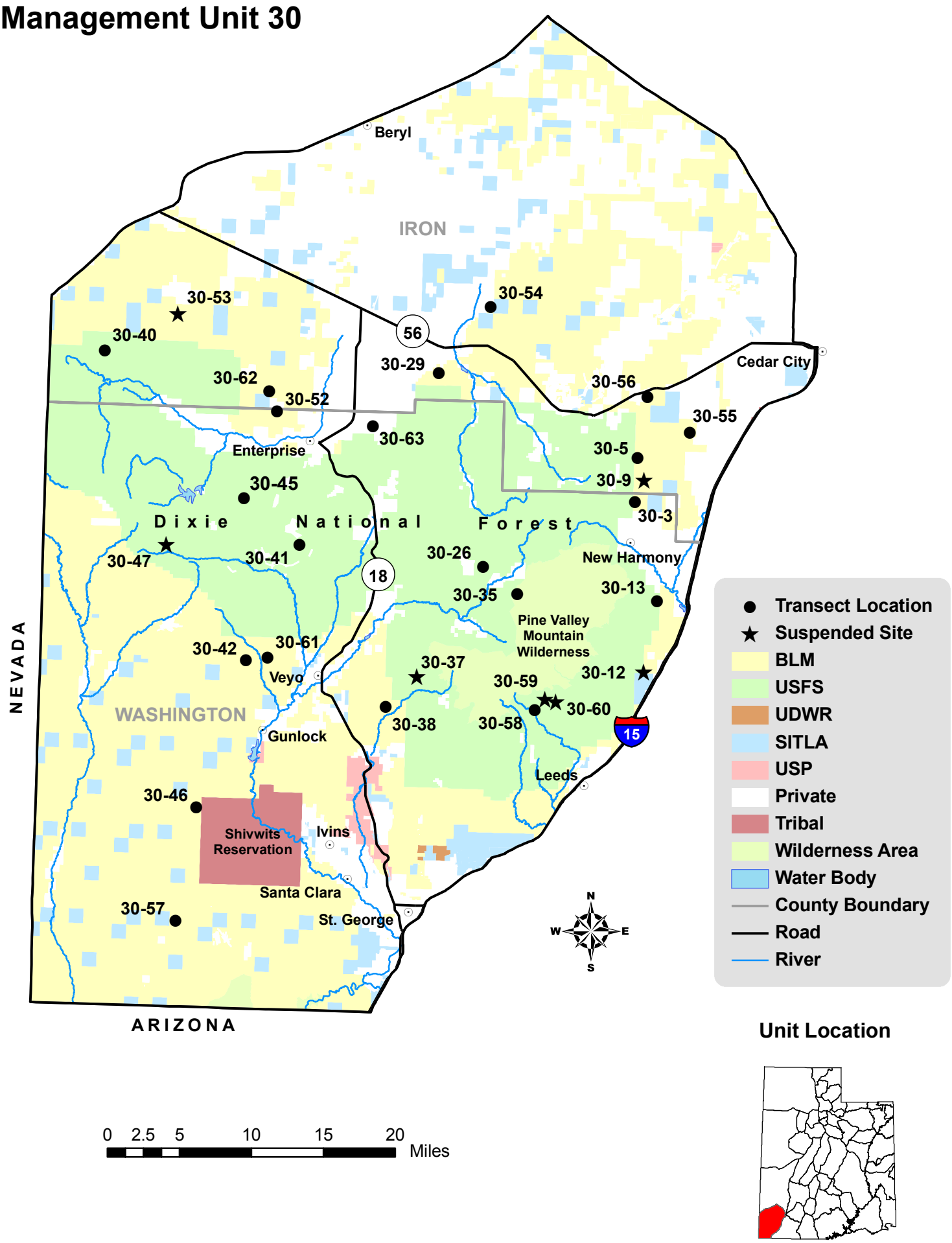
Management Unit 30



WILDLIFE MANAGEMENT UNIT 30 - PINE VALLEY

Boundary Description

Iron and Washington counties - Boundary begins at I-15 and the Utah-Arizona state line; north on I-15 to SR-56; west on SR-56 to the Lund Highway; northwest along the Lund Highway to the Union Pacific railroad tracks at Lund; southwest on the Union Pacific railroad tracks to the Utah-Nevada state line; south on this state line to the Utah-Arizona state line; west on this state line to I-15 and beginning point.

Management Unit Description

This unit was divided into 3 subunits; 30A West Pine Valley, 30B Comanche, and 30C Pine Valley/Browse prior to 1992. All subunits (A, B, and C) were combined for deer in 2001. The Pine Valley wildlife management unit encompasses the Antelope Range, Harmony Mountains, Pine Valley Mountains, Bull Valley Mountains, and the Beaver Dam Mountains. Unit 30 contains approximately 300,053 acres of summer range, 78% of which in managed by the U.S. Forest Service as part of the Dixie National Forest. Winter range encompasses 466,484 acres, 41% of which is occurs on Forest Service lands and 41% occurs on lands administered by the Bureau of Land Management. The I-15 corridor runs on the eastern side of the unit, effectively eliminating deer movement east due to a deer proof fence.

In the past, the assumption has been that summer range is a limiting habitat factor on this unit. However, in reality, the situation is not that simple. There is also a resident deer population in the New Harmony area which further complicates management.

Summer range is confined to elevations above 6,000 to 6,500 feet on the New Harmony and Pine Valley Mountains. The vegetational character is principally oakbrush and mountain brush on the Harmony Mountains and on the lower slopes of the Pine Valleys. Aspen and coniferous types are common on the higher portions of the Pine Valley Mountains, but much less prevalent on the Harmony Mountains. Sagebrush-grass parks and meadowlands can be found at the summit of the Harmony Mountains. These are important areas to deer for short periods during the summer which have been heavily impacted by cattle. Many similar, but more interspersed parklands occur on the northern end of the Pine Valley Mountains. Summer deer concentrations are primarily on the Harmony Mountain and the north end of the Pine Valleys. Relatively few deer summer south of Timber Mountain within unit 30C.

Herd unit 30 winter range varies greatly, depending upon elevation. North of the Great Basin-Colorado River divide, pinyon-juniper and sagebrush-grass predominate. South of the divide, pinyon-juniper is still important, but there are increasing amounts of a desert shrub type dominated by shrub live oak (*Quercus turbinella*) and several other browse species not often found to the north. Both areas possess important acreages of seeded range, most notably east of Pinto at Page Ranch, Woolsey Ranch, New Harmony and Pintura Bench. Deer tend to concentrate on these sites, especially the latter three. The winter range south of Pintura currently supports few deer. A comprehensive study conducted by the Southern Region of the Division of Wildlife Resources on deer population dynamics and habitat use, has contributed greatly to understanding of this herd unit. This study was especially helpful in locating trend studies on critical sites. For example, it is now evident that fawning and fawn rearing habitat are very critical for this unit. Accordingly, studies have been located at known fawning areas. In addition, the winter range is now better defined and critical areas have been identified. These sites were also sampled.

The herd unit varies with elevations of 10,000 feet on the Pine Valley Mountains to lower and drier areas such as Motoqua at an elevation of 4,000 feet. Vegetationally, the summer range consists of dense conifers with a few aspen clones and dry meadows at higher elevations, and mixed oakbrush, mountain brush, southern desert shrub, and sagebrush-grass on lower areas. Most of the summer range is within the officially designated

"wilderness area" which is open to livestock use.

Winter range is extensive, but not uniformly utilized. Pinyon-juniper is the dominant vegetative type, but there are also large areas of sagebrush-grass, southern desert shrub, oakbrush, and mountain brush. Important critical winter concentration areas include the area east of Central, the lower Pinto Creek drainage, the Antelope Range, Iron Mountain, the Shoal Creek drainage, Moody Creek, Tobin Bench, and the middle portion of the East Fork of Beaver Dam Wash. Only during the most severe winters do deer utilize the lower portions of the winter range, especially the Mojave desert areas. During the spring, summer, and fall, critical concentration areas include the higher elevations of the Bull Valley Mountains, Lost Peak, Maple Ridge, the slopes surrounding Pine Valley Reservoir, the meadows of the Whipple Valley area, and Flattop Mountains.

Trend Study Site Description

Trend study sites were originally established on the unit in 1982. Most of these sites were reread in 1992, and 1998. In 1986, 4 study sites were established on a burned area on the east side of the Pine Valley mountains. These sites were reread in 1987, 1992, and 1998. In 1998, several of the sites established in 1982 were discontinued and 3 sites were reread that were not read in 1992. In addition, 4 new study sites were established to cover important areas which were not previously being monitored. In 2003 most of the studies read in 1998 were revisited and 3 new trend studies were added.

SUMMARY

WILDLIFE MANAGEMENT 30 - PINE VALLEY

Community Types

Twenty one trend studies were sampled in 2008. Six studies sampled higher elevation summer and summer/transitional range (30-5, 30-26, 30-35, 30-41, 30-45, and 30-58). Six studies sampled winter range in mountain brush communities (30-3, 30-38, 30-42, 30-55, 30-61, and 30-62). Three studies sampled Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) communities (30-29, 30-54, and 30-63). Three studies sampled chained and seeded singleleaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*) communities (30-13, 30-40, and 30-56). Three studies sampled burns that had been seeded (30-46 and 30-52). One study sampled a black sagebrush (*Artemisia nova*) community (30-57).

Precipitation

Vegetation trends are dependent upon annual and seasonal precipitation patterns. Precipitation data from this herd unit were compiled from the Cedar City FAA Airport, New Harmony, Gunlock Powerhouse, Veyo Powerhouse, and Enterprise weatherstations (Figures 1 and 2). The units annual precipitation was below 75% of normal (drought conditions) in 1989, 1999, and 2002 (Figure 1). Spring precipitation for the unit was below 75% of normal in 1984, 1985, 1993, 1996, 1999, 2000, and 2007, near or below 50% of normal in 1989, 1997, 2004, and 2008, and near 15% of normal in 2002 (Figure 2). Fall precipitation was near or below 75% of normal in 1984, 1992, 1993, 2005, and 2007, near or below 50% in 1988, 1989, and 2003, and near or below 20% of normal in 1995 and 1999, (Figure 2). Spring precipitation is essential for the recruitment of browse seedlings and the establishment of native perennial grasses and forbs. Fall precipitation benefits winter annual species, such as cheatgrass (*Bromus tectorum*) (Monsen 1994).

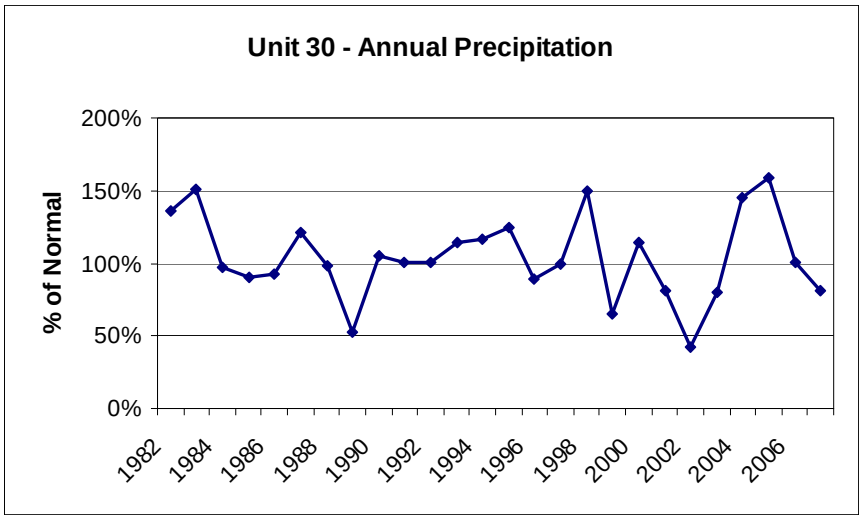


Figure 1. Annual precipitation data for unit 30. Precipitation data were collected at the Cedar City FAA Airport, New Harmony, Gunlock Powerhouse, Veyo Powerhouse, and Enterprise weather stations (Utah Climate Summaries 2008)

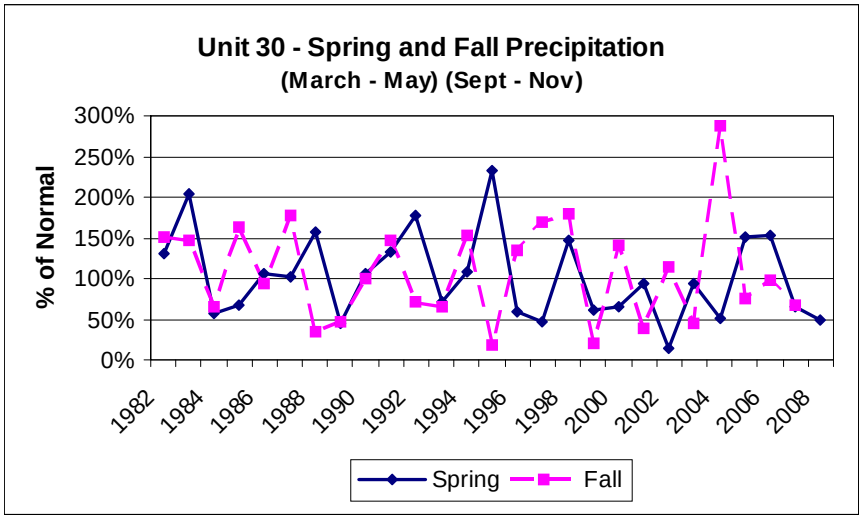


Figure 2. Annual spring (March-May) and Fall (Sept.-Nov.) precipitation for unit 30. Precipitation data were collected at the Cedar City FAA Airport, New Harmony, Gunlock Powerhouse, Veyo Powerhouse, and Enterprise weather stations (Utah Climate Summaries 2008).

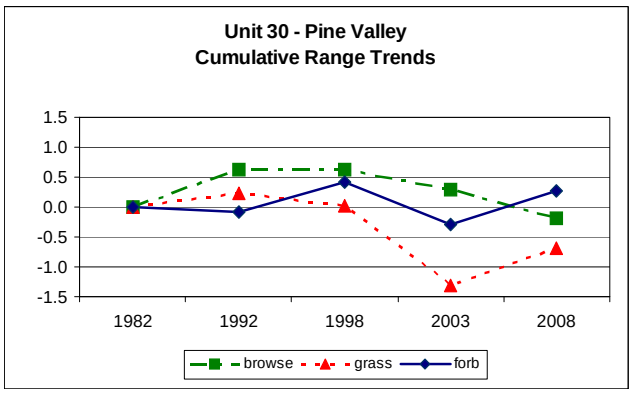


Figure 3. Cumulative range trends for unit 30.

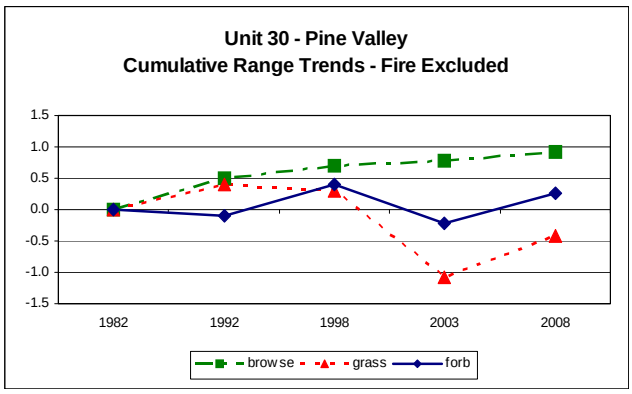


Figure 4. Cumulative range trends for unit 30, excluding sites that burned in wildfires.

Browse

Six study sites have burned in wildfires since sampling began (30-38, 30-42, 30-45, 30-46, 30-57, and 30-61). Most of the fires occurred between the 2003 and 2008 sample periods (For further detail, refer to the discussion section). Because of this, the average trends for the unit and for individual species are reported for all sites and for sites excluding sites that burned. The average browse trend for all sites increased slightly from 1982 to 1992, remained fairly constant to 1998, then steadily decreased in 2003 and 2008 (Figure 3). The average browse trend excluding sites that burned increased steadily from 1992 to 1998, then increased more slowly through 2008 (Figure 4).

Wyoming big sagebrush was sampled at the Southwest of Newcastle (30-29), Telegraph Draw (30-40), Northwest of Enterprise (30-52), Bullion Canyon (30-54), Quichapa Canyon (30-55), and Holt Canyon (30-63) study sites, none of which burned. Average density of Wyoming big sagebrush has remained similar at between about 3,500 plants/acre to about 4,000 plants/acre from 1998 to 2008 (Figure 5a). The average cover of Wyoming big sagebrush decreased slightly from about 12% in 1998 to 9% in 2008 (Figure 6a). Average decadence of Wyoming big sagebrush increased markedly from 16% in 1998 to 44% in 2003, and decreased slightly to 34% in 2008 (Figure 7a).

Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) was sampled in the Upper Broad Hollow (30-3), Harmony Mountain Summit (30-5), Black Ridge (30-13), Grassy Flat Ridge (30-26), Deep Canyon (30-35), Wide Canyon (30-38), Joe Spring (30-41), Grapevine Spring (30-42), Flat Top Mountain (30-45), Pahcoon bench (30-46), Woolsey Reseed (30-56), Spirit Creek South Burn (30-58), Tobin Bench (30-61), and North Hills (30-62) study sites, five of which have burned. Average density of mountain big sagebrush on all sites sampled was fairly constant at around 3,000 plants/acre in 1998 and 2003, but decreased to around 2,500 plants/acre in 2008 (Figure 5a). Trends for density were similar if sites that burned were excluded (Figure 5b). The cover of mountain big sagebrush on all sites decreased slightly from around 8% in 1998 and 2003 to 6% in 2008 (Figure 6a). If the sites that burned are excluded, cover increased steadily from 12% in 1998 to 22% in 2008 (Figure 6b). Decadence in mountain big sagebrush on all sites increased from 12% in 1998 to 26% in 2003, then decreased to 14% in 2008 (Figure 7a). Trends for decadence were similar if sites that burned were excluded, but at lower percentages (Figure 7b).

Black sagebrush (*Artemisia nova*) was sampled in two studies, Upper Broad Hollow (30-3) and Quichapa Canyon (30-55), at very low densities. Blackbrush (*Coleogyne ramosissima*) was sampled in one study,

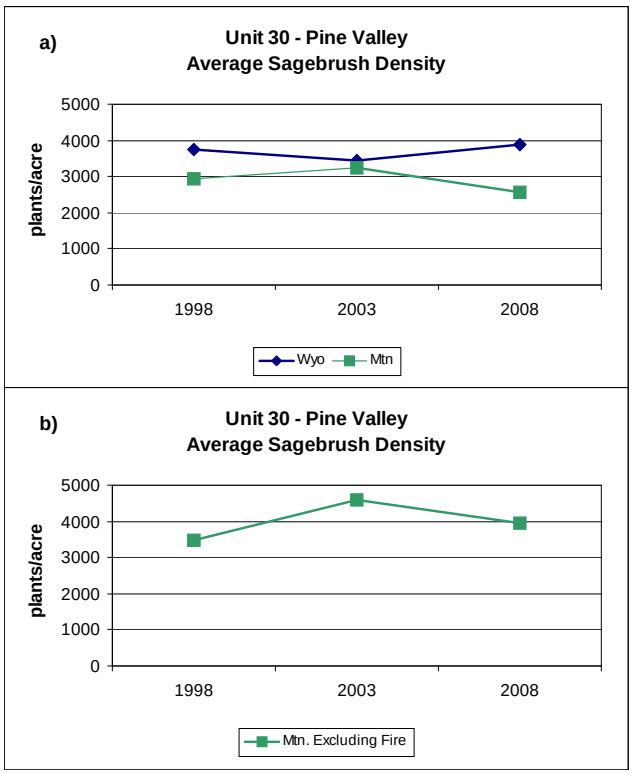


Figure 5. a) Average density of Wyoming big (Wyo) and mountain big (Mtn) sagebrush for all sites in unit 30. b) Average density of mountain big sagebrush for unit 30, with sites that burned excluded.

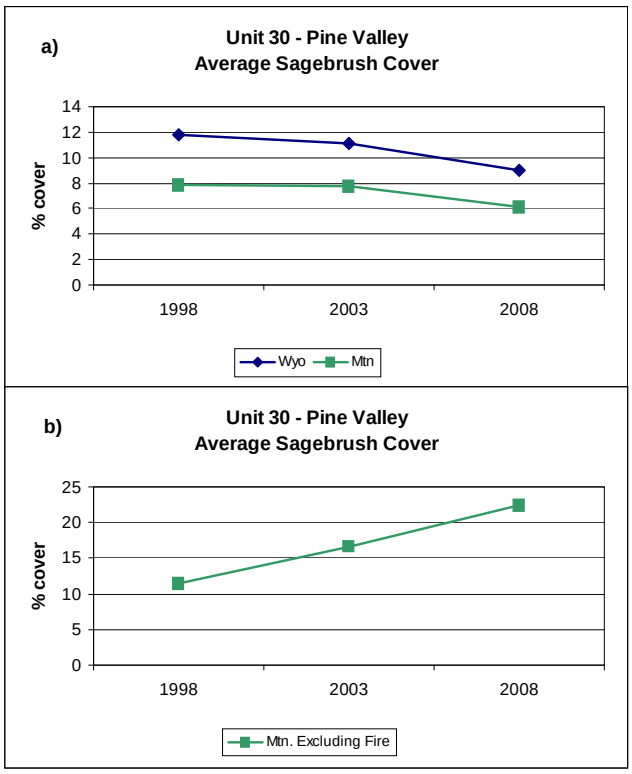


Figure 6. a) Average cover of Wyoming big (Wyo) and mountain big (Mtn) sagebrush for all sites in unit 30. b) Average density of mountain big sagebrush for unit 30, with sites that burned excluded.

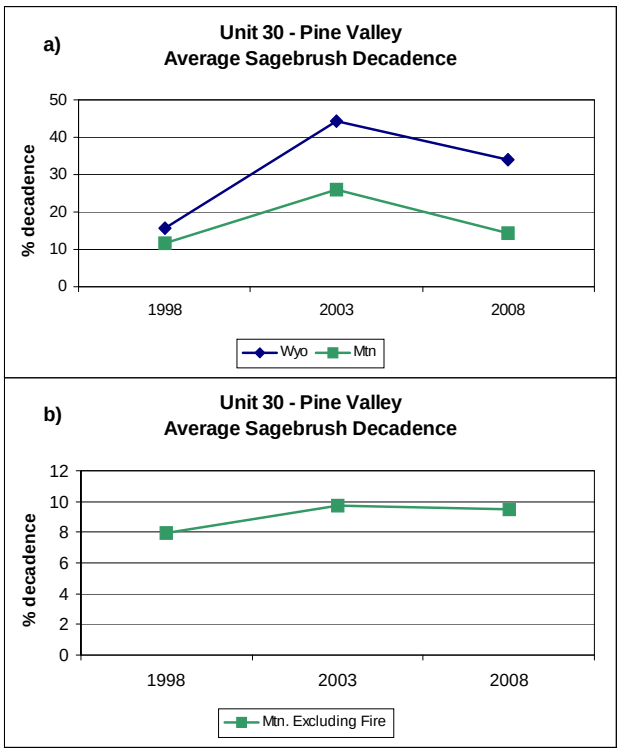


Figure 7. a) Average decadence of Wyoming big (Wyo) and mountain big (Mtn) sagebrush for all sites in unit 30. b) Average decadence of mountain big sagebrush for unit 30, with sites that burned excluded.

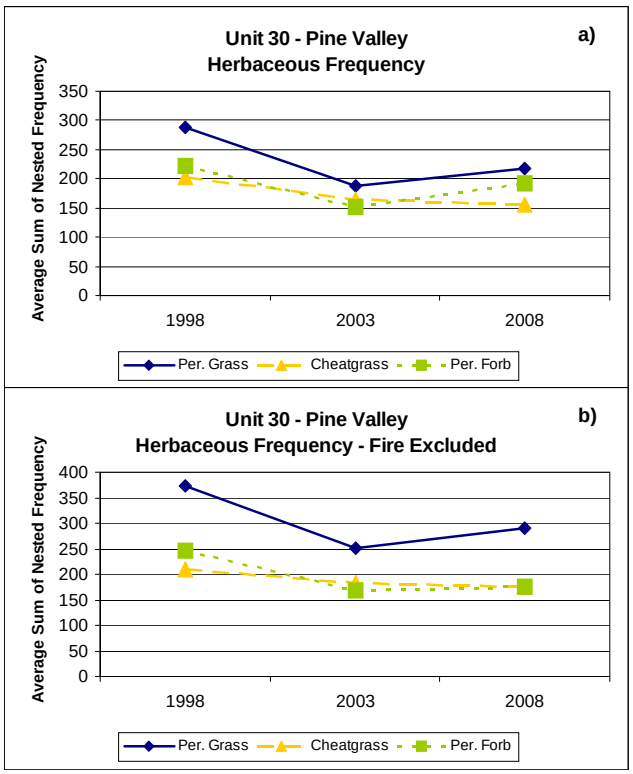


Figure 8. a) Average sum of nested frequency of perennial grass, cheatgrass, and perennial forbs for all sites in unit 30. b) Average sum of nested frequency of perennial grass, cheatgrass and perennial forbs in unit 30, with sites that burned in wildfires excluded.

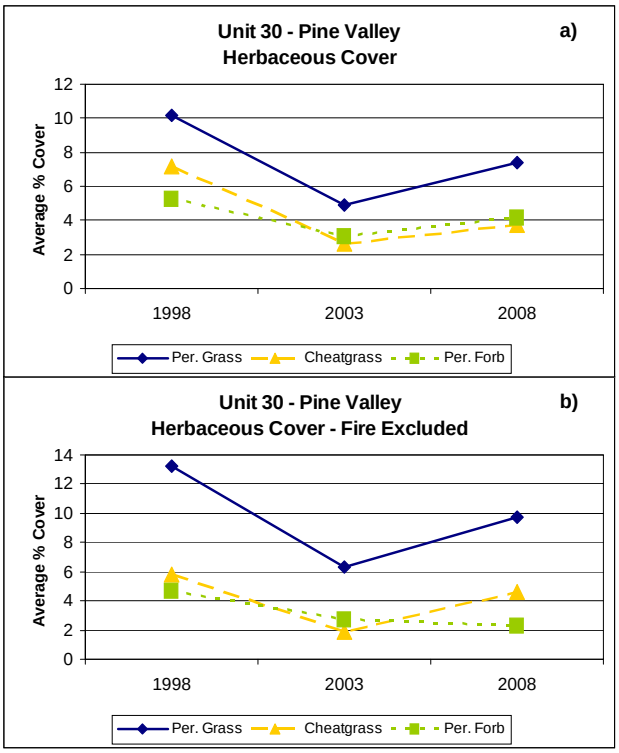


Figure 9. Average cover of perennial grass, cheatgrass, and perennial forbs for all sites in uni8t 30. b) Average cover of perennial grass, cheatgrass, and perennial forbs in unit 30, with sites that burned in wildfires excluded.

Summit Spring (30-57). Summary statistics were not calculated for these species. For more information on trends for these species refer to the discussion section of the individual sites.

Grass

The cumulative grass trend was similar for all sites and when sites that burned were excluded. The cumulative grass trend increased slightly from 1982 to 1992, stayed relatively stable to 1998, declined sharply in 2003, then increased in 2008 (Figure 3 and Figure 4). The average sum of nested frequency of perennial grasses and cover had a similar trend. The sum of nested frequency of perennial grasses decreased by 35% from 1998 to 2003, and increased by 16% in 2008 (Figure 8a). The average cover of perennial grasses decreased from 10% in 1998 to 5% in 2003, and increased slightly to 7% in 2008 (Figure 9a). There was a large decrease in both frequency and cover of cheatgrass (*Bromus tectorum*) between the 1998 and 2003 sample years, then both frequency and cover of cheatgrass stayed fairly constant in 2008 (Figure 8a and Figure 9a).

Forb

The cumulative forb trend of all sites was similar from 1982 to 1998, then decreased markedly in 2003 before increasing slightly in 2008 (Figure 3). The cumulative forb trend for forbs with sites that burned excluded was similar except that forbs did not increase much between 2003 and 2008. The trends of the average sum of nested frequency of perennial forbs and perennial forb cover were similar whether or not sites that burned were included. The sum of nested frequency of perennial forbs and cover both declined from 1998 to 2003, then increased again in 2008 (Figure 8a and Figure 9a).

Desirable Components Index

Six studies in this herd unit were considered to be in the low potential scale for the Desirable Components Index (DCI): Southwest of New Castle (30-29), Telegraph Draw (30-40), Northwest of Enterprise (30-52), Bullion Canyon (30-54), Summit Spring (30-57), and Holt Canyon (30-63. The average DCI rating for the low potential scale was fair (33) in 1998 and 2003, and decreased to poor-fair (24) in 2008 (Figure 10). When the low potential study that burned (30-57) was excluded, the average DCI rating increased to 44 in 1998, 32 in 2003, and decreasing further to 24 in 2008. The trend of the DCI rating remained similar, however. This increase in the overall average DCI rating for each sample year is due to the poorer quality of the Summit Spring study before it burned. Nine studies considered to be in the mid-level potential scale for the DCI: Black Ridge (30-13), Wide Canyon (30-38), Joe Spring (30-41), Grapevine Spring (30-42), Pahcoon Bench (30-46), Quichapa Canyon (30-55), Woolsey Reseed (30-56), Tobin Bench (30-61), and North Hills (30-62). The average DCI rating for mid-level potential scale was very poor-poor (35) in 1998, decreasing to very poor (25 and 24) in 2003 and 2008, respectively (Figure 10). When the mid-level potential sites that burned (30-38, 30-42, 30-46, 30-57, and 30-61) were excluded, the average DCI rating increased to 50 in 1998, 35 in 2003, and 39 in 2008. The trend for the average DCI of the mid-potential scale site improved slightly between the 2003 and 2008 sample years when sites that burned were excluded. One site was considered to be in the high potential scale for the DCI: Upper Broad Hollow (30-3). The DCI for this site was good (68 to 70) for all the sample years (Figure 10). The six remaining studies are considered to be summer range and do not meet the criteria for a DCI rating.

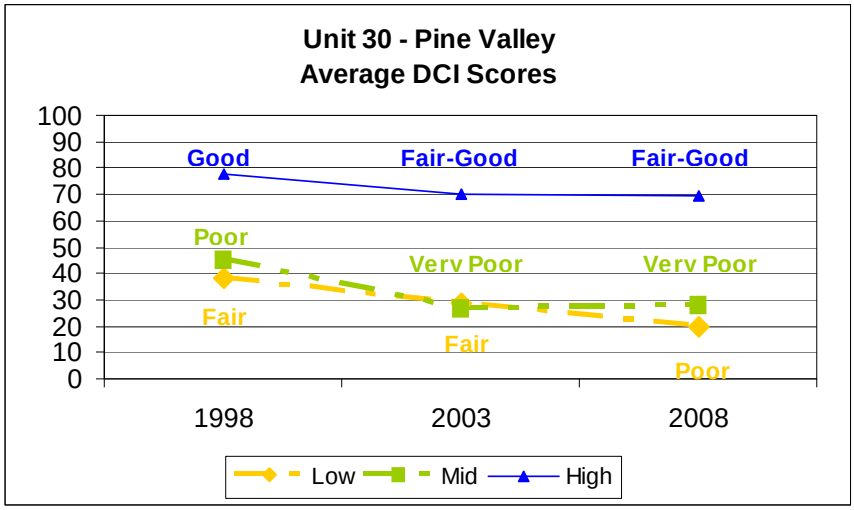


Figure 10. Unit 30, average Desirable Components Index (DCI) scores by year. The DCI scores are divided into three categories based on ecological potentials, which are low, mid-level, and high. Studies considered to be on summer range do not meet the criteria for a DCI rating and are not included.