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Intermountain  
Region

Dixie National  
Forest

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# Dixie National Forest

## Monitoring Report for Fiscal Year 2009



**Garfield, Iron, Kane, Piute, and Washington Counties, Utah**

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## Table of Contents

Introduction .....	1
Air Quality .....	1
Soils .....	1
Water .....	3
Fisheries .....	4
Wildlife .....	6
Timber .....	17
Protection – Fire.....	17
Protection – Insect and Disease.....	21
Range .....	21
Developed Recreation.....	25
Scenic Quality .....	26
Dispersed Recreation and Wilderness .....	26
Cultural (Heritage) Resources.....	27
Facilities.....	27

## Introduction

The purpose of this report is to provide Forest managers and the public with a brief look at the monitoring accomplished during fiscal year 2009 as part of implementing the Dixie National Forest Land and Resource Management Plan (Forest Plan). All references to the year 2009 refer to fiscal year 2009: October 1, 2008, through September 30, 2009. This report does not discuss individual management projects; instead, it gives an overview of specific monitoring items prescribed in the Forest Plan. More information on specific projects is available from the Dixie National Forest, 1789 North Wedgewood Lane, Cedar City, Utah, 84721.

## Air Quality

### Compliance with Utah State Air Quality Guidelines and Standards

All prescribed burning was implemented in compliance with the Utah Interagency Smoke Management Program. The Forest submitted the annual burn schedule to the Utah Interagency Smoke Management Coordinator as required. Permission to emit smoke was given before each prescribed burn was ignited. In 2009 Dixie National Forest fire managers complied with state air quality standards, with no violations for significantly contributing to particulate matter. Smoke monitoring equipment was set up in some areas that had the potential to be affected by prescribed fire and wildland fire use activities. Public complaints were monitored by local ranger districts and reported to the Utah Interagency Smoke Management Coordinator. There were fewer than five public comments about smoke concerns for all prescribed fires on the Forest.

Forest fire managers also kept the local communities and the Utah Interagency Smoke Management Coordinator and State Division of Air Quality informed of smoke production and dispersal during wildfire events across the Forest. The Executive Director of Utah Division of Air Quality was invited to visit the Mill Flat fire as it occurred; the Utah Interagency Smoke

Management Coordinator came as her representative to discuss smoke and air impacts with the Forest and incident management team.



**Photo 1 – Smoke impacts from the Mill Flat Fire near New Harmony.**

## Soils

### Long Term Soil Productivity

Two fire sites were monitored for soil productivity: the Straight Canyon and Kings Creek Fire Use fires on the Powell Ranger District. These fires burned at a low severity with adequate duff remaining to protect the soil from raindrop impact and to limit erosion.

### Compaction

We monitored compaction on the Midway Face Helicopter Timber Sale on the Cedar City Ranger District and The Pacer Rim Timber Sales on the Escalante Ranger District in 2009. Results confirmed that compaction occurred during skidding on ground based operations (dragging the logs away from the harvest site) and at log landing sites. On average, 2.7 percent of the timber sale units had experienced a 15 percent increase in bulk soil density. Timber harvests do cause compaction, but monitoring results showed that the proper use of Soil and Water Conservation Practices (SWCPs) kept compaction within acceptable levels.

### Upland Areas Adjacent to Riparian Management Areas

Three projects adjacent to riparian areas were monitored in 2009: Puma Stewardship Project, Midway Face Helicopter Timber Sale and Kings Creek Wildland Fire Use. The Puma Stewardship Project utilized best management practices (the SWCPs) that minimized the disturbance of the soil profile with harvest and yarding equipment. This proved to be effective in

minimizing the area of detrimentally disturbed soil by the equipment and the residual slash dissipates any movement of sediment.

The Midway Face Helicopter Timber Sale and Kings Creek Wildland Fire Use Projects had no visual disturbance to the stream channel from timber harvest activities and managed fire implementation.

### **Soil and Water Resource Protection – Project Environmental Assessment Mitigating Requirements**

Four implementation projects were monitored in 2009. These projects showed that best management practices (the SWCPs) were effective in protecting the soil and water resources.

### **Soil Survey Activities**

Data collection for the forest-wide field soil inventory has been completed and entered into a database (as directed in the Forest Plan, page II-52). Future analysis of this data will determine if additional field work is needed. Soil survey work will now shift to using the database to help with project and landscape scale analysis.

### **Soil and Water Resource Improvement Needs Inventory**

District hydrologists continue to update the forest-wide watershed improvement needs inventory. This data will be used to plan watershed improvement projects. Other district resource specialists and the hydrologists will continue to coordinate the implementation of watershed improvement projects by clearly defining objectives and developing plans well in advance of implementation.

## **Water**

### **Compliance with State Water Quality Standards**

Forest hydrologists sampled and analyzed water quality on the Santa Clara River and Pinto Creek, a tributary to Newcastle Reservoir, to compare the results with state water quality standards. All of our samples were in compliance with state water quality standards.

### **Effectiveness of Best Management Practices in Meeting Water Quality Objectives and Goals**

SWCPs are recognized as best management practices with the State of Utah Division of Water Quality. SWCPs were monitored at the following two locations in 2009:

1. Midway Face Helicopter Timber Sale, Cedar City Ranger District, and
2. Pacer Rim Timber Sale, Escalante Ranger District.

The implementation of a properly spaced skid trail network and adherence to SWCPs relating to soil moisture operational levels and the design and management of log landings was effective in meeting water quality goals and objectives within these two timber sales.

## Effectiveness and Maintenance Needs of Watershed Improvements

Seven sites within Duck Swains Access Management Project were monitored in 2009. Approximately 75% of the road closures monitored was successful. The remaining 25% failed due to road decommissioning sites are on Claron formation sites that recover slowly due to their poor soil conditions intermixed with geologic materials. Areas adjacent to Swains Creek (meadows north of Utah Highway 14) have been slow to recover because of unauthorized use beyond road closure signs and lack of barriers to deter OHV travel.

## Accomplishment of Riparian Area Management Goals

Measurements such as pebble counts, cross-sections, and photo points are being collected annually. These data have been used mainly to establish long-term monitoring sites and collect baseline data. In 2009, six sites were monitored. Ideally, more than 10 years of data are needed to distinguish a trend in a system. We must continue to collect data for those sites before we can infer a trend with more certainty. Initial results from the sites are summarized below.

1. Blubber Creek. The vegetation has increased significantly since the creek was put back into its original channel in 2007. There is some willow growth in the channel bed.
2. Bunker Canyon. No significant signs of change in the channel have been observed in the past 5 years.
3. Caddy Creek. Floodplains and banks appear significantly healthier compared to 2000. Willow transplanting in this channel has failed due to heavy ungulate grazing pressure.
4. Little Creek. This site appears to be stable.
5. Mill Creek. No substantial change was evident in the channel structure, some increase in boulders and large material was noted since 2003.
6. West Fork Deep Creek. This site appears to be stable.

## Fisheries

### Fish and Riparian Habitat

Riparian habitat and stream bank stability were monitored during inventories highlighted in the Range section. Aquatic macroinvertebrate surveys and pebble counts were conducted at the following locations in 2009:

- Cedar Ranger District
  - Little Creek
- Powell Ranger District
  - Cottonwood Creek

Macroinvertebrate samples are currently being analyzed by a contracting laboratory and the macroinvertebrate metrics and species data are not available at this time and will be discussed in the FY2010 report. The median particle size ( $D_{50}$ ) was 21 mm for Little Creek and 22 mm for Cottonwood Creek. The percent of particles smaller than 3.2 mm was 21% in Little Creek and 23% in Cottonwood Creek, both of which meet the Forest Plan standard which states that less than 25% of the substrate can be covered by sediment less than 3.2 mm and allows for a 20% variation from standards and guidelines.

## Bonneville Cutthroat Trout

The Utah Division of Wildlife Resources (UDWR) is in charge of all Bonneville cutthroat trout population surveys within the Southern Geographic Management Unit for the species, including sites on the Dixie National Forest. Currently, UDWR attempts to survey all known populations of Bonneville cutthroat trout on a seven year rotation.

In 2009 population inventories (electro-shocking surveys) for Bonneville cutthroat trout were completed by UDWR and DNF personnel at the following locations on the Dixie National Forest:

- Pine Valley Ranger District
  - Horse Creek (2 stations)
  - Leeds Creek (4 stations)
  - Pig Creek (1 station)
  - Spirit Creek (2 stations)
- Powell Ranger District
  - Deep Creek (1 station)
- Escalante Ranger District
  - Center Creek (3 stations)
  - Ranch Creek (1 station)

Nine stations were sampled within the four streams containing Bonneville cutthroat trout in the Leeds Creek watershed. Average density and biomass in Leeds Creek declined by 21% and 27%, respectively. Similarly, in 2009 average density and biomass in Spirit Creek was 30% lower and 59% lower than in 2001. Conversely, density remained similar between 2001 and 2008 in Pig Creek while biomass increased by almost 400%. Average density (~350%) and biomass (20%) also increased in Horse Creek. Overall, average density of Bonneville cutthroat trout declined by 11% in the Leeds Creek watershed and biomass declined by 23%. The decline in population size in two of the four streams in the drainage and the drainage overall exceeded the 10% decline standard outlined in the LRMP; however, distribution of Bonneville cutthroat trout in the drainage remained relatively stable. The decline in density and biomass is most likely related to the long-term drought that has affected the Virgin River drainage for most of the last decade.

The density and biomass of Bonneville cutthroat trout in Deep Creek was heavily impacted by the 2002 Sanford Fire and the flooding and debris flows that followed that fire. In 2002 the station above the Forest boundary was sampled after the majority of remaining Bonneville cutthroat trout were salvaged and transferred to Tenmile Creek. No Bonneville cutthroat trout were collected during that 2002 sampling effort. Reintroduction efforts for Bonneville cutthroat trout in Deep Creek began in 2006 and continued through 2009. The 2009 sampling efforts showed that both density and biomass were much higher than they were during the 2002 sampling efforts. Young of year trout were also collected indicating that the habitat has recovered enough to allow for reproduction, as well as a self-sustaining population of Bonneville cutthroat trout.

Nonnative trout in Center Creek and Rob's Reservoir were chemically removed from 2002 to 2004 and Bonneville cutthroat trout were reintroduced into the reservoir and/or stream from 2003 to 2005. By 2009 average density and biomass of Bonneville cutthroat trout in Center Creek had already reached levels that were slightly above average for southern Utah trout

streams. Sampling efforts at two downstream stations in Ranch Creek were completed and reported on in 2008. Similar to the results from those 2008 sampling efforts, density and biomass of Bonneville cutthroat trout at the most upstream station on Ranch Creek increased by 348% and 116% between 2001 and 2009. Bonneville cutthroat trout monitoring will continue at additional sites in 2010.

### **Brook, Brown, Rainbow, and Cutthroat Trout**

Until 2003, the UDWR was collecting the bulk of fisheries population data on the Dixie National Forest. During that time sampling locations for monitoring were determined by the UDWR with little input from the Forest. Over the past seven years (i.e., 2003-2009), Dixie National Forest personnel have collected fish population data at various sites across the Forest in cooperation with the UDWR. This and future fish monitoring data should start to allow for comparisons of current/future conditions with past and desired conditions. Quantitative population inventories (electro-shocking surveys) were completed for Management Indicator Species (MIS) fish species at nine locations on six Forest streams in 2009:

- Pine Valley Ranger District
- Cedar Ranger District
  - Red Creek (2 sites)
- Powell Ranger District
  - Crawford Creek (1 site)
  - East Fork Sevier/Robinson Canyon (1 site)
  - Kanab Creek (1 site)
- Escalante Ranger District
  - Bear Creek (2 sites)
  - Pine Creek (2 sites)

The portion of Red Creek immediately upstream of Red Creek (Paragonah) Reservoir is the known spawning area for the wild rainbow trout population in the reservoir. Historic records and cursory examination by DNF personnel in 2008 showed that brook trout were present in upstream reaches of Red Creek. Two quantitative sampling stations were completed on Red Creek in 2009 showing average to above average densities and average standing crop when compared to other southern Utah trout streams.

Brook trout and cutthroat trout were collected in Crawford Creek and their combined density and biomass were above average for southern Utah trout streams. The East Fork of the Sevier River in Robinson Canyon contained brook trout at a density and biomass above average for southern Utah trout streams. Brook trout, brown trout, cutthroat trout, and mountain sucker were collected in Kanab Creek. Combined trout density and biomass in Kanab Creek were above average for southern Utah trout streams. In 2004 quantitative sampling 1.4 miles (2.3 km) upstream from the 2009 sampling site showed resident trout biomass and density estimates 19% and 20% higher in 2004, respectively. LRMP allows for a 20% decline in population size. The 95% confidence intervals surrounding the 2004 and 2009 estimates indicated that the differences were not significant.

Bear Creek was sampled in 2003 and then again in 2008 after a wildfire resulted in high burn severities along the portion of the stream that contained the 2003 monitoring station. In addition a second station was sampled upstream of the high severity burn area in 2008. Brook trout appeared to be completely eliminated from the area of stream surrounded by the high severity

burn, as no fish were collected there in 2008. Additionally, the standing crop of brook trout at the upstream station in 2008 was 65% lower than the standing crop seen at the downstream station in 2003. This indicated that the low to moderate severity burn that occurred around the upstream station may also have reduced brook trout populations in that area. Both stations were sampled again in 2009 to evaluate fish population recovery from the fire. Brook trout standing crop at the downstream station, within the high severity burn area, remained depressed at about 1.5% of the 2003 estimate. Brook trout standing crop at the upstream station was three times higher in 2009 than in 2008 and was 11% higher than the 2003 estimate of standing crop at the downstream station. The brook trout population within the high severity burn area is not recovering as fast as expected, but the density and biomass of the population in the stream surrounding the burned area remains high in comparison to other southern Utah trout streams. The lack of overhead shade and instream cover in the area affected by the high severity portion of the Bear Creek fire appears to be limiting recolonization from other portions of the stream. As riparian vegetation recovers and large woody debris is recruited back into the channel, the population of brook trout in the portion of stream affected by the high severity portion of the fire should recover to pre-fire levels.

Immediately below the fish barrier constructed to protect Colorado River cutthroat population in Pine Creek, density and standing crop of brown trout was high compared to other southern Utah trout streams. Very little of the density and standing crop of trout at this location was comprised of Colorado River cutthroat trout (62 fish/ha and 5 kg/ha). Density and standing crop of brown trout was lower in Pine Creek at the downstream wilderness boundary, but was still above the average reported for southern Utah trout streams.

Streams without native cutthroat trout monitored in 2009 were chosen because of their direct relevance to project-level environmental analysis and/or in an effort to initiate a Forest-wide monitoring program to visit all fish-bearing streams once every five years. While resident trout fisheries (i.e., brown trout, brook trout, cutthroat trout, and rainbow trout), may show variability among years and locations, population density and standing crop across the DNF are generally stable and above average when compared to other southern Utah trout streams. Stream fisheries comprised of brown trout and brook trout are maintained primarily through natural recruitment, while rainbow and cutthroat trout fisheries are maintained through UDWR stocking, as well as natural recruitment.



**Photo 2.** Downstream station in Bear Creek during 2009 sampling efforts within the area that burned at a high severity during the 2008 Bear Creek fire.

In addition to quantitative sampling, qualitative sampling to evaluate species distribution was conducted in 10 Forest streams:

- Cedar Ranger District
  - Bear Creek
  - Little Creek
  - Mammoth Creek
  - Swain's Creek
- Powell Ranger District
  - East Fork Sevier/Robinson Canyon
  - East Fork Sevier/Swapp Canyon
  - Podunk Creek
- Escalante Ranger District
  - Clay Creek
- Former Teasdale Ranger District
  - Bullberry Creek
  - Spring Creek

In Bear Creek, brown trout were found to inhabit the lower 1.5 miles (2.4 km) of stream upstream from the Forest boundary, along with southern leatherside, and speckled dace. Mountain sucker appear to be restricted to a smaller section of stream closer to the Forest boundary. Speckled dace were also collected upstream near the Bear Creek Guard station and probably occur throughout any perennial areas of the stream. Cutthroat trout were found to be distributed throughout at least the lower 4.75 miles (7.6 km) of Little Creek upstream from the Forest boundary. Speckled dace were distributed throughout at least the lower 2 miles (3.2 km) of stream above the Forest boundary. In Mammoth Creek brown trout were found from the SR 89 road crossing upstream from the confluence with Castle Creek downstream to the Forest boundary. Brook trout appeared to be restricted to areas upstream from the Wilson Creek confluence and mottled sculpin were found from Mammoth Springs downstream to the Forest boundary. In Swain's Creek cutthroat trout, mottled sculpin, and redbside shiner were found at a location 8 miles (12.9 km) upstream from State Route (SR) 14, while only redbside shiner were found 1.5 miles (2.4 km) upstream from SR 14. In 2003 sampling in the upstream area found the same number of trout (5) in 100m as were collected in 58 m during 2009 sampling efforts, indicating similar or higher trout densities in Swain's Creek in 2009. Interestingly, brook trout and mountain sucker were found at the upstream area in 2003, but not in 2009.

Brook trout were present in both Swapp and Robinson Canyons essentially upstream to where water stopped flowing. Conversely, it appears that native non-game species only inhabit the lower ends of these canyons. Qualitative sampling in Podunk Creek found both brook trout and speckled dace. Similar sampling in 2004 had found 12 brook trout over 100m, while 2009 sampling found 17 brook trout over 100m, indicating that 2009 brook trout density was similar to or greater than 2004 density.

In Clay Creek qualitative sampling was conducted at five locations throughout the 5.6 miles (9.0 km) of wetted stream. A single southern leatherside was the only fish encountered during sampling. Sampling by UDWR and DNF personnel in 2004 and 2005 found larger numbers and a wider distribution of southern leathersides than seen in 2009. At least one large flood event appeared to have mobilized a substantial portion of the stream bed, resulting in major changes to fish and fish habitat (Photo 3)

Bullberry Creek is thought to contain Colorado River cutthroat trout near the Bullberry Lakes; however, the distribution and species composition of potential fish populations in the remainder of the stream was unknown. Qualitative sampling 0.25 miles (0.4 km) downstream from Bullberry Lakes collected brook trout. Similarly, no fish data was available for Spring Creek, but the stream that it feeds, Fish Creek, is known to have brook trout. Sampling in Spring Creek less than 0.1 miles (0.2 km) downstream from FR30179 found brook trout, as well.



**Photo 3.** Recently mobilized stream bed in Clay Creek on the Escalante Ranger District.

UDWR and DNF personnel also conducted fish population surveys (gill netting) on the following Forest lakes in 2009:

- Cedar City Ranger District
  - Panguitch Lake
  - Paragonah (Red Creek) Reservoir
  - Yankee Meadows Reservoir
- Escalante Ranger District
  - Pacer Lake

Panguitch Lake netting efforts showed that trout catch rates were near long-term averages, but that condition factors were at all time highs (Hepworth et al. in prep). Additionally, no Utah chub were collected which continues to indicate that the 2006 rotenone efforts were successful. As the fishery continues to rebound from the rotenone treatment, additional changes to fishing regulations and stocking protocols may be considered.

Netting efforts at Paragonah Reservoir collected an average of 70 rainbow trout per net night, which was 12 fish per net night higher than the long-term average. This was the fourth highest catch rate since semi-annual netting began in 1981. The catch rate represented a 56%

increase over the catch rate seen in 2007. Mean weight and condition factor were slightly below the long-term average.

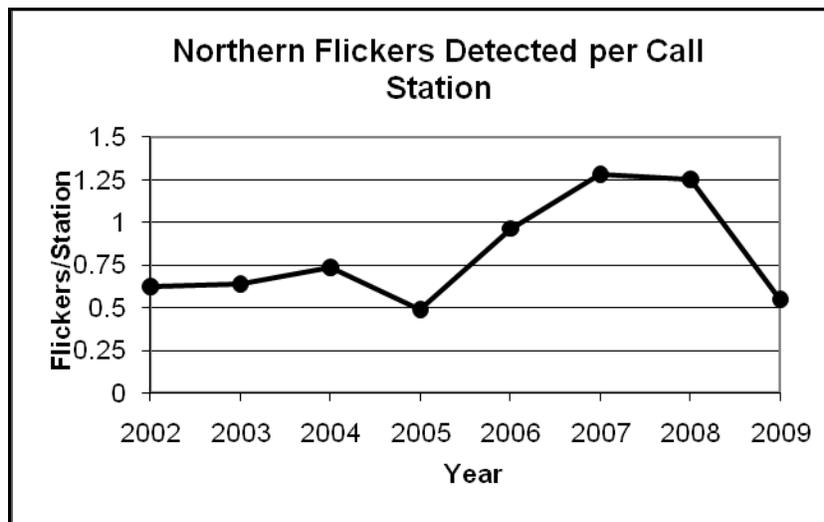
Brook trout catch rates (3 per net night) in 2009 Pacer Lake were 89% lower than catch rates during similar netting efforts in 1999 (28 per net night). The 2009 catch rate was also 80% lower than the average for southern Utah trout lakes (15 per net night; Hepworth and Beckstrom 2004). Additionally, no Bonneville cutthroat trout or Arctic grayling were collected in the netting effort, despite stocking efforts in 2005, 2007, and 2008 for Bonneville cutthroat trout and 2006 and 2007 for Arctic grayling. Winterkill issues in the lake are the most likely factor responsible for the low catch rates. The lake is relatively shallow and has dense growths of aquatic vegetation (primarily an undetermined species of milfoil).

Overall trout catch rates declined 34% from 64 trout per net night in 2007 sampling efforts to 42 trout per net night in 2009 sampling efforts. Total trout catch rates in 2009 were also 19% lower than the long term average for Yankee Meadows. UDWR attributed this decline in catch rate to stocking quota changes in Bonneville cutthroat trout. No Bonneville cutthroat trout were stocked in 2006 and lower numbers were stocked in 2007 and 2008. The decline in catch rate between 2007 and 2009 netting data was predominantly in Bonneville cutthroat trout catch rate, while rainbow trout and brook trout catch rate remained relatively stable.

## Wildlife

### Common Flicker

The chart below shows northern flicker detections per call station from 2002-2009 on the Dixie NF.



A total of 194 flickers were detected in surveys of 354 call stations, resulting in a detection rate of 0.55 flickers per station in 2009. This shows a decrease from 1.25 flickers per station in 2008. Detection rate was lowest in 2005 (0.49 flickers/station), and highest in 2007 (1.28 flickers/station). The variation in detection rates is likely due to changes in precipitation, insect populations, and weather conditions during the monitoring period.

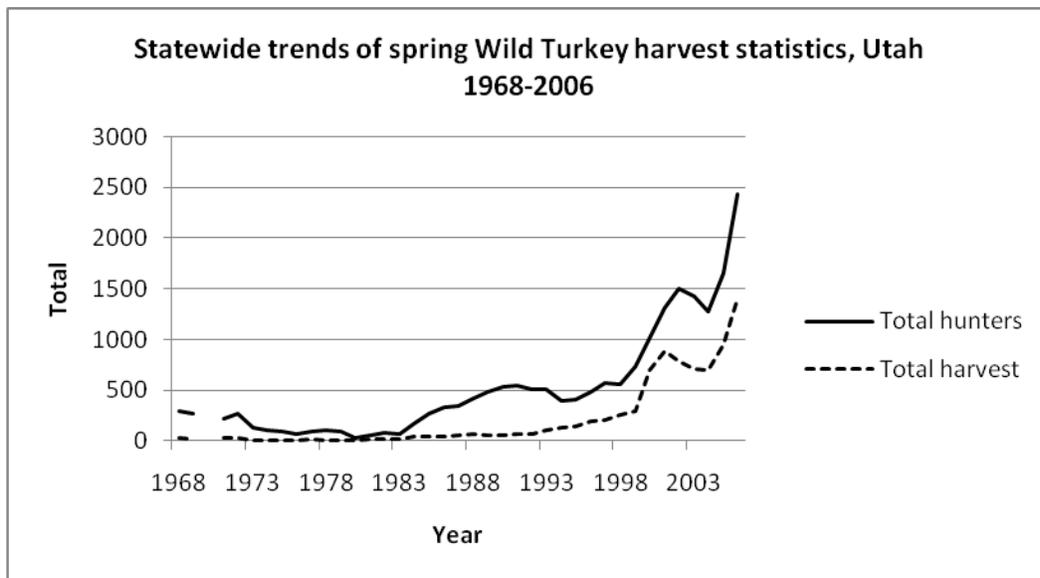
This species is well-distributed, occurring on each Ranger District over a variety of habitat types. Protective measures exist under the snag and downed woody debris standards and guidelines section of the Forest Plan. These measures are implemented Forest-wide, and are effective in managing and protecting important habitats for cavity nesters, including flickers.

Although the rate of detection decreased from 2008, flickers are still persistent across the Forest. The Forest Plan allows five years to detect a 25% decline in flicker populations before management action is required. Annual monitoring of this species will continue and provide the data necessary to detect population trends in flickers.

**Wild Turkey**

Utah’s wild turkey populations are thriving and expanding across the state; they’ve grown so much, in fact, that the Utah Wildlife Board has approved Utah’s first statewide general-season turkey hunt for 2010 (UDWR 2009). The RAC process is used to make population management recommendations, and the Utah Wildlife Board makes all decisions on population management. Because turkeys are such a common species, they are frequently observed, and incidental sightings are recorded across the Forest. In 2009, at least 129 turkeys were observed at 25 locations.

Based on the data provided by the UDWR (UDWR 2006), the total harvest of turkey in Utah has increased sharply in recent years. The chart below shows this increase, which also reflects an increase in birds statewide, including the Southern Region and lands administered by the Dixie NF.



\*No spring season in 1970.

\*\*2002-2004 data does not include conservation permit information.

\*\*\*2005 data does not include conservation permit or landowner permit information.

Based on this information, turkey populations are in an upward trend; therefore, populations are persistent in the Southern Region, including lands administered by the Dixie NF.

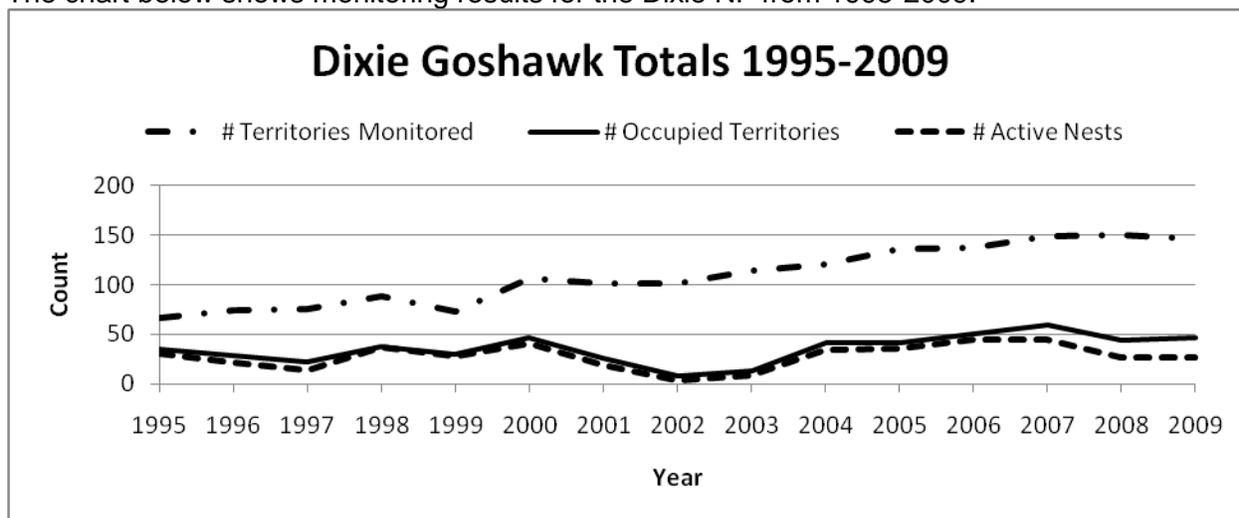
### Northern Goshawk

Out of 155 existing goshawk territories on the Dixie National Forest, 146 were monitored in 2009. Table 1 shows goshawk monitoring results for the previous six years. The increase in territories monitored is due to the discovery of new territories. Additional territories were very likely occupied, but the absence of bird detections during the site visit prevented categorizing them as such.

Table 1. Summary Results of Northern Goshawk Monitoring on the Dixie National Forest, 2004-2009

Northern Goshawk Monitoring Results						
Status	2004	2005	2006	2007	2008	2009
Territories Monitored	120	136	137	149	150	146
Occupied Territories	41	41	50	59	44	47
Active Nests	34	36	44	44	26	26

The chart below shows monitoring results for the Dixie NF from 1995-2009.



The total number of occupied territories in 2009 increased slightly from 2008. Factors such as temperature and timing and amount of precipitation affect goshawk distribution, survival, and reproduction. Climatic factors also impact prey species population size and distribution. Although overall numbers fluctuate, the number of occupied goshawk territories across the Forest is high and well-distributed among Ranger Districts. These results may indicate that our present method of protecting the species is adequate.

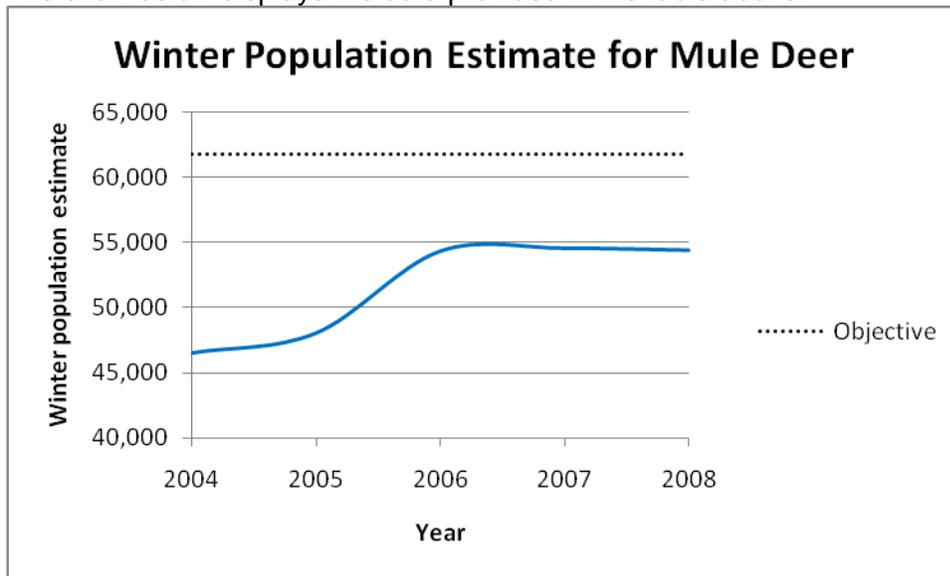
### Mule Deer and Rocky Mountain Elk

The Dixie NF contains portions of seven different Wildlife Management Units (WMUs) in the Southern Region: Boulder Plateau, Kaiparowits, Mount Dutton, Panguitch Lake, Paunsaugunt, Pine Valley, and Zion. Currently, elk habitat has not been defined within the Pine Valley WMU, although the Utah Division of Wildlife Resources (UDWR) manages a limited number of elk in the area. The data below comes from the 2008 Utah Big Game Annual Report (UDWR 2008). The table below displays winter population estimates from 2004-2008 for mule deer in the seven WMUs that overlap the Dixie NF, including two additional Boulder units.

Table 2. Mule Deer Winter Population Estimates by WMU

WMU	% Useable habitat within Dixie NF	Management Plan Objective	2004	2005	2006	2007	2008
Boulder Plateau	50%	22,600	15,150	15,400	17,000	15,800	12,000
Kaiparowits	3%	1,000	400	400	400	400	1,000
Mount Dutton	62%	2,700	1,900	1,700	2,000	2,300	2,500
Panguitch Lake	61%	8,500	8,500	7,150	8,925	8,700	10,000
Paunsaugunt	15%	5,200	3,975	5,100	6,500	6,600	6,000
Pine Valley	55%	12,800	8,300	11,700	12,500	13,400	13,400
Zion	9%	9,000	8,300	6,600	7,000	7,350	9,500
Total:	35%	61,800	46,525	48,050	54,325	54,550	54,400

The chart below displays the data provided in the table above.



\*Objective determined in Deer Management Plan

The Dixie NF contains summer, winter, and year-round habitat for mule deer populations. Amount of habitat varies with WMU, and altogether the Dixie National Forest administers only 35% of useable habitat within the seven WMUs (Table 2). Accurate estimates of populations on the Boulder Plateau are obscured due to the addition of the Fishlake and Thousand Lakes Boulder units. With the exception of the Boulder units, only Mount Dutton is slightly under objective, while the other units are at or over objective.

All big game species in Utah are managed by the UDWR. The Regional Advisory Council (RAC) process is used to make population management recommendations, and the Utah Wildlife Board makes all decisions on population management. The Forest Service has a representative on the RAC; however, the Forest in no way has control over population numbers. It should be noted that a WMU may be within approved population objectives, and as a result of UDWR management strategies, population numbers may be reduced.

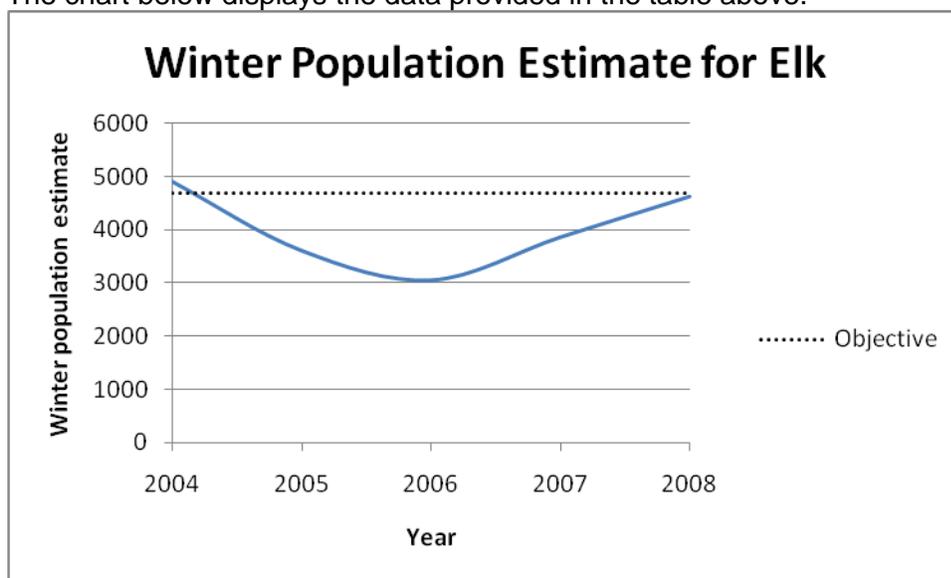
Deer populations appear to be healthy and will continue to persist across the Forest.

The table below displays winter population estimates from 2004-2008 for elk in the six WMUs that overlap the Dixie NF.

Table 3. Elk Winter Population Estimates by WMU

WMU	% Useable habitat within Dixie NF	Management Plan Objective	2004	2005	2006	2007	2008
Boulder Plateau	58%	1,500	1,700	400	500	900	1,500
Kaiparowits	51%	25	25	25	25	25	25
Mount Dutton	77%	1,500	1,625	1,600	1,270	1,400	1,500
Panguitch Lake	75%	1,100	1,125	1,150	872	950	1,000
Paunsaugunt	33%	200	80	75	24	30	50
Pine Valley		50	50	50	50	50	50
Zion	5%	300	300	300	300	500	500
Total:	54%	4,675	4,905	3,600	3,041	3,855	4,625

The chart below displays the data provided in the table above.



\*Objective determined in Elk Management Plan

The project area contains summer, winter, and year-round habitat for elk populations. The amount of habitat within the project area varies with WMU, and altogether the Dixie National Forest administers only 54% of useable habitat within the six WMUs (Table 3).

Elk populations appear to be healthy and will continue to persist across the Forest.

### Snag Habitat Maintained in Desired Spatial Arrangement

At 14 sites, a total of 238 plots were surveyed for snags. All fourteen sites had calculated average snag densities of well over 300 snags per 100 acres. Five sites reached the recommended guideline of 18+ inches dbh snags at densities of 300 snags per 100 acres. Based on these data, snag numbers are adequate across the Forest, though smaller than the preferred minimum (18 inches).

Table 4. Snag Densities on the Dixie National Forest 2009

Site	Plots	Average total snags/100 acres	18+\" snag/100 acres
Castle	3	1000.0	0.0
Cooper West	12	6583.3	333.3
Tippets	25	21760.0	400.0
Dry Ridge	30	13300.0	233.3
Fife Ridge	17	28708.8	941.2
Henrie Knolls	30	9200.0	33.3
Horse Valley	20	50650.0	250.0
John's Valley	5	2600.0	0.0
Navajo Lake	13	10769.2	1230.8
Pretty Tree	4	31750.0	3750.0
Puma	16	5312.5	62.5
Radar Ridge	10	16500.0	0.0
Upper Valley	27	1296.3	0.0
Whiteman Bench	26	1923.1	76.9

### Downed Woody Material and Logs Maintained in Sufficient Amount, Sizes, and Spatial Locations

Downed woody debris data was collected at 238 plots in 14 locations. The minimum amount of down logs (50 logs/10 acres) was recorded at five locations: Tippets, Cooper West, Dry Ridge, Navajo Lake, and Whiteman Bench. Four additional sites were shown to have the minimum required downed woody debris (100 tons/10 acres): Castle Creek, Fife Ridge, Johns Valley, and Radar Ridge.

Table 5. Downed Woody Debris on the Dixie National Forest 2009

Site	Logs/10 acres	Tons/10 acres
Castle	0.0	363.3
Cooper West	101.6	163.5
Tippets	73.2	175.9
Dry Ridge	62.8	153.3
Fife Ridge	41.6	142.9
Henrie Knolls	17.2	67.1
Horse Valley	19.4	84.6
John's Valley	22.2	139.4
Navajo Lake	98.1	142.5
Pretty Tree	0.0	15.7
Puma	7.4	77.7
Radar Ridge	5.5	115.9
Upper Valley	26.7	52.1
Whiteman Bench	53.3	104.7

64% of the sites meet the guideline requirements, which is below the acceptable range of 75% as outlined in the Forest Plan. Downed woody debris and logs need to be maintained at higher levels in project areas across the Forest. This need will be reflected in project design and associated management actions.

### Grazing Management and “At Risk” Goshawk Locations

There are currently no goshawk territories on the Forest that have been identified as being threatened by livestock grazing; therefore, no “At risk” areas have been delineated.

## Timber

### Timber Harvest Area

Acres harvested are monitored annually and compared with the Forest Plan projected average of 10,525 acres per year. An average of 3,408 acres in timber sales were sold annually from 1987 to 2009. The average acres harvested in timber sales sold from 1987 to 2009 was 2,947 acres.

**Table 6. Timber Sale Acres Sold and Harvested, 1987-2009**

Year	Total Acres Sold	Total Acres Harvested
1987	5,656	84
1988	5,369	2,946
1989	7,193	3,590
1990	5,184	7,454
1991	7,403	5,029
1992	2,907	6,629
1993	4,366	4,962
1994	2,044	3,807
1995	822	1,411
1996	11,762	4,068
1997	5,131	6,600
1998	4,092	3,743
1999	2,695	3,332
2000	1,553	6,196
2001	536	1,173
2002	804	990
2003	449	856
2004	2,266	144
2005	1,500	539
2006	230	723
2007	4,604	1,354
2008	1,191	1,824
2009	616	318
TOTAL	78,373	67,772

### Suitable and Unsuitable Land Classifications

The table below shows the number of timber sales and acres verified for timber suitability from 1987 to 2009.

**Table 7. Number of Timber Sales and Acres Verified for Timber Suitability, 1987-2009**

Ranger District	Number of Sales	Total Acres Verified
Cedar City	41	119,809
Escalante	19	95,173
Powell	6	27,992
Teasdale	14	25,505
Total	80	268,479

The Forest Plan identified 300,100 acres of land suitable for timber, which is greater than the total of 268,479 acres above. However, an accurate comparison is not possible until we complete the classification program, which is still underway.

### Harvest Practices in Retention/Partial Retention

Of 136 timber sales planned and implemented from 1987 to 2009, 46 had no mitigations identified in the landscape architect report. Of the remaining 90 sales for which mitigations were recommended, all contained the mitigations in the environmental document and in the silvicultural prescription. Of these 90 sales, seven have documentation of post sale monitoring completed by a landscape architect, and twelve sales are still in progress. The remaining 71 sales have no documentation of post sale monitoring. On three sales the Visual Quality Objectives (VQOs) were not met in the first Forest Plan decade (1987-1998) because bark beetle suppression objectives took priority over full accomplishment of visual quality objectives.

VQOs were documented as met on four completed sales (6 percent) of those with mitigation measures identified in the landscape architect report. There is no documentation to determine if VQOs were accomplished on the remaining 94 percent of the completed sales for which mitigation measures were identified.

### Harvest Practices in Riparian Areas

Riparian areas ranging from isolated springs to streams and ponds were present on 28 of the reviewed sales. Twenty-six sales included the riparian areas in the final layout. The hydrologist's recommendations were tracked through the environmental analysis, silvicultural prescription, marking guidelines, and contract/sale area map in the documents. A review of silvicultural prescriptions suggests that existing timber sale contract provisions, when fully implemented with a map, are adequate to protect and maintain riparian areas in their existing condition.

During project planning, specific restrictions (buffer zones) or special harvesting practices intended to protect riparian areas were identified. Most of these were carried into the environmental analysis as stated in the report. Recommendations were based on informal field visits. Several projects contain general recommendations such as "protect riparian areas." These recommendations were included in the environmental analysis.

### **Adequate Restocking**

Most areas that were harvested through a final harvest treatment prior to the adoption of the Forest Plan have regenerated to an adequate restocking level. Most of the acres planted since 1990 have been associated with the Engelmann spruce bark beetle epidemic, which has destroyed much of the spruce on the Forest. We expect this work to continue for the next decade.

Drought has affected survival of young trees; however, the use of containerized seedlings has improved seedling survival, especially on basaltic soils. Survival rates have generally exceeded 80 percent following three years after planting, including 80 percent for third year surveys in 2009. First year survival surveys on 2009 planting areas indicated between 91 and 94 percent survival which should result in well over the minimum stocking requirement of 150 trees per acre.

### **Maximum Size of Openings Created by Clearcuts**

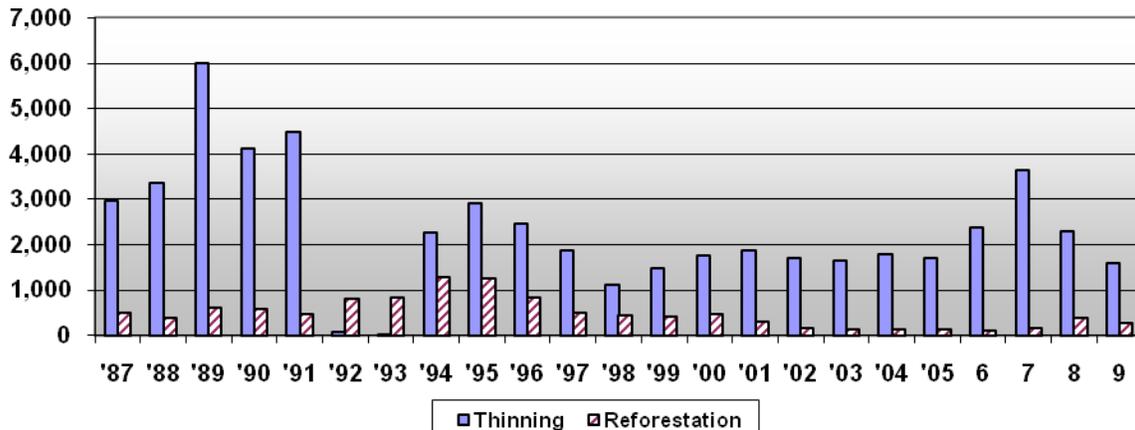
Numerous areas less than 40 acres in size were clearcut from 1987 to 2009 to meet disease control objectives. There have been no perceived or recorded adverse effects to harvest practices, visual quality, or other resources values because of the size or location of the clearcut.

### **Reforestation and Timber Stand Improvement (TSI) Accomplishment**

Thinning and reforestation accomplishments to date have not met the projections of the Forest Plan due to the decline in the timber harvest program and the accomplishment of most thinning needs early in the monitoring period. The Forest Plan projected 5,000 acres per year in thinning and 1,588 acres per year in reforestation.

TSI accomplishments in 2009 included thinning almost 1,000 acres as part of the Duck Creek Fuels Reduction project on the Cedar City RD, as well as over 500 acres of precommercial thinning on the Powell District. Also, about 100 acres of precommercial thinning was completed as part of the Barney Top Stewardship contract on the Escalante RD. Reforestation consisted of 268 acres of contract planting of ponderosa pine and Engelmann spruce on the Cedar City and Powell Ranger Districts.

**Chart 1. Acres Thinned and Reforested, 1987-2009**



**Fuelwood Consumption and Supply**

Vegetative management practices on the Forest result in the availability of an estimated 14,000 cords of fuelwood annually. During the first five years of the Forest Plan period, an average of 7,446 cords of fuelwood was utilized each year. After natural gas was delivered to the major population centers in the area, the fuelwood consumption has declined to approximately 5,000 cords per year. In the past 10 years, the Forest has experienced catastrophic Engelmann spruce tree mortality due to a spruce bark beetle epidemic. This has resulted in thousands of acres of dead trees and heavy volumes per acre of fuel loading, contributing to an increasing amount of fuelwood availability.

**Timber Supply Projections**

The latest Forest inventory (1998) showed the following results regarding sawtimber on non-reserved timber lands (i.e., lands not specifically designated for timber harvest):

- Net volume is 3,534,863 MBF (thousand board-feet),
- Net annual growth is 45,134 MBF, and
- Annual mortality is 53,763 MBF.

**Protection – Fire**

**Adequacy of Fire Prevention Programs**

We measure the adequacy of our prevention programs by the number of human-caused fires. As shown in the table below, there were 9 human-caused fires with a total of 13 acres burned in 2009. Nine fires is the same as the 5 year average, but 13 acres is well below the 5 year average of 776 acres. Initial attack on human-caused fires was very effective.

### Number and Acres of Human-caused and Lightning-caused Fires in 2009

Type of Fire	Ignitions	Acreage
Wildfires-lightning	50	17,827
Human-caused	9	13
<b>Total</b>	59	17,840

### Number of Wildfires and Acres Burned

In 2009 a total of 17,840 Dixie National Forest acres were burned. There were 50 wildfires on the Forest, with the acreage distributed across all districts.

The Pine Valley Ranger District of the Dixie National Forest had the largest fire of the season. The Mill Flat fire started from lightning on July 25th. It grew to 12,607 acres; 12,126 on Dixie National Forest lands. The next largest fires on the Forest were the lightning caused Bridge Fire at 4759 acres and the lightning caused Horse Valley fire, which burned 2110 acres.

### Fire Management Effectiveness Index

We no longer use this reporting method because it does not adequately measure success of the fire program. As a surrogate for this obsolete metric, initial attack effectiveness is calculated. Of the 59 fires in 2009, only two escaped initial attack efforts. This equates to a 97 percent initial attack success rate for this year. This high success rate also means that suppression expenditures were minimized. Typically, higher suppression costs are attributable to larger fires.

### Compliance with Fuel Loading Standards

The Dixie National Forest used prescribed burns, wildfires and mechanical treatments to reduce fuel loading. Fuel treatment effectiveness was monitored across the Forest by establishing and re-measuring sampling locations for both fuels treatments and wildfires. This involved data gathered from more than 400 plots across the forest. In 2009 the Forest treated 3,992 acres using prescribed fire, approximately 19,000 acres treated with wildfire and 6,628 acres using mechanical treatments.

## Protection – Insect and Disease

### Population Levels of Insects and Diseases

Localized mountain pine beetle (*Dendroctonus ponderosae*) and western pine beetle (*Dendroctonus brevicomis*) buildups have been observed over the years as sustained drought conditions have created greater moisture stress and stand susceptibility, particularly in older trees. Approximately 2,000 mountain pine beetle infested trees were treated in the Panguitch Lake Campground in an attempt to retain the important tree cover at that site. In 2002 the campground was non-commercially thinned to reduce tree densities and subsequent risk of bark

beetle infestation. The pine bark beetle, along with limb rust and mistletoe, is slowly killing the over-mature ponderosa pine on the Forest.

A spruce beetle (*Dendroctonus rufipennis*) population grew to epidemic levels on the Cedar City Ranger District in the early 1990s. The beetle outbreak spread across the Markagunt Plateau, essentially killing all of the over-mature/mature and intermediate Engelmann spruce trees over thousands of acres. By 2003, the Engelmann spruce component on the Cedar City Ranger District had been altered from an over-mature stand structure to total stand replacement in some areas and small seedling/saplings in others. Over the next century the spruce-dominated landscape will revegetate to seral aspen stand structure.

In the mid to late 1990s, the spruce beetle population grew to epidemic levels on Mount Dutton on the Powell Ranger District. Here, too, the mature/over-mature spruce stands have been replaced with aspen and subalpine fir because of the Engelmann spruce mortality. Since the early 2000s spruce beetles have been active on the Escalante and Teasdale ranger districts. Aerial Detection Surveys from 2003 to 2007 had estimated more than 100,000 Engelmann spruce trees have been killed by spruce beetle on the Escalante Ranger District. These epidemic outbreaks resulted in replacement of mature/overmature spruce stands with a composition of aspen, subalpine fir, and small diameter sized Englemann spruce. Spruce beetle populations continue to be looked at including annual beetle trap monitoring on the Griffin Top of the Escalante District.

Recently the Douglas-fir bark beetle (*Dendroctonus pseudotsugae*) and fir engraver beetle (*Scolytus ventralis*) populations have been building and killing large areas of Douglas-fir and white fir trees. The pinyon ips beetle population has reached epidemic levels in some areas in the pinyon/juniper type and has killed large areas of pinyon pine.

Root rot continues to be widespread. A research/treatment program initiated in the Peterson Grove area on the Teasdale Ranger District and localized treatments have been prescribed in timber sale projects. Results of the research and treatments are pending. Timber sale prescriptions and cultural treatment activities appear to have reduced the incidence of limb rust in ponderosa pine.

Insects and disease have increased over the past 10 years overall. This has prompted more dead spruce salvage and delayed other treatment activities.

### **Effectiveness of Dwarf Mistletoe Suppression Projects to Protect Regeneration**

Dwarf mistletoe treatments have been prescribed in all affected timber sale project areas initiated in the period since the Forest Plan was adopted in 1986, and thousands of acres within individual control projects have been completed. Permanent plots have also been established to monitor the long-term effects of mistletoe on tree growth, though these studies are not complete at this time.

Treatment prescriptions and projects have been successful in reducing localized dwarf mistletoe infections. However, the disease continues to be widespread in many stands, requiring continued emphasis on treatment and management.

## Range

### Range Vegetation Condition and Trend

During 2009, 275 long-term trend monitoring studies were completed on the Dixie National Forest. 198 were upland range trend monitoring studies, 41 of these monitoring studies were Level III Riparian Inventories and 36 were photo points completed by Forest personnel. 145 of 198 FS upland range trend monitoring sites (73%) were replicated studies from which accurate trend data can be derived. 23 of 41 of the FS Level III Riparian Inventories (57%) were replicated and have accurate trend available. Only 6 of 36 photo points (17%) were replicated and photo interpretive trend on these sites is also available.

Of the 145 replicated upland range trend monitoring studies, the data analysis on 27 of them (19%) indicate a downward trend in vegetation condition, effective ground cover, and/or frequency of invasives. The other 118 sites (81%) demonstrated stable or upward trends. 11 of the 27 monitoring sites (41%) that indicate downward trends are located in the Cove Mountain/Bull Complex wildfire burn area (burned in 2006) on the Pine Valley Ranger District. These burned areas are highly susceptible to cheatgrass invasion and low effective ground covers resulting from reduced fuel loads. The reasons that 11 of these sites exhibit a downward trend between 2006 and 2009 are because cheatgrass frequency continues to increase and effective ground covers are still low from these recent fires. Additionally, there is 1 monitoring site in the Lower Podunk Trailhead area (Meadow Canyon pasture) of the Powell Ranger District that has also declined as a result of wildfire. Therefore, there are a total of 15 monitoring sites of 145 sites (10% of all upland trend studies performed in 2009) where downward trends may be a result of management activities not influenced by uncontrolled wildfire. These 15 monitoring sites are located on 12 pastures of the Pine Valley, Cedar City, and Powell Ranger Districts. Each district will address this in their allotment annual operating instructions to determine what change in management direction is needed and able to improve these sites.

Of the 23 replicated Level III Riparian Inventories, the data analysis on 2 of them (9%) indicate a downward trend in vegetative successional status, bank stability, and/or effective ground cover. These occur on the Pine Valley and Escalante Ranger Districts. Each district will address this in their allotment annual operating instructions to determine what change in management direction is needed and able to improve these sites. A total of 21 of the replicated Level III Riparian Inventories (91%) demonstrate a stable or upward trend since they were last read in 2004, 2005, or 2006.

Of the 6 replicated photo points re-taken on the Dixie National Forest, 3 of the photo points demonstrated upward trends and 2 photo points demonstrated a stable trend. One photo point demonstrated a downward trend. This downward trend was a result of unauthorized ATV use in the Limekiln Canyon area of the Powell Ranger District.

In 1986, the Forest Plan did not define vegetation and soil (ground cover) conditions that would serve as a baseline from which to measure. Therefore, there are no reference conditions (from 1986) from which to measure trend. Since there is no baseline, sole reliance is placed on measuring trend during a defined time frame, from one long-term trend study reading to another. Therefore, variation that would cause further evaluation may be appropriate. Of the 275 monitoring studies and photo points reported here, 174 (63%) had previously established

baseline studies using current methodologies where accurate trend data or photo interpretation could be derived. Other study sites may have previous readings, but this data was collected using various methods which are not compatible with current measurements and/or locations and photos could not be replicated. In the absence of periodically recorded post-1986 data, we cannot project a clear picture of how much the range has improved or declined over 1986 levels on the Dixie National Forest.

The Forest has established a long-term monitoring program, as indicated by the number of studies re-read or established during 2009 and in previous years (520 FS upland range trend monitoring studies, 183 Riparian Level III Inventories, and 152 photo points from 2004-2009). Over time, these studies will be repeated and trend data will become available. This data is stored in a retrievable database where it can be accessed and additional repeat studies can also be stored and compared.

### **Riparian Condition**

*Successional Status:* The Forest Plan requires the Forest to maintain riparian areas at  $\geq 60\%$  of potential for management level 3 riparian areas. Potential for late seral community types is defined by % gradient and substrate classes (Dixie NF LRMP IV-41 amended 9/95; revised 3/96). In a sample of 41 riparian areas across the Forest during 2009, 26 of the sampled riparian areas (63%) are maintained at 60% of potential or above as required in the Forest Plan for management level 3 riparian areas. 15 riparian areas or 37% are not being maintained at 60% of potential as required by the Forest Plan. 4 of these 15 riparian areas not meeting Forest Plan requirements are on the Powell Ranger District and are the result of the Sanford wildfire burning through these areas in 2002. These 4 riparian areas on the Dutton Range have not yet recovered from the Sanford wildfire. Therefore, there are a total of 11 monitoring sites of 41 (27% of all Level III Riparian Inventories performed in 2009) where downward trends may be a result of management activities not influenced by uncontrolled wildfire. The riparian areas that are not meeting Forest Plan requirements are located on all 5 districts of the Dixie National Forest. Each district will address this in their allotment annual operating instructions to determine what change in management direction is needed and able to improve these sites.

*Stream bank stability:* Forest Plan standards and guidelines for bank stability (general direction – standard and guideline 4A – pg. IV-42) and wildlife and fish (general direction - standard and guideline 6B – pg. IV-33) require that we “maintain 50 percent or more of total stream bank length in stable condition”. For this analysis, this standard is interpreted as maintaining 50 percent of all riparian areas with at least a moderate bank stability rating. Out of the 41 Level III Riparian Inventories sampled on the Dixie National Forest in 2009, 37 or 90% had streambank stability ratings that were rated as moderate, good, or excellent. These ratings indicate long-term stable bank conditions in these riparian areas. There were no sample sites evaluated for the East Fork of the Sevier River drainage in 2009. The 2009 sample of riparian areas on the Dixie National Forest are meeting this Forest Plan standard and guideline. Therefore, no further evaluation and/or change in management direction is needed at this time.

*Percent Ground Cover:* Forest Plan standards and guidelines specific to management areas 4A, 9A, and 9B for ground cover in riparian areas (management area 4A direction – standard and guideline 4B – pg. IV-79, management area 9A direction - standard and guideline 3B – pg. IV-141, and management area 9B direction – standard and guideline 3B – pg. IV-150) require that the Forest: “Maintain at least 80 percent of potential ground cover within 100 feet from the edges of all perennial streams, lakes and other water bodies, or to the outer margin of the riparian ecosystem, where wider than 100 feet.”. Since no potential ground covers have been

defined for riparian areas on the Dixie National Forest, for the purpose of this analysis, potential is assumed, inappropriately, to be 100 percent for all riparian areas. Out of the 41 Level III Riparian Inventories sampled on the Dixie National Forest in 2009, only 8 fell within management areas 4A, 9A, or 9B. Of these 8 studies, three study sites, or 38%, had ground cover of less than 80% along the green-line vegetation transect. One of these three study sites that are below the Forest Plan standard have reduced ground cover resulting from the Sanford wildfire that burned in 2002. Ground cover on this site is not expected to fully recover for several years to come. The three study sites not meeting Forest Plan standards and guidelines for ground cover in special management area riparian systems occur on the Cedar City, Powell, and Teasdale Districts (Teasdale portion of the Fremont River Ranger District). Percent ground cover on these sites not meeting the standard may need to be evaluated to determine if a change in management is needed and able to improve them.

### **Forage Utilization**

During the 2009 grazing season, 50 of 81 allotments (62%) were reported to have been monitored for compliance with Forest forage utilization standards. A total of 134 pastures were monitored within the 50 allotments. Of the 134 pastures monitored, 126 (94%) were found to have met utilization standards. Stubble height, height/weight method, key species method, ocular reconnaissance, and photo documentation were the primary methods used for assessing utilization compliance.

Of the eight allotments monitored on the Pine Valley Ranger District, only one allotment did not meet utilization standards. Holt Canyon was over utilized on the West Pinto Allotment.

Twenty of the 22 allotments on the Cedar City Ranger District stayed within utilization standards. The Red Creek Allotment had two pastures, Caddy Creek and Three Mile Creek, where riparian standards were exceeded. Likewise on Little Valleys Allotment riparian standards were exceeded on two pastures, Williamson Ranch and Middle Canyon.

Eleven allotments on the Powell Ranger District were monitored in 2009. All monitored pastures were within Forest utilization standards.

Seven out of the nine allotments monitored on the Escalante Ranger District were within utilization standards. Over utilization was found in the Posey Lake Pasture on the Pine Creek Allotment and in the Pollywog and Big Swale/Clayton Pastures on the Coyote Allotment.

Several factors contributed to the limited amount of over utilization that occurred. These include the Horse Valley Fire, condition of range improvements and difficulty in controlling livestock. Recommendations for 2010 include an increased emphasis on maintaining range improvements and ensuring that pastures are "clean" of livestock once a move is made.

### **Wild Horse Numbers and Habitat Trends**

On January 26, 2010 the Bureau of Land Management (BLM) conducted a helicopter inventory of wild horses on the BLM North Hills Horse Management Area (HMA), which includes the Forest Service North Hills Wild Horse Territory managed by the Pine Valley Ranger District.

On the North Hills HMA a total of **187** head of wild horses were counted. There were 26 yearlings counted on the HMA. It is estimated that 90% of the horses on the HMA were counted because of the good snow conditions and coverage of the flight. The estimated population for

the HMA is 208. This HMA does not see much interchange from horses from other HMAs, but some does occur with adjacent HMAs in Nevada. Horses from other wild horse HMAs have been introduced to the HMA in the past to maintain genetic viability. However no new horses have been introduced to the HMA since the last population inventory. Though not proven, it is suspected that as many as 20 head of domestic horses have been set loose on the HMA.

Key points to note with January 26, 2010 Population inventory.

- Reproduction rate is less than 20% which is normally used to estimate population growth on this HMA. The reproduction rate could be affected by domestic horse turn out.
- Estimated numbers of wild horses on the HMA was lower without population inventory.
- Horses were in good condition.
- No young colts counted during this time of year.
- It is believed some domestic horses have been released into the HMAs.
- Elk use of this HMA has increased in the last 10 years from 0 to 20-40 head yearlong.
- HMA is targeted for 60 horses, with this data we are more than 300% over management objectives.

## Developed Recreation

### Facility Capacity and Developed Site Service

During 2009 the Persons At One Time (PAOT) figure for all developed recreation sites was 8,374 daily with a seasonal capacity of 1,928,948 PAOT days. During 2009 the forest had a total of 913,413 PAOT days to standard on the Forest.

### Downhill Ski Use

Brian Head Resort reported 128,750 skier visits for the 2008-2009 for winter season.

## Scenic Quality

Driving for pleasure to see and recreate in outstanding scenery continues to be the number one recreation use on the forest and the nation. (National Visitor Use Monitoring 2009)

The landscape integrity or the intactness of the landscape has been degraded in the past fifteen years by insect outbreaks in Spruce and Douglas Fir stands in many places throughout the forest. Seeing dead trees is a natural occurring process; however the scale and magnitude of these events trigger a change in landscape character and does not meet scenic integrity objectives. Acres affected are unknown at this time. Stands of spruce trees on some districts are approaching 100% mortality. The negative response from the public is substantial. Some surveys have been done and records kept of this public concern. Dead gray trees and dying red trees can be seen from most state highways and forest roads.

## Dispersed Recreation and Wilderness

Dispersed recreation and wilderness visitor use was monitored on 36 trails/roads on the Dixie NF in 2009. Some locations were monitored, but counter errors yielded no data. In addition some counters were not collected prior to snow fall data will be updated in the spring of 2010.

Dispersed recreation use numbers decreased slightly from the previous year. Most trail counts were static or slightly lower. These findings may be due to a downturn in the economy. Most of the high use trails tend to be either scenic destination and/or mechanized/motorized route. Across the forest non-motorized use numbers were lower in 2009 than previous years.

Further monitoring of these trails is necessary to create a database with base-line data. The Dixie National Forest has been consistently monitoring dispersed recreation use for the last five years on most trails listed. In order to monitor change over time, trail data needs to be collected, analyzed, and stored annually. With an increasing population growth and an increasing recreating public, trail use is expected to increase. The Dixie National Forest is especially susceptible to increased use due to its proximity to the fast growing city of Las Vegas. In addition, the Dixie National Forest provides many recreation opportunities for motorized recreation, which is the fastest growing sport in the United States.

## Cultural (Heritage) Resources

### **Completion of Cultural Resource Investigations For All Site-disturbing Activities Where No Site Inventory Has Been Completed**

Federal law requires the Forest Service to conduct surveys for Historical and Archaeological Resources prior to all ground-disturbing projects. During FY 2009 we surveyed or evaluated 29 projects totaling approximately 3,200 acres. During these surveys we found 42 archaeological and historical sites. Of these only ten were found not to be eligible for the National Register of Historic Properties. All Historic Properties identified were avoided by all project activities. The Forest has met all the requirements in the law regarding cultural resources.

## Facilities

### **Road and Bridge Construction and Reconstruction**

In FY2009 the Dixie National Forest along with cooperators maintained 379 miles of Passenger Car roads, 171 miles of High Clearance roads, improved 7.9 miles of High Clearance roads, 9.3 miles of Passenger Car roads and decommissioned 26 miles of Forest Roads under Motorized Travel Plan. Of those roads, 20 miles were maintained under timber sales, accounting for less than 1% of the total road maintenance of level 2 roads on the Forest.

East Fork Boulder Creek Bridge was constructed this year replacing an aging culvert structure and restoring aquatic passage where there was none before. Two other bridges were contracted in FY09, Delong Creek and Pine Creek which will also restore aquatic passage to the traveled streams. Those two projects will be constructed in FY10.

## Road Management

During 2009, 100 percent of the random sample condition surveys were completed for this cycle. 4 Routes were surveyed, together these routes consisted of 3.29 miles.

Route #	Name	Route Length
30042	Panguitch Lake CG North	1.145 Miles
31574	Local	1.11 Miles
31950	(no name)	0.87 Miles
32245	Local	0.17 Miles

The random sample is not large enough to determine the trend in the condition of existing roads.

## Buildings

21 Total Buildings were surveyed in 2009.

	Building ID#	Building Name
1.	0100	Cedar Fire Dispatch Building
2.	0303	Cedar Storage Shed
3.	0307	WCF Sign Shop & Storage
4.	0308	Oil & Gas House Building
5.	0309	Cedar Dispatch/Warehouse Computer
6.	0329	Browse G.S. Hay Shed
7.	0716	Honeycomb CG Pumphouse
8.	0222	Bear Valley Guard Station
9.	0330	Bear Valley GS Horse Shed
10.	0724	Boy Scout Pumphouse
11.	0728	Panguitch Lake CG Pumphouse
12.	0729	White Bridge CG Pumphouse
13.	0237	Podunk Guard station
14.	0239	Jones Corral Guard Station
15.	0347	Panguitch Hazardous Materials
16.	0358	Jones Corral Storage Shed
17.	0631A	Red Canyon Vis. Comfort Station
18.	0631F	Red Canyon CG Shower House
19.	0738	Jones Corral Pumphouse Building
20.	0366	Escalante Pesticide Building
21.	0373	Escalante Oil Storage
22.	0378	Clayton G.S. Garage

The Forest surveys all buildings at 20% per year over a five year period then repeats the cycle. Currently the Forest is in year two of the new cycle. All but one building has been inspected within the past five years (over two cycles).

Resources are available to maintain buildings that are being used to a reasonable standard; buildings that are not used or receive low use are not maintained. If this trend continues, buildings that are not used will continue to deteriorate until they will have to be either renovated or demolished. This will be in accordance with the Facilities Master Plan, which calls for most

unused buildings to be disposed of. The methods for determining deferred maintenance have changed such that data are not comparable from year to year. No additional evaluation is necessary.

### **Dam Administration**

All high hazard dams were inspected by the State of Utah in coordination with Forest engineering personnel. The following dams were inspected by the Forest (or the State via agreements) according to the existing Memorandum of Understanding with the State of Utah, Division of Water Rights:

1. Calf Creek Dam – not in compliance
2. Calf Springs Dam
3. Upper Enterprise Reservoir
4. Lower Enterprise Reservoir
5. Red Creek Reservoir
6. Panguitch Lake
7. Tropic Reservoir
8. Pine Lake
9. Pacer Lake
10. Oak Creek Reservoir
11. Lower Bowns
12. Chriss Lake

All inspections were accomplished by established state and federal regulations. Results are in compliance except for Calf Creek where the owner has been put on notice. Forest-owned dams (Pine Valley, Flat Lake, Robs, and Pine Creek) continue to be under-funded for necessary heavy maintenance and/or reconstruction.

### **Compliance with Utah Public Drinking Water Regulations**

All drinking water systems on the Dixie National Forest have been monitored in accordance with state and federal standards in 2009. All nitrate and subsequent sulfate monitoring returned acceptable results.