

**APPENDIX A**

**PRODUCTION AND UTILIZATION OF SHRUB AND HERBACEOUS SPECIES ON KEY AREAS**

**Sagebrush Production and Utilization**

Production and utilization data for sagebrush (*Artemisia tridentata wyomingensis*) are collected at ten sites in the Cody Region (Tables 1 and 2 and Figures 1 and 2). Sites were selected using a “key area” concept, whereby if utilization levels are within acceptable limits at these areas, there is reasonable assurance that utilization levels are acceptable over the entire herd unit area. Production is measured in September/October using the leader length method described in WGFD Wildlife Division Vegetation/Habitat Monitoring Protocol (August 1, 2004). Utilization is measured in April/May using a modified Cole browse method described in WGFD Wildlife Division Vegetation/Habitat Monitoring Protocol (August 1, 2004).

**Table 1. Production expressed as average annual leader length in centimeters for sagebrush transects in the Cody Region.**

Transect	2013	2014	2015	2016	2017	Long-term Average
Breteche		3.56				2.48
Aldrich		2.75		1.70		1.23
Grass Creek	1.94	2.57	3.22	3.24	3.87	2.84
Wagonhound	2.72	2.72	4.59	2.48	4.89	2.64
Dry Creek Basin	2.42	4.37	2.31	1.94	3.93	2.61
Five-mile	2.46	3.57	4.66	2.87	8.54	3.58
Denver Jake	1.40	1.36	3.92	3.81	3.29	2.06
Lightning Ridge	1.00	1.56	1.78	1.32	1.15	1.40
Alkali	2.10	1.80	1.24	1.07	2.67	2.37
Renner	2.73	2.76	3.73	1.91	4.52	3.13
Average of Transects	1.93	2.70	3.18	2.26	4.11	2.27

**Table 2. Utilization expressed as percent leaders browsed for sagebrush transects in the Cody Region.**

Transect	2014	2015	2016	2017	2018	Long-term Average
Breteche	7.4		11			18.75
Aldrich	0.60	0.00	1.80	0.00		4.94
Grass Creek	0.00	0.00	0.00	1.00	0.00	1.57
Wagonhound	17.60	8.20	7.00	18.40	8.40	15.06
Dry Creek Basin	20.60	35.20	25.60	48.00	41.40	26.79
Five-mile	20.20	21.20	28.20	22.40	3.80	17.30
Denver Jake	1.60	2.40	6.60	8.20	2.40	11.62
Lightning Ridge	0.00	2.00	9.40	3.80	2.20	4.24
Alkali	4.80	10.20	8.20	17.20	4.60	11.01
Renner	13.40	1.00	1.20	0.80	0.00	3.28
Average of Transects	8.62	8.91	9.90	13.31	7.85	12.08

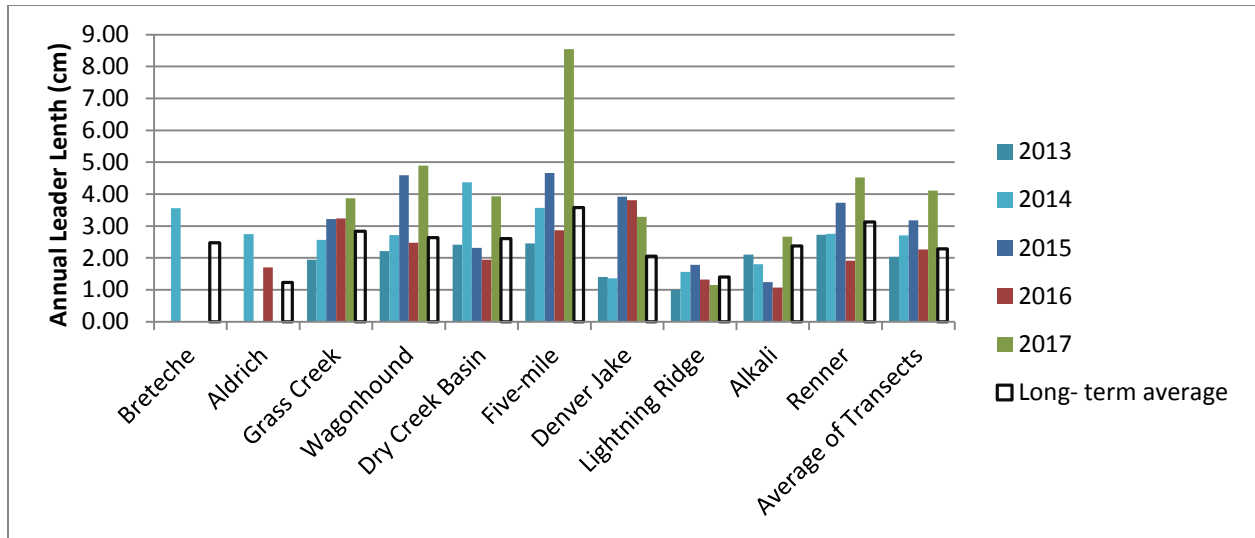


Figure 1. Average annual leader length for sagebrush transects in the Cody Region

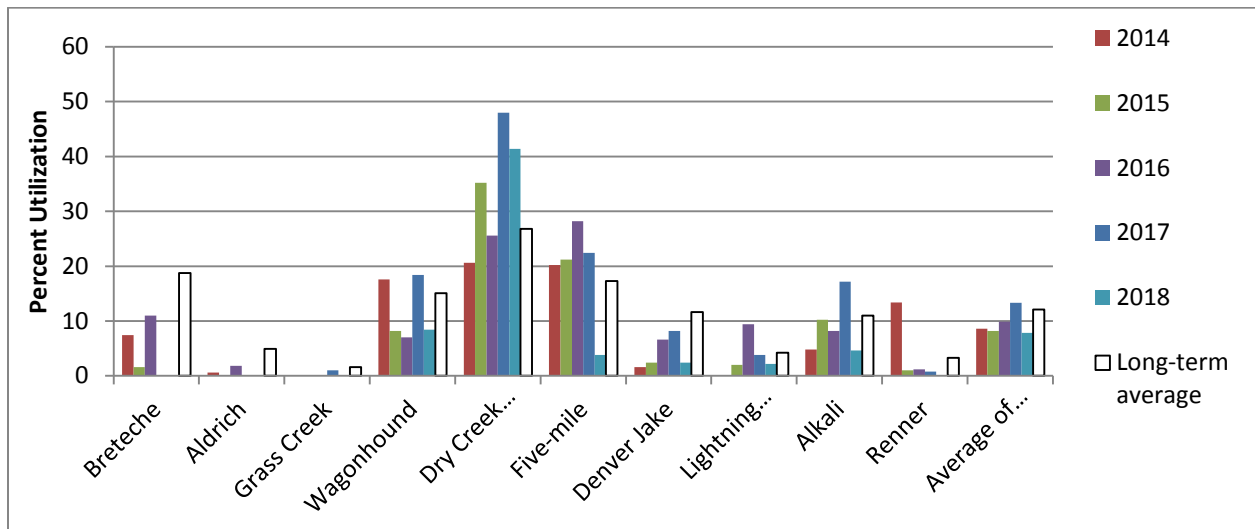


Figure 2. Percent utilization for sagebrush transects in the Cody Region

### Curleaf Mountain Mahogany Production and Utilization

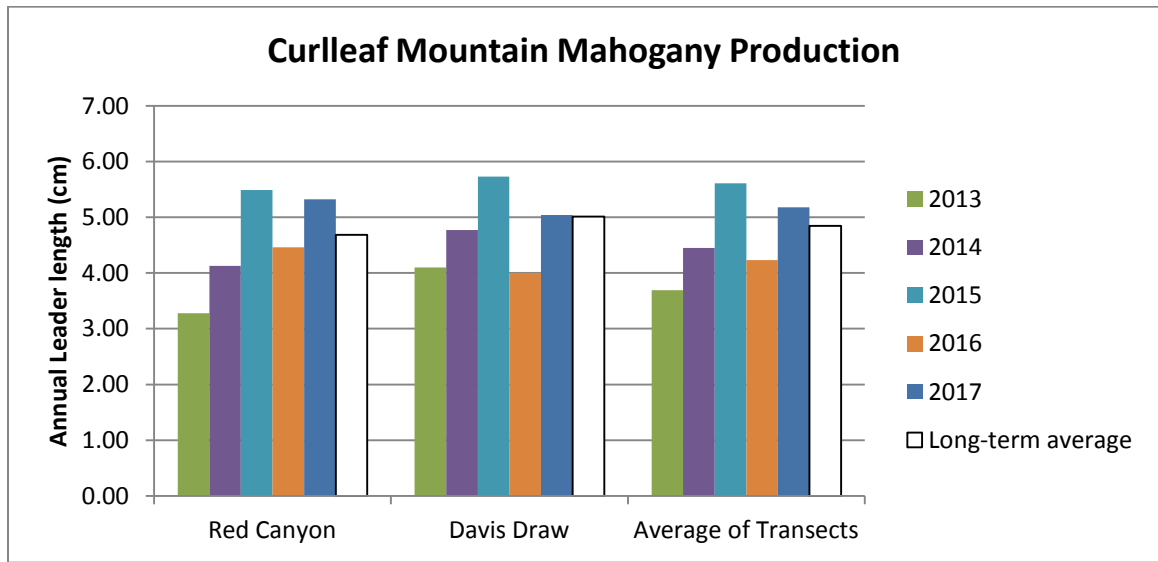
Production and utilization data for curleaf mountain mahogany (*Cercocarpus ledifolias*) are collected at two sites in the Cody Region (Table 3 and Figures 3 and 4). Sites were selected using a “key area” concept, whereby if utilization levels are within acceptable limits at these areas, there is reasonable assurance that utilization levels are acceptable over the entire herd unit area. Production and utilization are measured in September/October and April/May, respectively, using the twig length measurement method described in Utilization Studies and Residual Measurements, BLM Technical Reference 1734-3 (1996).

**Table 3. Production expressed as average annual leader length in centimeters for curlleaf mountain mahogany transects in the Cody Region.**

Transect	2013	2014	2015	2016	2017	Long-term Average
Red Canyon	3.28	4.13	5.49	4.46	5.32	4.68
Davis Draw	4.10	4.77	5.73	4.00	5.04	5.06
Average of Transects	3.69	4.45	5.61	4.23	5.18	4.85

**Table 4. Utilization expressed as average annual leader length in centimeters and percent of total leader length removed for curlleaf mountain mahogany transects in the Cody Region.**

Transect	2014	2015	2016	2017	2018	Long-term Average
Red Canyon	44	61	61	57	62	47
Davis Draw	70	63	79	76	53	61
Average of Transects	57	62	70	67	58	55



**Figure 3. Average annual leader length for curlleaf mountain mahogany transects in the Cody Region.**

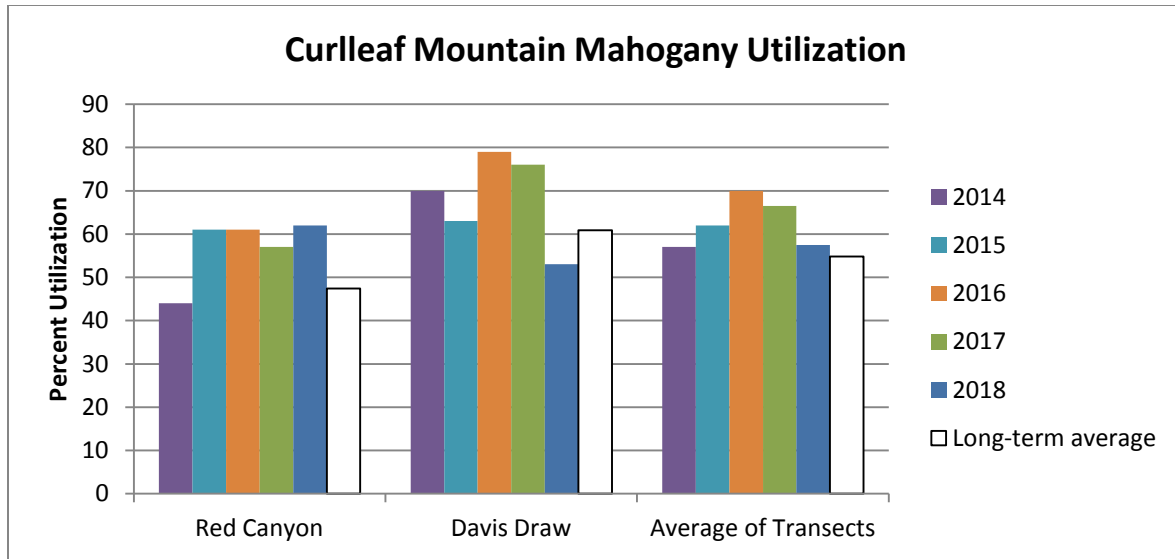


Figure 4. Average percent utilization for curleaf mountain mahogany transects in the Cody Region.

#### **Herbaceous Production and Utilization**

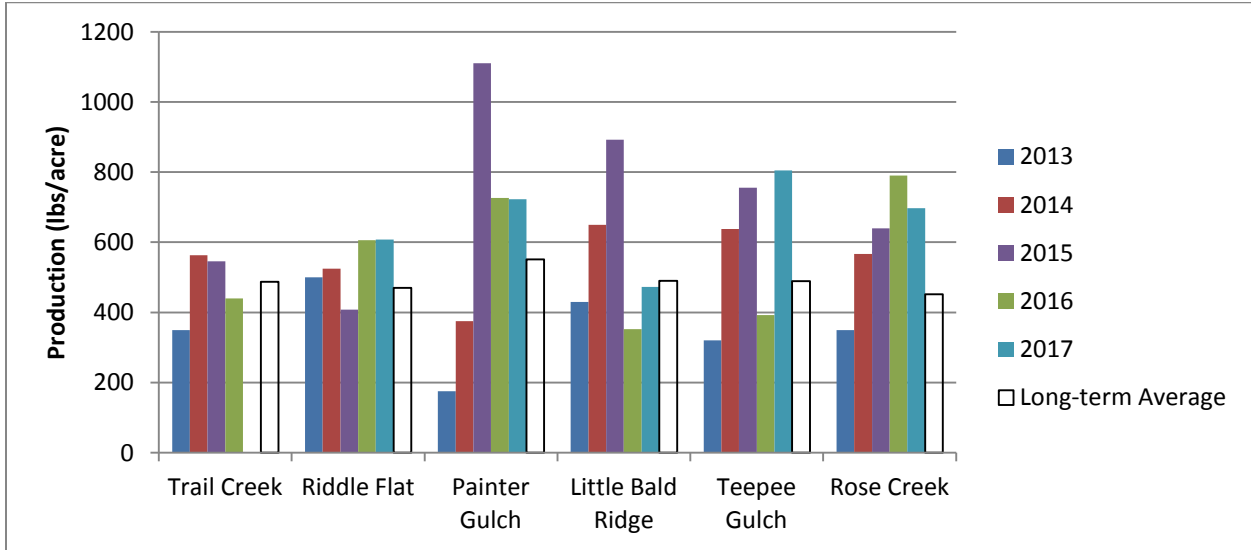
Production and utilization data for herbaceous forage (grasses and forbs) are collected at six sites in the Cody Region (Tables 4 and 5 and Figures 5 and 6). Sites were selected using a “key area” concept, whereby if utilization levels are within acceptable limits at these areas, there is reasonable assurance that utilization levels are acceptable over the entire herd unit area. Production is measured after peak seed ripe of key grass species by clipping and weighing samples. Utilization is measured by clipping and weighing samples inside and outside of a range cage just prior to green-up in the spring. Utilization is assumed to be primarily by elk unless noted. Methods can be found in [WGFD Wildlife Division Vegetation/Habitat Monitoring Protocol \(August 1, 2004\)](#).

Table 5. Production in pounds per acre for herbaceous transects in the Cody Region.

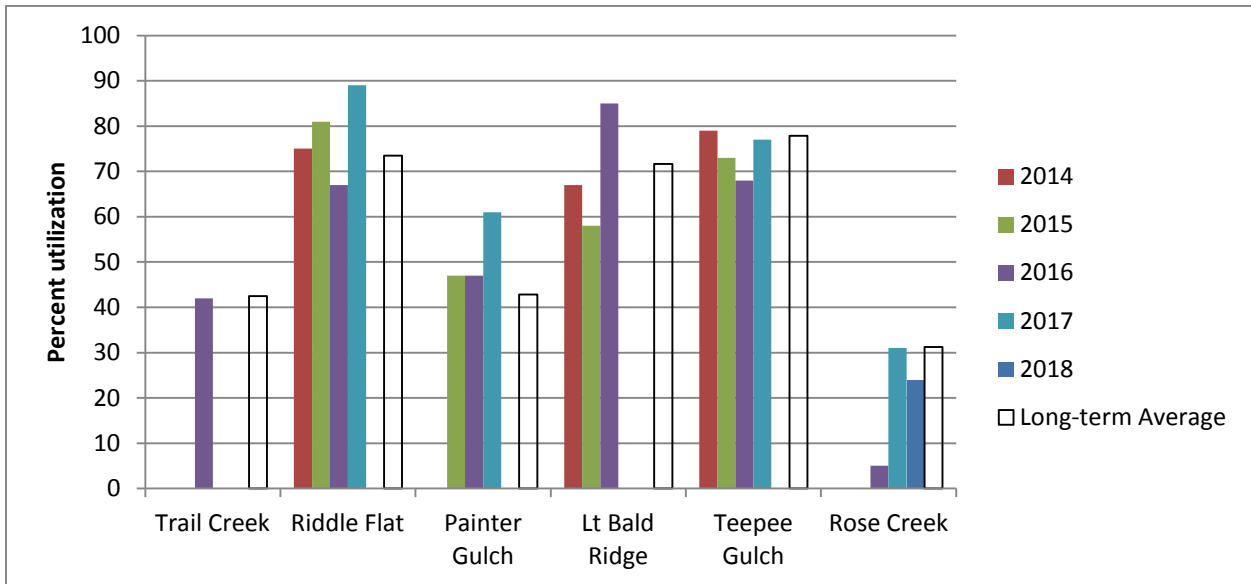
Transect	2013	2014	2015	2016	2017	Long-term Average
Trail Creek	350	563	546	440		487
Riddle Flat	500	525	408	606	608	470
Painter Gulch	175	375	1110	726	723	552
Little Bald Ridge	430	650	892	352	473	490
Teepee Gulch	320	638	755	392	805	489
Rose Creek	350	567	640	790	697	452

**Table 6. Percent utilization for herbaceous transects in the Cody Region.**

Transect	2014	2015	2016	2017	2018	Long-term Average
Trail Creek			42			42
Riddle Flat	75	81	67	89		73
Painter Gulch	0	47	47	61		43
Lt Bald Ridge	67	58	85			72
Teepee Gulch	79	73	68	77		78
Rose Creek		0	5	31	24	31

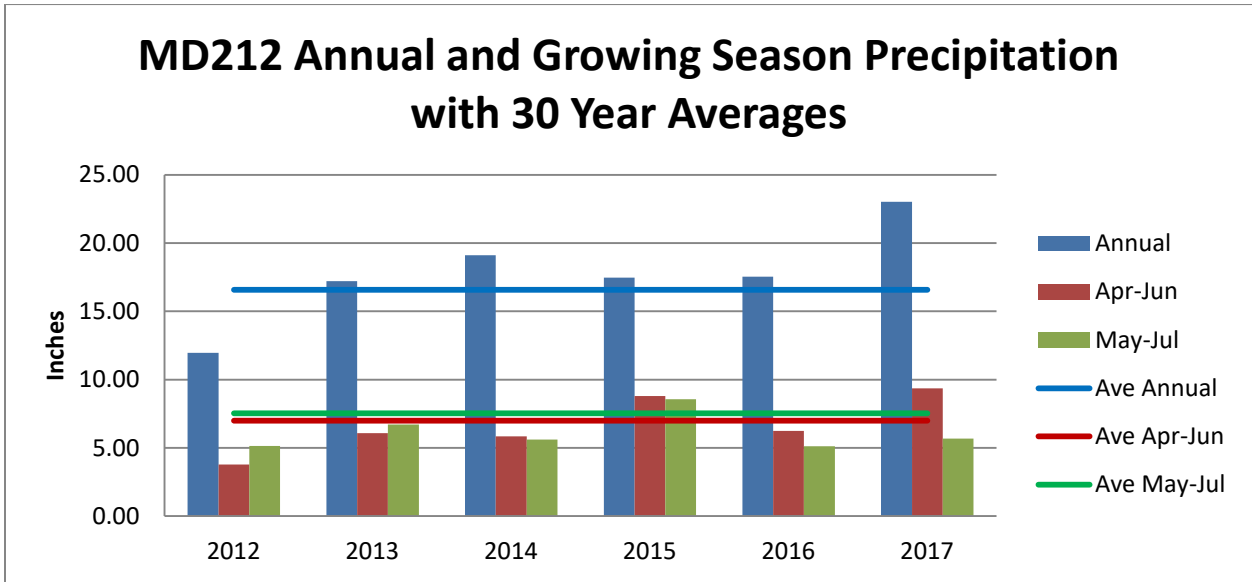


**Figure 5. Production for herbaceous transects in the Cody Region.**



**Figure 6. Percent utilization for herbaceous transects in the Cody Region.**

**Weather**



**Precipitation**

Annual precipitation from October 2016 thru September 2017 was well above the 30 year average. Precipitation during the growing season (April thru June 2017) was higher, but the growing season precipitation for high elevation SSF seasonal ranges (May - July 2017) was lower than the 30 year average.

**Winter Severity**

The 2016-2017 winter was slightly more severe than the long-term average. Data from the Sunshine 3 NE climate station (10 miles southwest of Meeteetse) showed the average December-March temperature was 1.37 degrees lower than normal, and total inches of snowfall in December-March was 116% of normal.

**Habitat**

Annual precipitation has been higher than average for the last five years, which may have contributed to the high fawn/doe ratio observed in the Owl Creek/Meeteetse herd unit the last four years. The Department initiated a 5-year rapid habitat assessment of the herd unit that will primarily focus on the condition of aspen communities and sagebrush and riparian communities being encroached by conifers. Aspen assessments led to identification of aspen communities in need of treatment. A 120-acre aspen treatment to remove conifers was initiated in the Grass Creek drainage in 2016 and is being completed in summer 2018. More aspen treatments were planned for the Gooseberry drainage and will be implemented in 2018 or 2019. A prescribed burn was conducted by BLM in the Gooseberry drainage to reduce conifer encroachment into sagebrush/grasslands. At total of 530 acres were treated in spring 2018 with an additional 800 acres planned for the next three years.

Two permanent shrub transects occur in this herd unit. Data was collected on leader growth, hedging class, age class, and percent utilization. Leader growth reflected the above average precipitation in 2017. Annual leader length for the Grass Creek and Wagonhound sagebrush transects were 136% and 185% of normal, respectively. Utilization continues to be very low on sagebrush in this herd unit, indicating that forage quantity on winter range may not be a limiting factor. These data can be found in Appendix B in the Cody Region JCRs.