

POPULATION CHARACTERISTICS AND SOCIAL AND REPRODUCTIVE BEHAVIOR OF
THE GRIZZLY BEAR IN YELLOWSTONE NATIONAL PARK

by

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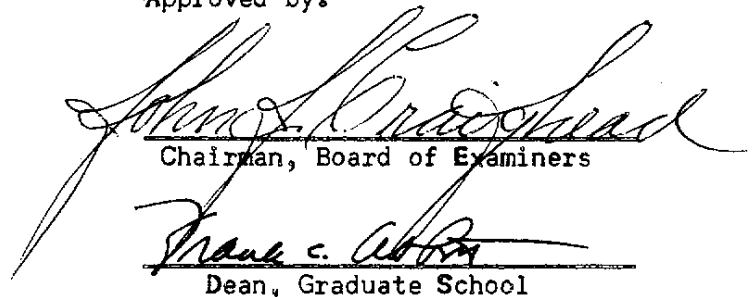
Presented in partial fulfillment of the requirements for the degree of

Master of Science in Wildlife Technology

MONTANA STATE UNIVERSITY

1962

Approved by:


Chairman, Board of Examiners


Dean, Graduate School

JUN 1 1962

Date

Hornocker 1962

REPRODUCTIVE BEHAVIOR

Observations

Observations on reproductive behavior were confined to the Trout Creek segment of the population in all three years. Two hundred twenty-six observations on this type of behavior were recorded; 115 involved adult males and 111 were made on females in breeding condition. Actual copulation was observed 41 times and activity between males and females other than copulation, 55 times. Copulation was effected by the male mounting the female and clutching around her body with his forelegs. Duration of copulation ranged from 5 minutes to 41 minutes, the average being about 16 to 20 minutes. The bulk of the observations were made at the concentration site, but some breeding activity was noted in other areas of Hayden Valley.

Number of Individuals Breeding

The number of individuals, both females and males, observed breeding in all three years are presented in Table XV. Seventeen females, positively identified as different individuals, were observed breeding. In addition, six were observed mating some distance from the observer and where poor light conditions made positive identification impossible. Twenty-seven positively identified males were involved in breeding activity during the three years. In addition, six were observed under circumstances where identification could not be

TABLE XV
NUMBER OF DIFFERENT INDIVIDUALS OBSERVED BREEDING, 1959-1961

<u>No. Different Bears</u>				<u>No. Diff. Days</u>		<u>No. Diff. Days</u>		<u>No. Diff. Times</u>		<u>No. Diff. Times</u>		Ratio, Breeding Females/ Breeding Males*
<u>No.</u>				<u>Identified</u>		<u>Unidentified</u>		<u>Identified</u>		<u>Unidentified</u>		
<u>Identified</u>				<u>Bears Observed</u>		<u>Bears Observed</u>		<u>Bears Observed</u>		<u>Bears Observed</u>		Breeding Females/ Breeding Males*
<u>No.</u>				<u>Breeding</u>		<u>Breeding</u>		<u>Breeding</u>		<u>Breeding</u>		
<u>Fem.</u>	<u>Males</u>	<u>Fem.</u>	<u>Males</u>	<u>Fem.</u>	<u>Males</u>	<u>Fem.</u>	<u>Males</u>	<u>Fem.</u>	<u>Males</u>	<u>Fem.</u>	<u>Males</u>	
1959	3	4	-	-	3	-	4	4	-	-	1:1.33	
1960	5	10	1	3	10	1	12	12	1	1	1:2.00	
1961	9	13	5	3	13	5	19	19	5	5	1:1.44	
Total	17	27	6	6	26	6	35	35	6	6	1:1.59	

* Includes only identified females.

made. It should be pointed out that in each year the 17 females were different individuals, but the males were not. Two of the 27 males bred females in all three years and five bred females in two of the three years.

Table XV shows that the 17 different, positively identified females bred one or more times on 26 different days. They were bred by 27 different males (22 if males breeding in more than one year are considered) a total of 35 times. Some females were bred by as many as four different males on a given date and each was considered a separate mating. When a female was bred by the same male more than once on a given date, a single mating was recorded. The same male was observed to copulate with one female as many as six times in a single evening; only one mating was recorded in these instances, even though more than one mating appeared successful. This was done in order to simplify presentation of the data.

Table XV also shows that the ratio of identified breeding females to breeding males was 1:1.59 for the three-year period.

The frequency of breeding of the 17 identified females and the number of different males accepted by females breeding more than once are presented in Table XVI. Nine of the 17 females were observed to mate a single time; eight were observed mating 26 times with 18 different males.

A single mating was recorded for each of the six unidentified females. Three of these females mated with identifiable males and three with unidentifiable individuals.

TABLE XVI
FREQUENCY OF BREEDING OF 17 IDENTIFIED FEMALES, 1959-1961

	No. of Identified Females Observed Breeding a Single Time	No. of Identified Females Observed Breeding More Than One Time	No. of Times Observed Breeding	No. of Different Males Accepted
1959	2	1	2	2
1960	3	2	9	8
1961	4	5	15	8
Totals	9	8	26	18

Breeding Season

The breeding season extended from about June 10 to July 10. For all three years, the first observed mating occurred on June 9, in 1961, and the last on July 10, in both 1960 and 1961. Some activity may occur earlier in June--observations are lacking for this period. Breeding activity reached its highest intensity in late June. Table XVII shows that, for 17 individual females breeding one or more times on 26 different days, 13 or 50 per cent of the matings occurred during the period from June 21 to June 30. During the nine-day periods immediately preceding and following the June 21-30 period, six or 23 per cent of the matings occurred in each. These periods of observed breeding activity of identified females are graphically represented in Figure 4. One of the six unidentified females bred during the June 11-20 period, three during June 21-30, and two during July 1-10.

TABLE XVII
PERIODS OF OBSERVED BREEDING ACTIVITY IN 17 IDENTIFIED
AND 6 UNIDENTIFIED FEMALES, 1959-1961

Period	No. of Identified Fe- males Observed Breeding	Per cent of Total Identified Females Observed Breeding	No. of Unidentified Females Obs- erved Breeding	Per cent of Total Uniden. Females Obs- erved Breeding
June 1-10	1	4	-	-
June 11-20	6	23	1	17
June 21-30	13	50	3	50
July 1-10	6	23	2	33
Totals	26	100	6	100

Estrus Periods

Considering the population as a whole, the number of females observed in estrus followed a curve suggested by Figure 4--50 per cent of the observed matings occurred in late June. There appeared to be some variation, however, in the length of the estrus period in individual females. Some were observed to breed a number of times over a rather extended period while others bred but a single time. It is realized that not all the breeding activity was observed; however, behavior of individual females and interest shown them by males at the concentration site appeared to indicate a particular female's breeding condition. Females in estrus attracted, and were receptive to, practically all adult males. Prior to the estrus period, females attracted

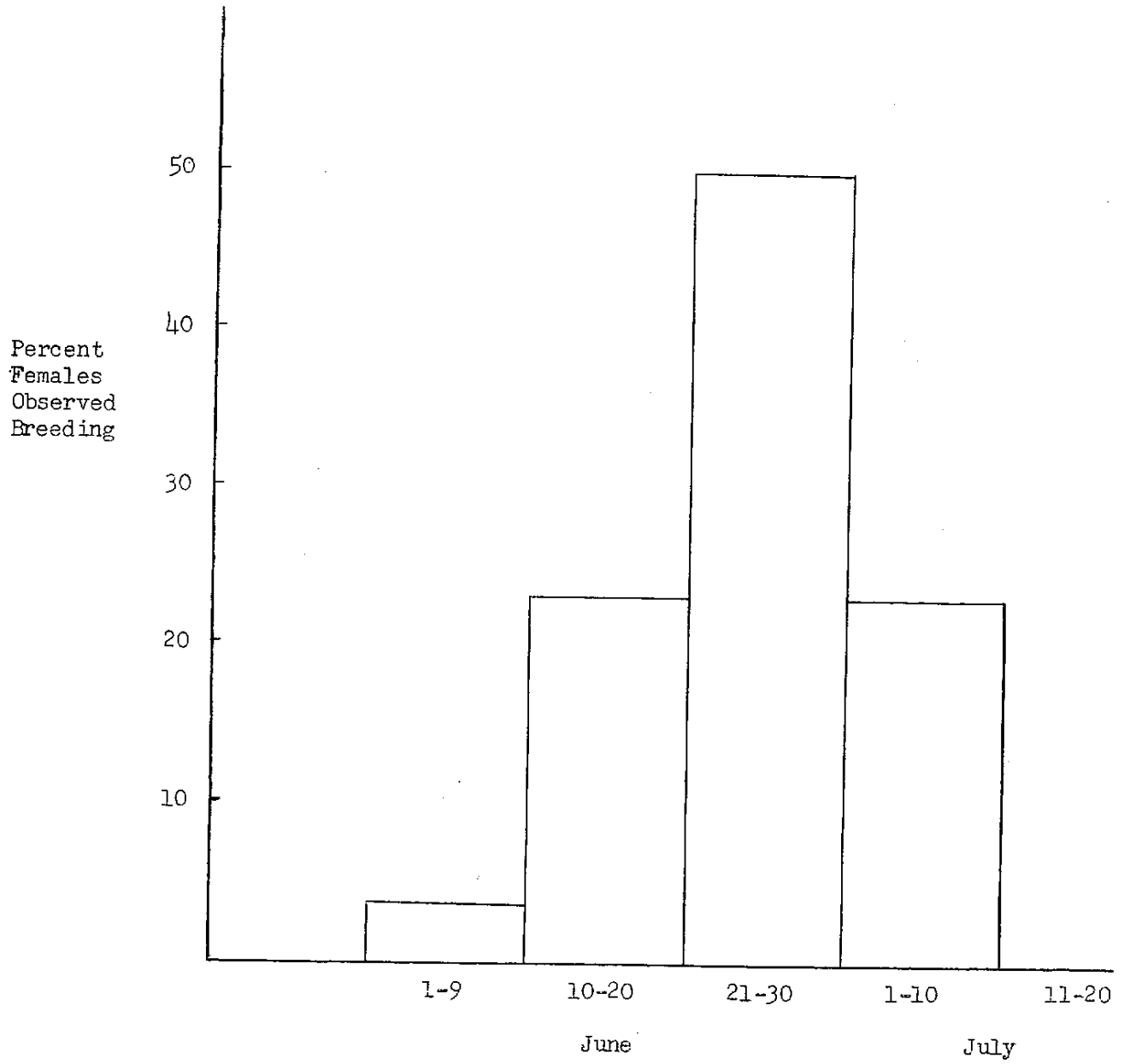


Figure 4. Period 26 females observed breeding, 1959-1961.

fewer males and were receptive to none of them. After estrus, they were ignored by the males.

Observations on three females before, during, and after estrus are presented in Table XVIII. The estrus periods of these three females typify fairly closely that observed in all identified females. Number 65 exhibited reproductive behavior on June 9, 10, and 11 in 1961. Several males displayed interest in her, but she was not receptive to any of them. She was not observed on June 12, 13, or 14, but was observed breeding on June 15. From June 16 to June 21, she displayed reproductive behavior but accepted none of the males that were attracted to her. No observations were obtained for June 22, 23, and 24, but on June 25 and 26 this female bred again. The following day, June 27, and for the rest of the season, she exhibited no reproductive behavior and no males displayed interest in her.

Number 15, a young appearing female, was first observed on June 21 in 1961. She was not observed again until June 26. This female showed no reproductive behavior on either date and no males were attracted to her. On June 28 she attracted a number of males and was receptive to their advances. She was bred by one large male while the observer was present. On June 30, this female displayed no reproductive behavior and was ignored by all males. This remained unchanged until the end of the observational period.

Number 12's Mate was a large female that Number 12, the Dominant Male, attempted to defend in 1960. She was first observed with the Dominant Male on June 17, and again on June 24, 25, and 26. She

TABLE XVIII
OBSERVATIONS RELATED TO ESTRUS PERIODS IN THREE FEMALES

Female	Behavior Prior to Breeding	Actual Breeding	Behavior After Breeding	Duration of Observations, in Days
No. 65	June 9 10 11	June 15 25 26	June 16 17 18 19 20 21 27 28 30	July 2 3 4 5 6 27
No. 15	June 21 26	June 28	June 30	July 2 3 6 9 11 12 21
No. 12's Mate	June 17 24 25 26	June 30 July 1 3 6 10	July 2 4 5 13 14 17 18	31

definitely exhibited reproductive behavior on each of these dates, but accepted no male. No observations were made from June 26 through June 29. On June 30 and July 1 she was bred by four different males. She attracted a number of males on July 2, but all were driven off by Number 12. July 3 she bred again, but on July 4 and 5, the Dominant Male drove away other males. This female bred again on July 6 and 10,

mating with the Dominant Male on the latter date. When again observed on July 13 and thereafter, she displayed no reproductive behavior. The Dominant Male and all other males exhibited no interest in her for the remainder of the season.