

THE DESTRUCTION OF OUR MOST VALUABLE WILDLIFE HABITAT

By TRUSTEN H. HOLDER

*Wildlife Consultant
Little Rock, Arkansas*

ABSTRACT

The hardwood forests that grow on rich alluvial soil are our most valuable wildlife habitat. All states in the Southeastern Region and some other states were originally endowed with an abundance of this type of wildlife habitat.

The soil which supported this habitat is also valuable for agriculture and this has caused the clearing of millions of acres. Shortly after World War II the rate of clearing of the bottomland hardwoods increased alarmingly. In the last ten years, the destruction of our most productive wildlife habitat has reached almost catastrophic proportions.

A study of woodlands in the Delta Region of Arkansas, being conducted by the Arkansas Planning Commission in cooperation with the Bureau of Outdoor Recreation, is revealing the extent of this rapid depletion of Delta timberlands. Further, the study is disclosing that this depletion is precipitating losses which extend far beyond what is generally considered to be the limits of conservation interests.

INTRODUCTION

Most conservationists, sportsmen, and nature lovers recognize that the bottomland hardwood timber growing on rich alluvial soil is our most valuable wildlife habitat. The larger bottomland hardwood areas of the southeastern states usually were intermingled with sloughs, lakes, and cypress brakes. This combination of water, rich soil, long warm growing seasons, and relatively mild winters produced a beautiful and lush environment that supported a great abundance and a wide variety of animal life.

The soil that helped produce this lush environment usually is valuable for agriculture after it has been wrested from the wilderness. Subduing the wilderness during all but fairly recent years was difficult to accomplish. The conversion of forest and cut-over land into productive farms was slow work and frequently required the labor of more than one generation prior to the advent of modern drainage and land clearing equipment. During the last few years one man with a bulldozer and one or two helpers has been able to clear more land in one summer than a family used to be able to clear in twenty or thirty years. This modern capability for clearing, plus economic and other factors and the inherited thinking that swamps and bottomlands are relatively worthless until after they have been drained and cleared, is hastening the disappearance of what is left of this most productive wildlife habitat.

The overall problem is not as critical in those bottomland areas where the distances to wooded uplands are not very great. In the Mississippi River Delta of Arkansas, Tennessee, Mississippi, and Louisiana, considerably more is at stake than the loss of places to hunt. After considering all factors, including the long range sociological and economic effects, it could be that the deterioration of the natural environment in the Mississippi Delta is presenting the greatest challenge to conservationists of our generation.

THE STUDY

The study of Woodlands in Eastern Arkansas was begun on February 1, 1969, as the result of an amendment to the Statewide Outdoor Recreation Plan to develop a technical appendix on this subject. The amend-

ment provides for reviewing the effects of drainage and land clearance and the loss of wetlands and associated bottomland hardwood timber, which are important to fish, wildlife, and related recreational opportunities in Eastern Arkansas. Changes affecting the aesthetic, social, and economic values of the area will also be evaluated.

The author was employed as a private consultant to conduct the study and to prepare the final report for publication. Messrs. Burl Bush and Harold Alexander, staff members of the Arkansas Planning Commission, are assisting in the study and each of them will prepare one section of the technical appendix.

The study area is the ten-million acre Mississippi River embayment portion of Arkansas which is commonly referred to as the Delta Region. All or parts of 27 of Arkansas' 75 counties are included. The Region extends from the Mississippi River westward to where the terrain which contains mostly flat arable land meets terrain that is mostly rocky, hilly, or considerably less suitable for agriculture. It has its westernmost point at the base of the Ouachita foothills near Little Rock. Nearly all of the study area was formerly woodland or swampland except an estimated 400,000 acres of grassland or prairieland.

The one-year study was only partially completed during the time this paper was being prepared. This paper, therefore, will be limited to a discussion of the forces and trends affecting our most valuable wildlife habitat and to a consideration of the effects of the loss of this habitat. While the majority of the material presented in this paper was collected in the Eastern Arkansas woodlands study, it is believed that this case study has general application to the problem of wildlife habitat destruction.

DISCUSSION

Soybeans have been the only big money crop that farmers could plant in recent years without having to contend with government imposed acreage controls. Despite this freedom from acreage controls, there has been an annual fear of the imposition of acreage limitations on soybeans similar to those presently in effect for cotton and rice. When the limitations were imposed on the number of acres of cotton and rice that could be planted, the quota to each individual farmer was based on the average number of acres of each crop that the farmer had planted during specified base periods. Many farmers, therefore, cleared some or maybe all of their remaining woodlands not only to take advantage of favorable marketing conditions, but also in hope of receiving a larger quota should soybeans be brought into the acreage control program.

Some farmers and business organizations began purchasing large tracts of bottomland hardwood timber, clearing the land and growing soybeans as fast as possible. For example, in 1960 one land development company, which has its home office in one of the northern states, purchased a tract of land in northeastern Arkansas which contained approximately 3,000 acres of cleared land and 21,000 acres of woodlands. According to information received in an interview with a company executive, by March of 1969 the 21,000 acres of woodlands had been reduced to approximately 500 acres.¹ This same company is completing the clearing of 11,000 acres located between Little Rock and Memphis. Major portions of this tract, which is near the Arkansas Game and Fish Commission owned Dagmar Area, is growing its second crop of soybeans this year. This company has cleared 14,000 acres on the Sunflower River in Mississippi. In Louisiana the firm has cleared 47,000 acres and has arranged to clear an additional 13,000 acres. The same company is also clearing a 100,000 acre tract on the North Carolina-Virginia border.

While this company is probably the largest of its kind, there are other companies which have purchased and cleared 5,000 to 10,000 acres of contiguous hardwood timberlands in Arkansas. These same companies

¹ Name and address of the company furnished upon request.

have other mammoth land clearing operations underway in other southeastern states. The owners of some of these large land development enterprises may expect to make more profit from selling the land at a later date than from farming, but the apparent reason for most land clearing is to grow soybeans.

In addition to the clearing which is done primarily to grow soybeans, other clearings also are being made for pastures, for roads, power line and pipeline rights of ways, for houses, shopping centers, and other crops. It appears that even the rows of trees growing alongside roads and streams and all the individual trees growing here and there throughout the rural portions of the Delta Region are destined for elimination. This unceasing decline in the woodlands acreage of the ten-million acre study is illustrated by the following estimates of the remaining woodlands:

Year	Forest Acres
1940	4,301,000
1950	3,709,000
1960	3,220,000
1969	1,973,000 ²

There is no need to explain the close relationship between drainage and the destruction of our most valuable habitat or to explain that this destruction has in the past and still is being financed by the federal government, for this subject has frequently been discussed. This group, which is composed of both fulltime professionals and knowledgeable and effective part-time workers in conservation, know these things only too well. Nor is there any need to explain that federal expenditures on drainage and flood control have helped tremendously thus far in bringing a high level of prosperity to the Mississippi Delta and other bottomland areas. This is something that all conservationists readily admit, but in so doing try to emphasize the "thus far" part of the admission.

There is not even any need for us to explain the extent of the wildlife losses that are resulting from the destruction of this habitat for the fate that awaits the wildlife once its habitat is destroyed is well known.

There is some need, though, to emphasize to this group that in the larger bottomland areas, and especially in the Mississippi River Delta Region, values that are considerably more important than those which can be attributed to the sport of hunting hang in the balance. What are some of these other losses which extend beyond what is generally considered to be the limits of conservation interests?

One of the most obvious of these losses is that which will be sustained by that portion of the wood products industry which is dependent upon Delta hardwood timber. In Arkansas that portion of the industry has enjoyed during the last ten years the receipt of logs from more than a million acres being cleared for cultivation. There were numerous exceptions, but in most cases the merchantable timber was harvested in connection with the land clearing operations. This influx of logs from this never-again-to-be-available source provided a temporary stimulus, but helped to speed the day when some, and maybe all, mills dependent upon Delta timber could close for lack of raw materials.

² The estimates of forest areas in the Delta Region of Arkansas are based primarily upon data from the following sources:

The 1940 Statistics

Holder, T. H., "A Survey of Arkansas Game" (Little Rock: Arkansas Game and Fish Commission, 1951), pp. 137-138.

The 1950 Statistics

Wheeler, Phillip R., "Forest Statistics for Arkansas," Forest Survey Release No. 71 (New Orleans: U. S. Department of Agriculture, Southern Forest Experiment Station, 1953), p. 16.

The 1960 Statistics

The Arkansas Conservation Needs Committee, "Arkansas Soil and Water Conservations Needs Inventory," (Little Rock: Arkansas Geological and Conservation Commission, 1961), pp. 40-41.

The 1969 Statistics

"Inventory of the Soil and Water Conservation Needs of Arkansas," (The Arkansas Conservation Needs Committee, 1967-1968).

What about the owners and operators of the wood products mills that are located in the Delta Region; are they looking forward to going out of business? Initial indications were that although some mill owners were concerned, they appear to have become overwhelmed by the magnitude of the problems; therefore, they were discouraged from taking an active part in preserving the bottomland timbered areas. A closer examination, however, has revealed that this is not the universal feeling within the industry. Even some of the companies which have cleared some of their own timberlands to go into soybean production are interested in trying to maintain large areas of timber in the bottoms. They would have preferred to have continued producing timber because of their heavy investment in the business that has been built around the manufacture, distribution, and sale of the many fine hardwood products.

Why, then, did these lumber companies clear some of their own lands and start growing soybeans? The April, 1969 issue of *The Potlatch Story* explains why Potlatch Forests, Incorporated, started growing soybeans on some of their land:

Potlatch Farms? You bet. Forty-four hundred acres of soybean and milo were harvested late last year—sown and reaped in soil where hardwoods once grew.

The farming activity is taking place down in the southeastern corner of Arkansas on the Mississippi delta land of Chicot (CHEE-ko) County. Why would a forest products company replace pecan, honey locust, rock elm, cypress, oak, ash, and willow with soybeans? Dick Warner, vice president in charge of Potlatch's southern division, gives the answer. "Unfortunately, there are some places in Arkansas where we can no longer grow trees. And because we always aim to make our land as productive as possible, we have switched to annual crops." Up until the last few years, the delta was a region where the wetland species of trees thrived. The spring floods would always raise their crest over the rivers and bayous spreading water across the lowlying tablelands of the delta. This was the way moisture got to the tree roots.

Yet, when tree farmers prayed for flood water, they prayed alone. Everyone else prayed for flood control, and flood control came to the delta. The bayous and rivers were dredged by the government and channel depths increased.

This action drained the delta area, dropped the water table deeply into the soil, and left the tree roots high and dry.

Fortunately the vast majority of Potlatch's 150,000 acres of Arkansas hardwoods are not in this particular delta area. But those that are suffered measurably.

According to Mike Mety, forester and farm manager, "In the drained areas, the yearly growth rate of the hardwoods dropped down to anywhere between \$2 and \$5 an acre. On some acreage we found we were growing only \$1 worth of hardwood in a year's time."

Faced with these facts, the Potlatch people in Arkansas first searched for means to accelerate tree growth. "We thought of everything," said Dick Warner, "but our hopes were forlorn. None of our ideas were practical.

"Our only alternatives were to sell the land to farmers or grow our own agricultural crops. We dismissed the thought of selling the land because it could still support a perpetual resource. The only difference was that the resource would now have to be food instead of forests.

We felt that down in Chicot County we could become good farmers instead of tree farmers," Warner remarked.

In 1965, the Southern Division started farming in a small way by clearing 360 acres of land and sowing them in crops. Men whose lives and values are closely intertwined with the heritage of the forests were cautious about clearing too much land before proving their idea was right.

They got their proof. Last autumn 4,400 acres were harvested—3,960 acres of soybean and 440 acres of milo, a grain sorghum used as poultry feed.

“By 1970 we hope to have 8,000 acres under cultivation,” says Mike Mety. “This will be the extent of our hardwood forests in Chicot County that have been hurt by flood control.”³

This same company made a brief explanation of this relation of drainage to timber in a full page advertisement which appeared in the July 19, 1969, issue of *Business Week Magazine*.

Potlatch is not the only wood products company concerned with the detrimental effects of drainage. The president of another company reported that if the proposed Cache River Drainage Project was completed, it probably would render much of his company's land unsuitable for growing timber and this might force the clearing of their Cache River tracts.⁴ This company, which specializes in high quality paneling, owns approximately 20,000 acres of bottomland timber in eastern Arkansas, but this amount is only one-third of the amount required to support the operation of the mill at its current level.

It is easy to predict how a continuation of the loss of wooded acres would affect the wood products industry. It is also easy to predict how it would affect the squirrels, the woodpeckers, and most all other forms of wildlife including even some of the lowly, but ecologically important, one-celled animals. How, though, would it affect the people? To visualize how it probably would affect the people, one might picture the Mississippi Delta after its last sawmill had been forced to close and after practically all its shady groves and cypress-lined sloughs had been eliminated. One might also picture the Delta after most of its Indian mounds and other evidence of America's heritage had been obliterated to make room for more soybeans, milo, rice, cotton, and cattle. Would a Delta Region practically devoid of trees and with almost no opportunity for outdoor recreation in a natural beauty setting be able to attract new industry or even retain the high quality industries it already has?

Would it be the kind of place where educated people would want to live and raise their families?

Would it be the kind of place where outsiders would want to spend their vacation or even visit?

What are the ecological importances to people of the wetlands and overflow bottom areas that are being drained and cleared? Do these areas have anything to do with the hydrology of the Region? What effect will the drainage and clearance of these areas have on the underground aquifer and on the level of soil moisture that is needed by the farmers? Will the complete loss of these areas be followed by worse drouths and worse floods?

What about these trees that apparently are looked upon by most landowners as being the enemy of progress and profit; do these trees contribute anything to the good life now enjoyed in the Delta? Do they keep the farm soils from blowing away? Do they have any effect upon the weather or upon the air we breathe?

Finally, what effect will living in a huge agriculture complex, which is apt to contain about the same aesthetic and cultural values one would expect to find in a huge industrial factory, have upon man? How will living in a Region with such a bleak environment affect man's physical health—and perhaps of more importance—how will it affect man's behavioral patterns and man's mental development?

When one considers the need to preserve the Delta wetlands and the associated wooded areas, the need to insure the long-range benefits that could be obtained, and the need to act while remnants are still available, most other conservation proposals shrink in comparison.

³ “Potlatch Farmer in the Delta,” “The Potlatch Story,” (April, 1969), pp. 9-11.

⁴ Name and address of the company furnished upon request.

CONCLUSION

The passenger pigeon and some other forms of wildlife disappeared while conservation was still in its infancy. The conservationists who came before us crusaded for the protection of the buffalo, the antelope, and the other varieties of our vanishing herds of big game. They also helped awaken a boisterous and greedy America to the values inherent in the wild and natural environment. The conservationists who came before us were not always successful, but they achieved some marvelous accomplishments in the establishment of our National Forests and Refuges and in the preservation of some of our parks and scenic wonders.

Now, it is our turn. It is our turn and the challenges before us which overshadow all others are those that pertain to the quality of the environment. It is our generation of conservationists which will win or lose important battles against pollution. It is, also, our generation of conservationists which is destined to preserve some, and possibly a great many, cypress brakes, patches of timber, and at least significant portions of our once vast wilderness domain which remains in the overflow bottoms.

FOREST SOILS AND GAME NUTRITION

By DEAN A. MURPHY and WAYNE R. PORATH

Missouri Department of Conservation

Columbia, Missouri

ABSTRACT

Early writings indicated that high soil fertility levels increased both quantity and quality of some wildlife species. More recent work has shown that factors other than soil fertility are also related to quality range for wildlife. Soils apparently have not been a limiting factor to turkey distribution in Missouri, since transplanted populations have done well on many soil types, even prairie soils. Weights of fawn white-tailed deer ranged from high in north Missouri to low in south Missouri, presumably reflecting a poorer quality of range in the Ozarks. However, chemical analyses of preferred deer foods collected from three soil areas did not reveal consistent differences which could be related to soil type or physical development of deer. Most native foods were of low quality. The increased physical development of deer in northern Missouri apparently resulted more from supplemental feeding on cultivated crops than from soil fertility. Digestibility of foods needs to be determined to more completely evaluate their worth. Several other studies have indicated that nutritive values of plants are not directly correlated with soil fertility but are influenced by many other factors. The major influence of soil fertility is expressed by the manner in which it influences the thinking of land managers.

"As our soil goes—so goes wildlife." (Crawford—1949). This theme has been reiterated in different phraseology by wildlife workers in Missouri since the 1940's (Denny, 1944 and Crawford, 1946). The basic idea for this theme probably originated with University of Missouri soil scientist, Dr. William Albrecht, who preached "Quality not quantity"—"protein not bulk". Dr. Albrecht (1949) believed that all life is the end product of the soil and that the distribution, health and survival of wildlife was related to the soil and its fertility.

Studies of several wildlife species in Missouri added support to Dr. Albrecht's statements (Crawford—1950). The body weights of 8,180 raccoons collected from 95 Missouri counties showed a direct relationship to soil fertility ratings for the various counties. The number of raccoons harvested also was related to the soil fertility. The lowest harvest was taken from soils of relatively high fertility but not high enough to