STATUS OF THE RED-COCKADED WOODPECKER IN OKLAHOMA

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Abstract: The red-cockaded woodpecker (*Picoides borealis*) presumably was fairly common historically in the pinelands of southeastern Oklahoma. The species requires old-growth timber for nests and roosts, and in the past century their populations have declined due to logging operations and clearing of forestland. Remnant populations of red-cockadeds were located in the McCurtain County Wilderness Area, and on Weyerhaeuser Company lands in Pushmataha County and may still occur in Beavers Bend State Park, McCurtain County. Between 145 and 165 birds occupy 48 to 53 colonies, with 84 to 90% of the population occurring in the McCurtain County Wilderness Area. The population inhabiting the Wilderness Area is the only one in the state whose habitat and population density appear secure. Continued survival of the species in Oklahoma depends upon maintenance of old-growth pine in the Wilderness area.

Proc. Annual Conf. S.E. Assoc. Fish & Wildlife Agencies 31:276-282

Red-cockaded woodpeckers, once abundant throughout the southeastern United States (Audubon 1839 cited in Jackson 1971), were presumably common in southeastern Oklahoma. Their presence in Oklahoma was first documented by Woodhouse (1853), but only occasional sightings have been recorded since then (Nice 1931, Baumgartner 1954, 1961, Carter 1965). The species once occurred in Bryan, Latimer, LeFlore, McCurtain, Pittsburg, and Pushmataha counties, but by the late 1960's Sutton (1967, 1974) reported it survived only in Bryan, Latimer, and McCurtain counties.

The species' historic range in Oklahoma may have coincided with that of shortleaf pine (*Pinus echinata*) (Fig. 1). However, there have been no verified observations of

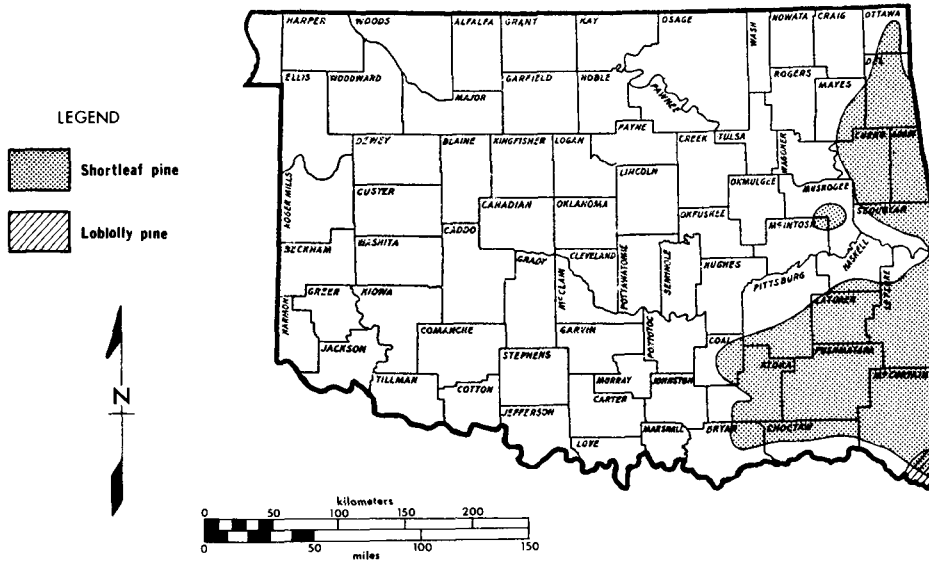

Fig. 1. Distributions of shortleaf pine and loblolly pine in Oklahoma (Czuhai 1971).

[a]Oklahoma State University, Oklahoma Department of Wildlife Conservation, U.S. Fish and Wildlife Service, and Wildlife Management Institute cooperating.

red-cockaded woodpeckers in northeastern Oklahoma where shortleaf pine stands are more scattered and sparser than in southeastern Oklahoma. Except for a relatively small area of loblolly pine (*P. taeda*) in the extreme southeastern corner of the state, shortleaf is the only southern pine found in Oklahoma. The woodpeckers are dependent upon old-growth living pines, infected with red heart fungus (*Formes pini*) (Steirly 1957), for nest and roost cavity trees.

All verified reports of red-cockaded woodpeckers in Oklahoma have come from approximately the southeastern 15 percent of the state. That area is covered with pine-hardwood forest on terrain that varies from flat coastal plain to rugged portions of the Ouachita Mountains with 600 m changes in elevation.

The decline of the species in Oklahoma is attributed to the same factor that caused its decline in nearly all other areas of the southeastern United States, destruction or severe alteration of habitat through logging and land clearing (Jackson 1971). The intensive silviculture practiced by timber companies has eliminated or diminished areas of old-growth pine, and thereby, precluded substantial population recovery. The clearing of forests for urban, industrial, recreational, and agricultural uses has also been a factor in the species' decline.

The red-cockaded woodpecker was first listed in the United States Federal Register as an endangered species in 1970 (Anonymous 1974) and is protected under the Endangered Species Act of 1973. There is no official endangered species list for Oklahoma at the present time. This woodpecker is, however, included on a list of endangered species in Oklahoma published by the U.S. Soil Conservation Service (Lewis 1975). Oklahoma has no endangered species act and state laws make no specific provisions for endangered species. Comprehensive population surveys of red-cockaded woodpeckers had not been conducted in Oklahoma prior to the present study.

The authors gratefully acknowledge financial support provided by the Oklahoma Cooperative Wildllife Research Unit, Oklahoma State University Environmental Institute, National Wildlife Federation, and Oklahoma Ornithological Society. We appreciate the considerable help of C. E. Woods, McCurtain County Wilderness Area Manager for the Oklahoma Department of Wildlife Conservation, and his assistant D. Toon, and the Department's provision of housing on the Area. We also thank the following individuals for their assistance: J. Barclay, W. Carter, W. Harden, V. Heller, W. Howard, P. Powell, G. Hulsey, D. Love, B. Moser, D. Overdeer, M. Ports, R. Reynolds, T. Silker, G. Sutton, P. Vohs, and C. Wood.

MATERIALS AND METHODS

The study was initiated in November 1975 and continued through July 1977. Surveys of red-cockaded woodpeckers were conducted in selected areas of McCurtain County Wilderness Area (MCWA) and Beavers Bend State Park (BBSP) in McCurtain County, Robber's Cave State Park in Latimer County, Ouachita National Forest in LeFlore County, Pushmataha County Game Management Area, private lands in northeastern Bryan County, and Weyerhaeuser Company lands in Latimer, McCurtain, and Pushmataha counties (Fig. 2). All reports of observations, some solicited by contacting various landowners and some volunteered, were investigated, as were various areas of potential red-cockaded woodpecker habitat.

Two techniques were used to search for cavity trees during the status surveys: (1) walking straight parallel transect lines spaced 40 to 60 m apart, the distance determined by terrain and visibility afforded by surrounding vegetation, and (2) walking or driving along roads or fence lines and visually surveying the bordering woodland. Method 1 was the principal method used whenever large tracts of old-growth forest were being systematically surveyed. Method 2 was used mainly to search for woodpecker populations wherever such timber was uncommon.

These survey methods are reasonably efficient, because red-cockaded cavity trees are unique and usually easily spotted in the field. The birds maintain a copious flow of resin on the trees several meters above and below cavities and extending around the trunks to the opposite sides. Substantial areas on cavity tree trunks are glazed and whitish and contrast sharply with nearby trees. Surveys were intensified and concentrated in certain areas where either evidence of the birds' foraging (trunks of pines with plates of bark recently scaled off) was located, or a foraging clan (a social unit generally consisting of a mated pair, their offspring, and associated helpers [Jackson and Thompson 1971]) was encountered.

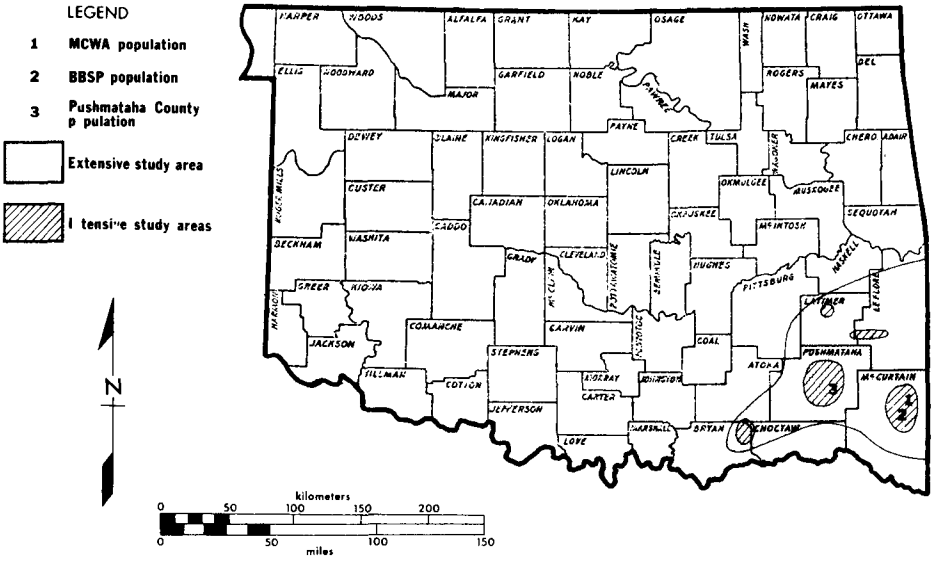

Fig. 2. Areas surveyed and location of populations of red-cockaded woodpeckers in Oklahoma.

Population counts were made in each colony (a grouping of cavity trees occupied and maintained by a single clan) either as the birds left their roosts in the morning or when they returned at night. Each clan was surveyed 2 to 10 times by 1 to 3 observers until the senior author was satisfied that a suitable count had been made. Two clans for which colonies were not located were censused at the time the birds were observed.

RESULTS AND DISCUSSION

Thirty-five red-cockaded woodpecker clans were recorded during the surveys, 31 in the MCWA, 1 in BBSP, and 3 on Weyerhaeuser Company lands in Pushmataha County (Table 1). Only 31 clans could be found at the end of the study; 2 clans on Weyerhaeuser lands and 2 in MCWA had disappeared from their respective colonies.

The colonies for 3 clans (4, 7, and 17, Table 1) were never located. The 32 colonies located consisted of 138 active cavity trees (4.3 trees per colony; range = 1-9). Thompson and Baker (1971) reported an average of 4.2 cavity trees per colony in 229 colonies scattered over 10 southeastern states, and 6.0 trees per colony (n = 80) were reported for colonies in South Carolina (Hopkins and Lynn 1971). The 4.3 cavity trees per colony in Oklahoma should be considered a minimum figure because some cavity treees may have been overlooked.

An estimated 145 to 165 red-cockaded woodpeckers, occupying 48 to 53 colonies, occur in southeastern Oklahoma. That population is composed of 3 sub-populations which are described in the following sections.

McCurtain County Wilderness Area Population

This population is located near the upper reaches of Broken Bow Reservoir and has probably remained relatively stable throughout recent history. The MCWA, the only area of substantial size where timber harvest has never been permitted, also provides the only large tract of favorable habitat for red-cockaded woodpeckers in Oklahoma. Consequently, most survey efforts were concentrated there. The MCWA, owned and managed by the Oklahoma Department of Wildlife Conservation, encompasses 5,701 ha of virgin pine-hardwood forest, 3,795 ha (66.6%) of which were surveyed for red-cockaded woodpeckers.

A minimum of 86 and a maximum of 92 birds occupied the 29 active colonies located in the MCWA (2.9-3.1 birds per colony). Clans occur fairly uniformly throughout the surveyed area (1 clan per 131 ha and 1 bird per 41 to 44 ha). The MCWA is

Table 1. Location and status of known red-cockaded woodpecker clans in Oklahoma, summer 1977.

Area and clan/colony	*Number of cavity trees*[a]	*Number of birds (May-June)*	*Specific location (range, township, section)*
Pushmataha County			20E 3S 6NE
1	4	3	20E 2S 32SE
2	3[b]	disappeared	20E 2S 33W
3	4[b]	disappeared	
Subtotal	11	3	
Beavers Bend State Park			
4	?	?	
McCurtain County Wilderness Area			
5	1	4	25E 3S 9NW
6	7	5	25E 3S 11SE
7	?	4-5	
8	4	5	26E 3S 7SW
9	6	2-3	25E 3S 10SW
10	4	2	25E 3S 9SE
11	4	4	25E 3S 10SE
12	4	4	26E 3S 18S
13	6	4	25E 3S 14NW
14	5	3-4	25E 3S 2NE
15	9	3	26E 3S 17SW, 18SE
16	4	2	25E 3S 1SW
17	?	3-4	
18	5	1	25E 3S 10SE
19	3	3-4	25E 3S 12NE
20	6	5	25E 3S 11NE
21	2	3	25E 3S 24NE
22	5[b]	disappeared	25E 3S 1NW
23	1	2	26E 3S 17SW
24	3	3	25E 3S 23NE
25	8	3	25E 3S 8SW
26	5	1	26E 3S 19SE
27	6	4	25E 3S 10SE
28	4	2	25E 3S 1SE
29	5	4-5	25E 3S 24SE
30	3[b]	disappeared	25E 3S 11W
31	4	3	26E 3S 8NE
32	2	1	26E 3S 7N
33	3	3	26E 3S 29NE
34	1	1	26E 3S 20SE
35	7	2	25E 3S 13SE
Subtotal	127	86-92	
Total	138	89-95	

[a]Cavity trees per colony should be considered a minimum number because trees in some colonies may have been overlooked.

[b]Refers to number active prior to disappearance of the resident clan.

fairly homogeneous, and assuming woodpeckers are present in the unsurveyed area in densities comparable to the surveyed area, a reasonably accurate population estimate can be derived for the total Area. The projected total population is 130 to 139 birds occupying 44 colonies. Eighty-four to 90 percent of the state's known population occurs within the MCWA.

While clans 7 and 17 were observed 5 times and once respectively, their colonies were never located. Colony 17 may have been outside the MCWA because the birds were observed near the boundary fence. Clans disappeared from 2 colonies (22 and 30) before population counts were obtained. No apparent reason was found for their disappearance.

The MCWA population should remain stable as long as that Area is maintained as old-growth forest; an unexpected natural factor, however, now jeopardizes that habitat. The southern pine beetle (*Dendroctonus frontalis*) was discovered in the MCWA in August 1976. Approximately 65 beetle infestation sites were found that contained from 2 or 3 trees to several hectares of timber. The infestations represent a new northwestern extension of the beetle's range, perhaps resulting from several mild winters in succession. Staff of Weyerhaeuser and other forestry concerns proposed clearcutting large blocks of timber around each infestation to eradicate the beetle, but no cutting has been carried out to date. New infestations were not detected in the spring of 1977, and, hopefully, low temperatures during the severe winter of 1976-77 may have eliminated most or all of the beetles. The woodpecker population should be monitored for several years to ascertain the effect, if any, the beetle has on this endangered species.

Limited fire suppression has been carried out in the MCWA since the 1920's. Although the configuration and species composition of the vegetation have appeared stable since the early 1950's (personal communication from C. E. Woods, MCWA manager), subtle vegetative changes may be resulting from the limited fire suppression. Habitat conditions in the Area should be periodically monitored to determine if any possible vegetative changes are having or will have adverse effects on the red-cockaded woodpecker. Special attention should be paid to whether or not hardwoods are threatening the dominance of pines in the overstory.

Pushmataha County Population

Three colonies were found in Pushmataha County at the beginning of the study, but 2 clans (2 and 3, Table 1) of 3 and 4 birds respectively, disappeared from their colonies during the winter of 1976-77. The fate of those birds is unknown. All 3 colonies were found with assistance of employees of Weyerhaeuser Company. Colony 1 is the only one now known active. This population is located near Cloudy, Oklahoma on lands owned by Weyerhaeuser Compay.

The 2 clans which disappeared from their colonies did so soon after substantial areas were clearcut adjacent to each colony site; they may have abandoned their respective colonies due to disturbance of the clearcutting. Suitable habitat nearby where these clans could relocate, is scarce. The more than 400,000 ha of Weyerhaeuser Company lands in southeastern Oklahoma include approximately 24,000 ha (6%) of old-growth timber (personal communication from Weyerhaeuser Company official 1977). Weyerhaeuser Company officials refused to provide us with information about the distribution of old-growth timber on their lands, but this timber reportedly occurs over 5 counties in scattered 4 to 8 ha plots, areas considered too small to sustain a viable clan (Red-cockaded Woodpecker Endangered Species Recovery Team, draft copy Red-cockaded Woodpecker Recovery Plan 1977).

Other clans, undetected by our surveys, may exist in Pushmataha County. Time and funds did not permit a search for and complete survey of all potential woodpecker habitat. Assuming that a few clans may have escaped detection, we estimate that 12 to 20 birds (3 to 7 clans) comprise the total population.

This population is undoubtedly declining due to clearcutting operations over substantial areas (80 to 600 ha per cut) which destroy red-cockaded habitat. Colonies are isolated from each other, surrounded by poor quality habitat, and have an insufficient number of replacement cavity trees. Weyerhaeuser officials leave uncut only approximately 1 ha, including the active cavity trees, as their effort for conservation of red-cockaded woodpeckers. Such a conservation effort is inadequate and survival of the clan is wholly dependent on the close proximity of other old-growth timber. Intensive management of the habitat in Pushmataha County, even if it were initiated now, might not be sufficient to stop the population decline because of the long time period (40 to 80 years) required for recovery from clearcutting.

Beavers Bend State Park Population

This population, if it still exists, is located in McCurtain County near the dam of Broken Bow Reservoir on lands owned by the Oklahoma Tourism and Recreation Department. Suitable red-cockaded woodpecker habitat probably extended to the MCWA prior to inundation of 5,750 ha by the reservoir in 1967. Now this population is 14.5 km from the MCWA population and most of the distance is over water.

The park presumably supports at least 1 clan. Three birds were reported seen in the area during the Christmas bird count in 1975 by members of the Oklahoma Ornithological Society (Anonymous 1976). However, the senior author was unable to locate any cavity trees, birds, or evidence of the birds' foraging (bark scaled off the trunks of pines) during 3 days of intensive surveys in spring of 1977.

Relatively little of the park's 2,078 ha is suitable habitat for red-cockaded woodpeckers. Only 160 ha contains old-growth timber and less than 24 ha of that 160 is virgin timber. J. Bell, Park Manager, does not believe the bird occurs in the park and has never seen a red-cockaded nor one of their cavity trees in the park. He is familiar with the birds' appearance and the appearance of their cavity trees, and recalled that they were quite "common" in southeastern Oklahoma 30 to 40 years ago. The authors judge that 3 to 6 birds, occupying 1-2 colonies, are the maximum population that might occur in BBSP. Failure to find birds or their sign suggests that the population may already be extinct.

CONCLUSIONS

The MCWA should remain in a wilderness status, in which timber harvest is not permitted, to ensure continued survival of the red-cockaded woodpecker in Oklahoma. Habitats supporting populations outside the Wilderness Area should also be protected using guidelines set forth in the Red-cockaded Woodpecker Recovery Plan (draft copy, Red-cockaded Woodpecker Endangered Species Recovery Team 1977). The guidelines consist basically of the following: (1) periodic inventory of populations, (2) maintaining at least 40 ha of contiguous mature pine forest around active colonies, and (3) using only silvicultural practices that would improve red-cockaded habitat (80 to 100 yr cutting rotations, limited control of hardwoods).

Pursuant to the provisions of Section 7 of the Endangered Species Act of 1973, the MCWA, BBSP, and the following locations in Pushmataha County should be designated as Critical Habitat for the species in Oklahoma: R20E T2S sections 31, 32, 33, and R20E T3S sections 4 and 5. Colonies discovered subsequent to the present study should be designated in the same manner. Such a designation would protect red-cockaded woodpecker habitat from any detrimental or potentially destructive land-use activity either undertaken or funded by an arm of the U.S. Government. It is also imperative that the Oklahoma Legislature approve an endangered species act that would facilitate official recognition of endangered species, including the red-cockaded woodpecker, and provide appropriate means for management of these species and protection against habitat destruction.

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