

FERAL HORSE DISTRIBUTION, HABITAT USE
AND
POPULATION DYNAMICS IN THEODORE ROOSEVELT NATIONAL PARK

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Objectives

Description of the ecological niche feral horses fill in Theodore Roosevelt National Park requires information on reproductive rates, home range size, individual and band affinity to home ranges, food and shelter requirements and seasonal diets. Therefore, the identification of individual animals and their social groups or bands was the initial objective of this study. Subsequent objectives will be to:

- A. identify the number, size and location of home ranges for harem and bachelor stallion bands;
- B. describe daily and seasonal movements of bands within identified home ranges;
- C. describe habitat and landform types used by horses for mating, foaling, foraging, and resting;
- D. describe seasonal horse diets; and,
- E. collect data on sex, age and social hierarchy within respective bands to facilitate estimation of horse population growth rates.

This information will be used to accomplish the project's goal; to integrate horse ecological requirements with those of elk (Cervus elaphus), bison (Bison bison) and the park's vegetation communities to determine the large ungulate carrying capacity of Theodore Roosevelt National Park.

Methods

Identification of individual horses and bands was accomplished through daily observation. Color, markings, approximate age, sex, and apparent social rank was recorded for individual horses under surveillance. Identification records were augmented with a 30 year field journal kept by Mr. Thomas Tescher, which provided information on age and parentage for feral horses within the park.

Observation periods lasted 4-8 hours and data on activity (feeding, mating, socializing, foaling, resting), and landform and vegetation type occupied was recorded. Each time a band or individual was located, the locus was noted on a 1:250,000 contour map. These locations were used in the determination of home ranges and home range size. Fresh fecal samples were collected monthly, frozen and shipped to Bozeman for later dietary analysis.

Data collection began 12 June 1989 and continued, uninterrupted until 8 September 1989. Field work will resume in mid-March 1990.

Results

Eight different feral horse bands were identified within Theodore Roosevelt National Park (Table 1). Band size ranged from 17 head (Brookman - Band A) to 3 head (Iron Grey - Band F). At the end of field observations, 31 August 1989, the combined count from all bands was 70 head. Two lone stallions brought the total feral horse population in the park to 72.

The 1989 summer population data is summarized in Figure 1. During the summer, the mare to stallion ratio among both adult and subadult portions of the population was approximately 1:1. There was a 0.6:1 colt to mare ratio (subadult mares were not included in the calculation).

In early June most of the horse activity was concentrated in the eastern and northeastern portions of the park surrounding Boicourt and Sheep Butte Springs (Fig. 2.). About 30 days later feral horse distribution had shifted to the extreme southeastern area of the park (Fig.2). Several factors may explain this shift.

First, visitor interaction with bands increased from early June to early July which may have caused horse displacement to a less visited portion of the park. Water availability may

Table 1. Feral horse bands by age - 1989.

<u>BAND A - BROOKMAN</u>	<u>BAND E - MIDNIGHT</u>
2 - Stallions over 5 years	1 - Stallion over 5 years
5 - Mares over 5 years	2 - mares over 5 years
1 - 4 year old Stallion	1 - 4 year old Stallion
1 - 4 year old Mare	1 - 2 year old Stallion
1 - 2 year old Stallion	1 - 2 year old Mare
2 - Yearling Stallions	1 - Yearling Stallion
2 - Yearling Fillies	1 - Yearling Filly
1 - '89 Stud Colt	1 - '89 Stud Colt
2 - '89 Fillies	-----
-----	9 - Band Count
17 - Band Count	
<u>BAND B - PAINTED CANYON</u>	<u>BAND F - IRON GRAY</u>
1 - Stallion over 5 years	1 - Stallion over 5 years
2 - Mares over 5 years	1 - Mare over 5 years
1 - 2 year old Stallion	1 - Yearling Stallion
1 - Yearling Filly	('89 Stud Colt killed by
1 - '89 Stud Colt	Stallion
1 - '89 Filly	-----
2 - 2 year old Bay Fillies	3 - Band Count
(lost 1 yearling Stallion)	

10 - Band Count	
<u>BAND C - TARGET</u>	<u>BAND G - BAD BLACK</u>
1 - Stallion over 5 years	1 - Stallion over 5 years
2 - Mares over 5 years	1 - Mare over 5 years
3 - 4 year old Mares	1 - 3 year old Mare
1 - 3 year old Mare	1 - Yearling Filly
2 - Yearling Fillies	1 - '89 Stud Colt
3 - '89 Stud Colts	1 - '89 Filly
-----	-----
12 - Band Count	6 - Band Count
<u>BAND D - BLUE ROAN/ARAB</u>	<u>BAND H - BOYS CLUB</u>
2 - Stallions over 5 years	2 - 4 year old Stallions
2 - 2 year old Fillies	3 - 3 year old Stallions
1 - Yearling Stallion	2 - 2 year old Stallions
1 - '89 Filly	-----
-----	7 - Band Count
6 - Band Count	
	<u>2 LONER INDIVIDUALS</u>
	5 year old Bay Stallion
	(fence)
	5 year old Stallion
	(Painted Canyon Son)

	72 HORSES TOTAL

POPULATION CHARACTERISTICS Summer 1989

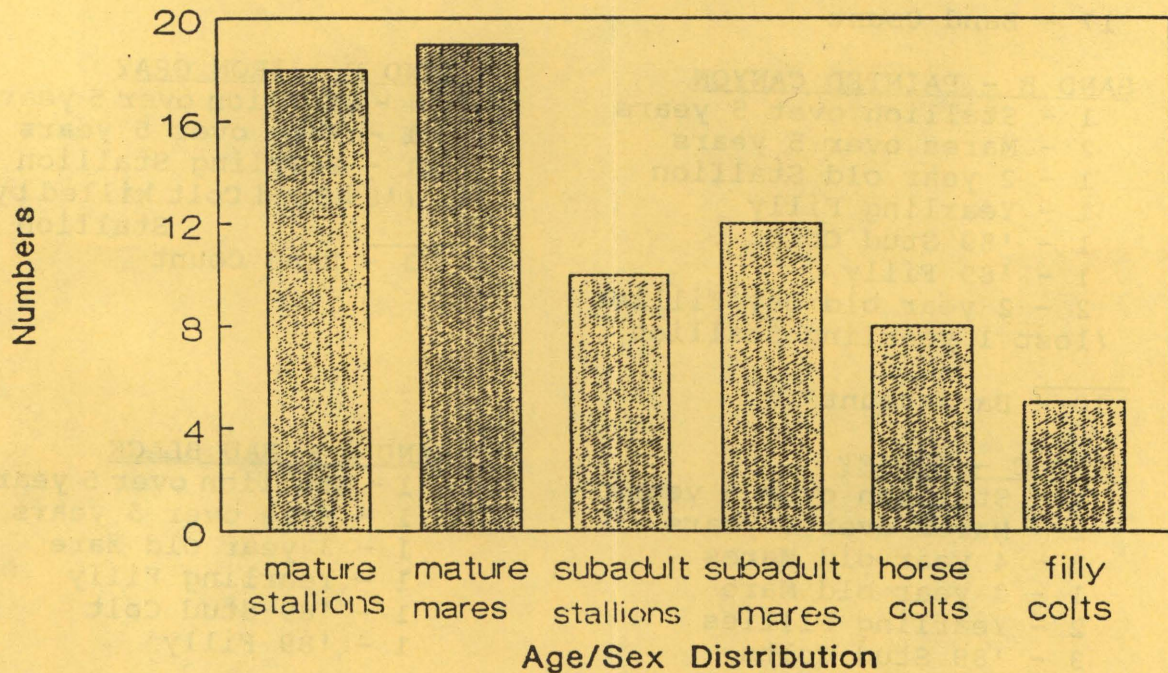


Figure 1. Summary of summer 1989 population census. Mature animals are 3 or more years of age. Subadult animals are 1-2 years old and colts are animals born during 1989. Census does not include two colts (1 horse and 1 filly) which died from stallion-caused injuries and one yearling stallion removed from the park because of similar injuries.

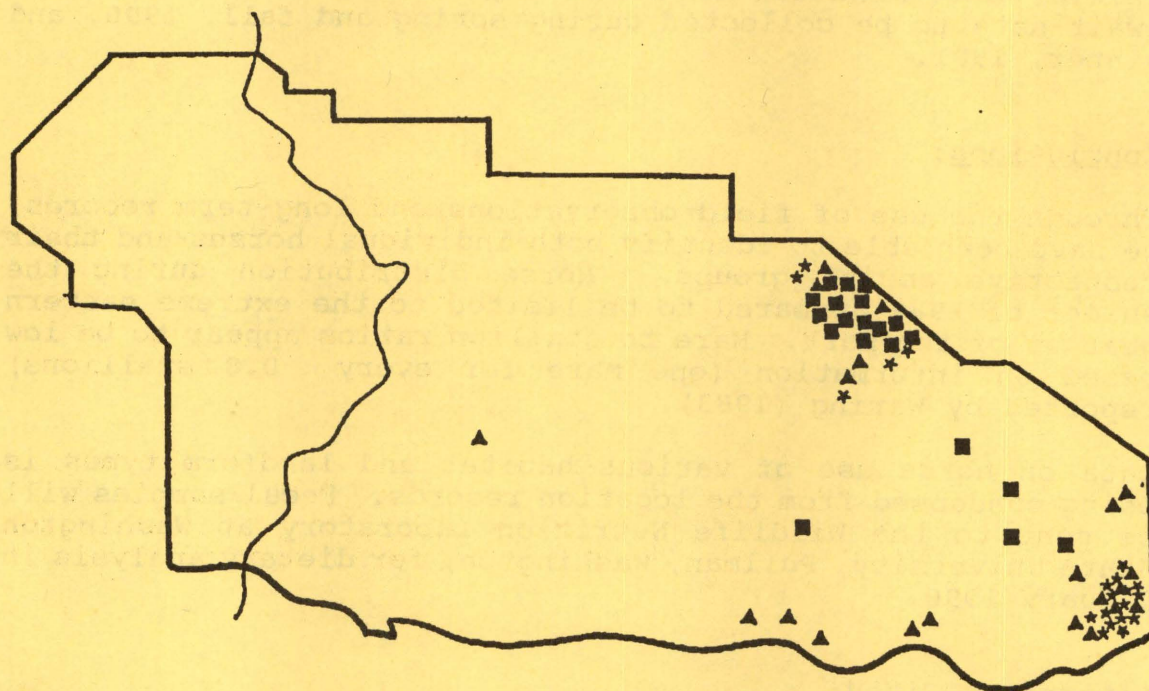


Figure 2. Seasonal distribution of feral horses within the south unit of Theodore Roosevelt National Park.

- - band sightings during June 1989;
- * - sightings during July 1989; and,
- ▲ - sightings during August 1989.

have also led to the concentration of feral horse activity in the extreme southeastern corner of the park. The apparent decline in water flows in the Sheep Butte and Boicourt Springs during late June may have caused the horses to move to a more abundant water source at Southeast Corner Spring. However, because feral horse bands returned to the Boicourt/Sheep Butte Springs area periodically during August (Fig. 2), water availability may not be as an important factor as visitor pressure influencing band displacement.

Initial determination of home range size and location must await data to be collected during spring and fall, 1990, and winter, 1991.

Conclusions:

Through the use of field observations and long-term records, we have been able to identify both individual horses and their respective social groups. Horse distribution during the summer of 1989 appeared to be limited to the extreme eastern quarter of the park. Mare to stallion ratios appear to be low based on information (one mare for every 0.8 stallions) reported by Waring (1983).

Data on horse use of various habitat and landform types is being condensed from the location records. Fecal samples will be sent to the Wildlife Nutrition Laboratory at Washington State University, Pullman, Washington, for dietary analysis in January 1990.

Literature Cited:

Waring, G.H. 1983. Horse Behavior. The Behavioral Traits and Adaptations of Domestic and Wild Horses, Including Ponies. Noyes Publications. Park Ridge, NJ, USA.