

.44A4c Introduction

The Buffalo Hills Planning Unit - Unit Resource Analysis (Step 3) conforms to the Bureau of Land Management (BLM) Manual 1605.44; May, 1977.

Within the Buffalo Hills Planning Unit wild horses are known to occupy four areas and wild horses/burros are known to occupy two areas (see Range Management Step 3 URA, Wild Horse/Burro Overlay No. ).

Information as to when the wild horse (Equus caballus) and burro (Equus asinus) first appeared in the Buffalo Planning Unit is undocumented.

The wild horse can be biologically classified as an "exotic" animal in North America (Hall 1972). Historically, it is difficult to state how or where horses first escaped, or were stolen, from early Spanish explorers and settlers and reverted to a wild state. On Columbus' second voyage in 1493, he landed horses from Andalusia in the West Indies. Ponce de Leon brought horses from Cuba or Puerto Rico to the coast of Florida in 1521 (Simpson 1951). Many homesteaders and ranchers abandoned their animals to the open range when they went out of business, and many others released quality stock in the hopes of upgrading the existing wild horse herds to supply their workstock. Refer to Section .44A-1 of the Range Management URA for a detailed description of the location and numbers of domesticated horses the livestock operators grazed on the open range in the Buffalo Hills Planning Unit. Capture and exploitation of these animals has probably taken place since their introduction. The first published account of horse gathering in this area appeared in an article published in 1909. The article states, ". . . who in six years . . . has shipped from Nevada to middle western markets more than seven thousand splendid horses" (Steele 1909). Conversations with older residents of this area indicate that horses were regularly rounded up and sold to slaughter houses in California. Many were simply shot for their hides or merely to save them from competition for forage with domestic livestock. At one time the City of Winnemucca, Nevada, had a processing plant which converted horse carcasses to fertilizer. Not all captured horses were slaughtered. Many were utilized as cow horses, rodeo stock, draft animals, cavalry mounts and for pleasure riding.

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Prepared by: Rodger Bryan

All of the "S" should be changed to "BH"

The burro went west with the Spanish Conquistadors to the New World; they remained in the West Indies several years before setting foot on the mainland. Burros soon appeared in northeastern Brazil and in Mexico and were imported into Venezuela perhaps before 1535, and soon spread to Argentina and Peru. The trade route from Vera Cruz to Mexico City, established by Cortes in 1522, was important for three centuries; pack trains or burros and mules transported as much as fifty thousand tons a year over this route until the advent of the railroad in 1973.

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The first burros to enter the United States probably belonged to the Spanish colonizer Juan de Onate who crossed the border from Mexico in about 1599 near present-day El Paso, Texas. A few years after Onate's arrival pack trains of burros were moving between Chihuahua, Mexico, and the Rio Grande Valley in New Mexico. From the Rio Grande basin they quickly spread to other parts of the West, playing a diversified role in the mining economy that spread from New Mexico through the western United States and into Canada and Alaska from the eighteenth to the early twentieth century. Burros also moved eastward along the Santa Fe Trail to Missouri (Brookshier 1974).

Protection of wild horses/burros began with the passage of Public Law 86-325 in 1959 which forbade the use of aircraft or motorized vehicles to capture or kill wild horses. Public Law 92-195 in 1971 charges the Secretaries of the Departments of Interior and Agriculture with the protection, management, and control of wild, free-roaming horses and burros which occupy the lands under their respective jurisdictions. Public Law 92-195 created an advisory board to make recommendations on the management and protection of wild horses and burros.

The Federal Land Policy and Management Act of 1976, Public Law 94-579, provides for the use of helicopters in the gathering of wild horse and burros, and for the use of motor vehicles in transporting captured animals.

Public Law 95-514, the Public Rangelands Improvement Act of 1978, has amended Subsections 3(b), (c), and (d) of PL 92-195 to state that the Secretary shall: (1) maintain a current inventory of wild horses/burros on given areas of public lands to determine whether and where an overpopulation exists; (2) "determine appropriate management levels of wild horses/burros on these areas; and (3) determine whether appropriate management levels should be achieved by the removal or destruction of excess animals, or other options (such as sterilization, or natural controls on population level(s)).

In making such determinations the Secretary shall consult with the United States Fish and Wildlife Service, wildlife agencies of the state or states wherein wild free-roaming horses and burros are located, such individuals independent of Federal and State government as have been recommended by the National Academy of Science, and such other individuals whom he determines have scientific expertise and special knowledge of wild horse and burro protection, wildlife management and animal husbandry as related to rangeland management."

With the pasage of PL 95-514 the BLM has been granted more freedom in the management of wild, free-roaming horses and burros, in that all excess animals must be removed "so as to restore a thriving natural ecological balance to the range, and to protect the range from the deterioration associated with overpopulation." To further the knowledge of wild horse and burro population dynamics and their interrelationship with wildlife, forage and water resource, PL 95-514 requires that the Secretary contract for a research study with individuals independent of Federal and state governments. This study will be "completed and submitted by the Secretary to the Senate and House of Representatives on or before January 1, 1983." This Act also allows qualified individuals to gain title on excess animals after a period of one year if the transferee has provided humane conditions, treatment and care for such animal. This will greatly enhance the Bureau's Adopt-A-Horse program in that individuals would rather adopt a horse they could eventually own, rather than take care of an animal that the government retained title to, as was regulated by PL 92-195.

Nevada State Statutes are in conflict with PL 92-195. Nevada State Statute 569.360 authorizes the "destruction, capture of wild, unbranded horses/burros running at large on public lands." The board of county commissioners of each county are empowered under Nevada State Statutes 569.370 and 569.380 to grant or revoke applications, and Nevada State Statute 569.400 makes it illegal to kill unbranded wild horses or burros without a permit. It is unlawful under Nevada State Statute 569.410 to kill wild, unbranded horses or burros under 12 months of age. Nevada State Statute 569.420 specified that the hunting of wild horses and burros by aircraft is unlawful and that the pollution of watering holes to aid capture is unlawful. Federal law (i.e., PL 92-195) takes precedence over Nevada State Statutes.

The constututional validity of PL 92-195 has been affirmed by U.S. Supreme Court decision dated June 17, 1976 (No. 74-1455).

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Herd Management Areas (HMAs) are defined as "the maximum geographic limits used by a particular herd over a period of years and under varying weather conditions" (BLM Manual 4700.05 E.). Sufficient data is not available to accurately delineate present HMA boundaries, thus resulting in an estimate of present herd use areas (HUAs). Much more intensive inventory information is required to accurately ascertain present HUA boundaries and individual herd home ranges. An ideal end product of such studies would be a breakdown of the HUAs into a greater number of smaller HUAs for more intensive management purposes.

Data on the following subjects are notably lacking for all HUAs, and acquisition of these data would greatly facilitate management: wild horse and burro distributions, home ranges and movement patterns; population condition; sex and age ratios; recruitment rates; birth rates; sizes; colors; types; wild horse and burro--livestock conflicts; wild horse and burro--wildlife conflicts; trend, condition and utilization of forage resources and effects of poisonous plants, mining and recreationists on wild horse and burro populations.

Due to the lack of the above-listed information, recruitment rates for the HUAs in the Buffalo Hills Planning Unit had to be estimated. Conley (Personal Communication, May 23, 1979) stated that a reasonable rate of increase per year in a population of wild horses and burros would be 13-15%. This rate would be applied to a population existing under ideal conditions. Competition for available forage between wild horses and livestock is extremely high in the planning unit. Therefore, it is estimated that the net rate of increase is 11%.

I. Population History

- A. In March of 1969 a wild horse inventory was conducted via fixed-wing aircraft in the Winnemucca District, during which 864 horses and 21 burros were counted in approximately 21 hours of flight time covering 1,900 miles. This is a relatively short period of time to accurately inventory eight and one-half million acres. The most current inventory, conducted in the Winnemucca District in the spring of 1977, required approximately 90 hours of fixed-wing aircraft flight time to complete. It is evident from this information that the 1969 inventory is not totally reliable, and a great deal of emphasis will not be placed on it. As this is the only inventory available prior to the passage of the Wild Horse and Burro Act, it is assumed that this count was used as the basis for determining the wild horse and burro areas as of December 15, 1971 (see Table 1).

The 1969 inventory revealed a total of 156 horses and no burros in the Buffalo Planning Unit (see Table 1). The most current inventory shows wild horses are found in the following mountain ranges: Buffalo Hills, Fox and Lake, Granites, Calicos, Warm Springs Canyon, and Black Rock West; wild burros are found in the Fox Range and in Warm Springs Canyon. In 1969 wild horses were found in all of their current ranges with the exception of the Lake and Granite Ranges.

No statistical data is available to determine how and why there has been an expansion in the wild horse/burro use areas. In the author's opinion the wild horses/burros expanded their range either by emigration or immigration from adjacent mountain ranges or through introduction by a private individual. It is also possible that during the 1969 inventory wild horses/burros were overlooked in these particular mountain ranges or that a combination of all three events might have occurred.

- B. Distribution information for the various wild horse and burro herd use areas is scarce. What population history information is known will be discussed individually by herd use area, although a synopsis is provided in Table 1.

TABLE 1  
Synopsis of Wild Horse/Burro Inventory Data

Herd Use Area	Spring '69 WH/B	Est. '71 #s <sup>1/</sup> WH/B	Fall '74 WH/B	Winter '75 WH/B	Summer '76 WH/B	Spring '77 WH/B	Winter '79 WH/B	Spring & Fall '79 WH/B
Buffalo Hills	123	152	649	582	1166 <sup>2/</sup>	888	---	623 <sup>3/</sup>
Fox and Lake Range	9	11	457/1	---	---	498/1	---	---
Granite Range	0	0	46	---	42	98	---	---
Calico Mtns.*	5	6	452	263	418	616	416	289 <sup>4/</sup>
Warm Spring Cyn.*	7	9	145/10	173	207	315	271/16	411/1 <sup>5/</sup>
Black Rock Range West*	21	26	232	252	---	375	337	463
TOTAL	165	204	1981/11	1270	1833	2790/1	1024/16	1786/1

--- Area not flown.

<sup>1/</sup> The 1971 figures were computed using the 1969 inventory and on 11% net increase in numbers per year.

<sup>2/</sup> High winds may have caused doubling in count.

<sup>3/</sup> A gathering operation was conducted in August and September 1979. The population was reduced to 128 animals.

<sup>4/</sup> Only the Soldier Meadows Allotment portion was flown.

<sup>5/</sup> The observer found only one burro during this flight. However, at least 15 additional burros were sighted the day before the flight, by Soldier Meadows Ranch employees.

\*A gathering operation is currently being conducted on these. The plan is to leave 50 horses in the Calico's 100 horses in Warm Springs Canyon, and 50 horses in Black Rock Range West.

- C. Licensed domestic horse and burro use has been terminated in all wild horse and burro use areas.

II. Vegetation-Domestic Livestock

The following subjects are described in detail in the Range Management portion of the Buffalo Planning Unit URA, Step 3: livestock-noxious or poisonous weed infestations, livestock-vegetative condition and trend, existing habitat problems, ecologically unique areas, nature of base properties, livestock classes, livestock seasonal distributions, and livestock-use conflicts with wild horses and burros.

Land treatments and management facilities, water resources, soils, livestock-vegetative relationships, and vegetation are discussed in the appropriate sections of the Physical Profile Step 2 URA.

III. Wild Horse/Burro Food Habits

- A. Probably the most important change that occurred in horse evolution was the transition from a browsing to a grazing animal. The teeth of early horses were efficient for eating a large variety of foods as long as the food was soft and did not wear down the teeth too rapidly. Early horses could not have lived on grass even if it were available because it would have worn out their teeth at an early age. As grasses became more abundant (determined from fossil grass seeds), many browsing animals, unable to adapt, disappeared. The horses exploited this change by evolving teeth that permitted them to change from browsing to grazing. The present tooth pattern of equids developed during the Miocene period and has not changed greatly since that time. After the new type of dentition was developed, horses could eat most any vegetable matter including harsh prairie grasses. Three main changes occurred: tooth patterns changed to permit grinding, crown height increased to give longer life to the teeth, and a cementum layer developed. The cement filled the valleys and pits in the teeth and prevented food from lodging and decaying; it also prevented the brittle enamel crests of the teeth from breaking. The tooth system of the present-day horse is highly specialized for eating grass which, due to its high silica content, is a very harsh food. As a result, the teeth of horses wear down rapidly. As they wear, the teeth in the upper jaw move down and those in the lower jaw move up so that a grinding surface is maintained at the same level. When the teeth are worn to the roots and can no longer grind, the horse will starve. Generally, however, most wild horses die of other causes before this occurs (Simpson 1951).

- B. Documented direct observations of forage consumption by wild horses/burros is very limited in the Buffalo Hills Planning Unit. Hines, Oke (April 1978) and the State BLM Range Specialist reported that horses in the Buffalo Hills HUA grazed 100% of the previous year's grass production; kicked, pawed and removed leaves, flower stalks and coarse, mature twigs of most horsebrush (Tetradymia glabrata) plants; cropped to within 4" of the soil surface some of the spiny hopsage (Grayia spinosa) plants; and stripped the bark off the mature twigs on about 60% of the big sagebrush (Artemisia tridentata) plants in the Frog Creek area (T. 34 N., R. 20 E., Sec. 18 & 19) and in the area immediately east of the Buffalo Hills plateau and south of Crutcher Canyon (T. 34 N., R. 21 E., Sec. 12) (see Figures 1-6).
- C. Studies conducted in the southwest vegetation type indicate that under ordinary range conditions 80 to 95% of the diet (on a dry weight basis) of wild horses consists of grasses and grasslike plants and that they consume more browse than they do forbs (Zarn 1977). Hall (1972) determined that the major forage items utilized on the Pryor Mountain Wild Horse Range in Montana during the spring, summer, and fall periods were grass species, whereas during the winter period the major forage items were browse species with grass species being utilized where available. The preferred grasses were bluebunch wheatgrass (Agropyron spicatum) and Sandberg bluegrass (Poa secunda) and the preferred browse species were saltbush (Atriplex spp.), gray rabbitbrush (Chrysothamnus nauseosus) and big sagebrush (Artemisia tridentata). Tables 2, 3, 4, 5, and 6 show the percentages of forage categories in the diets of wild horses from BLM Districts in Ely, Nevada; Salmon, Idaho; Susanville, California; Elko, Nevada; and in the Paradise-Denio Planning Unit of the Winnemucca, Nevada, District. The forage items present in each of these areas are somewhat similar to those found in the Buffalo Hills Planning Unit and may be indicative of the preferred forage species of this area. The percentage of major categories and seasonal preferences are summarized in Table 7, 8, 9, 10 and 11 for each of the previously mentioned BLM Districts.

In general, grass species were the staple of the diet throughout the spring, summer, and fall, and forb and browse species were of secondary importance. During the winter this order of preference was generally reversed. Forbs were utilized more heavily in the Salmon and Winnemucca Districts whereas shrubs were more heavily utilized in the Ely District. ✓

TABLE 2. Percentages of forage categories in the diets of wild horses, cattle, sheep and pronghorns determined by the microhistological analysis of feces technique (400 fields at 100X were examined per sample). Ely District, Nevada

Season of Collection	Summer Horse #9	Fall Horse #10	Winter Horse #11	Comp. Horse #12
Threeawn ( <u>Aristida</u> )				
Blue grama ( <u>Couteloua gracilis</u> )	1.38	0.06		1.89
Brome ( <u>Bromus</u> )				
Sedge ( <u>Carex</u> )	0.16			0.24
Wildrye ( <u>Elymus</u> )	0.51	0.28		0.40
Galleta ( <u>Hilaria jamesii</u> )	71.40	5.26	8.55	22.18
Indian ricegrass ( <u>Oryzopsis hymenoides</u> )	10.52	1.76	2.64	10.96
Bottlebrush squirreltail ( <u>Sitanion hystrix</u> )	1.04	1.24	0.87	1.14
Dropseed ( <u>Sporobolus</u> )	1.68	0.09	0.74	7.34
Needlegrass ( <u>Stipa</u> )	5.36	2.46	5.99	30.75
Unknown grass			0.49	0.08
Sagebrush ( <u>Artemisia</u> )				
Saltbrush ( <u>Atriplex</u> )	0.31	1.73	7.68	1.64
Rubber rabbitbrush ( <u>Chrysothamnus nauseosus</u> )				
Douglas rabbitbrush ( <u>Chrysothamnus visoidiflorus</u> )				
Tansy mustard ( <u>Descurainia</u> )			0.49	
Mormon tea ( <u>Ephedra</u> )				
Wallflower ( <u>Erysimum</u> )			0.12	
Winterfat ( <u>Eurotia lanata</u> )	7.29	86.90	70.45	22.82
Halogeton ( <u>Halogeton glomeratus</u> )				
Utah juniper ( <u>Juniperus utahensis</u> )				
Prickly-pear ( <u>Opuntia</u> )				
Phlox (Phlox)			0.25	0.24
Russian thistle ( <u>Salsola kali</u> )			0.12	
Nightshade ( <u>Solanum</u> )				
Scarlet globe-mallow ( <u>Sphaeralcea coccinia</u> )				
Seed				0.08
Unknown chenopod	0.08			0.16
Unknown forb	0.27	0.22	1.24	0.08

TABLE 3. Relative percent density of discerned fragments from wild horse fecal samples from Salmon District, Idaho. Based on 400 fields per sample.

TENTATIVE IDENTIFICATIONS*	Season			
	Spring	Summer	Fall	Winter
Western wheatgrass ( <u>Agropyron smithii</u> )	0.31	0.50		0.57
Bluebunch wheatgrass ( <u>Agropyron spicatum</u> )	52.87	39.63	77.90	43.20
Brome ( <u>Bromus</u> )		0.20		
Reedgrass ( <u>Calamagrostis</u> )	0.62	1.00	0.36	0.11
Sedge ( <u>Carex</u> )	1.74	1.93	2.45	0.46
Wildrye ( <u>Elymus</u> )		1.11		
Idaho fescue ( <u>Festuca idahoensis</u> )	5.22	18.72	0.21	1.16
Junegrass ( <u>Koeleria cristata</u> )	3.18	10.09	0.94	5.86
Indian ricegrass ( <u>Oryzopsis hymenoides</u> )	2.20	2.77	0.14	1.16
Bluegrass ( <u>Poa</u> )	5.10	5.29	0.87	3.70
Squirreltail ( <u>Sitanion</u> )	0.51	1.61		1.63
Dropseed ( <u>Sporobolus</u> )	0.51	0.40	0.14	0.23
Needlegrass ( <u>Stipa</u> )	0.62	5.75	0.21	0.69
Unknown sedge	0.10	1.61	0.14	
Unknown grass		0.10		0.81
Sagebrush ( <u>Artemisia</u> )	0.20	0.50	0.36	10.08
Milkvetch ( <u>Astragalus</u> )		0.30	0.07	0.57
Saltbush ( <u>Atriplex</u> )			0.07	0.46
Rabbitbrush ( <u>Chrysothamnus</u> )			0.07	
Buckwheat ( <u>Eriogonum</u> )		2.45	0.07	4.20
Winterfat ( <u>Eurotia lanata</u> )	3.85	3.09	1.46	3.70
Prickly phlox ( <u>Leptodactylon pungens</u> )			4.55	0.11
Lupine ( <u>Lupinus</u> )	0.31	0.10	1.84	0.93
Phlox ( <u>Phlox</u> )	22.95	2.45	8.01	19.58
Mullein ( <u>Verbascum</u> )		0.10		
Unknown forb				0.11
Lichen		0.20		0.57
Moss	0.31	0.10	0.14	0.11

\*Date for this table was 10 March 1975.

TABLE 4. Percent relative density of discerned plant fragments from horse fecal samples from Susanville, California. Based on 400 fields per sample.

TENTATIVE IDENTIFICATIONS*	Buckhorn	Toledad	Nevada	Pilgrim Lake	Copper Smith
Wheatgrass ( <u>Agropyron</u> )	41.44	11.82	15.13	45.21	3.04
Brome ( <u>Bromus</u> )	0.25	0.27	0.14	0.41	
Sedge ( <u>Carex</u> )	0.61	2.44	22.16	14.36	2.95
Idaho fescue ( <u>Festuca idahoensis</u> )	12.20	12.08		5.67	3.52
Rush ( <u>Juncus</u> )		0.09	14.51	2.95	27.00
Indian ricegrass ( <u>Oryzopsis hymenoides</u> )	34.51	27.28	26.19	29.65	15.71
Bluegrass ( <u>Poa</u> )	6.98	11.32	18.39		5.77
Dropseed ( <u>Sporobolus</u> )	0.25				
Sedge unidentified ( <u>Carex?</u> )		33.33	1.95		41.58
Sagebrush ( <u>Artemisia</u> )			0.10		
Composite (unknown)		0.37			
Buckwheat ( <u>Eriogonum</u> )			0.14		
Juniper ( <u>Juniperus</u> )	1.24				
Unknown legume	2.52	0.73	1.25	1.55	0.43
Unknown forb		0.27	0.14	0.10	

\* Date of this table was 10 March 1975.

TABLE 5. Percent relative density of fragments from horse fecal samples collected on the Granite Range, Elko County, Nevada. Each diet is based on 400 microscopic fields analyzed by the Composition Analysis Laboratory, Colorado State University.

	Spring March - May 77	Summer June - Aug. 77	Fall Sept.- Nov. 77	Winter Dec. - Feb. 77	Yearlong Sept. 76- Aug. 77
<b>Grasses and Grasslikes</b>					
Bluegrass ( <i>Poa</i> spp)	64	38	1	2	26
Needlegrass ( <i>Stipa</i> spp)	11	13	66	34	31
Wheatgrass ( <i>Agropyron</i> spp)	3	12	11	11	9
Cheatgrass ( <i>Bromus tectorum</i> )	<1	13	7	7	7
Idaho Fescue ( <i>Festuca idahoensis</i> )	9	12	<1		5
Sedges ( <i>Carex</i> spp)	2	2	<1	2	2
Indian ricegrass ( <i>Oryzopsis hymenoides</i> )	4	4	<1	<1	2
Squirreltail ( <i>Sitanion hystrix</i> )	2	2	1	<1	1
Four others <sup>1/</sup>	<1	<1	<1	<1	<1
TOTAL:	96	97	88	57	84
<b>Shrubs</b>					
Buckwheat ( <i>Eriogonum</i> spp)	<1	<1	8	30	10
Phlox ( <i>Phlox</i> spp)	1	<1	<1	8	3
Winterfat ( <i>Eurotia lanata</i> )	<1	3	1	<1	1
Prickly phlox ( <i>Leptodactylon</i> spp)			1	2	<1
Horse-brush ( <i>Tetradymia</i> spp)	3	<1			<1
Four others <sup>1/</sup>	<1		<1	<1	<1
TOTAL:	4	3	11	42	15
<b>Forbs</b>					
Lupine ( <i>Lupinus</i> spp)		<1	<1		<1
Three others <sup>1/</sup>	<1	<1		<1	<1
TOTAL:	<1	<1	<1	<1	<1

<sup>1/</sup> Other foods (<1%) in seasonal diets were: grasses and grasslikes--*Juncus*, *Elymus*, *Equisetum*, *Muhlenbergia*; shrubs--*Chrysothamnus*, *Purshia*, *Salsola*, *Tetradymia*; forbs--*Penstemon*, unknown forb, *Balsamorhiza sagittata*.

TABLE 6

Relative percent density of discerned fragments  
from wild horse fecal samples from Paradise-Denio  
Resource Area, Winnemucca District, Nevada

<u>Grasses and Grasslikes</u>	<u>Fall 1976</u>	<u>Winter 1978*</u>	<u>Winter 1978**</u>	<u>Spring 1977</u>
Agropyron	61.30		.43	19.61
Bromus			6.49	
Carex	0.32			.15
Distichlis				
Elymus				21.97
Festuca		.22	.69	
Juncus		.22		
Koeleria		2.73	40.55	
Muhlenbergia				.15
Oryzopsis hymenoides	9.68		3.95	7.20
Poa	1.14			16.16
Sitanion hystrix	2.61	.48	1.93	1.99
Sporobolus				
Stipa				
	<u>20.65</u>		<u>18.54</u>	<u>13.27</u>
TOTAL	<u>95.70</u>	<u>3.65</u>	<u>72.58</u>	<u>80.50</u>
<u>Shrubs</u>				
Artemisia	.32	.92	.88	.75
Atriplex		49.90	10.34	
Ceretoides lanata		1.52	.53	12.90
Chrysothamnus nauseosus		.78		
Ephedra		21.12	.27	
Grayia spinosa			14.12	
Leptodactylon				3.41
Opuntia				
Sarcobatus		20.75		1.99
Tetradymia		.51	.80	
TOTAL	<u>.32</u>	<u>95.50</u>	<u>26.94</u>	<u>19.05</u>
<u>Forbs</u>				
Astragalus				
Brassicaceae				
Descurainia				
Lepidium				.45
Phlox	3.98			
Others		<1	<1	
TOTAL	<u>3.98</u>	<u>&lt;1</u>	<u>&lt;1</u>	<u>.45</u>

\* Shadscale - budsage community

\*\* Lowsage - Sandberg bluegrass community

TABLE 7  
 Percentages of Major Forage Categories in the Diets  
 of Wild Horses in the Ely, Nevada, BLM District

<u>Season</u>	<u>Grass</u>	<u>Forbs</u>	<u>Shrubs</u>
Summer	92.05	0.27	7.68
Fall	11.14	0.22	88.63
Winter	19.28	2.22	78.13
Composite	74.98	0.32	24.62

TABLE 8  
 Percentages of Major Forage Categories in the Diets  
 of Wild Horses in the Salmon, Idaho, BLM District

<u>Season</u>	<u>Grass</u>	<u>Forbs</u>	<u>Shrubs</u>
Spring	72.98	23.26	4.05
Summer	90.71	5.40	3.59
Fall	83.36	15.54	1.96
Winter	59.58	25.50	14.24

TABLE 9  
 Percentages of Major Forage Categories in the Diets  
 of Wild Horses in the Susanville, California, BLM District  
 (Spring Period Only)

<u>Location</u>	<u>Grass &amp; Grass-like</u>	<u>Forbs</u>	<u>Shrubs</u>
Buckhorn	96.24	1.24	2.52
Toledad	98.63	1.37	0
Nevada	98.47	1.53	0
Pilgrim Lake	98.25	1.65	0.10
Copper Smith	99.57	0.43	0

TABLE 10  
 Percentages of Major forage Categories in the Diets  
 of Wild Horses in the Elko, Nevada, BLM District

<u>Season</u>	<u>Grass</u>	<u>Forbs</u>	<u>Shrubs</u>
Spring	96	1	4
Summer	97	1	3
Fall	88	1	11
Winter	57	1	42

TABLE 11  
 Percentages of Major Forage Categories in the Diets  
 of Wild Horses in the Paradise-Denio Resource Area  
 in the Winnemucca, Nevada, BLM District

<u>Season</u>	<u>Grass</u>	<u>Forbs</u>	<u>Shrubs</u>
Spring	80	1	19
Fall	96	4	1
Winter*	4	1	96
Winter**	73	1	27

\* Shadscale - budsage community

\*\* Lowsage - Sandberg bluegrass community

No full-scale studies have been done in Nevada of burro feeding habits. Research that includes observation, fecal analysis, species composition, abundance and productivity is much needed.

A study of feral burros was conducted from November 1974 to August 1975 in the Saline Valley Region of Inyo County in southeastern California. The major plant communities found in the Saline Valley, with the exception of the creosote bush, are also found in the Buffalo Hills Planning Unit. A list of the plants occurring on vegetation transects and the preference for use of these plants by livestock and burros is shown in Table 12. All of the preferred and staple plants found in the Saline Valley are found in the areas where burros occur on the Buffalo Hills Planning Unit with the exception of spiny menodora (Menodora spinescens), desert bitterbrush (Purshia glandulosa) and desert holly (Atriplex hymenelytra) (Kimsey and MacCarter 1976). ✓  
✓

Browning (1960) examined 20 burro stomachs to determine their forage references in Cottonwood Canyon of Death Valley National Monument. He reported that forbs comprised almost 65% of their spring diet and browse made up over 75% of their fall diet. Grass occurred in about half of the stomachs and amounted to 10 percent in both spring and fall diets. ✓

McMichael (1964) examined the stomach contents of nine burros collected in February, April, May, and July. Laboratory analysis revealed that the stomach contents consisted of 1 percent grass, 11 percent shrubs and 88 percent forbs.

Table 13 and Table 14 list the stomach contents of two other burro studies conducted by the California Department of Fish and Game. Both studies confirm Browning's results in that forbs comprise a large percentage of their spring diet while browse made up a large percentage of their fall diet.

#### IV. Vegetative Relationships

- A. Forage preferences of wild horses and cattle (Bos taurus) were determined to be 59% to 75% identical in the Piceance Basin area of Colorado (Hubbard and Hansen 1976). Olsen and Hansen (1976) found that wild horse food items were 45% identical to cattle, 40% identical to elk (Cervus canadensis) and 27% identical to domestic sheep (Ovis ovis) in the Red Desert area of Wyoming. There did not appear to be any serious dietary overlap between wild horses and mule deer (Odocoileus hemionus) in Colorado or with pronghorns (Antilocapra americana) in Wyoming.

TABLE 12. Plants occurring on vegetation transects, preference for use of plants by livestock and burros, and available pound per acre forage value: Saline Valley, California. July 1975.

Scientific	Common	Symbol	Livestock		Burro Preference <u>2/</u>
			Value <u>1/</u>	Lbs/AC	
<u>Allenrolfea occidentalis</u>	pickleweed	ALOC	U	0	U
<u>Hymenoclea salsola</u>	burrobush	HUSA	L	2	LV
<u>Larrea tridentata</u>	creosotebush	LATR	L	0	LV
<u>Atriplex confertifolia</u>	shadscale	ATCO	P	5	PR
<u>Grayia spinosa</u>	hopsage	GRSP	P	5	PR
<u>Mendora spinescens</u>	spiny mendora	MESP	P	5	PR
<u>Tetradymia sp.</u>	horsebrush	TET	L	0	LV
<u>Dalea polyadenia</u>	nevada dalea	DAPO	L	0	LV
<u>Ephedra nevadensis</u>	nevada tea	EPNE	L	5	LV
<u>Mallow parviflora</u>	cheeseweed	MAPR	L	0	LV
<u>Haplopappus spp.</u>	goldenbush	HAP	L	0	LV
<u>Eurotia lanata</u>	winterfat	EULA	P	10	PR
<u>Artemisia tridentata</u>	big sage	ARTR	L	2	LV
<u>Chrysothamnus spp.</u>	rabbitbrush	CHR	L	0	LV
<u>Eriogonum umbellatum</u>	sulfur flower	ERUM	L	2	LV
<u>Elymus cinereus g.</u>	basin wild rye	ELCI	S	10	ST
<u>Stipa speciosa</u>	desert needlegrass	STSP	P	20	PR
<u>Lupinus spp.</u>	lupine	LUP	S	5	ST
<u>Astragalus spp.</u>	locoweed	AST2	L	2	LV
<u>Purshia glandulosa</u>	desert bitterbrush	PUGL	P	5	PR
<u>Aster spp.</u>	desert milk aster	AST	U	2	U
<u>Juniperus osteosperma</u>	juniper	JUOS	U	0	U
<u>Distichlis spicata</u>	saltgrass	DIS	-	10	LV
<u>Atriplex hymenelytra</u>	desert holly	ATHY	S	5	ST

1/ U = Unknown; P = Primary; S = Secondary; L = low in decreasing order of value to livestock ✓

2/ U = Unknown; PR = Preferred; ST = staple; LV = low value, in decreasing order of preferred consumption by burros

TABLE 13

Food Items Eaten by 19 Feral Burros Collected  
From the Death Valley National Monument, 1959.  
(Information from California Department of  
Fish and Game).

Item	Fall		Spring	
	Vol. %	Freq.	Vol. %	Freq.
Bur sage ( <u>Franseria dumosa</u> )	52.5	9	13.1	6
Unidentified forbs (stems)	13.5	11	49.4	9
Grass stems (leaf stems)	10.0	7	7.8	4
Aster ( <u>Aster abatus</u> )	4.5	6	1.1	1
Atriplex ( <u>Atriplex polycarpa</u> )	4.5	3	tr	1
Atriplex ( <u>A. confertifolia</u> )	4.0	4	--	--
Cottonwood ( <u>Populus fremontii</u> )	4.0	6	--	--
Desert thorn ( <u>Lycium sp.</u> )	3.5	3	--	--
Burrobrush ( <u>Hymenoclea salsola</u> )	1.5	1	1.7	2
Spiny hop-sage ( <u>Grayia spinosa</u> )	1.5	2	tr	1
Unidentified browse	0.5	2	--	--
Mormon tea ( <u>Ephedra viridis</u> )	--	--	3.3	1
Wishbone bush ( <u>Morabilis bigelovii</u> )	--	--	0.6	1
Buckwheat ( <u>Eriogonum fasciculatum</u> )	--	--	4.4	6
Sedge ( <u>Cyperaceae</u> )	--	--	2.2	1
Buckthorn weed ( <u>Amsinckia tessellata</u> )	--	--	15.0	3
Rush bebbia ( <u>Bebbia juncea</u> )	--	--	0.6	2
Atriplex ( <u>Atriplex sp.</u> )	tr	2	0.6	3
Chorizanthe ( <u>C. brevicornu</u> )	tr	4	tr	3
Phacella ( <u>Phacella sp.</u> )	tr	1	--	--
Cryptantha ( <u>Cryptantha sp.</u> )	tr	1	tr	2
Rabbitbrush ( <u>Chrysothamnus sp.</u> )	tr	1	--	--
Matchweed ( <u>Gutierrezia sarothrae</u> )	tr	1	--	--
Penstemon ( <u>Penstemon sp.</u> )	tr	2	tr	1
Wild barley ( <u>Hordeum sp.</u> )	--	--	tr	1
Filaree ( <u>Erodium cicutarium</u> )	--	--	tr	2
Black brush ( <u>Coleogyne ramosissima</u> )	--	--	tr	1
Mint ( <u>Labiatae</u> )	--	--	tr	1
Brickellia ( <u>B. watsonii</u> )	--	--	tr	1
Chaenactis ( <u>C. stevioides</u> )	--	--	tr	1
Dalea ( <u>Dalea mollis</u> )	--	--	tr	1
Ground-cherry ( <u>Physalis sp.</u> )	--	--	tr	1
Pepper-grass ( <u>Lepidium sp.</u> )	--	--	tr	1
Mint ( <u>Salvia sp.</u> )	--	--	tr	1
Evening primrose ( <u>Oenothera sp.</u> )	--	--	tr	1
Borage ( <u>Boraginaceae</u> )	--	--	tr	1
Mustard ( <u>Cruciferae</u> )	--	--	tr	1

TABLE 14  
Food Items Eaten by 20 (Burros) China Lake -  
April, 1966. (Information from California  
Department of Fish and Game).

Item	Vol. %	Freq. 20
BROWSE:		
Spiny hop-sage sd. ( <u>Grayia spinosa</u> )	trace	3
Fourwing saltbush sd. ( <u>Atriplex canescens</u> )		1
Creosote bush lf. ( <u>Larrea divaricata</u> )		1
Nevada ephedra st. ( <u>Ephedra nevadensis</u> )		2
Unid. browse st.		4
Wishbone bush ( <u>Mirabilis bigelovii</u> )	1.0	11
Burrobush ( <u>Hymenoclea salsola</u> )	trace	8
Browse subtotal	<u>1.0</u>	
FORBS:		
Unid. forbs (st, lf)	86.0	20
Buckthorn weed lf, hd, sd ( <u>Amsinckia tessellata</u> )	11.0	19
Unid. compositae (hds)	1.0	10
Phacella pods & sd. ( <u>Phacella</u> sp.)	trace	6
Gilia sd & st ( <u>Gilia</u> sp.)		16
Fremont's chaenactis ( <u>Chaenactis fremontii</u> )		15
Red-stem filaree ( <u>Erodium cicutarium</u> )		15
Stickleaf pods & sds ( <u>Mentzelia</u> sp.)		11
Pepper-grass pods ( <u>Lepidium nitidum</u> )		5
Poppy sd. ( <u>Eschscholtzia</u> sp.)		5
California mustard ( <u>Thelypodium laslophyllum</u> )		3
Fringe-pod pods ( <u>Thysanocarpus</u> sp.)		4
Buckwheat lf ( <u>Eriogonum</u> sp.)		3
Snake's head bracts & sd ( <u>Malacothrix coulteri</u> )		2
Wing-nut cryptantha sd ( <u>Cryptantha pterocarya</u> )		2
Coreopsis sd ( <u>Coreopsis</u> sp.)		1
California coreopsis sd ( <u>Coreopsis californica</u> )		1
Loco weed pod & sd ( <u>Astragalus</u> sp.)		1
Hog-fennel sd ( <u>Lomatium</u> sp.)		1
Forb subtotal	<u>98.0</u>	
GRASS:		
Grass lf & st. ( <u>Gramineae</u> )	1.0	13
Cheatgrass sd. ( <u>Bromus tectorum</u> )	trace	2
Bentgrass spike ( <u>Agrostis</u> sp.)		1
Grass subtotal	<u>1.0</u>	

In the Granite Range near Elko, Nevada, Nawa (1978) found there was a 77% dietary overlap between cattle and wild horses, and only a 3% overlap between mule deer and wild horses. In the Paradise-Denio Resource Area, Winnemucca, Nevada, Smith (1978) found there was a 50% dietary overlap between cattle and wild horses, and a 2% overlap between antelope and wild horses.

- B. A wild horse will consume approximately 2-1/4 to 2-1/2% of its body weight daily (Cullison, 1975). Hall (1972) estimates the average weight of the wild horse on the Pryor Range to be between 600-850 pounds. This would translate to a forage need of 15-21 pounds per day, 450-630 pounds per month, or 5400-7560 pounds per year, per horse.
- C. Available forage allocations for wild horses/burros will be based on the range survey conducted in the 1960s. In accordance with Instruction Memorandum No. NV-79-213 the same rangeland suitability criteria (slope, distance from water, and forage production) and standards for livestock grazing (as established by Washington Office Instruction Memorandum No. 78-134) will be applied to wild horse/burros. These criteria are definite physical elements which limit or prevent wild horses/burros from grazing on a given area.

The values listed below constitute the recommended standard for the Bureau in determining range suitability:

1. Slope - will not allocate forage on slopes greater than 50%.
2. Distance from Water - maximum allowable distance from reliable water is four miles.
3. Forage Production - The maximum number of acres per AUM to be suitable for wild horse/burro grazing is 32 which is 25 pounds of usable forage.

Wild horse and burro demand for forage within a herd use area will be allocated entirely off the public land within that herd use area.

V. Wild Horse and Burro Use Areas

A. Buffalo Hills HUA

1. The Buffalo Hills are located in the southwest portion of the Buffalo Hills Planning Unit, bordered on the west by Buffalo Creek and the Susanville District boundary, on the north by Highway 81, on the east by the Granite Range, and on the south by the Smoke Creek Desert. The elevation ranges from 6,958 feet at Poodle Mountain to 3,823 feet. ✓

2. The area is comprised of approximately 132,410 acres; 123,498 acres (93%) of public lands and 8,912 acres (7%) of private lands. For a more detailed description of the HUA boundary, refer to the Range Management Step 3 URA Wild Horse/Burro Overlay No. .

3. The vegetation in the herd use area is characterized by big sgaebush, saltbrush, bud sage (Artemisia spinescens), low sage (Artemisia arbuscula), Utah juniper (Juniperus osteosperma), rabbitbrush, horsebrush (Tetradymia glabrata), Sandberg bluegrass, cheatgrass (Bromus tectorum), squirreltail (Sitanion hystrix), needlegrass (Stipa spp.), buckwheat (Eriogonum spp.), filaree (Erodium cicutarium), halogeton (Halogeton glomeratus), Russian thistle (Salsola kali), and tansymustard (Descurainia spp.). ✓

Poisonous plants appear to have little effect on wild horses in this area, as there are only six species known to occur in the Buffalo Hills in limited quantities: deathcamas (Zygadenus spp.), larkspur (Delphinium spp.), locoweed (Astragalus spp.), lupine (Lupinus spp.), halogeton and horsebrush. Great amounts of Astragalus spp. must be consumed over a long period of time before sickness or death will occur in a horse (Agricultural Research Service 1968).

4. The Buffalo Hills have been inventoried six times in the past ten years, both by fixed wing aircraft and helicopter (see Table 15). Aerial surveys are at best a rough estimate of the actual population size and consistently underestimate densities (Golley and Buechner 1968; Bergeund 1963; LeResch and Raush 1974; Gilbert and Grieb 1957; Frei, Peterson and Hall 1979). The accuracy of aerial censuses in estimating absolute density of wildlife populations varies from 29 to 88% (Caughley 1977).

Frei, Peterson, and Hall (1979), also found that aerial census will provide only broad overviews of population trend, as population increase is a function of fecundity and survival.

TABLE 15

Wild Horse Inventory Data - Buffalo Hills

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success (%)<sup>1/</sup></u>
Spring 1969*	123		123	---
Fall 1974	512	137	649	26.8
Winter 1975	408	174	582	42.6
Summer 1976	974	192	1166	19.7
Spring 1977	865	23	888	2.7
Summer 1979	492	131	623	26.6

\*Adults and foals were not separated.

<sup>1/</sup> Reproductive success is defined as the number of foals/the number of adults.

A gathering operation was conducted in the Buffalo Hills between August 7 and October 2, 1979, in which 544 horses were captured - 396 adults and 138 foals. Ten animals, that were not aged or sexed, had to be destroyed for various reasons at the trap sites. During the latter portion of the roundup the area was reinventoried. The reinventory showed an additional 33 animals on the range. Sixteen adult horses of the 544 animals captured were collared and released back in the Buffalo Hills for study purposes. This would leave an adjusted population of 128 adult horses entering the fall of 1979.

5. The Buffalo Hills were flown December 15, 1978 (by fixed wing aircraft) to determine winter use areas and to try to form some generalizations about migration patterns and seasonal use areas within the herd use area. This flight showed that the majority of the horses congregated on the foothills on the east side of the range. The inventory conducted January 28, 1975, revealed an even distribution of animals throughout the range. The majority of the HUA is between 5,000-6,000 feet in elevation. During mild winters the wild horses will not move down to the lower elevations and will use the same general area yearlong.

There might be some interchange of horses between the Buffalo Hills and the Granite Range in the Crutcher Canyon and Squaw Valley Reservoir areas, as there are very few fences to restrict their movement back and forth (see Physical Profile Step 2 URA-Developments). An interchange of horses might also occur on the west side of the HUA along the Susanville-Winnemucca District boundary fence. This boundary is not a continuous fence, as natural barriers are also utilized. At various times during the year, gates are left open allowing horses to move back and forth.

In January of 1978 a heavy snow of short duration occurred, forcing the wild horses on the northwest end down into the area of Frog Creek. These horses were probably trapped for a short period of time in this vicinity. The Susanville District Boundary Fence runs generally north and south, and the Coyote Allotment Boundary Fence runs east and west in this area. These fences prohibited the wild horses access to lower flats located to the north and west.

Range condition throughout the Buffalo Hills Range was classified as poor at that time due to overuse by both livestock and wild horses in competition for inadequate quantities of forage. In areas of big sagebrush canyons the bark had been stripped from most of the plants and the understory vegetation was non-existent. This combination of events led to a major horse die-off throughout this area (see Figures 7-10).

This die-off was documented between March and April 1978, during a thorough investigation by the District Wild Horse Specialist and other district employees. In the investigation approximately 300 dead horses were found.

Forty-five percent of these animals were located in the relatively small area of the North Fork of Frog Creek. The remainder of the horses were scattered throughout the lower areas of the Buffalo Hills Range.

The majority of the horses that were still alive were in a very weakened condition and were heavily infested with ticks. This fact, coupled with the boggy-wet soil conditions, placed additional stress on animals that were already heavily stressed (see Figures 11-12).

In view of the above situation, a "Notice of Closure of Federally Owned or Controlled Lands to Livestock Grazing" in the Buffalo Hills Range, was initiated by BLM on April 30, 1978, "for conservation of the Federal Range and forage thereon." This, in addition to the reduced population of wild horses, allowed the physical condition of the remaining animals to improve. This fact was verified by the extremely high foal crop this year (approximately 26.6%), and Don Pomi (personal communication August 10, 1979) has stated that the physical condition of the captured horses is excellent.

6. Minimal off-road vehicle (ORV) activity occurs in the Buffalo Hills, but the actual extent is undetermined (see Recreation Step 3 URA, Overlay No. ~~4~~).

The recreation inventory conducted in the late 1960s did not identify any existing recreation sites or any sites suitable for potential development. A minimal amount of hunting and fishing occurs, but the actual extent is unknown.

Mining activity on the Buffalo Hills HUA is low. Increased activity may occur if new mineral sources are discovered. For more information on the actual extent of the activity, refer to the Minerals Step 3 URA.

The effect upon the wild horses in the Buffalo Hills resulting from external influences (i.e., mining and recreation) is minimal at the present time. If these activities increase, a potentially detrimental situation will exist in that the wild horse population might be directly affected. Some action will have to be taken to insure that the disturbance is kept to a minimum or completely eliminated.

7. Small to moderate populations of mule deer, antelope, scaled quail (Callipepla squamata), California quail (Lophortyx californicus), sage grouse (Centrocercus urophasianus), and chukar partridge (Alectoris graeca) occur in the Buffalo Hills. For reasonable numbers and estimates of population densities of the above species refer to the Wildlife Step 3 URA. Hunting does occur for these species, but the actual extent is undetermined. ✓
8. Water supplies and developments are discussed in detail in their respective sections in the Physical Profile Step 2 URA. Daily water consumption per horse is approximately 10 gallons (Talbot 1926). Annually an individual horse consumes approximately 3,650 gallons of water. This translates into an annual consumption of water for the wild horse herd in the Buffalo Hills of 467,200 gallons (1.43 acres feet). Wild horses will utilize snow when it is available to supplement their water intake. ✓
9. The Buffalo Hills herd use area encompasses part of one allotment (see Range Management Step 3, URA Overlay No. ). The allotment, the livestock operators, the active use each operator is licensed for, the percentage of the herd use areas within the allotment, percent of allotment within the HUA, and the forage that is available from the allotment is described in Table 16.

Table 16. The Allotment, Livestock Operators, Percentage of Herd Use Area Within the Allotment, Percent of Allotment within the HUA, and the Forage Available for Livestock, Wildlife and Wild Horses.

<u>Allotment Name</u>	<u>Livestock Operator</u>	<u>Active Use (AUMs)</u>	<u>% Herd Use Area within Allotment</u>	<u>% of Allotment within HUA</u>	<u>Forage Available For HUA (AUMs*)</u>
Buffalo Hills	Joe Selmi (Livestock John Casey Closure) Andy Jackson (~1200 AUM trespass)	100	31		9,478
TOTAL		<u>1200</u>			<u>9,478</u>

\* Figures derived from range survey data.

The Buffalo Hills herd use area is not licensed for any Animal Unit Months (AUMs) on public lands. Approximately 100 head of cattle are in trespass yearlong.

The number of AUMs that will be consumed in the herd use area during the 1979 grazing season is described in Table 17.

Table 17. AUM Demand <sup>1/</sup> During 1979 Grazing Season

<u>Species</u>	<u>AUM Demand</u>
Livestock	1200 <sup>2/</sup>
Wild Horses	1536
Wildlife	<u>141</u>
TOTAL	<u>2877</u>

<sup>1/</sup> AUM demand is defined as the amount of forage necessary to support existing wildlife and wild horse demand and/or the licensed number of livestock.

<sup>2/</sup> This figure corresponds to the approximate 100 head of John Casey's livestock in trespass yearlong.

Presently there are 128 wild horses using the Buffalo Hills HUA yearlong. The majority of the available forage that was adjudicated in the mid-60s was for use in cattle operations, and a small amount was given to wildlife. Consideration was not given to wild horses. Currently, this situation still exists.

The carrying capacity for the Buffalo Hills herd use area is estimated to be 9,478 AUMs. The AUM demand by livestock, wildlife and wild horses combined is 2,877 AUMs.

10. Direct competition occurs between domestic livestock and wild horses for forage and water. There is an estimated 77% dietary overlap between wild horses and cattle (Nawa 1978). Wild horses will consume approximately 1,536 AUMs in addition to 1.43-acre feet of water during the next grazing season.

Wild horses do not compete as heavily with the major wildlife forage consumers, principally mule deer. Studies have shown that forage preferences of wild horses and mule deer are only 3% identical (Nawa 1978). A critical situation might arise during drought years, as wildlife and wild horses will compete directly for crucial water supplies.

Fences used in the intensive management of livestock operations hamper as well as restrict the movement of wild horses from one area to another, even within the confines of the herd use area. For a detailed description of the existing fences found within the Buffalo Hills HUA refer to the Physical Profile Development and Facilities Section, Step 2 URA. Due to the lack of information concerning wild horse movements it is not possible to determine which fences hinder their movement.<sup>1/</sup>

11. A Phase I Watershed Conservation and Development Inventory was conducted in the early 70s. This inventory was used to determine the erosion condition class by means of soil surface factors. Table 18 shows a breakdown of the herd use area by erosion condition class. Refer to the Watershed Step 3 URA for more detailed information.

<sup>1/</sup> The statement applies to all HUAs.

Table 18. Phase I Watershed Conservation & Development Data

<u>Erosion Condition Class/SSF</u>		<u>% of Herd Use Area</u>
Stable	0-20	5
Slight	21-40	72
Moderate	41-60	20
Critical	61-80	3
Severe	81-100	0

The majority of the herd use area falls within the slight (21-40 SSF) classification. Some steps will have to be taken to insure that deterioration of the watershed does not occur.

Rangeland in a deteriorated watershed condition (SSF greater than 60) should not be grazed if such use will accelerate soil erosion or otherwise damage the basic soil and vegetation resource.

12. A limited amount of data is available on the physical characteristics of the wild horses in the Buffalo Hills. A summary of the color types and the sex ratios for both foals and adults are shown in Table 19 and 20.

Table 19. Color Types (%)

	<u>Bay</u>	<u>Sorrel</u>	<u>Chestnut</u>	<u>Black</u>	<u>Brown</u>	<u>Albino &amp; White</u>	<u>Pinto &amp; Paint</u>	<u>Buckskin</u>
#s	350	112	10	23	32	2	3	2
%	65.5	21	1.9	4.3	6	.4	.5	.4

Table 20. Sex Ratio and Foals / 100 Adults

	<u>Sex Ratio Foal (%)</u>		<u>Sex Ratio Adults (%)</u>		<u>Sex Ratio Total (%)</u>		<u>Foals per 100 Adults</u>
	M	F	M	F	M	F	
#s	71	67	151	245	222	31 <sup>2</sup>	138/39 <sup>6</sup>
%	51	49	38	62	42	58	34.9

Two statements can be made concerning the above data: (1) the majority of the wild horses are either bay or sorrel colored and (2) the sex ratio for the herd use area favors the female by 16%, but the sex ratio for the foal crop favored the male by 2%. Two hypotheses can be formulated from the latter statement; (1) males are harder to gather than females and/or (2) a greater number of males than females die due to fighting and other interactions.

B. Fox and Lake Range HUA

1. The Fox and Lake Ranges are located in the southernmost portion of the Buffalo Hills Planning Unit. The HUA is bordered on the west and north by the Smoke Creek Desert, on the east by Highway 34 and the Blue Wing Planning Unit, and on the south by the Pyramid Lake Indian Reservation. The elevation ranges from 7,608 feet at Pah Rum Peak to 3,897 feet. For a more detailed description of the HUA boundary refer to the Range Management Step 3 URA, Wild Horse/Burro Overlay No. . ✓
2. The area is comprised of approximately 177,274 acres; 171,967 acres (97%) public lands and 5,307 acres (3%) private lands.
3. The vegetation in the HUA is characterized by big sagebrush, saltbrush, bud sage, low sage, Utah juniper, rabbitbrush, horsebrush, Sandberg bluegrass, cheatgrass, squirreltail, needlegrass, buckwheat, filaree, halogeton, Russian thistle, tumbled mustard and tansymustard.

Poisonous plants appear to have little effect upon wild horses in this area, as there are only six species known to occur in the East Range in limited quantities: deathcamas; larkspur; locoweed; lupine; halogeton; and horsebrush. Great amounts of these species must be consumed over a long period of time before sickness or death will occur in a horse. HUA ✓

4. The HUA has been inventoried three times in the past 10 years, both by fixed wing aircraft and by helicopter (see Tables 21 and 22). Aerial surveys give at best a rough estimate of the actual population size, consistently underestimate densities, and will provide only broad overviews of population trend, because population increase is a function of fecundity and survival. ✓

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Table 21. Wild Horse Inventory Data - Fox and Lake Ranges

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success (%)</u>
Spring 1969*	9		9	---
Fall 1974	368	89	457	24.2
Spring 1977	483	15	498	3.2

\*Adults and foals were not separated.

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Table 22. Wild Burro Inventory Data - Fox and Lake Ranges

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success %</u>
Spring 1969	0	0	0	---
Fall 1974	1	0	1	---
Spring 1977	1	0	1	---

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Two foaling seasons have occurred since the 1977 inventory. Based on the population dynamics of a wild horse herd (an 11% / year increase), it is estimated that approximately 614 wild horses and 1 burro are currently utilizing this area.

5. The HUA area was flown March 13, 1979, to determine winter use areas. The flight indicated that the majority of the horses spend the winter months on the San Emidio Desert side of the Fox Range. It also appears that a portion of the wild horse herd will travel across the San Emidio Desert and congregate just south of Empire and in the southern portion of the Lake Range. As spring approaches and the snow melts, more vegetation becomes available and the horses begin to move to higher elevations. Livestock grazing also plays an important part in the upward movement of the horse. As cattle are turned out in early spring, competition for forage becomes crucial. It appears that horses have a greater mobility than cattle do, and will not congregate, but will constantly seek areas of fresh feed (Stoddart, Smith and Box 1975). The inventory conducted during the spring of 1977 showed that the majority of the wild horses were found between 5500-7000 feet in elevation with relatively even distribution throughout the Fox Range.

There is a possibility that some interchange of horses occurs between the Selenite Range to the east and the Pyramid Lake Indian Reservation to the south. There are no fences to restrict their movement to the east and the fence to the south is in extremely poor condition with sections of one-quarter to one-half mile being down.

Very little information is available on the population condition of the wild horses in the HUA. On March 13, 1979, this author documented the fact that the horses appeared to be in bad flesh, did not appear to have healthy winter coats, and appeared to be weak and lethargic. It is possible that the horses were suffering from early stages of tetany.<sup>1/</sup> Follow-up investigations showed that the horses began to regain their strength and had recovered from the disease.

<sup>1/</sup> Tetany or grass "staggers" occurs when a wild horse undergoes a change in diet from a dry feed source to a lush grain feed source. The wild horse will be in a weakened condition for a period of one to two weeks at which time their digestive system will adjust to accept the green grass (Armstrong, personal communication March 28, 1979).

6. Minimal ORV activity occurs in the HUA, but the actual extent is undetermined (see Recreation, Step 3 URA, Overlay No. ).

The recreation inventory conducted in the early 1960s did not identify any existing recreation sites or any sites suitable for potential development. A minimal amount of hunting and fishing occurs but the actual extent is undetermined.

Mining activity in the HUA is low. For more information on the current level, refer to the Minerals Step 3 URA.

At the present time, the effect on the wild horses in the Fox and Lake Ranges resulting from external influences is low. If the activities associated with ORV use -- hunting, fishing and mining -- increase, a potentially detrimental situation will exist, in that the wild horse population might be directly affected, and some action will have to be taken to insure that the disturbance is kept to a minimum or completely eliminated.

7. Small populations of mule deer, sage grouse, seese partridge (Ammoperdix griseogularis), California quail, and chukar partridge occur in the HUA. For reasonable numbers and estimates of population densities for the above species, refer to the Wildlife Step 3 URA. Hunting does occur for these species, but the actual extent is undetermined.
8. Water supplied and developments are discussed in detail in the Water Resources Physical Profile, Step 2 URA. As daily water consumption is approximately 10 gallons per horse, the wild horse herd in the Fox and Lake Ranges will require approximately 2,244,750 gallons or 6.9 acre feet of water to survive this grazing season. Wild horses will utilize snow when it is available to supplement their water intake. ✓
9. The HUA encompasses all or part of two different allotments (see Range Management Step 3, URA Overlay No. ). A list of the allotments, the livestock operators, the active use each operator is licensed for, the percentage of the herd use area within each allotment, percent of the allotments within the HUA, and the forage that is available for distribution to livestock, wildlife, and wild horses from each allotment is shown in Table 23. ✓

Table 23. The Allotment, Livestock Operators, Percentage of Herd Use Area Within the Allotment, Percent of Allotment within the HUA, and the Forage Available for Livestock, Wildlife and Wild Horses. ✓

<u>Allotment Name</u>	<u>Livestock Operator</u>	<u>Active Use '79 (AUMs)</u>	<u>% Herd Use Area within Allotment</u>	<u>% of Allotment within HUA</u>	<u>Forage Available For HUA (AUMs )</u>
Rodeo Ck.	Ceresola Bros.	4811	92.1	82	5517
	Wesley Cook	139			
Pole Cyn.	Reginald Pert	540	7.9	100	200
	TOTAL	5490	100.0		5717

The Fox and Lake Range HUA is licensed for 5490 AUMs on public lands. This figure does not include AUMs authorized under exchange of use agreements on private lands.

The number of AUMs that will be consumed in the herd use area during the 1979 grazing season is shown in Table 24.

Table 24. AUM Demand During the 1979 Grazing Season

<u>Species</u>	<u>AUM Demand</u>
Livestock	5490
Wildlife	0
Wild Horses	7380
TOTAL	12870

The exact number of wild horses presently using the Fox and Lake Range herd use area is unknown. In 1979 it is estimated that at least 614 horses and 1 burro are utilizing this area yearlong. The distribution and AUM demand by allotment is as follows:

<u>Allotment</u>	<u>1977 #s/AUM Demand</u>	<u>1979 est. #s/AUM Demand</u>
Rodeo Creek	436/5232	<del>537/6444</del> 91/1092
Pole Canyon	<u>63/756</u>	<u>78/936</u>
TOTAL	499/5988	615/7380

All  
 The majority of the available forage that was adjudicated in the mid-60s was for use in cattle operations. Consideration was not given to wild horses or wildlife. Currently, this situation still exists. ✓

The carrying capacity for the HUA is estimated to be 5717 AUMs. The AUM demand by livestock, wildlife and wild horses combined is estimated to be 12870 AUMs. Obviously there is a shortage of forage and the use area is over-obligated by 7153 AUMs, or 125%.

10. Direct competition occurs between domestic livestock and wild horses for forage and water. Wild horses will consume approximately 7380 AUMs in addition to the previously mentioned 6.9 acre feet of water during the 1979 grazing season.

Wild horses do not compete as heavily with the major wildlife forage consumers, principally with mule deer. A critical situation might arise during drought years, as wildlife and wild horses will compete directly for crucial water supplies.

Fences used in the intensive management of livestock operations hamper as well as restrict the the movement of wild horses from one area to another, even within the confines of the herd use area. For a detailed description of the existing fences found within the HUA refer to the Physical Profile Developments & Facilities, Step 2 URA.

11. A Phase I Watershed Conservation and Development Inventory was conducted in the early 70's. This inventory was used to determine the erosion condition class by means of soil to determine the erosion condition class by means of soil surface factors. Table 25 shows what percentage of the herd use area falls within a particular erosion condition class. For more detailed information refer to the Watershed Step 3 URA.

Table 25. Phase I Watershed Conservation and Development Data.

<u>Erosion Condition Class/SSF</u>	<u>% of Herd Use Area</u>
Stable 0-20	7
Slight 21-40	48
Moderate 41-60	30
Critical 61-80	15
Severe 81-100	0

The majority of the herd use area falls within the slight (21-40 SSF) classification. Some steps will have to be taken to insure that deterioration of the watershed does not occur.

Rangeland in a deteriorated water condition (SSF greater than 60) should not be grazed if such use will accelerate soil erosion or otherwise damage the basic soil and vegetation resource.

Data is not available on the physical characteristics of the horses in the HUA. Acquisition of these data would greatly facilitate management of the species.

C. Granite Range HUA

1. The Granite Range is located in the approximate center of the Buffalo Hills Planning Unit, bordered on the west by Squaw Valley, the Smoke Creek Desert and the Susanville District Line, on the north by the Leadville Allotment, on the east by Hualapai Valley, and on the south by the Black Rock Desert. The elevation ranges from 9056 feet at Granite Peak to 3920 feet. For a more detailed description of the HUA boundary refer to the Range Management Step 3 URA, Wild Horse/Burro Overlay No. .
2. The area is comprised of approximately 101,650 acres; 88,506 acres (87%) public lands and 13,144 acres (13%) private lands.
3. There are six major vegetative types or communities which are found within the boundaries of the HUA; (1) big sagebrush, (2) low sagebrush, (3) Utah juniper, (4) mountain shrub, (5) black greasewood and (6) shadscale.

The big sagebrush type occurs generally above 5,000 feet and contains a wide variety of plants at various locations. Among these associated plants are bluebunch wheatgrass, Idaho fescue (Festuca idahoensis), Great Basin wildrye (Elymus cinereus), Lupine sp., locoweed, balsamroot (Balsamorhiza sagittata), bitterbrush (Purshia tridentata), and yellowbrush (Chrysothamnus viscidiflorus).

At lower elevations the following plants are among those associated with big sage: squirreltail, Thurber needlegrass (Stipa thurberiana), hawksbeard (Crepis sp.), yellowbrush, spiny hopsage (Grayia spinosa), cheatgrass, and Sandberg bluegrass.

The low sage type occupies the same elevational range as the big sage type, but it occurs on shallower soils. Much of the associated vegetation is the same as in big sagebrush types. One plant found on low sage sites that is not found in big sage is Hooker balsamroot (Balsamorhiza hookerii).

The juniper type occupies upland areas where precipitation exceeds 8" per year. It is found mainly on the west slopes of the Granite Range. The plants associated with big sage and low<sub>v</sub> are also juniper's associates. ✓

The mountain shrub type occurs at the higher elevations around Fox Mountain and Granite Peak. The higher precipitation at these sites allows a shrub community unlike any other to occur. Characteristic shrubs include big sagebrush, bitterbrush, snowberry (Symphoricarpus sp.), serviceberry (Amelanchier alnifolia), currant (Ribes sp.), snowbrush (Ceanothus velutinus), Idaho fescue, letterman needlegrass (Stipa lettermani), mountain brome (Bromus carinatus), balsamroot, and others, including many forbs. Pockets of aspen (Populus tremuloides) and mountain mahogany (Cercocarpus ledifolius) are present.

The shadscale (Atriplex confertifolia) sites occur on the alluvial fans. The shadscale type is found scattered throughout the habitat area. Subtle differences in soil properties apparently dictate whether the aspect will be shadscale or greasewood. Plants associated with the shadscale type are: budsage (Artemisia spinescens), winterfat (Ceratoides lanata), horsebrush, hopsage (Grayia spinosa), red brome (Bromus rubens), squirreltail, cheatgrass, and Indian ricegrass (Oryzopsis hymenoides).

The black greasewood (Sarcobatus vermiculatus) type is found in the valley bottoms, between the shadscale terraces and barren playas. Associated plants are saltgrass (Distichlis stricta), Great Basin wildrye, pickleweed (Allenrolfea occidentalis), buffaloberry (Shepherdia argenta), and seepweed (Suaeda sp.).

Poisonous plants appear to have little effect upon wild horses in this area, as there are only six species known to occur in the Granite Range in limited quantities: deathcamas, larkspur, locoweed, lupine, halogeton, and horsebrush.

4. The Granite Range has been inventories<sup>d</sup> four times in the past ten years, each time utilizing a fixed wing aircraft (see Table 26). ✓

Table 26. Wild Horse Inventory Data - Granite Range

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success (%)</u>
Spring 1969	0	0	0	---
Fall 1974	39	7	46	17.9
Summer 1976	32	10	42	31.3
Spring 1977	82	16	98	19.5

Two foaling seasons have occurred since the 1977 inventory. Based on the population dynamics of a wild horse herd (an 11%/year increase) it is estimated that approximately 121 wild horses are currently utilizing this area.

In June and July 1979, Dr. Joel Berger, working with the National Zoological Park and the Smithsonian Institute, photographed and identified 83 individual horses in the southern half of the Granite Range HUA. He was able to accurately determine the sex of 77 of the 83 animals (see Table 27).

Table 27. Sex Data for Wild Horses in the Southern Half of the Granite Range HUA.

<u>Adults</u>		<u>Juveniles</u>			<u>Yearlings</u>			<u>Foals</u>		
<u>M</u>	<u>F</u>	<u>M</u>	<u>F</u>	<u>?</u>	<u>M</u>	<u>F</u>	<u>?</u>	<u>M</u>	<u>F</u>	<u>?</u>
18	26	7	5	1	5	4	1	6	6	4

5. The HUA was flown March 14, 1979, using fixed wing aircraft, to determine winter use areas and assist in forming some generalizations on migration patterns and seasonal use areas within the Granite Range.

This general inventory indicated that an area of major winter concentration was Granite Basin, located in the southern end of the HUA approximately 6-7 miles north of Gerlach. The inventory also showed that the remainder of the horses in the HUA did not drop into the valley floors but stayed at the 6000' elevation. The spring, summer and fall months are spent in the higher elevations (approximately 7500-9000').

A possibility exists that wild horses in the Granite Range interchange with horses in the Buffalo Hills and the Calico HUAs. There is no data available to support this statement; however, data on this subject should be acquired for knowledgeable management of the species.

There is no information available on population condition of the wild horses in the Granite Range. Data on this subject should be acquired for knowledgeable management of the species.

6. Minimal ORV activity occurs in the HUA, but the actual extent is undetermined (see Recreation Step 3 URA, Overlay No. ).

The recreation inventory conducted in the mid-1960s identified five sites as having potential for future development. All sites were to be developed into campgrounds for hunting and sightseeing purposes.

Mining activity in the Granite HUA is low. Increased activity may occur if new mineral sources are discovered. For more information on the actual extent of the present activity, refer to the Minerals Step 3 URA.

At the present time, the effect upon the wild horses in the HUA, resulting from these external influences is minimal. Even if the activities associated with these influences showed a marked increase, the effect on the wild horse herd would still be minimal because of the small population inhabiting such an extensive area.

7. Small to moderate populations of antelope, sage grouse, mountain quail (Oreortyx pictus), California quail, scaled quail, and chukar partridge live in the Granite Range. A large population of mule deer also occurs in the HUA. For reasonable numbers and estimates of population densities of the above species refer to the Wildlife Step 3 URA. Hunting does occur for these species, but the actual extent is undetermined.
8. Water supplies and developments are discussed in detail in the Water Resources Physical Profile Step 2 URA. The wild horse herd in the Granite Range will consume approximately 441,650 gallons or 1.36 acre feet of water during the 1979 grazing season. Wild horses will utilize snow when it is available to supplement their water intake.
9. The Granite Range HUA encompasses part of one allotment (see Range Management Step 3 URA Overlay No. ). The name of the allotment, the livestock operators, the active use each operator is licensed for, the percentage of the herd use area within each allotment, the percent of the allotment within the HUA, and the forage that is available for distribution to livestock, wildlife and wild horses from the allotment is shown in Table 28.

Table 28. The Allotment, Livestock Operators, Percentage of Herd Use Area Within the Allotment, Percent of Allotment within the HUA, and the Forage Available for Livestock, Wildlife and Wild Horses.

<u>Allotment Name</u>	<u>Livestock Operator</u>	<u>Active Use (AUMs)</u>	<u>% Herd Use Area within Allotment</u>	<u>% of Allotment within HUA</u>	<u>Forage Available For HUA (AUMs)</u>
Buffalo Hills	Joe Selmi	17	100	24	7627
	John Casey	2667			
	Andy Jackson	177			
	TOTAL	2861	100		7627

The Granite Range HUA is licensed for 2861 AUMs on public lands. This figure does not include AUMs authorized under exchange of use agreements or private lands.

The number of AUMs that will be consumed in the herd use area during the 1979 grazing season is described in Table 29.

Table 29. AUM Demand During the 1979 Grazing Season

<u>Species</u>	<u>AUM Demand</u>
Livestock	2861
Wildlife	166
Wild Horses	<u>1452</u>
TOTAL	4479

The exact number of wild horses presently using the Granite Range HUA is unknown. In 1979 it is estimated that at least 121 horses are utilizing this area yearlong. The AUM demand by allotment is as follows:

<u>Allotment</u>	<u>1977 #s/AUMs Demand</u>	<u>1979 est. #s/AUM Demand</u>
Buffalo Hills	<u>98/1176</u>	<u>121/1452</u>
TOTAL	98/1176	121/1452

The carrying capacity of the Granite Range HUA is estimated to be 7627 AUMs. The AUM demand by livestock, wildlife, and wild horses combined is estimated to be 4479 AUMs.

10. Direct competition occurs between domestic livestock and wild horses for forage and water. Wild horses will consume approximately 1452 AUMs in addition to 1.36 acre feet of water during the 1979 grazing season. As the total population of wild horses in the Granite Range is small, so are the conflicts associated with competition for forage and water.

Fences used in the intensive management of livestock operations might hamper as well as restrict the movement of wild horses from one area to another, even within the confines of the herd use area. For a detailed description of the existing fences found within the Granite Range HUA, refer to the Physical Profile Developments and Facilities Step 2 URA.

11. A Phase I Watershed Conservation and Development Inventory was conducted in the early 70s. This inventory was used to determine the erosion condition class by means of soil surface factors. Table 30 shows what percentage of the herd use area falls within a particular erosion condition class. For more detailed information refer to the Watershed Step 3 URA.

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Table 30. Phase I Watershed Conservation & Development Data

<u>Erosion Condition Class/SSF</u>		<u>% of Herd Use Area</u>
Stable	0-20	0
Slight	21-40	10
Moderate	41-60	85
Critical	61-80	5
Severe	81-100	0

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The majority of the herd use area falls within the moderate (41-60 SSF) classification. Some steps will have to be taken to insure that further deterioration in the watershed does not occur.

12. Data is not available on the physical characteristics of the wild horses in the Granite Range. Acquisition of these data would greatly facilitate management.

D. Calico Mountains HUA

1. The Calico Mountains HUA is located in the center of the Buffalo Hills Planning Unit, bordered on the west by the Granite Range HUA and the Susanville District boundary fence, on the north by the Warm Springs Canyon HUA, and on the east and south by the Black Rock Desert. The elevation in the HUA ranges from 8491 feet at Donnelly Peak to 4000 feet. For a more detailed description of the herd use area boundary, refer to Range Management Step 3 URA, Wild Horse/Burro Overlay No. .
2. The area is comprised of approximately 157,166 acres; 157,066 acres (99.9%) public lands and 100 acres (.1%) private lands.
3. Vegetative types range from low and big sage-grass types intermingled with mountain browse types in the higher elevations, to sagebrush-grass types at moderate elevations, to shadscale-scrub and greasewood types in the valley bottoms.

Poisonous plants appear to have little effect on wild horses in this area. There are only six species that are known to appear in limited quantities in the Calicos. They are deathcamas, larkspur, locoweed, lupine, halogeton and horsebrush.

4. The calicos have been inventoried seven times in the past ten years. A fixed wing aircraft was utilized in all inventories with the exception of the winter of 1975, which was flown with a helicopter. Refer to Table 31 for a composite of the inventory data.

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Table 31. Wild Horse Inventory Data - Calico Mtns.

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success (%)</u>
Spring 1969*	5		5	---
Fall 1974	378	74	452	19.6
Winter 1975	212	51	263	24.1
Summer 1976	323	95	418	29.4
Spring 1977	537	79	616	14.7
February 1979	372	44	416	11.8
September 1979**	242	47	289	19.4

\* Adults and foals were not separated.

\*\* Only the Soldier Meadows Allotment portion was flown.

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A gathering was conducted in the Soldier Meadows Allotment in October and November 1979. During this roundup 236 animals were removed from the Calico Range. This would leave approximately 53 animals in the Soldier Meadows Allotment portion of the HUA. Using the February 1979 inventory and an 11% increase for this foaling season, it is estimated that there are 196 wild horses in the remainder of the HUA. This would leave an adjusted population of 249 horses entering the winter of 1979-80 in the Calico Range HUA.

5. The inventories indicate that the majority of the wild horses in the HUA congregate during the winter months in the 4000-5000 foot elevations at the north end of the Calicos, on the eastern side of the mountain range along the Black Rock Desert, and southwest of Donnelly Peak. The summer, spring, and fall months are spent at the higher elevations between 7000 and 8000 feet.

It is possible that an interchange of horses occurs at the southwest end of the HUA with animals from the Granite Range, at the north end of the HUA with animals from the Warm Springs Canyon area, and at the northwest side with animals from the Black Rock Range. There is no data available to support this statement.

A limited amount of information is available on the population condition of the wild horses in the HUA. During the September 1979 inventory the observer (Boni 1979) noted that the condition of the horses was poor, that their ribs could easily be seen from the air, and the ratio of adults to foals was the lowest in the area. After the conclusion of the roundup, Pomi (personal communication October 29, 1979) stated that he felt the horses that were captured would not have survived the winter.

6. Minimal ORV activity occurs in the herd use area, but the actual extent is undetermined (see Recreation Step 3 URA, Overlay No. ).

The recreation inventory conducted in the mid-1960s identified three sites as having potential for future development, all for campgrounds. The three sites are near High Rock Lake, Leadville Canyon, and Donnelly Creek.

Mining activity in the HUA is low. Some staking for uranium is occurring but it is limited at this time. For more information on the actual extent of the activity, refer to the Minerals Step 3 URA.

The effect upon the wild horses in the Calico Range resulting from external influences (i.e., mining and recreation) is minimal at the present time. If these activities increase, a potentially detrimental situation will exist in that the wild horse population might be directly affected. Some action will have to be taken to insure that the disturbance is kept to a minimum or completely eliminated.

7. Small to moderate populations of mule deer, sage grouse, California quail, and Chukar partridge occur in the Calico Range. For reasonable numbers and estimates of population densities of the above species refer to the Wildlife Step 3 URA. Hunting does occur for these species, but the actual extent is undetermined.
8. Water supplies and developments are discussed in detail in the Water Resources Physical Profile Step 2 URA. The wild horse herd in the Calico HUA will consume approximately 908,850 gallons or 2.79 acre feet of water during the 1979 grazing season. Wild horses will utilize snow when it is available to supplement their water intake. ✓
9. The Calico Range HUA encompasses parts of four different allotments (see Range Management Step 3 URA Overlay No. ). A list of the allotments, the *livestock operators, the acti-* use each livestock operator is licensed for, the percentage of the herd use area within each allotment, the percent of the allotment within the HUA, and the forage that is available for distribution to livestock, wildlife and wild horses from each allotment is described in Table 32.

Table 32. The Allotment, Livestock Operators, Percentage of Herd Use Area Within the Allotment, Percent of Allotment within the HUA, and the Forage Available for Livestock, Wildlife and Wild Horses. ✓

<u>Allotment Name</u>	<u>Livestock Operator</u>	<u>Active Use (AUMs)</u>	<u>% Herd Use Area within Allotment</u>	<u>% of Allotment within HUA</u>	<u>Forage Available For HUA (AUMs)</u>
Buffalo Hills	Joe Selmi	6	23.1	9	1918
	John Casey	1000			
	Andy Jackson	67			
Calico	Andy Jackson	1473	13.2	57	1551
Leadville	Fred Chez	2438	34.2	95	2579
Soldier Meadows	Ken Earp	<u>1263</u>	<u>29.5</u>	<u>14</u>	<u>4595</u>
		6247	100.0		10643

The Leadville allotment is currently being managed under an intensive grazing management system.

The Calico's HUA is licensed for 6247 AUMs on public lands. This figure does not include AUMs authorized under exchange of use agreements on private lands.

The number of AUMs that will be consumed in the herd use area during the 1979 grazing season is described in Table 33.

Table 33. AUM Demand During 1979 Grazing Season

<u>Species</u>	<u>AUM Demand</u>
Livestock	6247
Wildlife	40
Wild Horses	<u>2988</u>
TOTAL	<u>9275</u>

The exact number of wild horses presently using the herd use area is unknown. In 1979 it is estimated that at least 249 horses are utilizing this area yearlong. The distribution and AUM demand by allotment is as follows:

<u>Allotment</u>	<u>Feb. 1979 #s/AUM Demand</u>	<u>Nov. 1979 est. #s/AUM Demand</u>
Buffalo Hills	87/1044	97/1164
Calico	26/312	29/348
Leadville	63/756	70/840
Soldier Meadows	<u>240/2880</u>	<u>53/636</u>
	TOTAL 416/4992	249/2988

The carrying capacity of this herd use area is estimated to be 10643 AUMs. The AUM demand by livestock, wildlife, and wild horses combined is estimated to be 9275 AUMs.

10. Direct competition occurs between cattle and wild horses for forage and water. The conflicts that exist between these two species are even more pronounced during periods of drought.

Fences used in the intensive management of livestock operations hamper as well as restrict the movement of wild horses from one area to another, even within the confines of the herd use area. For a detailed description of the existing fences found within the Calico's HUA, refer to the Physical Profile Developments & Facilities Step 2, URA. ✓

11. A Phase I Watershed Conservation and Development Inventory was conducted in the early 1970s. This inventory was used to determine the erosion condition class by means of soil surface factors. Table 34 shows what percentage of the herd use area falls within a particular erosion condition class. For more detailed information refer to the Watershed Step 3, URA.

Table 34. Phase I Watershed Conservation & Development Data

<u>Erosion Condition Class/SSF</u>	<u>% of Herd Use Area</u>	
Stable	0-20	0
Slight	21-40	47
Moderate	41-60	43
Critical	61-80	10
Severe	81-100	0

The majority of the herd use area falls within the slight (21-40 SSF) classification. This erosion condition is fairly stable. Without proper management the watershed might deteriorate to the point where soil loss would occur at a future date.

12. Data is not available at this time about the physical characteristics of the wild horses in the Calico Mountain Range. This data is currently being compiled by the Palomino Valley gathering crew for the animals that were captured in the Soldier Meadows Allotment. This information should be available within a month.

E. Warm Springs Canyon HUA

1. The Warm Springs Canyon HUA is located in the northwest corner of the Buffalo Hills Planning Unit, bordered on the east by the Susanville District boundary fence, on the north by the Charles Sheldon Antelope Refuge, on the east by the Black Rock HUA, and on the south by the Calico Mountain HUA. The elevation ranges from 7,084 feet at Trough Mountain to 4550 feet. For a more detailed description of the herd use area boundary, refer to Range Management Step 3 URA, Wild Horse/Burro Overlay No. .
2. The area is comprised of approximately 83,136 acres; 82,485 acres (99%) of public lands, and 6541 acres (1%) of private lands. ✓

3. The vegetation in the HUA is characterized by big sagebrush, mountain mahogany, saltbush, bud sage, low sage, Utah juniper, rabbitbrush, horsebrush, Sandberg bluegrass, cheatgrass, squirreltail, needlegrass, buckwheat, filaree, halogeton, Russian thistle, tumbled mustard and tansymustard.

Poisonous plants appear to have little effect upon wild horses in this area, as there are only six species known to occur in the HUA in limited quantities: deathcamas; larkspur; locoweed; lupine; halogeton; and horsebrush. Great amounts of these species must be consumed over a long period of time before sickness or death will occur in a horse.

4. The Warm Spring Canyon HUA has been inventoried seven times in the past ten years; six times by fixed wing aircraft and once by helicopter in the winter of 1975. Refer to Tables 35 and 36 for a composite of the inventory data.

Table 35. Wild Horse Inventory Data - Warm Springs Canyon

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success (%)</u>
Spring 1969*	7		7	---
Fall 1974	110	35	145	31.8
Winter 1975	125	48	173	38.4
Summer 1976	156	51	207	32.7
Spring 1977	260	55	315	21.2
February 1979	234	37	271	15.8
September 1979	325	86	411	26.5

\*Adults and foals were not separated.

Table 36. Wild Burro Inventory Data - Warm Spring Canyon

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success (%)</u>
Spring 1969	0	0	0	---
Fall 1974	10	0	10	---
Winter 1975	0	0	0	---
Summer 1976	0	0	0	---
Spring 1977	0	0	0	---
February 1979	13	3	16	23.1
September 1979	1	0	1	---

A gathering operation was conducted in the HUA in October and November 1979. During this roundup 304 animals were removed from the range. This would leave approximately 107 wild horses in the herd use area.

During the February 1979 inventory 16 wild burros were observed in the herd use area. The September 1979 inventory revealed only one wild burro. A wild burro is very difficult to spot from the air. The observer talked with several of the Soldier Meadows Ranch employees who sighted the additional burros the day before the inventory. By using the February inventory numbers, and an 11% increase for the 1979 foaling season, it is estimated that 18 wild burros are presently using the herd use area.

5. The inventories indicate that relatively little seasonal migration occurs in the HUA, as the average elevation in the area is between 5000 and 6000 feet. The availability of water in the summer concentrates the horses in the northern half of the HUA but, during the remainder of the year, the wild horses are evenly distributed throughout the area. The wild burros have been observed in the southern half of the HUA.

There is a possibility that some emigration out of the herd use area and some immigration into the area occurs. This might take place with wild horses from the Black Rock Range to the east, and possibly from the Granite Range to the south.

Data is not available at this time on population condition of the wild horses in the herd use area. This information is currently being gathered to facilitate the management of the species.

6. Minimal ORV activity occurs in the herd use area, but the actual extent is undetermined (see Recreation Step 3 URA, Overlay No. ).

A recreation inventory conducted in the late 1960s identified one site as having potential for future development into an area of historical sightseeing. There has been no action taken to develop this site.

Mining activity in the HUA is low at the present time. As more and more mineral sources are discovered, increased activity and environmental disturbance will occur. For more information on the current level of mining activity, refer to the Minerals Step 3 URA.

The effect on the wild horses in the herd use area resulting from external influences is minimal at the present time. Some action will have to be taken to insure that any unnecessary disturbance is kept to a minimum or completely eliminated.

7. Small to moderate populations of mule deer, antelope, California quail, and chukar partridge occur in the HUA. For reasonable numbers and estimates of population densities of the above species, refer to the Wildlife Step 3 URA. Hunting does occur for these species, but the actual extent is undetermined.
8. Water supplies and developments are discussed in detail in the Physical Profile Water Resources Portion Step 2 URA. The wild horse/burro herd in the HUA will consume approximately 456,250 gallons or 1.4 acre feet of water during the 1979 grazing season. Wild horses/burros will utilize snow when it is available to supplement their water intake.
9. The herd use area encompasses part of one allotment (see Range Management Step 3 URA Overlay No. ). The name of the allotment, the livestock operator, the active use he is licensed for, the percentage of the herd use area within each allotment, the percent of the allotment within the HUA, and the forage that is available for distribution to livestock, wildlife, and wild horses from the allotment is described in Table 37.

Table 37. The Allotment, Livestock Operator, Percentage of Herd Use Area Within the Allotment, Percent of Allotment within the HUA, and the Forage Available for Livestock, Wildlife and Wild Horses.

<u>Allotment Name</u>	<u>Livestock Operator</u>	<u>Active Use (AUMs)</u>	<u>% Herd Use Area within Allotment</u>	<u>% of Allotment within HUA</u>	<u>Forage Available For HUA (AUMs)</u>
Soldier Meadows	Ken Earp	2255	100	25	8583

The Warm Springs Canyon HUA is licensed for 2255 AUMs on public lands. This figure does not include AUMs authorized under exchange-of-use agreements on private lands.

The number of AUMs that will be consumed in the herd use area during the 1979 grazing season is shown in Table 38.

Table 38. AUM Demand During the 1979 Grazing Season.

<u>Species</u>	<u>AUM Demand</u>
Livestock	2255
Wildlife	0
Wild Horses	1284
Wild Burros	216
TOTAL	<u>3755</u>

In 1979 it is estimated that at least 107 horses and 18 burros are utilizing this area yearlong. The AUM demand in the Soldier Meadows Allotment is as follows:

<u>Allotment</u>	<u>1977 #s/AUM Demand</u>	<u>1979 Est. #s/AUM Demand</u>
Soldier Meadows	315 horses/3780	107 horses/1284 18 burros/216
TOTAL	<u>315 / 3780</u>	<u>125 WH/B / 1500</u>

The carrying capacity of this herd use area is estimated to be 8583 AUMs. The AUM demand by livestock, wildlife, and wild horses combined is estimated to be 3755 AUMs.

10. Direct competition occurs between cattle and wild horses for forage and water. The conflicts that exist between these two species are even more pronounced during periods of drought.

Fences used in the intensive management of livestock operations hamper as well as restrict the movement of wild horses from one area to another, even within the confines of the herd use area. For a detailed description of the existing fences found within the HUA, refer to the Physical Profile Developments and Facilities Step 2 URA.

11. A Phase I Watershed Conservation and Development Inventory was conducted in the early '70s. This inventory was used to determine the erosion condition class by means of soil surface factors. Table 39 shows what percentage of the herd use area falls within a particular erosion condition class. For more detailed information, refer to the Watershed Step 3 URA. ✓

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Table 39. Phase I Watershed Conservation and Development Data.

<u>Erosion Condition Class/SSF</u>	<u>% of Herd Use Area</u>	
Stable	0-20	0
Slight	21-40	80
Moderate	41-60	20
Critical	61-80	0
Severe	81-100	0

---

The majority of the herd use area is in the slight (21-40 SSF) erosion classification. Some steps will have to be taken to insure that deterioration of the soil resource does not occur.

12. Data is not available on the physical characteristics of the wild horses in the HUA. This data is currently being gathered to facilitate the management of the species.

F. Black Rock Range (West) HUA

1. The Black Rock Range is located in the northeast portion of the Buffalo Hills Planning Unit, bordered on the north by the Charles Sheldon Antelope Refuge, on the east by the Black Rock Range (East) HUA in the Denio Planning Unit of the Winnemucca District, on the south by the Black Rock Desert, and on the west by the Black Rock Desert and the Warm Spring Canyon HUA. The elevation ranges from 8,687 feet to 4,400 feet. For a more detailed description of the herd use area boundary, refer to Range Management Step 3 URA Wild Horse/Burro Overlay No. .
2. The area is comprised of approximately 100,590 acres; 92,691 acres (92%) public land, and 7,899 acres (8%) private lands.
3. The vegetation in the herd use area is characterized by big sagebrush, saltbush, bud sage, low sage, aspen, mountain mahogany, rabbitbrush, horsebrush, greasewood, bluegrass, cheatgrass, squirreltail, needlegrass, buckwheat, filar/ee, and mustard. ✓  
  
Larkspur, locoweed, halogeton, lupine, deathcamas, and horsebrush are the poisonous plants that are widely distributed in limited quantities throughout the use area.
4. The Black Rock Range has been inventoried six times in the past ten years. A fixed wing aircraft was utilized in all inventories with the exception of the winter of 1975, which was flown with a helicopter. Refer to Table 40 for a composite of the inventory data.

Table 40. Wild Horse Inventory Data - Black Rock Range (West)

<u>Season &amp; Year</u>	<u># Adults</u>	<u># Foals</u>	<u>Total</u>	<u>Reproductive Success (%)</u>
Spring 1969*	21		21	---
Fall 1974	187	45	232	24.1
Winter 1975	190	62	252	32.6
Spring 1977	309	66	375	21.4
February 1979	284	53	337	18.7
September 1979	368	95	463	25.7

\*Adults and foals were not separated.

In November and December 1979, a gathering was conducted in the Black Rock Range (West) HUA. During this roundup 204 animals were removed from the range. This would leave an adjusted population of 259 wild horses entering the spring of 1980.

5. The inventories indicate that the majority of the wild horses congregate during the winter months in the basin between Mud Meadow Creek and Slungullion Creek, two to four miles south of the Summit Lake Indian Reservation. Horses can also be found this time of year distributed at the same elevation (5000-6000 feet) throughout the entire herd use area. During the remainder of the year horses are evenly distributed throughout the range.

A possibility exists that some emigration and/or immigration occurs in the HUA from or to the Black Rock Range (East) HUA to the east, and the Warm Spring Canyon HUA to the west.

There is no data currently available on the population condition of the wild horses in the HUA. This information is currently being gathered and will aid in the management of the species.

6. Minimal ORV activity occurs in the herd use area, but the actual extent is undetermined. For further information see Recreation Step 3 URA Overlay No. .

A recreation inventory conducted in the mid and late 1960s did not reveal sites with potential for future development.

Mining activity at the present time in the HUA is low. Some exploration is occurring for uranium. If large deposits are discovered, increased human activity and environmental disturbance will occur. For more information on the current level of mining activity refer to the Minerals Step 3 URA.

At the present time the effect upon the wild horses in the herd use area resulting from external influences is minimal. If an increase in activity is noted, steps will have to be taken to insure that the disturbance is kept to a minimum or eliminated.

7. Small to moderate populations of chukar partridge, California quail, antelope and mule deer occur in the Black Rock Range. For reasonable numbers and estimates of population densities for the above species, refer to the Wildlife Step 3 URA. Hunting does occur for these species but the actual extent is undetermined.
8. The wild horse herd in this use area will consume approximately 945,350 gallons or 2.90 acre feet of water during the 1979 grazing season. Wild horses will utilize snow when it is available to supplement their water intake.
9. The herd use area encompasses part of one allotment (see Range Management Step 3 URA Overlay No. ). The name of the allotment, the livestock operator, the active use operator is licensed for, the percentage of the herd use area within the allotment, the percent of allotment within the HUA, and the forage that is available for distribution to livestock, wildlife and wild horses from each allotment is described in Table 41.

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Table 41. The Allotment, Livestock Operator, Percentage of Herd Use Area Within the Allotment, Percent of Allotment within the HUA, and the Forage Available for Livestock, Wildlife and Wild Horses. ✓

<u>Allotment Name</u>	<u>Livestock Operator</u>	<u>Active Use (AUMs)</u>	<u>% Herd Use Area within Allotment</u>	<u>% of Allotment within HUA</u>	<u>Forage Available For HUA (AUMs)</u>
Soldier Meadows	Ken Earp	2616	100%	29	9580
	TOTAL	<u>2616</u>	<u>100</u>		<u>9580</u>

---

The Black Rock Range (West) HUA is licensed for 2616 AUMs on public lands. This figure does not include AUMs authorized under exchange-of-use agreements on private lands.

The number of AUMs consumed in the herd use area during the 1979 grazing season is shown in Table 42.

Table 42. AUM Demand During 1979 Grazing Season.

<u>Species</u>	<u>AUM Demand</u>
Livestock	2616
Wildlife	0
Wild Horses	3108
TOTAL	5724

In 1979 it is estimated that at least 259 horses are utilizing this area yearlong. The AUM demand by allotment is as follows:

<u>Allotment</u>	<u>1977 #s/AUM Demand</u>	<u>1979 est. #s/AUM Demand</u>
<del>Buffalo Hills</del> <i>Soldier Meadows</i>	375/4500	259/3108

The carrying capacity of this herd use area is estimated to be 9580 AUMs. The AUM demand by livestock, wildlife, and wild horses combined is estimated to be 5724 AUMs.

10. Direct competition occurs between cattle and wild horses for forage and water. The conflicts that exist between these two species are even more pronounced during periods of drought.

Fences used in the intensive management of livestock operations might hamper as well as restrict the movement of wild horses from one area to another, even within the confines of the herd use area. For a detailed description of the existing fences found within the Range HUA, refer to the Physical Profile Developments and Facilities Step 2 URA.

11. A Phase I Watershed and Conservation and Development Inventory was conducted in the early 1970s. This inventory was used to determine the erosion condition class by means of soil surface factors. Table 43 shown what percentage of the herd use area falls within a particular erosion condition class. For more detailed information refer to the Watershed Step 3 URA.

S-WH&B- 10/79  
Prepared by: Roger Bryan

Table 43. Phase I Watershed Conservation and Development Data.

<u>Erosion Condition Class/SSF</u>	<u>% of Herd Use Area</u>	
Stable	0-20	0
Slight	21-40	82
Moderate	41-60	15
Critical	61-80	3
Severe	81-100	0

The majority of the watershed in the HUA falls within the slight (21-40 SSF) erosion condition class. This condition should be maintained or improved wherever possible to provide the wild horse herd with the optimum habitat.

12. Data is not available at this time on the physical characteristics of the wild horses in the Black Rock Range. This data is currently being gathered to facilitate the management of the species.

#### VI. Protection

The value of wild horses/burros has changed in recent years from economic to esthetic and socio-cultural. Wild horses were formerly rounded up and sold for slaughter. This practice is currently outlawed. The Bureau of Land Management now has the responsibility to protect and manage wild horses and burros. Since the use of wild horses/burros is now a nonconsumptive use it is not possible to attach a dollar value to wild horses.

Many organized groups, such as Wild Horse Organized Assistance and the American Horse Protection Association, and some individuals, supported and lobbied for passage of PL 92-195 which placed wild horses/burros in a protected status. These groups place a high esthetic and cultural value on the animals.

Nationwide, the wild horse program is very popular and there is much public sentiment to support keeping the present wild horse/burro numbers. Statewide and locally, the general attitude toward wild horses is very different. The ranchers consider the horses, if left uncontrolled, a definite threat

to the existence of their livestock operations. The Nevada Department of Wildlife and wildlife enthusiasts can see the competition they place on forage and water needed for game species. The most common complaint against wild horses/burros is the fact that they contribute nothing to the economy such as wildlife and livestock do. A balance must be reached that will allow for a thriving and healthy wild horse herd yet will not put stable, income-producing ranches out of business.

The Nevada State Board of Wildlife Commissioners and the Nevada State Department of Wildlife has filed suit in the U.S. District Court of Nevada against the BLM, stating that excessive wild horse numbers have trampled and compacted meadow areas, indirectly caused a reduction in available browse species, and fouled many water holes crucial to wildlife species. The suit hopes to reduce the present population of wild horses/burros to the 1971 level of 10,000 by September 30, 1980. This will involve the removal of approximately 25,000 animals.

The negative value placed on wild horses/burros by the local ranching industry has resulted in numerous illegal roundups and shootings. The entire State of Nevada has only one law enforcement officer employed by the BLM. This special agent is responsible for enforcing all of the laws and regulations associated with all branches of the BLM. The BLM administers 48,000,000 acres of land in Nevada. This vast expanse of land is impossible for one person to properly control. District personnel respond to all reports of illegal activities, but the majority of the time it is after the infraction and the District personnel are unable to gather enough information to make a conviction. (41)

possible and in sufficient strength to minimize damages. Rehabilitation of fire areas should be done as quickly as is feasible and horse use of these areas should be discouraged to speed rehabilitation. If horses are not kept off burned areas during the period of rehabilitation, the vegetation will not have an opportunity to regain its vigor and seed producing capabilities. Controlled fire activity plans should take this into consideration. (under)

to the existence of their livestock operations. The Nevada Department of Wildlife and wildlife enthusiasts can see the competition they place on forage and water needed for game species. The most common complaint against wild horses/burros is the fact that they contribute nothing to the

The extent to which a number of land uses (i.e., hunting, fishing, mining activity, ORV, and recreational activity) conflict with wild horses/burros has not been determined in the Buffalo Hills Unit. A possibility exists that all of these land uses could produce a disruptive influence on the wild populations. Further studies will have to be conducted to determine the extent of the conflicts and initiate steps necessary to minimize or alleviate their effects.

#### VII. Fire

Fires in the planning unit are considered to be detrimental to wild horse movements and available forage (Neary, personal communication). Fire control response should be as quick as possible and in sufficient strength to minimize damages. Rehabilitation of fire areas should be done as quickly as is feasible and horse use of these areas should be discouraged to speed rehabilitation. If horses are not kept off burned areas during the period of rehabilitation, the vegetation will not have an opportunity to regain its vigor and seed producing capabilities. Controlled fire activity plans should take this into consideration.

#### VIII. Water

Availability of water serves as the primary distributive factor of wild horses during the spring, summer, and fall (Hall 1972). During the winter months snow is available, which allows the horses to utilize more of the range. Temporary water sources (i.e., springs, seeps, and wet meadows) and man-made waters will become important in the management of wild horses. Care must be taken to insure that overuse on the critical, temporary waters does not occur. This can be accomplished by periodic monitoring of the critical areas. When crucial levels are reached, the livestock and wild horses will have to be manipulated to protect the water sources from irreparable damage. If additional man-made developments are necessary to utilize an area, Hall (1972) warns that it takes at least two to three years for a horse to become accustomed to a new development.

#### IX. Wilderness

The initial phase of the wilderness inventory of the Winnemucca District has been completed. The purpose of the inventory was to eliminate from further wilderness consideration those lands that clearly lack wilderness characteristics and to reserve those lands for the intensive phase of the inventory which clearly exhibit wilderness values. All six of the HUAs contain land which will be intensively inventoried. The BLM has not determined if wild horse management will be compatible with Wilderness Study Areas.



Figure 1. Susanville District (facing left) and Winnemucca District (right). Note the fence line contrast and brush damage on the Winnemucca side (W 1/2 Sec. 18, T. 34 N., R. 20 E.)



Figure 2. Note how the horses have damaged (pawed) the horsebrush, and how the hop sage has been grazed to an approximate 4" in height (same location as above).



Figure 3. Exclosure in background (NW 1/4, Sec. 12, T. 34 N.,  
R. 21 E.). Note contrast with surrounding vegetation.



Figure 4. Close-up of exclosure and the fence line contrast.  
Note the 100% utilization on the previous years' grass  
production outside the exclosure.



Figure 5. Dead horse and high lined big sage.  
Note that only the bark was removed from the plants  
(SW 1/4, Sec. 19, T. 34 N., R. 20 E.)



Figure 6. Same general location as above  
showing the high lined sagebrush.



Figure 7. The amount of fecal material piled up around many of the horses indicated they must have been down 3-5 days prior to death.

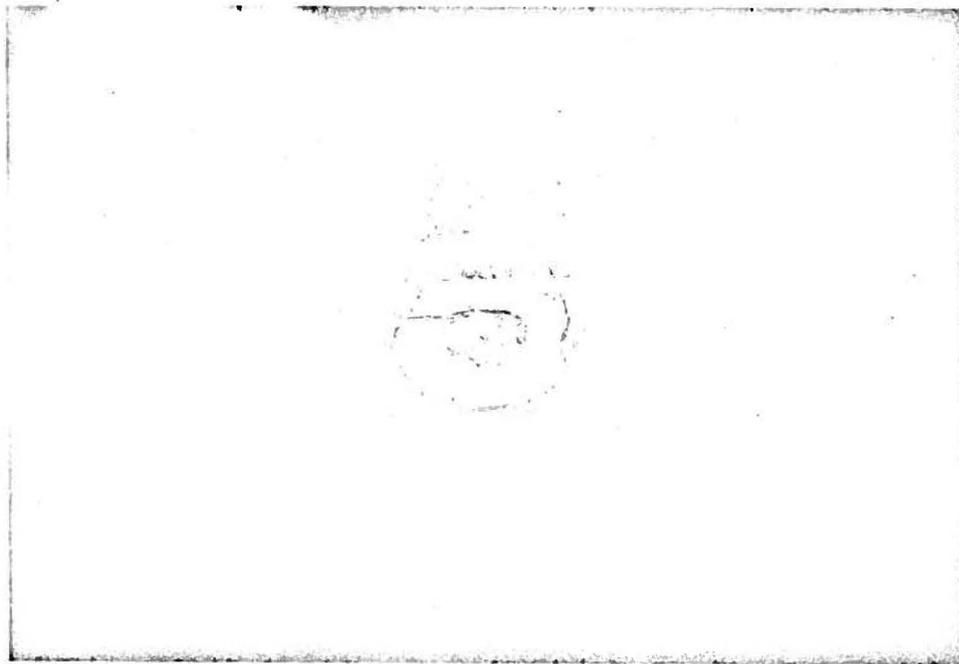


Figure 8. The bone marrow indicates death by malnutrition -- note reddish-pink color of marrow in cannon bone.



Figure 9. Many carcasses were located in and along streams. Note the denuded streambanks.



Figure 10. A two-year-old filly weak and down but still alive. Note the patches of hair that have been rubbed from its face in struggling.



Figure 11. Wild horses on the south end of the Buffalo Hills.  
The photograph was taken from approximately 25 yards  
indicating the horses' weak and lethargic condition.



Figure 12. Ticks were abundant on most carcasses  
and live horses found in the area.

Plant List

balsamroot  
big sagebrush  
bluebunch wheatgrass  
buckwheat  
bud sagebrush  
cheatgrass  
clasping pepperweed  
deathcamas  
Douglas rabbitbrush  
filaree  
fourwing saltbush  
gray rabbitbrush  
greasewood  
Great Basin wildrye  
gilia  
green rabbitbrush  
halogeton  
horsebrush  
Idaho fescue  
Indian ricegrass  
juniper  
larkspur  
locoweed  
low sagebrush  
lupine  
needlegrass  
oceanspray  
pinyon pine  
phlox  
quaking aspen  
rose  
rumex  
Russian thistle  
saltbrush  
Sandberg bluegrass  
seepweed  
serviceberry  
shadscale  
snowberry  
spiny hopsage  
starthistle  
squirreltail  
tansymustard  
Thurber needlegrass  
tumblemustard  
winterfat

Balsamorhiza sagittata  
Artemisia tridentata  
Agropyron spicatum  
Eriogonum spp.  
Artemisia spinescens  
Bromus tectorum  
Lepidium perfoliatum  
Zygadenus spp.  
Chrysothamnus viscidiflorus  
Erodium cicutarium  
Atriplex canescens  
Chrysothamnus nauseosus  
Sarcobatus vermiculatus  
Elymus cinereus  
Lepodactylon pungens  
Chrysothamnus spp.  
Halogeton glomeratus  
Tetradymia spinosa  
Festuca idahoensis  
Oryzopsis hymenoides  
Juniperus osteosperma  
Delphinium spp.  
Astragalus app.  
Artemisia arbuscula  
Lupinus caudatus  
Stipa spp.  
Hobodiscus discolor  
Pinus monophylla  
Phlox spp.  
Populus tremuloides  
Rosa woodsii  
Rumex spp.  
Salsola kali  
Atriplex spp.  
Poa secunda  
Suaeda spp.  
Amelanchier alnifolia  
Atriplex confertifolia  
Symphoricarpos spp.  
Grayia spinosa  
Centaurea spp.  
Sitanion hystrix  
Descurainia spp.  
Stipa thurberiana  
Sisymbrium altissimum  
Ceratoides lanata

Animal List

California quail  
chukar partridge  
domestic cow  
domestic sheep  
mountain quail  
mule deer  
pronghorn  
Rocky Mountain elk  
sage grouse  
wild burro  
wild horse

{ scaled quail  
{ quail partridge

Lophortyx californicus  
Alectoris graeca  
Bos taurus  
Ovis ovis  
Oreortyx pictus  
Odocoileus hemionus  
Antilocapra americana  
Cervus canadensis  
Centrocercus urophasianus  
Equus asinus  
Equus caballus

Callipepla squamata  
Ammodramus griseogularis

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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECORD OF PUBLIC PARTICIPATION  
IN THE PLANNING PROCESS

Planning Unit(s)

Sonoma, Blue Wing, Buffalo Hills

MFP

Date of Contact

2/22/79

Name(s) of Individual(s) or Group(s)

Wild Horse Organized Assistance Inc. (Dawn Larkin)

Location of Contact

Phone call

Bureau Interviewer(s) or Moderator(s)

Rodger T. Bryan

INTERVAL OF PUBLIC INVOLVEMENT

Phase I - Identification of Publics and Issues

Phase II - Specific Resource Input (URA Steps III and IV; Planning Area Analysis; and MFP Step I)

Phase III - Identification and Analysis of Impacts (MFP Step II); Decision Making (MFP Step III)

Phase IV - Public Review of Management Decision (MFP Step III) and Followup

TYPE OF PUBLIC PARTICIPATION (CHECK AS MANY AS APPLICABLE)

Individual Contact

Questionnaires or Surveys

Small Group Discussion

Written Statements

Public Meeting

Other (specify) phone call

Summarize briefly public input. (Use additional sheets if necessary. Attach worksheets, rosters, press releases, etc. as appropriate.)

Informed UHOA that we were in the planning process for the Sonoma-Gerbach Resource Area URA, and that I was doing the wild horse / Burns section. I asked her if it would be possible to get together and go over my line and get her input. I originally planned on next week sometime but she informed me she would be in tomorrow & that we could get together then.

Prepared by

Rodger T. Bryan

Date

2/22/79

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECORD OF PUBLIC PARTICIPATION  
IN THE PLANNING PROCESS

Planning Unit(s)

Buffalo Hills

MFP

Date of Contact

March 28, 1979

Name(s) of Individual(s) or Group(s)

Dr. Jack Armstrong, D.V.M. Supervisor of the Animal Disease Lab  
of the Division of Animal Industry with  
the Nevada State Department of Agric.

Location of Contact

Telephone Conversation

Bureau Interviewer(s) or Moderator(s)

Robert T. Bryan

INTERVAL OF PUBLIC INVOLVEMENT

Phase I - Identification of Publics and Issues

Phase II - Specific Resource Input (URA Steps III and IV; Planning Area Analysis; and MFP Step I)

Phase III - Identification and Analysis of Impacts (MFP Step II); Decision Making (MFP Step III)

Phase IV - Public Review of Management Decision (MFP Step III) and Followup

TYPE OF PUBLIC PARTICIPATION (CHECK AS MANY AS APPLICABLE)

Individual Contact

Questionnaires or Surveys

Small Group Discussion

Written Statements

Public Meeting

Other (specify)

Summarize briefly public input. (Use additional sheets if necessary. Attach worksheets, rosters, press releases, etc. as appropriate.)

Dr. Armstrong stated that a wild horse will experience a disease known as tetany or grass "staggers" while undergoing a <sup>sudden</sup> change in diet from dry to green grasses. This will cause a marked weakened condition and will last for a period of one to two weeks at which time their digestive system will adjust to accept the green grass.

Prepared by

Robert T. Bryan

Date

3/28/79

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECORD OF PUBLIC PARTICIPATION  
IN THE PLANNING PROCESS

Planning Unit(s)

Sonoma, Buffalo Hills, Blue Wing

MFP

Date of Contact

May 23, 1979

Name(s) of Individual(s) or Group(s)

Walt Conley, Assit. Professor Dept. of Fishery and Wildlife Sciences,  
Location of Contact New Mexico State Univ., Las Cruces  
New Mexico

Utah State University, Logan, Utah

Bureau Interviewer(s) or Moderator(s)

INTERVAL OF PUBLIC INVOLVEMENT

Phase I - Identification of Publics and Issues

Phase II - Specific Resource Input (URA Steps III and IV; Planning Area Analysis; and MFP Step I)

Phase III - Identification and Analysis of Impacts (MFP Step II); Decision Making (MFP Step III)

Phase IV - Public Review of Management Decision (MFP Step III) and Followup

TYPE OF PUBLIC PARTICIPATION (CHECK AS MANY AS APPLICABLE)

Individual Contact

Questionnaires or Surveys

Small Group Discussion

Written Statements

Public Meeting

Other (specify)

Summarize briefly public input. (Use additional sheets if necessary. Attach worksheets, rosters, press releases, etc. as appropriate.)

Dr. Conley stated that a reasonable rate of increase per year in an actual population of wild horses would be 13-15%.

Prepared by

Roderic T. Boyer

Date

May 23, 1979

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECORD OF PUBLIC PARTICIPATION  
IN THE PLANNING PROCESS

Planning Unit(s)

Spruce, Bull, Collins, Redwing

MFP

Date of Contact

May 23, 1979

Name(s) of Individual(s) or Group(s)

Dawn Lapsin of WFOA

Location of Contact

Logan, Utah (Utah State University)

Bureau Interviewer(s) or Moderator(s)

Edgar T. Ryan

INTERVAL OF PUBLIC INVOLVEMENT

Phase I - Identification of Publics and Issues

Phase II - Specific Resource Input (URA Steps III and IV; Planning Area Analysis; and MFP Step I)

Phase III - Identification and Analysis of Impacts (MFP Step II); Decision Making (MFP Step III)

Phase IV - Public Review of Management Decision (MFP Step III) and Followup

TYPE OF PUBLIC PARTICIPATION (CHECK AS MANY AS APPLICABLE)

Individual Contact

Questionnaires or Surveys

Small Group Discussion

Written Statements

Public Meeting

Other (specify)

Summarize briefly public input. (Use additional sheets if necessary. Attach worksheets, rosters, press releases, etc. as appropriate.)

I asked Dawn if she had an opportunity to review the outline I'd given her on the Unit Resource Analysis of the wild horses/bunnos. and if she had, did she have any suggestions for improvement. She said that she had reviewed that that she felt it would adequately portray the present situation. She did not have any additions or deletions to make.

Prepared by

Edgar T. Ryan

Date

5/30/79

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECORD OF PUBLIC PARTICIPATION  
IN THE PLANNING PROCESS

Planning Unit(s)

Buffalo Hills  
MFP

Date of Contact

August 10, 1979

Name(s) of Individual(s) or Group(s)

Don Pomi, Manager of the Palomino Valley Capture Crew and  
Holding Facilities.

Location of Contact

Telephone conversation

Bureau Interviewer(s) or Moderator(s)

Rodger T. Byan

INTERVAL OF PUBLIC INVOLVEMENT

Phase I - Identification of Publics and Issues

Phase II - Specific Resource Input (URA Steps III and IV; Planning Area Analysis; and MFP Step I)

Phase III - Identification and Analysis of Impacts (MFP Step II); Decision Making (MFP Step III)

Phase IV - Public Review of Management Decision (MFP Step III) and Followup

TYPE OF PUBLIC PARTICIPATION (CHECK AS MANY AS APPLICABLE)

Individual Contact

Questionnaires or Surveys

Small Group Discussion

Written Statements

Public Meeting

Other (specify)

Summarize briefly public input. (Use additional sheets if necessary. Attach worksheets, rosters, press releases, etc. as appropriate.)

Stated that the horses removed during the first part of Buffalo Hills roundup have been larger than average and in good physical condition + flesh.

Prepared by

Rodger T. Byan

Date

8/10/79

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECORD OF PUBLIC PARTICIPATION  
IN THE PLANNING PROCESS

Planning Unit(s)

Suffalo Hills

MFP

Date of Contact

October 29, 1979

Name(s) of Individual(s) or Group(s)

Don Tomi

Location of Contact

Telephone Conversation

Bureau Interviewer(s) or Moderator(s)

Robert T. Ryan

INTERVAL OF PUBLIC INVOLVEMENT

Phase I - Identification of Publics and Issues

Phase II - Specific Resource Input (URA Steps III and IV; Planning Area Analysis; and MFP Step I)

Phase III - Identification and Analysis of Impacts (MFP Step II); Decision Making (MFP Step III)

Phase IV - Public Review of Management Decision (MFP Step III) and Followup

TYPE OF PUBLIC PARTICIPATION (CHECK AS MANY AS APPLICABLE)

Individual Contact

Questionnaires or Surveys

Small Group Discussion

Written Statements

Public Meeting

Other (specify)

Summarize briefly public input. (Use additional sheets if necessary. Attach worksheets, rosters, press releases, etc. as appropriate.)

The round up in the Soldier Meadows Allotment portion of the Calico Mtns. is completed. Don stated that the physical condition of horses captured is poor and many ribs are showing. He stated that its a good thing we started sturing here as he felt they wouldn't have made it through the winter.

Prepared by

Robert T. Ryan

Date

10/29/79