DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 22
Beaver
2020

BOUNDARY DESCRIPTION

Iron, Garfield, Piute, Beaver and Millard Counties: Boundary begins at SR-130 and I-15; north on SR-130 to SR-21; north on SR-21 to SR-257; north on SR-257 to the Black Rock road; east of the Black Rock road to I-15; south of I-15 to I-70; east on I-70 to US-89; south on US-89 to SR- 20; west on SR-20 to I-15; south on I-15 to SR-130.

LAND OWNERSHIP

	Summer Range		Winter Range	
Ownership	**Area (acres)**	**%**	**Area (acres)**	**%**
Forest Service	213,318	70%	83,337	14%
Bureau of Land Management	65,991	22%	396,598	68%
Utah State Institutional Trust Lands	7,386	2%	44,367	8%
Native American Trust Lands	0	0%	205	<1%
Private	18,436	6%	53,769	9%
Department of Defense	0	0%	0	0%
USFWS Refuge	0	0%	0	0%
National Parks	0	0%	0	0%
Utah State Parks	0	0%	0	0%
Utah Division of Wildlife Resources	0	0%	2,288	2%
Total	**305,201**	**100%**	**580,564**	**100%**

RANGE AREA AND APPROXIMATE OWNERSHIP

UNIT MANAGEMENT GOALS

- Manage for a population of healthy animals capable of providing a broad range of recreational opportunities, including hunting and viewing.
- Balance deer herd impacts on human needs, such as private property rights, agricultural crops and local economies.
- Maintain the population at a level that is within the long-term capability of the available habitat to support.

POPULATION MANAGEMENT OBJECTIVES

Target Winter Herd Size – Manage for a 5-year target population of **14,000** wintering deer (modeled number) during the five-year planning period; unless range conditions become unsuitable as evaluated by DWR. This is an increase from the 2015 plan which was 13,000. The 10-year average population estimate is 13,200. Range Trend data coupled with annual browse monitoring will be used to assess habitat condition. If habitat damage by deer is occurring due to inadequate habitat, measures will be taken to reduce the population to sustainable levels.

Herd Composition – This is a General Season unit and will be managed to maintain a three year average postseason buck to doe ratio of **18-20** according to the statewide plan.

Harvest – General season hunting will be used to maintain and work towards objectives on this unit. Hunting strategies will include using Archery, Rifle, and Muzzleloader hunts. Antlerless removal will be implemented to achieve the target population size using a variety of harvest methods and seasons. It is recognized that buck harvest may fluctuate due to climatic and productivity variables. Buck harvest strategies will be developed through the RAC and Wildlife Board process to achieve management objectives.

POPULATION MANAGEMENT STRATEGIES

Monitoring

- Population Size - Utilizing harvest data, postseason classification and mortality estimates, a computer model has been developed to estimate winter population size. The 2019 model estimates the population at 12,000 deer.

- Buck Age Structure - Monitor age class structure of the buck population through the use of checking stations, postseason classification, statewide harvest survey data and bag checks.

- Harvest - The primary means of monitoring harvest will be through the statewide harvest survey and the use of checking stations.

Limiting Factors (May prevent achieving management objectives)

- Crop Depredation – Strategies will be implemented to mitigate crop depredation as prescribed by state law and DWR policy.

- Habitat – The amount and condition of summer habitat on public lands, landowner acceptance and winter forage conditions will determine herd size. Excessive habitat utilization will be addressed through antlerless removal. The Southwest Desert is a summer range limited unit. Winter range is abundant. Fawn recruitment is a major concern on this unit and may be the single greatest factor limiting the population

- Predation - If predation is determined to be a limiting factor, efforts to limit predation will be taken according to DWR predator management policy.

- Highway Mortality – DWR will cooperate with the Utah Dept. Of Transportation to construct highway fences, passage structures and warning signs etc if needed.

- Illegal Harvest - If illegal harvest is identified as a limiting factor, a unit specific action plan will be develop in cooperation with the Law Enforcement Section.

HABITAT MANAGEMENT OBJECTIVES

- Maintain or enhance forage production through direct range improvements on winter and summer deer range throughout the unit to achieve population management objectives.

- Maintain critical fawning habitat in good condition. Fawn recruitment is a major concern on this unit and may be the single greatest factor limiting the population.

- Work with federal and state partners in fire rehabilitation and prevention on crucial deer habitat through the WRI process

HABITAT MANAGEMENT STRATEGIES

Monitoring

- Determine trends in habitat condition through permanent range trend studies, spring range assessments; pellet transects, and field inspections. Land management agencies will similarly conduct range monitoring to determine vegetative trends, utilization and possible forage conflicts.

- Range trend studies will be conducted by DWR to evaluate deer habitat health, trend, and carrying capacity using the deer winter range desirable component index (DCI) and other vegetation data. The DCI was created as an indicator of the general health of deer winter ranges. The index incorporates shrub cover, density and age composition as well as other key vegetation variables. Changes in DCI suggest changes in winter range capacity. However, the relationship between DCI and the changes in deer carrying capacity is difficult to quantify.

Habitat Protection, Improvement and Maintenance

- Work with public land management agencies to develop specific vegetative objectives to maintain the quality of important deer use areas.

- Continue to coordinate with land management agencies in planning and evaluating resource uses and developments that could impact habitat quality including but not limited to: oil and gas development, wind energy, solar energy, and transmission line construction.

- Coordinate with federal and state partners in designing projects that will improve fire resiliency and protect areas of crucial habitat.

- Work toward long-term habitat protection and preservation through agreements with land management agencies and local governments, the use of conservation easements, etc. on private lands and working toward blocking up UDWR properties through land exchanges with willing partners.

- Manage vehicle access on Division of Wildlife Resources land to limit disturbance critical times such as winter and fawning.

- Manage riparian areas in critical fawning habitat to provide water, cover and succulent forage from mid- to late summer.

- Work with BLM to support wild horse removals where there are conflicts with Mule Deer.

- Cooperate with federal land management agencies and private landowners in carrying out habitat improvement projects. Protect deer winter ranges from wildfire by reseeding burned areas, creating fuel breaks and reseed areas dominated by cheatgrass with desirable perennial vegetation.

- Reduce expansion of Pinion-Juniper woodlands into sagebrush habitats and improve habitats dominated by Pinion-Juniper woodlands by completing habitat restoration projects.

- Seek opportunities to increase browse in burned areas of critical winter range.

- Cooperate with federal land management agencies and local governments in developing and administering access management plans for the purposes of habitat protection and to provide refuges.

- Seek out opportunities to improve the limited summer range across the unit. Develop summer range habitat improvement projects that remove encroaching trees, improves succulent vegetation and wet meadows, increases aspen recruitment, enhances and/or protects riparian areas, and use prescribed fire to promote early succession habitats where appropriate.

- Future habitat work should be concentrated on the following areas.
    - Seek opportunities to increase browse in burned areas of critical winter range.
    - Continue to reduce Pinyon and Juniper encroaching into shrubland in critical winter range. Specifically moving north from Beaver toward I-70 and along the east side of the Tushar slopes in critical winter range.
    - West of I-15 seek opportunities to improve riparian vegetation in fawning habitat to furnish water, cover, and late to mid-summer succulent forage.
    - Quaking Aspen forests unit wide.

Habitat Project Summary

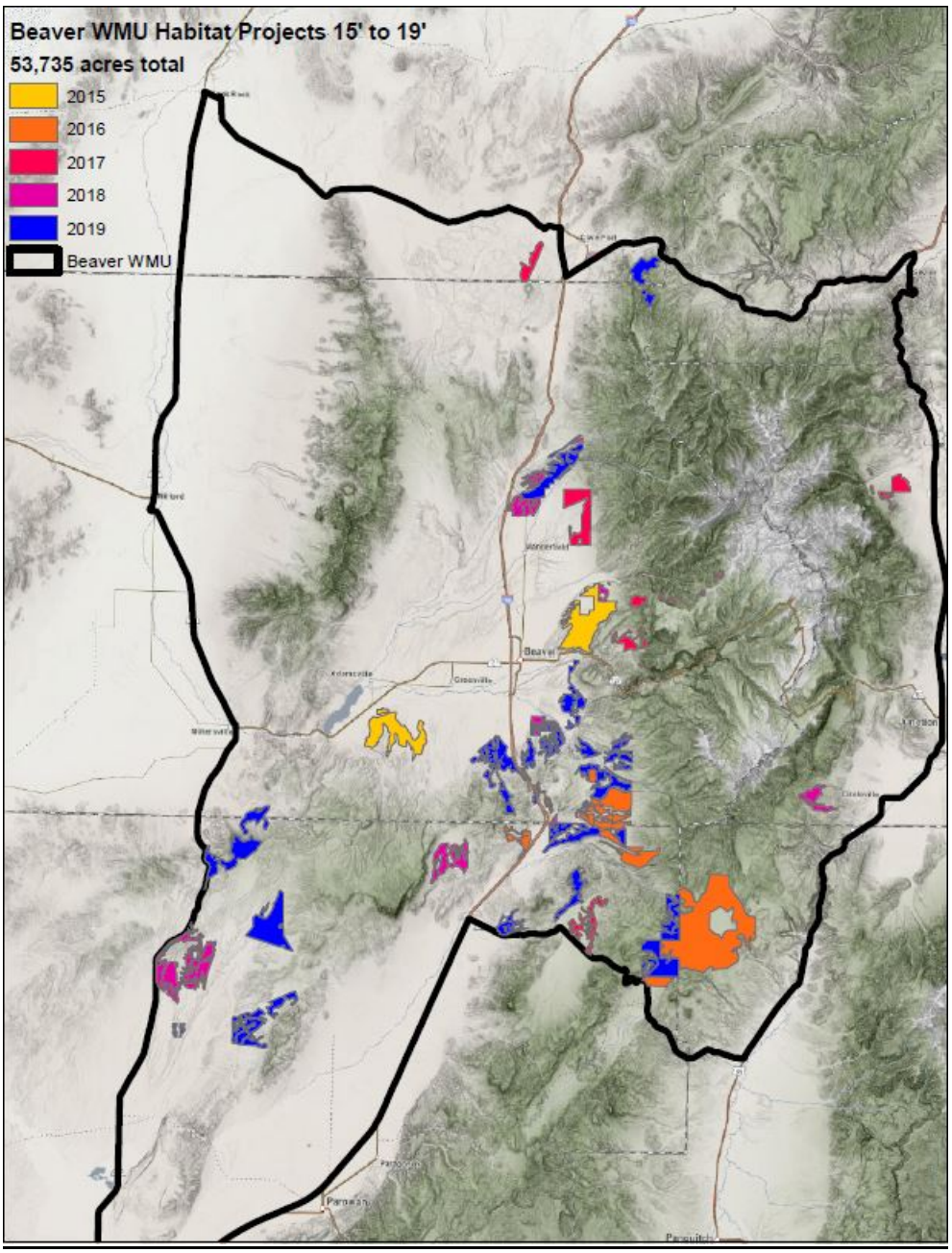
There has been an active effort to address many of the limitations on this unit through the Watershed Restoration Initiative (WRI). A total of 204,704 acres of land have been treated within the Beaver unit since the WRI was implemented in 2004 (Map 1.8). An additional 9,471 acres are pending completion, 15,217 acres are currently being treated, and treatments have been proposed for 25,438 acres. Treatments frequently overlap one another bringing the total completed treatment acres to 254,829 acres for this unit (Table 1.7). Other treatments have occurred outside of the WRI through independent agencies and landowners, but the WRI comprises the majority of work done on deer winter ranges throughout the state of Utah.

Seeding plants to augment the herbaceous understory is the most common management practice in this unit. Anchor chaining to remove pinyon and juniper is also frequently used. Other management practices include (but are not limited to): bullhog treatments to treat pinyon and juniper, prescribed fire, hand crews to remove pinyon and juniper, harrow, and other similar vegetation removal techniques (Table 1.7).

Type	Completed Acreage	Current Acreage	Pending Completed Acreage	Proposed Acreage	Total Acreage
Anchor Chain	**119,760**	**2,523**	**0**	**2,751**	**125,034**
Ely (One-Way)	109,199	2,523	0	0	111,722
Ely (Two-Way)	9,822	0	0	2,751	12,573
Smooth (One-Way)	740	0	0	0	740
Bullhog	**12,423**	**3,697**	**0**	**464**	**16,584**
Full Size	12,038	3,697	0	464	16,199
Skid Steer	385	0	0	0	385
Bulldozing	**36**	**0**	**0**	**0**	**36**
Tree Push	36	0	0	0	36
Chain Harrow	**514**	**1,091**	**0**	**0**	**1,605**
≤15 ft. (Two-Way)	93	1,091	0	0	1,184
>15 ft. (One-Way)	307	0	0	0	307
>15 ft. (Two-Way)	114	0	0	0	114
Disc	**158**	**0**	**0**	**0**	**158**
Off-Set (Two-Way)	158	0	0	0	158
Harrow	**4,380**	**0**	**0**	**69**	**4,449**
≤15 ft. (One-Way)	75	0	0	0	75
≤15 ft. (Two-Way)	2,269	0	0	69	2,337
>15 ft. (One-Way)	1,646	0	0	0	1,646
>15 ft. (Two-Way)	391	0	0	0	391
Herbicide Application	**1,481**	**0**	**0**	**0**	**1,481**
Aerial (Fixed-Wing)	1,481	0	0	0	1,481
Planting/Transplanting	**1,057**	**0**	**0**	**0**	**1,057**
Prescribed Fire	**0**	**0**	**9,471**	**79**	**9,550**
Seeding (Primary)	**168,983**	**1,364**	**0**	**969**	**171,316**
Broadcast (Aerial-Fixed Wing)	121,807	1,364	0	969	124,140
Drill (Rangeland)	46,016	0	0	0	46,016
Drill (Truax)	1,068	0	0	0	1,068
Ground (Mechanical Application)	92	0	0	0	92
Seeding (Secondary/Shrub)	**0**	**0**	**0**	**262**	**262**
Hand Seeding	0	0	0	262	262
Skid-Steer Mounted Tree Cutter	**1,750**	**0**	**0**	**0**	**1,750**

Hydraulic Brush Saw	1,750	0	0	0	1,750
Vegetation Removal/Hand Crew	**25,917**	**7,758**	**0**	**24,868**	**58,543**
Lop (No Scatter)	5,074	0	0	0	5,074
Lop & Scatter	20,838	7,758	0	24,868	53,464
Lop-Pile-Burn	5	0	0	0	5
Other	**852**	**0**	**0**	**0**	**852**
Road Decomissioning	852	0	0	0	852
Grand Total	**337,311**	**16,433**	**9,471**	**29,463**	**392,678**
*** Total Land Area Treated**	**204,704**	**15,217**	**9,471**	**25,438**	**254,829**

Table 1.1: WRI treatment action size (acres) for completed, current, and proposed projects for WMU 22, Beaver. Data accessed on 02/18/2019. *Does not include overlapping treatments.



Big Game Habitat

There are an estimated 883,573 acres classified as deer range on Unit 22 with 34% classified as summer range and 66% considered to be winter range (Table 1.1, Map 1.2).

Land managed by the Bureau of Land Management comprises 68% of the winter range, 14% is administered by the United States Forest Service (USFS), 10% is privately owned, 7% is managed by the Utah School and Institutional Trust Lands Administration (SITLA), and less than 1% each is tribally owned or managed by the Utah Department of Transportation (UDOT), Utah State Parks (USP), or Utah Division of Wildlife Resources (UDWR) (Table 1.2, Map 1.2, Map 1.6). Of the elk winter range, 51% is administered by the BLM, 34% by the USFS, 8% is privately owned, 6% is managed by SITLA, 1% is administered by UDWR, and less than 1% is tribally owned (Table 1.3, Map 1.3, Map 1.6).

The Black and Mineral Mountains lack good summer range, but have vegetation similar to most deer wintering areas of southern Utah. Both the Black and Mineral Mountains have relatively steep, rugged slopes with areas of rocky outcrops. However, the Black Mountains are unlike the Mineral Mountains in that the top is dominated by gently rolling sagebrush hills and dry meadows.

The Tushar Mountains are more typical of the high elevation mountains of central and southern Utah and contain good summer range for deer and elk. The Tushars have many small lakes and perennial streams. The western slopes of the Tushar Mountains are more gradual and receive sufficient precipitation to create substantial summer range for deer. On the east side of the Tushar Mountains, the normal winter range boundaries range from 6,200 feet on the valley floor to 8,500 feet in the upper basins. Oak Basin often winters deer up to the 8,600-foot level. The upper limit along the steeper portions of the east face of Tushar Mountains is 7,200 feet. Winter deer concentrations are found on south and southeast facing slopes. Minor migrations from the summer ranges of units 23 - Monroe and 24 – Mt. Dutton onto unit 22 winter ranges occur each year, but the major movement is an elevation movement from summer to winter range within the unit.

PERMANENT RANGE TREND SUMMARIES

The condition of deer winter range within the Beaver management unit has continually changed on the sites sampled since 1998; the active Range Tend sites within the unit are considered to be in very-poor to good condition as of the 2018 sample year (**Figure 1.10**, **Figure 1.10**). The sites considered to be in good condition are Deer Flat, Rocks Reseeding, and South Creek: high amounts of preferred browse and significant perennial grass cover contribute to the high rankings of these sites. The Marysvale WMA and Piute Reservoir site is considered to be in fair-good and fair condition, and the Beaver Table study is classified as being in poor-fair condition. The Wades Canyon and Minersville Reservoir studies were classified as being in poor condition. The Sheep Rock, B Hill, and Above Fremont Wash study sites are considered to be in very poor to poor condition. Finally, the sites considered to be in very poor condition are Bone Hollow, Big Cedar Cove, and Antelope Mountain. The lack of preferred browse and high annual grass cover are primary reasons that these sites were categorized as being in very poor condition.

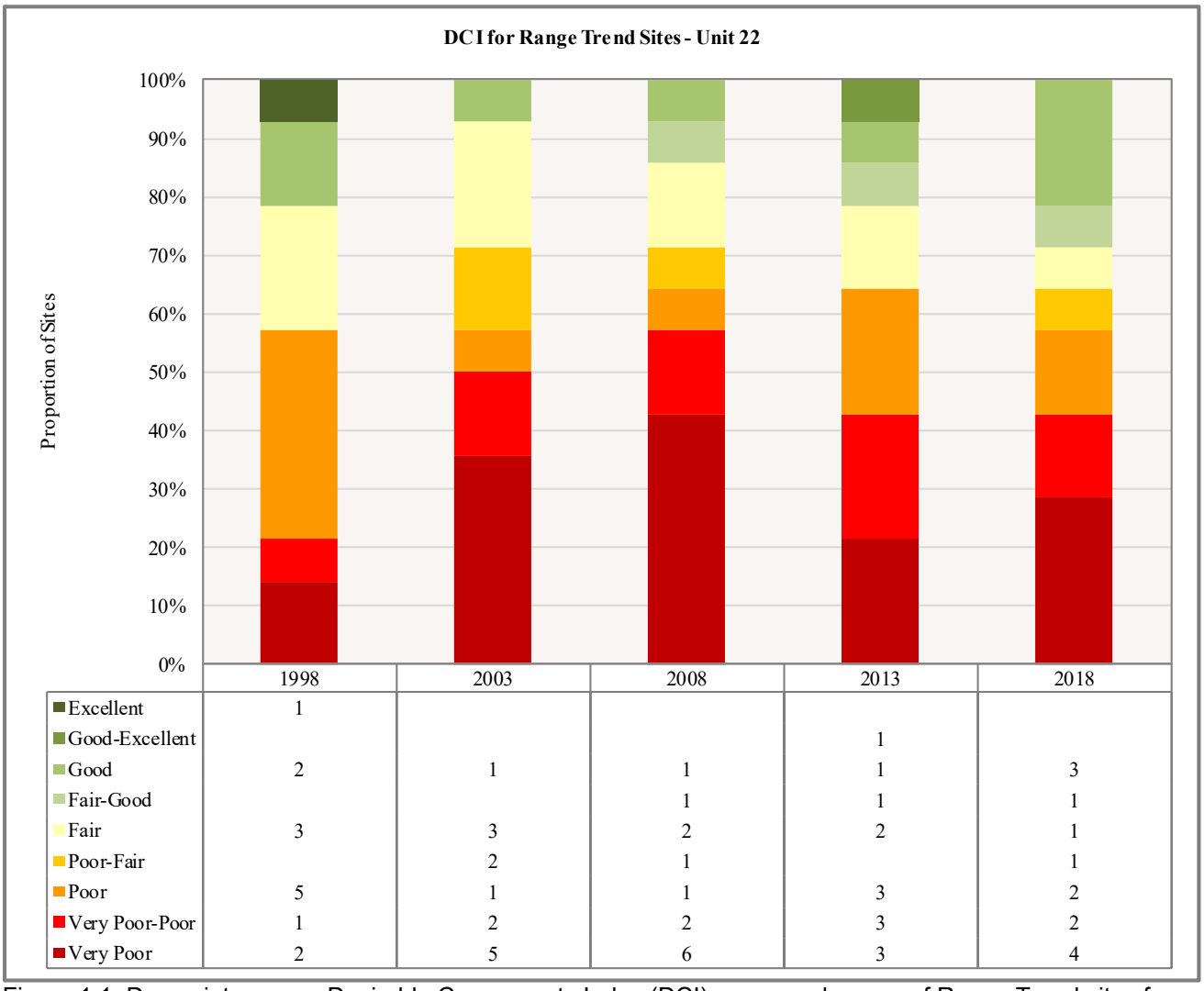


Figure 1.1: Deer winter range Desirable Components Index (DCI) summary by year of Range Trend sites for WMU 22, Beaver.

Climate Data

The 30-year (1981-2010) annual precipitation PRISM model shows precipitation ranges on the unit from 8 inches near Marysvale to 43 inches on Mount Baldy. All of the Range Trend and WRI monitoring studies on the unit occur between 9 and 22 inches of precipitation (Map 1.1) (PRISM Climate Group, Oregon State University, 2013).

Vegetation trends are dependent upon annual and seasonal precipitation patterns. Palmer Drought Severity Index (PDSI) data for the unit was compiled from the National Oceanic and Atmospheric Administration (NOAA) Physical Sciences Division (PSD) as part of the South Central division (Division 4).

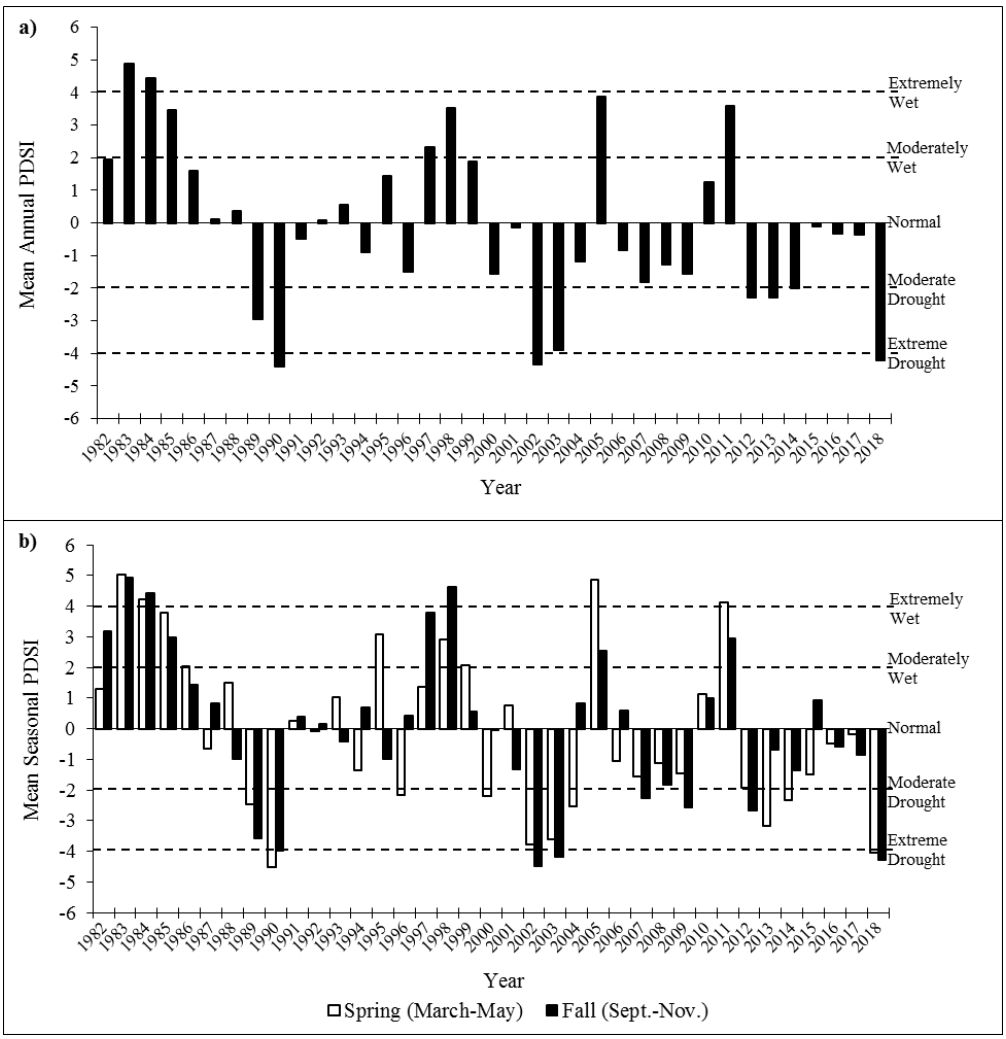
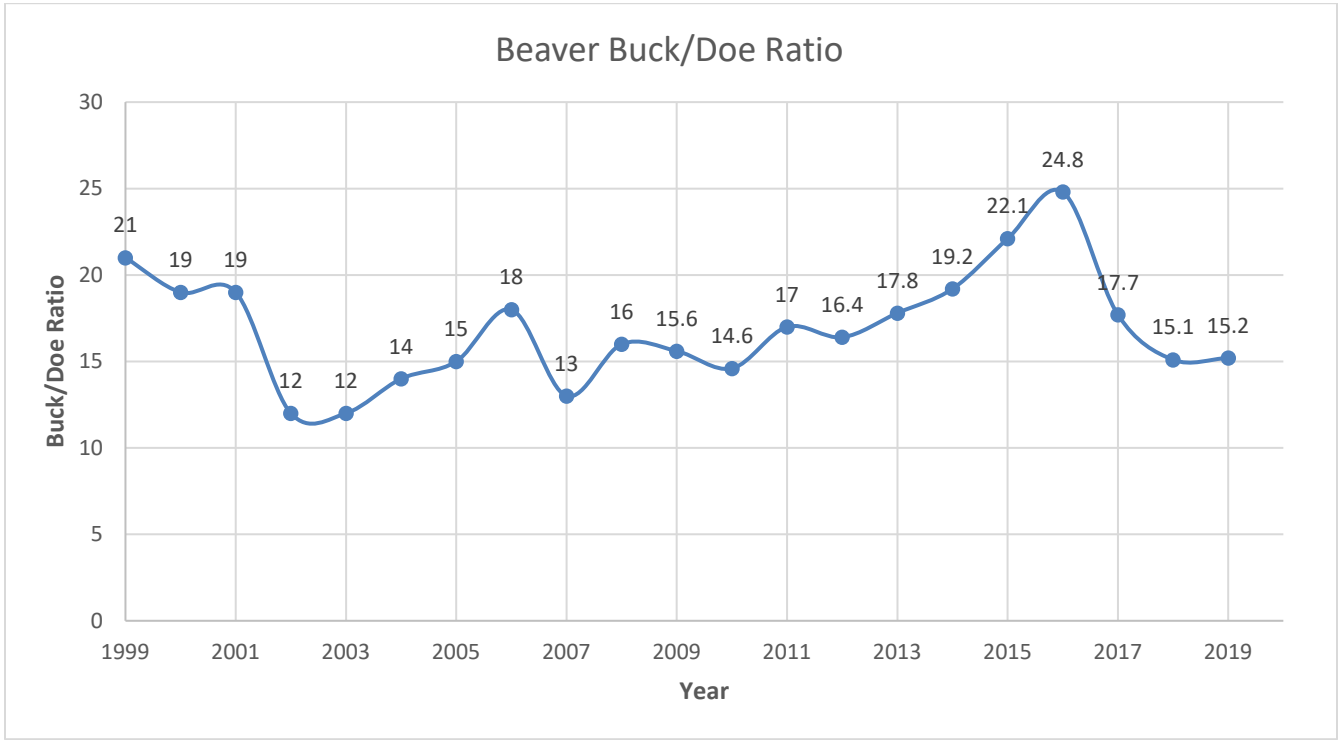
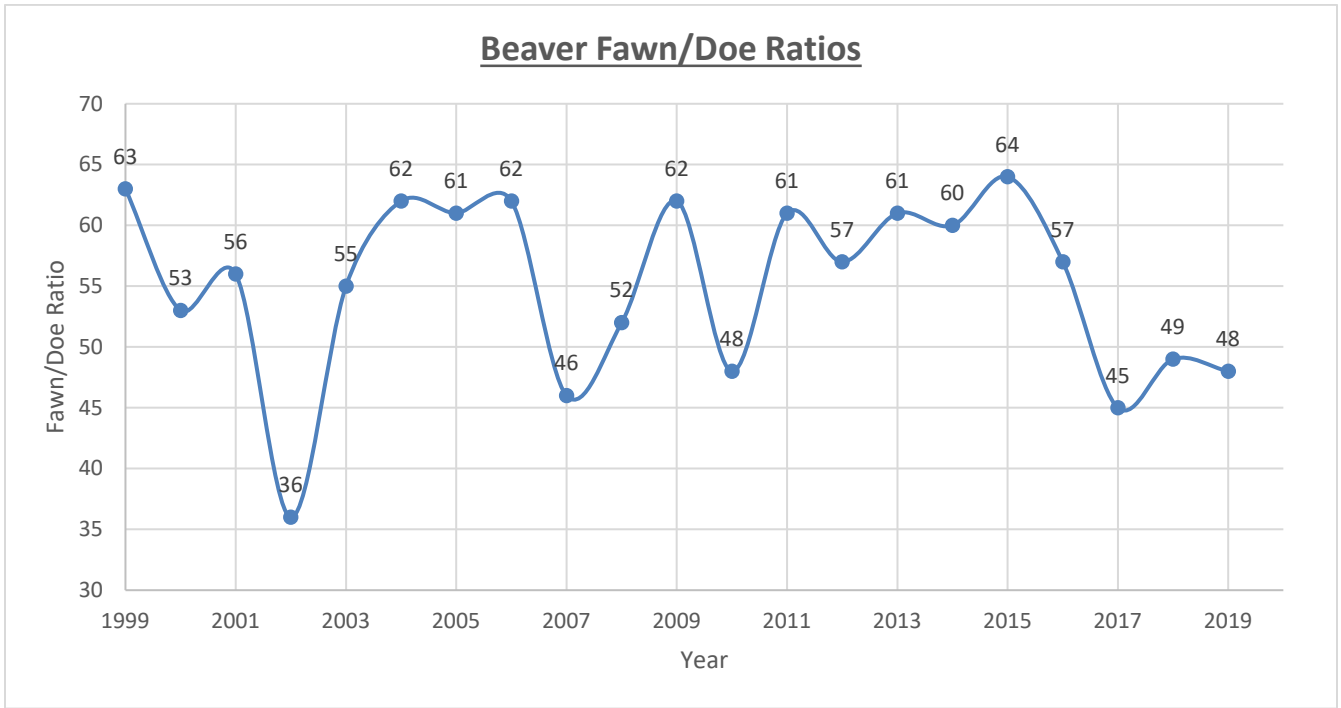


Figure 1.2: The 1982-2018 Palmer Drought Severity Index (PDSI) for the South Central division (Division 4). The PDSI is based on climate data gathered from 1895 to 2018. The PDSI uses a scale where 0 indicates normal, positive deviations indicate wet and negative deviations indicate drought. Classification of the scale is ≥4.0 = Extremely Wet, 3.0 to 3.9 = Very Wet, 2.0 to 2.9 = Moderately Wet, 1.0 to 1.9 = Slightly Wet, 0.5 to 0.9 = Incipient Wet Spell, 0.4 to -0.4 = Normal, -0.5 to -.9 = Incipient Dry Spell, -1.0 to -1.9 = Mild Drought, -2.0 to -2.9 = Moderate Drought, -3.0 to -3.9 = Severe Drought and ≤-4.0 = Extreme Drought. a) Mean annual PDSI. b) Mean spring (March-May) and fall (Sept.-Nov.) (Time Series Data, 2019).


Beaver Buck/Doe Ratio
Buck/Doe Ratio
Year
30
25
20
15
10
5
0
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
21
19
19
12
12
14
15
18
13
16
15.6
14.6
17
16.4
17.8
19.2
22.1
24.8
17.7
15.1
15.2


Beaver Fawn/Doe Ratios
Fawn/Doe Ratio
Year
70
65
60
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45
40
35
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1999
2001
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2009
2011
2013
2015
2017
2019
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