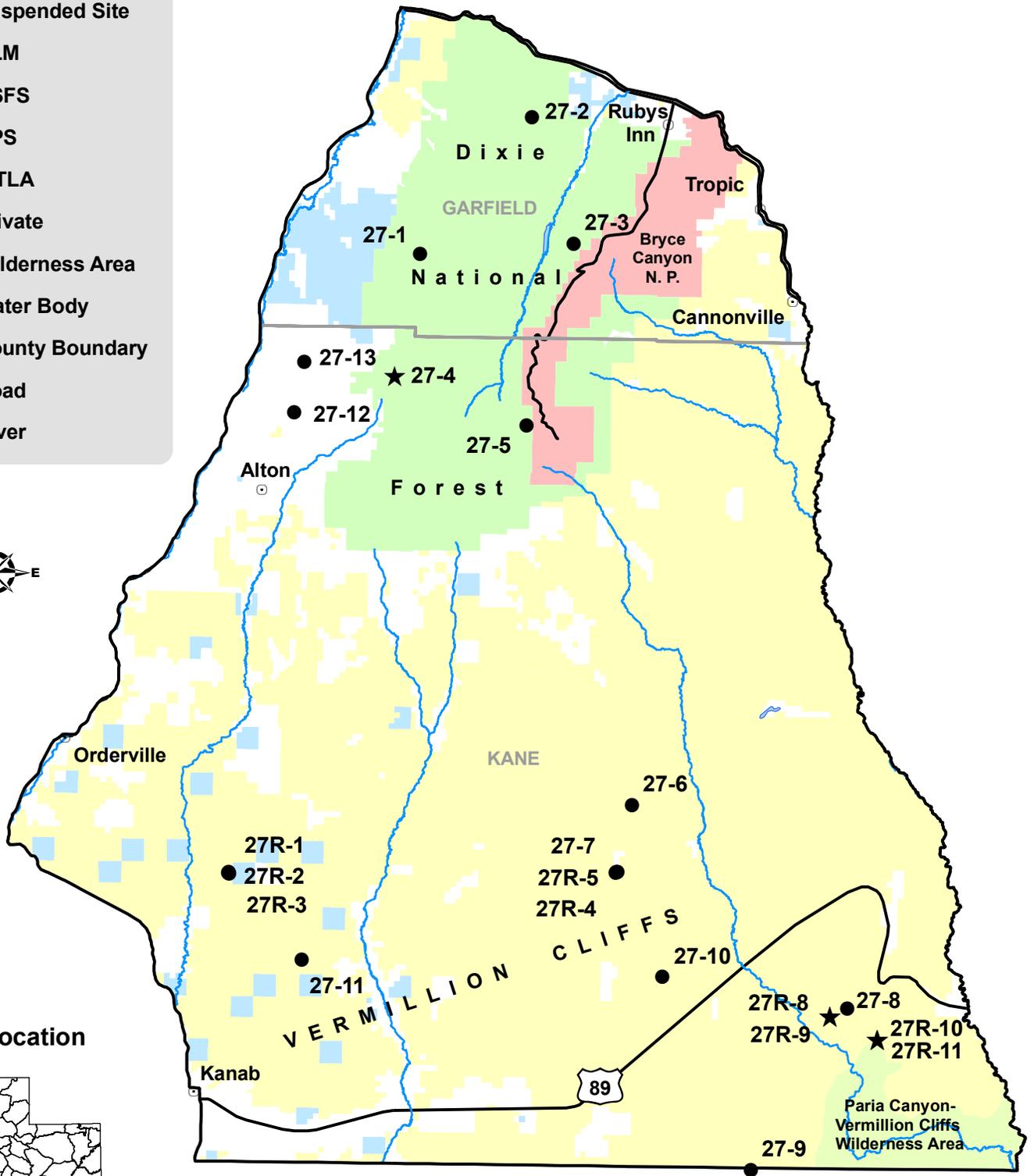
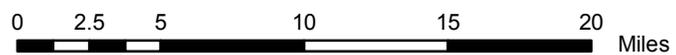
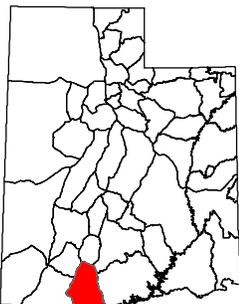


Management Unit 27



Unit Location



WILDLIFE MANAGEMENT UNIT 27 - PAUNSAUGUNT

Boundary Description

Kane and Garfield counties - Boundary begins at highway US-89A and the Utah-Arizona state line; then north on US-89A to Highway US-89; then north on US-89 to Highway SR-12; then east on SR-12 to the Paria River; then south along the Paria River to the Arizona-Utah state line; then west along this state line to US-89A and beginning point.

Winter Range Description

The Paunsaugunt wildlife management unit encompasses approximately 280,471 acres of summer range and 205,284 acres of winter range for deer, of which only 26% and 7%, respectively, occurs on private land. The vast majority of the winter range in the unit (85%) is managed by the Bureau of Land Management, while most of the summer range falls under Forest Service administration (40%), private land holdings (26%), and the Bureau of Land Management (25%). The Paunsaugunt Plateau provides the bulk of the summer range in the unit with an average elevation of 9,000 feet. The southern rim of the plateau is delineated by the Pink Cliffs of Bryce Canyon National Park and the Sunset Cliffs to the west. Terrain of the transitional and/or winter range is characterized by gently sloping terraces interspersed by extensive cliff formations. The Skutumpah Terrace lies between the Pink Cliffs and White Cliffs; the Wygaret Terrace, Nephi Pasture, and No Man's Mesa lie between the White and Vermillion Cliffs. The bulk of the winter range is found on the Wygaret Terrace.

Key Areas

The key areas that have been identified on the summer range are the mixed mountain brush community in the upper reaches of Proctor Canyon, a high elevation black sagebrush-grass community between Ahlstrom Hollow and Johnson Bench, the ponderosa pine type on Whiteman Bench, the conifer clear-cut with its associated aspen resurgence below the Sunset Cliffs near Sand Pass, and the grass meadow type in Podunk Creek. Three studies were established in 1987 on deer winter range which are all on BLM land. A basin big sagebrush community is the dominant vegetation type on the two Nephi Pasture sites, and black sagebrush (*Artemisia nova*) predominates on the Five Mile Mountain study site. An additional five study sites were established in 1997 to include important areas previously missed by trend studies. These include critical winter ranges on the south end of the unit on Buckskin Mountain, Telegraph Flat, and Crocodile. Two additional sites at Moon's Landing and Heaton, on the west side of the unit, sample mountain brush and sagebrush/bitterbrush transitional ranges at around 8,000 feet. In 1998, six trend studies were established at several exclosures in the unit to determine differences in grazing treatments. These studies are found at the exclosure complexes in Nephi Pasture and John R. Flat. Both of these areas are important deer wintering areas. The three John R. Flat exclosure studies were suspended in 2008.

SUMMARY

WILDLIFE MANAGEMENT UNIT 27 - PAUNSAUGUNT

Community Types

Fourteen trend studies were sampled in 2008. Six studies sampled Basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) communities (27-6, 27-7, 27-9, 27-11, 27R-4, and 27R-5), three studies sampled black sagebrush (*Artemisia nova*) communities (27-2, 27-8, and 27-13), two studies sampled mountain brush communities (27-1 and 27-12), one study sampled a ponderosa pine (*Pinus ponderosa*) community (27-3), one study sampled a dry meadow community (27-5), and one study sampled a pinyon-juniper chaining with Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*). Three of the studies (27-7, 27R-4, and 27R-5) consist of studies that monitor trends in a livestock enclosure, a total enclosure, and outside of the enclosures.

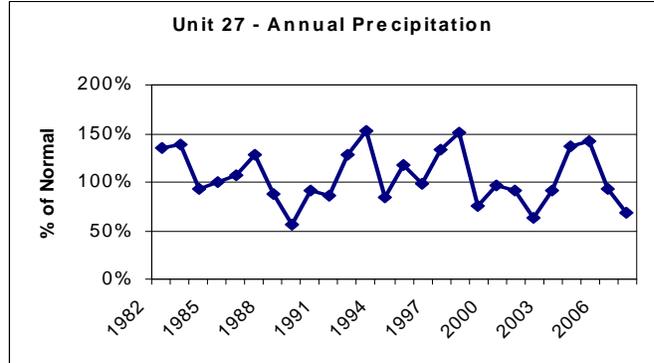


Figure 1. Annual precipitation data for unit 27. Precipitation data were collected at Bryce Canyon National Park, Alton, Orderville, and Kanab weather stations (Utah Climate Summaries 2008).

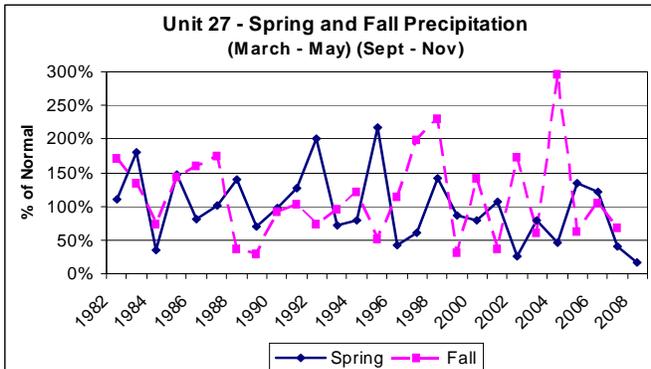


Figure 2. Annual spring (March-May) and fall (Sept.-Nov.) precipitation for unit 27. Precipitation data were collected at the Bryce Canyon National Park, Alton, Orderville, and Kanabe weather stations (Utah Climate Summaries 2008).

(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).

Precipitation

Vegetation trends are dependent upon annual and seasonal precipitation patterns. Precipitation data from this herd unit were compiled from the Bryce Canyon National Park, Alton, Orderville, and Kanab weather stations (Figures 1 and 2). The units annual precipitation was below 75% of normal (drought conditions) in 1989, 2002, and 2007 (Figure 1). Spring precipitation for the unit was below 75% of normal in 1989, 1993, 1996, and 1997, near or below 50% of normal in 1984, 2004, and 2007, and near or below 25% of normal in 2002 and 2008 (Figure 2). Fall precipitation was below 75% of normal in 1984, 1992, 2003, 2005, and 2007, near or below 50% in 1988, 1989, 1995, 1999, and 2001

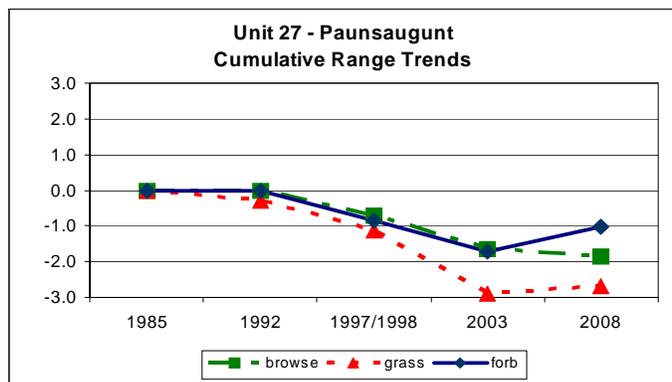


Figure 3. Cumulative range trends for unit 27, Paunsaugunt.

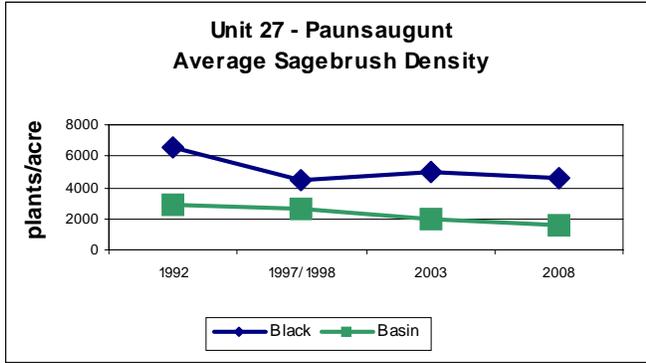


Figure 4. Average density of black sagebrush and Basin big sagebrush for unit 27, Paunsaugunt.

around 9% in 2003 and 2008 (Figure 5). Average decadence of black sagebrush decreased slightly from 24% in 1992 to 18% in 2003, before increasing to 20% in 2003 and further to 32% in 2008 (Figure 6).

Basin big sagebrush was sampled the Nephi Pasture I (27-6), Nephi Pasture Exclosure Outside (27-7), Buckskin Mountain (27-9), Crocodile (27-11), Nephi Pasture Total Exclosure (27R-4), and Nephi Pasture Livestock Exclosure (27R-5) study sites. Average density of Basin big sagebrush decreased steadily over the sample years from 2,860 plants/acre in 1992 to about 1,550 plants/acre in 2008 (Figure 4). Following the decline in density, cover of Basin big sagebrush decreased from 16% in 1992 to 10% in 1997/1998, then remained fairly constant at 8%-9% in 2003 and 2008 (Figure 5). Decadence of Basin big sagebrush increased from around 40% in the 1992 and 1997/1998 sample years to over 60% in the 2003 and 2008 sample years (Figure 6).

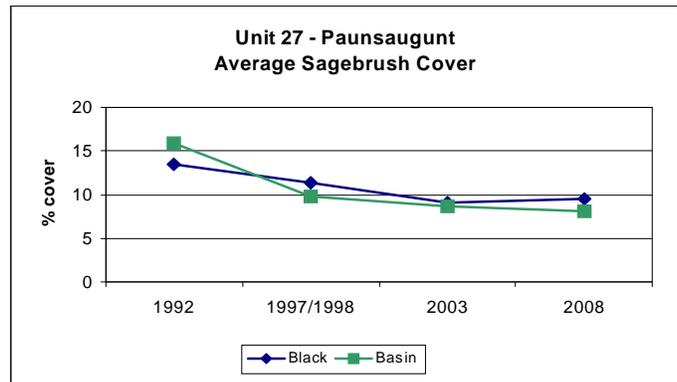


Figure 5. Average cover of black sagebrush and Basin big sagebrush for unit 27, Paunsaugunt.

Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and Wyoming sagebrush were sampled in just one study each in this unit, so summary statistics were not calculated for these species. Mountain big sagebrush was sampled at the Moons Landing (27-12) study site, and Wyoming big sagebrush was sampled at the Telegraph Flat (27-10) study site. For more information on trends for these species refer to the discussion section.

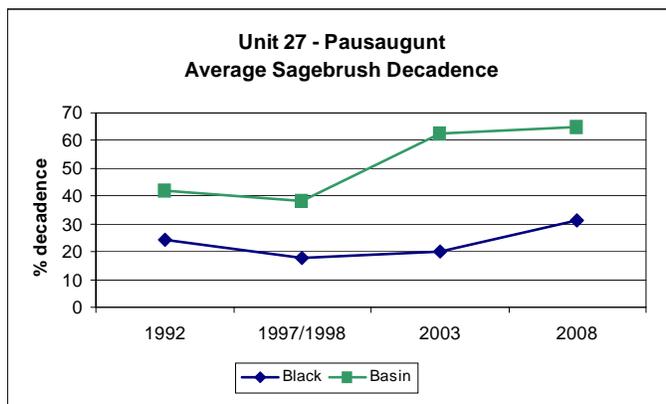


Figure 6. Average decadence of black sagebrush and Basin big sagebrush from unit 27, Paunsaugunt.

Browse

The average browse trend increased slightly from 1985 to 1992, then steadily decreased until 2003, and remained fairly constant in 2008 (Figure 3). Black sagebrush was sampled at the Proctor Canyon (27-1), Ahlstrom Hollow (27-2), Whiteman Bench (27-3), Fivemile Mountain (27-8), Moons Landing (27-12), and Heaton (27-13) study sites. Average density of black sagebrush decreased slightly from about 6,500 plants/acre in 1992 to about 4,500 plants/acre in 1997/1998, then stayed fairly constant through 2008 (Figure 4). The average cover of black sagebrush decreased slightly from 14% in 1992 to 11% in 1997/1998, then decreased further to

Grass

The cumulative grass trend was relatively stable from 1985 to 1992, decreased slightly in 1997/1998, decreased drastically in 2003, and stayed similar in 2008 (Figure 3). The average sum of nested frequency of perennial grasses had a similar trend. The sum of nested frequency of perennial grasses decreased by 48% from 1992 to 2003, increased by 12% in 2008 (Figure 7). The average cover of perennial grasses decreased from 14% in 1992 to 8% in 1997/1998, slightly decreased to 5% in 2003, and increased slightly to 7% in 2008 (Figure 8). There was a large increase in both frequency and cover of cheatgrass (*Bromus tectorum*) between the

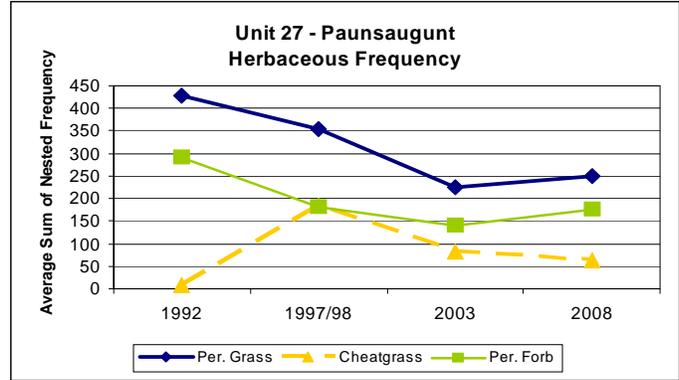


Figure 7. Average herbaceous sum of nested frequencies for unit 27, Paunsaugunt.

1992 and 1997/1998 sample years, then a decrease in frequency and cover of cheatgrass in 2003 and 2008 (Figure 7 and Figure 8).

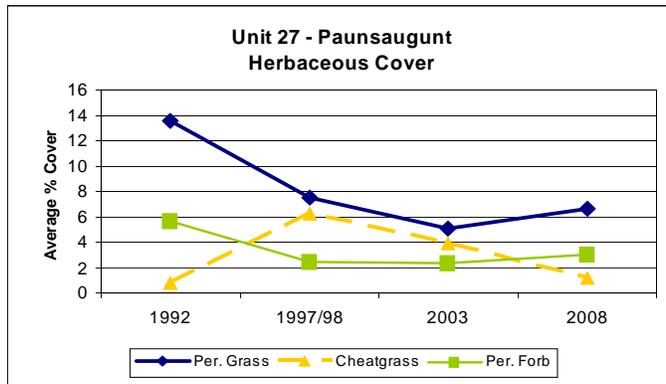


Figure 8. Average herbaceous cover for unit 27, Paunsaugunt.

Forb

The cumulative forb trend was similar from 1985 to 1992, then decreased steadily until 2003 before increasing slightly in 2008 (Figure 3). The average sum of nested frequency of perennial forbs decreased from 1992 to 2003, then increased slightly in 2008 (Figure 7). The average cover of perennial forbs decreased from 6% in 1992 to 2% in 1997/1998, and remained around 2%-3% in 2003 and 2008 (Figure 8).

Desirable Components Index

Four studies in this herd unit were considered to be in the low potential scale for the Desirable Components Index (DCI): Fivemile Mountain (27-8), Buckskin Mountain (27-9), Telegraph Flat (27-10), and Crocodile (27-11). The average DCI rating for the low potential scale was fair (39) in 1997/1998, decreased to poor (21 and 18) in 2003 and 2008, respectively (Figure 9). The six remaining winter range studies were in the mid-level scale for the DCI: Nephi Pasture I (27-6), Nephi Pasture Exclosure Outside (27-7), Moons Landing (27-12), Heaton (27-13), Nephi Pasture Total Exclosure (27R-4), and Nephi Pasture Livestock Exclosure (27R-5). The average DCI rating for mid-potential scale was fair (61) in 1997/1998, decreasing to poor-fair (48 and 49) in 2003 and 2008, respectively (Figure 9). The four remaining studies, Proctor Canyon (27-1), Ahlstrom Hollow (27-2), Whiteman Bench (27-3), and Podunk Creek (27-4), are considered to be summer range and do not meet the criteria for a DCI rating.

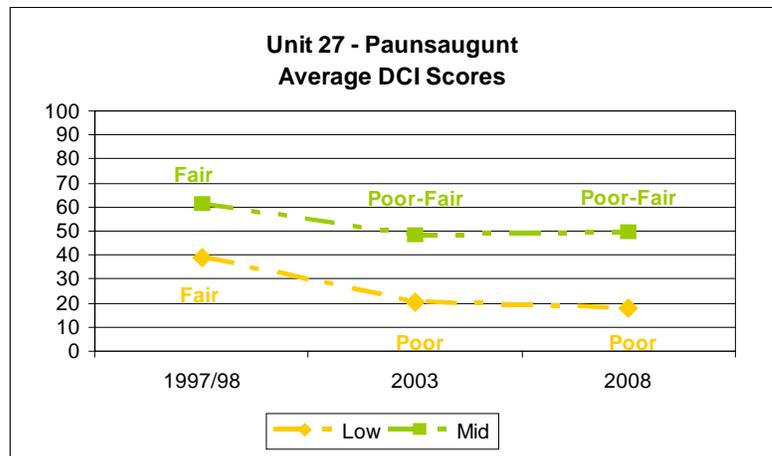


Figure 9. Unit 27, Paunsaugunt, average Desirable Components Index (DCI) scores by year. The DCI scores are divided into three categories based on ecological potentials, which include low, mid-level, and high.