

MANAGEMENT UNIT - 4 - MORGAN RICH

Boundary Description

Morgan, Rich, Summit and Weber counties - Boundary begins at the junction of I-80 and I-84 near Echo, Utah; northeast on I-80 to the Utah-Wyoming state line; north along this state line to SR-16; north on SR-16 to SR-39 near Woodruff; west along SR-39 to SR-167 (Trappers Loop road); south on SR-167 to SR-30 at Mountain Green; west on SR-30 to I-84; east on I-84 to I-80 and beginning point.

Unit Description

In 1993, unit boundaries were changed and unit 4 was created from parts of the old units 5, 6 and 7. The new unit incorporates a section of Weber county southeast of Huntsville, the northern halves of Morgan and Summit counties, and the southern portion of Rich county southwest of Woodruff. Municipalities along the unit boundaries include Woodruff, Huntsville, Mountain Green, Croydon and Echo.

Eight of the 13 study sites in the unit occur along the I-84 corridor on critical winter range. Most winter range is located in the major drainages and on the slopes north of the Weber River. A detached, smaller wintering area is found on the south-facing slopes above Cottonwood Creek. These are the areas highly developed. Highway I-80 and I-84, which run through Echo Canyon and along the Weber River, form the unit's southern boundary. There are several towns along the highways. Surrounding Croydon, the majority of the Lost Creek bottoms have been converted to alfalfa fields. Lost Creek Reservoir, managed by the Division of Parks and Recreation, is primitively developed and the road is not maintained in winter. However, approximately 1,320 snowmobilers, winter fishermen, and other recreationists used the facilities during the 1985 winter months. Two areas of land in the unit are managed by the Division of Wildlife Resources. The Round Valley WMA is north of I-84, just east of Morgan. The Henefer-Echo WMA is located east of Henefer and is managed primarily as a big game habitat. Controlled grazing, vehicle restrictions, and revegetation projects are major management tools in this area.

Earlier inventory studies described six vegetation types. The sagebrush type is most common and is found over the whole area. It forms part of a continuum, based on moisture conditions, between the mountain browse/sagebrush and mountain browse types. The lower elevation sagebrush and mountain browse/sagebrush types are productive and utilized heavily by deer, while the mountain browse type mostly provides cover and is unavailable in many winters. The other vegetation types occupy comparatively little area, but have the potential to increase. Burns occur frequently in the unit and, unless seeded, production of desirable species is very low. Deer use the burned areas infrequently, possibly because of lack of cover. A small population of mahogany is in Cottonwood Canyon, but it is important to wintering deer. The scattered juniper areas are also important in providing thermal cover, but provide little forage.

In severe winters, the area of available winter range is greatly reduced. The upper limit is 6,500 feet on most of the unit. The available acreage of all vegetation types, except agricultural land, is reduced during severe winters. All range trend studies in the unit were established on winter range. Most studies sample critical and/or heavily used areas.

The Lost Creek, Weber River, and Echo Canyon areas are traditional deer wintering areas. There is considerable migration both from higher elevations in the unit and from other herd units to this area, especially during severe winters. The largest number of deer probably come from the East Canyon unit, where deer summer on the east side of the Wasatch Mountains. Development in Morgan Valley is disrupting this migration route. Deer also come from the Ogden and Coalville units which also have adequate summer range, but limited winter range.

Big Game Trends

The Lost Creek area provides critical habitat for wintering big game. The abundance of summer range, high productivity of the herds, and generally increasing numbers of big game lead to heavy use on this limited

winter range. Development, the predominance of private land, and heavy impact from both livestock and big game has led to problems every winter. Approximately 86% of the deer summer range and 80% of the winter range is privately owned.

The current management objective is to maintain a winter herd population of approximately 12,000 deer with a post season minimum classification of 20 bucks per 100 does. Of those bucks, 30% should be 3-point or better. The management objective for elk is to achieve a target winter herd of 3,500 elk with a minimum of 40 bulls per 100 cows. Of those bulls, 50% will be 2 ½ years of age or older (1998 Utah Big Game Management Plan).

Study Site Description

Thirteen trend study sites were read in 2006. Eight of these sites were originally established in 1984, 2 were established in 1990, 3 additional sites were added in 1996, and 2 sites were established in 1997. All trend studies monitor big game winter range. Maps, trend assessments, and data for each study site follow. It should be noted that precipitation was above normal prior to the establishment of trend studies in 1984 (See Figure 1 in the Summary). Precipitation data from Morgan show above-normal annual precipitation from 1982-1984. Precipitation was below normal during the 1990 readings and dry conditions prevailed from 1987 to 1994 at Morgan. Above normal precipitation was received during 1996 when the studies were reread. Dry conditions returned in 1999 and continued until 2001. Spring precipitation was poor in both 2000 and 2001. Annual precipitation was at or below drought conditions (75% of normal) in 2002 and 2003. In 2005, annual precipitation was normal for weather stations in unit 4 (Utah climate summaries 2006). The precipitation patterns for the unit between the years of 2001 and 2006 are covered in more detail in the unit summary.

SUMMARY

HERD UNIT 4 - Morgan - Rich

Thirteen trend studies were read in Unit 4 in 2006. Dry Hollow (4-16) was suspended in 2006 because access was restricted. Two roving studies established in 1997 on Deseret Land and Livestock property were added to the regular rotation in 2006. Seven of the studies sample mountain big sagebrush communities, 4 sample Wyoming big sagebrush communities, 1 samples a revegetated burn, and 1 samples a Gambel oak community.

Vegetative trends are dependent upon annual and spring precipitation patterns. Precipitation data from this herd unit was compiled from the Morgan, Woodruff, and Echo Dam weather stations (Figures 1 and 2). In 2001, 2002, and 2003, average precipitation values at the 3 weather stations were at or below drought level (75% of normal; Figure 1). Spring precipitation for the unit was below normal from 2000 to 2004 and below 75% of normal in 2001 and 2002 (Figure 2). Spring precipitation is essential for the recruitment of browse seedlings and the establishment of native perennial grasses and forbs. It is likely that declining browse trends are a product of the period of drought in 2001 and 2002 (Figure 3).

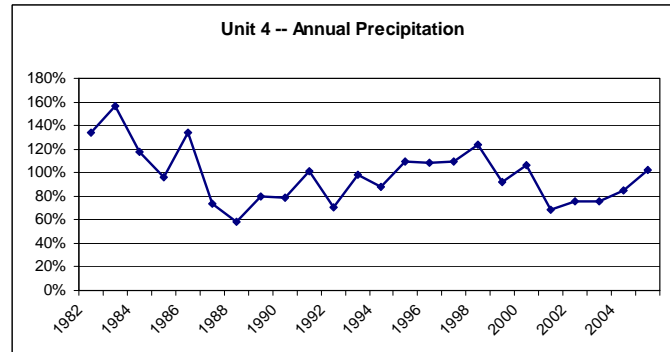


Figure 1. Annual precipitation for Unit 4. Precipitation data was collected in Morgan, Woodruff, and at Echo Dam (Utah climate summaries 2006).

The average browse trend for the unit has steadily decreased since 1984 (Figure 3). Between 2001 and 2006,

both Wyoming big sagebrush and mountain big sagebrush density averages have decreased across the unit; Wyoming has declined by about 700 plants/acre and mountain by about 200 plants/acre on average (Figure 4). The unit average for Wyoming big sagebrush densities increased from 3,644 plants/acre in 1996 to 4,784 plants/acre in 2001, then decreased to 4,052 plants/acre in 2006. Mountain big sagebrush unit average density decreased from 2,088 plants/acre in 1996 to 1,740 plants/acre in 2001, down to 1,523 plants/acre in 2006. The average cover of both Wyoming and mountain big sagebrush decreased about 2% since 2001 (Figure 5). The percentage of plants classified

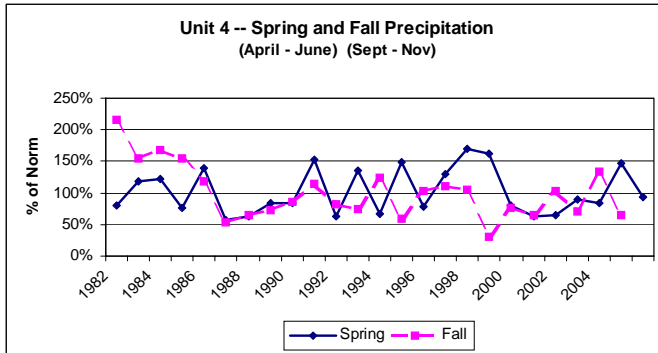


Figure 2. Spring and fall precipitation for Unit 4. Precipitation data was collected in Morgan, Woodruff, and at Echo Dam (Utah climate summaries 2006).

as decadent also increased for both Wyoming and mountain big sagebrush populations since 2001 (Figure 6). On average, the number of plants classified as decadent increased nearly 14% in Wyoming big sagebrush and 8% in mountain big sagebrush. The browse trends of 5 study sites were either down or slightly down in 2006. Echo Canyon (4-2), Harris Canyon (4-6), and Deseret Main Gate (4-18) all had down browse trends. Shell Hollow (4-8), Chapman Canal (4-14), and Above Toon Ranch

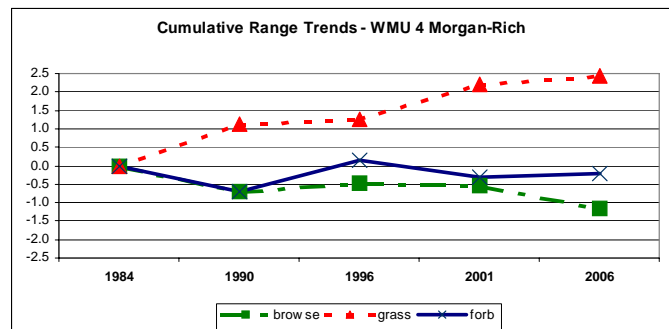


Figure 3. Cumulative Range Trends for unit 4, Morgan Rich.

(4-17) had slightly down browse trends. As mentioned above, the drought in 2001 and 2002 contributed to the declining browse trends, but part of the reason could be due to the increased infestation of the sagebrush defoliator moth (*Aroga websterii*) in this unit in 2006. Harris Canyon (4-6), Chapman Canal (4-14), and Deseret Main Gate (4-18) studies both showed defoliator moth infestation and all three showed downward browse trends. Ninety-three percent of the sagebrush individuals at the Chapman Canal study were classified with poor vigor, compared to 36% of Deseret Main Gate individuals and 9% of the Harris Canyon individuals. The moth was also present on some of the sagebrush at Shell Hollow (4-8), but none of the sampled individuals showed signs of infestation. It is possible that other sites were infested, but showed no signs of the moth at the time the studies were read.

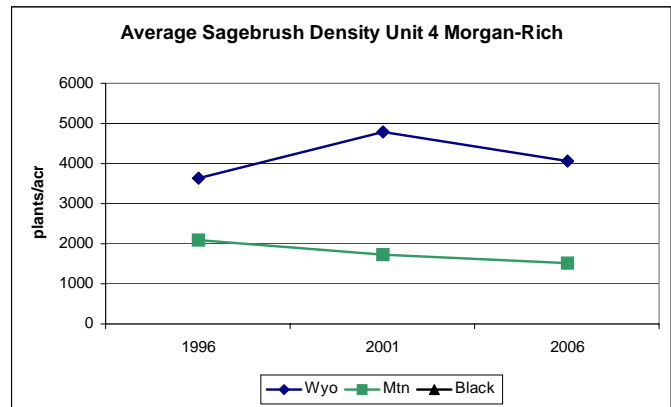


Figure 4. Average Wyoming and mountain big sagebrush densities in unit 4.

The herbaceous understory has improved unit wide from 2001 to 2006. The unit average of perennial grass cover has increased from 10% in 1996, to 15% in 2001, to 17% in 2006 (Figure 7). The nested frequency of perennial grasses has also increased steadily (Figure 8). The perennial forb cover unit average has increased about 2% since 1996 and the nested frequency has remained constant (Figures 7 and 8). The unit average of cheatgrass cover and nested frequency decreased from 1996 to 2001 and only returned partially (Figures 7 and 8). The bulbous bluegrass unit average cover and nested frequency show slight increases in since 1996 (Figures 7 and 8). Bulbous bluegrass has been sampled on 4 studies and has either increased or remained stable in cover and nested frequency on each. Studies with increasing bulbous bluegrass cover and nested frequencies appear to hinder cheatgrass growth. Stewart and Hull (1949) reported that bulbous bluegrass seed and bulbils distributed in established cheatgrass stands

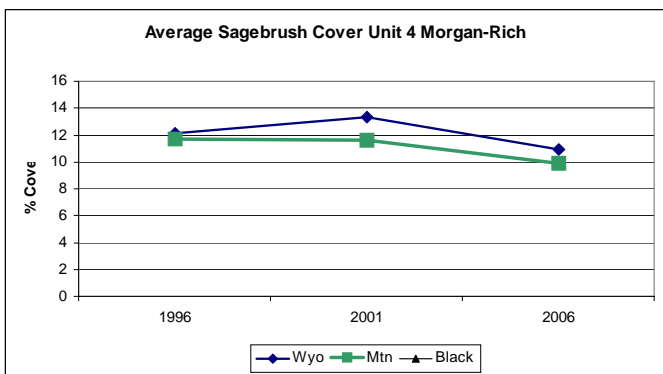


Figure 5. Average Wyoming and mountain big sagebrush cover in unit 4.

could reduce the cheatgrass.

The unit-wide Desirable Components Index (DCI) scores have slightly decreased, although they have remained fair for the Mid-level potential (mountain big sagebrush and Gambel oak) studies and good for the Lower potential (Wyoming big sagebrush) studies (Figure 9). The 2006 DCI scores remained similar to those of 2001 despite the decrease in browse densities across the unit. This is because the DCI score only takes browse cover, decadence, and young into account; unlike browse densities, the unit average of sagebrush cover only decreased about 2% for mountain and Wyoming big sagebrush.

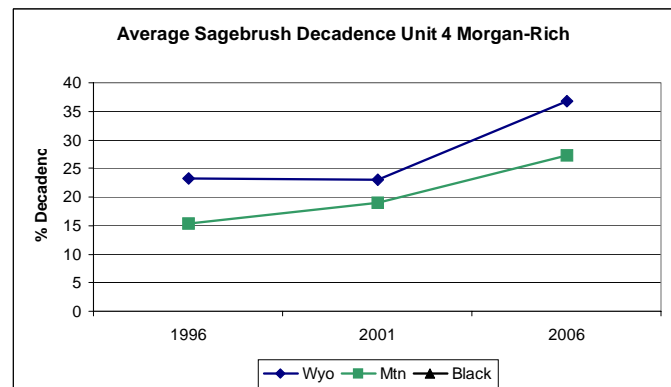


Figure 6. The average percentage of Wyoming and mountain big sagebrush decadence in unit 4.

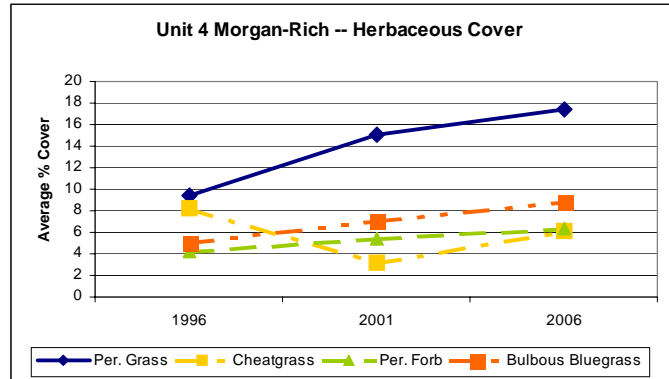


Figure 7. Unit 4 herbaceous understory cover averages.

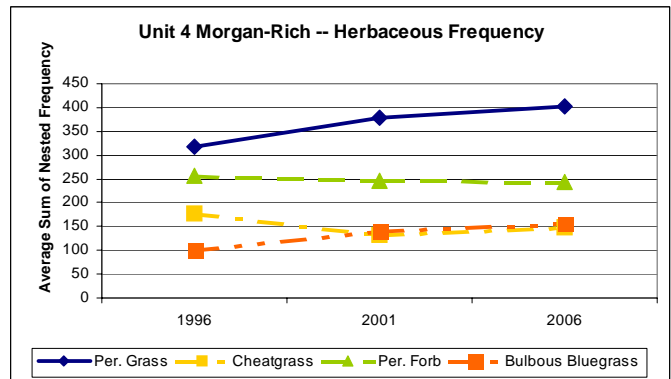


Figure 8. Unit 4 herbaceous understory nested frequency averages.

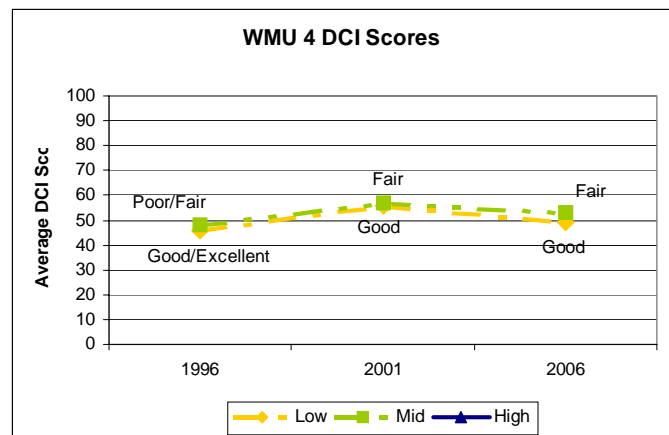


Figure 9. Unit 4 average Desirable Components Index (DCI) score by year. The DCI ratings are given for each site based on the 3 ecological potentials.