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RR
Pine Ranges
Burgess Spring

January 21, 1938

CATTLE SALT-WATER RELATIONSHIPS

Burgess Spring Experimental Range
1937

By

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CATTLE SALT WATER RELATIONSHIPS

One of the most controversial questions in range management is that of whether cattle should be salted near or away from water. The Forest Service maintains stock should be salted away from water so their grazing will be more evenly distributed over the range. Many stockmen, however, are convinced that cattle go to water immediately after salting. If the salt is placed far away, the cattle will make a long trip to water which will be useless as far as meat production is concerned and may even be detrimental; whereas, if the cattle were salted next to water, the walk would be avoided. In the hope of casting some light on this problem the study was undertaken at the Burgess Spring Experimental Range in the summer of 1937.

The area is 537 acres in size and was stocked with 16 Herefords made up of 4 yearling steers, 4 yearling heifers, 4 two-year-old steers and 4 three-year-old dry cows. The water holes had dried up by July 2 and after this date there was only one place to water, which was located in the corral on the west side of the pasture. The only salt ground was located east of the water and about 3/4 of a mile away.

An ingenious but serviceable device was constructed for measurement of water consumption amounts and times. In a still-well at one end of the water trough was a float on an arm. At the end of the arm was a magnet. When the water level was lowered, as in drinking, the magnet moved against a mercuroid switch making an electrical contact. This opened an electrical valve, and water flowed into the trough which made a mark on a Bristol recorder. The

water ran through a meter which recorded every gallon. It was also hooked to the Bristol and every 2 1/2 gallons that passed through the meter was recorded. As the water flowed into the trough, the water level rose, moving the magnet from the mercuroid switch and closing the valve. This device was constant within 1 to 3 gallons and accurate to 1 gallon or less.

Deer watered consistently throughout the year but in most cases their record could be separated from that of the cattle due to the small amount taken, and the time of drinking. Each morning a check was made of the tracks around the water and the presence of deer was recorded.

At the salt ground another device was installed for time recording. Five salt boxes were set out, each resting on a spring. As the cattle licked the salt, the box moved on the spring, making an electrical contact which was recorded on another Bristol. Both the salt and water Bristols were connected by a telephone wire so by throwing a switch, salt would be recorded on the water Bristol and vice versa, so in case one failed to work no records would be lost.

Soil around the salt boxes was raked each morning and the presence or absence of deer tracks was recorded. Deer salting times were easily separated from cattle times due to the much greater number of marks that were made by the cattle on the Bristol roll.

Quarter ground salt was used prior to July 11 but after this date small 5 lb. blocks were tried out in the hope that the cattle would lick it more vigorously and give us better time records. This was so successful it was continued for the rest of the season.

For perfect records the cattle would have to salt and water in one herd. Soon after they were on the range, however, they broke up into smaller groups, making it impossible in many cases to tell the exact amount of time elapsing between the salting and watering of any group. The groups generally followed the same general direction of travel while grazing and often met at the salt grounds. Eighty percent of the time there was only one salting per day, that is, all salting periods during the day being less than one hour apart. The average salting time was 26 minutes prior to August 11 when the 1/4 ground salt was used. After this date, when block salt was used, the average salting time was 50 minutes, the cattle taking longer to get their fill of block salt than ground salt.

In each of the three months July, August and September, cattle salted 2 days out of 3. The time of day the stock took salt varied quite a bit. The majority of their visits to the salt grounds were between 5 A.M. and 8 P.M. although they took salt at almost all other hours of the day at some time during the season. During the month of July roughly 2/3 of the salting periods were in the afternoon or evening. In August they salted about as much in the morning as they did in the afternoon or evening. In September about 2/3 of their salting periods were in the morning.

After salting the cattle generally wandered off grazing and by the time they were thirsty and started for water they had broken up into a few groups, the groups drinking 15 minutes to 2 hours or more apart. The cattle watered almost every day of the grazing season. They drank in the afternoon over 85 percent of the time, mostly between 4 and 8 P.M.

As indicated before, it was generally the practice of the cattle to salt more or less in one group and water in several bunches. Thus it is impossible to tell the exact amount of time elapsing between salting and watering. However, a minimum figure can be arrived at by averaging the time elapsing between the end of each salting period and the beginning of the next watering period occurring after this time. This assumes that each group of cattle watered at the first watering period occurring after their salting period. Averaging by months 5 hours elapsed between salting and watering in July. In August and September they waited for 8 hours before watering. The average figure for the three months was 7 hours and 22 minutes.

Conclusions

The cattle took almost twice as long to get their fill of block salt as they did quarter ground. Licking the block took longer to get a given amount of salt than did licking a heap of ground salt. Also when the group was large the cows and steers monopolized the blocks longer, making the yearling cattle wait until they were through.

Cattle watered almost every day and salted 2 out of 3 days.

Most of the salting periods were during the daylight hours although they sometimes occurred at all hours of the night.

The stock preferred to take salt in the afternoon or evening in July, at all times in August, and in the morning in September. Moisture content of the forage influencing their hunger for salt undoubtedly was the reason for this. No definite conclusions can be drawn as the daily grazing periods

are not known.

Cattle do not go to water directly after taking salt. The salt ground was located 3/4 of a mile from water, a distance that could easily be travelled by cattle in less than a half hour. The minimum average time elapsing between salting and watering was so great, almost 8 hours, it indicates conclusively that cattle do not go to water immediately after salting. Actual observations made while following the cattle show that one or more grazing periods usually follow a visit to the salt ground.

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R.W.G. 12-27-37
L.F.R. 1-13-38

TIME ELAPSING BETWEEN SALTING AND WATERING

Burgess Spring Experimental Range - 1937

Date	Salt Water Intervals	Date	Salt Water Intervals	Date	Salt Water Intervals
July 3	2:56	Aug. 1	5:53	Sept. 1	19:03
4	:47		3:36	2	10:27
	10:16		20:28	3	9:16
5	1:58	2	9:03	4	6:20
	:36	4	4:07	5	:17
6	11:23	5	9:16	6	4:26
8	14:40	6	8:59		2:42
9	1:11	8	12:00		:39
11	22:27	10	10:12	7	8:13
16	1:48		:21		4:24
17	5:48	11	1:00	9	21:01
20	3:53	15	1:53	10	9:46
22	7:55	17	7:01	12	20:44
	9:18		1:47	13	11:15
23	1:14		22:09	14	7:44
24	6:35		18:56	15	7:09
	:26	18	17:31	16	6:11
	4:22		16:04	17	5:23
26	:26	22	14:23		1:34
28	3:17		12:21	20	4:55
	:45		10:28	22	6:58
30	13:20		:46		5:36
31	:30	24	:27	25	:28
		25	14:47	28	11:21
			11:36	29	8:50
			4:31		
			3:24		
			:18		
		27	4:22		
		28	6:09		
Total by Months -	125:51		253:48		194:42
Average by Months	5:12 hrs		8:28 hrs		7:47 hrs

Seasonal Average - 7:22 hrs

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January 13, 1938

FREQUENCY DISTRIBUTION OF SALT AND WATER INTERVALS

Burgess Spring Experimental Range - 1937

Hours	No. of times	Average %
0 - 2	21	27.0
2 - 4	6	7.7
4 - 6	11	14.0
6 - 8	9	11.5
8 -10	8	10.3
10 -12	8	10.3
12 -14	3	3.8
14 -16	3	3.8
16 -18	2	2.6
18 -20	2	2.6
20 -22	3	3.8
22 -24	2	2.6
Total	78	100.