

Forest Conservation in the Ohio Valley

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With the 1937 floods of the Ohio and its tributaries still fresh in our minds, we turn to methods of flood control. It is true that in the past the Ohio and Mississippi valley have had periodic spring floods, but during the past few years these floods have occurred more frequently and with greater severity. Constructing of storage reservoirs along the head waters of the Ohio river and its tributaries along with a very intensive and extensive reforestation program will in time curb these destructive floods.¹ This is very well expressed by Mr. Wade O. Martin, Chairman of the Louisiana Flood Control Commission, who states; "We must return to 'God's plan of checking floods'. We must back-track now, restore the timber and grass, the lakes and swamps which were nature's method of flood control".

In Indiana and Illinois as is the case in many of the other states in the Ohio valley, the Civilian Conservation Corps under the direction of the Federal and State governments have done a marvelous piece of work in the way of clearing out much dead, diseased and undesirable growth. They have constructed fire barriers, surveyed, studied and reforested many acres of old worn out hillsides and sub-marginal land. Along with this reforestation program the National and State governments have a well planned system of flood-control reservoirs which are to be constructed or are now under construction in practically every State and National park and forest.

Some few states have pioneered in reforestation in that they have endeavored to interest individuals to set aside private areas as forest preserves and classified forest regions. Indiana has gone forward in this movement by setting aside by law, certain forest areas called classified forests. The individual owners must meet certain conditions relative to forest protection and reforestation. The state in turn releases this land from the regular tax rate and places this woodland under a specific low tax rate. By this method private owners of primeval forests are given encouragement to preserve for future generations these forest tracts and at the same time are encouraged to experiment, survey and add sub-marginal timberland to their woodlands.²

It is desired in this report to point out to other states and individuals what can be accomplished if proper steps are taken by state legislatures, in enacting laws to preserve the few scattered forest regions in the Ohio

¹ Recently there has been announced through the newspapers that the State of Illinois is considering a plan for the construction of between 7,000 and 10,000 small dams for water conservation. It has been pointed out by State Senator Charles F. Baumrucker that "The level of Illinois underground water reservoir has dropped 10 to 30 feet in the last fifteen years." He further states: "Deforestation and farming have destroyed the sponge surface of the land, so that rain runs off instead of soaking in. Dams in ravines and gullies would catch this runoff, minimize floods, arrest soil erosion, restore the ground water level and prevent drought."

² Classified forest lands have increased from 4,192 acres classified by 75 owners in 1923 to 91,530 acres classified by 1,496 owners in 1936.

valley. Herein is described and explained one experiment which illustrates what can be accomplished relative to reforestation, especially where nature has taken a hand, this being a very common occurrence on many acres of sub-marginal land throughout the Ohio valley.

In Dubois County, Indiana, there is at present an experiment underway whereby one can observe nature's plans and methods of reforestation over a long period of time. Man can really gain much valuable information from a careful survey of forest associations, distribution of types of trees and secondary plant succession. From a report made by J. E. Potzger and Ray C. Friesner for Butler University, there are several conclusions to be drawn regarding forests in this section of the Ohio valley. This forest area is characteristic of upland and hill territory of the valley. It is known as the Mauntel Forest and is located about two and one-half miles southwest of Holland, Indiana. This forest of about 60 acres may be divided into four distinct parts which have had different histories of treatment. With one exception the area has been disturbed very little by cultural influences. Livestock did not roam this area. Therefore, the undergrowth and small trees have not been molested. Fifteen acres on the north (Section A) is virgin timber. Only such timber was cut which appeared matured or diseased. Twelve acres on the south and southwest (Section B) was partly cut over for the marketable timber fifty-five years ago; about thirteen acres of the southwest corner of the mature forest (Section C) was completely cleared seventy years ago.³ This strip of woods has been permitted to reforest itself according to the natural law of plant succession. As a result the forest has afforded an excellent opportunity to make a comparative study of undisturbed virgin forest and several stages of secondary succession (black oak, white oak and hickory) *Quercus velutina*, *Quercus alba*, and *Carya ovata*. Another area has been added to this forest for further study of secondary succession. This consists of twenty acres and extends west of the main forest (Section D). The area was taken out of cultivation fifteen years ago. Here can be observed the first plant and tree communities as they develop by natural reseeding.

From careful observation and study one notices wild blackberry *Rubus villosus*, dewberry *Rubus canadensis*, and various field weeds predominating in the ground cover. Birch, maple, ash (*Betula-Acer-Fraxinus*) was the climax in this section with a small percentage of black oak *Quercus velutina*, hickory *Carya ovata*, white elm *Ulmus americana*, and cedar *Juniperus virginiana* scattered throughout section D. By comparison of the four sections of this representative forest we have four different stages of plant development in the succession.

In the virgin section A we have the typical oak-hickory *Quercus-Carya* climax with an abundance of large trees widely spaced. These large trees furnish a very dense canopy which excludes much sunlight from the floor of the forest. As a result, the ground cover of herbaceous plants is sparse and scattered. Poison-ivy (*Rhus toxicodendron*) was the most important element of the ground cover. There is a deep layer of humus and decaying leaves, which acts as a sponge during wet weather to absorb the excess moisture and tends to hold this moisture during long periods of drought.

The partly cut-over region (Section B) resembles the oak-hickory climax *Quercus-Carya* with the exception that the trees were not as large and in some cases there are dense patches of undergrowth. The only second-layer tree of any importance is the dogwood *Cornus florida*. There is practically

³ As classified by J. E. Potzger and Ray C. Friesner, Butler University Botanical Studies, Vol. III, paper 3, page 85.

an absence of the common early successional species which are found growing on cut-over areas. Example: the sassafras *Sassafras officinale*, persimmon *Diospyros virginiana*, Dwarf Sumach *Rhus copallina* and sweet gum *Liquidambar*.

Section C represents an area of various peculiarities unlike that of sections A and B. Here the trees are much smaller with dense stands in some places, while in other places there are open grass tracts and copses which are very frequent. The oak-hickory-ash *Quercus-Carya-Fraxinus* climax prevails. In certain open places there are large patches of lichens and xerophytic mosses. Some trees have reached twelve inches in diameter. The stand is very thick and consists of various scrub species of oak, some hickory and ash. These scrub species of oak are absent in sections A and B, which suggests that in seventy years, oak-hickory *Quercus-Carya* has regained dominance by crowding out the scrub species. These four sections give one a picture illustrating the rapidly advancing succession from the open field, through thicket and bramble stage, to climax forest in the period of from fifty to seventy years.