3	0445		0	5	4	9
1701TP026	47211	PEPA	0	3	0445		0	5	4	9
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1701TP028	47211	PEPA	0	3	0445		9	5	4	9
1701TP028	47211	PEPA	0	3	1000		9	5	6	4
1701TP024	47211	PEPA	0	3	1002	6		5	2	13
1701TP025	47211	PEPA	0	3	1002	6		5	2	13

1701TP026	47211	PEPA	0	3	1002	6		5	2	13
1701TP027	47211	PEPA	0	3	1002	6		5	2	10
1701TP028	47211	PEPA	0	3	1033		6	5	1	8
1701TP024	47211	PEPA	0	3	1035		6	5	4	12
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1701TP026	47211	PEPA	0	3	1035		9	5	4	12
1701TP027	47211	PEPA	0	3	1035		9	5	4	13
1701TP028	47211	PEPA	0	3	1035		9	5	4	12
1701TP024	47211	PEPA	0	3	1042	0		5	1	3
1701TP025	47211	PEPA	0	3	1042	6		5	1	2
1701TP026	47211	PEPA	0	3	1042	6		5	1	1
1701TP027	47211	PEPA	0	3	1042	6		5	1	1
1701TP028	47211	PEPA	0	3	1042	6		5	1	1
1701TP024	47211	PEPA	0	3	1044		6	5	4	14
1701TP025	47211	PEPA	0	3	1044		0	5	4	13
1701TP026	47211	PEPA	0	3	1044		9	5	4	14
1701TP027	47211	PEPA	0	3	1044		9	5	4	14
1701TP028	47211	PEPA	0	3	1044		0	5	4	14
1701TP025	47211	PEPA	0	3	1052		3	5	8	15
1701TP026	47211	PEPA	0	3	1052		3	5	8	14
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1701TP028	47211	PEPA	0	3	1052		3	5	8	14
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1701TP025	47211	PEPA	0	3	1102		0	5	3	10
1701TP026	47211	PEPA	0	3	1102		3	5	3	11
1701TP027	47211	PEPA	0	3	1102		9	5	3	10
1701TP028	47211	PEPA	0	3	1102		9	5	3	12
1701TP024	47211	PEPA	0	3	1110	0		5	5	14
1701TP025	47211	PEPA	0	3	1110	0		5	5	14
1701TP026	47211	PEPA	0	3	1110	0		5	5	14
1701TP027	47211	PEPA	0	3	1110	6		5	5	15
1701TP028	47211	PEPA	0	3	1110	6		5	3	14
1701TP026	47211	PEPA	0	3	1111		3	5	8	10
1701TP027	47211	PEPA	0	3	1111		3	5	8	10
1701TP028	47211	PEPA	0	3	1111		3	5	8	10
1701TP024	47211	PEPA	0	3	1112	6		5	7	8
1701TP025	47211	PEPA	0	3	1114		0	5	7	16
1701TP028	47211	PEPA	0	3	1114		3	5	7	16
1701TP024	47211	PEPA	0	3	1122		6	5	2	15
1701TP025	47211	PEPA	0	3	1122		0	5	2	14
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1701TP028	47211	PEPA	0	3	1122		9	5	2	14
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1701TP026	47211	PEPA	0	3	1123	0		5	3	17
1701TP024	47211	PEPA	0	3	1131	6		5	1	5
1701TP025	47211	PEPA	0	3	1131	0		5	1	4
1701TP026	47211	PEPA	0	3	1131	0		5	1	5
1701TP027	47211	PEPA	0	3	1131	6		5	1	5
1701TP024	47211	PEPA	0	3	1135	6		5	8	11
1701TP025	47211	PEPA	0	3	1135	6		5	8	13
1701TP026	47211	PEPA	0	3	1135	0		5	8	12

1701TP028	47211	PEPA	0	3	1135	6		5	8	11
1701TP024	47211	PEPA	0	3	1141	6		5	2	14
1701TP025	47211	PEPA	0	3	1141	0		5	2	8
1701TP026	47211	PEPA	0	3	1141	6		5	2	2
1701TP028	47211	PEPA	0	3	1141	0		5	2	2
1701TP024	47211	PEPA	0	3	1145	6		5	7	3
1701TP025	47211	PEPA	0	3	1145	6		5	7	5
1701TP026	47211	PEPA	0	3	1145	6		5	7	2
1701TP027	47211	PEPA	0	3	1145	6		5	7	7
1701TP024	47211	PEPA	0	3	1151	6		5	3	10
1701TP025	47211	PEPA	0	3	1151	0		5	3	10
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1701TP028	47211	PEPA	0	3	1151	0		5	2	11
1701TP024	47211	PEPA	0	3	1153	6		5	5	8
1701TP025	47211	PEPA	0	3	1153	6		5	5	6
1701TP026	47211	PEPA	0	3	1153	6		5	5	4
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1701TP028	47211	PEPA	0	3	1201	6		5	6	9
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1701TP027	47211	PEPA	0	3	1205		6	5	1	14
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1701TP024	47211	PEPA	0	3	1210		0	5	6	15
1701TP025	47211	PEPA	0	3	1210		0	5	5	10
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1701TP025	47211	PEPA	0	3	1230		3	5	5	6
1701TP027	47211	PEPA	0	3	1230		9	5	5	5
1701TP028	47211	PEPA	0	3	1230		9	5	5	6
1701TP026	47211	PEPA	0	3	1233	6		5	5	4
1701TP027	47211	PEPA	0	3	1233	0		5	5	4
1701TP028	47211	PEPA	0	3	1233	0		5	5	4
1701TP024	47211	PEPA	0	3	1240		0	5	5	8
1701TP025	47211	PEPA	0	3	1240		0	5	5	9

1701TP024	47211	PEPA	0	3	1241		0	5	3	17
1701TP025	47211	PEPA	0	3	1241		0	5	3	17
1701TP026	47211	PEPA	0	3	1241		9	5	3	17
1701TP027	47211	PEPA	0	3	1241		9	5	3	17
1701TP028	47211	PEPA	0	3	1241		9	5	3	17
1701TP024	47211	PEPA	0	3	1242		3	5	1	13
1701TP028	47211	PEPA	0	3	1243		6	5	1	4
1701TP024	47211	PEPA	0	3	1244		3	5	7	17
1701TP025	47211	PEPA	0	3	1244		6	5	7	17
1701TP027	47211	PEPA	0	3	1244		9	5	7	17
1701TP028	47211	PEPA	0	3	1244		0	5	7	17
1701TP025	47211	PEPA	0	3	1245		6	5	7	12
1701TP027	47211	PEPA	0	3	1245		9	5	7	15
1701TP028	47211	PEPA	0	3	1245		3	5	7	15
1701TP025	47211	PEPA	0	3	1250		6	5	5	7
1701TP026	47211	PEPA	0	3	1250		0	5	5	6
1701TP027	47211	PEPA	0	3	1250		9	5	5	7
1701TP028	47211	PEPA	0	3	1250		9	5	5	7
1701TP024	47211	PEPA	0	3	1251		3	5	7	10
1701TP025	47211	PEPA	0	3	1251		0	5	7	6
1701TP026	47211	PEPA	0	3	1251		3	5	7	7
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1701TP025	47211	PEPA	0	3	1252		3	5	7	11
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1701TP028	47211	PEPA	0	3	1252		6	5	7	12
1701TP024	47211	ONLF	0	2	0000		1	5	4	9
1701TP025	47211	ONLF	0	2	0000		1	5	3	8
1701TP026	47211	ONLF	0	2	0000		1	5	4	12
1701TP028	47211	ONLF	0	2	0000		1	5	2	9
1701TP024	47211	ONLF	0	2	1201	6		5	4	10
1701TP025	47211	ONLF	0	2	1201	6		5	4	10
1701TP026	47211	ONLF	0	2	1201	6		5	6	12
1701TP027	47211	ONLF	0	2	1201	6		5	4	12
1701TP028	47211	ONLF	0	2	1201	6		5	3	10
1701TP024	47211	ONLF	0	2	1208	6		5	4	13
1701TP028	47211	ONLF	0	2	1208	6		5	4	12
1701TP026	47211		0	2	0000	6		5	7	8
1701TP026	47211	SPTO	0	2	0000	1		5	4	13
1701TP026	47211	SPTO	0	2	0000	1		5	5	9
1701TP026	47211	SPTO	0	2	0000	1		5	8	10

1701TP026	47211	SPTO	0	2	0000		1	5	7	3
1701TP026	47211	SPTO	0	2	0000		0	5	7	5
1701TP027	47211	SPTO	0	2	0000	1		5	6	15
1701TP027	47211	SPTO	0	2	0000	0		5	6	3
1701TP027	47211	SPTO	0	2	0000	1		5	7	10
1701TP027	47211	SPTO	0	2	0000		1	5	7	15
1701TP028	47211	SPTO	0	2	0000		1	5	7	5
1701TP028	47211	SPTO	0	2	0000		1	5	7	10
1701TP028	47211	SPTO	0	2	0000	1		5	7	12
1701TP028	47211	SPTO	0	2	0000		1	5	7	15
1701TP027	47211	SPTO	0	2	0010		0	5	3	12
1701TP028	47211	SPTO	0	2	0011		0	5	4	13
1701TP025	47211	SPTO	0	2	0031	0		5	4	9
1701TP024	47211	SPTO	0	2	0035		0	5	5	16
1701TP025	47211	SPTO	0	2	0035		0	5	6	14
1701TP026	47211	SPTO	0	2	0035		0	5	5	15
1701TP027	47211	SPTO	0	2	0035		0	5	1	15
1701TP028	47211	SPTO	0	2	0035		0	5	6	15
1701TP024	47211	SPTO	0	2	0042	0		5	3	15
1701TP027	47211	SPTO	0	2	0044		0	5	8	9
1701TP028	47211	SPTO	3	2	0044		0	5	8	11
1701TP025	47211	SPTO	0	2	0101	0		5	8	15
1701TP026	47211	SPTO	0	2	0101	0		5	1	2
1701TP027	47211	SPTO	0	2	0101	0		5	1	7
1701TP028	47211	SPTO	0	2	0101	0		5	1	2
1701TP026	47211	SPTO	0	2	0113	1		5	8	13
1701TP025	47211	SPTO	0	2	0114		1	5	2	15
1701TP026	47211	SPTO	0	2	0114		1	5	1	10
1701TP027	47211	SPTO	0	2	0114		1	5	1	11
1701TP028	47211	SPTO	0	2	0114		1	5	1	9
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1701TP026	47211	SPTO	0	2	0115	1		5	6	12
1701TP027	47211	SPTO	0	2	0115	1		5	6	12
1701TP028	47211	SPTO	0	2	0115	1		5	6	13
1701TP025	47211	SPTO	0	2	0121		9	5	5	13
1701TP025	47211	SPTO	0	2	0124		1	5	1	16
1701TP026	47211	SPTO	0	2	0124		1	5	1	14
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1701TP028	47211	SPTO	0	2	0124		1	5	7	14
1701TP026	47211	SPTO	0	2	0131	1		5	1	15
1701TP028	47211	SPTO	0	2	0131	1		5	1	12
1701TP025	47211	SPTO	0	2	0132		1	5	2	11
1701TP027	47211	SPTO	0	2	0133		1	5	3	9
1701TP025	47211	SPTO	0	2	0134		0	5	3	9
1701TP027	47211	SPTO	0	2	0134		0	5	1	14
1701TP027	47211	SPTO	0	2	0140		1	5	5	17
1701TP028	47211	SPTO	0	2	0140		1	5	6	12
1701TP025	47211	SPTO	0	2	0145	1		5	5	13
1701TP028	47211	SPTO	0	2	0154	1		5	5	15
1701TP025	47211	SPTO	0	2	0201		1	5	1	15
1701TP027	47211	SPTO	0	2	0201		1	5	1	17