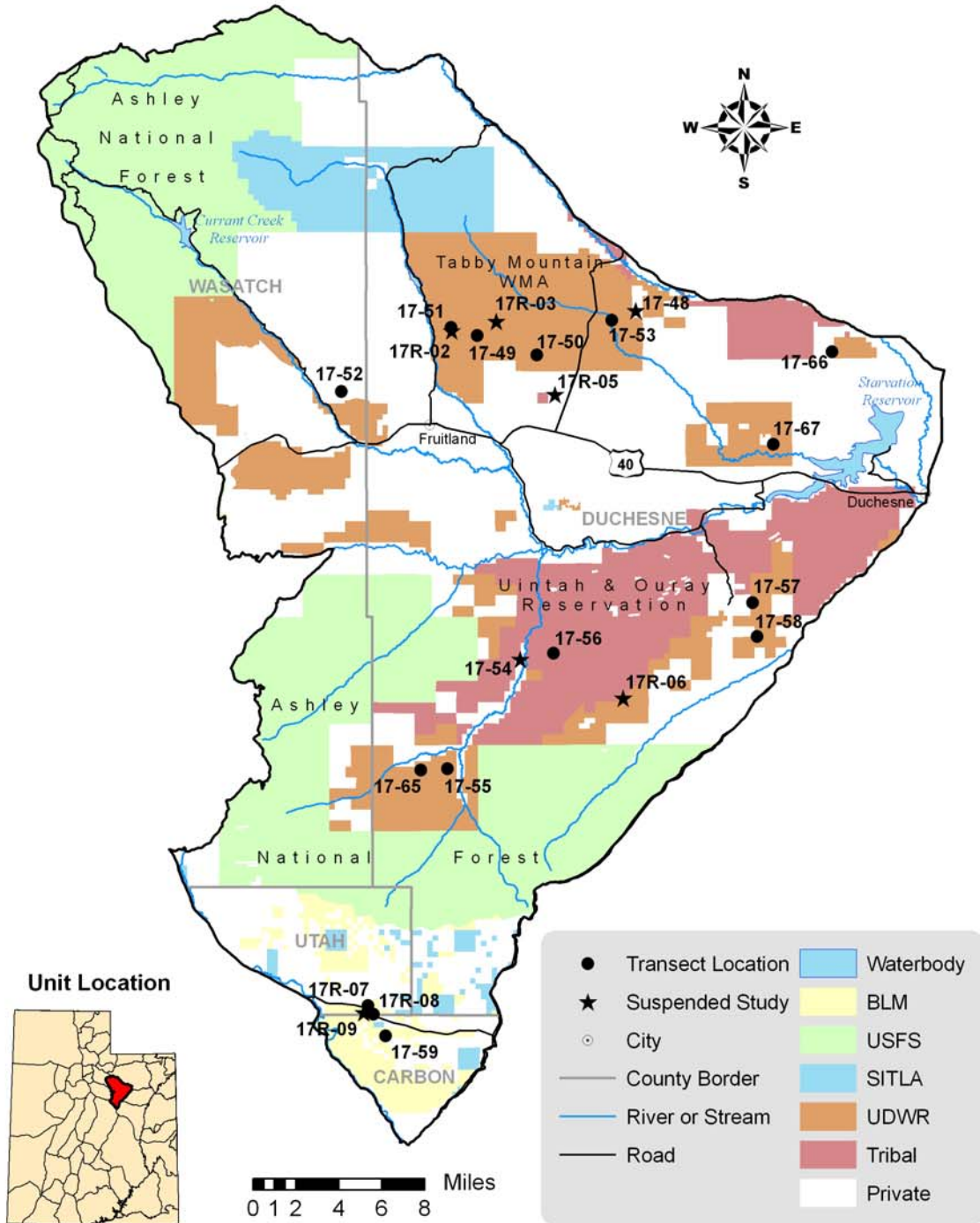


Management Unit 17



WILDLIFE MANAGEMENT UNIT 17 - WASATCH MOUNTAINS

Boundary Description

Salt Lake, Summit, Wasatch, Duchesne, Carbon, Utah counties - Boundary begins at the junction of Interstate 15 and Interstate 80 in Salt Lake City, then east on I-80 to Highway US-40; south on US-40 to Highway SR-32; east on SR-32 to Highway SR-35; southeast on SR-35 to Highway SR-87; south on SR-87 to Duchesne and Highway US-191; south on US-191 to Highway US-6; northeast on US-6 to I-15; north on I-15 to I-80 in Salt Lake City.

Management Unit Description

Management Unit 17 is divided into six smaller, more manageable subunits. These are Diamond Fork (17A), Timpanogas (17A), Salt Lake (17A), Heber (17A), and Currant Creek-Avintaquin (17B and 17C). The Northeastern Region 2010 report covers only the Current Creek-Avintaquin subunits. The Salt Lake subunit no longer contains range trend studies due to lack of access and development. The Diamond Fork, Timpanogas and Heber subunits are monitored as part of the Central Region rotation, which were last read in 2007 and will be reread in 2012.

There are approximately 720,200 acres of deer range within the Current Creek-Avintaquin subunits with 36% classified as winter range, 58% as summer range and 6% as year-long range. The U.S. Forest Service administers 26% of the deer range, Bureau of Land Management (BLM) 2%, private landowners 40%, Utah Division of Wildlife Resources (UDWR) 15%, Utah State Institutional Trust Lands (SITLA) 5% and Native American Trust Lands 10%. There is an estimated 706,600 acres of elk range within the Current Creek-Avintaquin subunits with 50% classified as winter range, 18% as summer range, 18% as transitional range and 14% as year-long range. The U.S. Forest Service administers 27% of the elk range, BLM 3%, private landowners 40%, UDWR 16%, SITLA 5% and Native American Trust Lands 10%. The areas of most concern in this unit are the winter ranges, which are very limited in quantity and quality. Residential developments along the Wasatch Front have consumed much of the crucial winter range that was available to wildlife and is projected to continue in the future. Because most of the winter range in this unit now lies on private land, managing wildlife populations is a challenge. Critical issues facing management of big game within Unit 17 include crop depredation, habitat quantity and quality, and highway mortality.

Range Trend Studies

Sixteen interagency range trend studies were sampled in Unit 17 during the summer of 2010. Nine of these studies were established in 1982 and have had regular monitoring through 2010. Three of the studies [Grey Wolf Mountain (17-49), Lower Santaquin Draw (17-50) and Two Bar Ranch (17-53)] sample Wyoming big sagebrush communities, three studies [Santaquins Cabin (17-51), Skitzzy Canyon (17-57) and Buck Knoll (17-58)] sample chained and seeded pinyon-juniper communities, two studies [Lower Horse Ridge (17-55) and Sam's Canyon (17-56)] sample mountain brush communities, and one study [Cutoff (17-52)] samples a mountain big sagebrush community. One study [Emma Park (15-59)] was established in 1994 and samples another mountain big sagebrush community. Two further studies were established in 2005. One study [Sand Wash (17-66)] samples a Wyoming big sagebrush community and one study [Little Horse Ridge (17-65)] samples a mountain brush community. A special study [Rabbit Gulch (17-67)] was established to monitor a Wyoming big sagebrush community in 1997 and has been monitored as a regular range study since 2005. Two more special studies [Emma Park Harrow Grazed (17R-7) and Emma Park Harrow Ungrazed (17R-8)] were established in 2001 to monitor grazing differences on a harrow project in a mountain big sagebrush community. One other special study [Allen Smith Reseed (17R-22)] was established in 2006 to monitor a seeding project in a former Wyoming big sagebrush community. There are seven studies on Units 17B and 17C that have been suspended for various reasons and were not sampled in 2010. For further information on suspended studies, refer to past reports at <http://wildlife.utah.gov/range/>.

SUMMARY
WILDLIFE MANAGEMENT UNIT 17 - WASATCH MOUNTAINS

Community Types

Deer winter range within a unit is summarized into three categories based on ecological potentials which include 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 or meadow communities. Sixteen interagency range trend studies were sampled in Unit 17 during the summer of 2010. Seven of the studies [Cutoff (17-52), Lower Horse Ridge (17-55), Buck Knoll (17-58), Emma Park (17-59), Little Horse Ridge (17-65), Emma Park Harrow Grazed (17R-7) and Emma Park Harrow Ungrazed (17R-8)] are categorized as mid-level potential sites for deer winter range and sample communities with a mixture of mountain big sagebrush and other mixed mountain brush. Though categorized as winter range in this summary, the three studies in the Emma Park area and the Little Horse Ridge studies are also considered to be deer summer range and fawning habitat. The three Emma Park studies are also considered to be elk summer range and calving habitat and the two studies on Horse Ridge are considered to

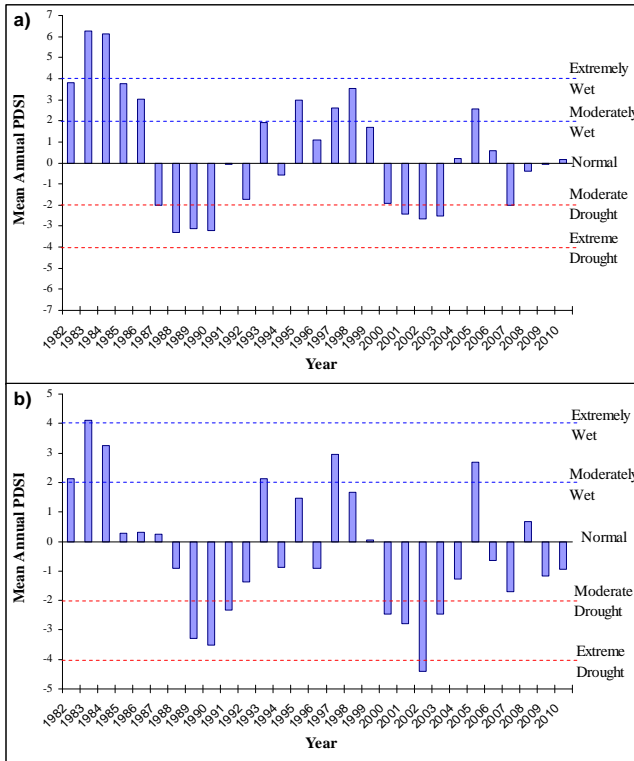


Figure 1. a) The 29 year mean annual Palmer Drought Severity Index (PDSI) for the Northern Mountains (Division 5). **b)** The 29 year mean annual PDSI for the Uinta Basin (Division 6). The PDSI is based on climate data gathered from 1895 to 2010. The PDSI uses a scale where 0 indicates normal, positive 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 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 -0.9 = 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).

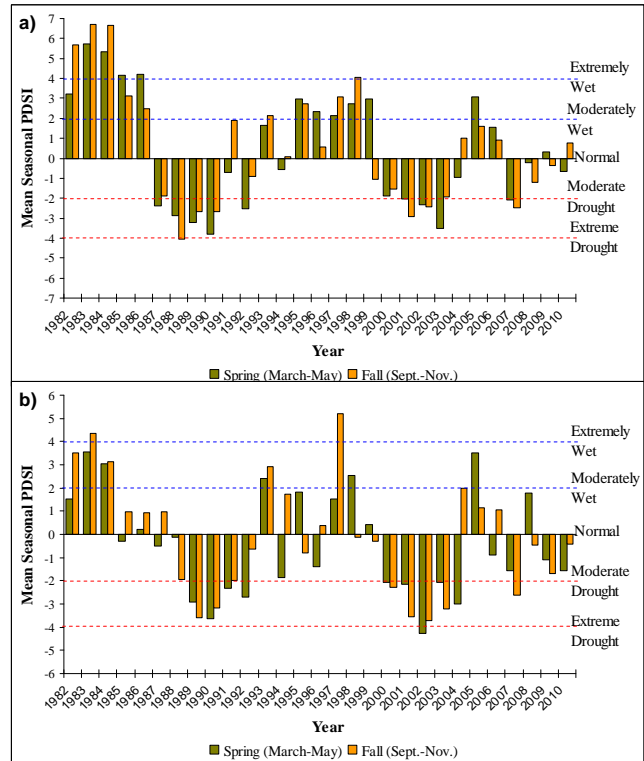


Figure 2. a) The 29 year mean spring (March-May) and fall (Sept.-Nov.) Palmer Drought Severity Index (PDSI) for the Northern Mountains (Division 5). **b)** The 29 year mean spring (March-May) and fall (Sept.-Nov.) PDSI for the Uinta Basin (Division 6). The PDSI is based on climate data gathered from 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 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 -0.9 = 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).

be elk year long range. The remaining two studies are also considered elk winter range. The three studies at Emma Park are managed as part of the Southeastern Region, while the other four studies are managed as part of the Northeastern Region. Eight of the studies [Grey Wolf Mountain (17-49), Lower Santaquin Draw (17-50), Santaquins Cabin (17-51), Two Bar Ranch (17-53), Skitzzy Canyon (17-57), Sand Wash (17-66), Rabbit Gulch (17-67) and Allen Smith Reseed (17R-22)] are classified as low potential deer winter range sites and sample primarily Wyoming big sagebrush communities. All of these studies are also considered to be elk winter range. Only one of the range trend studies in the unit [Sam's Canyon (17-56)] was categorized as a high potential site for deer winter range. Because this category has only one study, it is not included in this summary. For further information on this study, refer to the discussion section. There were no studies in this unit that were categorized exclusively as 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 Northern Mountains (Division 5) and Uintah Basin (Division 6) Divisions. The Grey Wolf Mountain, Lower Santaquin Draw, Santaquins Cabin, Cutoff, Lower Horse Ridge, Sam's Canyon, Emma Park, Little Horse Ridge, Emma Park Harrow Grazed, Emma Park Harrow Ungrazed and Allen Smith Reseed studies fall within the Northern Mountains Division, while the Two Bar Ranch, Skitzzy Canyon, Sand Wash, Rabbit Gulch and Buck Knoll studies are within the Uintah Basin Division. The Northern Mountains and the Uintah Basin had historic annual mean precipitation of 19.11 inches and 7.99 inches, respectively, from 1895 to 2010. Over the course of the study years in Unit 7, the mean annual PDSI of both of the Divisions display several periods of prolonged drought. Moderate to extreme wet years in the Northern Mountains included 1982-1986, 1993, 1995, 1997-1998 and 2005, and moderate to extreme drought years included 1987-1990, 2000-2003 and 2007 (Figure 1a and Figure 2a). Moderate to extreme wet years in the Uintah Basin included 1982-1984, 1993, 1997 and 2005, and moderate to extreme drought years included 1989-1991 and 2000-2003 (Figure 1b and Figure 2b) (Time Series Data 2011).

Mountain Big Sagebrush Communities (Mid-Level Potential Winter Range)

Browse: The mid-level potential cumulative median browse trend had a slight increase in 1986 and increased slightly again in 2010 (Figure 8a). The browse composition on the studies is primarily a mixture of mountain big sagebrush and a few other mountain brush species. The prevalent browse species on the two studies on Horse Ridge and the Buck Knoll study is true mountain mahogany (*Cercocarpus montanus*). The density of mountain big sagebrush is moderate on the studies and the mean density increased significantly in 2010 (Figure 4a). This increase in the sagebrush mean density was due to a substantial increase in the recruitment of young plants on the Emma Park Harrow Grazed study. Density of mountain big sagebrush only increased slightly on the other studies in 2010. The mean cover of mountain big sagebrush was significantly lower in 2005 (Figure 4b). The mean decadence of mountain big sagebrush was high throughout the early years of the studies, but decadence decreased significantly to more moderate levels in 2010 (Figure 4c). True mountain mahogany mean density increased significantly in 2005 due to the addition of the Little Horse Ridge study, which has the densest population of mahogany of all the studies (figure 4a). The mean cover of mahogany has steadily increased and decadence has been low over the course of the study years (Figure 4b and Figure 4c).

Herbaceous Understory: The mid-level potential median cumulative grass trend was down in 2000/2001, but increased again in 2005 (Figure 8a). Grasses within most of these communities are diverse and abundant, and typically consist of a good mixture of native perennial species. The mean sum of nested frequency of perennial grasses decreased significantly in 2000/2001, but increased significantly again in 2005 (Figure 3a). Despite the decrease in nested frequency, the mean cover of perennial grasses increased significantly in 2000/2001, and remained higher throughout the remaining sample years (Figure 3b).

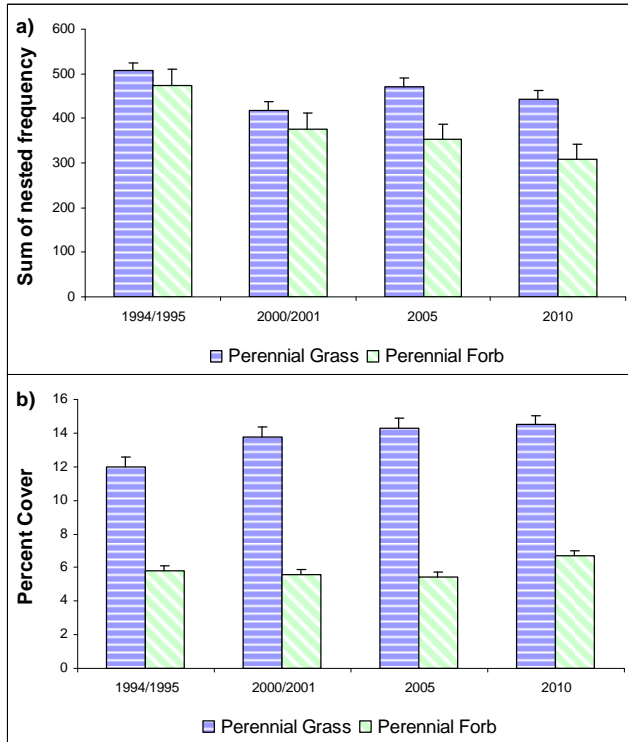


Figure 3. a) Mid-level potential sites mean perennial grass and perennial forb sum of nested frequency (n=7) by year for WMU 17, Wasatch Mountains. b) Mid-level potential sites mean perennial grass, perennial forb and cheatgrass cover (n=7) by year for WMU 17.

The mid-level potential median cumulative forb trend for the unit increased slightly in 1994/1995, but has steadily decreased throughout the subsequent sample years (Figure 8a). Perennial forbs are also diverse and fairly abundant within the sampled communities. The mean sum of nested frequency of perennial forbs was higher than perennial grasses in 1994/1995, but decreased significantly in 2000 and has continued to decrease throughout the remaining sample years (Figure 3a). Cover of perennial forbs was similar throughout the early years of the study, then increased slightly, but significantly, in 2010 (Figure 3b).

Utilization: Pellet group transect data indicates that deer predominantly use these areas, with the highest deer use sampled on the Cutoff study. The mean deer days use/acre on the unit has been mostly moderate with a slight decrease in 2010. The mean elk days use/acre has been mostly light, with the highest use in 2005. Cattle use appears to be light on these studies. Cattle use increased in 2010 due to a large increase in use on the Emma Park Harrow Grazed study (Figure 9a). Minor use by moose and horses has also been sampled on several studies.

Deer Desirable Components Index (DCI): The mid-level potential deer DCI has slightly in 2000/2001 and in 2010. Much of the increase is due to increases in cover of preferred browse and decreases in decadence (which increases the decadence score). The ranking of the DCI has been fair to good throughout the sample years (Table 1 and Figure 7).

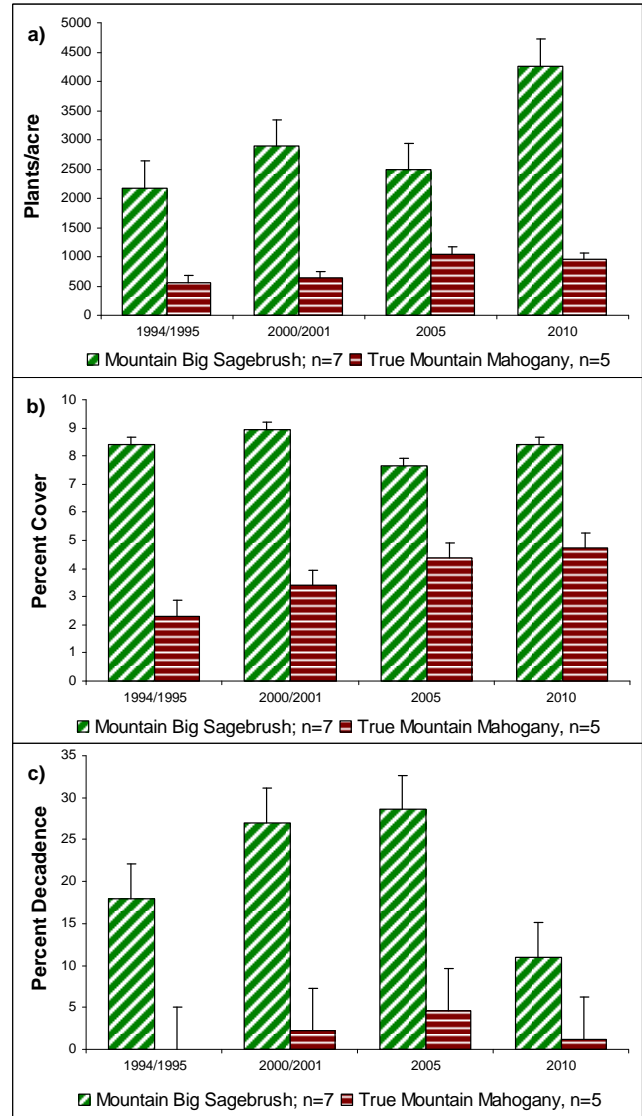


Figure 4. a) Mid-level potential sites mean density of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and true mountain mahogany (*Cercocarpus montanus*) by year for WMU 17, Wasatch Mountains. b) Mid-level potential sites mean cover of mountain big sagebrush and true mountain mahogany by year for WMU 17. c) Mid-level potential sites mean population decadence of mountain big sagebrush and true mountain mahogany by year for WMU 17.

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
94/95	14.9	6.9	5.7	23.1	0.0	8.3	0.0	58.9	Fair
00/01	15.9	8.6	8.9	26.4	0.0	7.0	0.0	66.8	Fair-Good
05	15.2	9.3	6.5	24.6	0.0	8.1	0.0	63.8	Fair-Good
10	17.7	13.2	8.7	25.8	0.0	7.3	0.0	72.7	Good

Table 1. Mid-level potential scale mean deer DCI scores (n=7) by year for WMU 17, Wasatch Mountains. The deer DCI scores are divided into three categories based on ecological potentials which include low, mid-level and high.

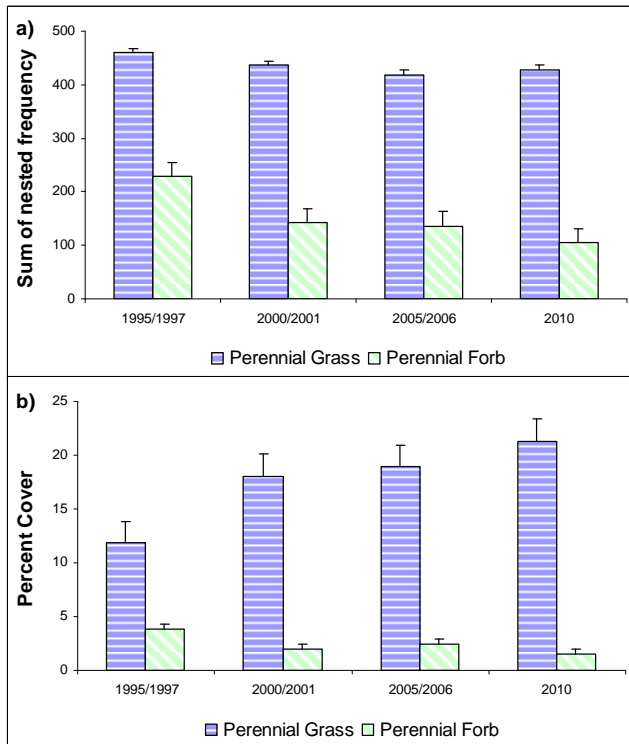


Figure 5. a) Low potential sites mean perennial grass and perennial forb sum of nested frequency (n=8) by year for WMU 17, Wasatch Mountains. b) Low potential sites mean perennial grass and perennial forb cover (n=7) by year for WMU 17.

Wyoming Big Sagebrush Communities (Low Potential Winter Range)

Browse: The low potential studies cumulative median browse trend increased slightly in 1986, remained stable through 2000/2001, then decreased in 2005/2006 (Figure 8b). Browse species are not common on the Skitzzy Canyon or Allen Smith Reseed studies. The most common browse species on the Skitzzy Canyon study is black sagebrush. Wyoming big sagebrush is the dominant browse species on all of the other low potential studies. Only Wyoming big sagebrush is summarized for this unit. The mean density of Wyoming big sagebrush was moderately high in the first two sample years, but decreased significantly in 2005 (Figure 6a). The mean cover followed a similar

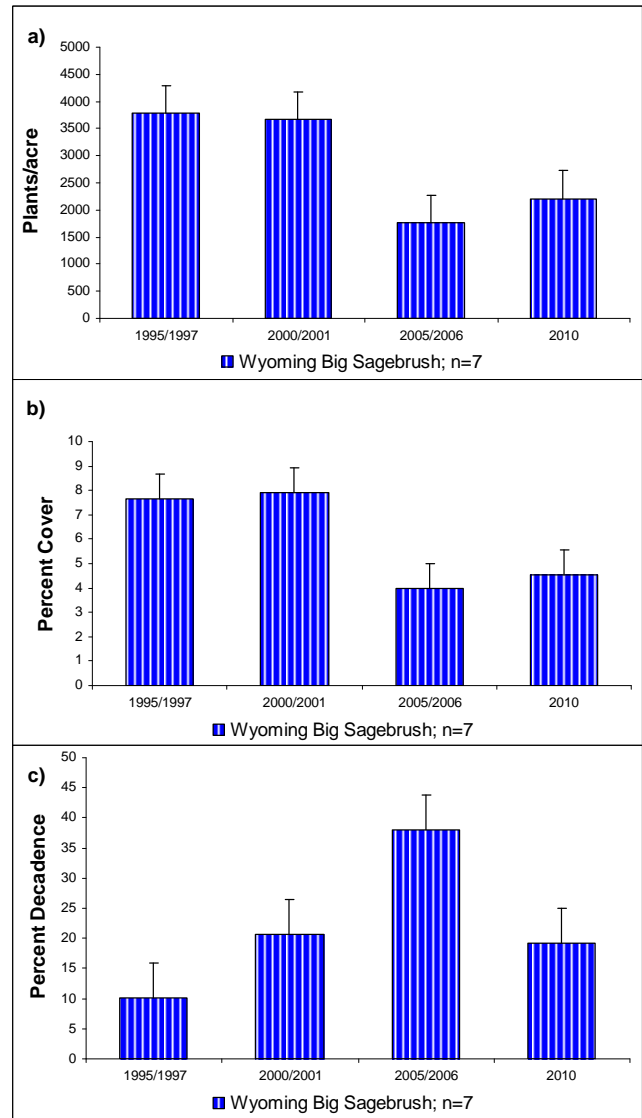


Figure 6. a) Low potential sites mean density of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) by year for WMU 17, Wasatch Mountains. b) Low potential sites mean cover of Wyoming big sagebrush by year for WMU 17. c) Low potential sites mean population decadence of Wyoming big sagebrush by year for WMU 17.

trend (Figure 6c). Mean decadence of Wyoming big sagebrush has been moderately high for the unit, but was significantly higher in 2005 than the other sample years (Figure 6c).

Herbaceous Understory: The low potential median cumulative grass trend increased slightly in 1995/1997 and remained relatively stable throughout the subsequent sample years (Figure 8b). Grasses within these communities are fairly diverse, but are typically dominated by one of two species, crested wheatgrass (*Agropyron cristatum*) or needle-and-thread (*Stipa comata*). The mean sum of nested frequency of perennial grasses has remained similar over the course of the study years (Figure 5a), but mean cover has steadily increased in each sample year (Figure 5b).

The low potential median cumulative forb trend increased slightly in 1995/1997, but decreased in 2000/2001 and 2010 (Figure 8b). Perennial forbs are diverse and moderately abundant within most of the sampled communities. The mean sum of nested frequency of perennial forbs decreased significantly in 1995/1997 and remained lower over the remaining sample years (Figure 5a). The mean perennial forb cover followed a similar trend (Figure 5b).

Utilization: Pellet group transect data indicates that deer and elk both predominantly use these study areas. Use by both species has been moderately heavy to heavy over the sample years. The mean deer days use/acre was very heavy in 1995/1997, but has steadily decreased in each sample year. The mean elk days use/acre increased markedly in 2005/2006, but decreased again in 2010. Cattle use appears to be light on the studies (Figure 9b).

Deer Desirable Components Index (DCI): The low potential deer DCI remained fairly stable over the sample years with a ranking of fair-good to good throughout the sample years. Generally, preferred browse cover has decreased on the unit, while perennial grass cover has increased (Table 2 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
95/97	8.7	6.2	4.8	22.9	-0.1	6.4	0.0	48.8	Good
00/01	9.7	4.7	3.6	28.3	0.0	3.9	0.0	50.3	Good
05/06	5.8	2.5	3.6	29.3	-0.2	4.9	0.0	45.8	Fair-Good
10	6.2	3.9	4.0	30.0	0.0	3.0	0.0	47.1	Good

Table 2. Low potential scale mean deer DCI scores (n=8) by year for WMU 17, Wasatch Mountains. The deer DCI scores are divided into three categories based on ecological potentials which include low, mid-level and high.

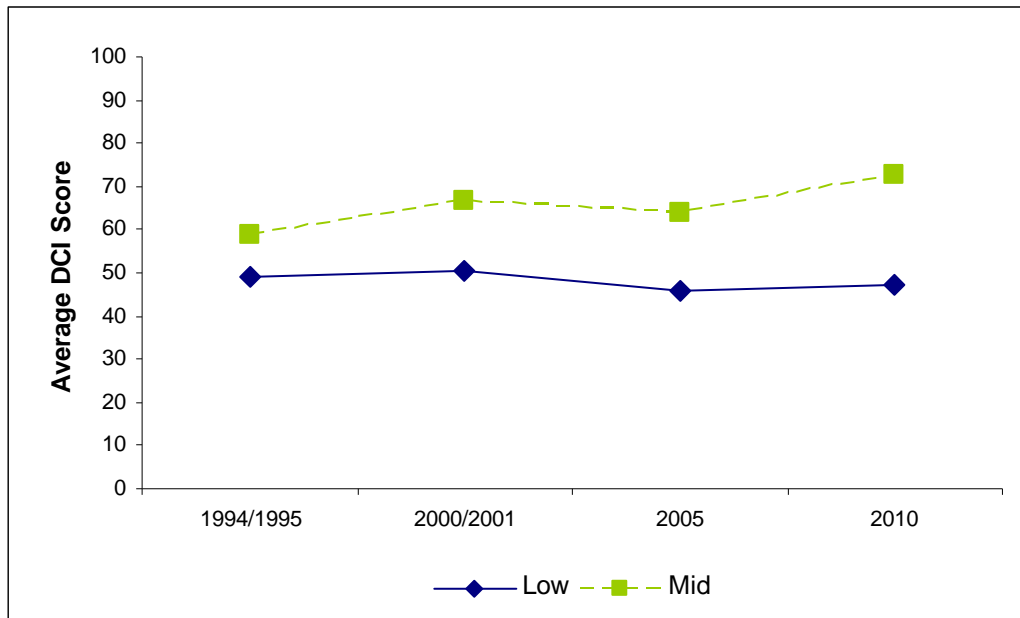


Figure 7. Mean low (n=8) and mid-level (n=7) potential scale deer DCI scores by year for WMU 17, Wasatch Mountains. The deer DCI scores are divided into three categories based on ecological potentials which include low, mid-level and high. For further information on the DCI for the only high potential study, refer to the Sam's Canyon (17-56) discussion section.

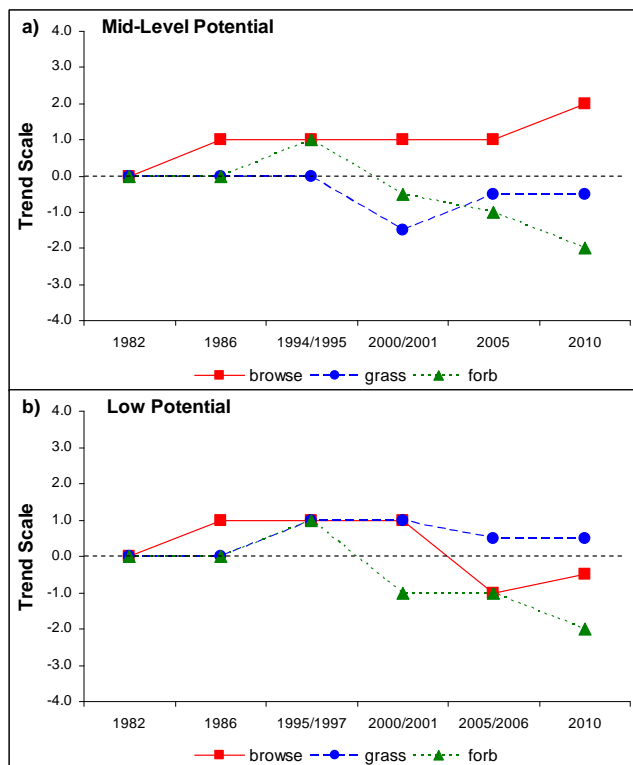


Figure 8. a) Mid-level potential sites (n=7) cumulative median browse, grass and forb trends by year for WMU 17, Wasatch Mountains. b) Low potential sites (n=8) cumulative median browse, grass and forb trends by year for WMU 17. For further information on trends for the only high potential study, refer to the Sam's Canyon (17-56) discussion section.

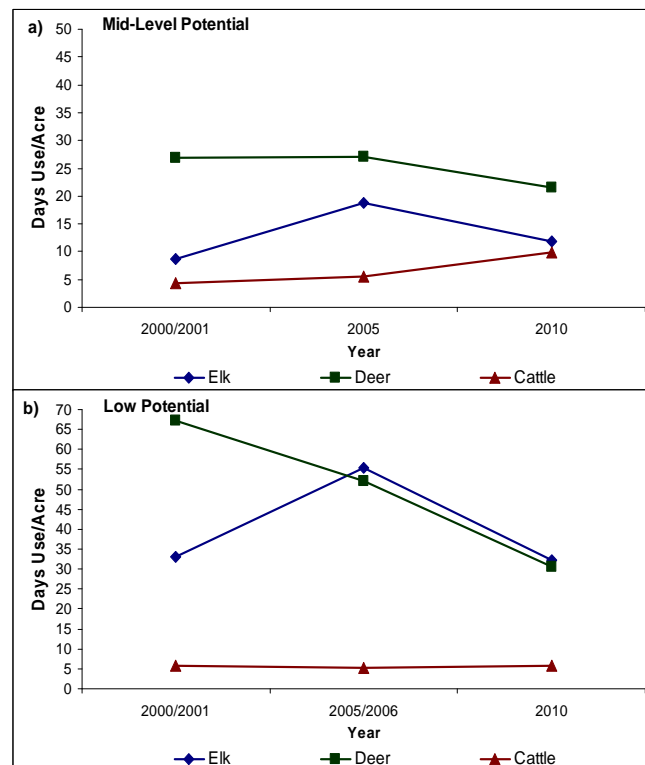


Figure 9. a) Mid-level potential sites (n=7) mean animals days use/acre by year for WMU 17, Wasatch Mountain. b) Low potential sites (n=8) mean animal days use/acre by year for WMU 17. For further information on animal use for the only high potential study, refer to the Sam's Canyon (17-56) discussion section.