

Behavior of Yearling Cattle on Eastern Oregon Range¹

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Highlight

Brahman × Hereford and Hereford yearling steers, grazing a sagebrush-bunchgrass range in eastern Oregon, displayed a distinct early morning, late evening, and a variable midday grazing pattern. Bedding occurred after 9 pm and little or no grazing activity was observed between that time and daybreak. The distribution of activity by these yearling steers during the grazing day was similar to that of cows grazing semi-arid ranges as reported by others. Three-fourths of the total travel time but only 20% of the total grazing time occurred around the time of watering.

Man's attention to the behavior of cattle while on pasture resulted in the beginning of rotation grazing systems, according to Johnstone-Wallace and Kennedy (1944) who searched the early European literature and that published later by Americans. Behavior studies had their beginning in the United States when Shepperd (1921) recorded the activity of steers on pastures in the Northern Great Plains. Since then studies have been conducted on Eastern pastures (Hein, 1925; and Johnstone-Wallace and Kennedy, 1944); on Mid-western pasture (Atkeson et al., 1942) and prairie (Weaver and Tomanek, 1951; Moorefield and Hopkins, 1951; Peterson and Woolfolk, 1955; and Dwyer, 1961); on Southwestern rangeland (Cory, 1927; Culley, 1938; Box et al., 1965; Herbel and Nelson, 1966); and on California annual range (Wagnon, 1963).

A research project led by Farris Hubbert at the Squaw Butte Experiment Station in 1951-52 compared the performance of Brahman × Hereford and Hereford yearlings. Their behavior while on sagebrush-bunchgrass summer range was included as a part of the project but was only briefly mentioned in the final report, Hubbert et al. (1955).

I reexamined the data to gain insight into the behavior of yearling animals on our range. In particular I desired to know the time of watering, frequency of watering, and the traveling time associated with these occurrences. This paper presents those findings and summarizes other attributes of these yearlings as found by Hubbert.

Experimental Material and Procedures

Technicians observed the behavior of a single steer from each animal group in May, June, July, and August in each year. A typical observation period was normally four consecutive days; a crossbred steer was observed for 2 days and a Hereford steer observed for 2 days. A different steer for each period was selected by random and a neck bell attached to the selected animal to facilitate night observations. Forty head in 1951 and 28 head in 1952, equally divided by breed and sex, grazed on the same pastures in common.

Activity of the steers was re-

corded every 15 minutes in one of the following categories: grazing, travel when not grazing, drinking, salt licking, standing, and lying down. The steer's position was plotted on a detailed map, and the total distance traveled was computed. They also recorded, at each 15-minute interval, the wind direction, percent sky overcast, and presence or absence of precipitation. Precipitation amount, relative humidity, and temperature were recorded at the Station headquarters.

The yearlings grazed in pastures of approximately 2,000 acres; the maximum distance from water was 3½ miles. Crushed salt and a salt-bonemeal mix were close to water and available at all times.

Around-the-clock observation of these animals prior to the commencement of the study revealed that little or no grazing activity took place between the time the yearlings bedded at night and the time they arose in the morning. Thus, observations in any one day began at the initiation of grazing in the morning and terminated when the animal bedded down. This period constitutes the "grazing day."

Results

Calendar date of the observation period within each month and mean day temperature between 9 AM and 5 PM for each period is shown in Table 1. A trace of precipitation was observed on June 18, 1952 and a light drizzle of 3- to 4-hour duration was recorded at midday June 20, 1952.

The distances traveled, time spent traveling (not grazing), and time spent grazing per day by breed for each observation period within years is tabulated in Tables 2 and 3. Figure 1 shows the percent of time spent grazing within each hour of the grazing day in 4 observation periods in 1951 and 1952.

Very little time was expended in drinking water, the most in any day being 17 minutes. Only on 1 day in 1951, and 2 days in 1952, did the yearlings fail to drink in

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Table 1. Calendar dates and mean day temperatures (°F) of each observation period in 1951 and 1952.

| Period | 1951 | | 1952 | |
|--------|-----------|------|-----------|------|
| | Date | Temp | Date | Temp |
| 1 | 5/24-5/30 | 60 | 5/17-5/30 | 69 |
| 2 | 6/19-6/22 | 72 | 6/17-6/20 | 70 |
| 3 | 7/17-7/20 | 83 | 7/15-7/18 | 81 |
| 4 | 8/14-8/18 | 81 | 8/5-8/8 | 82 |
| 5 | — | — | 8/26-8/29 | 73 |

Table 2. Summary of average distance (miles) traveled, average time (hours) spent traveling (not grazing), and average time spent grazing per day during eight 24-hour observation periods by Hereford and Brahman × Hereford steers during 1951.

| Period observed | Herefords | | | Brahman × Herefords | | |
|-----------------|-------------------|-------------|--------------|---------------------|-------------|--------------|
| | Distance traveled | Travel time | Grazing time | Distance traveled | Travel time | Grazing time |
| 1 | 4.8 | 0.46 | 9.7 | 5.7 | 0.55 | 10.7 |
| 2 | 4.8 | 1.50 | 8.7 | 3.1 | 0.38 | 10.7 |
| 3 | 4.2 | 0.85 | 8.4 | 3.4 | 0.65 | 8.3 |
| 4 | 5.3 | 2.00 | 9.2 | 3.2 | 0.70 | 7.5 |
| Avg. | 4.8 | 1.20 | 9.0 | 3.8 | 0.57 | 9.3 |

Table 3. Summary of average distance (miles) traveled, average time (hours) spent traveling (not grazing), and average time spent grazing per day during twenty 24-hour observation periods by Hereford and Brahman × Hereford steers during 1952.

| Period | Herefords | | | Brahman × Herefords | | |
|--------|-------------------|-------------|--------------|---------------------|-------------|--------------|
| | Distance traveled | Travel time | Grazing time | Distance traveled | Travel time | Grazing time |
| 1 | 5.1 | 0.86 | 10.5 | 8.0 | 1.35 | 8.8 |
| 2 | 4.2 | 0.29 | 9.6 | 6.8 | 0.88 | 9.4 |
| 3 | 6.6 | 0.43 | 10.4 | 5.0 | 0.18 | 8.8 |
| 4 | 3.1 | 0.13 | 10.5 | 5.0 | 0.34 | 10.2 |
| 5 | 4.0 | 0.38 | 11.3 | 5.2 | 0.41 | 10.7 |
| Avg. | 4.6 | 0.42 | 10.4 | 6.0 | 0.63 | 9.6 |

a 24-hour period. The steers drank water 1.9 and 1.6 times per day, respectively in 1951 and 1952. The times of drinking varied; 30% occurred between 6 AM and 12 noon, 53% from noon to 4 PM, and the remaining times between 4 PM and 8 PM.

In the hour before the drinking hour 47% of the time was spent in grazing and 25% in traveling. Grazing and traveling time during the hour of drinking each accounted for 35% of the time spent. Grazing time increased to 44% in the hour after the drinking hour;

travel time decreased to 11%. Although a large portion (75%) of the day's travel time occurred in this 3-hour period around watering, only a small portion (20%) of the grazing took place in the same 3 hours.

In 1951 animals took salt in 5 days of the 16; but in 1952 this increased to 11 days out of 20. The animals took salt most often immediately prior to or immediately after watering. Twenty-five minutes was the longest time spent in taking salt.

Beginning at daybreak the steers

grazed for a period of approximately 5 hours (Fig. 1). In the following 7 hours, grazing was variable with no established pattern. Grazing began again in late afternoon and continued without interruption until dark when the animals began to bed down. Once bedded these animals tended to remain lying down until daybreak. The steers grazed 40% of the 24-hour day, or 53% of the grazing day.

Discussion

Hubbert et al. (1955) found greater differences within breeds than between breeds; thus, the breed differences shown in Tables 1 and 2 are not statistically significant.

Yearling steers grazing sagebrush-bunchgrass ranges differed very little in their pattern of daylight activity from that of cows observed elsewhere on semi-arid ranges (Cory, 1927; Wagnon, 1963; Dwyer, 1961; Weaver and Tomanek, 1951; and Moorefield and Hopkins, 1951).

Bedding down for the night occurred after 9 PM. This was 1 to 2 hours later than that recorded from most other studies. A possible source for explaining such differences may be the time standard used. The time of sunrise recorded in field notes of this study indicate that the time standard used was Pacific Daylight Saving Time. Once bedded, the steers seldom arose to graze until daylight. This differs from published reports and may be due to the class of animal being observed.

The mean number of times the animals watered per days agrees with that reported by Wagnon (1963) and Box et al. (1965). The taking of salt occurred less frequently in this study than that reported by Box et al. (1965), Dwyer (1961), and Wagnon (1963). This difference may be due to the form of salt offered, the class of animal being observed or salt content of the forage.

Hereford steers traveled about the same distance in each year. The distance traveled falls within the

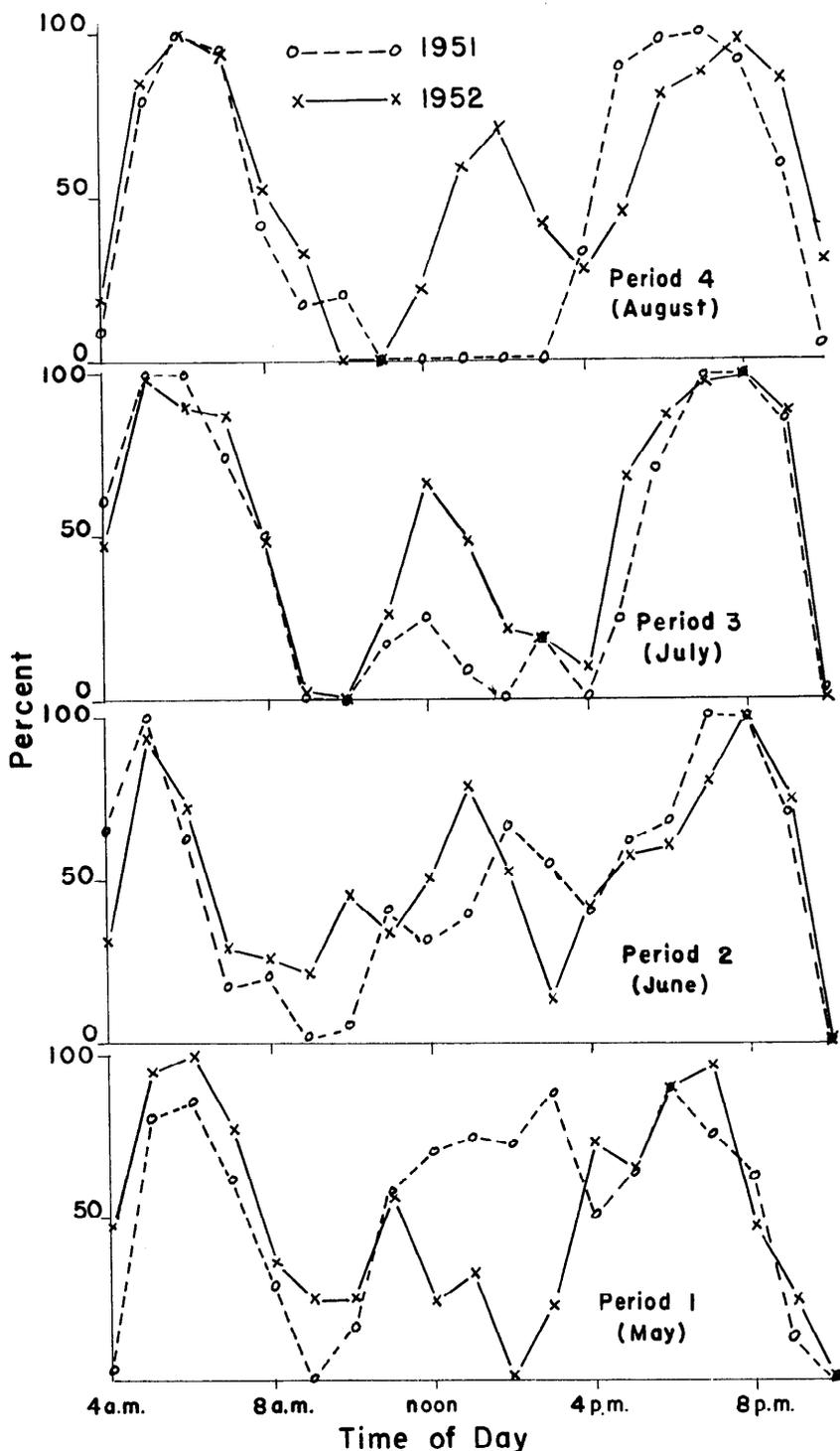


FIG. 1. Percent of time spent grazing within each hour of the grazing day by yearling steers.

4 to 5 mile range that Herbel and Nelson (1966) suggested as the upper limit for this breed. Cross-bred steers traveled 6 miles per day in the wet summer of 1952 but only 3.8 miles in 1951, a much dryer summer.

Midday grazing was not closely related to simple mean day-temperature. The steers spent somewhat more time grazing in midday early in the grazing season than later when day-temperature increased. This relation was not as

close as that reported by Dwyer (1961).

These data, though coming from the behavior of yearling steers, are believed applicable as well to heifers. I base this upon the lack of field notation indicating that the observed animal behaved differently from those in the group with which it was a part.

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