

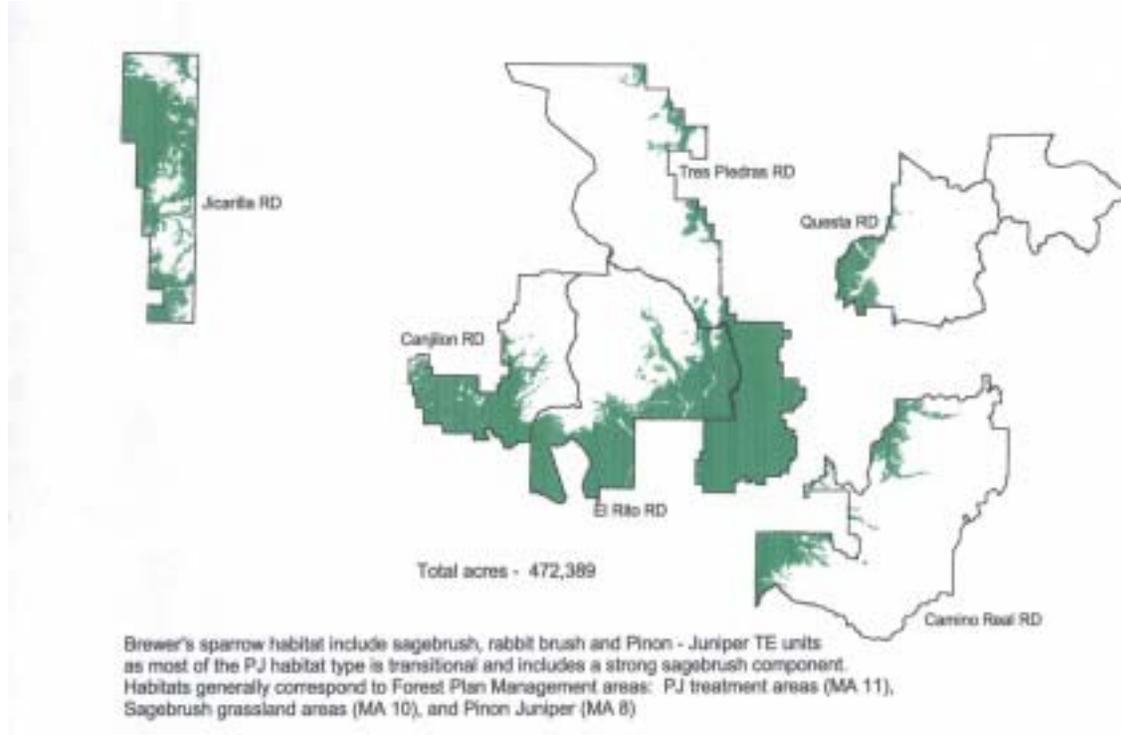
Brewer's Sparrow (*Spizella breweri*)

Indicator Species Habitat

On the Carson National Forest, the Brewer's sparrow is an indicator species for sagebrush (USDA 1986a, p.97). In northern New Mexico, the habitat for the Brewer's sparrow is sagebrush, brushy plains and the interface of piñon-juniper woodlands and sagebrush. The species prefers brushy conditions intermixed with grasses and grass understory. The Brewer's sparrow is strongly associated throughout its range with high sagebrush vigor (Knopf et al. 1990), preferring areas dominated by high shrub cover, large patch size and bare ground (Rotenberry and Wiens 1980; Weins and Rotenberry 1981). The species can also be found to a lesser extent in mountain mahogany, rabbitbrush, bunchgrass grasslands with shrubs, bitterbrush, *Ceanothus* spp., manzanita and large openings in piñon-juniper (Knopf et al. 1990; Rising 1996; Sedgwick 1987; USDA 1994).

Brewer's sparrows breed in North America and winter primarily south of the US-Mexico border (Williams 1993). The sparrow can be abundant in sagebrush habitat and will breed in high densities, but densities may vary greatly from year to year (Rotenberry et al. 1999). It prefers to nest low in sagebrush, other shrub or cactus, from a few centimeters to about 1 meter from ground. Nests are placed higher in taller sagebrush (Rich 1980).

The Carson National Forest currently supports a total of 472,389 acres of potential Brewer's sparrow habitat (USDA 1987). These acres include existing sagebrush, revegetation areas that were converted from sagebrush to grassland and piñon-juniper woodland. As displayed below on a map of the Carson National Forest, the potential habitat for the Brewer's sparrow is abundant and well distributed across the Forest.



Map 1. Brewer's Sparrow Potential Habitat Distribution on the Carson National Forest (USDA 1987)

Management Activities or Natural Events That May Affect Habitat

Negative: Mechanical, chemical or prescribed burning treatments of sagebrush, as well as the encroachment of piñon and juniper trees to the point where shrubby dominance is diminished.

Note: Sparrows that use grasslands for breeding and/or wintering do not seem to respond to grazing, therefore livestock grazing is not considered an impact on the Brewer's sparrow habitat (NMDGF 1997).

Positive: Encroachment of sagebrush into converted grasslands.

Plans, Regulations and Guidelines Supporting, Maintaining or Improving Habitat

- *Carson National Forest Land and Resource Management Plan, Forest-wide Wildlife and Fish (1986)*, requires that
for nontimber species, such as piñon-juniper, oak and sagebrush, standards and guidelines are established for the maximum size, dispersal and duration of created openings. These standards and guidelines are designed to address concerns for wildlife and plant species. (USDA 1986c, p. Wildlife & Fish – 6).

The desired condition for Management Area 12 is described as, “quality habitat for plain titmouse” (USDA 1986c, p. 12. Sagebrush - 1).

Habitat Condition And Trend On The Carson National Forest

Forest Plan EIS identifies sagebrush as the habitat type for this species (USDA 1986, p. 97). At the time the Forest Plan was implemented, 52,600 acres of quality Brewer's sparrow habitat were identified for the Forest. It was expected that habitat would remain relatively consistent along with populations.

Based on the current GIS vegetation data layer, there is now a total of 81,752 acres of sagebrush.

Habitat trend for Brewer's sparrow on the Carson National Forest is up by about 55 percent or 29,152 acres.

This is mainly due to the large areas of revegetation treatments, which converted both piñon and juniper and sagebrush to grasslands in the 1960's. A total of 83,142 acres of these treatments (Management Area 11 in the Forest Plan) were not included in either the sagebrush or piñon/juniper habitats at that time. Many of the acres of both conversion types have gradually transitioned from grasslands to sagebrush, which accounts for the significant upward trend in habitat. Some of sites are shifting from sagebrush back to piñon/juniper. Others have been maintained by prescribed burning and are not expected to shift from grasslands to sagebrush.

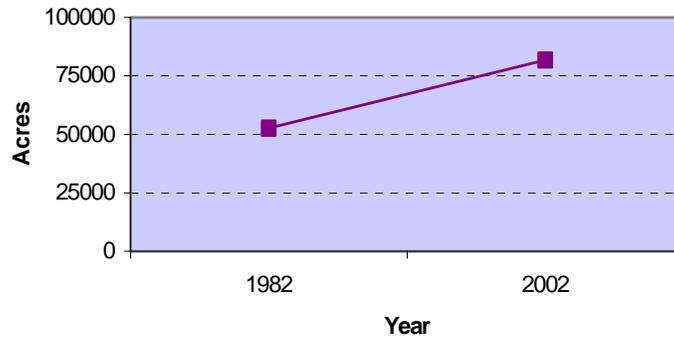


Figure 1. Changes in Brewer's Sparrow Suitable Habitat on the Carson National Forest from 1986 to 2002

It should be noted that many acres in the Forest Plan EIS identified as piñon-juniper habitat acres have a very strong sagebrush component. For example, sagebrush may actually be the dominant species in an area, but piñon/juniper may be present in sufficient abundance to provide the structural difference necessary to classify the site as piñon/juniper. No set criteria are provided for observers to breakout this particular transitional portion of the community. However, areas are often broken out based on the most structurally or visually influencing species. The Brewer's sparrow may occupy as much as two or three times the acres of monoculture sagebrush habitat present.

In the next several years, there is likely to be a significant shift from piñon to sagebrush habitats, as the bark beetle impacts from the summer and fall of 2002 are realized -- especially if the drought continues through 2003.

Forest Management Activities

Based on the Carson Forest Plan cover classifications, there are over 125,000 acres of what is likely to be excellent habitat for the species (USDA 1986c). However, the piñon-juniper habitats generally have a strong component of sagebrush as do much of the low elevation grasslands. Therefore there is an additional 384,000 acres that would also provide suitable habitats. These large areas of sagebrush-grasslands are well distributed throughout the lower elevations of the Forest.

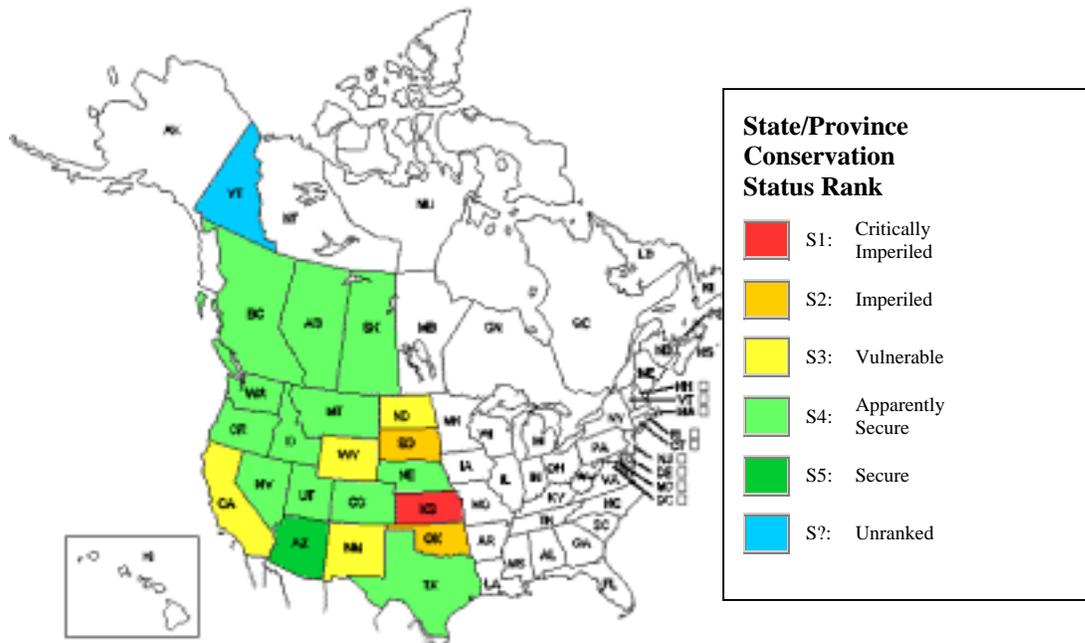
Overall habitat for this species has expanded considerably during the past several decades. During the 1950's, 60's and 70's, piñon-juniper woodlands on the Carson National Forest were removed to increase forage for livestock grazing. Plowing of sagebrush and reseeding to grasses occurred during the same period. Since then, most of these revegetation areas have experienced transition from grasslands to a sagebrush community, increasing habitat for Brewer's sparrow. In some of these areas, prescribed fire has been (and still is) used to sustain grasses and forbs, but burning treatments have not been enough to offset the increase in the overall sagebrush habitat type.

For the past 20 years, the trend on the Carson has been an increase in habitat for the Brewer's sparrow, despite the occasional maintenance of grasslands through prescribed burning. **Existing habitat for the Brewer's sparrow on the Carson National Forest is in good condition with an upward trend.** It is possible that the current upward trend recorded in Brewer's sparrow populations in the Southwest is primarily in response to the species' recovery from earlier years of vegetation treatments (sagebrush plowing) and that the quality and quantity of its habitat has reached a plateau.

Habitats dominated by sagebrush and areas with a mosaic of sagebrush and grasslands provide for optimal Brewer's sparrow population density. Entire removal of sagebrush in large blocks (> 40 acres) will decrease population density (Braun et al. 1976). Mosaic patterns, narrow strips or small blocks can be utilized to intersperse grassland and sagebrush to the benefit of non-game species, such as the Brewer's sparrow (Peterson and Best 1987; Castrale 1982).

Population Trend And Viability

Throughout its range, the Brewer's sparrow is listed as G5, (i.e., globally secure and common, widespread, and abundant) (NatureServe 2002). It is apparently secure in most of its range. Species with this rank typically occur in more than 100 localities, and number more than 10,000 individuals. Within the United States, it is listed as N5, that is, it is secure and common, widespread and abundant.



Map 2. Distribution of Brewer's Sparrow in North America (NatureServe Explorer 2002)

The Brewer's sparrow breeds from southwestern Yukon, southern Alberta, southwestern Saskatchewan, south (east of the Cascades and Sierras) to southern California, central Arizona and northern New Mexico. It winters in the southern parts of the Border States into northern Mexico. In the Southwest, it summers in northern New Mexico southward to the Gallup and Santa Fe areas. It occasionally breeds into eastern New Mexico and westward to the Mogollon Plateau in Arizona.

In the Southern Rockies, the North American Breeding Bird Survey (BBS) has compiled estimated trends for the Brewer's sparrow within three guilds, successional/scrub habitat, cup nesters, and ground or low nesters (Sauer et al. 2001). Analyzing species within guilds (groups with similar life history traits) can provide additional insight into patterns of population trends. These trend estimates have been adjusted in order to take into account the relative precision of the estimated trends and provide a better ranking of change for the species relative to other species in the same guilds. The three adjusted trend estimates for the Brewer's sparrow (across 28 routes) each indicated a nonsignificant regional trend (Sauer et al. 2001).

Table 1. Trend Estimates (across 28 routes) in Southern Rockies (Sauer et al. 2001)

Guild	Adjusted Trend Estimate	P Value	Declining or Increasing
Successional/scrub breeding	1.4138	P>0.1	Nonsignificant Trend
Cup nesters	-0.0625	P>0.1	Nonsignificant Trend
Ground or low nesters	1.6179	P>0.1	Nonsignificant Trend

It is probable that the large areas of sagebrush that were type converted to grasslands throughout the Southwest during the middle part of the last century negatively impacted the sparrow. An increase in numbers is likely a recovery response by sagebrush to earlier years of sagebrush and piñon-juniper treatments.

New Mexico

The Brewer's sparrow is a migratory bird that breeds during the summer months in New Mexico (Schwarz 1995). Statewide, it is considered to be rare to locally abundant (Hubbard 1978). The bird is a spring, fall and/or summer resident in the Chavez, Eddy, Lincoln, Socorro and Taos counties.

In New Mexico, the Brewer's sparrow is listed as S3, meaning it is vulnerable in the state either because it is rare or uncommon, or found only in a restricted range (even if it is abundant at some locations), or because of other factors making it vulnerable to extirpation. Species with this rank typically occur in 21 to 100 localities, and number between 3,000 and 10,000 individuals (NatureServe 2002). However, monitoring information from the North American Breeding Bird Surveys in New Mexico from 1968 to 1999 indicate population and trends are fairly stable for the entire state (Sauer et al. 2001).

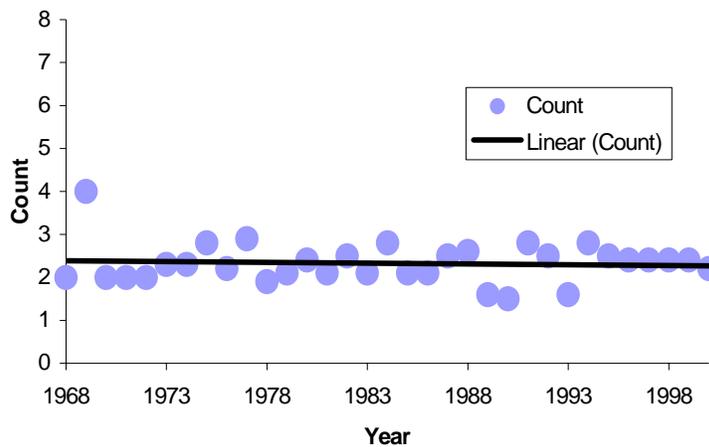
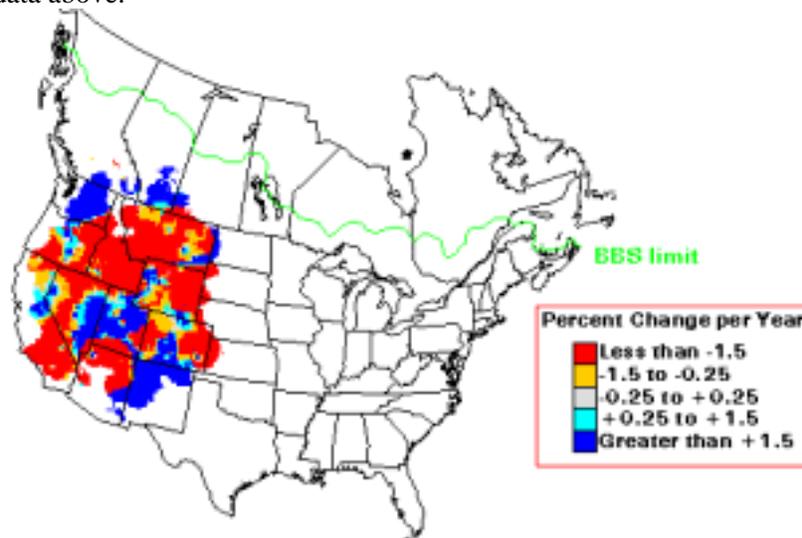


Figure 2. Estimated Trend for Brewer's Sparrow in New Mexico (Sauer et. al 2001)

Breeding Bird Survey results allow an analysis of trend by species and state. For the Brewer's sparrow in New Mexico from 1968 through 2000, the estimated trend is -0.3 percent change per year. This trend estimate is a summary of the population change over the last 32 years, and does not provide information on other patterns of population change (such as cycles) over time. Eight survey routes¹ were used in this analysis, and the relative abundance of Brewer's sparrow

¹ Numbers reflect the abundance of the species near the survey route. They are averages of the total counts along the route for the period 1989-1998. Because each survey route is 24.5 mi long,

observed per route was 2.33. These results corroborate the stable trend seen in the nation-wide and regional data above.



Map 3. Percent Change in Breeding Bird Survey Trend Per Year for Brewer's Sparrow

Carson National Forest

The Brewer's sparrow occurs regularly and breeds in Taos County. It is thought to likely reside on the Jicarilla Ranger District; however, the only written record is from a 1979 avian and rodent survey of the district by Mark Flippo. Based on its current distribution throughout New Mexico, the species is considered to be stable despite habitat alterations that have occurred in the past and current management practices.

On lands administered by the Bureau of Land Management (BLM) just west of the Questa Ranger District in Taos County, New Mexico, a prey base analysis for the peregrine falcon conducted by Eagle Environmental in spring/summer 1995 and 1986 found an average of 50 breeding pairs of Brewer's sparrow per square kilometer in the sagebrush grassland habitat type (Stahlecker et al. 1989).

Two Breeding Bird Survey routes have been used to evaluate trend for the Carson National Forest. Since the BBS routes that are located on the Carson do not go through sagebrush habitat, two routes adjacent to the Forest were selected for this analysis -- Stinking Lake, NM and Antonito, CO. The Brewer's sparrow was commonly detected on both routes from 1992 to 2000. Individual route trend estimates are seen in the table below.

and consists of 50, 3-minute counts along the length of the route, the abundance estimate represents the number of birds that a very good birder would encounter in about 2.5 hours of roadside birding in the area near the BBS route (Sauer et al. 2001).

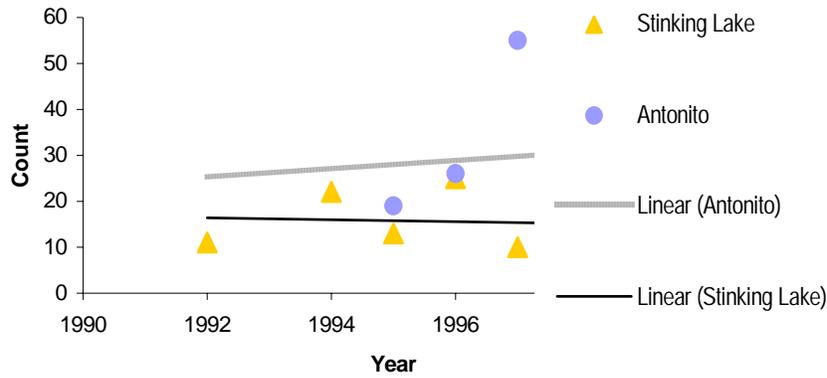


Figure 3. Time Series of Brewer's Sparrow for Stinking Lake and Antonito Survey Routes

Survey estimates for Stinking Lake and Antonito indicate a stable trend in Brewer's sparrow in sagebrush habitat adjacent to the Carson National Forest. Analyzing population change on survey routes is probably the most effective use of BBS data, however these data do not provide an explanation for the causes of population trends (Sauer et al. 2001).

Table 2. Breeding Bird Survey Estimates for Brewer's Sparrow

BBS Route	Trend Estimate	P value	Number of Years	Average Count
<i>Stinking Lake</i>	-1.35	0.83715	7	15.57
<i>Antonito</i>	3.07	0.85527	5	29.80

The removal of sagebrush in large blocks was likely related to a decrease in Brewer's sparrow in the past. As more sagebrush comes back into the man-made grasslands, habitat for the sparrow should continue to increase and improve.

Across the Carson National Forest, the acreage of sagebrush has remained stable to increasing since the inception of the Forest Plan. The Final Environmental Impact Statement for the Carson Forest Plan analyzed seven alternatives (USDA 1986a). The Carson Forest Plan decision alternative is described relative to projected impacts on management indicator species over the life of the plan. In Revegetation Areas (MA 11) where sagebrush type was converted to grassland, the Carson Forest Plan says to "maintain revegetation sites in grassland communities..." The effects analysis to implement the Carson Forest Plan took into account the maintenance of identified revegetation areas over the next 10 to 20 years. The FEIS describes that,

The Proposed Action will over time provide moderate to high amounts and quality of most habitat components within the suitable timberlands and other management areas. Requirements for management of old growth, cover, vegetative diversity, raptor nesting habitat and many other habitat components receive greater emphasis and specific direction than other alternatives. Populations of all indicator species, with the possible exception of certain rare animals, will be managed at levels greatly exceeding minimum viable populations (USDA 1986a, p.152).

The amount of sagebrush to be maintained as grassland on the Carson National Forest is about half of the acres in MA 11 or approximately 40,000 acres (~4000 ac/yr). Since the inception of the Forest Plan in 1986, the actual maintenance level of sagebrush on average has been 300 to 500 acres per year. Since the FEIS determined that MIS would be managed at levels greatly exceeding viable populations at the projected management levels, and the actual level of

maintenance has averaged only about 12 percent of the projected, it is assumed that the Forest is well within its ability to maintain viable populations for Brewer's sparrow.

For the reasons previously described, Brewer's sparrow habitat on the Carson National Forest is in good condition with an upward trend. The Brewer's sparrow is sustaining viable populations within its range (Sauer et al. 1997 and NMDGF 1997). Taking into account the condition and trend of the bird's habitat on the Forest and existing data from nearby habitat, the Carson National Forest is maintaining viable populations of Brewer's sparrow. Future management activities impacting sagebrush such as prescribed burning is not likely to change the quantity of habitat and subsequently their effects on the sparrow's viability is insignificant. Even fire prescriptions to promote the recovery of piñon-juniper will include burning in mosaic patterns, narrow strips or small blocks resulting in sagebrush interspersed with grasses that will actually benefit non-game species such as the Brewer's sparrow.

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