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Outdoor Facts

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Game Information Leaflet

Number 107

WINTER FOODS OF MULE DEER IN PICEANCE BASIN

Food choices of tame mule deer (*Odocoileus hemionus*) were observed on pinyon-juniper (*Pinus edulis-Juniperus osteosperma*) winter range in Piceance Basin from October-April, 1978-79 and 1979-80. Forage selections of 8 tame deer (6 in April 1980) were recorded during 5 foraging periods in 1978-79 and 6 in 1979-80. Foraging trials were conducted in 2 sections of the basin each sampling period to include varying vegetation compositions. One section was a pinyon-juniper-mixed shrub type in the northeastern portion of the basin and the other a pinyon-juniper-sagebrush (*Artemisia tridentata*) type in the southwestern portion. Methods and results of the species composition and nutritional quality aspects of deer winter diets were presented elsewhere (Bartmann 1983). This report augments data on major forage species discussed in that publication with a graphic presentation of forage use by deer over winter (Fig. 1). In addition, all plant species eaten by tame deer are listed for reference use in habitat improvement or reclamation projects in Piceance Basin or similar areas.

During the 2-year study, tame deer were observed for 685 hours and took over 641,000 bites of forage. They ate at least 139 plant species including 28 trees and shrubs, 94 forbs and lower plant forms, and 17 grasses and sedges (Table 1). Sometimes, species within the same genus could not be consistently identified throughout the winter. In these cases, the genus name is given and species known to have been eaten are shown in parentheses. Plant nomenclature follows the Plant Information Network of the USDI, Biological Services Program.

Species composition, on a dry-weight basis, of individual deer diets were combined and averaged to derive a composite diet for each month by area and year. Thus, there were 4 composite

diets for each month (2 areas x 2 years) except January which had 2 because there were foraging trials for that month only in 1 year (1980). Composite diets were then averaged by month to derive the values in Table 1.

Results of the food habits work (Bartmann 1983) show deer ate a variety of species during all winter periods. The total number of species eaten each month ranged from 56 in November to 81 in March. However, only 1/5 to 1/3 of these species averaged 1% or more of monthly diets. Changes in use of many species generally reflected changing availability due to phenology or snow conditions. Shrub and tree species were important during early and mid-winter because they were available above the snow and were

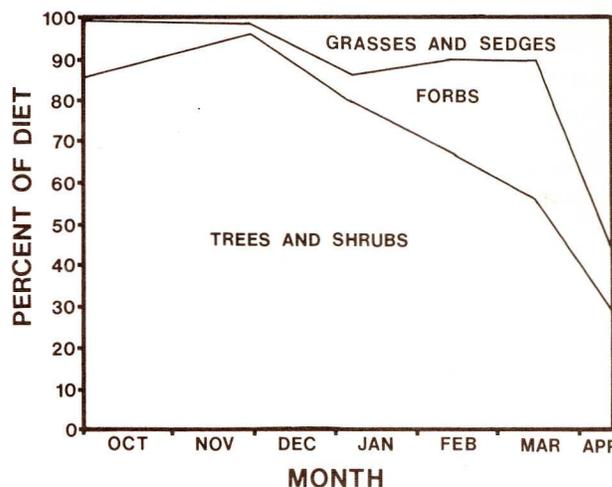


Figure 1. Relative importance of major forage classes from October-April in diets of tame mule deer on pinyon-juniper in Piceance Basin, 1978-79 and 1979-80 winters combined.

nutritionally equal or superior to grasses and forbs (Fig. 1). Importance of grasses and forbs peaked in spring when new growth began. This new growth was nutritionally superior to browse in both crude protein and digestibility. Thus, forage diversity is important to wintering mule deer in Piceance Basin and revegetation and habitat improvement efforts should provide for it.

Table 1. Monthly percent composition of tame mule deer diets on pinyon-juniper range in Piceance Basin during October-April 1978-79 and 1979-80.

Species	Month					
	O	N	J	F	M	A
TREES AND SHRUBS						
<i>Amelanchier utahensis</i>	21	13	9	5	7	10
<i>Artemisia tridentata</i>	t ^a	3	1	4	6	4
<i>Atriplex canescens</i>				t	t	
<i>Atriplex confertifolia</i>			1	1	1	
<i>Brickellia scabra</i>				t		
<i>Ceratoides lanata</i>	t		t		t	
<i>Cercocarpus martinii</i>	t					
<i>Cercocarpus montanus</i>	22	29	4	2	2	7
<i>Chrysothamnus depressus</i>						t
<i>Chrysothamnus nauseosus</i>	t	t	2	8	3	t
<i>Chrysothamnus viscidiflorus</i>	t	1	1	1	2	t
<i>Ephedra viridis</i>				t	t	t
<i>Gutierrezia sarothrae</i>	t	t	t	t	2	t
<i>Juniperus osteosperma</i>	1	23	27	23	9	2
<i>Juniperus scopulorum</i>		1	t	t	t	t
<i>Leptodactylon pungens</i>	t		t	1	t	t
<i>Mahonia repens</i>	t			t	t	t
<i>Pachystima myrsinites</i>	t					
<i>Pinus edulis</i>	1	11	24	13	9	1
<i>Purshia tridentata</i>	34	10	7	2	5	5
<i>Quercus gambelii</i>	7	6	2	t	1	1
<i>Rhus trilobata</i>				t	t	
<i>Ribes cereum</i>				t	t	
<i>Rosa woodsii</i>	t					
<i>Sarcobatus vermiculatus</i>			t	4		
<i>Symphoricarpos oreophilus</i>	1	t		1	1	1
<i>Tetradymia canescens</i>	t	t	t	1	4	t
<i>Yucca glauca</i>					t	

Table 1. (continued)

Species	Month					
	O	N	J	F	M	A
FORBS AND LOWER PLANT FORMS						
<i>Achillea lanulosa</i>	t	t	t			t
<i>Agoseris aurantiaca</i>			t			1
<i>Allium acuminatum</i>						t
<i>Androsace septentrionalis</i>					t	
ANTENNARIA	t			t	t	t
(<i>A. parvifolia</i>)						
(<i>A. rosea</i>)						
ARABIS						t
<i>Arenaria eastwoodiae</i>	t		t	t	t	
<i>Artemisia dracunculul</i>		t		t	t	
<i>Artemisia frigida</i>	t	t	t	2	1	t
<i>Artemisia ludoviciana</i>	t	t	t	1	4	t
<i>Astragalus chamaeleuce</i>					t	t
<i>Astragalus convallarius</i>	t	t	t	t		
<i>Astragalus purshii</i>						t
<i>Astragalus spatulatus</i>	t			t	t	
<i>Astragalus tenellus</i>	t					
ASTRAGALUS						t
<i>Atriplex rosea</i>		t	t	t	t	
<i>Balsamorhiza sagittata</i>	t	t	t	t		t
<i>Brickellia grandiflora</i>		t				
<i>Calochortus nuttallii</i>						t
CASTILLEJA	t	t	t			t
(<i>C. chromosa</i>)						
(<i>C. lineariaefolia</i>)						
<i>Centraria nivalis</i>					t	t
<i>Chaenactis douglasii</i>	t					t
<i>Chenopodium fremontii</i>	t	t	t	t	t	
CHENOPODIUM				t		
CIRCIUM		t	t	t	t	t
(<i>C. undulatum</i>)						
<i>Collinsia parviflora</i>						t
<i>Comandra umbellata</i>	4					t
<i>Crepis acuminata</i>	t	t	t			t
<i>Cryptantha sericea</i>	t	t	t	1	1	3
CYMOPTERUS						t
(<i>C. acaulis</i>)						
(<i>C. fendleri</i>)						
<i>Delphinium nuttallianum</i>						t
<i>Descurainia richarsonii</i>	t			t		
<i>Erigeron eatonii</i>	t		t		t	t
<i>Erigeron speciosus</i>	t					
<i>Erigeron subtrinervis</i>	t	t	t			

Table 1. (continued)

Species	Month					
	O	N	J	F	M	A
<i>Eriogonum alatum</i>	t	t	t	t	t	t
<i>Eriogonum cernuum</i>		t		t	t	
<i>Eriogonum lonchophyllum</i>	2		1	8	8	t
<i>Eriogonum ovalifolium</i>				t	t	
<i>Eriogonum umbellatum</i>	1			t		1
<i>Erysimum asperum</i>	t	t				
<i>Euphorbia fendleri</i>					t	
<i>Euphorbia robusta</i>	t	t	t	t	t	
<i>Galium coloradoensis</i>			t	t	t	
<i>Geranium fremontii</i>	t					
<i>Haplopappus acaulis</i>		t	t	t	t	t
<i>Haplopappus nuttallii</i>	1	t	1	3	4	
<i>Hedysarum boreale</i>	t		t	t	t	t
<i>Helianthella uniflora</i>	t	t	t			
<i>Heliomeris multiflora</i>	t					
<i>Heterotheca villosa</i>	t					t
<i>Heuchera parvifolia</i>		t	t	t		
<i>Hymenopappus filifolius</i>			2	3	6	t
<i>Hymenoxys acaulis</i>	t					
<i>Ipomopsis aggregata</i>	t	t				t
<i>Kochia scoparia</i>				t	t	
<i>Kuhnia rosmarinifolia</i>				t	t	
<i>Lappula redowskii</i>				t		
<i>Lepidium montanum</i>	t			t		t
<i>Leucelene ericoides</i>				t	t	
<i>Linum lewisii</i>	t	t			t	
<i>Lithospermum ruderales</i>	t	t	t	t		
LITHOSPERMUM					t	
<i>Lomatium dissectum</i>						t
<i>Lomatium grayi</i>						t
<i>Lomatium triternatum</i>	t					
<i>Lupinus argenteus</i>				t	t	
<i>Lupinus caudatus</i>	1	1	1	t	t	1
<i>Machaeranthera leucanthemifolia</i>	t	t	t	t	t	t
<i>Mertensia lanceolata</i>	t	t	t			2
Moss	t	t		t	t	t
<i>Penstemon caespitosus</i>	1			t		
<i>Penstemon fremontii</i>	t			t	t	t
<i>Penstemon osterhoutii</i>			1	2	4	t
<i>Penstemon strictus</i>	t	t		t	t	t
<i>Penstemon watsonii</i>	t					t
<i>Phlox hoodii</i>		t	t	1	2	2
<i>Phlox longifolia</i>	t		t			t
<i>Phlox multiflora</i>					t	
<i>Physaria acutifolia</i>	t		t	t	t	t

Table 1. (continued)

Species	Month					
	O	N	J	F	M	A
<i>Salsola iberica</i>			t	1	t	
<i>Senecio multilobatus</i>	t	t		t	t	t
<i>Senecio mutabilis</i>	t	t				2
<i>Senecio werneriaefolius</i>				t	t	
<i>Sisymbrium altissimum</i>	t					
<i>Sphaeralcea coccinea</i>	1		t			
<i>Streptanthus cordatus</i>	t		t	t	t	
<i>Taraxicum officinale</i>						t
<i>Tragopogon dubius</i>	t					
<i>Trifolium gymnocarpon</i>						t
<i>Verbascum thapsis</i>						t
<i>Viola nuttallii</i>						t
<i>Zygadenus venosus</i>						1
GRASSES AND SEDGES						
AGROPYRON	t	t	3	1	t	3
(<i>A. cristatum</i>)						
(<i>A. smithii</i>)						
(<i>A. spicatum</i>)						
<i>Aristida fendleriana</i>			t	t		
<i>Bouteloua gracilis</i>	t	t	t	t	1	t
<i>Bromus tectorum</i>	t	t	t	t	t	t
CAREX	t	t	1	1	3	4
(<i>C. geophila</i>)						
(<i>C. pityophila</i>)						
<i>Elymus cinereus</i>	t	t		t		t
<i>Hilaria jamesii</i>				t	t	
<i>Koeleria cristata</i>	t	t	t	t	1	1
<i>Oryzopsis hymenoides</i>	t	t	3	3	2	1
POA	t	t	2	1	2	43
(<i>P. fendleriana</i>)						
(<i>P. pratensis</i>)						
(<i>P. sandbergii</i>)						
<i>Sitanion hystrix</i>	t	t	t	t	t	t
<i>Stipa comata</i>	t	t	2	2	1	t

a t = <1%

LITERATURE CITED

Bartmann, R.M. 1983. Composition and quality of mule deer diets on pinyon-juniper winter range, Colorado. J. Range Manage. 36:in press.

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