

Sheep Mountain MDI

Habitat Happenings

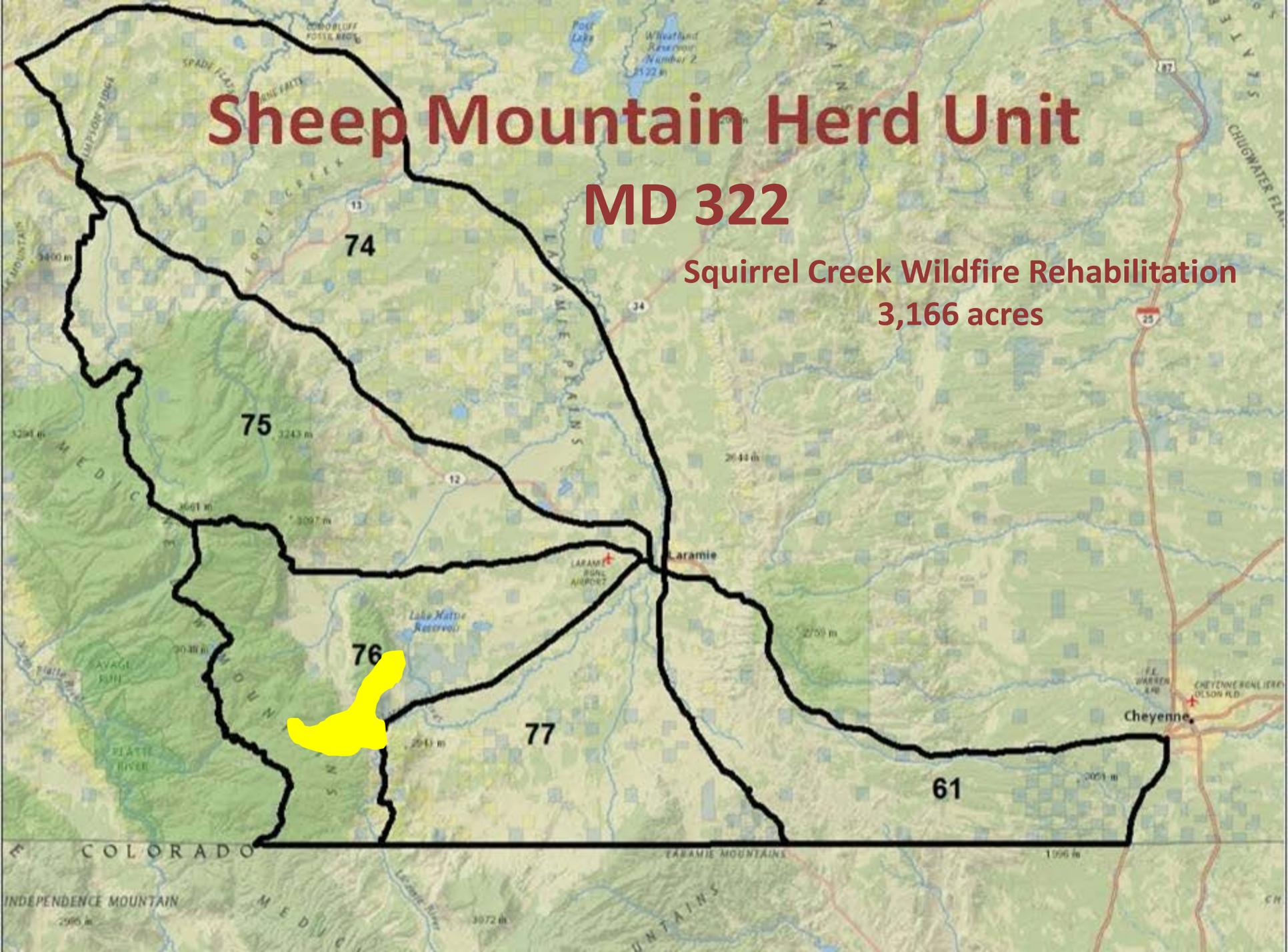
April 28, 2016

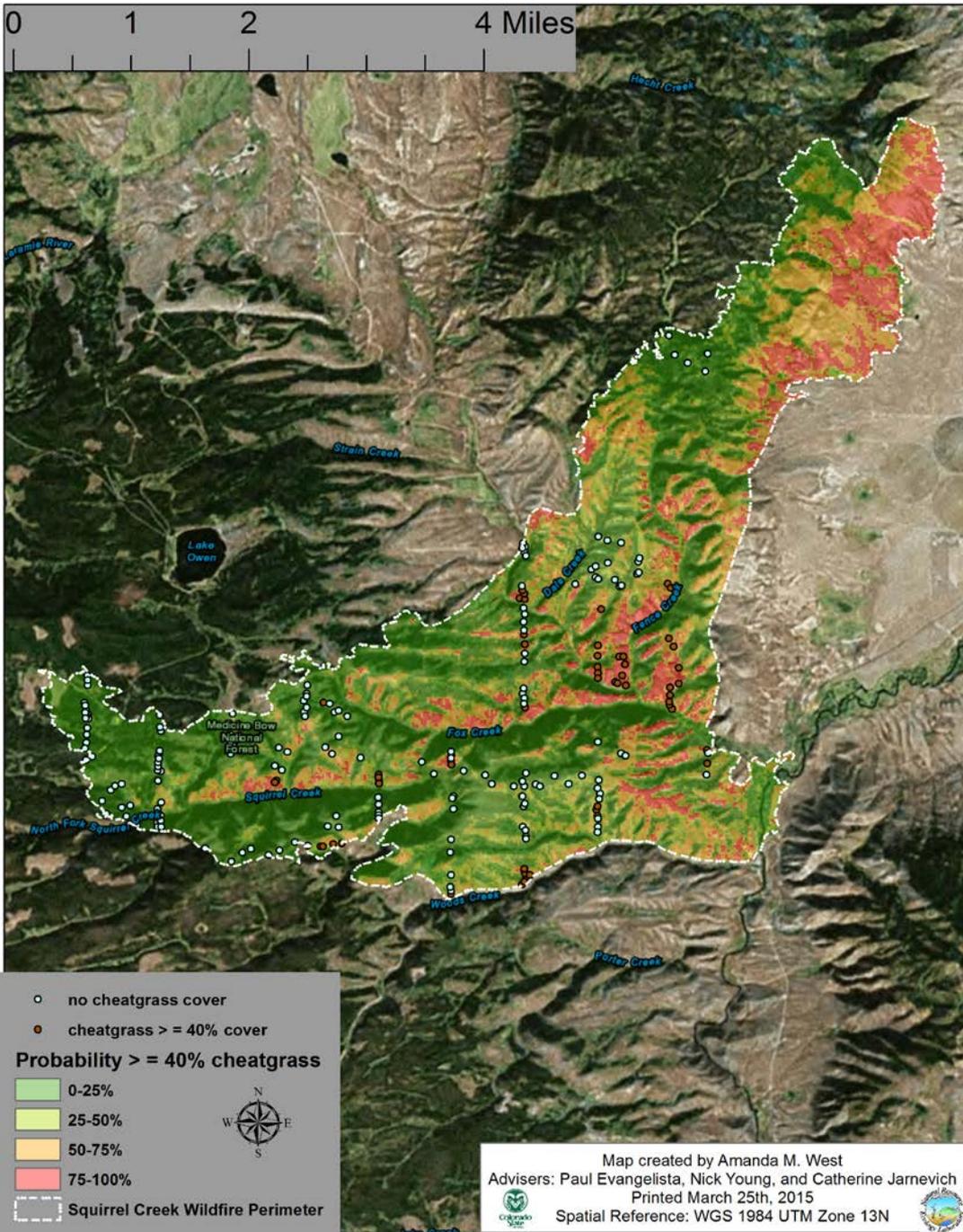
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Sheep Mountain Herd Unit

MD 322

Squirrel Creek Wildfire Rehabilitation
3,166 acres





Satellite imagery in combination with vegetation sampling plots (ground truthing), resulted in development of a map showing % probability of sites being $\geq 40\%$ cheatgrass composition.

Areas in red / orange are highest probability, and account for 3,166 acres of the 10,587 acre wildfire, and are the focus areas for treatment in 2016.

Predominantly southerly aspects, steep slopes, and/or areas of highest fire severity.

CSU Natural Resource Ecology Lab
\$38,376 in-kind services for mapping efforts





Project Partners

<u>Source</u>	<u>© = committed</u>	<u>Amount</u>
Cash		
USFS Title II	©	\$ 7,000
Muley Fanatics Foundation (SE Wyoming Chapter)	©	\$10,000
Mule Deer Foundation (Cheyenne Chapter and National)	©	\$15,000
Rocky Mountain Elk Foundation	©	\$10,000
Wyoming Wildlife and Natural Resource Trust		\$28,000
Wyoming Governor's Big Game License Coalition		\$10,000
<u>Mule Deer Initiative – Wyoming Game & Fish Commission</u>	<u>©</u>	<u>\$20,000</u>
TOTAL (cash)		\$100,000
 In-Kind (project planning, design, implementation, monitoring)		
USFS – Laramie Ranger District	©	\$ 2,500
WGFD – Laramie Region & Statewide Wildlife and Habitat Management	©	\$ 2,500
<u>CSU – Natural Resource Ecology Lab</u>	<u>© and completed</u>	<u>\$38,376</u>
TOTAL (in-kind)		\$43,376
 GRAND TOTAL		 \$143,376.00



**Plateau herbicide @ 6 oz/acre &
6 gallons/acre water as carrier
\$6.60 per acre for product**

**Application via helicopter in late August
2016 prior to cheatgrass germination
\$25.00 per acre for application**

JELM MOUNTAIN MULE DEER / MOOSE DIETS WINTER 2015

Wyo. Game & Fish Dept.

Jelm Mountain

Plants	Mule	Mule	Mule	Mule	
	Deer	Deer	Deer	Deer	Moose
	MD #1	MD #2	MD #3	MD #4	#1
Conifer:	0.0 %	0.0 %	0.0 %	3.0 %	0.0 %
Bromus tectorum	2.1				
Poa	1.4				
Other Grass	1.4			1.5	
Total Grasses:	4.9 %	0.0 %	0.0 %	1.5 %	0.0 %
Alnus incana stem	4.1	1.4	9.1	1.5	2.4
Amelanchier alnifolia stem	4.8	4.2	1.2		0.6
Artemisia frigida	6.6	0.7	1.5	7.4	
Artemisia tridentata leaf	53.3	64.8	60.9	52.9	
Artemisia tridentata stem	2.7	5.7	9.1	3.7	
Betula leaf				0.7	
Betula stem	9.0	16.2	8.5	13.3	19.4
Cercocarpus montanus leaf	1.4				
Cornus					0.6
Prunus virginiana stem			4.9		0.6
Purshia tridentata leaf	7.6	1.4		3.7	
Purshia tridentata stem				2.2	
Ribes spp. leaf	1.4	1.4	1.2		
Ribes spp. stem			1.2		3.3
Salix spp. leaf				1.5	
Salix spp. stem	2.1		1.8	6.7	73.1
Shrub leaf				1.5	
Shrub stem	0.7				
Total Shrubs:	93.7 %	95.8 %	99.4 %	95.1 %	100.0 %
Erigeron	1.4				
Forb	1.4	2.8	0.6	0.4	
Total Forbs:	1.4 %	2.8 %	0.6 %	0.4 %	0.0 %
Lichen	0.0 %	1.4 %	0.0 %	0.0 %	0.0 %
TOTAL	100.0 %				

93% of moose diet is 2 species!
Birch 19% and Willow 73%

MULE DEER

Big sagebrush 55% - 70%
True Mtn Mahogany 0 – 1.4%
Antelope Bitterbrush 1.4% - 7.6%
Birch 8% - 16% of diet

Mule deer utilize very small amounts of grasses and forbs in *unburned* habitats in winter

MULE DEER DIETS WINTER 2015

FORBES WHMA (UNBURNED) VS. WOODS LANDING (BURNED)

Wyo. Game & Fish Dept.

Mule Deer

		Forbes WHMA UNBURNED	Woods Landing BURNED in 2012	
Plants				
	Agropyron spp.		7.6	
	Festuca idahoensis		3.8	
	Poa		1.9	
	Total Grasses:	0.0%	13.3%	GRASSES
3	Amelanchier alnifolia stem	Serviceberry	8.5	7.5
	Artemisia frigida			1.9
1	Artemisia tridentata leaf	Big Sagebrush	51.1	32.1
	Artemisia tridentata stem		4.2	
	Chrysothamnus leaf			1.9
4	Cercocarpus montanus leaf	True Mountain Mahogany	2.1	
	Cercocarpus montanus stem		4.3	9.4
	Mahonia (Berberis) leaf		8.5	5.7
	Prunus virginiana stem		4.3	
2	Purshia tridentata leaf	Antelope Bitterbrush	17.0	11.3
	Shepherdia leaf			1.9
	Total Shrubs:	100.0%	71.7%	SHRUBS
	Astragalus			0.9
	Lesquerella			1.9
	Mertensia			10.4
	Plantago			0.9
	Mustard			0.9
	Total Forbs:	0.0%	15.0%	FORBS
TOTAL		<u>100.0%</u>	<u>100.0%</u>	

ANTELOPE BITTERBRUSH

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WY
W
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CHEYE

Date Received: 03/09/2015
Date Reported:

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Date Reported:

Customer sample ID: ABF0215

FORBES WHMA @ Sheep Mountain

Customer sample ID: ABZN0215

ZN RANCH @ Saratoga

Lab ID: P1581

	Dry Weight Basis	As Received Basis
Moisture (%)	43.47	
Dry Matter (%)	56.53	
Crude Protein (%)	8.2	4.66
Neutral Detergent Fiber (%)	53.05	29.99
Acid Detergent Fiber (%)	29.89	16.90
TDN (%)	65.29	36.91
DE (Mcal/lb)	1.31	0.74
ENE (Mcal/lb)	58.43	33.03
NE Lactation (Mcal/lb)	0.71	0.40
NE Maintenance (Mcal/lb)	0.73	0.41
NE Gain (Mcal/lb)	0.40	0.23
ME (Mcal/lb)	0.49	0.28
RFV	115.1	65.0
Total N (%)	1.32	0.75

Lab ID: P1580

	Dry Weight Basis	As Received Basis
Moisture (%)	39.57	
Dry Matter (%)	60.43	
Crude Protein (%)	9.9	5.97
Neutral Detergent Fiber (%)	53.05	32.06
Acid Detergent Fiber (%)	29.89	18.06
TDN (%)	65.29	39.45
DE (Mcal/lb)	1.31	0.79
ENE (Mcal/lb)	58.43	35.31
NE Lactation (Mcal/lb)	0.71	0.43
NE Maintenance (Mcal/lb)	0.73	0.44
NE Gain (Mcal/lb)	0.40	0.24
ME (Mcal/lb)	0.49	0.29
RFV	115.1	69.5
Total N (%)	1.58	0.95

Calcium(%)	0.46	0.26
Magnesium(%)	0.13	0.07
Sodium(%)	0.00	0.00
Potassium(%)	0.93	0.53
Phosphorus(%)	0.39	0.22
Iron(mg/kg)	81.6	46.1
Manganese(mg/kg)	17.4	9.84
Zinc(mg/kg)	11.6	6.56
Copper(mg/kg)	3.00	1.70
Boron(mg/kg)	34.6	0.45
Molybdenum(mg/kg)	0.10	0.06

Calcium(%)	0.65	0.39
Magnesium(%)	0.16	0.09
Sodium(%)	0.00	0.00
Potassium(%)	1.19	0.72
Phosphorus(%)	0.39	0.23
Iron(mg/kg)	132	80
Manganese(mg/kg)	17.0	10.27
Zinc(mg/kg)	12.9	7.80
Copper(mg/kg)	3.3	1.99
Boron(mg/kg)	37.9	0.50
Molybdenum(mg/kg)	0.38	0.23

Both sites untreated.....

TRUE MOUNTAIN MAHOGANY

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CHEYENNE

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CHEYENNE

Date Received: 03/09/2015
Date Reported:

Customer sample ID: TMMWL0215B

WOODS LANDING *Burned

Lab ID: P1578	Dry Weight Basis	As Received Basis
Moisture (%)	36.70	
Dry Matter (%)	63.30	
Crude Protein (%)	7.3	4.62
Neutral Detergent Fiber (%)	53.05	33.58
Acid Detergent Fiber (%)	29.89	18.92
TDN (%)	65.29	41.33
DE (Mcal/lb)	1.31	0.83
ENE (Mcal/lb)	58.43	36.99
NE Lactation (Mcal/lb)	0.71	0.45
NE Maintenance (Mcal/lb)	0.73	0.46
NE Gain (Mcal/lb)	0.40	0.25
ME (Mcal/lb)	0.49	0.31
RFV	115.1	72.8
Total N (%)	1.17	0.74



Date Received: 03/09/2015
Date Reported:

Customer sample ID: TMMFW025U

FORBES WHMA *Not burned

Lab ID: P1577	Dry Weight Basis	As Received Basis
Moisture (%)	43.88	
Dry Matter (%)	56.12	
Crude Protein (%)	9.0	5.07
Neutral Detergent Fiber (%)	53.05	29.77
Acid Detergent Fiber (%)	29.89	16.78
TDN (%)	65.29	36.64
DE (Mcal/lb)	1.31	0.73
ENE (Mcal/lb)	58.43	32.79
NE Lactation (Mcal/lb)	0.71	0.40
NE Maintenance (Mcal/lb)	0.73	0.41
NE Gain (Mcal/lb)	0.40	0.23
ME (Mcal/lb)	0.49	0.27
RFV	115.1	64.6
Total N (%)	1.45	0.81

Calcium(%)	0.586	0.37
Magnesium(%)	0.16	0.10
Sodium(%)	0.00	0.00
Potassium(%)	1.07	0.67
Phosphorus(%)	0.50	0.32
Iron(mg/kg)	93	59
Manganese(mg/kg)	17.4	11.01
Zinc(mg/kg)	21.7	13.74
Copper(mg/kg)	5.6	3.54
Boron(mg/kg)	27.7	0.36
Molybdenum(mg/kg)	0.1	0.06

Calcium(%)	0.486	0.27
Magnesium(%)	0.12	0.07
Sodium(%)	0.00	0.00
Potassium(%)	1.12	0.63
Phosphorus(%)	0.54	0.30
Iron(mg/kg)	244	137
Manganese(mg/kg)	18.6	10.44
Zinc(mg/kg)	17.9	10.05
Copper(mg/kg)	5.1	2.86
Boron(mg/kg)	30.3	0.40
Molybdenum(mg/kg)	0.09	0.05

Nearly identical nutritional levels in burned/unburned areas, however, annual leader production MUCH HIGHER in burned sites

Big Sagebrush (*Artemisia tridentata wyomingensis*)

55% - 70% of mule deer diet on east flank of Snowy Range

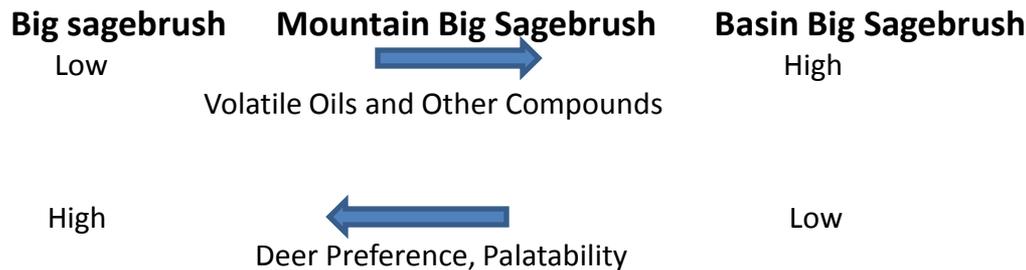
11- 13% crude protein in winter months in Big Sagebrush (*wyomingensis*)

Presence of volatile oils, terpenoids affect microbial activity in rumen, need other species in diet to assist with digestion = Diversity!

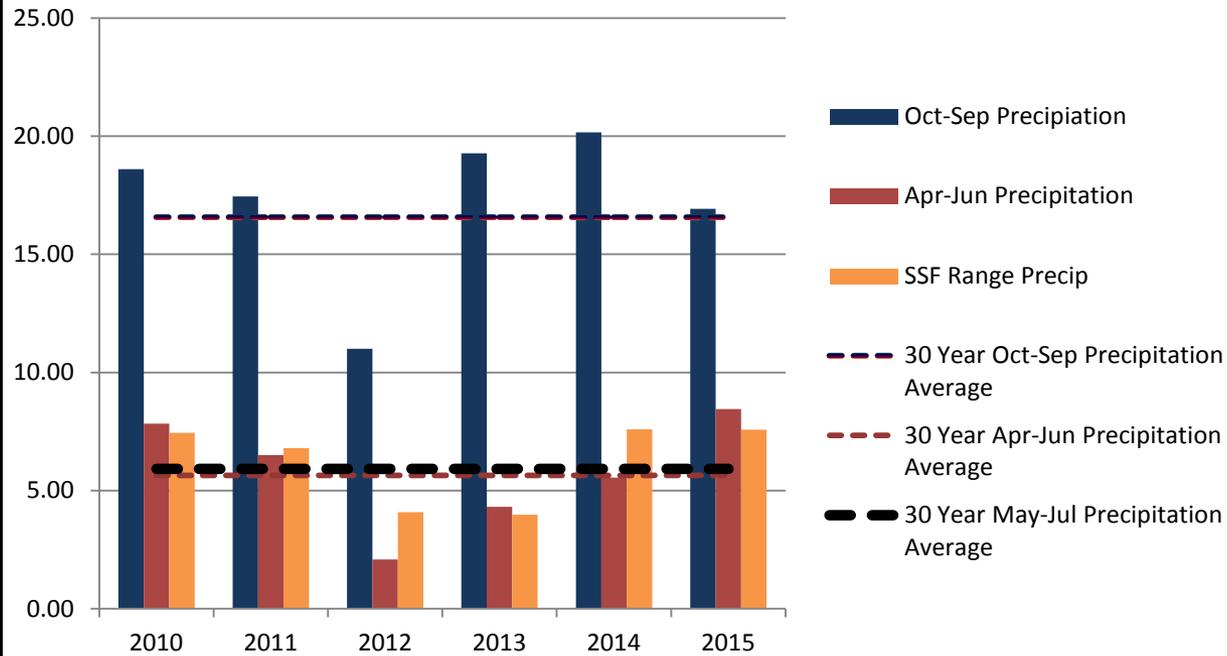
Sagebrush varies seasonally in the amount of volatile oil concentrations in the leaves.....plants' way of reducing herbivory in critical growth periods.

Highest in summer and Lowest in Winter.

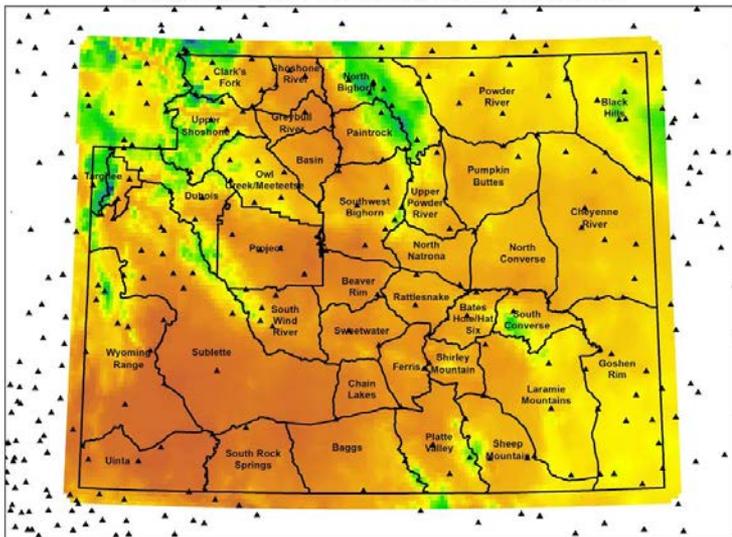
The "aroma" in the area after a rain storm is actually the oils being released from the plant.



Sheep Mountain Herd Unit Precipitation (inches)



Mule Deer Herd Units 2015 - Weather Stations 1981 - PRISM May-July 1981



Parameter-Elevation Relationships on Independent Slopes Model (PRISM) utilized to estimate to estimate precipitation by calculating a climate-elevation regression for each Digital Elevation Model grid cell (*4 km resolution*).

WHAT'S NEXT?

- Pre-treatment monitoring for Squirrel Creek Cheatgrass Control project
 - Herbicide application in late August 2016
 - Private land legume seeding projects.....any interest for Spring 2016 or 2017?
 - Rapid Habitat Assessments across all seasonal ranges throughout Sheep Mountain MDI focus area from Colorado border to Wagonhound Rest Area on I-80 (Aspen, Shrub and Rangeland, and Riparian)
 - Coordination with USFS, BLM, State and Private Landowners
 - Potential habitat enhancement project planning on Jelm, Red, Ring Mountain, Centennial Ridge, Forbes WHMA, and private lands
 - In-the-field site visits to identify potential projects
- Potential seedling shrub plantings on wildfire impacted areas.....interest?