Carson National Forest
Southwestern Region

Carson Forest Plan Monitoring and Evaluation Report

Fiscal Year 2006

Forest Supervisor Certification of Forest Plan Sufficiency

The Carson Forest Plan is sufficient to guide management of the Forest over the next year. There are improvements that can be made as outlined in the recommendations section and will be scheduled as funding and personnel are available in future years.

MARTIN D. CHAVEZ, JR.
Forest Supervisor

3/22/07
Date

Monitoring Activities and Evaluation

Program Area	Summary of Monitoring Conducted and Evaluation
Biological Environment	
Wildlife & Fish	**Goals:** To manage for healthy ecosystems, provide goods and services in an environmentally sound fashion, use new knowledge, develop an integrated inventory, cooperate with other agencies, and promote awareness and appreciation of species. ▪ **Maintain habitat for viable populations** of all wildlife and fish species found on the Forest and improve habitat for selected species. This will be accomplished indirectly through intensive habitat management. ▪ **Support New Mexico Game and Fish Department** in meeting its objectives of the New Mexico Comprehensive Wildlife Plan and in the reintroduction of native wildlife and fish species. Favor native species over new exotic species in stocking and introductions whenever possible. ▪ **Maintain and/or improve habitat for presently listed threatened or endangered species** of animals and other species as they are classified as threatened or endangered. Work toward the eventual recovery and delisting of species. *Threatened and endangered species* populations and habitat will be protected and improved as necessary to aid in the recovery of the species. **Monitoring:** **MANAGEMENT INDICATOR SPECIES** A summary of status and habitat trends for 11 management indicator species (MIS) identified in the Carson Forest Plan was initiated in FY 1999. MIS species are elk, bighorn sheep, turkey, Abert's squirrel, red squirrel, hairy woodpecker, white-tailed ptarmigan, juniper (plain) titmouse, Brewer's sparrow, resident trout, and aquatic macroinvertebrates. In cooperation with the New Mexico Department of Game and Fish, aerial surveys were conducted for **elk** in FY 2006 to determine reproductive and adaptive success. Counts were done in Game Management Units (GMU) 51 and 55A and Jicarilla Ranger District (GMU 2). For GMU 2 (Jicarilla RD) this is an annual survey. Other GMU on the forest are surveyed in different years. Supporting documentation for elk aerial monitoring is located at the New Mexico Department of Game and Fish State Office in Santa Fe, New Mexico.

Program Area	Summary of Monitoring Conducted and Evaluation
	Annual counts of the reintroduced **Rock Mountain bighorn sheep** population in the Wheeler Peak, Latir and Pecos Wilderness Areas (majority of the Pecos herd is on the Santa Fe National Forest, with some use on the Carson) conducted by the New Mexico Department of Game and Fish (NMGF) . This monitoring is performed to determine the herd's reproductive and adaptive success. The Carson National Forest cooperates with the NMGF in this monitoring. In 2006, Wheeler Peak, Columbine/Hondo area was 300 sheep; Latir 160 sheep; and Pecos area were 350 sheep. The data is held by the New Mexico Game and Fish Department. Point count transects for breeding birds, which in **hairy woodpecker, juniper titmouse and Brewers sparrow** are conducted on the Carson National Forest. These transects were monitored from FY 2003 -2006. These counts provide trend data of NTMB migrations, as well as for MIS species trend information. Supporting documentation is located at the Forest Supervisor's office. Surveys for the **Abert's squirrel** were continued in FY 2006. This is the fourth year of data collection for Abert's squirrels. There was a significant increase in squirrel density in FY 2006 versus FY 2003 and 2004 data. Supporting documentation is located at the Forest Supervisor's office. Data collected by the New Mexico Game and Fish, USGS, US Fish and Wildlife Service, and other public and private sources are being analyzed and will be used to update the Forest-Wide Management Indicator Species Assessment. The data collected is held by the respective collector. Survey results for resident trout are located in the sensitive species section. **THREATENED AND ENDANGERED SPECIES** Threatened, and endangered (T&E) species are surveyed for project and program monitoring requirements (e.g., 1996 region-wide Amendment for Forest Plans), as well as to provide planning information during project analysis. Monitoring is ongoing for T&E species on the Forest for known nesting locations. The primary species monitored on the Carson are southwestern willow flycatcher and Mexican spotted owl. In FY 2005, Critical Habitat was designated for the southwestern willow flycatcher. The Forest had one Critical Habitat Unit designated on Forest Service land. Project level inventory is done for projects to provide the biologists information on the potential occurrence of T&E species on the Forest, as well as, whether management activities (e.g., grazing, recreation, tree cutting, etc.) are a threat to a species' habitat or existence. Supporting documentation for project level inventory is located at each of the ranger stations. Over 200 acres of mixed conifer habitat was surveyed for Mexican spotted owl (MSO). Supporting documentation can be found on the Tres Piedras Ranger District. There is only one location with known occupied **southwestern willow flycatcher** (SWWF) habitat on the Forest. The status of this population appears to be stable. Five nest sites were detected during FY 2006 monitoring activities. This monitoring data was forwarded to the US Fish and Wildlife Service. Supporting documentation is located at the Camino Real Ranger station.

Program Area **Summary of Monitoring Conducted and Evaluation**

REGION 3 SENSITIVE SPECIES

The primary Region 3 sensitive species inventoried and monitored on the Carson are northern goshawk, American peregrine falcon, and Rio Grande cutthroat trout. This type of inventory and monitoring provide the biologists information on the occurrence of TE&S species on the Forest, as well as, whether management activities (e.g., grazing, recreation, tree cutting, etc.) are a threat to a species' habitat or existence.

The northern goshawk had approximately 5,000 acres of project level surveys done to protocol in FY 2006. Eight known nest sites were monitored in FY 2006. No nesting pairs were located.

Inventory and monitoring of known goshawks nesting areas in FY 2006 produced the following information:

□Table 1 2004-2006 Northern Goshawk inventory and monitoring results

District		Acres of inventory	Results (sightings, nests)	Monitoring of Known Goshawk Nesting areas
Canjilon	2006	0	0	0
	2005	0	0	0
	2004	0	0	0
El Rito	2006	0	0	1 nest site – no birds
	2005	0	0	1 nest site – no sighting
	2004	355	0	0
Jicarilla	2006	0	0	Single adult
	2005	0	0	Single adult
	2004	697	0	Single sighting but nesting not confirmed
Camino Real	2006	0	0	5 nest sites – no goshawks located
	2005	381	0	5 nest sites – no goshawks located

	2004	6806	0	Monitored seven known sites. Two active nests sites located

District		Acres of inventory	Results (sightings, nests)	Monitoring of Known Goshawk Nesting areas
Tres Piedras	2006	1,500	0	2 nest sites – no birds located
	2005	2000	0	2 nest sites – found 1 pair with 2 young
	2004	4650	Nest found with young, one next unoccupied	2 visits to know nest site. No goshawks observed
Questa	2006	4,000	1 single adult	0
	2005	1000	0	0
	2004	0	0	0

Peregrine falcon surveys are conducted by the New Mexico Game and Fish. The Carson National Forest located a new nest site in 2006. There are currently six known nest sites on the Carson National Forest. Survey information can be obtained from the New Mexico Department of Game and Fish.

Baseline inventory and monitoring of **Rio Grande cutthroat trout** (RGCT) populations are ongoing throughout the Carson NF. The surveys are performed using the three-pass

Program Area

Summary of Monitoring Conducted and Evaluation

Wild Trout Populations and Macroinvertebrates

Baseline inventory and monitoring of **Rio Grande cutthroat trout** (RGCT) populations are ongoing throughout the Carson NF. The surveys are performed using the three-pass regression method and population estimates are calculated from the regression. Samples from populations are also collected for genetic analysis. These surveys are ongoing and help determine the level of management appropriate for the population. Supporting documentation is located at the Forest Supervisor's office.

Habitat surveys were conducted on the Rio de los Piños, Rio Hondo, Rio Pueblo, Rito de la Presa, and La Junta Creek, for a total of 32.3 miles. The Carson National Forest habitat reports are to be completed this spring.

Population surveys for RGCT and other fish were conducted on the following streams during FY 2006:

Stream	Miles
Vallecitos	2
Tusas box	1
Canjilon Creek	1
Hondo Trib	1
San Cristobal	1
Los Piños	2
Rio Pueblo	2
San Antonio Creek	2
Tanques Creek	3
Agua Caliente	2
Bitter Creek	3
Alamitos Creek	3
	23

Vallecitos, Tusas Box, Canjilon Creek, Hondo Tributary, San Cristobal, Los Piños, Rio Pueblo, and San Antonio Creek are included in a four year rotation to determine resident trout population trend across the Forest. Populations seem to be decreasing slightly across the Forest likely due to the low water levels as a result of the ongoing drought, which also affects over-wintering habitat. The remaining streams in the list are Rio Grande cutthroat trout populations that require monitoring. These populations are also low due to the drought. This accomplishes all miles scheduled for 2006.

Macroinvertebrate population monitoring was planned, across the Forest, following a three year rotation, but not scheduled. Funds were initially allocated, but withdrawn. As a result, no macroinvertebrate monitoring was done in fiscal year 2006.

Precipitation, Taos New Mexico 2001-2006

In inches

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
2001	0.9	0	0	0	0	0.16	1.69	2.28	0.25	0.31	0.4	0	5.09
2002	0.85	0.04	0.22	0	0	1.02	0.95	0.59	2.7	1.32	0.77	0.32	8.78
2003	0	1.1	1.11	0.5	0.52	0.72	0.69	1.83	1.73	0.62	0	0.81	9.63
2004	0.1	0.65	0.49	1.84	0	1.29	1.1	0.54	1.76	1.28	0.58	0.8	8.47
2005	1.65	0	1.07	1.71	0.67	0.89	1.14	3.77	2.58	2.02	0	0	10.6
2006	0.12	0.1	0.14	0.56	0.45	0.33	0.75	2.54	0.73	0.8	0.18	0.2	6.72
avg	0.60	0.31	0.51	0.77	0.27	0.80	1.10	1.93	1.63	0.94	0.17	0.36	7.09

Long term average precipitation in Taos New Mexico

avg	0.67	0.62	0.82	0.9	1.2	0.9	1.64	1.85	1.28	1.08	0.74	0.64	12.4
yrs data	88	89	90	89	86	89	88	88	88	88	87	88	74

Management Indicator Species

The Management Areas referenced are as indicated in the Carson National forest Plan. Management areas not listing forest habitat may be found in any of the forest habitats. The following table lists the management areas:

□Table 2 Forest Plan Management Area Descriptions

Management Area (MA)	Description
1	Spruce under 40% slope
2	Spruce over 40% slope
3	Mixed Conifer under 40% slope
4	Ponderosa Pine under 40% slope
5	Mixed Conifer and Ponderosa Pine over 40% slope
6	Aspen
7	Unsuitable Timber
8	Piñon/Juniper
9	High Elevation Grassland
10	Low Elevation Grassland
11	Revegetation Areas
12	Sagebrush
13	Oak
14	Riparian
15	Potential Recreation Sites

Program Area

Summary of Monitoring Conducted and Evaluation

Management Area (MA)	Description
16	Recreation Sites
17	Wilderness
18	Wild and Scenic River
19	Special Areas
20	Semi-primitive
21	Valle Vidal

A summary of population and habitat trends for the 11 **MIS** identified in the Carson Forest Plan will provide biologists a forest-wide evaluation of MIS habitat to use when analyzing a project's site-specific effects. Additional resources, literature and databases are being used to compile this assessment. The original assessment was completed in July 2003. The MIS assessment is a living document with updating continuing throughout FY 2006 as more information, published research, and habitat and population studies, became available. The MIS assessment update was completed during FY 2006 with final edits to be completed in FY 2007. The updated MIS assessment will replace the older July 2003 assessment. The updated MIS assessment will be posted to the World Wide Web on the Carson National Forest website (http://www.fs.fed.us/rs/carson). Its purpose is to provide an overall status of MIS populations and their habitats on the Carson National Forest.

Elk numbers had steadily increased over the past two decades; however, the past few years had shown a decline in herds. This decline is believed to be due to drought and increased hunting permits. A significant migration occurs to and from the Rio Grande National Forest in southern Colorado to the north and the Tierra Amarilla Grant to the west. Monitoring in recent years has indicated that the elk population on the on the Forest is fairly stable. On the Jicarilla Ranger District, data shows a steady or increasing population from 1981-1993, and a slightly decreasing population since then. It is believed that the fluctuation in population is mainly due to drought conditions and habitat improvement projects on other lands. Annually, the Forest Service, Bureau of Land Management and NM Department of Game and Fish jointly conduct elk surveys in January in GMU 2. These surveys are expected to continue. Elk habitat corresponds to the following management areas of the Carson Forest Plan, MA 1, MA 2, MA 3, MA 4, MA 5, MA 6, MA 7, MA 8, MA 9, MA 11, MA 12, MA 13, AND ma 14.

Forest-wide, it is estimated that elk habitat on the Carson National Forest has increased by 61,314 acres (75% of total sagebrush habitat). The trend for Rocky Mountain elk habitat from 1986 to 2005 is estimated to have increased from 1,362,760 to 1,424,074 acres or upward by almost four percent.

Populations of **bighorn sheep** have shown a continual increase on the Carson National forest. Current population surveys show that numbers are considered at or near the carrying capacity for all three areas (personnel communication with NMG&F bighorn sheep biologists). The Carson and Santa Fe National Forest have developed an agreement with the New Mexico Department of Game and Fish for removal of bighorn sheep over the next five years to help keep population at or near current levels. It is hoped to establish a hunt in the Latir area in the near future. Removal of some sheep occurred

in 2005 in the Latir and Pecos areas. Information on carrying capacity and sheep removal can be found at the New Mexico Game and Fish Department. Forest-wide habitat for the bighorn sheep has considered stable and in good condition.

Hairy woodpecker is found in all forested habitats. Bark beetle outbreaks typically stimulate an increase in woodpecker populations. The recent *Ips*, pinyon bark beetle, likely stimulated the woodpecker population in areas adjacent to the outbreak areas. The outbreak in the pinyon/juniper type appears over. However, scattered pockets of dying trees are scattered forest-wide providing habitat for woodpecker populations.

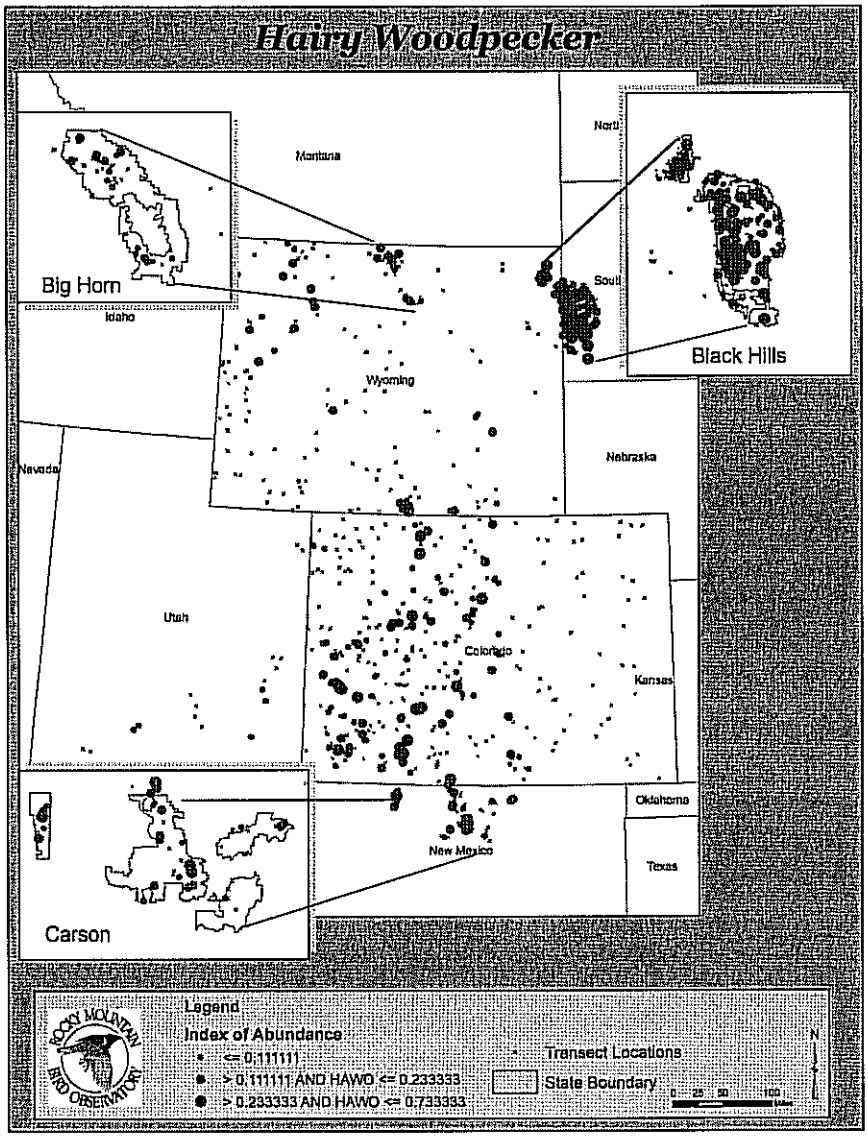
The density per hectare in 2003 was not determined due to insufficient data. In 2004 the density was 0.017 birds per hectare in the pinyon areas. Some 85 individuals were noted in monitoring surveys with 33 found in the pinyon-juniper forest type. The remaining individuals were found in all forested habitats with the exception of alpine tundra and grasslands. In 2005, 51 birds were found in six habitats. The attached map shows the Index of abundance for the hairy woodpecker on the Forest and other study areas. In 2006, 53 birds were found in five habitats. In 2006, densities for hairy woodpecker were done for Ponderosa pine habitat and pinyon juniper habitats. The population in ponderosa pine was calculated at .15 birds per hectare and in pinyon-juniper were 0.028 birds per hectare.

Rocky Mountain Bird Observatory (RMBO) has conducted surveys throughout the Southern Rocky Mountains and notes that populations of this species have shown dramatic increases after natural disasters, such as burns or major insect outbreaks. In 2004 they detected sufficient numbers of this species to provide a density estimate in the beetle infested pinyon-juniper habitat. Overall, the RMBO has detected the hairy woodpecker on all the RMBO point-count transect monitoring projects (Beason et al. 2005).

Program Area

Summary of Monitoring Conducted and Evaluation

Map 1 Hairy Woodpecker (Beason et al. 2005)



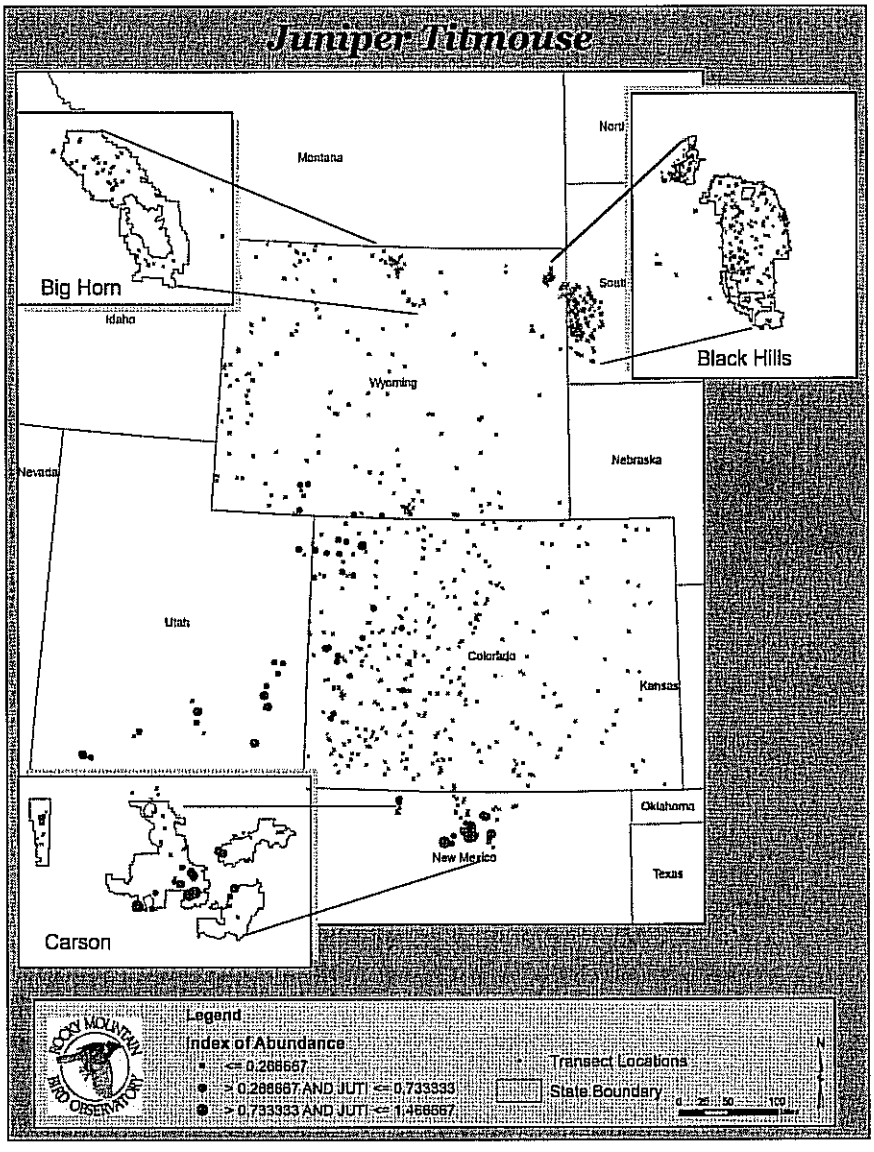
The forested habitats correspond to Carson Forest Plan Management areas, MA 1, MA 2, MA 3, MA 4, MA 5, MA 6 and MA 7. There were no harvest treatments from 2002 to 2005 that would have eliminated any areas from habitat. From 1986 to 2005, the estimated habitat trend for hairy woodpecker on the Carson National Forest is from 106,880 acres to 112,653 acres of habitat, or upward trend of five percent.

Program Area	Summary of Monitoring Conducted and Evaluation
	Juniper titmouse (plain titmouse) had a lower density per hectare in 2003 than in 2004, 0.177 and 0.258 respectively. In 2005, the population density of the juniper titmouse was 0.313 birds/hectare. The 2006 surveys found the population to be 0.22 birds per hectare. The survey data from the past 4 years seem to indicate the population on the forest at this time appears to be stable. The *Ips*, pinyon bark beetle, population peaked in 2003 with a substantial decline in 2004. The population returned to endemic levels in 2005 with no aerial detection of infestations sites. The acres of dead and dying pinyon declined from over 277,000 acres in 2003 to roughly 33,000 acres in 2004 and then to unmappable in 2005. However, even in the face of this loss of habitat by natural causes the juniper titmouse seems to be persisting.

Program Area

Summary of Monitoring Conducted and Evaluation

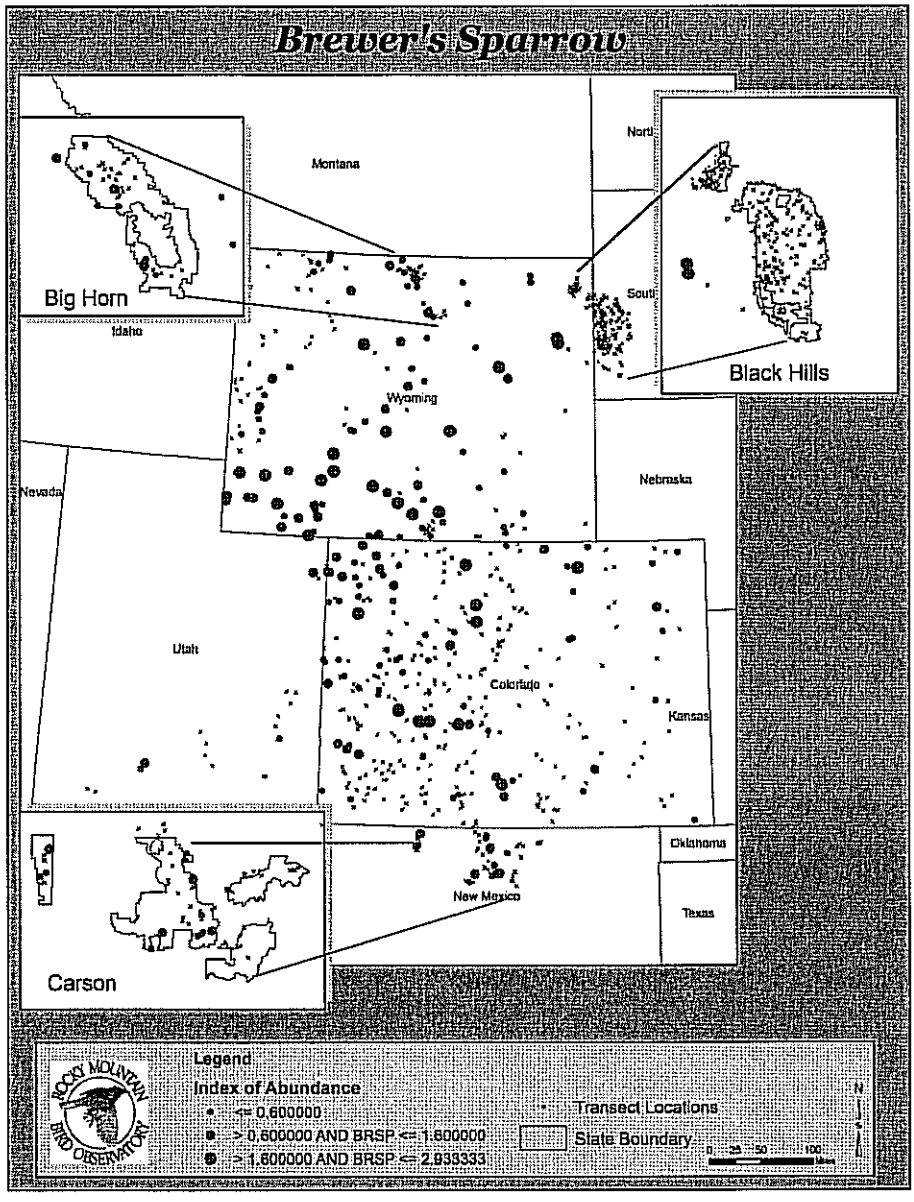
Map 2 Juniper Titmouse (Beason et al. 2005)



This species is dependent on large seeds such as those provided by juniper and pinyon pine, and acorns rather than insects. The die off of many pinyons may have increased the number of tree cavities available for breeding. The surviving pinyon in the infestation areas and uninfested adjacent areas experienced a moderate to heavy seed crop in the fall of 2005. A moderate to heavy seed crop also occurred in 2006. This indicates an increase of available soil moisture in the infested areas as trees died in addition to the increase moisture levels in 2006.

Program Area	Summary of Monitoring Conducted and Evaluation
	The bird is found throughout the pinyon-juniper forest type which is Carson Forest Plan Management Area, MA 8. Forest management activities have maintained the habitat for this bird; natural causal organisms caused a loss of habitat is some areas. The trend in habitat acres shows a decrease from 355,409 to 348,239. This is a downward trend of an estimated 7,170 acres, or about two percent of available juniper titmouse habitat on the Carson National Forest since 1986. **Brewer's sparrow** was estimated to have a density in 2003 of 0.0935 breeding birds per hectare in the sagebrush type. The species was also detected in both the piñon-juniper and grassland habitats. In 2004 the density was 0.6617 breeding birds per hectare. The density in 2005 number of birds per hectare was 0.376 in the sagebrush and 0.049 in the pinyon-juniper. In 2006 the density was found to be 0.266 birds/hectare in sagebrush and 0.020 birds per hectare in the pinyon-juniper.

□Map 3 Brewer's Sparrow (Beason et al. 2005)



Rotenberry (1999) states Brewer's sparrow population numbers are "highly variable, depending on habitat and year." For example one site in Oregon sampled for seven years varied from 50 to 350 individuals/km2 (0.5 to 3.50 individuals/ha). A site may be unoccupied in one year, then attain densities of 1.50 individuals/ha the next year. Because of high annual variation, estimates from small-scale or short-term studies must be handled with caution (Rotenberry 1999). Although the numbers have fluctuated for the

Forest, they appear to be within normal range for the species.

Forest management activities have maintained the amount of sagebrush lands available for this species. Sagebrush lands correspond to Management Area, MA 12, of the Carson Forest Plan. Habitat trend for Brewer's sparrow on the Carson National Forest is up by about 55 percent or 29,152 acres. Existing habitat for the Brewer's sparrow on the Carson National Forest is in good condition with an upward trend.

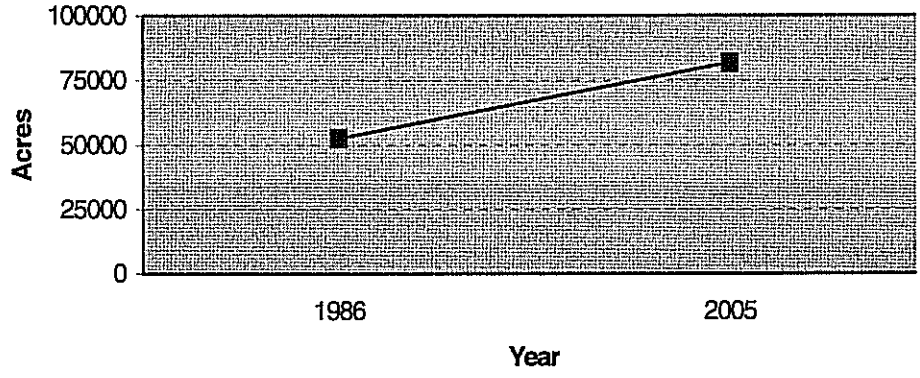


Figure 1 Changes in Brewer's Sparrow Habitat on the Carson National Forest, 1986-2005

While 2003 and 2004 **Abert's squirrel** surveys showed approximately the same density (0.005 squirrels/ha; 1 squirrel/500 acres), in 2005 the overall mean density was 0.01 squirrel/ha (1 squirrel/ 247 acres) (Frey 2005, p. 21). in 2006 the overall mean density was 0.01 squirrel/ha (1 squirrel/ 247 acres) on the previously surveyed transects (Frey 2006). Additional areas were surveyed in the Valle Vidal Unit. These additional surveys show a mean density of 1 squirrel for 123 acres. The Valle Vidal Unit surveys showed a density of 1 squirrel for 35 acres of habita. This is a significantly higher density number than in previous years. While the numbers are still low in comparison to other studies, they are similar numbers found in Utah in 2003 and in the San Juan National Forest in 2004 (Frey 2005, p.21). While comparing monitoring results on the Carson with other recent studies conducted in Arizona and Utah, two patterns are apparent to Dr. Frey (2005, p.24). First, it appears the entire region experienced declines in Abert's squirrel densities from 2001 to 2004. Second, the regional declines are probably attributable to drought conditions. In north-central New Mexico, drought conditions began in 2000 and extended into the beginning of 2004. In contrast with previous years, moisture was high during 2005; therefore, the increased density of Abert's on the Carson in 2005 is most likely due to increased moisture. In contrast with previous years, moisture was high during 2006; therefore, the increased density of Abert's on the Carson in 2006 is most likely due to increased moisture.

Abert's squirrel habitat corresponds to Carson Forest Plan Management Areas MA 4, MA 5, MA 7. Stand with a dense oak understory and the presence of pinyon and juniper had lower squirrel densities. The habitat trend for Abert's squirrel from 1986 to 2005 is estimated to have increased from 53,220 to 63,794 acres of interlocking canopies or an upward trend of almost 20 percent. From 2002 to 2005 there have been no treatments that would have reduced squirrel habitat.

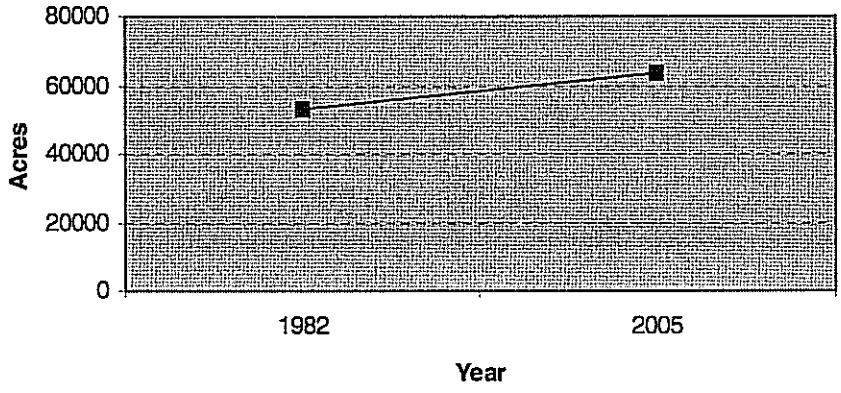


Figure 2 Changes in Abert's Squirrel Habitat on the Carson National Forest, 1986 to 2005

Red Squirrel is a huntable species as indicated by the 2006 Hunting Proclamation distributed by the New Mexico Department of Game and Fish. Nationwide densities vary from about 1 per 3.2 hectares to 1 per 0.2 hectare. In 2003 the overall mean density for the red squirrel was 0.47/ac (1.16/ha) and in 2004 was 1.04/ac (2.58/ha). Table 2 shows the density estimates by habitat type and year. The surveys have shown that the population levels are consistent with the rest of the state and the population appears to be stable throughout its range (Frey 2003 and 2004). There were no surveys in 2005 and 2006. Funding for a 2007 survey was obtained in 2006.

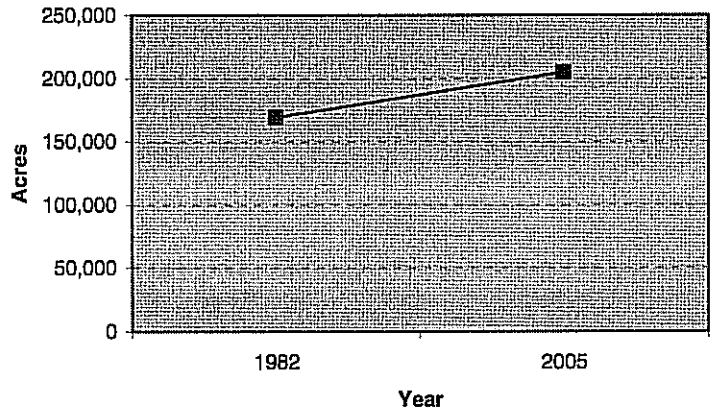
□Table 5 Mean Density/ Acre for Red Squirrel (Frey 2003 and 2004)

YEAR	MIXED CONIFER	WHITE FIR	BLUE SPRUCE	ENGELMANN SPRUCE	SPRUCE-FIR
2003	0.17/AC (.42/HA)	0.15/AC (0.36/HA)	0.97/AC (2.40/HA)	0.43/AC (1.07/HA)	0.81/AC (2.00/HA)
2004	0.36/AC (0.90/HA)	0.56/AC (1.38/HA)	1.32/AC (3.26/HA)	1.04/AC (2.58/HA)	1.97/AC (4.87/HA)
2005	NO SURVEY				
2006	NO SURVEY				

The red squirrel prefers coniferous and mixed forests. These types of forests correspond to Carson Forest Plan management Areas MA 3, MA 5, MA 7. From 1986 to 2005, red squirrel habitat of interlocking canopies in mixed conifer and spruce-fir is estimated to have increased from 169,400 to 204,873 acres or an upward trend of about 20 percent. The following chart shows the habitat trend information since implementation of the Forest Plan in 1986.

Program Area

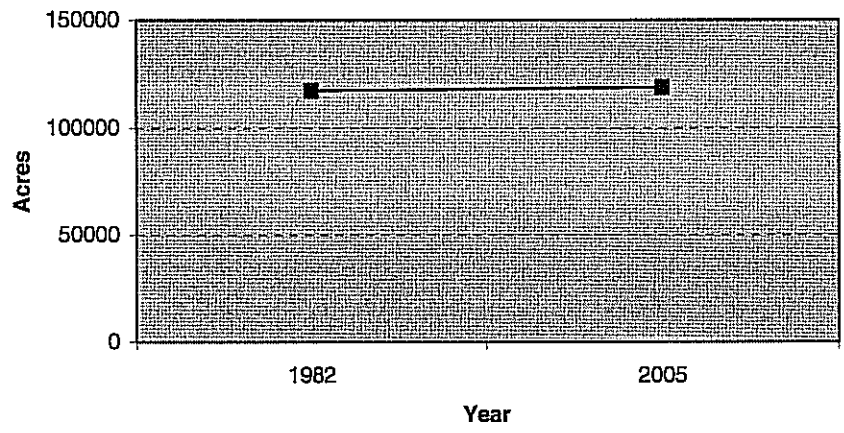
Summary of Monitoring Conducted and Evaluation



□Figure 3 Changes in Red Squirrel Habitat on the Carson National Forest, 1986 to 2005

Wild turkey is an indicator species for the presence of old growth pine. With the increase of harvest (hunting) areas on the forest since the signing of the LRMP, it is reasonable to assume a population increase on the forest. In fact, Unit 52 was open to turkey hunting in the spring of 2005. Hunting continued in 2006. Population trend can be determined based on increased areas where turkeys are found, increased hunting areas opened to the public, and by hunter success. Wild turkey populations, nation wide, are estimated to have increased by 3.7 to 4.2 million from 1990 to 1995 and from 1989 to 1995 there is an estimated 46% expansion of occupied range (Kennamer J.E. and M.C. Kennamer 1995).

Turkey habitats are located in the following Management Areas of the Carson Forest Plan, MA 3, MA 4, MA 5, MA 6, and MA 1. Turkey habitat from 1986 to 2005 is estimated to have increased from 117,300 to 118,816 acres or a slight upward trend of about one percent. There have been no vegetation treatments from 2002 to 2005 that are considered such that would have removed acres from suitable habitat. The shift in management practices to increased thinning and prescribed burning should improve conditions favorable to increasing populations over time. The urban-interface fuels reduction projects planned for the near future on the Carson will continue to improve conditions for the bird, although at a fairly slow rate. Thinning to create clumpy conditions interspersed with openings can reduce competition and create larger tree diversity for roosting and openings for foraging. Prescribed fire would control dense tree reproduction and provide understory forage. Continued development of small, protected water sources and implementation of effective road closures in turkey habitat will also improve conditions. Subsequently, these forest activities will contribute to maintaining turkey populations.



□Figure 4 Changes in Suitable Habitat on the Carson National Forest , 1986 to 2005

White-tailed ptarmigan is an indicator species for the presence of alpine tundra and subalpine deciduous shrub. This corresponds to Management Area, MA 9, in the Carson National Forest Plan. The Carson Forest Plan EIS identifies 6,400 acres of occupied habitat (USDA 1986a, p. 97). No management actions have changed since the time of the Forest Plan to cause a change in the number of acres of available habitat on the Carson National Forest. The Terrestrial Ecosystem Survey data layer indicates there are 10,106 acres of alpine tundra on the Forest (USDA 1987). This does not mean there is any change in the trend of available habitat, but is a result of a variation in habitat mapping. Incidental observations show that portions of these habitats are still occupied. The most recent reports were in the Pecos Wilderness in 2002. The overall habitat trend for the white-tailed ptarmigan on the Carson National Forest is stable. Domestic sheep grazing has been eliminated in ptarmigan habitat that should eventually contribute to willow recovery, and subsequently an improved trend over time. Other potential habitat areas, such as Little Costilla Peak in the Valle Vidal, were visited in 2006. The Little Costilla Peak area lacks habitat requirements for the white-tailed ptarmigan. Little Costilla Peak should be considered a possible resting location for this bird. Big Costilla Peak on private lands west of the Valle Vidal has been reported to have habitat for this bird. Sightings have been recorded from Big Costilla Peak. Determination of habitat on private lands as is recordation of sightings is under the purview of the New Mexico Department of Game and Fish and the landowners.

Resident trout species are used as indicator species for quality perennial streams and riparian vegetation. This corresponds to Management Area, MA 14. Resident populations reproduce and sustain themselves in the wild. Defined also as "resident trout" in the Carson Forest Plan, rainbow, brown and brook trout are non-native species that have been stocked extensively in northern New Mexico during the last 100 years. Rio Grande cutthroat trout is the only native of the resident trout management indicator species. Approximately 440 miles of perennial stream on the Carson National Forest are known habitat for resident trout. Rainbow, brown or brook trout occupy about 50 percent (~225 miles) of that habitat. Physical habitat conditions related to forest management activities and habitat trend for resident trout is stable.

Program Area	Summary of Monitoring Conducted and Evaluation
	Aquatic macroinvertebrates or aquatic insects are found in lakes, streams, ponds, marshes and puddles and help maintain the health of the water ecosystem by eating bacteria and dead, decaying plants and animals. Local populations of certain aquatic macroinvertebrates are indicator species of high quality water. They are an indicator of overall aquatic conditions, quality of fisheries and associated riparian habitat. This habitat corresponds to Management Area, MA 14 of the Carson National Forest Plan. For the purpose of analyzing the effects of forest management activities, the primary habitat requirement for aquatic macroinvertebrates is perennial water. Habitat conditions on the Carson National Forest vary by stream and by location within the stream. Overall, most habitats appear able to support diverse communities of aquatic macroinvertebrates. Stream habitat surveys, which are ongoing, will better qualify conditions in specific streams over time. Since the implementation of the Carson Forest Plan in most areas of the forest, physical condition of aquatic habitat appears to be stable or improved. Population trends for aquatic macroinvertebrates on the Carson National Forest appear to be stable. **Threatened and Endangered species** monitoring results in 2005 and 2006 do not indicate significant alterations in occupied or potential habitat for TE&S species that could result in a downward trend of habitat condition or populations. The lack of detected **Mexican spotted owls** appears to indicate the Jicarilla Ranger district should be considered as on the fringe of the MSO habitat. Another implication is drought has made the formerly occupied habitat on the district uninhabitable for the present point in time. The known occupied **southwestern willow flycatcher (SWWF)** area appears to be stable. Five breeding sites were detected during FY 2005 and 2006 monitoring activities. Forest activities do not point to having any negative effect on the individuals that occupy the suitable habitat. Ongoing cowbird removal in or near occupied southwestern willow flycatcher habitat has been continue. In FY2005, Critical Habitat was designated for the SWWF. The known occupied site is the only Critical Habitat Unit established for on the Forest. The older Talpa-Penasco 45 kV distribution line was located in portions of the SWWF occupied location. This older line was placed in this area when the land was being used for haying and pasture. The poles in the SWWF habitat are to be left in place reducing disturbance from removal. The Talpa-Penasco 69 kV transmission and distribution line removed the previously existing powerline (45 kV) from SWWF habitat. This action followed implementation of the Talpa-Penasco 69kv powerline Environmental Impact Statement and Decision Notice published in January of 2002. The Talpa-Penasco 69 kV transmission/distribution line construction on Federal lands was completed in the fall of 2006. The final connection across private lands and reservation lands has not been completed. **Sensitive species** monitoring results in 2005 and 2006 do not indicate significant alterations in occupied or potential habitat for TE&S species that could result in a downward trend of habitat condition or populations. The low number of **goshawks** may be due to the ongoing drought beginning in 1996 and continuing though FY 2005. Some drought relief was realized in 2006 but a response to

Program Area	Summary of Monitoring Conducted and Evaluation
	increased moisture was not detectable. Research has shown at least one prey species, squirrels (several species), of the goshawk has been affected by the drought and it is likely that other prey species is impacted. It has been found that some raptors will have a negative nesting response during period of low prey bases. (Weins and Reynolds, 2005; Robertson, Andersen, Kennedy 2003, page 10; Salsfsky, 2004; Hawksaloft, 2006, Frey 2003, 2004, 2005, 2006). The stabilization of **Rio Grande cutthroat** (RGCT) populations and the reintroduction of the species in a number of the Carson's stream reaches have progressed and monitoring is ongoing. However, the threat of whirling disease contaminating New Mexico's trout fisheries is imminent. The RGCT is extremely susceptible to whirling disease. The disease has been detected in several hatcheries in the state and infected fish have been found in the San Juan River in the northwestern corner of the state. How the disease will affect the RGCT and other trout is not yet known, but the consequences could be catastrophic. The installation of fish barriers and the improved condition of water quality in many of the Carson's mountain streams may be factors in warding off this devastating disease. Coordination with the NM Department of Game and Fish continues. The agency reviews the majority of environmental analyses conducted for project level proposals. Forest biologists have been active in assisting in bighorn transplants and Rio Grande cutthroat surveys of stream reaches that have not been recently inventoried. Forest is also actively working the State on elk and livestock issues. Habitat Stamp Program projects, such as prescribed burning to improve the quality of habitat, are monitored after completion and continue over several years. The NM Department of Game and Fish is a partner in Habitat Stamp Program project implementation monitoring and whether predicted results have been met. Supporting documentation is located at the District Ranger offices.
Riparian	**Goals:** To improve the condition of riparian areas through direct treatment and improved resource management, indirectly benefiting fish and wildlife habitat diversity, water quality, and water oriented dispersed recreation. **Monitoring:** (1) Determine the response in riparian condition resulting from the implementation of the standards and guidelines and; (2) Monitor the activities and uses to insure they are within the Standards and Guidelines. **Results**: Riparian health is a key to a sustainable, healthy forest ecosystem. Historic railroad logging across watersheds and settlement activities (such as intensive grazing, and conversion to haying operations) in riparian areas significantly altered these systems in the late 1800's and early 1900's prior to presidential declarations making the public lands Forest Reserves. Although most of these systems have remarkably recovered, many still need improvement to regain their full natural function. One area of recovery is east of the Talpa, New Mexico community on the Rito de la Olla (Pot Creek). Until the late 1960's the riparian area was grazed and used for haying operations. The shifting of grazing to other pastures within the allotment, reductions in permitted livestock, cessation of the haying operations all contributed to recovery of the

Program Area	Summary of Monitoring Conducted and Evaluation
	riparian area. This particular riparian area is now home to the occupied habitat for the Southwestern Willow Flycatcher. This particular are is within the Mirancda allotment however it is excluded from grazing. Riparian condition surveys are being completed as a component of the fisheries surveys. These surveys also permit collection of information pertinent to the identification, location, and the condition of existing riparian areas. Properly functioning conditions are also being assessed. For key projects, baseline watershed quality information is being collected. Water quality information is being obtained and provided by the State of New Mexico.
Special Areas (Management Area 19)	**Goals:** The proposed Arellano Canyon Research Natural Area, the Tres Piedras *Haplopappus microcephalus* Botanical Area, the Middle Fork Lake/Sangre de Cristo Pea Clam Zoological Area and other potential research natural areas will be maintained and protected. **Monitoring:** NEPA analysis of site-specific proposed actions include the evaluation of effects on special areas, to insure that they are not adversely impacted. An interdisciplinary team evaluates a proposal through the NEPA process and recommends restrictions or corrective actions if inspections reveal adverse impacts on the potential RNA or endangered plants or animals. **Results:** In FY2004, there was one proposal within the grazing allotment, Rio Pueblo, containing the Arellano Canyon Research Natural Area to permit grazing of the area. The decision on the Rio Pueblo allotment, signed in November 2005, continued current management, exclusion of this area from domestic livestock grazing. No uses or management activities on the Carson National Forest are causing adverse impacts to special areas. The continuing drought could possibly reduce the size of Middle Fork Lake which could cause a change in populations in the Pea Clam Zoological Area. The increased moisture levels in 2006 contributed to Middle Fork Lake maintaining near normal size.
Protection 3 **Insect and Disease**	**Goals:** To meet Federal regulation, ensure destructive insect and disease organisms do not increase to potentially damaging levels following management activities. **Monitoring:** Determine growth reduction and mortality caused by insect and disease infestations. Diseases such as dwarf mistletoes and root disease causing organisms are found scattered about the forest. These diseases cause the death of individual trees and at times small pockets of trees. The scattered nature of these dead trees prevents an estimate of acreage of killed trees. Foliage diseases such as Ponderosa Pine Needle Cast are scattered over the Carson National Forest. New Mexico 518 between Taos and Questa has pockets of needle cast. These locations are expected to increase in size due to drought stress in trees and the increasing amount of inoculum present. Bark beetles —the primary tree killers in the region--tend to be host specific. Moreover, most conifers (excluding ponderosa pine) are normally attacked and killed by a single species of bark beetle. A group of Douglasi-fir "faders," for example, is most often a result of attack by the Douglas-fir bark beetle, *Dentroctonus pseudotsugae.* In contract, ponderosa pine are attacked and killed by several different bark beetles. Piñon pine

mortality is primarily caused by *Ips confusus*, another bark beetle.

Insect and disease infestation/infection by year by acres

Western Pine Beetle is not easily detected until a small clump of 3 to 5 trees or more are infested with the resultant browning of needles. This insect rarely infests trees less than 9 inches in diameter. Hence one beneficial effect of this insect is to create dead or dying trees suitable for cavity nesting wildlife species. Using the minimum number of trees needed to aerially detect this insect as 4 dead or dying trees a table was created to indicated the estimated number of snags over 9 inches in diameter created in the past 6 years by this insect along. The table is based on one fader group equivalent to one acre infested.

□Table 6 Insect and disease conditions 2001 to 2006

Insect/Disease	2001	2002	2003	2004	2005	2006
Western Spruce Budworm	290,610	114,680	62,700	114,990	80,265	54,077
Aspen Defoliation	640	2,645	680	7,570	8,525	1,524
Pinyon Bark Beetle	Rudimentary data collected	16,240	277,615	33,265	None mapped	None Mapped
Mountain Pine Beetle (further investigation has shown the agent to be Western Pine Beetle)	1500	3,265	3,325	1,345	None mapped	271
Douglas-fir Beetle	75	90	6,235	15,815	11,885	4,826
Spruce Beetle (includes corkbark fire mortality)	1,230	1,675	5,840	3,905	6,605	2,223
Fir engraver Beetle	200	455	85	165	4,100	1,727
Ips beetle in ponderosa pine	275	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded
Western balsam Bark Beetle	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded	3,540	6,590

Western pine beetle has increased its presence since 1999 but appears to be returning to lower levels. The increased presence is a result of high stand densities and continued drought stresses. Prolonged drought reduces the trees ability to respond to insect attack through reduced sap production. The anticipated trend in 2004 was reduced instead of increased over 2003. It was expected the infestation incidence will be slightly reduced in 2005 due the reduced infested acreage in 2004. In actuality the population appears to have crashed with no detection of this insect in FY 2005 or 2006. The indications are creation of at least 37,740 ponderosa pine snags 9 inches or greater in diameter in the last six years by this insect. The maps prepared after the aerial observation show the scattered nature of the insect infestations. It is highly likely the snags created are generally interior forest locations precluding removal, authorized or unauthorized, for firewood

purposes. Issued permits preclude removal of ponderosa pine snags over 9 inches in diameter. Secondary cavity nesting birds preferred to nest in trees that had recently died. A significant number of nests are found in snags which had been dead less than 20 years with the most heavily used in the 5 to 20 year age since death range. (Balda, 1975)

□Table 7 Western Pine Beetle conditions and snags created 2001 - 2006

Western Pine Bettle	2001	2002	2003	2004	2005	2006
Acres affected	1500	3,265	3,325	1,345	None mapped	None mapped
Estimated Snags created	6,000	13,060	13,300	5,380	0	0

Douglas-fir beetle is similar to Western pine beetle in the number of trees (3-5), dead or dying, before aerial detection is effective. The larger trees, greater than 9 inches in diameter, are attacked and killed. A beneficial effect of this insect is to increase snag densities in infested stands. Using the minimum number of trees needed to aerially detect this insect as 4 dead or dying trees a table was created to indicated the estimated number of snags over 9 inches in diameter created in the past 6 years by this insect along. The table is based on one fader group equivalent to one acre infested. The indications are creation of at least 150,878 Douglas-fir snags 9 inches or greater in diameter in the last six years. The maps prepared after the aerial observation shows the scattered nature of the insect infestations. It is highly likely the snags created are generally interior forest locations precluding removal, authorized or unauthorized, for firewood purposes. Secondary cavity nesting birds preferred to nest in trees that had recently died. A significant number of nests are found in snags which had been dead less than 20 years with the most heavily used in the 5 to 20 year age since death range. (Balda, 1975)

Douglas-fir beetle has increased its presence from 6,235 acres in 2003 to 15,815 in 2004 and 11,885 in FY 2005. The decline continued in FY 2006 to 4,826 acres affected. The number of infested acres appears to be declining slightly. The precipitation increases over previous years in 2005 may account for some of this reduction. An additional explanation is the number of parasitic insects increased during 2005. This parasitism in 2005 helped reduce the population available for infestation of new trees. The populations like many other insects are somewhat cyclic around an endemic population.

□Table 8 Douglas-fir beetle conditions and snags created 2001 - 2006

Douglas-fir Beetle	2001	2002	2003	2004	2005	2006
Acres affected	75	90	6,235	15,815	11,885	4,826
Estimated Snags created	300	360	24,940	63,260	47,540	14,478

Fir Engraver beetle is similar to Western pine beetle in the number of trees (3-5), dead or dying, before aerial detection is effective. The larger trees, greater than 9 inches in diameter, are attacked and killed. A beneficial effect of this insect is to increase snag densities in infested stands. Using the minimum number of trees needed to aerially detect this insect as 4 dead or dying trees a table was created to indicated the estimated number of snags over 9 inches in diameter created in the past 6 years by this insect along. The table is based on one fader group equivalent to one acre infested. The table is based on one fader group equivalent to one acre infested. The indications are creation of at least 25,161 Douglas-fir and white fir snags 9 inches or greater in diameter in the last six years. The maps prepared after the aerial observation shows the scattered nature of the insect infestations. It is highly likely the snags created are generally interior forest locations precluding removal, authorized or unauthorized, for firewood purposes. Secondary cavity nesting birds preferred to nest in trees that had recently died. A significant number of nests are found in snags which had been dead less than 20 years with the most heavily used in the 5 to 20 year age since death range. (Balda 1975)

Fir engraver beetle has increase its presence from 95 acres located in 2000 to 4,100 acres in 2005 and then declined to 1,712 acres in 2006. The identification of an infestation requires 3 to 5 trees in a clump. The number of infested acres appears to be fluctuating. Available moisture may account for some of these changes. An additional explanation is the number of parasitic insects increased during 2004 but the conditions in 2005 were not conducive for increased parasitism. These populations like many other insects are somewhat cyclic around an endemic population.

Table 9 Fir Engraver Beetle conditions and snags created 2001- 2006

Fir engraver Beetle	2001	2002	2003	2004	2005	2006
Acres affected	200	455	85	165	4,100	1,727
Estimated Snags created	800	1,780	340	660	16,400	5,181

Spruce beetle is similar to Western pine beetle in the number of trees (3-5), dead or dying, before aerial detection is effective. The larger trees, greater than 9 inches in diameter, are attacked and killed. A beneficial effect of this insect is to increase snag densities in infested stands. This insect can build to high populations very quickly causing large areas of mortality in the higher elevations. Both spruce trees and corkbark/subalpine fir are attacked and killed. Using the minimum number of trees needed to aerially detect this insect as 4 dead or dying trees a table was created to indicated the estimated number of snags over 9 inches in diameter created in the past 6 years by this insect along. The table is based on one fader group equivalent to one acre infested. The indications are creation of at least 85,912 spruce and fir snags 9 inches or greater in diameter in the last six years. The maps prepared after the aerial observation shows the scattered nature of the insect infestations. It is highly likely the snags created are generally interior forest locations precluding removal, authorized or unauthorized, for firewood purposes. ! Secondary cavity nesting birds preferred to nest in trees that had recently died. A significant number of nests are found in snags which had been dead less than 20 years with the most heavily used in the 5 to 20 year age since death range. (Balda 1975)

Spruce beetle has reduced its presence from 5,840 acres in 2003 to 3,905 acres in 2004 and increased to 6,605 in FY 2005 and declined in FY 2006 to 2,223 acres affected. The number of infested acres appears to be fluctuating. The spruce beetle populations like many other insects are somewhat cyclic around an smaller endemic population.

□Table 10 Spruce Beetle conditions and snags created 2001 - 2006

Spruce Beetle	2001	2002	2003	2004	2005	2006
Acres affected	1,230	1,675	5,840	3,905	6,605	2,223
Estimated Snags created	4,920	6,700	23,360	15,620	26,420	8,892

Western balsam bark beetle is similar to Western pine beetle in the number of trees (3-5), dead or dying, before aerial detection is effective. The larger trees, greater than 9 inches in diameter, are attacked and killed. A beneficial effect of this insect is to increase snag densities in infested stands. This insect attacks and kills trees in the true fir group, such as white fir and subalpine or corkbark fir. Using the minimum number of trees needed to aerially detect this insect as 4 dead or dying trees a table was created to indicated the estimated number of snags over 9 inches in diameter created in the past year by this insect along. The table is based on one fader group equivalent to one acre infested. The indications are creation of at least 40,520 fir snags 9 inches or greater in diameter in the last year. The maps prepared after the aerial observation shows the scattered nature of the insect infestations. It is highly likely the snags created are generally interior forest locations precluding removal, authorized or unauthorized, for firewood purposes. Secondary cavity nesting birds preferred to nest in trees that had recently died. A significant number of nests are found in snags which had been dead less than 20 years with the most heavily used in the 5 to 20 year age since death range. (Balda, 1975)

Western balsam bark beetle has increased its presence from undetected in 2000 to 2004 to 6,590 acres in 2006. The number of infested acres appears to be increasing. The populations like many other insects are somewhat cyclic around an endemic population.

□Table 11 Western Balsam Bark Beetle conditions and snags created 2000 - 2005

Western Balsam Bark Beetle	2001	2002	2003	2004	2005	2006
Acres affected	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded	3,540	6,590
Estimated Snags created	0	0	0	0	14,160	26,360

The following chart summarizes the acres infested by insect, and the estimated number of snags greater than 9 inches in diameter created by insect infestation. The insects noted are native to the Carson National Forest. An endemic population of these insects fluctuates depending on year, moisture and temperature regimes, timing of temperature changes, parasitic insects and organism, bird and small mammal populations, and plant densities. Epidemic populations occur when some factor such as the moisture regime changes, drought, or plant densities become high causing intense competition for soil moisture and nutrients. The populations of natural control agents generally lags one to two years behind

changes of insects.

□Table 12 Insect, acres affected, and estimated snags created by year 2001 - 2006

Insect/data	2001	2002	2003	2004	2005	2006
Western Pine Beetle						
Acres affected	1500	3,265	3,325	1,345	None mapped	None mapped
Estimated Snags created	6,000	13,060	13,300	5,380	0	0
Douglas-fir Beetle						
Acres affected	75	90	6,235	15,815	11,885	4,826
Estimated Snags created	300	360	24,940	63,260	47,540	14,487
Fir engraver						
Acres affected	200	455	85	165	4,100	1,727
Estimated Snags created	800	1,780	340	660	16,400	5,181
Spruce Beetle						
Acres affected	1,230	1,675	5,840	3,905	6,605	2,223
Estimated Snags created	4,920	6,700	23,360	15,620	26,420	8,892

Insect/data	2001	2002	2003	2004	2005	2006
Western Balsam Bark Beetle						
Acres affected	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded	3,540	6,590
Estimated Snags created	0	0	0	0	14,160	26,360
Total estimated snags created	12,020	21,900	61,940	84,920	104,520	54,920

In the past six years an estimated 340,220 snags 9 inches in diameter or larger have been created by the above six insects, in the spruce, mixed conifer, and ponderosa pine cover types. These snags over time will fall to the forest floor providing large woody debris after their use by cavity nesting species.

The above table indicates an increasing amount of forested land affected by these six insects. One insect population may be on a decline, while another may be increasing. The recent several years of drought are likely one of the causal factors increasing insect populations. Other natural causal factors are increased tree densities, reduced bird and small mammal populations due to drought, and reduced populations of parasitical insects.

Pinyon bark Beetle (*Ips*) generally infests the entire stand though an occasional pinyon will not be attacked. Other tree species within the stand are not infested. The insect is host specific. The effect of this insect is to remove nearly all the pinyon pine in the infested stand. The number of acres infested decreased dramatically but still nearly 33,000 acres were attacked in 2004. In 2005 and 2006 there were no infested acres mapped aerially. It appears that the population of this insect has collapsed and returned to an endemic level.

The immediate vegetative result of this beetle infestation is loss of tree cover. The longer-term result should be an increase in grass and forbs covers as the dead trees fall and breakup creating ground debris this in turn provides micro sites (shade and moisture) collection for grass and other plant establishment. Other plants likely to invade the areas of tree canopy loss include big sagebrush and four wing saltbush.

Program Area	Summary of Monitoring Conducted and Evaluation
Protection 5 **Fuels**	**Goals:** Fuel treatment will follow the various timber activities as a means of reducing fire hazard and insect and disease potential. **Monitoring:** Maintain a fuel treatment atlas and record areas treated. Data is generated from field personnel who monitor and/or direct fuel treatment by Forest Service crews, logging companies, contractors, etc. **Results:** No large scale timber sales were implemented on the Forest in recent years. The majority of fuel treatments are occurring in the wildland urban interface adjacent to communities located in or adjacent to the National Forest. These projects are being prepared under the Healthy Forest Initiative or Healthy Forest Restoration Act or other authorities. The National Fire Plan has focused attention on at risk communities. Supporting documentation is located at the Forest Supervisor's office and the individual Ranger District offices. Forest-wide, the trend is toward increased fuel loadings, tree mortality, and increased tree density within stands of trees. Management options for dealing with these issues are somewhat limited. Tree mortality caused by insects or disease is difficult to address due to its widely scattered nature. Insect populations tend to by cyclic. Disease centers are difficult to treat if economically treatable. Fuel loadings increase as trees and other woody material die and fall to the forest floor. The trend has been toward more restrictions on use of active management, both through application of restrictive standards and guidelines related to threatened, endangered, and sensitive species and through limitations outlined in appeals and litigation.
Physical Environment	
Soil and Water 1 **Watershed Conditions**	**Goals:** To improve unsatisfactory watershed conditions on 25,000 acres by 2020. As a result of this change, productivity of the land is expected to improve. **Monitoring:** Improvement of watershed condition on the Forest is based on certain activities that will increase or enhance ground cover conditions. These activities include prescribed burning, converting sagebrush to native grasses and forbs, improving livestock distribution and utilization on grazing allotments, thinning densely stocked forested stands, installing sediment retention structures, and implementing proper grazing management through National Environmental Policy Act analysis for permit re-issuance. The Forest Plan monitoring plan identifies sampling of percent ground cover every three years as specified in *Terrestrial Ecosystem Survey Handbook*, Chapter 8 as the method for monitoring watershed conditions. Vegetative ground cover was extensively monitored using various methodologies, principally associated with grazing management and compliance with the annual operating instructions and permit terms and condition (utilization monitoring, RAM, and pre and post season pasture evaluations). **Results:** Activities that improved Forest watershed conditions were accomplished on over 5,000 acres in FY 2005. The trend in the types of projects proposed on the Forest is towards improving watershed conditions and completing treatments that are light on the land. The wildland/urban interface projects proposed in the coming year involve primarily

ranger districts. A detailed summary of district activities is included in this report.

Table 13 Some Highlights of Watershed Improvement Work 2001 -2006

Fiscal Year	2001	2002	2003	2004	2005	2006
Road Maintenance (miles)	243	476	431	143	286	260
Road Obliteration (miles)	43	8	20	0	2.8	0
Re-seeding (Acres)	50	3,000 (Montoya fire)	0	500	2,000	1,500
Sagebrush conversion (Acres)	400	200	0	1,200	0	0
Thinning (acres)	1,486	630	966	1,898	1,288	2,200
Prescribed burning	1,010	4,770	3,915	2,595	2,063	2,957

Summary for Year 2006

Camino Real Ranger District

- Maintained 4 miles of existing road
- Closed 32 miles of existing road
- 128 miles of trails were maintained. Maintenance included tree clearing as well as tread maintenance.
- OHV barriers were installed at key wilderness access points to eliminate access and reduce erosion.
- Range readiness and forage utilization monitoring was conducted on fifteen allotments in an early drought year. Several allotments were stocked under allowed capacity voluntarily. Grazing utilization guidelines of 40% in key areas and 4-6" stubble height in riparian zones continued to be implemented in all grazing allotments.
- Constructed 3 stock tanks on the Rio Chiquito allotment. Disturbed area was seeded with native seed mix.
- Repaired cattleguard in Santa Barbara allotment and improved drain system at location of road.
- Installed cattleguard on FR442 in Rio Pueblo grazing allotment.
- Continued the implementation of vegetative treatments and fuel reduction activities in the following projects: Turkey Park II, La Joya, El Pato, Montes Borrego and North an

South Shady Brook. A total of 244 acres were thinned.

- Completed 100 acres of thinning in the Maestas Ridge project and an additional 33 acres in the Guajalote thinning project.
- 122 acres of prescribed burning in Shady Brook project areas

□Table 14 Stocking Level Reductions for representative allotments for Camino Real Ranger District 2004 -2006

Allotment	Stocking level reduction 2004	Stocking level reduction 2005	Stocking level reduction 2006
Black Lake	60	0	45
Capulin	29	0	10
Luna-Chacon	49	0	20
Rio Chiquito	36	0	31
Rio Pueblo	61	0	100
Santa Barbara	40	0	29
Trampas	35	0	33
Tienditas	33	0	39

Canjilon Ranger District:

- Removed 10+ acres of Russian knapweed and Yellow Toadflax treated by hand removal in the Canjilon Creek Watershed. Labor provided by Youth Conservation Corps crew.

- Reduced permitted stocking levels from 9 to 16 percent district wide (reduced numbers or shortened grazing season)

Completed environmental analysis (NEPA) on Jarosa and Bateman allotment

Monitored grazing levels on all allotments

- Mulched over 200 acres of large decadent Sage Brush and small pinyon pine to reduce plant competition and rejuvenate dormant grass cover. Expect an increase in vegetation cover and ground cover and increased diversity of plant community compared to the current mono culture of sage.

- Prescribed burn over 400 acres of Ponderosa pine, Pinyon/juniper, and sagebrush to reduce stand density, reduce fuel loads, and improve ground vegetation conditions.

Table 15 Stocking Level Reductions for representative allotments for Canjilon Ranger District 2006

Allotment	Stocking level reduction 2006
Bateman	0
Canjilon	20
Canjilon Creek	20
Cebolla	2
English	9
Mesa	32
Mogote	25
Mogotito	14

El Rito Ranger District:

- Adjustments in permitted cattle numbers were made (approximately 50% reduction in cattle and sheep)
- Accomplished 25 acres of noxious weed control
- Thinned approximately 300 acres for fuels reduction (150ac A/C, 150 ac Ensenada)
- Prescribed burn of 850 acres (Petaca/Las Tablas Rx burn)
- Reseeded approximately 1,500 acres of Pine Canyon burn area
- Road Sediment Control
- Installed erosion control rock barriers (silt traps) and spillway barriers along FR137
- Gathered and removed approximately 50 head of wild horse stock from the territory in calendar year 2006.
- Prescribed burn over 850 acres of Ponderosa pine, Pinon/juniper, and sagebrush to reduce stand density, reduce fuel loads, and improve ground vegetation conditions.
- Implemented emergency rehab actions on 3900 acre Pine Canyon Complex burned area. Actions included: aerial seed approximately 1500 acres of moderate and high burn severity, culvert protection and upgrade to protect FR 137 from storm damage, placement of woody debris in intermittent/ephemeral channels for sediment retention, hand seeding of 25 acres along FR 137 for erosion control.

- Adjustments in entry dates and permitted cattle numbers were made in the following representative allotments, other allotments were also reduced, due to vegetative condition, management objectives and drought conditions:

Table 16 Stocking level reductions for representative allotments on El Rito Ranger District 2004 - 2006

Allotment Name	Stocking level reduction 2004 in %	Stocking level reduction 2005 in %	Stocking level reduction 2006 in %
Comanche Sheep	42	20	25
El Rito Lobato East	73	35	45
El Rito Lobato West	60	44	43
Jarita Mesa	35	8	30/5
Alamosa	35	19	20
Salvador Complex	52	47	48 cattle 70sheep
Cano	10	NA	0
San Gabriel	4	NA	10

Jicarilla Ranger District

- Suppressed 14 wildfires totaling 6.4 acres
- Fire Line rehab - 4 acres
- 3 armored culverts installed – addition to installed culverts on new road construction.
- 24 gas wells permitted and constructed 1 of which was located on an existing well location (twinned)
- 7 silt traps constructed – to catch sediment from disturbed areas
- 4.15 miles of new road construction – constructed to "Gold Book" standards
- 37 armored culverts installed – addition to installed culverts on new road construction
- Constructed 2 low water crossings (gabions and tire bales)
- Road wash-out repair – 1 mile.
- Installed 5 new culverts.
- Sandstone road surfaced 1.5 miles.
- Maintained 141.1 miles of existing road
- Cleaned 102 culverts on existing road
- 4 acre La Jara riparian enclosures – protect vegetation from grazing use
- Grazing use was for 20 head (permitted 257 head) to graze from 5/16/ to 10/31. One Range permittee took non-use of their 8 head permit from 5/16 to 10/15.
- Continued management of Wild Horse and Burro populations in the Jicarilla Wild Horse and Burro Territory.

□Table 17 Stocking level reductions for representative allotments on Jicarilla Ranger District 2005

Allotment Name	Stocking level reduction 2004 in %	Stocking level reduction 2005 in %	Stocking level reduction 2006 in %
Cabresto	80	85	54
Bancos	100	100	100
Carracas	100	100	100
Vaqueros	92	92	92
Laguna Seca	20	48	34
Valencia	0	16	17

• Approximately 120 miles of road maintenance was performed through our continued partnership with the oil and gas companies via the Carson Roads Committee. In addition, about 150 miles of lease roads are maintained on a timely basis to access gas well locations and minimize resource impacts from road use.

• Interagency agreement between BLM and FS for fire management continues to be beneficial for both agencies by saving money and increased suppression efficiency.

Tres Piedras Ranger District

- Prescribed burn over 800 acres of Ponderosa pine, Pinyon/juniper, and sagebrush to reduce stand density, reduce fuel loads, and improve ground vegetation conditions.
- Cisernos Spring development and water quality protection. Collection box, pipeline and water drinkers provide a water source to livestock. Project's intended benefits to water quality: Reduce sedimentation, soil erosion, and headcutting within the drainage caused by livestock trampling within the spring runoff drainage.
- Administered all allotments to standard through range readiness inspections, issuance of annual operating instruction in pre-season meetings with permittees, utilization monitoring during the grazing season and end-of-season-monitoring and feedback to permittees. This administration covers approximately 75,000 acres District-wide.

□Table 18 Stocking level reductions for Tres Piedras Ranger District 2005

Allotment Name	Stocking level reduction 2004	Stocking level reduction 2005	Stocking level reduction 2006
Apache	25	12	10
Sublette	21	20	25
Lagunitas	15	10	15
San Antone	18	15	25
Tio Grande	13	15	10
Tusas	25	10	20
Spring Creek	15	10	30

Questa Ranger District

- Placed road and parking lot surfacing and establish drainage to sediment control basin, surface Fawn Lakes access road used by NM Game and Fish stocking truck for fish stocking, direct road drainage to sediment control basins. Funding for the project provided by NM Game and Fish – Sikes Program.
- Improve Comanche Creek fish habitat by reducing point sediment sources associated with Forest Road 1950 from entering Comanche Creek. Seven (7) culverts were installed at key locations on FR1950. Long lengths of road which had no ditch relief were divided by installation of culverts. Surface water intercepted by new culverts reduced road ditch erosion and allowed water to be redirected to wetlands and vegetative buffer strips.
- Remove existing barb wire fence and replace with field fencing. Install fence corner braces and gate. Install livestock water gap. Work funded and accomplished in cooperation with volunteer partners thru Amigos Bravos 319 grant. Bitter Creek area
- Constructed and repaired 12 riparian exclosures in Comanche Creek drainage.
- Installed 119 post vanes in Comanche Creek to stabilize stream banks and reduce sediment input.
- Re-established existing grade dips and constructed additional new grade dips on heavily used recreation road. Constructed road access barriers to eliminate un-authorized spur road use parallel and adjacent to main road. Expanded Goose Lake parking lot and placed traffic barriers to prevent vehicle use and traffic outside parking lot boundary.
- 5 miles road decommission (full bench recovery) and 1 mile road stabilization Comanche Creek Watershed
- Re-established road grade and drainage structures on 14 switchbacks, installed vehicle access barriers at switchbacks, constructed 35 grade dips and fabricated 15 pipe barriers for traffic control. Middle fork lake road

Program Area	Summary of Monitoring Conducted and Evaluation

- Stabilize 2 miles of Boy Scout mountain bike trail. Stabilize ephemeral drainages with one rock dams. Install one rock dams to induce meandering in McCrystal Creek. Re-construct and maintain McCrystal Creek riparian exclosure.
- Removal and disposal of hazardous mine waste rock from 6 mine sites in Pioneer and Placer Creeks, part of the historic Red River Mining District. In-situ treatment of waste rock at 2 mine sites where access or exposure to surface water did not exist. Development of consolidation cell and installation of groundwater monitoring wells. Improvement to existing roads to facilitate transport of waste rock to consolidation cell.
- Construct bridges at 4 stream crossings on Columbine Creek to facilitate hiker movements up Columbine Creek trail.
- Install gate and fence barriers to prevent un-authorized OHV access in headwaters of Sawmill and Trail Canyons.
- Obliterate 2 miles of un-authorized (user created) OHV trails. Installed 750 feet of fence to eliminate access by OHV to user created trails.
- Obliterate and restore lengths of user created trails.
- Reduce/eliminate sediment source from hiking trails as follows:

  1 mile of Cebolla Mesa trail (down to toward the Red River).

  2 miles of Columbine Creek trail.

  3 miles of E. Fk. Of the Red River

- Adjustments in entry dates and permitted cattle numbers we made in the following allotments due to vegetative condition, water availability and management objectives driven by on-going drought conditions:

□Table 19 Stocking level reductions for representative allotments on the Questa Ranger District 2004 - 2006

Allotment Name	Stocking Level Reduction 2004 in %	Stocking Level Reduction 2005 in %	Stocking Level Reduction 2006 In %
Arroyo Hondo	17	37	47
Black Copper/Red River	100	100	100
Bobcat		100	100
Allotment Name	Stocking Level Reduction 2004 in %	Stocking Level Reduction 2005 in %	Stocking Level Reduction 2006 In %
Columbine	100	100	100
Deer Creek	50	50	50

Summary of Monitoring Conducted and Evaluation

Allotment Name	Stocking Level Reduction 2004 in %	Stocking Level Reduction 2005 in %	Stocking Level Reduction 2006 In %
Goose Creek	100	100	100
La Cal	100	100	100
La Lama	80	75	80
Lake Fork Baldy	100	100	100
Midnight	50	38	36
Rito Segundo	25	60	69
San Cristobal	57	24	67
Sawmill Park	100	100	100
Valle Vidal	20	0	15 (ave)

SUPERVISORS OFFICE

- Supported efforts for Forest Land Management and Resource Plan amendment for the Valle Vidal.

- Continued an Interagency Agreement with the U.S. Geological Survey and initiated a groundwater investigation of water resources in the east side of the Valle Vidal Administrative Unit.

- Supported the State of New Mexico Regional Water Planning efforts as a member of the Taos County Regional Water Planning Steering Committee in cooperation with Taos County and other stakeholders.

- Forest Staff and Leadership hosted several Congressional field trips and briefings regarding the Valle Vidal plan amendment.

- Forest Staff supported the abandoned mine remediation activities in the Red River Mining District through participation at public meetings (open house), on-site evaluation, development of best management practices, and review of design criteria for removal

Program Area	Summary of Monitoring Conducted and Evaluation
	repositories. • Forest Staff attended several public meetings hosted by NMED Surface Water Bureau related to the development of TMDL planning documents for the Red River, Rio Hondo, Upper Rio Grande (Part I and II). • Maintained approximately 266 miles of forest roads (see Ranger District accomplishments for specific road segments maintained).
Soil and Water 2 **Best Management Practices**	**Goals:** Production of water from forestlands will meet State water quality standards. **Monitoring:** Established designated qualified personnel check Best Management Practices (BMP) (i.e., seeding disturbed areas, water barring roads, etc.) for implementation on the ground. Best management practices monitoring follows Regional evaluation guidelines and procedures. **Results:** The application of BMPs is standard procedure with any ground disturbing activity undergoing environmental analysis. Implementation of BMPs is the responsibility of each district ranger. Field trips are taken to validate on-site BMP implementation. It is recommended that more emphasis be put on BMP training and the development of a BMP monitoring program to track actual implementation and effectiveness. Several water quality projects have been implemented on the Forest: ▪ Baseline and existing condition information (primarily turbidity) are being collected in cooperation with the New Mexico Environment Department (NMED) for several creeks within the Carson National Forest boundary. Collected information will help determine whether these reaches should be removed from the State's 305b list for non-attainment. Supporting documentation is located at the respective ranger station. ▪ Identification of existing and potential non-point source water pollution on the Carson is ongoing and helps determine where watershed work would provide the most significant results.
Soil and Water 3 **Roads**	**Goals:** To assure that Best Management Practices (BMP) are implemented in all phases of road design, construction and maintenance to minimize erosion and maintain on-site productivity and water quality. Also to assure that open to public use road density is not exceeded. **Monitoring:** Road design, construction, maintenance and density. **Results:** BMPs are standard mitigation measures when any road construction is proposed. Analysis of the proposal and alternatives are usually conducted with the assumption that BMPs are integrated into the activities. Much of the road maintenance performed on Forest roads is to apply BMPs (e.g., water bars, crowning, resurfacing, etc.) in order to minimize erosion and maintain on-site productivity and water quality. Supporting documentation is located at the respective ranger districts

Program Area	Summary of Monitoring Conducted and Evaluation
	Supervisor's Office • Maintained approximately 266 miles of forest roads forest wide. **Jicarilla Ranger District** • Approximately 120 miles of road maintenance was performed through our continued partnership with the oil and gas companies via the Carson Roads Committee. In addition, about 150 miles of lease roads are maintained on a timely basis to access gas well locations and minimize resource impacts from road use. ▪ Placed sandstone road surfacing on approximately 4.1 miles of forest roads to reduce erosion. ▪ Well pads built totaled 72 with 12.0 miles of new road construction – constructed to "Gold Book" standards. The new access roads for well pads are closed to public use. Total surface disturbance from all oil and gas well pad construction in FY 2006 totaled approximately 216 acres.
Human Environment	
Facilities 2	**Goals:** Travel management objectives will be developed for all Forest Development Roads (FDR) and travelways which will further determine and verify which are needed and should be included or remain on the FDR System, which are needed only periodically and should be closed, and which should be added to the obliteration list. New construction of Forest Development Roads is primarily for timber sales and oil & gas development. Approximately 70% of these roads should be local terminal functional classification and should be closed promptly after resource management activities have ended. **Monitoring:** A schedule to complete an inventory of roads on the Carson NF was deleted due to the Travel Management process. A revised transportation plan for the Carson will be completed in the next three years under the Travel Management process. In FY 2002, an inventory was performed on level 3, 4 and 5 roads. The result was a Forest-wide Road Analysis (RAP) for these arterial and collector roads. The RAP was completed in April 2003. In addition over 3,777 miles of road, levels 1 and 2, have been inventoried, documenting conditions of road surface, drainage, sight distance, and proper signing since 2001. The inventory was halted at the end of 2006 pending Travel Management decisions. Facility, road, bridge and dam maintenance monitoring is ongoing, although minimal. I **Results:** In fiscal year 2006 there was no new road reconstruction.
Recreation 1	**Goals:** Provide the opportunity for the public to obtain a variety of recreation experiences by managing the natural resource setting and the activities that occur within it. Provide a spectrum of opportunities on the Forest from Semi-primitive to Urban, with emphasis on the less developed end of the spectrum. To offer a balanced level of developed and

Program Area	Summary of Monitoring Conducted and Evaluation
	dispersed recreation experiences. Demand for dispersed recreation will be within capacity. Quality of experience will increase due to more intensive management. **Monitoring:** Effects on dispersed recreation are evaluated in the majority of environmental analyses for project proposals – whether or not they are recreation related. Changes to the Recreation Opportunity Spectrum (ROS) class are assessed and avoided if possible. **Results:** No decisions on site-specific projects in FY 2006 have caused an analysis area's ROS class to change.
Recreation 2	**Goals:** The Forest will offer a wide range of opportunities for developed sites in the public and private sector to support recreationists, to provide barrier-free access, and to implement recreational strategies. **Monitoring:** Assessment of goal achievement for the recreation program is based on professional judgment by recreation specialists, public comments and information from Regional, Forest and District recreation managers. Customer satisfaction on how well we are managing the Forest is monitored through evaluation cards, newspaper articles and comments from recreation fee envelopes and walk-in visitors. Developed campgrounds and picnic areas are monitored at least on a weekly basis during the summer months by Forest Service law enforcement, district personnel, campground hosts and/or concessionaires, as well as through cooperative agreements with state and county law enforcement. These comments provide input on the conditions of developed recreation sites, the presence of user conflicts and public safety problems. Supporting documentation is located at each ranger station or in the Forest Supervisor's office. Taos Ski Valley (TSV) and Red River Ski Area (RRSA) operations are monitored at least once a week during the winter by the Questa snow ranger. Sipapu Ski Area operations are monitored at least once a month. Site inspections by Forest Service lift engineers are made at least once a season at each ski area. Supporting documentation for monitoring operations at TSV and RRSA is located at the Questa Ranger Station and at each ski area. Supporting documentation for monitoring operations at Sipapu is located at the Camino Real Ranger Station and at Sipapu Ski Area. Supporting documentation of lift inspections is located at the Southwestern Regional office in Albuquerque. The National Visitor Use Monitoring Project for the Carson National Forest was completed and placed in the public domain in June, 2004. It is available electronically at http://www.fs.fed.us/recreation/programs/nvum/. **Results:** Recreation use and demand appears to be experiencing a small, steady growth. Use is concentrated at developed sites, streams, rivers, lakes, wilderness and backcountry areas. Several nearly barrier-free recreational facilities have been provided in recent years at Santa Barbara Campground, Echo Amphitheater Picnic Area and Hopewell Lake Campground.

Program Area	Summary of Monitoring Conducted and Evaluation
	Monitoring ski area operations has not exposed any noncompliance or safety violations. □Table 20 Skier visits to respective ski areas 2001 -2006 ski seasons | Ski Season	Taos Sky Valley	Red River Ski Area	Sipapu Ski Area | |---|---|---|---
2000-2001	248,814	104,012	14,068
2001-2002	201,113	107,840	14,573
2002-2003	249,682	101,816	15,874
2003-2004	224,565	104,406	18,137
2004-2005	237,441	84,133*	19,791
2005-2006	155,003	76,140	17,751	 * Lower number due to change in method of obtaining visitor count. The Enchanted Forest continues to provide cross-country skiing opportunities for approximately 5,000 skiers per year depending on snow conditions. Snow conditions or lack of snow also influences the number of skiers. Red River Ski area and Sipapu Ski Area both permit snowboarding with the snowboarders reflected in the number of skiers. Overall, skiers are satisfied with the conditions of the four ski areas on the Carson, although a movement by the snowboarding community to open Taos Ski Valley to snowboarding surfaced in 1999. The snowboarding community through 2005 continued to pressure Taos Ski Valley regarding allowance of snowboarding. This decision is up to the ski area operator. Many comments from skiers approve of the Ski Valley's decision to remain closed to snowboarding. This issue continues to resurface but the operators are adamant on not allowing snowboarders. This decision helps this ski area to develop its niche in the skiing industry.
Recreation 3	**Goals:** Help the public enjoy their Forest visit and instill an understanding of the resources and uses of their National Forests. Wildlife recreation use will increase by 183 percent by the end of the planning period. This, however, is within capacity for this type of use. **Monitoring:** No specific monitoring of wildlife recreation use has taken place on the Forest. The NM Department of Game and Fish regulates hunting and fishing on the National Forest System lands. **Results:** Inquiries and comments received at the ranger stations and the Forest Supervisor's Office verify that many visitors come to see wildlife through active bird watching, camping, hiking and cross-country skiing.
Recreation 4	**Goals:** All developments are high quality and well maintained. They fill the needs of the

Program Area	Summary of Monitoring Conducted and Evaluation
	users. **Monitoring:** Assessment of goal achievement for the recreation program is based on professional judgment by recreation specialists, public comments and information from Regional, Forest and District recreation managers. Customer satisfaction on how well we are managing the Forest is monitored through evaluation cards, newspaper articles and comments from recreation fee envelopes and walk-in visitors. Developed campgrounds and picnic areas are monitored at least on a weekly basis during the summer months by Forest Service law enforcement, district personnel, campground hosts and/or concessionaires, as well as through cooperative agreements with state and county law enforcement. These comments provide input on the conditions of developed recreation sites, the presence of user conflicts and public safety problems. Supporting documentation is located at each ranger station or in the Forest Supervisor's office. Recreation facility construction projects include reviews to ensure contract work meets specifications, environmental assessment requirements, and to monitor how well the design meets user needs. Such reviews have been performed at the Santa Barbara Campground, Echo Amphitheater Picnic Area and Hopewell Lake Campground. Supporting documentation is located at the Forest Supervisor's office. **Results:** Customer satisfaction on the condition of developed sites varies depending on the location and the age of the facility. The newest campgrounds, such as Agua Piedra and Hopewell Lake, are experiencing positive comments. On the other hand, Taos Canyon facilities are heavily used and sites closest to Taos are frequently vandalized. The campgrounds near Red River are heavily used during the summer months. The National Visitor Use Monitoring Project for the Carson National Forest contains more information. The National Visitor Use Monitoring Project for the Carson National Forest was completed and placed into the public domain in June, 2004. This information is available electronically at http://www.fs.fed.us/recreation/programs/nvum.
Recreation 5	**Goals:** Establish a full spectrum of trail opportunities, considering all modes of travel, ranging from opportunities fro challenged and adventure to opportunities for people with disabilities, and give special emphasis to the protection, development and management of specially designated areas and trails. **Monitoring:** Assessment of goal achievement for the recreation program is based on professional judgment by recreation specialists, public comments and information from Regional, Forest and District recreation managers. **Results:** Non-ATV hunters have been complaining over the increasing use of ATVs on the Forest during hunting season. There is little enforcement of ATV use off designated roads and trails. Hunters on the Jicarilla RD complain of the disturbance caused by an increase in gas drilling activity and traffic in their favorite hunting spots. ATV use in unauthorized areas is becoming a significant problem on the Forest. The

development of a transportation plan that designates the type of use on roads and trails is needed. Involvement of the public to resolve issues and educate users is an integral part of designing a new transportation plan. The December 9, 2005 regulation concerning Travel Management, 36 CFR 212 as amended, will be used to determine designation of roads, trails, and areas open or closed to motor vehicles. The Carson National Forest expects to complete implementation of this rule in the next four years.

The Continental Divide Trail system portion on the Carson National Forest has been designated. Much of the trail is along existing open and closed roads. Some portions are expected to be relocated in Fiscal 2007 pending completion of environmental documentation. A trail map is available through private sources.

In addition, the following recreation projects were completed to provide a quality recreational experience on the Forest, while protecting natural resources. Supporting documentation is located at the Forest Supervisor's office.

□Table 21 Forest Trail Activities 2000 - 2005

Activity	2001	2002	2003	2004	2005	2006
Trail Maintenance (miles)	20	162	28	11	105	106
Trail Condition Surveys (miles)	50	50	10	0	0	7.6
Trail Reconstruction (miles)	7	6	1	0.5	0	4

Recreation 6

Goals: Potential wilderness characteristics will be maintained In Management Area 20, in order that the areas can be considered for multiple use or wilderness recommendation when a new plan is prepared in 10 -15 years.

Monitoring: In 1999, the President of the United States initiated the Roadless Area Conservation analysis for all National Forest System (NFS) lands. The Carson National Forest's Management Area 20 includes all inventoried roadless areas identified in the Roadless Area Review and Evaluation II (RARE II), with the exception of a portion allocated for potential expansion of Sipapu Ski Area. The nation-wide Roadless Area Conservation Proposed Rule would prohibit any road building or timber harvesting in most RARE II inventoried roadless areas on NFS lands. The Roadless Area conservation Rules were promulgated in 2000. These rules have been a source of litigation since. Currently the Rules are not being implemented due to litigation. The 2000 Roadless Conservation Rule was overturned in the litigation process. The 2004 Roadless Conservation Rule is currently in the litigation process. The 2004 Roadless Conservation rule was overturned in the litigation process. The Carson National Forest continues to

Program Area	Summary of Monitoring Conducted and Evaluation
	maintain the integrity of the roadless areas mapped on the forest pending the outcome of the rule making process, other methods of congressional intent concerning the roadless issue, or resolution of the litigation. **Results:** For the most part, the implementation of the Roadless Area Conservation proposal and its successor would duplicate protection for Management Area 20 already in place through Forest Plan standards and guidelines.
Recreation 7	**Goals:** Trails will be reconstructed and maintained at a level that provides public safety and travel and resource protection. **Monitoring:** The assessment is based on professional judgment of recreation specialists, public comments, and information from Regional, Forest and District recreation managers. **Results:** Trail use is primarily by recreationists and grazing permittees. Use levels appear to be moderate to heavy with a slight increase depending on the location of the trail and trailhead. Some trailheads provide information about recreational opportunities. In 2006, 106 of the 639 miles of designated trail were maintained or reconstructed. **Camino Real Ranger District** ▪ Maintained 95 miles of foot trail District-wide. Maintenance activities included tree clearing, trail drainage, and tread maintenance. The miles of trail maintained by watershed area are displayed in the following table. □Table 22 Miles of trail maintenance by trail name. ▪ OHV barriers were installed at key wilderness access points to eliminate access and reduce erosion. ▪ In cooperation with El Valle community members, an earthen barrier was located along the Rio de las Trampas to prevent OHVs from crossing the stream.

Trail Maintained	Miles of maintenance
South Boundary	22 miles
Borrego Crossing	5 miles
Pot Creek Trail	1 mile
Elliot Barker Trail	6 miles
San Leandro/Trampas	12 miles
Policarpio/Comales	12 miles
La Cueva	6 miles
Pecos Wilderness Trails	30 miles
Auga Piedra ADA Trail	1 mile

Program Area	Summary of Monitoring Conducted and Evaluation
	Questa Ranger District ▪ Continued barrier installation, law enforcement activities and signing to address recreational OHV use and resulting resource damage from this activity. Approximately 90% of OHV problem areas have now been identified, barriers installed and/or signed. ▪ Continued Implementation of horse use regulations in campgrounds on Valle Vidal to minimize impacts. ▪ Maintained OHV barriers at Cabresto Park, Pioneer Canyon, and Midnight Meadows. ▪ Conducted trail maintenance on approximately 10 miles of wilderness trails. Many trails do not meet trail standards (clearing, logging out, tread maintenance, signing, nonexistent trail logs, etc.) due to budget/staff limitations. Management decisions regarding acceptable limits, zoning, and resource emphases are often made informally, frequently lacking the support of coordinated plans or professionally established analysis methods. Volunteer groups are aiding the Forest Service in trail maintenance.
Wilderness 1	**Goals:** Maintain an enduring high quality wilderness and provide a quality recreational experience. **Monitoring:** The assessment is based on professional judgment of recreation specialists, public comments, and information from Regional, Forest and District recreation managers. Volunteers and/or recreation specialists perform wilderness patrols several times during a summer. Patrols include inspections of trail conditions, dispersed camping areas and outfitter/guide permit use. Supporting documentation is located at each ranger station. **Results:** Wilderness use is primarily day-use by recreationists and grazing permittees. Wilderness use is increasing slightly and is primarily concentrated along trails in the Wheeler Peak, Pecos wilderness areas, and Columbine-Hondo Wilderness Study Area. The use of the Latir Wilderness and the Cruces Basin Wilderness is also increasing slightly. Much of the use in these two wilderness areas is for fishing. Most trailheads provide information about recreational opportunities and wilderness resource conservation issues. Regular patrols are becoming more infrequent as the number of district employees is reduced. Public complaints about the presence/impacts of cattle grazing on aesthetics and ecosystems have occurred. Many trails do not meet trail standards (clearing, logging out, tread maintenance, signing, nonexistent trail logs, etc.) due to budget/staff limitations. Management decisions regarding acceptable limits, zoning and resource emphases are often made informally, frequently lacking the support of coordinated plans or professionally established analysis methods.
Wilderness 2	**Goals:** Maintain an enduring high quality wilderness trail system that is a source of minimal resource damage. **Monitoring:** The assessment is based on professional judgment of recreation specialists, public comments and information from Regional, Forest and District recreation managers. **Results:** Regular patrols are becoming more infrequent as the number of district employees is reduced each year. Wilderness use is primarily day-use by recreationists

Program Area	Summary of Monitoring Conducted and Evaluation
	and grazing permittees. Wilderness use is increasing slightly. Use is primarily concentrated along trails in the Wheeler Peak and Pecos wilderness areas and Columbine-Hondo Wilderness Study Area. The use of the Latir Wilderness and the Cruces Basin Wilderness is also increasing slightly. Much of the use in these two wilderness areas is for fishing. Most trailheads provide information about recreational opportunities and wilderness resource conservation issues. Public complaints about the presence/impacts of cattle grazing on aesthetics and ecosystems have occurred. Many trails do not meet trail standards (clearing, logging out, tread maintenance, signing, nonexistent trail logs, etc.) due to budget/staff limitations. Management decisions regarding acceptable limits, zoning and resource emphases are often made informally, frequently lacking the support of coordinated plans or professionally established analysis methods. Supporting documentation is located at each ranger station. The Cruces Basin Wilderness was established with the permitted use of grazing.
Wild and Scenic Rivers	**Goals:** Conduct a Wild and Scenic River eligibility assessment on all river and stream segments on the Carson National Forest and maintain and enhance the outstandingly remarkable values and free-flowing conditions of eligible and designated Wild and Scenic Rivers. **Monitoring:** Eligibility and classification assessments have been conducted on all ranger districts. These assessments involved an analysis team of field personnel – such as a biologist, hydrologist/soil scientist, recreation specialist, archeologist, and technicians – familiar with the district. A representative from the NM Department of Game and Fish also participated. Rivers were sectioned into logical segments for evaluation. Each member of the team reviewed each segment and determined whether it supported any outstandingly remarkable values. Discussions were generated when there were differences of opinion and final determinations were based on consensus. The Bureau of Land Management monitors the wild and scenic designated portions of Rio Grande and Rio Chama that are on National Forest System lands. **Results:** Sixty-five river segments have been identified as potentially eligible for Wild and Scenic designation. Supporting documentation is located at the Forest Supervisor's office. The outstandingly remarkable values for which each segment deemed potentially eligible will be protected until a suitability study has been completed or Congress designates it as a Wild and Scenic River. Supporting documentation is located at the Forest Supervisor's Office. The waters on the Valle Vidal Unit (Management Area 21) entered a period of controversy. Some stream segments had been identified as potentially eligible for Wild and Scenic designation. The State of New Mexico under the Clean Water Act designated the streams at least on the east side of the Valle Vidal as special waters. This designation does not change the stream segment eligibility under the Wild and Scenic Rivers Act. There were changes in the designation of stream segments identified as potentially eligible for Wild and Scenic designation

Program Area	Summary of Monitoring Conducted and Evaluation
	The outstandingly remarkable values of the Rio Grande and Rio Chama are being maintained.
Lands	**Goals:** Successfully complete, process or administer planned land exchanges, title claims, purchases, donations, withdrawal reviews, property boundary locations, special uses, memorandums of understanding, and the acquisition of needed rights-of-ways, to meet other program output needs (timber sales, range projects, recreation operations etc.) and the needs of other agencies, private parties and corporations. **Monitoring:** Conditions to be monitored are dictated by individual projects, applications, annual programs, etc. **Results:** Approximately 536 Special Use Permits related to real estate are administered on the Carson National Forest. In 2006, 50 new permits were processed and 200 permits (approximately 35%) were administered to standard. Supporting documentation is located at the Forest Supervisor's Office.
Protection 1 Drinking Water	**Goals:** Comply with state health and sanitation - codes to protect public health. All public potable water supplies will be in compliance with the Safe Drinking Water Act and applicable state laws. Wastewater treatment will comply with state laws. **Monitoring:** Monitor all potable water systems open to public use. **Results:** Water samples are taken once a month from all campgrounds (when open) and Forest Service administrative buildings (year-round) not on municipal water systems. New Mexico requires a quarterly water sample; the Forest Service requires monthly samples. In 2006, all water samples met the minimum state requirements for public use water systems. Supporting documentation is located at the Forest Supervisor's office.
Protection 2 Fire Suppression	**Goals:** Provide effective fire suppression to reduce or minimize fire risk as the projected increase in population is realized. **Monitoring:** Determine the effectiveness of fire suppression by -- 1. Periodic inspections and reviews by specialists to determine if fire control organization is effective in controlling fire losses within acceptable limits. 2. Fire reviews of selected fires. **Results:** The 2006 fire season was challenging at least eight fires on the west side of the forest were arson caused. The number of starts locally nearly doubled from FY 2005. In addition to the local fire activity many of the Carson's personnel contributed to the national fire fighting effort during the summer of 2006. In addition, many of these same personnel contributed to the hurricane relief efforts during the late summer months. The Carson National Forest faced the possibility of an unprecedented fire season in 2006. The Carson had a total of 123 starts in 2006, which burned a total of approximately 147 acres. Although the majority of fires were less than one acre in size, one wildfire exceeded 50 acres. The largest fire incident was the Querno fire on the Tres Piedras Ranger District. The fire suppression and forest closure efforts helped keep the number of acres burned by

wildfire to a minimum.

□Table 23 Wildfires on the Carson National Forest 2001 - 2006

	2001	2002	2003	2004	2005	2006
Total Acres	226	31,238	232	84	4,771	147
Average Size (acres)	4.5	558	2.4	1.3	63.6	1.2
Number of Fires	50	56	95	65	75	123
Largest fire (acres)	50	92,194 (Ponil)	85 (5,400 adjacent on Taos Pueblo lands	25	3,922 (Pine Canyon)	52 (Quemos)

The magnitude of these fires is the result of two primary factors: a severe drought, and the long-term effects of almost a century of aggressively suppressing all wildfires that has led to an unnatural buildup of brush and small trees in our forests and rangelands. Keeping the wildfires small permits better planning for prescribed burning when weather and fuel conditions allow.

The total number of fire starts, 75, is greater than the six year average of 66 fire starts per year. The last three years have seen a greater number of fire starts than the first threes years of the six year cycle. The number of human fire starts,10, held steady as a percent of the total fire starts over this time period. The long term drought since 1996 was a contributor to the Pine Canyon fire. The dry conditions and stressed trees in the area likely contributed to the fire intensity, duration, and rate of spread. Forest resources and incident management team resources were used to contain, control, and put out the wildfire. Homes and other private lands were threatened but the threat was eliminated by quick reaction to the fire situation.

The Healthy Forest Initiative has been used during FY2005 to begin reducing fuel loadings in the vicinity of several communities across the Forest. These communities include Tres Piedras, La Madera, and Rio Pueblo (Taos Canyon area in general). Prescribed burns and other fuel reduction efforts were continued in FY 2005. Efforts to reduce fuel loading are expected to continue into the future.

The Camino Real Ranger District in conjunction with Taos Pueblo, upper Taos Canyon communities, and other communities near and adjacent to Angel Fire, New Mexico completed the environmental analysis and documentation on the La Jara Healthy Forest

Program Area	Summary of Monitoring Conducted and Evaluation
	Restoration project. This Healthy Forest Restoration Act project (HFRA) was appealed. The decision was upheld. Project implementation is expected to begin in FY 2006.
Protection 4 **Law Enforcement**	**Goals:** Law enforcement efforts by the Forest Service, and aided by cooperative agreements with local sheriffs' departments, are adequate and commensurate with the goods and services produced on the Forest and Grasslands. **Monitoring:** Professionally evaluate trend in law enforcement effectiveness based on reviewing caseloads, solution rates and public compliance. The evaluation will be based specifically on a review of 1) protection of cultural resources; 2) changes in ORV damage; 3) changes in fuelwood theft; 4) changes in the dollar cost of vandalism; 5) trends in user protection; and 6) recurrent law enforcement problems at developed recreation sites. **Results:** ▪ Maintained signing in areas north of Red River to address illegal ATV use. Law enforcement efforts were also increased to address this concern. ▪ Over one half of violation notices issued were for -- dumping private trash on national forest, cutting forest products without a permit and off road vehicle violations. ▪ A new area of concern is arson caused wildfire. At least 8 incidents of arson occurred on the Carson National Forest in 2006. ▪ Recurring law enforcement problems at developed recreation sites are exceeding the 14 day limit, leaving fires unattended, destruction of government property, and dogs not on a leash.
Air Quality **Visibility – Class I Areas**	**Goals:** Class I areas will retain good visibility to meet Class I standards. Visibility will be retained in form, line, texture and color of characteristic landscapes. **Monitoring:** Determine baseline condition of visibility and determine if any visibility degradation is occurring in the Class I areas. **Results:** After nearly 20 years of photo documentation of the Wheeler Peak Wilderness to detect changes in air quality of a Class I airshed, it has been determined that photo comparisons are qualitative data that do not provide substantive results in determining whether quantitative standards for air quality have been exceeded. Late in 2000, a new air quality monitoring station was installed in the Taos Ski Valley to monitor air quality in the Wheeler Peak wilderness area using quantitative data, such as percent particulate matter. The photo monitoring has ceased. Data is collected using the installed monitoring station.
Timber 1	**Goals:** Achieve a more balanced age class distribution, appropriate growing stock levels, appropriate rotations and provide wildlife habitat and other resource needs. Ensure that – 1) Rotation age and CMAI assumptions are correct -- silvicultural prescriptions follow management areas standards; 2) Silvicultural prescriptions precede vegetative treatments; 3) Silvicultural prescriptions are practical and achieve desired results. **Monitoring:** Determine age class distribution, growing stock levels, rotations and

Program Area	Summary of Monitoring Conducted and Evaluation
	wildlife/resource needs through stand database reports; Timber Management Information System; silvicultural prescriptions; Staff field reviews of 5% of treatment projects. **Results:** Forest Plan goals for forest health, especially treatment of mid-seral vegetation to improve diversity, have not been met, but the few small projects accomplished each year continue to move the Forest towards its desired condition. Mixed conifer and ponderosa pine forests on the Carson still contain large areas of small, densely growing trees. These conditions pose a threat of catastrophic wildfire over extensive landscapes. Stand examination was contracted late in 2006. The field work is expected to be completed in 2007. Vegetation treatments on the Camino Real, Tres Piedras, Jicarilla, Canjilon, Questa, and El Rito Ranger districts received post-treatment monitoring by the Forest silviculturalist to assess their effectiveness. Supporting documentation is located at the respective ranger stations. Periodic field visits to project areas by sale administrators, specialists and/or line officers usually result in informal monitoring and evaluation of the application of best management practices or actions needed. Documentation is captured through specialist notes, sale administration inspection reports and/or photo points located at the ranger stations.
Timber 2 **Timber Assumptions**	**Goals:** Timber plans and projections support a sustained yield of forest products and achievement of multiple-resource objectives. Validate timber assumptions: volume, productivity, Management Area descriptions and acres harvested. **Monitoring:** Through sale review, EA's, cruise summaries, TMIS, compartment exams, stand database (use the same conversion ratios as used in Plan calculations), ensure that: ▪ board foot/cubic foot ratios are correct; ▪ volume/acre yield Is correct; ▪ management area descriptions are correct; ▪ schedule of acres harvested is correct. **Results:** The Carson National Forest large sale timber program was very limited in 2006. Several small fuelwood, viga and ecosystem improvement sales have occurred. Other small sales made have been done for than timber purposes vegetation management or wildlife habitat improvements are the reasons for the small sales. The schedule of sales outlined in the Forest Plan has been discarded. The sales listed are no longer valid based on many external factors such as litigation. The board foot/cubic foot ratio used is determined at the region level. The ratio is accurate at approximately 1 CCF (hundred cubic feet) the same as .5 MBF (thousand board feet) or stated differently 1 MBF equals 2 CCF. Other measures are not being used. Vigas and latillas are sold on a per foot basis. The amount sold of these two products is small.
Timber 3 **Sawtimber and Products**	**Goals:** Annual sale offerings will be made on a sustained yield basis. Meet Federal regulation, measure output; assure allowable sale quantity is not exceeded. **Monitoring:** PAMARs or other annual reporting systems and programmed harvest

Program Area	Summary of Monitoring Conducted and Evaluation
	reports. **Results:** The large sale timber program of the Carson was not implemented in 2005. Four small sales, fuelwood, ecosystem improvement, timber, and viga, did occur. The amount harvested was below the minimum ingrowth on the Carson ensuring sustained yield. The allowable sale quantity was not exceeded. The Carson National Forest sold and harvested less than 5 MMBF out of an allowable sale quantity of 42 MMBF.
Timber 4 **Fuelwood**	**Goals:** Green wood sales will continue on a sustained yield basis. Dead/dry firewood will continue to be available through timber-sale residue and natural mortality. **Monitoring:** Review annual total of firewood sale reports, total firewood advertised but not sold, free use and administrative or other use. **Results:** The Carson continued to provide the necessary firewood, latillas, vigas and other small products to the local populace. The amount of woody material provided met the needs of the communities and local population. The number of permits for small products and fuelwood increased in 2006. This increase is in partial response to the weather during 2005. The Forest was closed due dry conditions in 2006; this is in contrast to 2004.
Timber 5 **Openings**	**Goals:** Improve wildlife habitat through timber harvest by manipulation of stand sizes, methods of cut and juxtaposition of stands. **Monitoring:** Insure stand size of other harvest areas is appropriate through environmental analysis, presale and administrative reviews, and post sale reviews/project area. **Results:** Harvest prescriptions are geared toward the manipulation of wildlife habitat improvement. Guidelines for the Northern Goshawk are used to insure adequate opening

□Table 24 Fuelwood and Small Products 2000 - 2005

	FY2001	FY2002	FY 2003	FY2004	FY2005	FY2006
Latillas, and small products not convertible to volume						
Permits	481	649	816	Total included in fuelwood permits	2,042	2,960
Fuelwood						
Permits	3,686	3,775	3,750	3,550	4,964	5,384
Volume (cords)	14,132	18,377	17,885	20,536	24,345	13,533

Program Area	Summary of Monitoring Conducted and Evaluation
	size and number, retention of overstory trees. These guidelines are melded with the requirements of Mexican spotted owl recovery plans. The end result is harvest areas meeting wildlife habitat needs with any timber harvest the tool used to provide for wildlife habitat improvement.
Timber 6 **Practices and Assumptions**	**Goals:** All lands harvested for timber production as part of the allowable sale quantity are adequately restocked within 5 years after final harvest. **Monitoring:** Assure that regeneration is obtained within 5 years after -- final harvest cut, and scheduled planting is accomplished through Annual Reforestation/TSI needs report, plantation survival surveys, silvicultural prescriptions, post sale administrative review, Timber Management Information System (TMIS), Stand Data Base/Acres. **Results:** Lands harvested are not harvested for timber production. Emphasis is on wildlife habitat improvement. Regeneration on harvests for other than timber production emphasis are not required to meet the 5 year time period. No lands were harvested for timber production reasons in 2005.
Timber 7 **Unsuitable Timberlands**	**Goals:** Meet Federal regulations to periodically re-examine lands identified as not suited for timber production to determine if they have become suited and could be returned to timber production. **Monitoring:** Evaluate the accuracy of suitable timberlands classification through -- 1) Review new or updated soil survey data. 2) Review development of better technology for regeneration establishment. 3) Stand exams. 4) Timber Inventory and planning results.

□Table 25 Regeneration Surveys 2003 - 2006

Activity	Acres 2003	Acres 2004	Acres 2005	Acres 2006
TOTAL Acres Regeneration Survey	591	508	0	1,212
Total natural Regeneration Survey	367	0	0	0
Total natural Plantation Survival	0	222	0	1,212
Natural Regeneration without site preperation	0	38	0	0

Program Area	Summary of Monitoring Conducted and Evaluation
	The data monitored will be used as the basis for an evaluation to determine which lands are suited to timber production. **Results:** The soil information, stand examination data, timber inventory, and regeneration establishment technology has not changed since implementation of the Forest Plan. No stands identifies as unsuitable were placed in timber production category.
Minerals	**Goals:** To meet the requirements of the law, regulations, contract obligations, fiscal accountability, protection of surface resources and successful reclamation. The expected future conditions should be specified in the documentation of the approval of the activity, project, lease, sale, etc. **Monitoring:** The mineral program will be monitored through a combination of the MAR data reporting system, systems designed for individual project quality control, field examinations by Forest Staff personnel and the Activity review system. Management of the minerals activities: Environmental Assessments, bonds, bond justifications, response times for applications and plans of operations, quality of resource coordination, field checks for compliance of the terms of the operating plans, reasonableness of resource protection requirements, mineral sales program, pit plans, accountability, documentation, and reclamation. **Results:** A Forest Geologist was hired in FY 2002. The job was vacated in FY 2003. the job was filled once again in FY 2004. The San Juan Basin (Jicarilla Ranger District) has experienced an upturn in Applications for Permit to Drill (APD). These APD's are on lands leased prior to 1970. An environmental assessment is made for each APD or grouped APDs. An environmental impact study is expected to be released for comment in FY 2005 concerning unleased lands and surface occupancy on the unleased lands or lands having leases lapse on this ranger district. The EIS is expected to be completed in FY 2007.
Range 1 Unsatisfactory Range	**Goals:** Bring unsatisfactory ranges to satisfactory condition through increasing management intensity levels, constructing structural range improvements, adding nonstructural range improvements. **Monitoring:** Use allotment analysis data to update Grazing Statistical Report. **Results:** The drought over the last few years continued in 2006. This temporary change in the weather has brought many hardships to cattle producers. Late entry dates and early removal continued to be use as intensive management options to reduce impacts to unsatisfactory ranges to aid in moving these ranges toward a satisfactory condition. See discussion under watershed improvement for details pertaining to range condition monitoring and actions to improve conditions.
Range 2 Range Condition and Trend	**Goals:** Range conditions will be improved at 2030 by decreasing unsatisfactory range to 68,883 acres; and increasing satisfactory range to 753,244 acres. **Monitoring:** Conduct range analysis per Regional standards by qualified Range Conservationists. **Results:** Improved range conditions have resulted from implementation of structural and

Program Area	Summary of Monitoring Conducted and Evaluation
	nonstructural improvements, and more intensive management developed in allotment management plans. Continued NEPA analysis on all of the Forest's allotments will help sustain this type of improvement. Drought conditions have slowed the progress of improving range conditions. Non-Native invasive plants are found in scattered locations across the Carson National Forest. These plants have the potential to impact the native plants through replacement by competition, root exudates, and aggressive growth behavior. An Environmental Impact Statement addressing treatment of these plants was approved in 2005. The EIS was appealed and remanded to the forest. A revised non-native invasive plant is anticipated in Fiscal year 2007.
Range 3 **Management Plans**	**Goals:** Prepare or update grazing allotment or unit management plans on 75 percent of the National Forest allotments. **Monitoring:** Track allotment management plans through PAMARS. **Results:** The Forest completed six allotment management plans in FY 2006. The Forest strove to complete the analysis and documentation phase on additional numerous allotment environmental analyses. These allotment environmental analyses are expected to be completed in FY 2007 and 2008.
Range 4 **Range Development**	**Goals:** To move toward balancing range use with capacity, the structural and nonstructural improvements will be added or reconstructed based on the allotment management plans and funding levels. **Monitoring:** Track data on completed range improvements (fences, waters, revegetation, etc.) through the existing RAMIS system and the annual grazing statistical report. **Results:** The needed data was reviewed, verified and entered in the Infra database by District personnel. The Range Infra Deferred Maintenance database has replaced the RAMIS database.
Range 5 **Permitted Use**	**Goals:** Through increased management and additional structural and nonstructural range improvements, range capacity is expected to increase from the present 119,000 AUM's to 136,000 AUM's in the fifth decade. **Monitoring:** Track through data generated from grazing permits and displayed in Grazing Statistical Report. **Results:** All permitted Use data for stocked allotments was verified/updated in the Range Infra database by Forest Personnel in FY 2006.
Range 6 **Grazing Capacity**	**Goals:** Grazing capacity is expected to exceed permitted use through the fifth decade. **Monitoring:** New analysis data updates Annual Grazing Statistical Report. **Results:** The grazing capacity was verified for the six allotments on the Carson National Forest through the NEPA process. Four of the allotment analyzes were upheld on appeal.

Program Area	Summary of Monitoring Conducted and Evaluation
	Two analyzes were returned to the Forest for further analysis.
Visual Quality 1	**Goals:** Prevent acres with visual quality objectives of Retention or Partial Retention from being reduced more than 20%. **Monitoring:** The Visual Resource Management System will be used as a basis of the monitoring activity. **Results:** There was no activity that would reduce the visual quality objectives of Retention or Partial Retention in 2006. There was an application for permit to drill in the Vaqueros Canyon area of the Jicarilla Ranger District that could impact the Partial Retention designation. The oil and gas lease predate the Forest Plan and designation of Vaqueros Canyon. Placement of the gas well, supporting structures and colorization will aid in maintaining the Visual Quality Objectives of Vaqueros Canyon. The Valle Vidal unit is the planned Forest Plan amendment will use the updated Visual Quality Objectives (VQO) system known as the Scenery Management System (SMS). A cross walk between VQO and SMS will permit the use of the newer designations. This survey and report were completed in 2006.
Visual Quality 2	**Goals:** Visual Quality levels will be maintained or enhanced. **Monitoring:** Projects involving vegetative treatment or manipulation, road or trail construction and major development will be evaluated through the NEPA process to enhance or maintain visual quality levels. Results: Two powerline project analyses are on going or have been completed. Visual resource management is an integral part of both projects. It is expected that neither project will reduce the visual quality levels below current levels or not follow the standards and guidelines in the Forest Plan. Some enhancement should be expected where portions of the powerlines could be relocated or removed. The Talpa-Penasco powerline became fully operational in 2005. Construction of the Ojo Caliente powerline is partially hidden from view. Construction of the Ojo Caliente powerline was completed in FY 2006.
Forest Plan Implementation	**Goals:** Assure compliance with and implementation of the Carson Forest Plan in accordance with its stated mission, goals, objectives and standards and guidelines. **Monitoring:** This will be done in light of funding or any other constraints **Results:** Each project implemented in 2006 was evaluated to insure compliance with the Forest Plan. There were no Forest Plan amendments in 2006.

Baseline/Inventory Monitoring

- Contracts for wildlife population monitoring have been ongoing since 2003. These monitoring contracts are expected to continue into the future.
- Vegetation data are being collected on each ranger district. This information is being used to determine existing conditions for wildland urban interface and forest health projects, salvage sales, Mexican spotted owl thresholds and old growth at the landscape level, and Forest Plan Revision preparation. Vegetation conditions are recorded on maps and tracked in the RMRIS database and GIS. Photo history is also used to document changes in vegetation composition, structure and health. Much of this data determines where management activities are needed on the Forest to help reach a desired condition. Supporting documentation is located at the ranger stations and the Forest Supervisor's office.
- The Forest archeologist provides program oversight and quality control by reviewing all heritage resource clearances. The purpose of this type of monitoring is to gain overall knowledge of new sites found on the Forest and the course of action taken to protect them. Supporting documentation is located at either the ranger stations or the Forest Supervisor's office.
- The National Visitor Use Monitoring Project for the Carson National Forest was completed and placed into the public domain in June, 2004. This information is available electronically at http://www.fs.fed.us/recreation/programs/nvum.

Implementation Monitoring

- Fuelwood monitoring includes field checking for "leave" trees and assessing how the public is harvesting. Monitoring information is considered when determining cleanup efforts needed for fuelwood areas. Cleanup efforts are also monitored. Recommendations and actions are normally documented and are located at the ranger stations.
- Precommercial thinning and salvage sale activities include post-sale inspections. Areas are examined to ensure contract requirements are met and results are documented in the RMRIS database. Supporting documentation is located at each of the ranger stations.
- Forage utilization is monitored periodically in grazing allotment pastures to determine whether over utilization is occurring. Supporting documentation is located at each of the ranger stations.
- Range readiness is monitored on an annual basis to determine the time livestock can be released onto an allotment pasture. Current drought conditions have resulted in later than normal turnouts. Supporting documentation is located at each of the ranger stations.
- Archeological and heritage surveys are completed prior to the implementation of ground disturbing proposals to assure protection or mitigation of cultural and/or historic sites. Supporting documentation is located at the Forest Supervisor's office. 2,683 acres were surveyed in 2005 with 113 new heritage sites located. In addition, 99 additional sites were monitored for disturbance and current condition.

Effectiveness Monitoring

- Prescribed fire treatments are monitored through on-site visits. Usually "before and after" photos are taken for burn projects to determine whether the anticipated objectives have been attained (i.e., has the palatability of the oak browse noticeably improved?). Recommendations and follow-up actions are determined. Supporting documentation is located at each of the ranger stations.
- Numerous public field trips are taken each year on the Carson to areas where projects have been implemented. These trips result in informal monitoring of the effectiveness of actions taken and provide excellent opportunities for the public to express their opinions about a type of project. Line officers are also involved in these trips. Supporting documentation is located in the NEPA project documentation at each of the ranger stations.
- Damage, erosion and changed conditions of prerecorded heritage resource sites are documented. Project areas are inspected upon project completion to verify that flagged archaeological sites have been avoided. Site monitoring forms are kept on file in the Forest Supervisor's office. Four damage assessments were completed in 2005.

Certain assumptions made in the Carson Forest Plan are continually being validated by many of the monitoring activities listed above. Amendments, such as the 1996 region-wide amendment for the Mexican spotted owl, northern goshawk and old growth, can significantly change how we meet our goals and objectives, but not necessarily the assumptions or desired conditions made in the Forest Plan. Since the Forest Plan primarily focuses on desired condition rather than how to get there, we can be flexible in finding and determining better ways of moving toward our desired condition.

Upon reviewing Chapter 5 (Monitoring Plan) of the Carson Forest Plan, much of the Carson's monitoring activities are closely linked to the items listed in Chapter 5. Formal evaluation and documentation of these monitoring activities is limited, given the emphasis and budget constraints put on the specialists. The information generated from these monitoring efforts achieves the intent of the majority of monitoring items found in Chapter 5 of the Forest Plan.

2

Monitoring Results

Introduction

Specifically this year, what has happened on the forest/grassland or externally that has affected the forest/grassland such as natural changes, social and economic changes, and management actions?

Drought

The drought conditions appeared to end in 2006. Historical evidence and tree ring evidence indicate droughts in the southwest often last for 50 or more years. Within the long term drought short periods of near normal or normal precipitation do occur. The drought began about 1996 and has continued with periods of near normal moisture such as occurred in 2006. The grasslands have been affected. The grass grew very little this past summer. The mature plants were often times less than 6 inches in height. Grazing was curtailed with some permittees not allowed to graze cattle. The act of not permitting cattle to graze many allotments and by extension much of the national forest aided in maintaining grasslands at their current levels.

Forested lands were also affected by the lack of moisture. The moisture stress is beginning to show with increase bark beetle and other insect population increases. Small spots of dead, dying, or damaged trees are evident across the forest. These areas are well scattered. These population centers could be a forbearer of increase insect attack and mortality across the forest.

□Table 26 Precipitation, Taos, New Mexico 2001 - 2005

Precipitation, Taos New Mexico 2001-2006

In inches

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
2001	0.9	0	0	0	0	0.16	1.69	2.28	0.25	0.31	0.4	0	5.09
2002	0.85	0.04	0.22	0	0	1.02	0.95	0.59	2.7	1.32	0.77	0.32	8.78
2003	0	1.1	1.11	0.5	0.52	0.72	0.69	1.83	1.73	0.62	0	0.81	9.63
2004	0.1	0.65	0.49	1.84	0	1.29	1.1	0.54	1.76	1.28	0.58	0.8	8.47
2005	1.65	0	1.07	1.71	0.67	0.89	1.14	3.77	2.58	2.02	0	0	10.6
2006	0.12	0.1	0.14	0.56	0.45	0.33	0.75	2.54	0.73	0.8	0.18	0.2	6.72
5 yr ave	0.70	0.36	0.58	0.81	0.24	0.82	1.11	1.80	1.80	1.11	0.35	0.39	8.51

Long term average precipitation in Taos New Mexico

ave	0.67	0.62	0.82	0.9	1.2	0.9	1.64	1.85	1.28	1.08	0.74	0.64	12.4
yrs data	88	89	90	89	86	89	88	88	88	88	87	88	74

Fire season

The potential for large fires was present for an extended period of time during 2005 even with the increase moisture levels of the year. Lightning activity was prominent throughout much of June and July. Late season fire activity was higher and than normal. Fire activity throughout the Southwest was high with several large fires, which stretched the resources on a local basis. Several lightning and human caused fires were detected. These scattered fires were extinguished by the fire personnel remaining on the forest.

The Carson National Forest faced the possibility of an unprecedented fire season in 2005. The Carson had a total of 75 starts in 2005, which burned a total of approximately 4,771 acres. Although the majority of fires were less than one acre in size, two fires exceeded 20 acres. The Osha Park and Pine Canyon fires totaled 4,120 acres combined. The larger fire incident was the Pine Canyon fire on the El Rito Ranger District. The fires suppression and forest closure efforts helped keep the number of acres burned by wildfire to a minimum.

□Table 27 Wildfires on the Carson 2000- 2006

	2000	2001	2002	2003	2004	2005	2006
Total Acres	160	226	31,238	232	84	4,771	147
Average Size (acres)	3.0	4.5	558	2.4	1.3	63.6	1.2
Number of Fires	53	50	56	95	65	75	123
Largest fire (acres)	185	50	92,194 (Ponil)	85 5,400 adjacent on Taos Pueblo lands	25	3,922 (Pine Canyon)	52 (Quemos)

Social and Economic Changes

The communities adjacent and within the forest boundaries are experiencing a continued influx of people. Many visitors return becoming residents. The attitudes brought by the newer residents conflict with many traditional land uses and at time the cultures of current residents. There were continuing comments concerning cessation of grazing activities to protect the land. Yet many long-term residents have used or have family members who use the forestlands to supplement or provide incomes to sustain their families. The newer residents may conflict with the long-term residents causing tension with the Forest Service in the middle.

The economic changes have been in the seasonal business sector, and lodging and food establishments. Many of these jobs are on the lower end of the income level. Businesses capable of using forest products and paying higher wages have not moved into the area.

Ecosystem Health

The increasing insect populations in the pinyon/juniper woodland are a potential change agent. The outbreak could continue for many years reducing the amount of pinyon in these woodlands. The potential is to see the woodlands become juniper savannahs in a few years. The loss of the pinyon trees could benefit grasslands. As the trees die and fall to the ground the added litter should provide microenvironments suitable for grass establishment. The grass would likely increase giving the soil more vegetative cover. The current situation is a change in visuals as the trees die. The population of bark beetles in the pinyon-juniper has decreased as noted by the reduced acreage noted as infested by aerial detection methods. Over the time the incidence of bark beetle infection should return to endemic population levels. It appears that the population of pinyon bark beetle has collapsed returning to the endemic level.

Other insects have increase their population causing mortality in all the forest cover types on the Carson National Forest. This natural phenomenon provides many wildlife benefits such as snags and insect larva for food. An estimated 292,000 snags greater than 9 inches in diameter have been created by insects in the last 6 calendar years. Insect populations are expected to continue in their cyclic pattern with epidemics not expected. However, an epidemic population can build up in less than one years time if climatic conditions coincide with other natural factors.

Table 28 Insect and disease infestation/infection 2000 - 2006

Insect/Disease	2000	2001	2002	2003	2004	2005	2006
Western Spruce Budworm	86,645	290,610	114,680	62,700	114,990	80,265	54,077
Aspen Defoliation	15,160	640	2,645	680	7,570	8,525	1,524
Pinyon Bark Beetle	No data collected	Rudimentary data collected	16,240	277,615	33,265	None mapped	None Mapped
Mountain Pine Beetle (further investigation has shown the agent to be Western Pine Beetle)	585	1500	3,265	3,325	1,345	None mapped	271
Douglas-fir Beetle	40	75	90	6,235	15,815	11,885	4,826
Spruce Beetle (includes corkbark fire mortality)	955	1,230	1,675	5,840	3,905	6,605	2,223
Fir engraver Beetle	95	200	455	85	165	4,100	1,727
Ips beetle in ponderosa pine	Not detected or recorded	275	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded
Western balsam Bark Beetle	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded	Not detected or recorded	3,540	6,590

Multiple Benefits to People

In FY2006, fuelwood was provided to individuals. Northern New Mexico has a high proportion of resident who use fuelwood for heating and cooking. The Carson provided fuelwood supplies to local communities as is typified by the Camino Real Ranger District's stewardship blocks. Communities are both obtaining fuelwood and creating thinned areas to aid in providing increased fire protection to their homes.

The Carson National Forest has a long-standing tradition and desire to provide for the local communities while providing for national needs. The fuelwood program provides for both of these needs.

Scientific and Technical Assistance

Management activities were designed to improve the productivity of the natural resources while providing for people. The grazing program while delaying entry dates was designed to provide for the natural resources. Early and constant contact with livestock owners permitted the owners to reduce numbers or find other sources of feed. The range program continued to monitor the conditions of the allotments with the intent of providing the permittees an opportunity to graze the land.

The planned accomplishment of 6 to 8 allotment management plans was not met. Only one management plan was completed. This failure to complete the total number planned may have an impact in the future but the uncompleted documents in addition to another 6 to 8 are scheduled to be completed in 2006.

The Carson National Forest participated in many activities with school and local groups. These contacts permit students and parents to ask questions, learn about the forest, grasslands, and waters, and discuss their feelings regarding the national forest. The following bulleted statements are a sampling of the technology transfer activities Carson employees were involved in.

- Visited with elementary children in numerous communities, Taos, Questa, El Rito, Peñasco,and Red River in school and field settings discussing many aspects of forest management, wildlife and other multiple use areas.
- Participated in Fire Prevention and Career Fair programs throughout the Carson National Forest influence area..
- District personnel visited schools for the purpose of educating youth about fire prevention, the dangers of wildfires and how fire can be used as a management tool. on wildfire, 5 events and 600 adults/children.
- District personnel from Tres Piedras RD, El Rito RD and Canjilon RD along with Carson NF Supervisors Office staff planned and coordinated the 2006 Hopewell Lake Fish Fiesta in July.
- District personnel from Questa RD, Camino Real RD, along with Carson NF Supervisors Office staff planned and coordinated the 2006 Eagle Rock Lake Fish Fiesta in July.
- Hosted numerous field tours of the Valle Vidal.
- Offered winter environmental education tours at Taos Ski Valley through our "Ski with the Ranger" program.

These activities enable the information possessed by Carson employees to be passed on to students and their families. Communities are strengthened by the information transfer as well as the Forest Service.

Barriers To Effective Monitoring

The predominant barriers overriding effective monitoring and evaluation have been higher priority work and lack of funding. Congressional and budget intent comes to us functionally, and is still tied to targets. In addition, user groups want us to produce a "product" (wilderness experience, firewood, forage, clean campgrounds, etc.) for them. Few are asking for monitoring results. In order to show responsiveness toward the public and accomplishments to Congress, we maintain focus on products and targets. Often any internal or external interest there may be in monitoring is focused on the "gotcha" versus the adaptive management of learning. People or special interest groups are more interested in using our deficient documentation of monitoring activities as a way of demonstrating that we are not following regulations.

Status of Previous Year's Recommendations and Current Year's Recommendations

Status of Recommendations

--Forest Plan Direction for the Vallecitos Federal Sustained Yield Unit

Recommendation for 1999:

Most of the technical writing for the proposed amendment is complete.

The proposed changes must still go through the NEPA process.

Recommendation for 2003:

Amend the Vallecitos Federal Sustained Yield Unit section of the Carson Forest Plan to reflect the intent of two court settlements (March, 1996).

--Management Indicator Species Forest Wide Assessment for the Carson National Forest

Recommendation for 2005:

Incorporate information obtained from monitoring activities, studies, and research into the Management Indicator Species Forest Wide Assessment. This is an ongoing process. Complete an updated report in 2006. Report to be finished in early 2007.