NESTING HABITAT FOR RED-HEADED WOODPECKERS IN SOUTHWESTERN VIRGINIA

By Richard N. Conner

Preliminary observations suggested that nesting habitat of the Red-headed Woodpecker (*Melanerpes erythrocephalus*) in the ridge and valley region of southwestern Virginia was rather limited. The extensive flood plains in regions with little topographical relief that provide the nesting habitat in Illinois (Reller, *Am. Midl. Nat.*, **88**: 270-290, 1972) are not abundant in southwestern Virginia. Reller, in addition to studying behavioral aspects of Red-headed Woodpecker nesting, made several observations on the condition and types of nest trees selected by the woodpecker. Bock et al., (*Wilson Bull.*, **83**: 237-248, 1971) described nesting habitat of the Red-headed Woodpecker in southeastern Colorado as open bottomland along rivers or as trees along roads or around buildings in open farmland but did not include any habitat measurements in the study. Bent (*U.S. Natl. Mus., Bull.* 174, 1939) also did not report any quantitative descriptions of Red-headed Woodpecker nesting habitat. The present study was designed to describe quantitatively Red-headed Woodpecker nesting habitat in southwestern Virginia and make management recommendations for its perpetuation.

The study area (20 km^2) was located near Blacksburg, Virginia, and included the Craig Creek and Poverty Creek drainages of the Jefferson National Forest (15 km^2), portions of the flood plain east of the New River (3 km^2) and the Virginia Polytechnic Institute and State University campus (2 km^2). Although many rivers occur in southwestern Virginia, flood plain habitat is limited because banks of rivers typically rise sharply due to topographical relief. The study area, which included habitat types from clear-cuts to mature forests, was searched systematically for active woodpecker nests during the springs of 1972, 1973, and 1974 in an attempt to locate as many nests as possible. Stand-condition maps of the Ranger District were used to assure that all available habitat types were searched.

Territories of woodpeckers were determined by their drumming and vocalizations. Subsequent observations of their movements were used to pinpoint nest trees.

At each active nest the following variables were measured: basal area (with a prism), density of stems in a 1/20 ha circular plot around the nest tree, canopy height to top of crown, DBH of the nest tree, percent of the nest tree that appeared alive (an index of vigor), height of the nest tree, height of the nest cavity, diameter of the nest tree at the cavity nest, age of the nest tree, and distance to unwooded areas.

All but one of the 14 Red-headed Woodpecker nests were in old mature oak (*Quercus* spp.)-hickory (*Carya* spp.) woodlots on the VPI & SU campus (Fig. 1). The other nest was in a developed residential area where the shrub layer and small trees had been

FIGURE 1. An old mature woodlot typical of the nesting habitat used by Red-headed Woodpeckers in southwestern Virginia.

cleared and grass planted. No nests were found on the flood plain habitat or in the many habitat types available in the Jefferson National Forest, altogether constituting nine-tenths of the entire study area. All areas containing nest trees were devoid of any shrub layer; grasses and forbs were the only ground cover.

The woodlots the Red-headed Woodpeckers selected for nest sites varied between 0.5 and 20.0 ha with 0.25 to 1.0 km between woodlots. Basal area of live trees at nest sites average 25.5 m^2/ha (SD 3.6) while density of stems greater than 7 cm averaged 67.3 stems/ha (SD 22.4) and canopy height to top of crown averaged 31.6 m (SD 10.6). No stems less than 20 cm DBH were found within the 1/20 ha circular plot around each nest tree. Trees 20 to 40 cm DBH were uncommon. Nest trees averaged 29.3 m (SD 16.8) from unwooded areas.

The average age of the 14 nest trees was 228.1 yr. (SD 50.1). The nest trees averaged 95.0 cm (SD 25.2) DBH and 29.5 m (SD 12.8) tall. The percent of the nest tree that was alive averaged 62.3% (SD 23.6). Nest cavities averaged 17.5 m (SD 4.4) above the ground and portions of the trees where nest cavities were excavated averaged 38.0 cm (SD 13.4) in diameter. Four nest cavities were excavated in dead limbs, three were in dead portions of the trunk, and of the remaining four, two were in live trunks and two in live limbs. White oak (*Quercus alba*) was the

species most utilized for nesting, followed by hickories, and then northern red oak (*Q. rubra*).

Three-fourths of a 20 ha woodlot had been fenced off from cattle about 15 years prior to this study and had a dense understory of about 4-5 m in height. Red-headed Woodpeckers did not nest in the fenced off portion of the Woodlot; yet each year they nested in the small portion (5 ha) that was cleared of undergrowth. Rarely did the woodpeckers venture into the 15 ha portion of the woodlot that contained a dense understory. The smallest woodlot utilized for nesting by Red-headed Woodpeckers was 2 ha. A different 3 ha woodlot contained two nesting pairs, at opposite ends of the woodlot.

The open areas adjacent to woodlots used for nesting also appeared to be an important aspect of the nesting habitat because pairs spent much time foraging in these open areas. Because the woodpeckers also wintered in the woodlots where they nested, the woodlots and surrounding open areas apparently fulfilled the winter foraging requirements.

Red-headed Woodpeckers were not found nesting in the Jefferson National Forest near Blacksburg. The habitat of the national forest was quite heterogeneous. Average basal area of nesting habitats of Pileated (*Dryocopus pileatus*), Hairy (*Dendrocopos villosus*) and Downy (*D. pubescens*) woodpeckers, and Common Flickers (*Colaptes auratus*) in the national forest ranged from 1.2 to 31.5 m^2/ha (Conner et al., *J. Wildl. Manage.*, **39**: 144-150, 1975). Density of stems (those > 7 cm DBH, in no./ha.) ranged from 19.3 to 139.8 at these nest sites, and vegetation height varied from 1 to 30 m. Understory vegetation and regenerating vegetation in clear-cuts in the national forest was in most places quite dense. The presence of this understory and the rarity of old mature oaks (probably due to frequent timber harvests) might be the reason why Red-headed Woodpeckers did not nest in the national forest.

The Red-headed Woodpeckers apparently preferred to nest in the old mature woodlots because of the abundance of open areas for flycatching, extensive access to the ground for foraging, the large mast crop which provided acorns for the woodpeckers to eat, and the abundance of potential nest sites in the old trees.

In the old mature woodlots on the VPI & SU college farm the shrub layer is actively removed by grazing cattle and by human activities. These activities, although apparently helping to create the suitable Red-headed Woodpecker nesting habitat, have an additional effect. By removing all growth attempts of young stems, there is no replacement for the old trees that compose the woodlot. The net effect in the future will be the disappearance of the woodlots.

If favorable management of the Red-headed Woodpecker is desired, dead trees should not be removed from woodlots, but left standing as potential nest sites. Young trees should be planted at a temporal sequence so as to provide replacement trees for the larger trees when they die. If these practices are not done, the gradual disappearance of mature woodlots may cause the Red-

headed Woodpecker to be eliminated from areas of its range which are similar to southwestern Virginia.

I would like to thank the Department of Fisheries and Wildlife Sciences, VPI & SU and the Southeastern Forest Experiment Station, U.S. Forest Service for partial support during the initial phase of the study.

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