

WOODLAND MANAGEMENT TRENDS THAT AFFECT GAME IN COASTAL PLAIN FOREST TYPES

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As the South prepares to supply an increasing share of the Nation's timber needs, we can expect major changes in forestry practices. To certain game species, some of the changes will be adverse; other changes will improve game habitat. Thus, even in a discussion that is confined to the Coastal Plain, broad generalizations are impossible. We must think in terms of specific forest types, forestry practices, and game species.

In the Coastal Plain, which includes more than half of the South's forest land, there are four major forest types—longleaf-slash pine, loblolly-shortleaf pine-hardwoods, bottom-land hardwoods, and upland hardwoods (Fig. 1). The principal forest game species in the area are

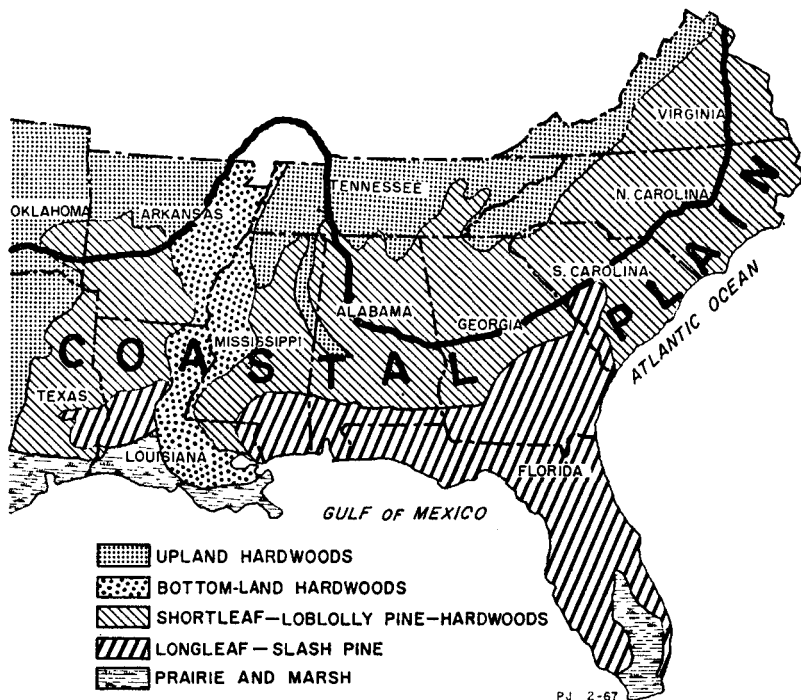


Figure 1. Major forest types in the southern Coastal Plain.

white-tailed deer (*Odocoileus virginianus* L.), wild turkey (*Meleagris gallopavo* L.), gray and fox squirrels (*Sciurus carolinensis* Gmelin and *S. niger* L.), and bobwhite quail (*Colinus virginianus* L.).

GAME DISTRIBUTION BY FOREST TYPE

Of course, game animals are not evenly distributed throughout the Coastal Plain. To plan for harmonious coexistence of game and timber, it is useful to consider the distribution in the four major forest types. For deer and turkeys, estimates of the relative sizes of populations by

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type can be made by examining game harvest information for individual counties, then considering the predominant forest type in each county.

Such records indicate that deer are most numerous in bottom-land hardwoods and least numerous in longleaf-slash pine. In Louisiana, for example, interpretation of Haygood's (1966) data showed that the ratio of deer killed to acres was one to less than 500 in bottom-land hardwoods; it was one to a little less than 1,000 in the mixed bottom-land hardwood and pine-hardwood forests along the Red River and its tributaries, one to 2,000 in loblolly-shortleaf pine-hardwoods, and one to more than 2,000 in longleaf-slash pine.

In Mississippi, nine of the 10 leading deer counties contain predominantly bottom-land hardwood forest (Anon., 1967).

The same pattern holds for the rest of the States in the Coastal Plain, and for obvious reasons—food and cover. Moore *et al.* (1960) showed that Georgia bottom-land hardwood stands contain more preferred and staple deer browse than loblolly-shortleaf or slash pine forests. Murry and Dennett (1965) state that soil fertility (resulting in nutritious plants), mast, water availability, and lack of disturbance make northeast Louisiana's bottom-land hardwood sites the State's most productive game range on a per acre basis. St. Amant (1959) said that though this area consists of only half of the total upland range of the State, it carries 94.2 percent of all the deer outside the coastal marsh. Based on records of early travelers he postulated that the longleaf pine forests never produced high deer populations.

High turkey populations in the South are also found in bottom-lands or mixed bottom-land-upland forests (Schorger, 1966). Kill data from Arkansas show that 10 counties accounted for 67 percent of the State's turkey harvest, and that these counties contained mainly bottom-land hardwood forest. Bick (1947) noted that 78 percent of the known turkey flocks in Louisiana inhabited such sites. In Georgia, the small river bottoms and oak-gum-cypress-magnolia hammocks interspersed through the pine forests are "turkey magnets" from which the birds spread to adjacent pine lands (Stoddard, personal communication).

Quail seem to prefer the longleaf-slash pine forest type. St. Amant (1959) believes that in Louisiana these lands may be the place where game management can do the most to enhance public quail hunting. Southwide, this is the forest type for which the bird shows greatest affinity.

It is well known that the gray or cat squirrel has a clearcut affinity for specific forest types (Madson, 1964). In the Coastal Plain it dwells almost exclusively in bottom-land hardwood stands. Occasionally gray squirrels are found at the pine-hardwood margin but they rarely venture beyond.

The fox squirrel inhabits the pine-hardwood forest and, in lesser numbers, the longleaf-slash pine type. He is also found sometimes at the margins of bottom-land forests. In contrast to the gray squirrel, he rarely resides in extensive bottom lands (Madson, 1964).

TRENDS IN TIMBER MANAGEMENT

It is apparent that three of the five major forest game species are found in larger numbers in the bottom-land hardwood type than elsewhere. What major changes can we expect in the management of this and other forest types, and more significantly, what influences will these changes have on the game species?

It has been predicted that the softwood cut in the South will almost triple, and that the hardwood cut will more than double by the year 2000. To grow the necessary amount of wood, timber management must be intensified (Wheeler, 1967).

Let us first consider what form intensive management will take on bottom-land hardwood lands. These lands are generally the most fertile in the Coastal Plain. In fact, they are so fertile that foresters will not get the chance to continue growing timber on many of them.

About 10 million acres have been cleared and brought under cultivation in the last 30 years. More than a million acres have been cleared in the lower Mississippi Valley in the last five years (McKnight, 1967). In addition, new reservoirs have inundated thousands of bottom-land acres.

On highly fertile lands that remain, foresters are planning the intensive culture of cottonwood, sycamore, and sweetgum. Such plans may include control of understory vegetation that competes with the trees for nutrients and water. In stands managed for maximum fiber yield, game habitat is likely to be adversely affected.

With the expected shrinkage of the bottom-land hardwood type, and with the intensive management of some of what is left, the gray squirrel population is bound to suffer. However, it may not be completely destroyed, because nowhere near all timberland owners will choose to manage their forests exclusively for timber. Past experience tells us that the farmers and other nonindustrial private owners, whose holdings include 73 percent of the commercial forest land in the South, are slow in adopting changes in forest management. There are still more than 100 million southern acres of privately owned forest land on which little or no management is practiced (U. S. Department of Agriculture, 1965). Many private owners, especially the increasing number who live in cities far away from their holdings, may prefer to manage their forests for game rather than wood production.

Cull removal is one way in which production from both hardwood and pine-hardwood stands will be increased (Wheeler, 1967). Unfortunately, foresters must think of culls in terms of wood value. Thus, a cull in a pine-hardwood stand is likely to be a hardwood. And the tree that is favored in a hardwood stand is likely to be the one whose wood is most in demand, rather than the one that produces the most mast. In loblolly-shortleaf pine-hardwood stands, therefore, the hardwood component may be limited to creek bottoms, branch heads, and oak flats. Such areas are very productive of wood but are often too small to be considered in the timber management plan for the stand. However, their mast and occasional den trees are important to game.

In many areas, longleaf pine is being replaced by the faster growing and more easily planted slash pine. In the longleaf-slash pine type, considerable effort is also being expended to remove hardwoods. Both trends are likely to damage game habitat. Slash pine stands are considered inferior to longleaf stands for quail habitat, and removal of hardwoods will decrease mast supplies.

Other management practices, however, are improving quail habitat in longleaf-slash pine forests. For example, controlled burning, which is done primarily to lessen the severity of wildfires, encourages natural pine seeding, and controls brown-spot needle blight, also promotes the growth of quail food plants. Likewise, repeated thinnings encourage rapid and uniform tree growth, but also increase the light and moisture supply for the plants quail thrive on.

Prescribed burning and thinning are also helpful both for quail and timber production in loblolly and shortleaf pine stands (Stoddard, 1931; Lay, 1940).

OUTLOOK

Generally, most intensive timber management measures improve the habitat for quail in its preferred forest type. This may not be so for other game species in their favorite habitats. To maintain or increase their populations, special efforts may be needed.

Turkeys are now found mainly in bottom lands, but they can also thrive in pine and pine-hardwood forests (Stoddard, 1963). There is evidence that turkeys will do well under modern forest management practices (Schaffer and Gwynn, 1967; Powell, 1967). During the past 10 years their southern population has increased 85 percent (U. S. Depart-

ment of Interior 1957; 1966). Interspersed creek bottoms and hammocks should favor the turkey's expansion into uplands.

In some parts of the South, deer numbers in hardwood bottoms are at the carrying capacity of the land (St. Amant, 1959). With acreage in this type decreasing, deer numbers are also likely to decrease (Noble, 1966). It seems, then, that the future potential for maintaining suitable deer population lies in increasing their numbers in upland forests. Deer habitat in pine-hardwood forests can be made productive by creating permanent openings that contain food plants selected to meet specific seasonal needs, by prescribed burning periodically to make food available, and by thinning to induce understory growth. Two of these requirements are not likely to conflict much with timber management needs. Permanent openings will take land out of timber production, but many forest managers may be willing to install them if convinced that such openings are needed to maintain deer.

The future for squirrels is less promising. Some major and costly measures may be needed if these animals are to continue as the most hunted game in the South.

In most cases, compromises between timber and game management are possible. Where such compromises are made, management activities should be directed toward growing the game species best suited to the particular environment. By recognizing the affinity of certain species for certain forest types, it should be possible to achieve harmonious coexistence of game and timber.

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THE EMERGING GAME MANAGER

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Abstract: Since we are entering an era of human management in the natural resources field in America, a game manager must emerge to meet the challenge of public relations in modern game management. He must have the natural ability, combined with professional training to manage people with one hand in order that they will permit him to scientifically manage their wildlife resources with the other. A smooth working relationship must be constantly maintained with both his internal and external publics if he is to successfully mold their opinions and lead them in the cause of game management. Those who are responsible for his professional training will have to envision the need for his contribution before he can fully emerge. Furthermore, it will be necessary for his field supervisors to allow him ample liberty in the execution of his professional services before he can succeed.

INTRODUCTION

Perplexing public relations problems in game management will not be solved with better plans and programs. They will be solved by men who are trained to cope with public relations problems and who are allowed to use this training. How strange that we are constantly stretching and straining to develop better organizations for public relations when our need is for better individual relationships between game managers and the public with which they deal. Are we not over-organized already and fenced in with rules and regulations that will surely squeeze the last breath of individual initiative out of us? The history of this country reveals that the greatest achievements have been made by the individual genius of free men. Our forefathers conquered kingdoms, and alas now we have to have a permit to add a room to our house! Trained men are still the key to better public relations. If we depend upon organization to produce better public relations in game management, we will get the product of organization—a paper brigade that is not worth the match to set it afire and get it out of the way. On the other hand, if we will place the challenge of public relations on the shoulders of game managers who are properly trained and give them the freedom to release their energies and express their abilities, we will get what top professional men have always produced—a product that will make us justly proud.

In his recent book *Public Relations In Natural Resource Management*, Dr. Douglas Gilbert (1964) states that America has gone through four eras in natural resource management: namely, The Era of Abundance from the discovery of America to 1850, The Era of Exploitation from