

Progress Report for Period
July 27 - August 8, 1937
Burgess Spring Experimental Range

Climate

The atmosphere was very dry during this period. The humidity trend was downward although the temperature remained below the seasonal peak of the preceding period. This condition was accompanied by only a slight rise in the trends of wind movement and evaporation. No rain fell. Vegetation and soil dried rapidly, the upper soil layer becoming very dry and dusty.

The mean areal air temperature dropped ten degrees during two cold days, July 31 and August 1, minimum 34.5° on August 1, maximum 84.6° on August 4.

Mean soil temperature was well below that of the corresponding period last year. Minimum at $\frac{1}{2}$ " 32.8 on August 1. Maximum 146.5 on August 3.

Minimum humidity 12, maximum 99. Only two maximums were above 90 and it dropped to 41 August 7.

Maximum evaporation 10.33 gallons, minimum 6.76.

Maximum wind movement 41.4 miles, minimum 18.3.

Phenology

The vegetation is drying rapidly. Most of the seedstalks of perennial grasses are dry and all the species except fescue are generally shattered. Lupine seeds were shattering near the first of the period and were nearly all shattered by the end of it. Late annuals, such as

Gayophytum, Epilobium, and Monardella are in seed and the early annuals are entirely dry.

Rodents are now eating seeds of Ceanothus prostratus, carrying them to rock outcrops before dining.

Growth Stages of Several Species
on July 29, 1937

Species	Fl	Slh	Bm	Bt	Cr	Pt	BA	Wm	Lcl	CRB	GO	COto
<u>Growth Stage</u>		<u>Percent of species in each stage</u>										
Vegetation	60				38	61			15	64		
Stalk												
Inflorescence												
Flowers												
Seed												
juice	1	1	1									
dough	26	24	16	4					1	5	63	
ripe	1	7				5			1	1	5	
shattering	11	70	84		62	34			70	30	32	
shattered	1								13			
milk		5					5	5				100
% dry												

Cattle

The stock continued to gain satisfactorily, although the average of 1.33 pounds per day is slightly below that made during the same period last year.

The cattle were rounded-up with horses the morning of August 11, after having watered the preceding evening. An unsuccessful attempt was made on foot two days before.

Several factors combined to make the average gain slightly low. Eleven head were weighed on August 9 and dropped 13 pounds, an average of 1.2 pounds each, during the next two days. One yearling steer, No. 5, lost 16 pounds in two days so that his weight recorded on August 11 was the same as on July 27. No. 4 was sick and gained only one pound during the 15 day period.

Choice of Species

Lupine was an outstanding choice in the cattle's selection of feed. Ranking first in number of selections, it also furnished a large amount of volume. The stock took all of the plant and chose all stages of development.

Although chosen quite often, the grasses furnished a small percent of the bulk consumed during the examination periods. They continued to select the leaves, taking stems and fruit as they were included.

A large number of species continue to be included in the diet.

Class and No.	Weight			Gain
	June 14	August 11	Total	Last 15 Day Period
Yearling 1	316	455	139	21
heifers 2	415	576	161	29
3	462	624	162	30
4	313	417	104	1
Average Gain per day	377	518	141	20 1.33
Yearling 5	511	665	154	0
steers 6	515	710	195	20
7	475	649	174	23
8	506	675	169	34
Average Gain per day	502	674	172	18 1.20
2 Year old 9	681	908	227	34
steers 10	788	927	139	9
11	783	1022	239	20
12	850	1064	214	29
Average Gain per day	776	980	204	23 1.53
Cows 13	618	782	164	18
14	822	976	154	14
15	697	838	141	16
16	610	778	168	32
Average Gain per day	687	843	156	20 1.33
Total	9362	12066	2704	330
Average Gain per day	585	754	169	20
			2.91	1.33

Species	Total No. of Choices	Estimated Percent of Diet by Weight				Plant Parts Grazed							
		7/28	7/30	8/4	8/6	L	S	I	F	Tm	Fd	Fr	Is
<i>Lupinus calcaratus</i>	742	90	10	80	80	x	x	.	.	.	.	x	x
<i>Purshia tridentata</i>	298	2	80	10	10	x	.	.	.	.	.	.	.
<i>Festuca idahoensis</i>	167	2	5	5	3	x	x	.	.	.	x	x	x
<i>Sitanion hystrix</i>	109	T	T	3	4	x	x	.	.	.	.	x	.
<i>Balsamorhiza sagittata</i>	64	5	T	T	1	x	.	.	.	.	.	.	.
No. 2 - Aster ?	49	-	T	-	-	x	.	.	.	.	.	.	.
<i>Stipa</i> sp.	45	T	2	T	T	x	x	.	.	.	.	.	x
<i>Ceanothus prostratus</i>	34	-	-	T	T	x	.	.	.	.	.	.	.
<i>Achillea millefolium</i>	30	-	T	T	-	x	x	x	x	.	.	.	.
No. 1	28	-	T	T	T	x	x	.	.	.	.	.	.
<i>Geyophytum</i>	29	-	T	T	T	x	x	.	.	.	.	x	.
<i>Carex</i>	21	-	T	T	T	x	x	.	.	.	.	.	.
<i>Madia elegans</i>	21	-	-	T	T	x	x	.	.	.	.	x	.
<i>Wyethia mollis</i>	10	T	T	T	T	x	.	.	.	.	x	.	.
<i>Bromus marginatus</i>	10	-	T	T	T	x	x	.	.	.	.	x	.
<i>Antennaria</i>	10	-	T	-	T	x	x	.	x	.	.	x	.
<i>Arctostaphylos patula</i>	9	-	T	T	T	x	.	.	.	.	.	.	.
<i>Amelanchier alnifolia</i>	8	-	T	-	-	x	.	.	.	.	.	.	.
<i>Polygonum</i>	7	-	T	-	-	.	x	.	.	.	.	.	.
<i>Lotus</i>	7	-	T	-	-	.	x	.	.	.	.	.	.
<i>Castilleja</i>	6	-	T	-	T	x	x	.	.	.	.	.	.
<i>Allocarya</i>	6	-	-	T	-	x	x	.	.	.	.	.	.
<i>Rush</i>	5	-	-	T	-	-	x	.	.	.	.	.	.
<i>Poa</i>	5	-	T	-	-	x	.	.	.	.	.	.	.

Species	Total No. of Choices	Estimated Percent of Diet by Weight					Plant Parts Grazed ^{1/}						
		7/28	7/30	8/4	8/6	L	S	I	F	Fm	Fd	Fr	Is
Eriogonum nudum	4	T	-	-	T	X	X	.	X
Rosa	4	-	T	-	-	X	X	.	.	.	.	.
Symphoricarpos	4	-	-	-	T	X	.	.	.	.	.	.
Bromus tectorum	3	-	T	-	-	X	.	.	.	.	.	.
Eriophyllum	3	-	-	-	T	X	X	.	X	.	.	.	
Gum	2	-	T	-	-	X	X	.	.	.	.	.
Crepis acuminata	2	-	-	T	T	X	X	.	.	.	.	X
Monardella	2	-	-	-	T	X	X	.	.	.	.	X
Elymus	1	-	T	-	-	X	X	.	.	.	.	.
Vicia	1	-	T	-	-	.	X	.	.	.	.	.
Pterospora andromeda	1	-	T	-	-	.	X	.	X	.	.	.	
Phacelia	1	-	-	T	-	X	.	.	.	.	.	.
Astragalus	1	-	-	T	-	X	.	.	.	.	.	.
Chaenactis	1	-	-	-	T	X	X	.	.	.	.	X
Totals	1750					253	486		507	504			

^{1/}

L = leaves
S = stems
I = inflorescence
F = flower

Fm = Fruit in milk
Fd = " " dough
Fr = " ripe
Is = Inflorescence shattered

Salt Consumption

Compared to the preceding month, salt consumption dropped slightly during this period. There was no rain so that losses in excess of cattle use were small. Deer used an undetermined small percent of the .04 pounds per day average attributed to cattle.

Salt Consumption - July 26 - August 8, 1937

Date	Pounds Used		Remarks
	Total	Per head (16)	
July 26	.50	.03	Cattle and deer
27	0	0	
28	2.20	.14	Cattle
29	.05	0	Deer
30	0	0	
31	.75	.05	Cattle and deer
Aug. 1	2.95	.18	Cattle and deer
2	0	0	
3	.05	0	Deer
4	1.20	.08	Cattle
5	1.15	.07	Cattle and deer
6	0	0	
7	.90	.06	Cattle and deer
8	0	0	
Average per day	.70	.04	

Water Consumption

The cattle drank about one-half gallon of water per day per animal more than during the preceding month. The average daily consumption of 6.78 gallons is rather small for dry weather. The small amount of water taken regularly by deer is included in this average.

Water Consumption - July 26 - August 8, 1937

Date	<u>Gallons Used</u> ^{1/}		Remarks
	Total	Average per head (16)	
July 26	113.47	7.09	Cattle
27	58.33	3.65	Cattle and deer
28	111.20	6.95	Cattle and deer
29	138.27	8.64	Cattle and deer
30	92.60	5.79	Cattle and deer
31	135.53	8.47	Cattle and deer
Aug. 1	84.13	5.26	Cattle and deer
2	103.43	6.46	Cattle and deer
3	96.30	6.02	Cattle and deer
4	93.57	5.85	Cattle and deer
5	134.87	8.43	Cattle and deer
6	129.17	8.07	Cattle and deer
7	112.23	7.01	Cattle and deer
8	115.87	7.24	Cattle and deer
Average per day	108.50	6.78	

^{1/} Evaporation subtracted.

Time of Salting and Watering

"Time" records are complete since July 20. During the last two weeks the records begin to show a definite trend in time of watering. Stock took water in the afternoon or evening on all but one day, July 27, when they were watered at 10:00 a.m. after weighing. They took water on two other mornings but also watered in the afternoon of those days. Stock came in for water as early as 2:00 in the afternoon and as late as 8:45 in the evening but the majority of the watering was done between 6:00 and 8:00 p.m.

The herd continued to break up most of the time but most of the records are easily interpreted.

The cattle salted in the morning on five days and in the afternoon on six days, omitting three days. Cattle salted about one hour before watering on one day. On two other days the interval was about four hours and there was no surety that stock went that directly to water. On three days the cattle salted immediately after drinking. On one of these days the interval was about an hour and there was no doubt that the stock went directly to salt. The interval was two hours or less on the other two days. On five days the stock salted in early morning and took water in the evening.

Pine Seedlings

Germination of pine seedlings has practically ceased, and mortality still continues at a fast pace. Most deaths are from heat.

Only those quadrats having live seedlings at the last examination were visited this time. It was felt that germination had dropped so low that it would not be worth-while to examine all of them. Considerable time was saved in doing this, the job being reduced from 10 man days at the last examination to three man days this time.

With only 485 seedlings left alive out of a total germination of 2170 and no new germination to be expected, it appears that possibly, less than 100 seedlings will be alive at the end of the season.

Record of 1937 Pine Seedlings

<u>Examination No.</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>
<u>Date</u>	June 1-11	June 21-26	July 6-8	July 19-22	Aug. 2-3
New Germination	1607	353	156	49	51/
Total Germination	1607	1960	2116	2165	2170
New Mortality	311	612	294	278	190
Total Mortality	311	923	1217	1495	1685
% Mortality to Date	19.4	52.9	57.4	69.1	77.6
Total Alive	1296	1037	899	670	485
New Mortality from Cattle	0	18	11	7	1
Total Mortality from Cattle	0	18	29	36	37
% of Total Mortality (to date)	0	2	2.4	2.4	2.2
Trampled (total no.)	0	14	23	30	31
Grazed (total no.)	0	4	6	6	6

1/ Germination only on the 367 quadrats having live seedlings at examination IV.

Other Studies

Clipping — Most of the material clipped during the preceding three weeks was air-dried during this period. This was done at the Burgess Spring area in an open frame covered with window screen. It is a satisfactory method.

Logging-Forage — The examination of 305 quadrats, to determine changes in ground cover due to logging, was completed during the first week of this period. These quadrats are located in six $2\frac{1}{2}$ x 5 chain plots distributed along a N-S control line in the east half of a section logged over in 1936. The ground cover of each quadrat was measured in 1935. This year only the quadrats that were disturbed by logging were reexamined. All changes due to logging were measured and recorded, listing the disturbing cause opposite each.

During this period transects were laid through each large plot to measure the relative amount of disturbance on each plot. Two transects were established in each $\frac{1}{2}$ x $2\frac{1}{2}$ chain block, or 20 in each $2\frac{1}{2}$ x 5 chain plot. The quadrats will be mapped to show the percent of each kind of disturbance in them. The two methods of measuring the large plots will be compared.