

Seasonal Movements and Home Ranges of Feral Horse Bands in Wyoming's Red Desert

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Abstract

Feral horses have seasonal movement patterns which correspond to their use of water sources and areas near ridges. Home ranges of horse bands varied in size from 73 to 303 km². Some bands shared use of a common home range. Those bands having a common range followed similar movement patterns within their home ranges. A herd is defined as a structured social unit made up of bands following movement patterns within a common home range.

Movements of feral horses can be important to managers in determining the effects of the horses on the range and in setting boundaries of herd management units. Previously reported feral horse home ranges have varied from 0.9 km² on Sable Island (Welsh 1975) to 78 km² for a spring and summer home range in Stone Cabin Valley, Nev. (Green and Green 1977). As part of a general study of feral horses in Wyoming's Red Desert (Miller and Denniston 1979, Boyd 1980, Miller 1980, Miller 1981, Miller 1983), movements and home ranges of the horses were determined. The objectives of this portion of the study were to determine the size of band use areas and to determine if a pattern existed in time of use for any one area.

Methods

Research was begun in June 1976 and continued until September 1979. Bands were identified with a photo file and card file system keyed on color combinations and readily identifiable individual horses. When bands were identified their locations were plotted to quarter section of USGS to topographic maps. Bands were located from the ground using binoculars and a spotting scope. A number of locations were obtained while working on other portions of the study, such as while following breeding horses. When a band had not been located for 2 weeks, the known use area of that band and adjacent areas were searched. Between November 1977 and April 1979 bands were also located from an airplane during 16 flights made to study habitat use of feral horses and cattle (Miller 1983).

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The author thanks Lee Boyd, Val and Ray Hobbs and R.H. Denniston II for their help. Flight time was paid for by: The International Society for the Protection of Mustangs and Burros; Wild Horse Organized Assistance; The Rock Springs District of the Bureau of Land Management; the Department of Zoology and Physiology of the University of Wyoming; Mrs. Margaret Haggard, Mr. and Mrs. C.T. Mallory; R.H. Denniston II; Lee Boyd and Ann Miller.

In determining home ranges I modified Mohr's (1974) minimum home range method in that 2 outside points were not connected if the area which would be included was easily observed and regularly covered during field work. Any band using such an area should have been easily spotted. I made this modification to avoid inflating home range estimates.

Results

Only one of the home ranges I determined in the Red Desert fell within the range of previously reported sizes (0.9 km² to 78 km²) (Welsh 1975, Green and Green 1977). Most home ranges were larger than any previously reported (Table 1). Locations and identification of bands was much more difficult during winter, as bands were much more wary in winter. A band which we could regularly approach within 400 m in the summer often could not be approached within 1 km in winter. This wariness, combined with limited access to the area and fewer field days available during fall and winter, limited the number of fall and winter locations.

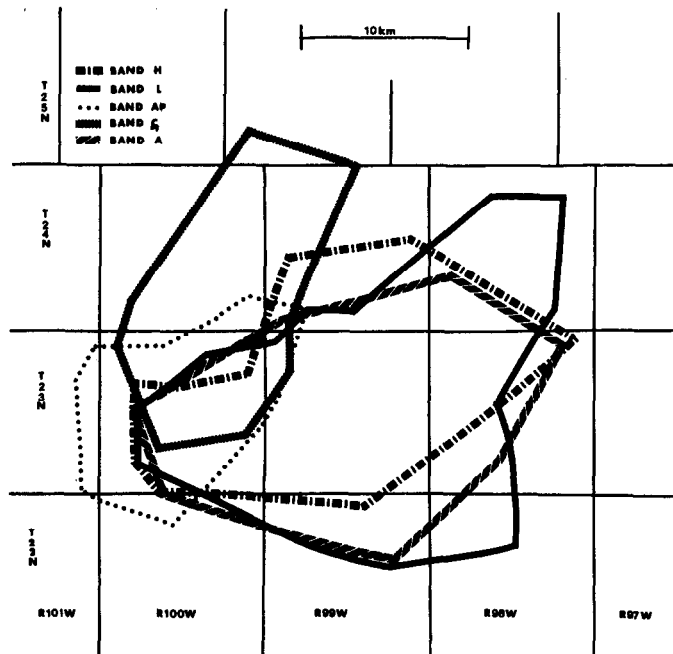


Fig. 1. Home ranges of Bands A, H, and L from Herd #1 and Bands AP and CZ from other herds.

Table 1. Home ranges of feral horse bands in Wyoming's Red Desert.

Band	Home range size (km ²)	Part of herd #1	Dates	Number of locations by season			
				Dec.-Mar.	Apr.-May	June-July	Aug.-Nov.
A	264	yes	8/76-2/79	5	8	26	19
B	197	yes	8/76-7/79	2	14	28	16
N	233	yes	8/76-9/79	6	12	52	22
L	303	yes	6/76-8/79	5	40	67	19
Y	73	no	8/76-10/79	1	6	51	16
AC	158	yes	4/77-10/79	1	2	58	6
AE	88	?	6/77-8/79	0	4	33	8
AP	101	no	6/77-9/79	0	10	57	9
CV	166	yes	10/77-10/79	0	7	29	9
CZ	145	no	5/77-7/79	1	7	30	15
AL	93	no	8/76-7/79	1	7	40	13

The home ranges of some horse bands in the Red Desert overlap almost completely (Fig. 1, Bands A, H and L), and I believe these bands can be said to have a common home range. Bands with a common home range follow similar movement patterns within that home range. An illustration of this is that bands with similar movement patterns were often first located and last located near a particular well or foraging site with a few days of each other (Table 2).

Figure 1 illustrates home ranges for bands from more than one herd and shows that herd home ranges do overlap. Association of bands from different herds is not unusual at a water source or feeding site. All bands from one herd do not always move at the same time but usually follow similar patterns in their movements and usually move as groups of bands (Table 2).

Bands of horses followed very similar movement patterns each year of the study, arriving in a portion of their home range at approximately the same time each year. In effect, they followed something similar to a rotation grazing system in which the same pasture is used at the same season each year. A composite of the seasonal locations of 6 bands which had overlapping home ranges and similar movement patterns (Fig. 2) shows discrete winter and summer seasonal use areas, indicating the similarity in movements and habitat selection. The large sizes of the April-May and the August-November seasonal ranges (Fig. 2) reflect the variation in weather conditions during those 2 seasons and the responses of the

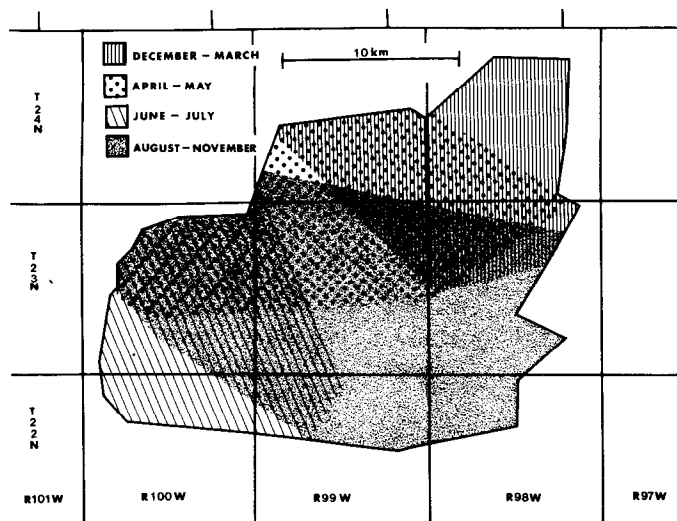


Fig. 2. A composite of the home ranges and seasonal locations of Herd #1, Bands A, B, H, L, AC and CV.

Table 2. Dates of locations of bands from Herd #1 at selected points in the Red Desert.

	Band					
	A	B	H	L	AC	CV
1976						
Last located at 4th of July well	8/8	9/26	8/15	—	—	—
First located at well in S7,T23N,R99W	—	8/28	8/28	8/28	—	—
Last located at well in S7, T23N, R99W	—	9/10	10/16	9/25	—	—
1977						
First located at well in S7,T23N,R99W	4/24	7/7	7/6	4/30	5/28	—
First located at 4th of July well	6/10	5/25	6/10	6/10	6/10	—
Return to well S7,T23N,R99W	9/24	7/7	7/6	7/7	7/6	—
Last Located at 4th of July well	9/2	9/3	9/3	6/27	6/27	9/2
1978						
First located at well S7,T23N,R99W	4/23	—	—	4/23	—	—
First located at 4th of July well	6/7	6/7	6/7	6/8	6/15	6/17
Last located at 4th of July well	8/11	7/27	8/11	7/14	7/14	7/12
First located at El Paso well #1	9/9	9/9	9/9	7/27	7/27	7/27
Last located near Chandler-Simpson well	10/1	9/9	10/1	8/10	9/17	8/10
1979						
First location at well in S7,T23N,R99W	—	—	—	5/28	—	—
First location at 4th of July well	5/28	5/19	5/21	5/21	6/10	5/20
Last location at 4th of July well	disbanded	6/13	7/16	7/30	7/1	6/20

Dates given are those for locations and may not be the exact dates when bands arrived at or left any site, but they do serve to illustrate similarity and dissimilarity in the timing of movements for bands within one herd.

horses to weather (Miller 1983).

Discussion

An interband dominance hierarchy has been described for the bands whose movements are reported here (Miller and Denniston 1979). Miller and Denniston (1979) suggested that a structured social unit made up of bands existed and defined that unit as a herd. The data presented here show that some of these same bands follow similar movement patterns within overlapping home horses. An expansion of the definition of a herd given in Miller and Denniston (1979) follows: a herd is a structured social unit made up of bands following similar movement patterns within a common home range. An examination of the home ranges presented in Green and Green (1977) and in Feist and McCullough (1976) suggests that herds may also be found in other feral horse populations.

Herds may be a deme or a breeding unit and could show significant morphological variation as found in demes of Uganda kob (Buechner and Roth 1974). Support for this idea is found in the variation in the proportion of certain coat colors seen in horses from different localities in the Red Desert. Pintos and greys, which are infrequently seen in the population as a whole, are common in certain areas.

Clutton-Brock and Harvey (1977 and 1978) suggested that large home ranges result where resources are strongly clumped, widely dispersed or unpredictable in abundance. Altmann (1974) and Crook et al. (1976) have predicted extensive home range overlap where several essential resources have very restricted distributions. Denham (1971) made a similar argument that clumping of populations should be high where predictability of resources is low. Water sources and ridges which are used as cover in the Red Desert can be considered strongly clumped or as having restricted distributions and as being widely dispersed from one another. Marquiss (1957), studying vegetation composition and ground cover of relict areas in the sagebrush grassland type adjacent to my study area, found variations in ground cover and composition which were significant at the 0.01 level between sites and between years. From his data I believe vegetation and hence forage in this section of the Red Desert may be considered both patchy and unpredictable in availability from year to year. If these factors are producing the large home range sizes, extensive home range overlap, and strongly clumped population distributions found in

the Red Desert horses, then changes in the distribution and/or availability of resources can be expected to change home range and movement patterns.

Herds of horses, because they follow similar seasonal movement patterns and thus have similar habitat using patterns within a common home range, are logical management units for future feral horse management in the Red Desert.

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