

Reforestation in Southern Illinois: The Shawnee National Forest Purchase Units

Thomas F. Barton

Southern Illinois State Normal University, Carbondale, Illinois

After approximately one hundred years of forest, wildlife, soil, water and mineral exploitation, so nearly exhausted are the natural resources in the eleven counties of southern Illinois that the area is now in a desperate economic condition. A brief discussion of this area's present economic condition, some of the geographic factors contributing to its economic decline, and a plan for restoring part of its wealth as well as establishing a permanent economy in the area, is the object of this paper. A report of the restoration of renewable resources in the Shawnee National Forest purchase units in the hardwood area of Illinois, will illustrate how, in many ways, the national government through the forest service is reestablishing natural resources and thereby making investments in our future national wealth. Other central hardwood reforestation projects of which the Shawnee National Forest Purchase units is representative are being developed in Ohio, Indiana, Kentucky, Iowa, Missouri, and Arkansas.

A General Landscape Picture.—The landscape in the three southern most tiers of counties in Illinois is one of decadency. Here and there the scattered patches of forest, cut over and now occupied by less valuable species of trees, have been gutted by fires and reduced to a poor quality of coppice. In recent years, especially since the development of concrete highways, these hitherto isolated forests have been drawn upon for mine timbers, ties and saw logs until virtually every specie of commercial size has been utilized. Most of the wildlife that once inhabited this region is now gone. The well stocked fur and fish streams have been miserably thinned out by mine impurities, earth materials from soil erosion, sewage, and also by the too frequent and greedy "catches" of man. In this area are found abandoned mines and disintegrating mining towns. The once fertile and cultivated slope lands are now deeply scarred by gully erosion, and over large areas the top soil is gone. Deserted fields produce only persimmons, sassafras and blackberry thickets. Because of slope wash and floods, the formerly tilled bottomlands are weed infested. Numerous abandoned pastures are now weedy plots of ground. And, as a natural sequence to such a picture, a gradual but steady exodus of rural population, leaving behind abandoned farmsteads, has been going on for the past quarter century and continues today.

The Problem.—A quantitative analysis of (1) terrain, (2) forest removal, (3) extent of erosion, (4) population exodus, and (5) farm values may help to clarify the landscape picture.

(1) **Terrain.** The terrain of southern Illinois is of a hilly nature generally rough and broken with many precipitous rocky slopes and having a maximum difference in elevation of approximately 600 feet. According to E. A. Norton, "About 75 per cent of the area lies in slopes steeper than 15 per cent . . . Ten per cent of the area is bottom land . . . and the remaining 15 per cent lies on slopes varying from 3 to 15 per cent."

¹ E. A. Morton is Assistant Chief in Soil Survey Mapping in Illinois. Quotations taken from a reprint by L. E. Sawyer, "National Forest Movement in Illinois", *Transactions of the Illinois Academy of Science*, Vol. 23, No. 2, 1932, p. 2.

(2) Forest removal. When white man first came here he found over this rough terrain an "oak-hickory" forest on the slopes and uplands, and "river bottom hardwoods and Cypress" on the major flood plains. But by 1932, the timber in the principal counties in which the Shawnee National Forest purchase units are located had been cleared for farms or so indiscriminately cut that about only one-third of the original timber area remains, and most of this is cut-over forest land. According to M. E. Ensminger, just thirty years ago the unglaciated part of southern Illinois was still covered with timber and the "income from this natural resource was about \$2,000,000 per year. Since 1905, this has been going down until today it is less than \$100,000 per year, and there is less than one per cent of the original timber which has not been cut over.¹

(3) Extent of erosion. Once the forest cover was removed and the ground plowed, soil erosion became inevitable. A map of Illinois prepared by the Illinois Soil Survey Division showing the percentages of county areas affected by erosion of a "serious" and "destructive" nature reveals the startling extent of erosion in the area under consideration.² In six of the eleven counties more than 75 per cent of the land has been affected by "serious" and "destructive" erosion, and three of the remaining five show from 51 to 75 per cent of the land so affected. This erosion has taken place primarily on the slopes steeper than 15 per cent where erosion is destructive even under a grass cover. Erosion has also been harmful on the 3 to 15 per cent slopes where, at one time or another, most of the land has been under cultivation. Today, due to soil depletion through erosion, long periods of leaching and continuous cropping, about two-thirds of this slope land has been abandoned.³ This is now waste land chiefly occupied by weeds and brush.

(4) Population exodus. Although the drift of people from this area has not been spectacular, it is none the less real. A map prepared by the University of Illinois Agricultural Experiment Station comparing the 1930 with the 1910 population by civil divisions furnishes conclusive evidence of this existing condition. Many townships have lost as much as one-third to one-half of their rural population.⁴

(5) Farm values. The economic status of the remaining farmers is indicative of the land utilization problem.⁵ In 1930, in Hardin, Pope, and Johnson counties, with the exception of two civil divisions, the value of farm land and buildings was less than 30 dollars per acre, with some large areas valued under ten dollars. In the same year, when only the valuation of farm land per acre was considered, over nine-tenths of the land now included in the Shawnee National Forest purchase units was valued from 0-30 dollars per acre, with much of it valued at less than ten dollars an acre.

Cereals Versus Tree Utilization.—From the standpoint of national planning, the question confronting one is, in what way can the land in the eleven counties of southern Illinois best be utilized? Undoubtedly, the best and in some places the only use that can be made of a large per cent of the land is to plant it to trees rather than cereal crops. This is especially true of seven of the eleven counties in the Shawnee National Forest purchase

¹ M. E. Ensminger; from an unpublished manuscript entitled, "Ah Wilderness". (Mr. Ensminger is manager of the Dixon Springs Pasture and Erosion Control Demonstration Project.)

² Map, p. 123, *A National Plan for American Forestry*, op. cit.

³ L. W. Sawyer, op. cit., p. 2.

⁴ Unpublished statistics compiled by the writer.

⁵ Maps and charts from the Illinois State Planning Commission.

units. These seven counties contain an area of 2131 square miles of which 53 per cent of the total area is so rough that under the present economic system it will not prove profitable. Furthermore, 11 per cent of this total area contains flat land with an impervious subsoil, thus excluding it from land suited to cultivation.¹

Admitting that 65 per cent of the land in these seven counties can be used for cultivation, the question arising is: should the abandoned land be reforested, or should it be fertilized and returned to crop production? Moreover, with a soil that is impoverished, is it not possible in this scientific age to restore its fertility with fertilizers and reduce slope wash with contour plowing, strip farming and terracing? In order to find a scientific answer to these two questions, the University of Illinois located two experiment fields in the area. The conclusion following this investigation was that the submarginal land could not, under ordinary grain cropping systems of farming, be made profitable.

It is not surprising, consequently, that in this area tax-delinquency has grown with accelerated tempo. Of the 2131 square miles in seven counties in which reforestation is to be developed, by February, 1931, 25,320 acres had been forfeited for the non-payment of taxes.² Alexander County alone by the end of 1931, contained over 25,000 acres of land that had been forfeited for this reason, representing in that county an increase in one year of 15,269 acres, and a total as great as the combined seven counties for the previous year. Alexander County is not a unique example. It is typical of land forfeiture in the region.

After examining the statistical evidence as to the extent of erosion, amount of land abandonment, and percentages of land suited for agriculture, it becomes evident that reforestation here is the feasible solution to efficient land utilization. Acting upon this conclusion, the public leaders of Illinois prevailed upon National Government agencies to start a reforestation project in southern Illinois.

Location and Pattern.—The Shawnee National Forest project is located in the three southernmost tiers of counties in Illinois. Its pattern is roughly H-shaped. The two vertical bars of the H are represented by the tier of counties paralleling the east side of the Mississippi River, namely, Jackson, Union, and Alexander counties, and the tier paralleling the west side of the Ohio, namely, Gallatin, Hardin, Pope, and Massac. These two vertical bars of the H are almost connected by two horizontal projections which extend from the east and west and almost join near the center of the state where they occupy parts of Hardin, Pope, Johnson, and Union counties.

The irregular exterior boundaries of the project enclose 785,000 acres—60 per cent of which will be purchased for reforestation. The irregular boundaries are due primarily to the adjustment of the boundary to land-form and soil conditions. The government is attempting to exclude good agricultural land and at the same time to include as much as possible of the region that should be reforested.

Objectives.—The five primary objectives of the Shawnee National Forest purchasing units are: (1) erosion control, (2) restore and manage wildlife, (3) develop and provide recreational facilities, (4) develop sustained yield of timber and game and, (5) sustain forest communities.

(1) Control Erosion. Although the ultimate goal of the project is to hold in place the soil as produced by nature, the immediate objective is to

¹ Statistics furnished by the Illinois Soil Survey.

² County tax figures.

check soil destruction. Already, a large part of the time and money has gone toward protecting soil from fire and erosion.

According to C. S. Horton, of the four principal factors in local erosion, namely, steepness of slope, the thundershower type of rainfall, lack of a long cold period, and the characteristics of the loess soil, the latter is the crux of erosion tempo. From the standpoint of erosion, this soil has all the poor qualities of sand and clay soils and none of the good. Clay soil puddles and thus protects itself in part from erosion; sandy soil permits rapid percolation thus protecting itself by decreasing the run-off; but when water falls on loess the soil melts away like sugar;¹ consequently, a forest litter plays an important role in controlling erosion in this area.

(2) Restore and manage wildlife. In this project many factors will contribute to the restoration of wildlife. A cutting cycle and plan for distributing cuttings will be adopted thus permitting cuttings to be economical and at the same time provide suitable game habitat. Invaluable game cover will be furnished by the many comparatively small plantings of conifers² distributed throughout the project to fit soil conditions. A sane program of "weed tree" elimination will be followed, and not one that would be inimical to wildlife. Plant species of major importance to wildlife will be chosen wherever feasible for erosional control and for sites too poor to produce first class timber. Thus, many of these plants will have the dual function of furnishing food and cover for wildlife and at the same time aid in erosion control.

(3) Develop and provide recreational facilities. Only the lack of good roads and recreational facilities have prevented more people from enjoying "Little Egypt's" points of interest and beauty. In this area there are many places of geographical, archaeological and geological phenomena of educational and recreational importance. The construction of good roads will make these points of interest accessible to the general public. Picnic grounds with modern equipment, parks, and in the future, swimming facilities will be constructed. Provisions will be made for fishing and hunting. In this way the people can enjoy the Shawnee National Forest purchase units and at the same time the natural resources will be protected from destructive public habits.

(4) Sustained Yields. Both the trees and the game are to be managed on a sustained yield basis. This type of management has many advantages. Game will be protected from being exterminated by its enemies, and at the same time it will not be permitted to multiply to the point where it will destroy its own habitat. By a cutting cycle operated on a sustained yield basis the forest will fulfill its multiple use of protecting soil, regulating water, contributing to recreation, providing a suitable habitat for game, and furnishing steady yearly employment for workers.

(5) Sustain forest communities. The Shawnee National Forest purchase units are expected to sustain small forest communities, and, in time, small wood-working industries. In these communities men will find work in the various uses made of the forest. Trees will require planting, thinning, trimming, logging, and protection from fire, disease, insects, and rodents. Wildlife will need to be cared for. Fishing and hunting parties will need lodging, equipment and guides. The tourist trade will supply work for those in private business or working for the Government. Small wood working industries will furnish some annual employment. Some of the family income will be earned by tilling small plots of the better land adjacent to the towns. Each family will be expected to have a garden and few animals. It is hoped that

¹ Personal Interview with G. S. Horton, December 17, 1936.

² Ira N. Gabrielson, *The Correlation of Forestry and Wildlife Management*, Wildlife Research Management Leaflet, BS-37, Bureau of Biological Survey, p. 4.

these communities will have a rather steady income from year to year, and not be a booming town one year and a ghost town a few years later.

Fires.—The keystone of the whole problem in restoring the renewable resources in the Shawnee units is fire control. This is more true of southern Illinois than some of the other areas being reforested. In northern Michigan "weed trees" enter abandoned land and necessitate expense of cutting in order to clear the land for planting of more valuable species. The hardwood species in the Shawnee units if protected from fire follow quickly in the ecological evolution after the transitional vegetation of sassafras and persimmon. However, if the hardwoods in this region are protected they will reproduce prolifically and better commercial types gradually increase.

With the control of fires natural propagation will be a great asset to the project. About two-thirds of the 471,000 acres to be purchased in the Shawnee units have a fair stand of second growth, or will have if properly thinned and protected from fire. From the standpoint of reseeded and transplanting, this natural propagation means a great saving. The natural seeding of the trees for transplanting will supplement artificial seeding methods as much as possible. In this way nursery costs will be reduced. In Union county, for example, by keeping fires out of an area for three years, the management has protected from two to three million fine seedlings which can be transplanted in a few years.

Because of the lack of a snow blanket, and because of the dry periods in summer, the occasional drought, together with the too prevalent practice of "burning" by the farmers, and the lack of an informed public, fire hazards are large. The farmers of the region, both in the spring and fall, burn over parts of their land with little care whether the fire stops on their land or not. They have a naive, almost religious philosophy that burning over the ground is beneficial to tree growth. Thus a high per cent of the trees which appear to be commercial timber are fire scarred. Insects and animals also take advantage of these fire scars so that numerous trees are gutted before they reach cutting age.

Fire, moreover, not only destroys part of the wildlife, but what little escapes its ravages has its food, water, breeding grounds, and places of shelter destroyed.

PROGRESS AND FUTURE

Most of the money and time expended thus far has gone for administrative purposes. First, the land had to be optioned, approved and bought. Then, roads and trails had to be improved and fire lanes marked. Lookout towers, telephone lines, bridges and new roads had to be constructed, and equipment for construction purposes, fire fighting, erosional control and reseeded and transplanting purchased.

By May 1, 1937, the government had purchased 63,000 acres and in addition had optioned and approved 153,000 more. By this date, it had also seeded 2,580 acres and planted 1,360.

From the standpoint of wildlife, a game survey has been made. Wildlife water ponds one-half to one-fourth an acre in size have been constructed and more are under way. Twelve deer, thirty beaver, and a large number of wild turkey have been liberated.

The 1937 and 1938 program calls for the seeding and planting of four million trees per year.