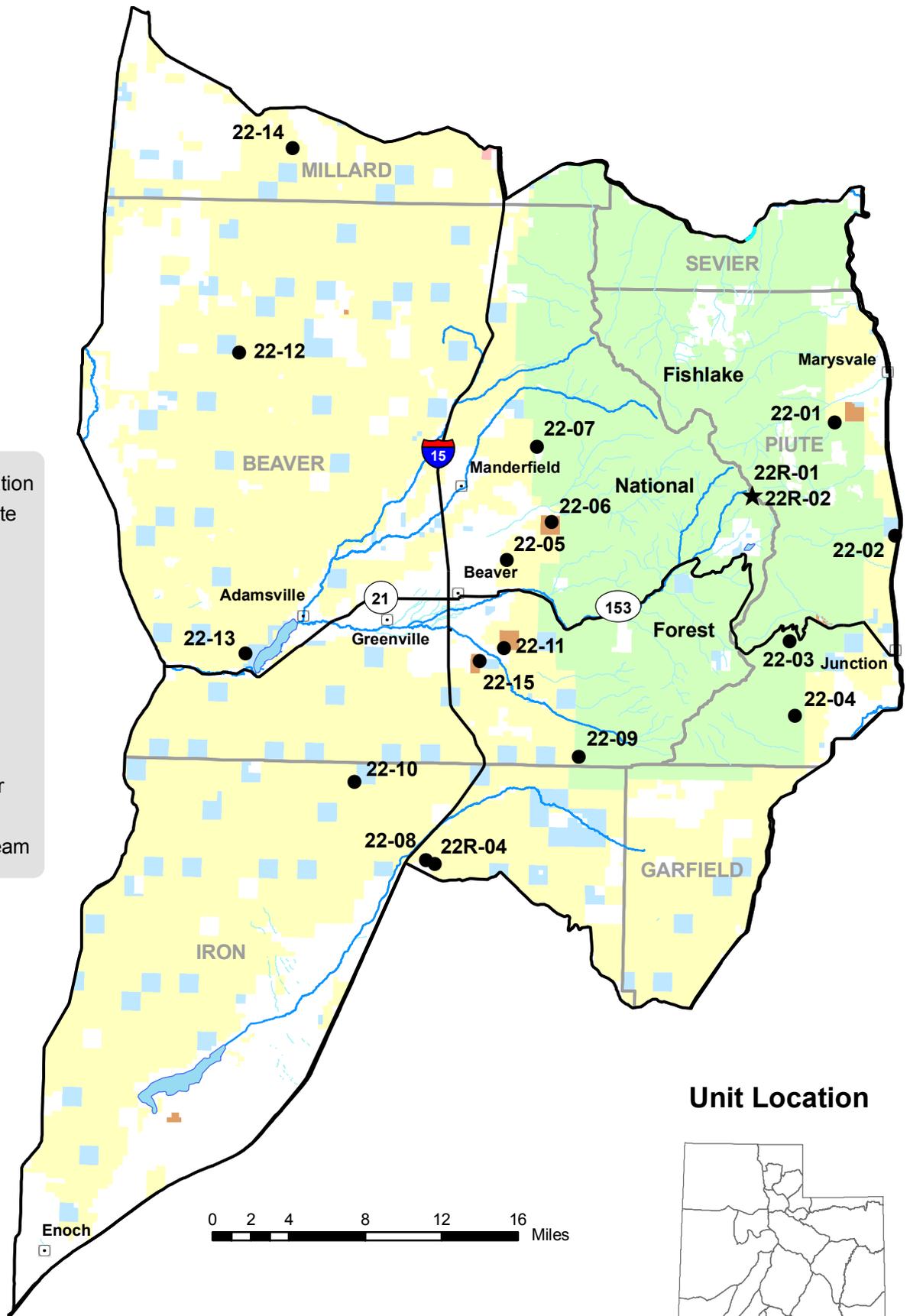


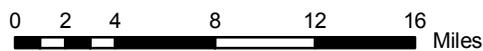
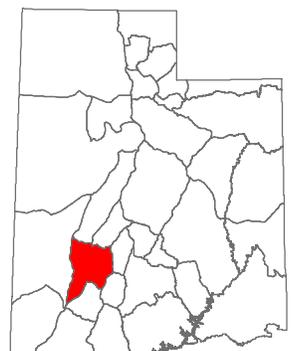
# Management Unit 22



- Transect Location
- ★ Suspended Site
- BLM
- USFS
- Private
- UDWR
- SITLA
- Tribal
- Water Body
- Road
- County Border
- River
- Perennial Stream



**Unit Location**



## WILDLIFE MANAGEMENT UNIT 22 - BEAVER

### Boundary Description

**Iron, Garfield, Piute, Beaver, and Millard counties** - Boundary begins at SR-130 and I-15; north on SR-130 to SR-21; north on SR-21 to SR-257; north on SR-257 to the Black Rock road; east on the Black Rock road to I-15; south on I-15 to I-70; east on I-70 to US-89; south on US-89 to SR-20; west on SR-20 to I-15; south on I-15 to SR-130.

### Management Unit Description

The Beaver wildlife management unit includes both slopes of the Tushar Mountains south of I-70. It also contains the Mineral Mountains south of the Black Rock road, a portion of Parowan Valley, and Fremont Wash. Total usable mule deer range in the wildlife management unit is estimated at 1,154,744 acres. Sixty percent of the range is considered winter range and 40% is considered summer range. Total usable elk range is estimated at 507,698 acres with 55% of this being classified as summer range and 45% being winter range.

On the west side of the wildlife unit, the Black Mountains and the Mineral Mountains are typical of the arid mountains of western Utah. Neither support streams with permanent flows. They lack good summer range, but are vegetatively similar to most deer wintering areas of southern Utah. Both the Black and Mineral Mountains have relatively steep, rugged slopes and areas of rocky outcrops. Black Mountain is unlike the Mineral Mountains in that the top is dominated by gently rolling sagebrush hills and dry meadows.

The Tushar Mountains are more typical of the high elevation mountains of central and southern Utah and contain good summer range for deer and elk. The Tushar's have many small lakes and perennial streams. The western slopes of the Tushar Mountains are more gradual and receive sufficient precipitation to create good intermediate deer range which is used in the spring and fall and during mild winters. Delano Peak on the Tushar Mountains is the unit's highest point at an elevation of 12,173 feet. The low point in the unit is about 5,000 feet in the valley near Milford. The highest point in the Mineral Mountains is 9,578 feet on Granite Peak and Jack Henry Knoll at 8,668 feet is the highest area in the Black Mountains. Towns in this area include Beaver, Milford, and Minersville.

The east side of the Tushar Mountains is comprised of drainages which empty into the Sevier River. The major tributaries are Deer Creek, Beaver Creek, Bullion Creek, Cottonwood Creek, Ten Mile Creek, City Creek, Birch Creek, Pine Creek and Chokecherry Creek. Between Circleville and Marysvale, a broad river valley with gradual slopes joins the steep mountain slopes and sheer cliffs of the Tushar mountains. The portions north of Marysvale and south of Circleville (including Marysvale and Circleville Canyons) are composed of disjunct pinyon-juniper canyons. Towns in this area include Sevier, Marysvale, Junction, and Circleville.

Most of the big game winter range in this unit is located on Forest Service or BLM managed lands. Minor portions of the winter range in the unit occur on private holdings, Utah State School Trust Lands, and Division of Wildlife Resources management areas. In 1996, a fire burned on the north end of the management unit burning large tracts of winter range.

On the west side of the Tushar Mountains, most of the use on the winter range is on the Black and Mineral Mountains. The winter ranges on these mountains were used quite extensively in the past by deer migrating from summer range on the Tushars. These migrations were essentially eliminated by the construction and fencing of I-15. Two underpasses and one overpass were constructed to aid deer in crossing I-15, however, these have had limited success. Meanwhile, the winter range on the east side of I-15 must carry the burden. Still, there is ample range for deer in normal winters. Only in severe winters when the usable range is limited to the lowest areas near the freeway does winterkill become a significant problem.

On the east side of the Tushar Mountains, the normal winter range boundaries range from 6,200 feet on the valley floor to 8,500 feet in the upper basins. Oak Basin often winters deer up to the 8,600 foot level. The upper limit along the steeper portions of the east face of Tushar Mountains is 7,200 feet. Severe winter range occupies 47,223 acres, 71% of the normal winter range (Huff and Bowns 1965). The upper limit of severe winter range is normally 7,000 feet, but goes as high as 8,000 feet in Oak Basin. Winter deer concentrations are found on south and southeast facing slopes. Minor migrations from the summer ranges of units 23 - Monroe and 24 - Dutton onto unit 22 winter ranges occur each year, but the major movement is an elevational movement from summer to winter range within the unit.

#### Trend Study Description

Fourteen range trend studies were initially established in the Beaver unit in 1985. These studies were reread in 1991 and 1998. Additional range trend studies were established in 1998 at South Creek, 22-15 and in 1999 at 22R-4, Above Fremont Wash, due to additional monitoring needs on critical deer winter ranges. In 1997, two additional transects were established on top of the Tushar Mountains to monitor the effect that mountain goats were having on the Tushar paintbrush, a sensitive species endemic to the area. All of the studies were resampled in 2003 and again in 2008, with the exception of the two studies monitoring Tushar paintbrush.

## SUMMARY

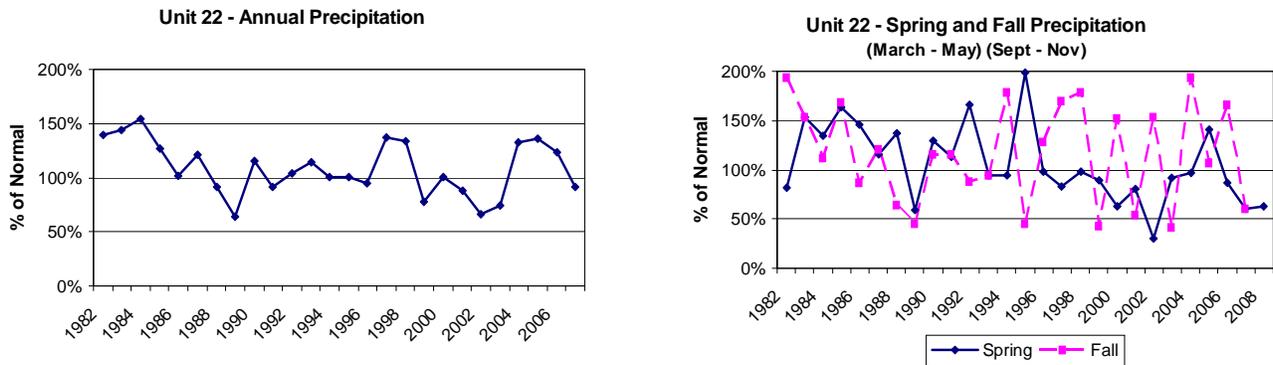
### WILDLIFE MANAGEMENT UNIT 22 - BEAVER

#### Community Types

Sixteen trend studies were sampled in this unit in 2008. Most of the range trend studies in the Beaver unit sample winter ranges. Two studies, Oak Basin (22-3) and Doubleup Hollow (22-10), sample transitional ranges that would receive big game use during mild winters. These areas are dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), although at Doubleup Hollow a fire has removed all browse. The majority of studies sample Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) communities or chained pinyon-juniper communities. Two studies on top of the Tushar Mountains (last monitored in 2003) sample summer range for mountain goats (22R-1 and 22R-2). These studies are not typical range trend studies as the sampling methodology was created specifically to determine the effect of mountain goat use on the Tushar paintbrush, a sensitive species endemic to the area.

#### Precipitation

Vegetation trends are dependent upon annual and seasonal precipitation patterns. Precipitation data from this subunit were compiled from the Milford, Minersville, Marysvale and Circleville weather stations (Figure 1) (Utah Climate Summaries 2008). The unit annual precipitation average was below 75% of normal (drought conditions) in 1989, 2002, and 2003. Spring precipitation was below 75% of normal in 1989, 2002, and 2003. In 2002 spring precipitation was only 30% of normal. Fall precipitation was below 75% of normal in 1988, 1989, 1995, 1999, 2001, 2003 and 2007. Spring precipitation is crucial for the recruitment of browse seedlings and the establishment of native perennial grasses and forbs. Fall precipitation, however, benefits winter annual species, such as cheatgrass (*Bromus tectorum*) (Monsen 1994).

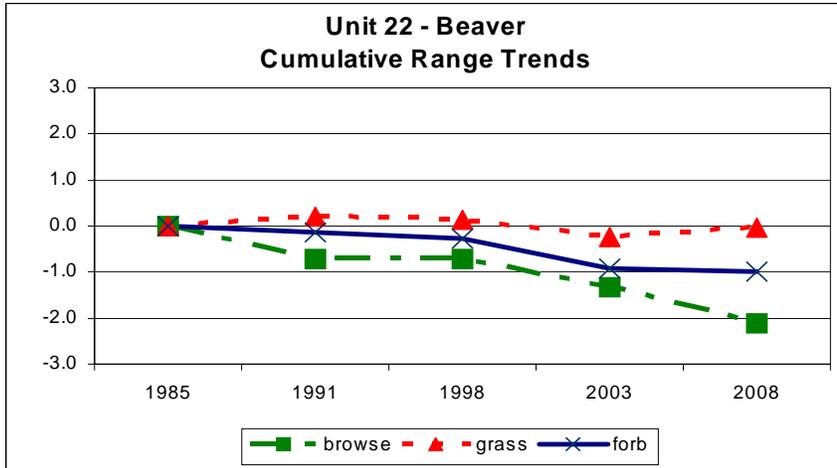


**Figure 1.** Percent of total annual precipitation (left) and percent of spring and fall (precipitation) for Beaver Unit 22, from weather stations at Milford, Minersville, Marysvale, and Circleville.

#### Browse

The average browse trends have been steadily decreased since 1998 (Figure 2). Much of this can be attributed to fires. Since the establishment of these studies in the 1980's, six of them have burned: Oak Basin (late 1980's), Muley Point (2005), Doubleup Hollow (2007), Big Cedar Cove (2007), Minersville Reservoir (1998), and Antelope Mountain (1996). Fires at higher elevation studies such as Oak Basin and Doubleup Hollow may benefit the areas, but at lower elevations the fires have long lasting effects on browse. No preferred browse has been sampled at Antelope Mountain since the 1996 fire and recovery for browse has been very slow at Minersville reservoir. Seeding efforts may have been successful at Big Cedar Cove, but it is too early to determine.

Drought and competition with winter annuals such as cheatgrass (*Bromus tectorum*) may also be having a



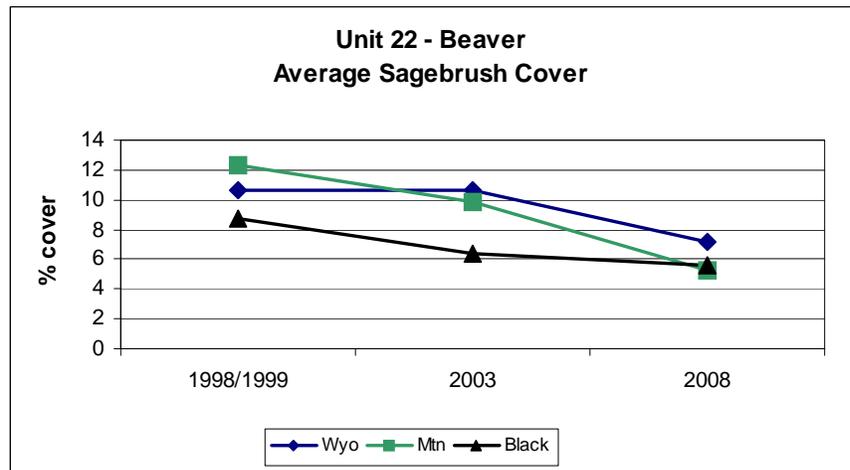
**Figure 2.** Cumulative range trends for unit 22 Beaver.

a higher elevation study showed increases in mountain big sagebrush density and cover. Sagebrush has been increasing on this study since the fire in the late 1980's.

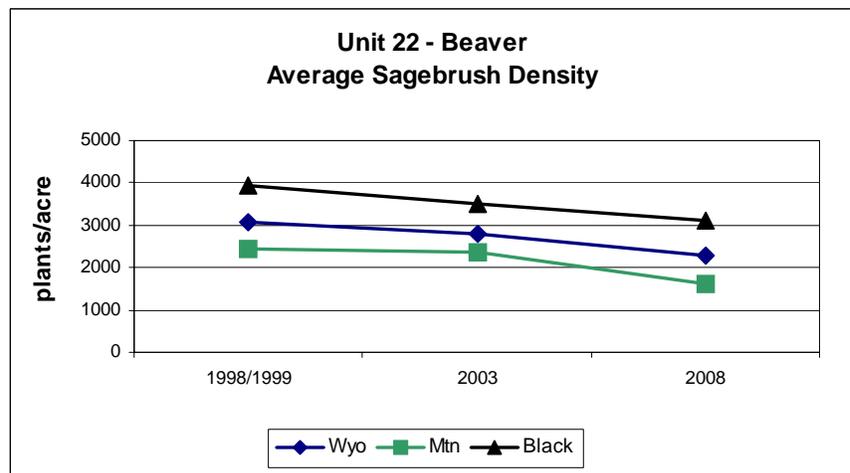
The browse trend at South Creek was up in 2008. This study in a Wyoming big sagebrush community south of Beaver had a huge increase in young plants in 2008, although overall sagebrush cover was relatively unchanged.

negative effect on browse conditions. Seven studies that have not burned since 2003 had downward trends for browse. Average cover across the unit for sagebrush has declined (Figure 3). Average Wyoming big sagebrush cover has declined from nearly 11% in 1998 to 7% in 2008. Average mountain big sagebrush cover has declined from 12% in 1998 to 5% in 2008. Sagebrush density has also declined (Figure 4).

Only two studies had upward browse trends. Oak Basin, which is



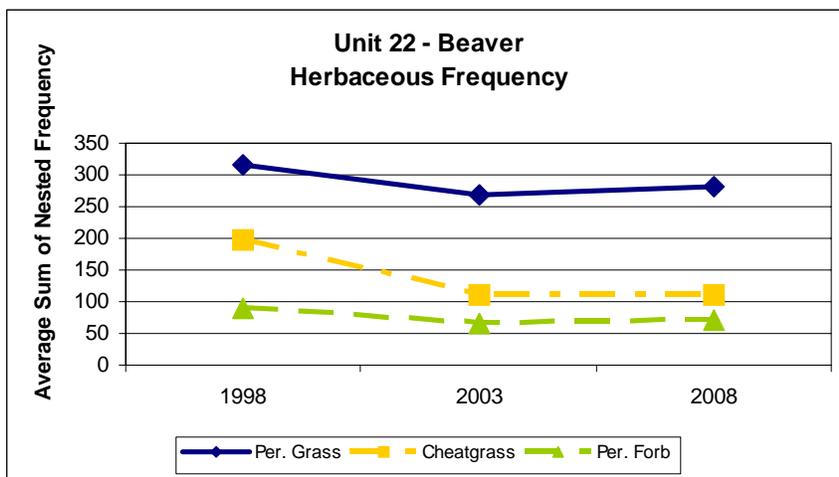
**Figure 3.** Average sagebrush cover for Wyoming big, mountain big and black sagebrush across Unit 22 Beaver.



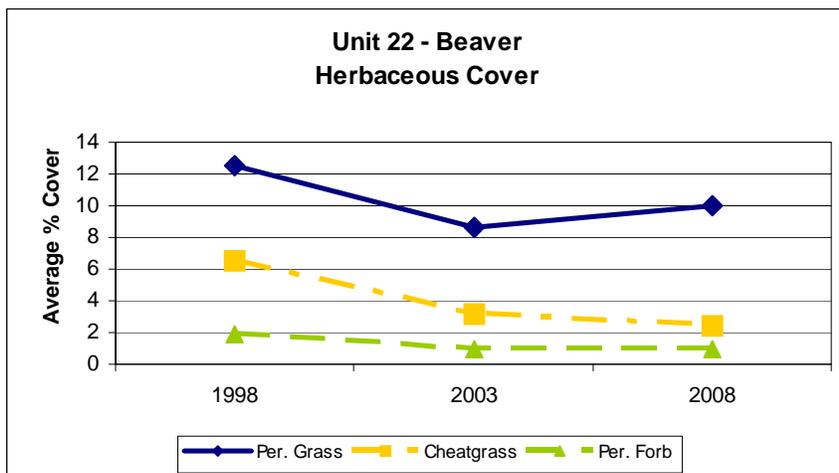
**Figure 4.** Average sagebrush density for Wyoming big, mountain big, and black sagebrush across Unit 22 Beaver.

### Grasses and Forbs

The trends for grasses has been mostly stable for the unit (Figure 2). Cheatgrass abundance has declined since 1998 (Figure 5). Drought conditions in 2002 and 2003 may have much to do with this decline. Cover of cheatgrass was lower in 2003 and 2008 than it had been in 1998 (Figure 6). Average cheatgrass cover was 7% in 1998, and declined to only 2% in 2008. Despite this decline cheatgrass has still had negative effects on habitat conditions. The fires at Muley Point and Big Cedar Cover were fueled by cheatgrass. Average perennial grass cover was 12.5% in 1998, 8.6% in 2003, and 10.1% in 2008 (Figure 6). Perennial forb nested frequency and cover has been low, but has changed very little (Figures 5 and 6). Average cover of perennial forbs was 1.9% in 1998, 0.9% in 2003, and 1.0% in 2008.



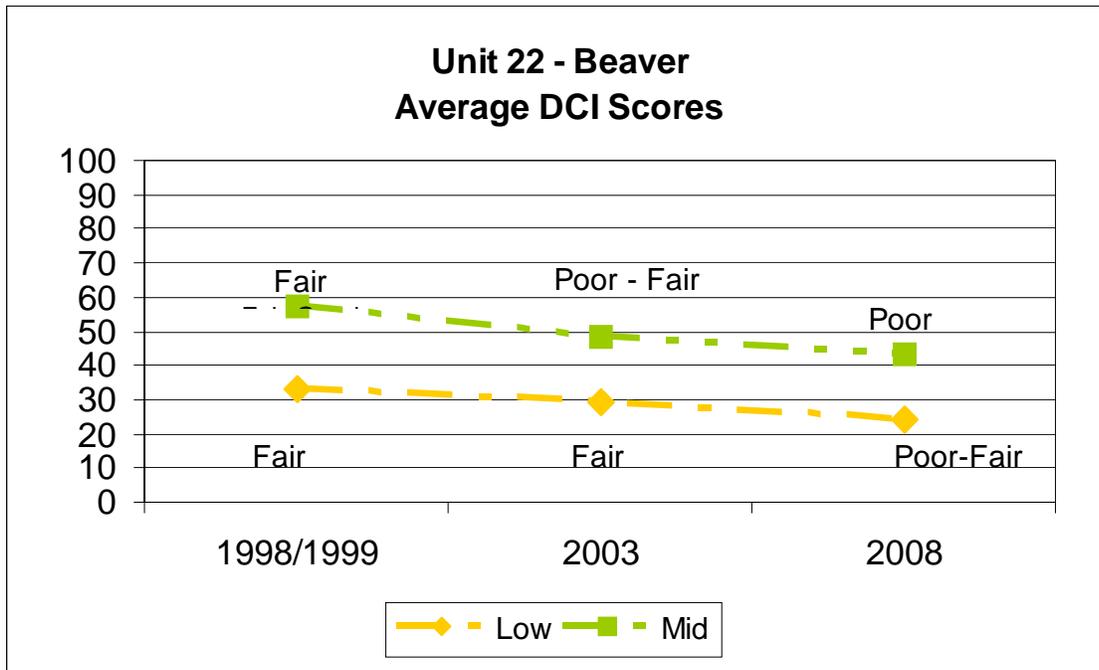
**Figure 5.** Average nested frequency of perennial grasses, cheatgrass, and perennial forbs for Unit 22 Beaver.



**Figure 6.** Average percent cover of perennial grasses, cheatgrass, and perennial forbs for Unit 22 Beaver.

Desirable Components Index

Eleven studies within this unit are scored on the low potential scale of the Desirable Components Index (DCI): Piute Reservoir, Wades Canyon, Bone Hollow, Beaver Table, Muley Point, “B” Hill, Big Cedar Cove, Minersville Reservoir, Antelope Mountain, South Creek, and Above Fremont Wash. The average DCI scores for these studies was 33 in 1998, 29 in 2003, and declined to 24 in 2008 (Figure 7). Declines in browse cover resulted in this decline. The remaining five studies are within the mid-level potential scale: Deer Flat, Oak Basin, Sheep Rock, Rocks Reseeding, and Doubleup Hollow. The average DCI scores for these studies was 57 in 1998, 49 in 2003, and 44 in 2008. The factors that caused the decline in score between 1998 and 2003 were increased decadence in preferred browse and fewer young plants being recruited into the population. The score declined in 2008 due to the fire that eliminated browse at Doubleup Hollow.



**Figure 7.** Unit 22 average scores for Desirable Components Index. Studies are placed into one of three ecological potential categories: low, mid-level, or high. No studies are sampled in the high category on this unit.