Merriam's Turkey (*Meleagris gallopavo*)

Indicator Species Habitat

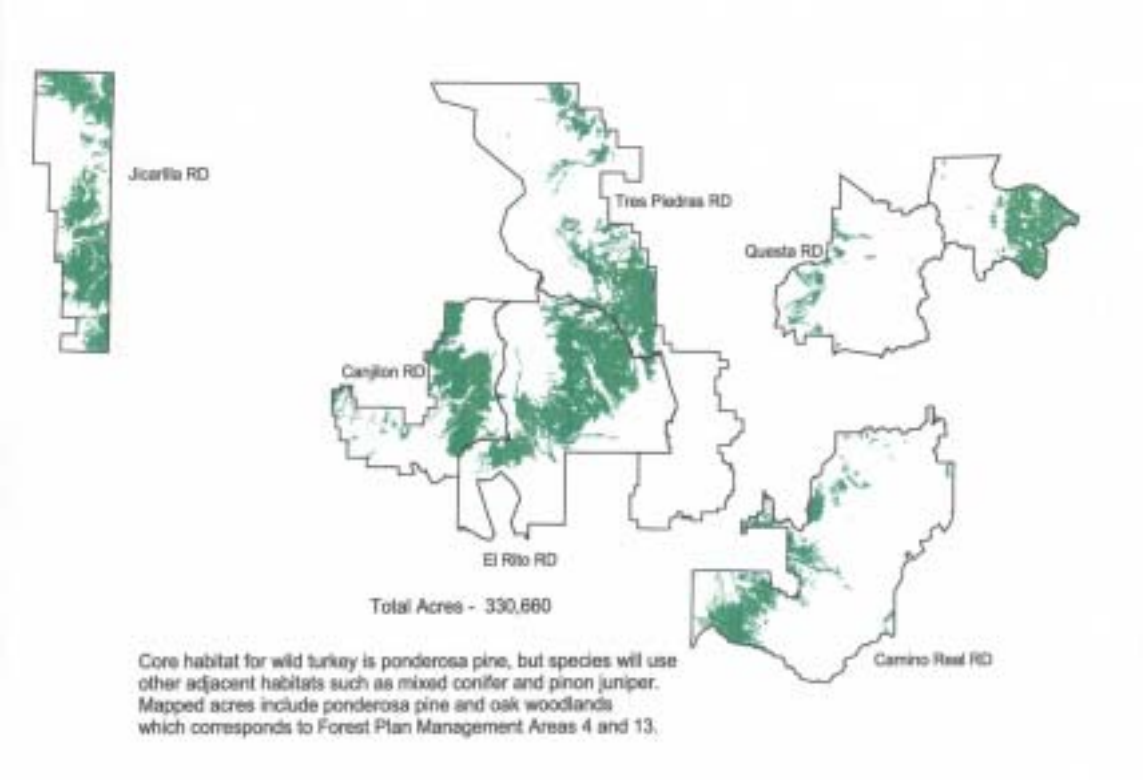
The wild turkey is an indicator species for the presence of old growth pine (USDA 1986a, p.97). Turkeys are common in most mountainous areas of New Mexico and across the west. This upland game bird primarily utilizes ponderosa pine and pine-oak as well as the transition habitats between ponderosa and piñon-juniper woodland habitats and ponderosa and mixed conifer. There are three essential habitat components. These include surface water, roosting trees, and openings for summer brood areas. Turkeys often key in on old growth habitats as they generally provide a combination of cover, roosting and summer brood habitats.

The Merriam's turkey is one of five recognized subspecies of wild turkey. Three of which occur in New Mexico. Merriam's has the widest distribution and is the most common of the subspecies. Its range is generally considered to be the eleven western states. It is common in most mountainous areas of New Mexico. Ponderosa pine habitats provide a source of mast crop and roosting trees and productive openings for brooding.

Turkeys prefer to roost in tall mature or over-mature ponderosa pines with relatively open crowns and large horizontal branches starting at 6 to 9 meters (20-30 ft) from the ground. Trees with a diameter at breast height (DBH) of over 14 inches are used as roosts. Preferred roost sites are often located just below a ridgeline. Hens normally nest within ½ mile radius of water.

A healthy ponderosa pine understory provides cover, as well as, forage. Turkeys forage in grasslands, brush communities, deciduous tree-brush and in ponderosa pine. They eat grasses and some forbs and insects such as grasshoppers in the summer. Oak acorns, mature ponderosa pine seeds and piñon nuts supply an important mast crop in the fall. Taller grasses are important in the winter during heavy snow packs. Openings with adequate residual forage height and abundant insects are important to hens with broods. Young poults are heavily dependent on insects for the first couple of weeks and residual stubble height is important for cover.

The Carson Forest Plan focus on old growth stands and available roost tree habitat as a basis for habitat. The Forest Plan estimates 117,300 acres of habitat for wild turkey. The Terrestrial Ecosystem Survey unit data was used to produce the potential habitat distribution map. There is some degree of occupancy distributed across most of these habitats. However the distribution maps represents potential natural vegetation and the total acres do not represent comparable trend acres. With this in mind, some treatments such as group selections in adjacent mixed conifer stands can be just as beneficial for this species as those in the ponderosa pine. The recently completed vegetation layer indicates the Carson National Forest has 301,297 total acres of ponderosa pine.



Map 1. Wild Turkey Potential Habitat Distribution on the Carson National Forest

Management Activities or Natural Events That May Affect Habitat

Negative: Primarily related to long term cumulative effects of forest succession after heavy logging, long-term fire suppression, some overstory removal prescriptions, drought and large wildfires.

Positive: Thinning, water developments, road closures, prescribed fire and small wildfires.

Plans, Regulations and Guidelines Supporting Habitat Protection

- *Carson National Forest Land and Resource Management Plan, Forest-wide Wildlife and Fish* and Management Areas 3, 4 and 5 -- desired condition is to provide quality habitat for wild turkey. Objective of prescribing annually fire on 1,000 acres of this habitat type.
- *New Mexico Hunting Proclamation*

Habitat Condition And Trend On The Carson National Forest

There are two levels that need to be considered when looking at the ponderosa pine habitats across the Forest. First is the overall ponderosa pine habitat. This is important to help place the subset of old growth identified in the Forest Plan EIS in perspective. Although there are 301,297 total acres of ponderosa (based on current stand data cover types), the Forest Plan EIS identifies a subset of 117,300 acres of occupied turkey habitat. According to the Forest Plan EIS, wild turkey utilize old growth stands of pine, but focus on roost tree availability as a key component or habitat group (USDA 1986a, p. 97). Although definitions for old growth have changed somewhat since 1986, there was and still is significantly less than 117,300 acres of old growth ponderosa pine. By going back to the Analysis of the Management Situation document (USDA 1984, p. H-

2) used in preparation of the Forest Plan, it was discovered that acres of turkey habitat were also taken from several "analysis areas" including aspen and mixed conifer. Since that time, stands have grown, some have been harvested some have experienced wildfire. Data to estimate habitat availability has also improved. Although there is important forest-wide data, the subset of roost trees is the primary feature by which habitat trend for Merriam's turkey is tracked. Queries were designed to replicate to the degree possible the intent of the Forest Plan by identifying stands with a high likelihood of providing roost trees or roost tree groups.

Several factors are used to determine habitat trend. Management activities (primarily timber sales) and wildfire have reduced certain habitats to unsuitable conditions. High intensity wildfire and certain harvest prescriptions such as overstory removal, seed cuts and shelterwood harvests are examples of areas that are deducted from the total acres of turkey habitat. Total stand acres are not deducted. Only the actual acres treated that are estimated to result in acres becoming unsuitable are subtracted. Appendix A explains in more detail how habitat trend is determined.

Suitable stands (4,000 ac) that had experienced high intensity fire were removed from turkey habitat. Suitable habitat lost to timber harvest (9,733 ac) was also deducted. Also taken into account is forest succession, where ponderosa pine stands have progressed towards more quality habitat since 1986. A conservative estimate of stands moving to suitability is one percent of the overall ponderosa pine on the Forest.

Table 1. Turkey Suitable Habitat Acres: Change from Wildfire, Logging, and Tree Growth 1986-2002

Ranger District	Total PP MC & AA Acres	Estimated Acres Of Turkey Habitat in 2002	Habitat Acres Reduced by Wildfire	Habitat Acres Reduced by Logging	Total Acres Reduced	Total Acres of Ingrowth (+ 1%)	Remaining Acres of Turkey Habitat
D1, D2, D6[1]	298,792	71,809	1,000	7,338	8,338	718	64,189
D3	35,848	12,016	0	0	0	120	12,136
D4	193,069	31,670	0	2,117	2,117	317	29,870
D7	131,752	15,500	3,000	278	3,278	155	12,377
Total	659,461	130,995	4,000	9,733	13,733	1,310	118,572

Turkey habitat from 1986 to 2002 is estimated to have increased from 117,300 to 118,572 acres or a slight upward trend of about one percent.

[1] D1 = Canjilon, D2 = El Rito, D3 = Jicarilla, D4 = Camino Real, D6 = Tres Piedras, D7 = Questa

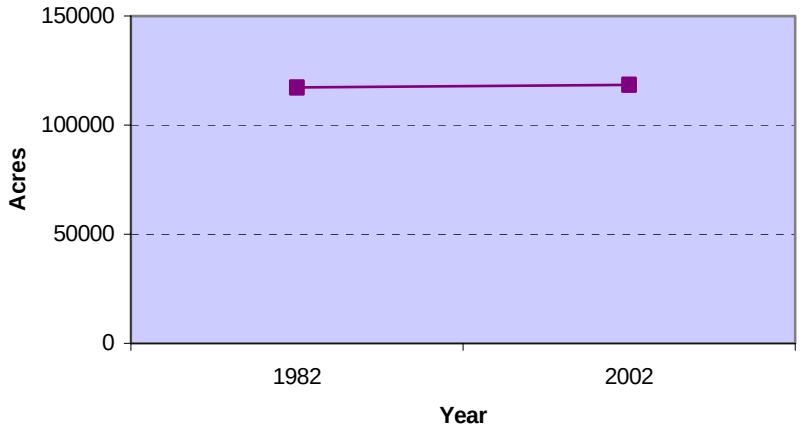


Figure 1. Changes in Turkey Suitable Habitat on the Carson National Forest from 1986 to 2002.

Forest Management Activities

In the mid-elevation portions of the Carson National Forest, Merriam's turkey habitat is abundant and well distributed, but is fairly heavily dominated by mid seral conditions. This is not as beneficial as a good balance of habitat conditions including early and late seral stages. The dominant mid-seral conditions primarily relate to cumulative effects of historical logging such as the railroad logging early in the 20th century and fire suppression. Duff layers in the understory not subjected to periodic burning suppressed turkey forage base. Overstory removal prescriptions also contributed to the trend towards dense smaller diameter stands.

Suitable habitat must include three main components: water, roost sites, and summer/brood areas. Roost trees are naturally more abundant in late seral stands. These trees also provide for food, escape and resting cover. Open areas of grass and forbs (early seral conditions) provide the summer brood areas that provide a source of food in the form of seeds and insects for developing poults (NMGF 2000). Piñon, juniper and Gambel oak are found on the south-facing slopes for winter forage requirements.

The dominant mid-seral conditions on the Carson primarily relate to the effects of forest succession from the historical harvesting such as the railroad logging early in the 20th century and fire suppression. Duff layers in the understory not subjected to periodic burning suppressed turkey forage base. Overstory removal prescriptions also contributed to the trend towards dense smaller diameter stands.

Reduction of stand heterogeneity and landscapes dominated by the VSS 3 and 4 conditions has likely had a negative effect on turkey habitat. Recent changes in management practices on the Forest places more emphasis on thinning, prescribed burning and timber harvest objectives to meet a desired ecological condition. Thinning, group selection and prescribed burning will all help move the VSS 3 and 4 stands towards larger and more diverse structural stages faster (Reynolds et al. 1992).

The figure below shows that between 1986 (when the Carson Forest Plan was implemented) and 2000, approximately seven percent of the potential Merriam's Turkey habitat has been actively managed for timber production.

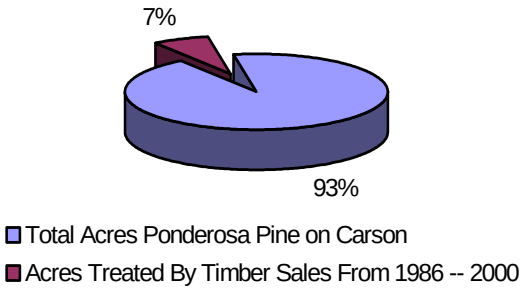


Figure 2. Proportion of Merriam's Turkey Forested Habitats Treated in Timber Sales on the Carson National Forest From 1986 to 2000 (RMRIS DB, Activity Records)

The Forest Service has conducted many habitat improvement projects for the turkey, including water developments, underburning in ponderosa and creating slash piles for nesting structure.

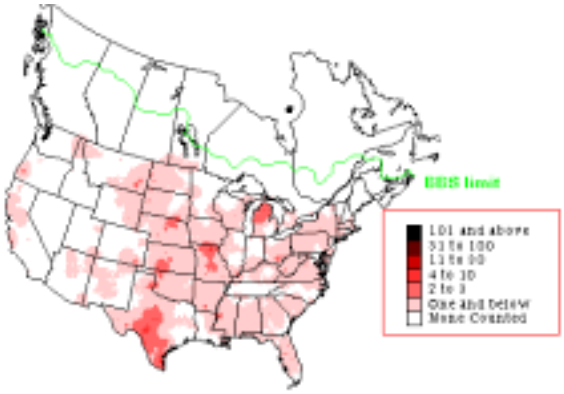
Population Trend And Viability

The Merriam's turkey has the widest distribution and is the most common subspecies of turkey. It is found in many mountainous areas of northern New Mexico. However when miners and stockmen came into New Mexico in the 1800s, they started to effectively kill turkeys. Wagonloads were hauled to market. Subsequently, turkeys were eliminated from many mountain ranges and their populations depleted in other areas. The ebb was around 1924 when sportsmen began actively promoting hunting regulations and bag limits. By 1930, efforts by the NM Department of Game and Fish (NMDGF) began to turn the numbers around. Birds were also live-trapped and moved to other areas (NMDGF 2001).

Most mountain ranges in New Mexico now support healthy, self-sustaining wild turkey populations (NMGF 2001). Drought conditions can affect mast crops from piñon-juniper and oak can significantly influence yearly reproduction (Liedlich et al. 1991). Turkey reintroductions during the past decade have contributed to localized increases in populations and distribution.

The wild turkey is a species for which there is currently no reliable technique to estimate density or total populations, nor has a single method emerged as a standard for surveying populations. Spring gobbling surveys can be used to confirm presence and success in new transplant areas, but is unsuitable for estimating population numbers (Colorado Division of Wildlife 1993). Summer brood counts and winter track counts may also be used to help determine trend.

Population trend data can be gathered over large areas. Merriam's turkey is one of the bird species for which data is collected and compiled on a large-scale breeding bird survey of North American birds. This breeding bird survey (BBS) is maintained by the Patuxent Research Center (US Geological Survey) and is found on a website (http://www.mbr-pwrc.usgs.gov/bbs). It is a roadside survey, primarily covering the continental United States and southern Canada, although survey routes have recently been initiated in Alaska and northern Mexico. The BBS was started in 1966, and the over 3,500 routes are surveyed in June by experienced birders.



Map 2. Distribution of All Subspecies Of Wild Turkey in North America (BBS Survey Map Displays)

(Note: there are several other subspecies of wild turkey, but Merriam's turkey is the dominant subspecies in the 11 western states.)

The primary objective of the BBS has been the estimation of population change for songbirds. However, the data have many potential uses, and investigators have used the data to address a variety of research and management objectives (Sauer 1997). Since 1966 the population trend of the Merriam's turkey in the western part of the United States has increased over 33 percent.

Populations have expanded on the Carson National Forest since the inception of the Forest Plan in 1986. For example, on the Jicarilla Ranger District, the Forest Service and NM Department of Game and Fish have cooperated in transplanting over 60 birds since 1988. The two agencies, as well as the Bureau of Land Management, conduct yearly gobbler surveys to track population trends. These surveys do not provide population numbers, but can show upward or downward trends. Results of these surveys have shown a steady or slightly increasing population since 1996. The population is doing well enough that the New Mexico Department of Game and Fish and the Forest Service agreed to a limited hunt beginning in 1998. In the winter of 1995, 64 mix sexed Merriam's turkeys were transplanted on the Tres Piedras Ranger District in unoccupied range. After a few years of observations, the transplants have successfully occupied that portion of the district.

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.

Based on data from the NM Department of Game and Fish, the Patuxent Research Center, the condition and trend of the turkey's habitat on the Forest and individual observations made by Forest Service biologists, **wild turkey populations on the Carson National Forest are considered to be in an upward trend.**

References

Colorado Division of Wildlife. 1993. Management guidelines for Merriam's wild turkeys. Division Report No. 18. Fort Collins, CO: Colorado Division of Wildlife in cooperation with USDA Forest Service: 23 p.

DeGraaf, Richard M.; Scott, Virgil E.; Hamre, R. H.; [and others]. 1991. Forest and rangeland birds of the United States: Natural history and habitat use. Agricultural Handbook. 688. Washington, DC: U.S. Department of Agriculture, Forest Service. 625 p.

Hoffman, Richard W. 1991. Spring movements, roosting activities, and home-range characteristics of male Merriam's wild turkey. The Southwestern Naturalist. 36(3): 332-337.

Hoover, Robert L.; Wills, Dale L., eds. 1987. Managing forests for wildlife. Denver, CO: Colorado Division of Wildlife in cooperation with USDA Forest Service: 459 p.

Lockwood, David R.; Sutcliffe, Daniel H.; 1985. Distribution, mortality and reproduction of Merriam's turkey in New Mexico. Proceedings of the national wild turkey symposium. 5:309-316.

Liedlich David W.; Lockwood; D.R., Schemnitz, S.D.; Sutcliffe, D.H. ; Haussamen, W.C. 1991 Merriam's wild turkey reproductive ecology in the Sacramento mountains, South-Central New Mexico. New Mexico Agricultural Experiment Station Res. Bulletin 757. 38 p.

New Mexico Department of Game and Fish. 2001. BISON-M (Biota Information System of New Mexico): Biological database for New Mexico. NMDGF in cooperation with USDI BLM, USDI FWS, USDI Bureau of Reclamation, US Army Corps of Engineers, USDA Forest Service and University of New Mexico. http://nmnhp.unm.edu/bisonm

Reynolds, Richard T.; Graham, Russell T.; Reiser, M. Hildegard; and others. 1992. Management recommendations for the northern goshawk in the southwestern United States. General Technical Report RM-217. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 90 p.

Sauer, J. R., J. E. Hines, and J. Fallon. 2001. The North American breeding bird survey results and analysis 1966-2000. Version 2001.2. Patuxent Wildlife Research Center, Laurel, MD. http://www.mbr-pwrc.usgs.gov/bbs/bbs.

Temple, L.; Weybright, D. 1995. Big game surveys: Valle Vidal Merriam's turkey studies. Final Report, 1 April 1989: NM W-093-R-36/Job 14/Segments 32-36. Santa Fe, NM: 28 p.

USDA Forest Service. 1984. Analysis of the management situation. Taos, NM: US Department of Agriculture, Forest Service, Southwestern Region, Carson National Forest.

USDA Forest Service. 1986a. Environmental impact statement, Carson forest plan. Albuquerque, NM: US Department of Agriculture, Forest Service, Southwestern Region. 386 p.

USDA Forest Service. 1986b. Record of decision for the Carson National Forest land and resource management plan. Albuquerque, NM: US Department of Agriculture, Forest Service, Southwestern Region. 6 p.

USDA Forest Service. 1986c. Carson National Forest land and resource management plan. Albuquerque, NM: US Department of Agriculture, Forest Service, Southwestern Region.

USDA Forest Service. 1987. Terrestrial ecosystems survey of the Carson National Forest. Albuquerque, NM: US Department of Agriculture, Forest Service, Southwestern Region. 552 p.

USDA Forest Service. 1996. Record of decision for amendment of forest plans – Arizona and New Mexico. Albuquerque, NM: US Department of Agriculture, Forest Service, Southwestern Region. 96 p.