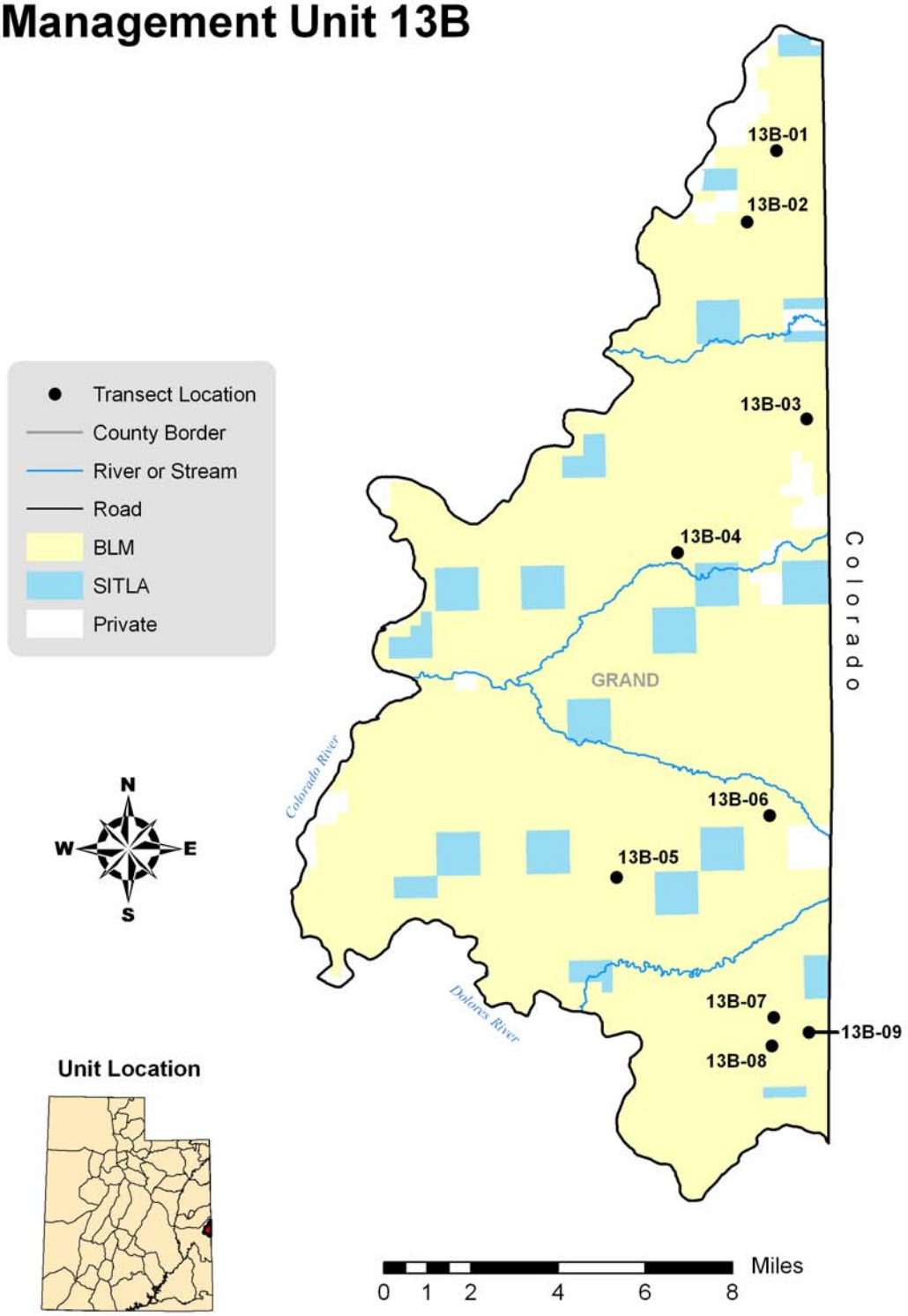
Management Unit 13B



WILDLIFE MANAGEMENT UNIT 13B - DOLORES TRIANGLE

Boundary Description

Grand County - Boundary begins at the Colorado River and Utah-Colorado state line; then southwest along the Colorado River to the Dolores River; east along the Dolores River to the state line; north along the state line to the Colorado River and beginning point.

Management Unit Description

The Dolores Triangle unit is formed by the Colorado River, the Dolores River, and the Colorado-Utah state line. Topography is varied with relatively flat mesas above 7,000 feet, large rocky rough canyons and broken country at the middle elevations, and low desert along the Colorado River. Four drainages dominate the area. The Granite Creek flows into the Dolores Rive, and Ryan Creek, Coates Creek and Little Dolores River empty into the Colorado River. There are ranches scattered throughout the area, but Fruita and Grand Junction, Colorado are the closest municipalities. Access to the unit is through Colorado by way of Glade Park or by fording the Dolores River near its confluence with the Colorado River at Dewey, however, fluctuating water levels and undulating bottom contours make crossing the river hazardous. The unit is comprised of 100,785 acres of deer range and 69,995 acres of elk range all of which is classified as winter range. The breakdown of management of both the deer and elk ranges consists of the Bureau of Land Management (BLM) managing about 88%, Utah State Institutional Trust Lands (SITLA) manages about 9% and 3% is privately owned.

The Dolores Triangle unit serves as winter range for deer which spend the remainder of the year in Colorado's Pinon Mesa area. Few deer reside in the unit year-round, those that do are found along the Colorado River. Concentrated areas for deer during normal winters are Steamboat Mesa, Lower Steamboat Mesa, Fish Park, Big Triangle, Ryan Park, and Granite Park. Only during severe winters with abnormally heavy snowfall are deer forced to disperse into the lower desert range where forage quality is poor. Severe winter range and normal winter range are not separated into different categories because much of the land to the east is too high for normal winter range. Therefore, the whole unit could be considered crucial. The ranches with agricultural land scattered throughout the herd unit offer valuable forage to the deer in the spring and fall.

Coles and Pederson (1967) identified and described five vegetation types which make up the winter range on the unit. The desert shrub type is dominated by blackbrush which occupies the lower portions of this winter range. This type is most important during severe winters although few desirable forage species are found within it. The grass type is found in the Granite Park and Steamboat Mesa areas. These were once large sagebrush parks, but have undergone a conversion to grasses (much of it cheatgrass) after overgrazing during the wrong time of the year (fall and/or spring), wildfires (reoccurring more often after the increase in weedy species), and sagebrush treatments. These areas were formerly important deer wintering areas which now receive increased use by elk. The sagebrush type is found above the desert shrub type, up to and within the pinyon-juniper woodlands. It provides important browse to both deer and livestock. The pinyon-juniper type, like the grass type, has undergone some changes due to competition with the mature trees, extended drought, and heavy use in some years. An understory of cliffrose and black sagebrush has diminished somewhat through the years and is the least productive vegetation type on the unit. This type is common on the slopes and higher mesas. The pinyon-juniper-sagebrush type occupies the upper portions of the winter range and provides important cover and forage for wildlife. In recent years, many wildfires have burned a large number of acres of this vegetation type.

Livestock grazing is the single-most important land use in the area. Winter sheep use began in the early 1900's. Now, most of the AUM’s the BLM allocates for livestock use is for cattle, although some winter sheep use still occurs. The evolving dominance of pinyon-juniper along with excessive use by livestock and big game have led to deteriorating range conditions. Both livestock and deer numbers were reduced in the past to help improve the range. Although some problems still exist, range conditions appear to be slowly improving according to Jense et al (1986). Range conditions were in a state of improvement in the mid 1980s, but

continued drought has caused deterioration in sagebrush communities. An increase in precipitation in the autumn of 2004 and the spring of 2005 have and will likely continue to improve declining range conditions.

Range Trend Studies

Nine interagency range trend studies were established during June 1986 and have been monitored regularly through 2010. Four of the studies [Fish Park (13B-3), Ryan Creek (13B-6), Steamboat Mesa North (13B-7) and Steamboat East Bench (13B-9)] sample chained and seeded pinyon-juniper communities. The Ryan Creek study also burned in a wildfire since establishment. Two of the studies [Buckhorn Draw (13B-5) and Steamboat Mesa South (13B-8)] sample Wyoming big sagebrush communities and two studies [Lower Westwater-Dolores (13B-1) and Upper Westwater-Dolores (13B-2)] sample former basin big sagebrush communities. The Lower Westwater-Dolores and Steamboat Mesa South studies have both burned in wildfires since study establishment. One other study [Red Cliffs (13B-4)] samples a blackbrush community.

SUMMARY
WILDLIFE MANAGEMENT UNIT 13B - DOLORES TRIANGLE

Community Types

Deer winter range within a unit is summarized into three categories based on ecological potentials which inlude low potential, mid-level potential and high potential. Low potential sites include desert shrub, Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and cliffrose (*Cowania mexicana* ssp. *stansburiana*) communities. Mid-level potential sites include mountain big sagebrush (*A. tridentata* ssp. *vaseyana*) communities. High potential sites include mountain brush communities. Black sagebrush (*A. nova*) and basin big sagebrush (*A. tridentata* ssp. *tridentata*) communities are placed within the low potential or mid-level potential scales based on precipitation and elevation. Deer summer range is summarized separately from winter range as a fourth category and typically includes aspen (*Populus tremuloides*) and high elevation mountain brush communities. Nine interagency range trend studies were sampled in Unit 13B during the summer of 2010. All nine of the range trend studies in the unit [Lower Westwater-Dolores (13B-1), Upper Westwater-Dolores (13B-2), Fish Park (13B-3), Red Cliffs (13B-4), Buckhorn Draw (13B-5), Ryan Creek (13B-6), Steamboat Mesa North (13B-7), Steamboat Mesa South (13B-8) and Steamboat East Bench (13B-9)] are categorized as low potential sites for deer winter range. All of the studies except the two Westwater studies are also considered to be elk winter range. Four studies sample chained and seeded pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) communities; two studies sample Wyoming big sagebrush communities; two studies sample former basin big sagebrush communities that have converted to cheatgrass (*Bromus tectorum*); one study samples a blackbrush community. There were no studies in this unit that were categorized as high potential or mid-level potential deer winter range, or summer range.

Precipitation

Vegetation trends are dependent upon annual and seasonal precipitation patterns. Precipitation and Palmer Drought Severity Index (PDSI) data for the unit were compiled from the National Oceanic and Atmospheric Administration (NOAA) Physical Sciences Division (PSD) as part of the Southeast Division (Division 7). The Southeast Division had historic annual mean precipitation of 9.07 inches from 1895 to 2010. Over the course of the study years in Unit 13B, the mean annual PDSI displayed several periods of prolonged drought. Moderate to extreme wet years in the Southeast Division included 1983-1985, 1993, 2005 and 2010, and moderate to extreme drought years included 1989-1990, 2000, 2002-2003 and 2009 (Figure 1 and Figure 2) (Time Series Data 2011).

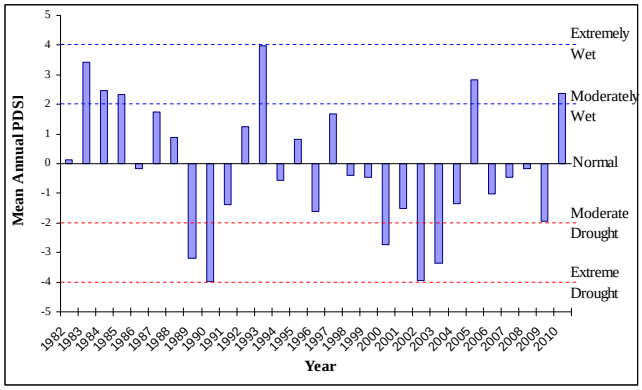


Figure 1. The 29 year mean annual Palmer Drought Severity Index (PDSI) for the Southeast Division (Division 7). The PDSI is based on climate data gathered from 1895 to 2010. The PDSI uses a scale where 0 indicates normal, positive deviations indicate wet and negative deviations indicate drought. Classification of the scale is ≥4.0 = Extremely Wet, 3.0 to 3.9 = Very Wet, 2.0 to2.9 = 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 (Time Series Data 2011).

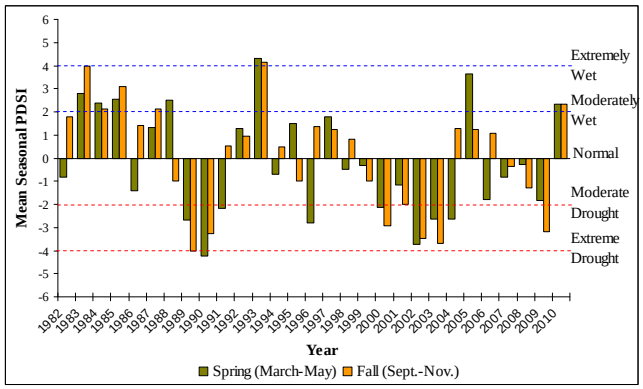


Figure 2. The 29 year mean spring (March-May) and fall (Sept.-Nov.) Palmer Drought Severity Index (PDSI) for the Southeast Division (Division 7). The PDSI is based on climate data gathered from 1895 to 2010. The PDSI uses a scale where 0 indicates normal, positive deviations indicate wet and negative deviations indicate drought. Classification of the scale is ≥4.0 = Extremely Wet, 3.0 to 3.9 = Very Wet, 2.0 to2.9 = 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 (Time Series Data 2011).

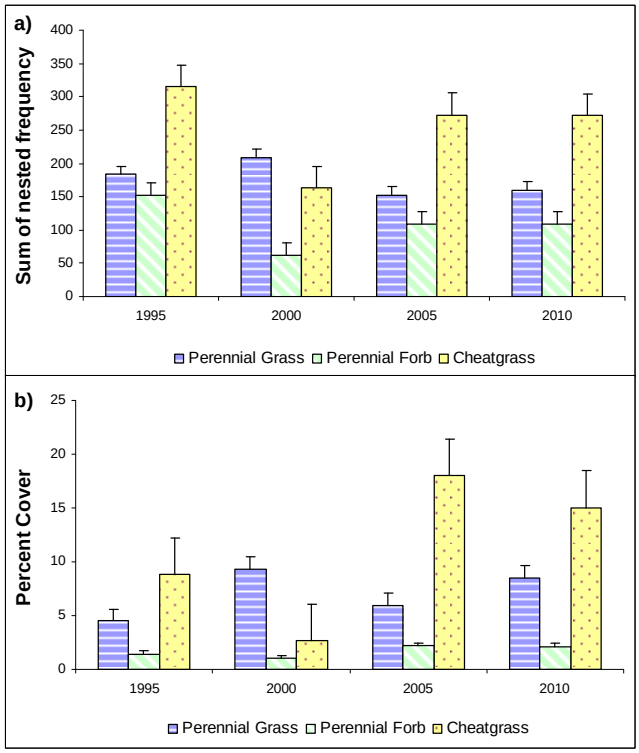


Figure 3. a) Low potential sites mean perennial grass, perennial forb and cheatgrass sum of nested frequency (n=9) by year for WMU 13B, Delores Triangle. **b)** Low potential sites mean perennial grass, perennial forb and cheatgrass cover (n=9) by year for WMU 13B.

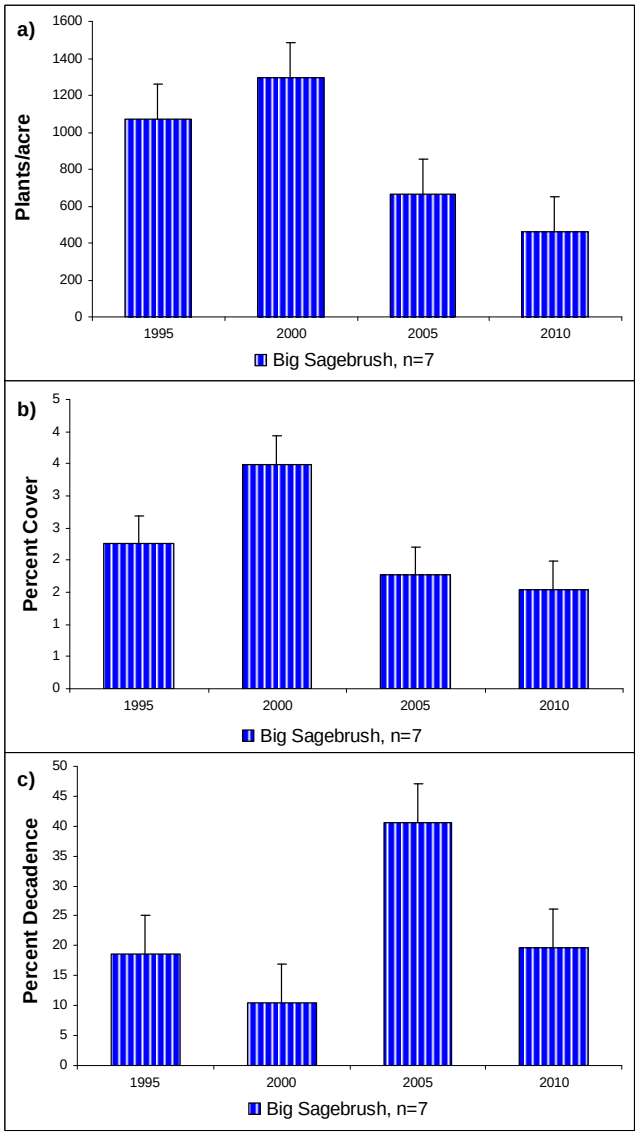


Figure 4. a) Low potential sites mean density of big sagebrush (*Artemisia tridentata*) by year for WMU 13B, Dolores Triangle. **b)** Low potential sites mean cover of big sagebrush by year for WMU 13B. **c)** Low potential sites mean population decadence of big sagebrush by year for WMU 13B.

Wyoming Big Sagebrush Communities (Low Potential Winter Range)

Browse: The low potential cumulative median browse trend remained stable throughout the early years of the study, decreased slightly in 2005 and remained lower in 2010 (Figure 5). Desirable browse species are limited on most of the study sites in the unit. Two of the studies, Upper Westwater-Dolores and Ryan Creek, burned in wildfires prior to the collection of browse cover in 1995, removing sagebrush from the sites. The Steamboat Mesa South study burned in a 2009 wildfire that removed all of the browse from that site, as well. The Red Cliffs study is dominated by blackbrush (*Coleogyne ramosissima*) and the most common preferred browse species on the Steamboat East Bench study is true mountain mahogany (*Cercocarpus montanus*). For information on the trends of these species, refer to the study discussion section. Wyoming big sagebrush and basin big sagebrush are typically the most common preferred browse species on the studies within the unit. For the purposes of this summary, Wyoming big sagebrush and basin big sagebrush measurements were combined and will be referred to simply as big sagebrush. The mean density of big sagebrush decreased significantly in 2005 with a general decrease in density across the study sites. Mean density decreased further in 2010 (Figure 4a), primarily due to the fire that removed sagebrush from the Steamboat Mesa South study. The density of big sagebrush on the other studies in the unit remained similar in 2010. The mean cover of big sagebrush increased significantly in 2000, but decreased significantly in 2005 (Figure 4b). Mean decadence of big sagebrush is typically moderate on the unit, but was significantly higher in 2005 than in any other sample year (Figure 4c).

Herbaceous Understory: The low potential median cumulative grass trend has fluctuated over the course of the study years. It was slightly down in 2995 and 2005, but was slightly up in 2000 and 2010 making the overall trend fairly stable (Figure 5). Despite the stable trend, grasses within these communities are generally in poor condition. Grasses are not particularly diverse or abundant, and are typically dominated by one or two species. The annual species cheatgrass (*Bromus tectorum*) is common on within the unit and is the dominant or co-dominant grass species on most of the studies. The increaser species bulbous bluegrass (*Poa bulbosa*) has been sampled at low, but increasing, frequency and cover on the Fish Park study and the three studies in the Steamboat Mesa area. The mean sum of nested frequency of perennial grasses increased in 2000 with a significant decrease in the mean nested frequency of cheatgrass, but the sum of nested frequency of perennial grasses decreased significantly in 2005 with the significant increase in cheatgrass nested frequency (Figure 3a). Mean cover followed similar trends as nested frequency, though perennial grass cover increased significantly in 2010. Also, the mean cover of cheatgrass was much higher in 2005 than other sample years (Figure 3b).

The low potential median cumulative forb trend for the unit increased slightly in 1995, was down in 2000, but increased slightly again in 2005. Overall, the trend for forbs has remained relatively stable over the sample years (Figure 5). Perennial forbs are also in fairly poor condition across the unit with annual forbs typically being more common on the studies. The mean sum of nested frequency of perennial forbs decreased significantly in 2000 and despite a significant increase in 2005, the mean perennial forb sum of nested frequency remained significantly lower than in 1995 (Figure 3a). The mean cover of perennial forbs was significantly higher in 2005 and 2010 than in 1995 and 2000 (Figure 3b).

Utilization: Pellet group transect data indicates that deer predominantly use the study areas. The mean deer days use/acre on the unit has been moderately heavy over the course of the study years, with less use in 2005. Elk use is light on most studies. The increase in the mean elk days use/acre is due a large, steady increase in the use by elk on the Fish Park study. The mean cattle use on the unit is moderate (Figure 6) with the heaviest use sampled on the two Westwater studies, the Buckhorn Draw study and the Steamboat Mesa South study.

Deer Desirable Components Index (DCI): The low potential deer DCI has fluctuated slightly over the sample years, primarily due to the perennial and annual grass cover scores. The ranking of the DCI has ranged from very poor-poor to poor-fair throughout the sample years (Table 1 and Figure 7).

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	**Total Score**	Ranking
95	4.9	3.1	1.8	9.0	-7.1	2.9	0.0	**14.7**	Poor
00	5.9	2.9	1.1	16.8	-2.5	2.1	0.0	**26.3**	Poor-Fair
05	4.0	1.0	0.3	11.1	-12.6	4.3	0.0	**8.3**	Very Poor-Poor
10	4.1	2.3	0.8	15.1	-10.3	3.8	0.0	**15.8**	Poor

Table 1. Low potential scale mean deer DCI scores (n=9) by year for WMU 13B, Dolores Triangle. The deer DCI scores are divided into three categories based on ecological potentials which inlude low, mid-level and high.

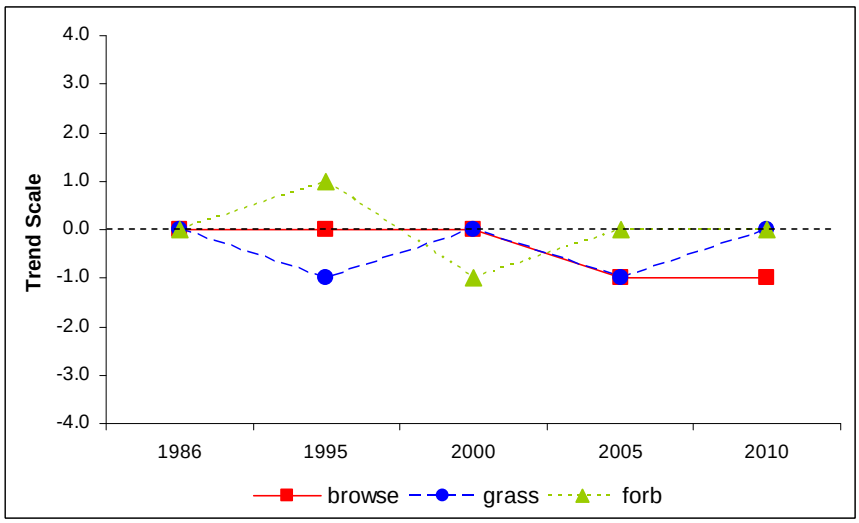


Figure 5. Low potential sites (n=9) cumulative median browse, grass and forb trends by year for WMU 13B, Dolores Triangle.

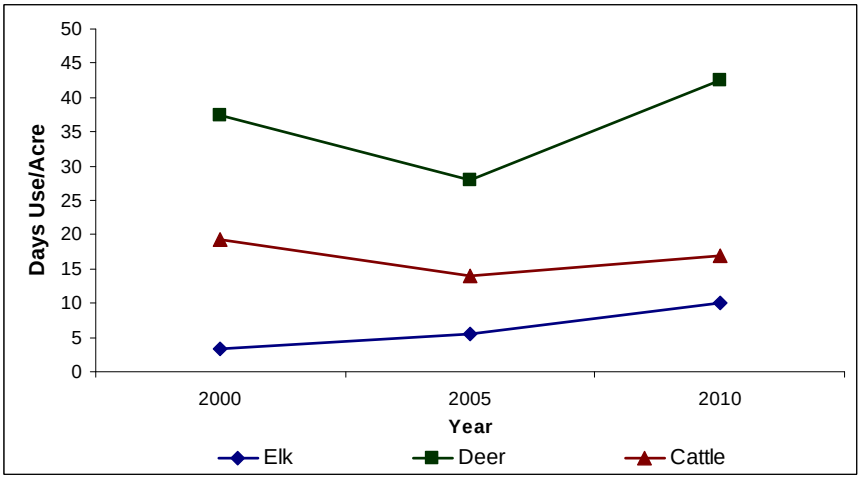


Figure 6. Low potential sites (n=9) mean animal days use/acre by year for WMU 13B, Dolores Triangle.

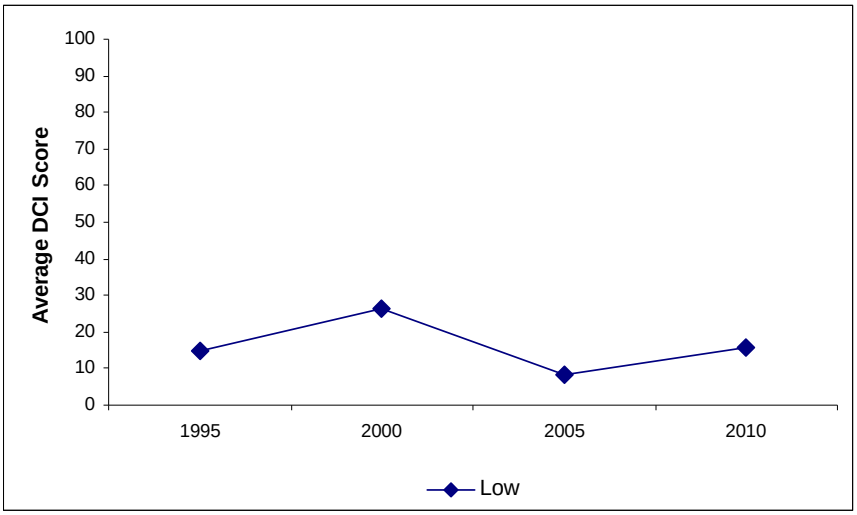


Figure 7. Mean low (n=9) potential scale deer DCI scores by year for WMU 13B, Dolores Triangle. The deer DCI scores are divided into three categories based on ecological potentials which inlude low, mid-level and high. No mid-level or high potential sites were sampled in this unit.