

BLM LIBRARY



88045911

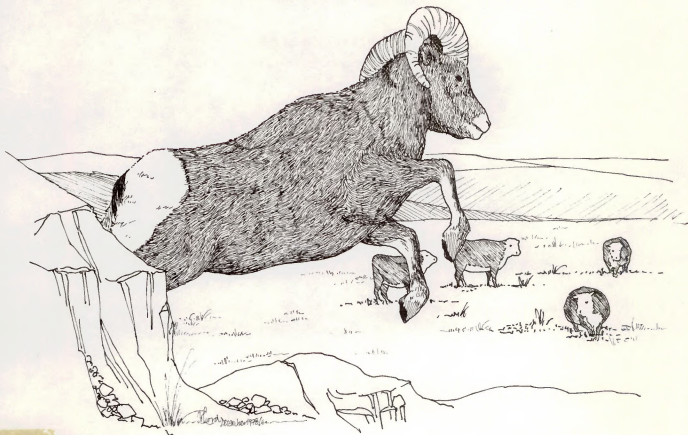


U.S. DEPARTMENT OF THE INTERIOR - BUREAU OF LAND MANAGEMENT

TRICKLE MOUNTAIN Forage Allocation Research

Report No. 2
Denver Service Center

160-04



SF
97
.L36
no. 2
c. 2

BUREAU OF LAND MANAGEMENT
Library
Denver Service Center



PLANTATION HANDBOOK
BUREAU OF LAND MANAGEMENT
DENVER SERVICE CENTER



1088045911

SF
97
.L36
10.2
e.2

PROGRESS REPORT: TRICKLE MOUNTAIN
RESEARCH STUDY

Contract No. YA-512-CT8-22

November 1, 1978

Dr. James A. Bailey, Principal Investigator
Department of Fishery and Wildlife Biology
Colorado State University
Fort Collins, Colorado 80523
Phone: (303) 491-5002

BUREAU OF LAND MANAGEMENT
Library
Denver Service Center

RECEIVED

NOV 19 1954

LIBRARY OF THE

NOV 19 1954

LIBRARY OF THE
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN
NOV 19 1954

This research report is provided from Bureau of Land Management Contract YA-512-CTB-22, Trickle Mountain Forage Allocation Research (San Luis Valley, Colorado).

As semiannual reports are received under the contract they will be forwarded to the field offices for various management applications.

Dr. Allen Cooperrider - BLM Wildlife Research Biologist

Dr. Dale Hoffman - BLM Research Coordinator

Richard M. Kerr - BLM Contracting Officer's Authorized Representative

1870
1871
1872
1873
1874
1875
1876
1877
1878
1879
1880

1881
1882
1883
1884
1885
1886
1887
1888
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898
1899
1900

1901
1902
1903
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920

I. ABSTRACT

This report summarizes work on the Trickle Mountain Research Study (Contract No. YA-512-CT8-22) during April 1 through September 30, 1978. Field work continued throughout this period. A total of 418 groups of ungulates representing approximately 2100 individuals were observed and their locations and activities recorded. This data has been used to determine spring and summer ranges of all four wildlife species. Of particular interest is the discovery of a lambing area adjacent to Middle Creek which is largely on BLM administered lands. Fecal samples from 520 wild ungulates and 540 domestic animals have been systematically collected at 2-week intervals and sent to the laboratory. Preliminary food habits data for the period March 12 through June 15 are reported here.

II. OBJECTIVES

A. Overall Program Objectives:

To determine use of and competition for forage by livestock, mule deer, elk, antelope and bighorn sheep by habitat types and seasons in the Trickle Mountain Wildlife Habitat Area and to identify opportunities for habitat improvement and management.

B. Specific Study Objectives:

1.) Determine forage use by mule deer, elk, antelope, bighorn sheep and domestic livestock by habitat sites and season in the Trickle Mountain Area. Determine diet overlap and potential for competition. Determine gross forage carrying capacity for all ungulates.

2.) Develop a model that will define alternative forage allocations for big game and livestock from the above data.

3.) Propose potential habitat improvements and management that will produce alternative carrying capacities for big game and livestock simultaneous with ecosystem integrity and environmental quality based on information obtained during the study. These will include, but not be limited to:

- a.) vegetative manipulation
- b.) controlled burning
- c.) fencing
- d.) seeding and planting
- e.) livestock grazing systems; and
- f.) big game harvest, trapping and transplanting

III. PROCEDURES

A. General:

This report summarizes work on the project from April 1 through September 30, 1978.

Field work on the project has continued according to the proposal, i.e. food habits and distribution data for all ungulates on the range have been collected every 2 weeks, and SVIM-type range surveys have been conducted during summer.

The Principal Investigator, J. A. Bailey, made two trips to the study area during this time. In addition, several reviews of the project and/or presentations of the project have been made by BLM personnel. On May 31, 1978 Richard Kerr, the COAR; Dale Hoffman, BLM Research Coordinator; Ed Roberts, Wildlife Biologist, Colo. S.O.; Clay Bridges, Wildlife Biologist, Canon City D.O. and Project Inspector; and John Schwartz, Wildlife Biologist, spent 2 days in the field reviewing the project. On May 15, 1978 Clay Bridges and John Schwartz spent a day in Fort Collins reviewing data collection and analysis procedures with Allen Cooperrider and on August 29, 1978 Dale Hoffman, Richard Kerr and Ken Brown from D.S.C. spent a day in Fort Collins with James Bailey and Allen Cooperrider reviewing concepts to be applied to the forage allocation model. Finally, on September 18, 1978 Allen Cooperrider made a presentation to employees of the Colorado State Office, BLM on the project.

Other personnel working on the project include Scott McCollough, the C.S.U. graduate student assigned to the project, Scott Hoover, a C.S.U. undergraduate who was hired for the summer to work on the SVIM inventory and Becky Trentledge, Gary Glueckert, and Tom Lankenau, all C.S.U. undergraduates who were hired in September as work/study students to code and keypunch data and assist in other aspects of data analysis.

B. Data Collection:

1.) Habitat Use. From April 1 through September 30, 1978 an additional 418 observations of groups of wild ungulates have been made. This represents approximately 2100 individual animals. For each observation, data on time, location, sex and age classes and activity have been recorded.

Data on distribution and movements of marked bighorn sheep have also been collected. There are approximately 20 marked sheep in the population. In this effort we have been assisted by Els Cooperrider, another C.S.U. graduate student who is working on a separate but related study under the direction of Dr. Richard Hansen of the Range Science Department. She is studying food habits and nutrition of bighorn lambs and ewes on the Trickle Mountain lambing areas, and some of the preliminary observations about sheep movements are based on her data.

2.) Food Habits. Ten fecal samples have been collected from each of the wild ungulate species for each 2-week period from April 1 to September 30. In addition, beginning in May, 15 samples from livestock have been collected from each allotment having either cattle or horses on it. This represents 540 livestock samples (Table 1). All samples have been preserved in salt and submitted to the Composition Analysis Laboratory at C.S.U. for analysis.

3.) Forage Production. Scott McCollough, graduate student assigned to the project, and a technician spent the first part of June identifying and collecting plants of the area. New species were added to the collection throughout the summer.

Vegetative typing of the area was based on a map developed by Steve Hennen of the San Luis Resource Area Office in Alamosa. Vegetative types were delineated on aerial photos and on topographic maps. Types usually consisted of many Site Writeup Areas. It was not practical to sample vegetation in all of the large number of SWA's. Therefore, SVIM-type range inventories were carried out in a randomly selected portion (at least 25%) of SWA's within each vegetation type. A total of 48 SWA's was sampled.

4.) Other. Field notes on all vertebrate animals seen on the Trickle Mountain area are being kept, and an updated and annotated list of mammals and birds observed will be included in the next progress report.

C. Data Analysis:

1.) Habitat Use. No major analysis of the data on habitat use has been made. Data have been punched on cards and a FORTRAN program to check cards for errors and to make initial summaries has been written and debugged. The data have been plotted on topographic maps for visual inspection.

2.) Food Habits. Fecal samples from five more 2-week periods, covering March 12 through June 3, have been analyzed. These data have been coded and punched on cards and preliminary summaries have been prepared for each period.

3.) Forage Production. No major analysis of the data on forage production has been made to date. A system for data analysis is being developed by the BLM Denver Service Center and is expected to be operational by December, 1978. Six completed SWA forms have been sent to Denver for trial runs that will aid in developing the system.

D. Forage Allocation Model:

As the major emphasis at this stage of the project has been on data collection and analysis, work on the forage allocation model has been limited to developing the overall structure of the simulation model. Active programming and debugging of the model will commence in January when Scott McCollough will take over major responsibility for the field work allowing Allen Cooperrider to concentrate on data analysis and modeling.

IV. RESULTS AND DISCUSSION

Preliminary results are available on spring and summer distribution and spring food habits of the four wild ungulate species. Winter distribution and food habits were reported previously.

A. Spring and Summer Distribution:

All four species of wild ungulates exhibited a seasonal shift in range use between April-June as compared to July-September.

Bighorn Sheep. In late March sheep began to disperse from winter concentration areas on Trickle Mountain and along Ford and Middle Creek. Two distinct movements were noted. One was the movement of ewe groups (ewes, lambs, and yearlings) to the traditional lambing rocks on Buffalo Pass. The other was the movement of ewe groups into a lambing area along Middle and Jacks Creek.

Sheep were first observed on the Buffalo Pass lambing area on April 27 and lambs were first observed there on May 25. Sheep were observed along the Middle Creek area on occasion during winter. This area had not previously been identified as a lambing area. We first observed lambs there on May 31. The area consists of primarily BLM administered lands.

None of the approximately 20 marked ewes in the population were observed on the Middle Creek lambing area, whereas virtually all of the known

marked ewes were observed at one time or another on the Buffalo Pass lambing ground. Sheep were observed to stay close to the lambing rocks until mid-July when sheep with lambs were observed at greater distances from the rocks. On July 17 collared sheep were seen back on the winter range and for the rest of the summer collared sheep were often observed feeding in the cutover hayfield along Saguache Creek from the Dabney Ranch east to where Highway 114 crosses the creek. However, some of these marked sheep were later seen back in the vicinity of the lambing grounds. As there were no marked sheep along Middle Creek, movements of individuals could not be followed in that area.

A major summer-use area for rams has been reported in the vicinity of Antora Peak. This area which is entirely Forest Service land was not actively observed during summer.

Pronghorn Antelope. Antelope appeared to move from winter concentrations on Trickle Mountain west and north to summer ranges at higher elevation, providing more mesic sites. Major concentrations were noted in the vicinity of Antelope Park and the North Park/Bear Creek area.

Mule Deer. Mule deer appeared to disperse from winter concentrations rather than to move from one discrete winter range to a summer concentration area. Deer were observed throughout the wildlife habitat area during summer but in very low densities with one exception. Deer concentrations were noted along Saguache Creek from May through September.

Elk. Elk followed the same pattern of dispersal as did deer, except that they seemed to favor wet areas along small tributary streams such as Bear Creek, Upper Sheep Creek, and Upper Antelope Creek. Elk could be observed regularly in such areas until cattle were turned onto them. Major spring concentrations were observed in North Park/Bear Creek, Antelope Park, and Indian Park. Major summer concentrations were observed in the Sargents Mesa area.

B. Food Habits:

Food habits for seven periods during March 12 to June 15 are shown in the Appendix and the pattern is described below.

Bighorn Sheep. Bighorn sheep continued to rely on sagebrush, primarily Fringed Sage (Artemisia frigida) through mid-April when they switched to a diet composed primarily of grasses and grasslike plants. Important grass and grasslike plants observed in fecal samples included fescues (Festuca spp.), muhly's (Muhlenbergia spp.), needlegrasses (Stipa spp.), sedges (Carex spp.), and spike sedges (Eleocharis spp.).

Pronghorn Antelope. Pronghorn continued to feed primarily on shrubs with sagebrush (Artemisia spp.), rabbitbrush (Chrysothamnus spp.), and saltbush (Atriplex spp.) continuing to be the principal species observed in fecal pellets.

Mule Deer. Mule deer continued to feed primarily on browse species particularly sagebrush and conifers (Pinus spp., Pseudotsuga sp. and Juniperus spp.) and to eat very little grass until May when grasses greened up. During May significant amounts of grass and grasslike plants were consumed, after which deer appeared to shift back to browse species such as gooseberry (Ribes spp.), true mountain mahogany (Cercocarpus montanus) and willow (Salix spp.).

Elk. By mid-March elk were consuming substantial amounts (31%) of grass and grasslike plants and they continued to consume increasing amounts through May, reaching a peak intake of 89% grass and grasslike species in late May. Important species consumed included fescues, muhly's, wheatgrasses (Agropyron spp.), bluegrasses (Poa spp.), danthonias (Danthonia spp.) and sedges.

Table 1. Livestock Fecal Collections, Trickle Mountain Study Area, June - September 1978.

Period	Allotment	Number of Samples	
		Cattle	Horses
25 (June 4 - June 17)	Laughlin Gulch	15	15
	Poison Gulch	15	
	Taylor Canyon	15	
26 (June 18- July 1)	Laughlin Gulch	15	15
	Poison Gulch		
	Cross Creek	15	
	Trickle Mountain	15	
1 (July 2 - July 15)	Laughlin Gulch	15	15
	Poison Gulch		
	Cross Creek	15	
	Trickle Mountain	15	
2 (July 16 - July 29)	Laughlin Gulch	15	15
	Poison Gulch	15	
	Trickle Mountain	15	
3 (July 30 - August 12)	Laughlin Gulch	15	15
	Poison Gulch	15	
	Trickle Mountain	15	
4 (August 13 - August 26)	Laughlin Gulch	15	15
	Poison Gulch	15	
	Trickle Mountain	15	
5 (August 27 - September 9)	Laughlin Gulch	15	15
	Poison Gulch	15	
	Cross Creek	15	
	Trickle Mountain	15	
6 (September 10 - September 23)	Laughlin Gulch	15	
	Poison Gulch	15	
	Cross Creek	15	
	Trickle Mountain	15	
	Sheep Creek	15	
7 (September 24 - October 7)	Laughlin Gulch	15	
	Sheep Creek	15	
Total		435	105

**Appendix - Food Habits Summary for Trickle Mountain Wild
Ungulates (March 12 - June 15)**

FOOD HABITS SUMMARY FOR PERIOD MARCH 12-25
Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn	Pronghorn	Mule	
		Sheep	Antelope	Deer	Elk
		%	%	%	%
<u>GRASSES AND GRASSLIKE</u>					
Wheatgrass	<u>Agropyron</u>				2
Sedge	<u>Carex</u>			4	3
Fescue	<u>Festuca</u>	2		5	10
Prairie Junegrass	<u>Koeleria cristata</u>	2			3
Muhly	<u>Muhlenbergia</u>	3		2	6
Bluegrass	<u>Poa</u>	3		3	5
Blue Grama	<u>Bouteloua gracilis</u>	4			
Needlegrass	<u>Stipa</u>	1			
	Others	3	1	1	2
	TOTAL	18	1	15	31
<u>BROWSE</u>					
Sagebrush	<u>Artemisia</u>	57	82	26	35
Mt. Mahogany	<u>Cercocarpus montanus</u>	2		1	2
Rabbitbrush	<u>Chrysothamnus</u>		12	1	11
Mistletoe	<u>Phoradendron</u>				1
Fir	<u>Pseudotsuga</u>		2	1	9
Pine	<u>Pinus</u>	1		10	5
Yucca	<u>Yucca</u>	5			1
Winterfat	<u>Ceratoides lanata</u>	3		3	
Saltbush	<u>Atriplex</u>	7		11	
Juniper	<u>Juniperus</u>			5	
Willow	<u>Salix</u>			14	
Greasewood	<u>Sarcobatus vermiculatus</u>			1	
	Others	1		3	3
	TOTAL	76	96	76	67
<u>FORBS</u>					
Globemallow	<u>Shpaeralcea</u>	1			
Clover	<u>Trifolium</u>	1		4	
Penstemon	<u>Penstemon</u>			1	
Pepperweed	<u>Lepidium</u>		1		
	Others	3	2	2	
	TOTAL	5	3	7	
<u>UNKNOWN</u>					
				3	4

FOOD HABITS SUMMARY FOR PERIOD MARCH 26 - APRIL 8
Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn	Pronghorn	Mule	Elk
		Sheep	Antelope	Deer	
		%	%	%	%
<u>GRASSES AND GRASSLIKE</u>					
Blue Grama	<u>Bouteloua gracilis</u>	4	2		3
Brome	<u>Bromus</u>	1			
Sedge	<u>Carex</u>	2		4	1
Fescue	<u>Festuca</u>	8			6
Prairie Junegrass	<u>Koeleria cristata</u>	1			2
Muhly	<u>Muhlenbergia</u>	2	1		12
Bluegrass	<u>Poa</u>	10			
Dropseed	<u>Sporobolus</u>	3			
Wheatgrass	<u>Agropyron</u>				6
Tufted Hairgrass	<u>Deschampsia caespitosa</u>				4
Ricegrass	<u>Oryzopsis</u>				1
Needlegrass	<u>Stipa</u>				4
	Others	2	1	2	2
	TOTAL	33	5	6	41
<u>BROWSE</u>					
Sagebrush	<u>Artemisia</u>	48	70	61	41
Saltbrush	<u>Atriplex</u>	2			
Winterfat	<u>Ceratoides lanata</u>	6			2
Fir	<u>Pseudotsuga</u>	3	1	3	4
Yucca	<u>Yucca</u>	4			2
Rabbitbush	<u>Chrysothamnus</u>		11	2	3
Aspen	<u>Populus</u>		2		
Mt. Mahogany	<u>Cercocarpus montanus</u>			1	
Juniper	<u>Juniperus</u>			6	
Pine	<u>Pinus</u>			14	
Cactus	Cactaceae			1	
Willow	<u>Salix</u>			1	
Broom Snakeweed	<u>Gutierrezia sarothrae</u>		3		
	Others	1	3	2	1
	TOTAL	64	90	91	53
<u>FORBS</u>					
Pingue	<u>Hymenox</u>		2		
Cinquefoil	<u>Potentilla</u>		2		
	Others	2	1	3	2
	TOTAL	2	5	3	2
<u>UNKNOWN</u>					
			1		

FOOD HABITS SUMMARY FOR PERIOD APRIL 9-22
Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn	Pronghorn	Mule	
		Sheep	Antelope	Deer	Elk
		%	%	%	%
<u>GRASSES AND GRASSLIKE</u>					
Wheatgrass	<u>Agropyron</u>	2			2
Blue Grama	<u>Bouteloua gracilis</u>	1			2
Sedge	<u>Carex</u>	2		2	3
Tufted Hairgrass	<u>Deschampsia caespitosa</u>				2
Fescue	<u>Festuca</u>	13		1	16
Prairie Junegrass	<u>Koeleria cristata</u>	3			2
Muhly	<u>Muhlenbergia</u>	5		1	13
Ricegrass	<u>Orzopsis</u>				5
Bluegrass	<u>Poa</u>	2		1	6
Squirrel Tail	<u>Sitanion hystrix</u>	1			
Needlegrass	<u>Stipa</u>	1			2
	Others	1	1	3	2
	TOTAL	31	1	8	55
<u>BROWSE</u>					
Sagebrush	<u>Artemisia</u>	53	39	55	27
Fir	<u>Pseudotsuga</u>	1		5	2
Saltbush	<u>Atriplex</u>		26		
Winterfat	<u>Ceratoides lanata</u>		6		
Rabbitbrush	<u>Chrysothamnus</u>		15	1	3
Yucca	<u>Yucca</u>	1			1
Juniper	<u>Juniperus</u>			12	
Cactus	Cactaceae		10	1	
Pine	<u>Pinus</u>	4		9	
Aspen	<u>Populus</u>				10
	Others	2	1	2	1
	TOTAL	61	97	85	44
<u>FORBS</u>					
Cinquefoil	<u>Potentilla</u>	2	1	2	1
Sandwort	<u>Arenaria fendleri</u>	1			
Sulphur Flower	<u>Eriogonum</u>	2			
Mustard	<u>Descurainia</u>		1		
	Others	2	1	4	2
	TOTAL	7	3	6	3

FOOD HABITS SUMMARY FOR PERIOD APRIL 23 - MAY 6
Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn	Pronghorn	Mule	
		Sheep	Antelope	Deer	Elk
		%	%	%	%
<u>GRASSES AND GRASSLIKE</u>					
Wheatgrass	<u>Agropyron</u>	1	3	1	11
Sedge	<u>Carex</u>	5			5
Danthonia	<u>Danthonia</u>				1
Tufted Hairgrass	<u>Deschampsia caespitosa</u>	2			3
Fescue	<u>Festuca</u>	11	2		14
Prairie Junegrass	<u>Koeleria cristata</u>	2			4
Muhly	<u>Muhlenbergia</u>	21	2	2	9
Ricegrass	<u>Oryzopsis</u>	1			2
Bluegrass	<u>Poa</u>	6	1	1	4
Needlegrass	<u>Stipa</u>	11			7
	Others	1	1	3	1
	TOTAL	61	9	7	61
<u>BROWSE</u>					
Sagebrush	<u>Artemisia</u>	28	51	51	9
Saltbush	<u>Atriplex</u>			1	
Mt. Mahogany	<u>Cercocarpus montanus</u>		3		
Rabbitbush	<u>Chrysothamnus</u>		4		2
Juniper	<u>Juniperus</u>		3	6	
Pine	<u>Pinus</u>	2			1
Fir	<u>Pseudotsuga</u>	2	6		1
Currant	<u>Ribes</u>			21	
Willow	<u>Salix</u>				12
Barberry	<u>Mahonia</u>				6
	Others	1	3	2	1
	TOTAL	33	70	81	32
<u>FORBS</u>					
Penstemon	<u>Penstemon</u>		1		
Cinquoil	<u>Potentilla</u>	4	6		2
Townsendia	<u>Townsendia</u>		7		
Milk Vetch	<u>Astragalus</u>		2		3
Mustard	<u>Descurainia</u>		3		
Aster	<u>Composite</u>			3	
Phlox	<u>Phlox</u>			3	
	Others	1	2	2	1
	TOTAL	5	21	8	6
<u>UNKNOWN</u>					
			1	1	1

FOOD HABITS SUMMARY FOR PERIOD MAY 7-20
Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn	Pronghorn	Mule	
		Sheep	Antelope	Deer	Elk
		%	%	%	%
<u>GRASSES AND GRASSLIKE</u>					
Wheatgrass	<u>Agropyron</u>	3	2	1	7
Sedge	<u>Carex</u>	24		9	14
Fescue	<u>Festuca</u>	12			22
Muhly	<u>Muhlenbergia</u>	3		1	5
Bluegrass	<u>Poa</u>	4	5	8	9
Needlegrass	<u>Stipa</u>	1			3
Tufted Hairgrass	<u>Deschampsia caespitosa</u>				4
Ricegrass	<u>Oryzopsis</u>				1
Rush	<u>Juncus</u>	3			
Spikesedge	<u>Eleocharis</u>	13		2	1
	Others	2	2	2	2
	TOTAL	65	9	23	68
<u>BROWSE</u>					
Sagebrush	<u>Artemisia</u>	15	53	25	16
Saltbush	<u>Atriplex</u>	1			
Winterfat	<u>Ceratoides lanata</u>	2			
Mt. Mahogany	<u>Cercocarpus montanus</u>	4	1	3	
Rabbitbrush	<u>Chrysothamrus</u>		10		1
Currant	<u>Ribes</u>	6	9	6	
Broom Snakeweed	<u>Gutierrezia sarothrae</u>		4		
Juniper	<u>Juniperus</u>			4	
Pine	<u>Pinus</u>			14	3
Fir	<u>Pseudotsuga</u>			12	2
Yucca	<u>Yucca</u>				1
Willow	<u>Salix</u>				6
	Others	1	1	2	
	TOTAL	29	78	66	29
<u>FORBS</u>					
Aster	<u>Composite</u>			1	
Sulpher Flower	<u>Eriogonum</u>			1	
Cinquefoil	<u>Potentilla</u>	2	4	2	1
Mustard	<u>Descurainia</u>		5	2	
Milkvetch	<u>Astragalus</u>			1	
	Others	1	3	1	2
	TOTAL	3	12	8	3
<u>UNKNOWN</u>		1	1	1	

FOOD HABITS SUMMARY FOR PERIOD MAY 21 - JUNE 3
 Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn	Pronghorn	Mule	
		Sheep	Antelope	Deer	Elk
		%	%	%	%
GRASSES AND GRASSLIKE					
Wheatgrass	<u>Agropyron</u>	3		6	7
Sedge	<u>Carex</u>	3	1	9	15
Fescue	<u>Festuca</u>	12		4	26
Muhly	<u>Muhlenbergia</u>	43	4	3	5
Tufted Hairgrass	<u>Deschampsia caespitosa</u>			2	5
Bluegrass	<u>Poa</u>			9	14
Squirreltail	<u>Sitanion hystrix</u>			2	
Blue Grama	<u>Bouteloua gracilis</u>				2
Danthonia	<u>Danthonia</u>				14
Spikesedge	<u>Eleocharis</u>			11	
	Others	5	3	1	1
	TOTAL	62	8	47	89
BROWSE					
Sagebrush	<u>Artemisia</u>	4	27	8	
Mt. Mahogany	<u>Cercocarpus montanus</u>	6	4		
Pine	<u>Pinus</u>		3		
Fir	<u>Pseudotsuga</u>	3	7		
Currant	<u>Ribes</u>	6	15	26	
Snowberry	<u>Symphoricarpos</u>	3			
Rabbitbrush	<u>Chrysothamnus</u>		1		
Juniper	<u>Juniperus</u>			3	
Willow	<u>Salix</u>				2
Mistletoe	<u>Phoradendron</u>		3		
	Others	4	3	4	6
	TOTAL	26	63	41	8
FORBS					
Mustard	<u>Descurainia</u>	3			
Aster	<u>Composite</u>		5		
Actinea	<u>Hymenoxys</u>		2		
Bladderpod	<u>Lesquerella</u>		2		
Cinquefoil	<u>Poteneilla</u>	7	7	2	3
Penstemon	<u>Penstemon</u>		3		
Milkvetch	<u>Astragalus</u>		11		
Sweetclover	<u>Melilotus</u>			9	
	Others			1	
	TOTAL	10	30	12	3

FOOD HABITS SUMMARY FOR PERIOD JUNE 8-15
 Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn	Pronghorn	Mule	
		Sheep	Antelope	Deer	Elk
		%	%	%	%
<u>GRASSES AND GRASSLIKE</u>					
Wheatgrass	<u>Agropyron</u>				5
Blue Grama	<u>Bouteloua gracilis</u>	3			
Sedge	<u>Carex</u>	7		2	14
Danthonia	<u>Danthonia</u>	4			8
Tufted Hairgrass	<u>Deschampsia caespitosa</u>				18
Fescue	<u>Fetusca</u>	9		2	1
Prairie Junegrass	<u>Koeleria cristata</u>	3			1
Muhly	<u>Muhlenbergia</u>	17	4		7
Ricegrass	<u>Oryzopsis</u>	1			1
Bluegrass	<u>Poa</u>				8
Dropseed	<u>Sporobolus</u>	2			
Spikesedge	<u>Eleocharis</u>	1			
	Others	3	2	1	2
	TOTAL	49	6	3	65
<u>BROWSE</u>					
Sagebrush	<u>Artemisia</u>	6	.35		5
Mt. Mahogany	<u>Cercocarpus montanus</u>	5	5	32	1
Rabbitbrush	<u>Chrysothamnus</u>		2	2	
Aspen	<u>Populus</u>				1
Currant	<u>Ribes</u>	8	15	6	1
Snowberry	<u>Symphoricarpos</u>	10	1	7	2
Skunkbush	<u>Rhus trilobata</u>	5		9	
Willow	<u>Salix</u>			19	5
Russet Buffaloberry	<u>Sheperdia canadensis</u>				4
	Others	2	1	1	2
	TOTAL	36	59	82	20
<u>FORBS</u>					
Rose	<u>Rosa</u>			9	
Aster	<u>Composite</u>		7		
Sulphur Flower	<u>Eriogonum</u>		2		
Fingue	<u>Hymenoxys</u>		4		
Penstemon	<u>Penstemon</u>		1		
Cinquefoil	<u>Potentilla</u>	4	8	2	8
Globemallow	<u>Sphaeralcea</u>	4	1		
Clover	<u>Trifolium</u>			2	1
Milk Vetch	<u>Astragalus</u>		4	3	2
Mustard	<u>Descurainia</u>		1		
Dandelion	<u>Taraxacum</u>		1		
	Others	2	4	1	1
	TOTAL	10	33	17	12
<u>UNKNOWN</u>					
		1	1	1	1

BUREAU OF LAND MANAGEMENT

Library
Denver Service Center

U.S. DEPARTMENT
BUREAU OF LA
BORROW

SF Trickle Mountain F
97 Report NO.2

.136
no.2
C.2

DATE LOANED	BORROWER

(Continued on reverse)

Pd

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

11
12
13

14
15
16

17
18
19
20