

## NONGAME BIRD HABITAT MANAGEMENT IN NEW JERSEY FORESTS

Joan M. Galli<sup>1/</sup>

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Abstract -- A brief review is presented of research and management programs for nongame forest-dwelling birds in New Jersey. Particular emphasis is given to the state wildlife management agency's programs.

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### INTRODUCTION

Today, our attention is directed specifically at agency sponsored programs to manage forest habitat for nongame birds. Let me begin by providing a brief summary of New Jersey's forest and wildlife resources that will place our management programs in perspective.

The 2.1 million acres of forest in New Jersey are concentrated in two areas. The Pine Barrens, encompassing approximately one million acres, is located in the southern Outer Coastal Plain portion of the state. This woodland has been described as the "most extensive wildland tract of the Middle Atlantic Seaboard region" (McCormick 1971). Dominant species are pitch pine (*Pinus rigida*), oaks (*Quercus* spp.) and southern white cedar (*Chamaecyparis thyoides*). The second concentration of forest lands, dominated by mixed oak, occurs on the ridges of the Northern Highlands and in the Ridge and Valley province in northwestern New Jersey. In the remaining areas of the state, urban sprawl and agricultural practices have reduced forest lands to scattered woodlots of various sizes along ridges and poorly drained lowlands.

Since 1899, the proportion of forest land in New Jersey has remained relatively constant at approximately 46 percent despite a 400 percent increase in human population (Robichaud and Buell 1974). This apparent paradox has occurred for several reasons (Robichaud and Buell 1974). First, population growth over the last century has concentrated in counties where forests were essentially eliminated by 1900. Second, there has been a

sizeable increase in forest acreage in the northwest portion of the state due to abandonment of agricultural lands, a process which has offset the appropriation for development of other forest lands, particularly in the Pine Barrens. Third, the amount of forest land in state ownership has increased in the last fifty years and now accounts for 17 percent of all commercial forest land in the state.

Currently, 83 percent of all commercial forest land in New Jersey is privately owned, primarily as part of residential property (Kingsley 1975). Esthetic enjoyment was considered the most important past benefit derived from forest land ownership. However, the major motivating factor for future ownership appears to be the expected increases in land value (Kingsley 1975). This attitude was expressed by private owners of 55 percent of the commercial forests in New Jersey.

There are approximately 640 vertebrate species of nongame wildlife (including freshwater fish) in New Jersey (State of New Jersey 1979). The birds constitute the most diverse class and represent approximately 40 percent of the total number of vertebrate nongame species. One third of the birds may be considered primarily forest-dwelling species.

Twenty-five species of vertebrate are considered endangered in New Jersey. Six are birds of which two, the Cooper's hawk (*Accipiter cooperi*) and the bald eagle (*Haliaeetus leucocephalus*), are forest-dwelling species. Five additional avian species associated with forest habitats, the great blue heron (*Ardea herodias*), red-shouldered hawk (*Buteo lineatus*), barred owl (*Strix varia*), merlin (*Falcon columbarius*) and red-headed woodpecker (*Melanerpes erythrocephalus*) are considered "threatened" in New Jersey.

<sup>1/</sup> Nongame Biologist, New Jersey Division of Fish, Game and Shellfisheries, Trenton, N.J.

The paucity of endangered avian species in New Jersey forests may be unexpected considering the State's rapid urbanization and degraded environmental quality. The stability of populations of forest-dwelling birds in New Jersey is understandable, however, considering the relative constancy of total forest acreage during this century - particularly when compared to the loss of such coastal habitats as salt marsh and barrier islands (Ferrigno 1973). Consequently, as we shall see, there has been a lack of priority for research and management of forest-dwelling birds in New Jersey due to the absence, to date, of significant alteration of forest habitat.

#### MANAGEMENT PROGRAMS

The management and protection of New Jersey's wildlife resources is the legal responsibility of the Division of Fish, Game and Shellfisheries. Initial legislation providing protection for "birds other than game birds" was adopted in 1903. An additional 70 years were required, however, to expand the legislation to include the research, management and habitat acquisition programs necessary to insure "...the continued participation in the ecosystem..." of nongame and endangered wildlife species.

Promulgation in New Jersey of the "Endangered and Nongame Species Conservation Act of 1973" provided for the creation of an Endangered and Nongame Species Project within the Division of Fish, Game and Shellfisheries. Comparable programs for the management of nongame species are currently being developed by eight additional state wildlife agencies in the Northeast (Galli 1978b).

#### Current Actions

To date, endangered and threatened species have received, proportionally, the major emphasis in state agency programs for nongame wildlife. Focusing of research and management on these species is attributable, in part, to the availability of federal funding and to public interest.

Consistently, states' efforts in endangered and threatened species research and management programs have been species-specific (Taylor 1978). In New Jersey, we are primarily in the inventory stage of management for forest-dwelling species. However, some management actions have been undertaken. Research has documented the decline of the coastal nesting of great blue herons (Buckley 1978). Our work (Galli 1978a) has shown a shift in nest habitat to a forest island in the Pine Barrens and to

woodland swamps in the northern portion of the state. Management actions have been limited to designation of critical nesting habitat and protection of these sites from alteration. In this regard, local conservation commissions and the Soil Conservation Service (1977) have shown considerable initiative in establishing public ownership of rookery sites.

Habitat protection has also been the major management alternative employed for the bald eagle. State initiative has resulted in the establishment of a buffer zone around the state's one remaining nest site located on private forest land. A program to delineate the population of wintering eagles and their winter range is also currently active. The objective of this aspect of the eagle management program is, once again, to delineate critical habitat and regulate land use on both public and private land to avoid detrimental alterations of habitat.

An assessment of the habitat requirements and management alternatives of the less conspicuous Cooper's hawk has been limited. Movements of all migratory raptors including the Cooper's hawk and the merlin are monitored at two privately operated raptor banding stations and eight hawk lookout stations throughout the state.

Inventory of resident populations of endangered and threatened individuals is particularly difficult for forest-dwelling species. Our efforts have consisted of soliciting sighting reports from field ornithologists. On Division managed lands in the Pine Barrens we have, in one instance, passively managed for red-headed woodpeckers by not removing standing dead timber.

Endangered species constitute only a minor proportion of a state's nongame wildlife resource. In New Jersey, the diversity of nongame species necessitates a broader approach to management and research on non-endangered species than the species-specific programs previously discussed. Consequently, project personnel in New Jersey have adopted a "habitat diversity" approach consisting of research and management for wildlife communities within a particular habitat. Leck, (1975) in his recent discussion of the avifauna of New Jersey, delineated sixteen habitats within three "ornithological zones" in New Jersey. Three habitats (pine-oak forest, streams and ponds, and cedar swamps) collectively constitute the Pine Barrens. While this area has recently been the focus of considerable national attention, its avifauna is so lacking in diversity that it has been of little interest to ornithologists beyond the inventory stage. Only recently

have scientists begun to conduct research on the avian component of this pine forest renowned for its unique flora (Marshberger 1916) and herptofauna (Fowler 1907). Current research efforts include assessment of 1) bird community foraging and habitat utilization in the Pine Barrens and 2) interactions of birds with fruit dispersal patterns within the Pine Barrens (E. Stiles pers. comm.).

To my knowledge, no recent management efforts have been undertaken in the Pine Barrens specifically for the benefit of avian communities. Small scale clear-cutting on Division managed lands has been conducted to diversify the habitat to enhance game bird production. The effects of this management practice on nongame birds have not yet been rigorously assessed. This omission has been due in part to the priority of effort given the avian communities of the coastal wetlands (Berger 1977, Buckley 1978, and Galli 1978a).

However, forest-dwelling birds have not been entirely ignored in New Jersey. The reforestation and maturation of our northwest forests has led to Division programs to re-introduce the turkey (Meleagris gallopavo) to our woodlands. Kane (1973) has also reported that the maturation of Norway spruce (Picea abies) groves planted by the Civilian Conservation Corp in the 1930's has provided nest habitat for two previously unrecorded state breeders, the red-breasted nuthatch (Sitta canadensis) and the golden-crowned kinglet (Regulus satrapa). In the same paper Kane also discusses the potential breeding range extension into New Jersey of the yellow-rumped warbler (Dendroica coronata), purple finch (Carpodacus purpureus) and magnolia warbler (Dendroica magnolia) due to maturation of the spruce groves. Sweager (1978) is currently completing a survey on the effects of wildfire on bird species diversity in an upland hardwood forest in the Appalachian Mountain region of New Jersey. Heck (pers. comm.) has been studying the comparative breeding biology of the great horned owl in the rural woodlands of New Jersey and the large suburban estates on Long Island.

The management implication of a recent study by Galli (1974) makes this work most relevant to the present discussion. The author examined the avian distribution patterns in mixed oak forest islands of differing sizes in the New Jersey piedmont.

The threefold objective was to determine 1) the relationship between size of a habitat patch and bird species richness, 2) the forest size requirements of different bird species and 3) the importance of forest edge and forest

interior as distinct zones for birds. Forman et al (1976) expanded interpretation of this forest island study to include discussion of land use implications inherent in the findings. This interpretive analysis is precisely the information needed by management agencies.

#### FUTURE CONSIDERATIONS

This brief review of management actions has revealed an essential lack of priority in New Jersey for research and management of forest-dwelling birds. The question implicit in this discussion is, therefore, one of a need for an expansion or reordering of priorities to provide for such programs. The recent projections of population growth in southern New Jersey and the potential impact of the resultant development on the Pinelands (State of New Jersey 1978), as well as the changing attitude of forest landowners, necessitates a definitive "yes" to the question of a need for research on the habitat requirements and management alternatives for forest-dwelling birds in New Jersey. To date, fiscal limitations have dictated state agency priorities relative to nongame wildlife. In New Jersey, federal nongame funding is essential for expansion of the state agency efforts toward comprehensive nongame research and management programs.

It is, in my opinion, the State's legal responsibility to encourage and facilitate such research. Further, the incorporation of pertinent findings and recommendations into subsequent land acquisition and management practices is imperative if the diversity of New Jersey's wildlife is to be maintained.

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