

## Woodlands in Monroe County, Indiana

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Forests are an important natural resource of Indiana. They add over ten million dollars to the yearly income of the state's inhabitants. They offer employment to about 26,000 workers who earn over 61 million dollars working in the wood-using industries. They are especially important in southern Indiana which contains two-thirds of the state's commercial forest land (Fig. 1). In the north and center only the morainal hills have more than 10% of their land in forest. In the south, however, one-third of the unglaciated uplands is commercial forest land (1).

An area coinciding with the Crawford and Norman Uplands comprises the most heavily wooded belt of southern Indiana. Monroe County was chosen as a typical unit for the study of the woodlands of the southern part of the state. The county has 48% of its land in commercial forest, and contains sizeable portions of the two physiographic provinces which seem to be responsible for most of southern Indiana's woodland. Of the county's total area of 264,000 acres, 127,000 are wooded (4) and of this 52,592 are farm woodland, half of which is pastured. The total income from farm woodland for 1949 was \$22,022.00 (2).

### Relation of the Distribution of Woodlands to the Physiographic Provinces of Monroe County

The map of Monroe County woodlands (Fig. 2) reveals three distinct patterns of distribution. The eastern part of the county is very heavily wooded. The large areas of woodland are cut up only by long, narrow valleys of clear land.

The central part of the county shows a very small amount of woodland, some of it along the few surface streams, and a few patches of poor woods representing overgrown quarries.

The south-western part of the county has a very patchy type of forest cover in striking contrast to the more solid woodland pattern of the eastern part of the county.

A closer analysis of these patterns reveals some relationship between forest distribution and the physical characteristics of the three physiographic provinces.

The Norman Upland is a maturely dissected cuesta underlain by gently dipping sandstones and shales of the Borden group of Mississippian rocks (5). The two main characteristics of this upland are its great local relief and the uniformity of its topography. The upland is marked by very sharp ridges, deep narrow valleys, perfectly symmetrical drainage pattern, uniformly steep slopes, and uniform lithology (6). This topography is reflected in the woodland distribution of this

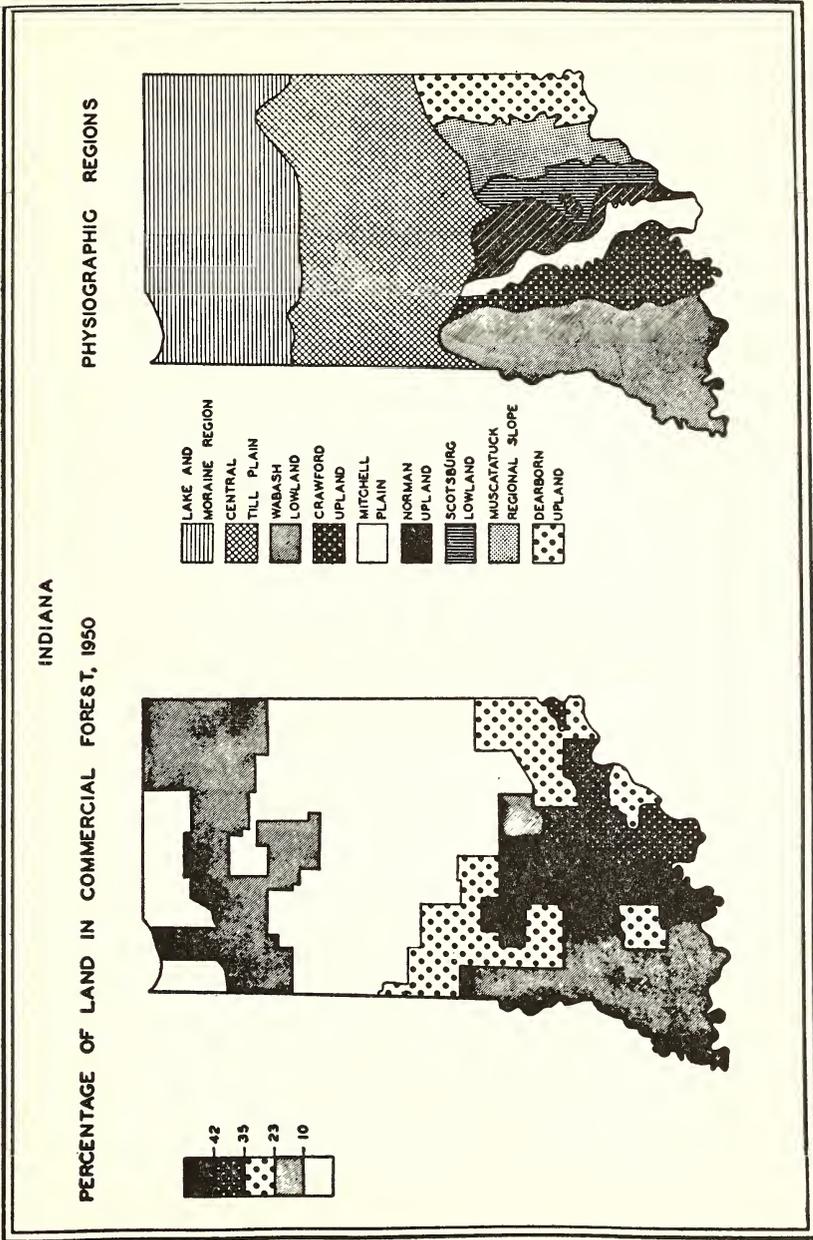


Figure 1

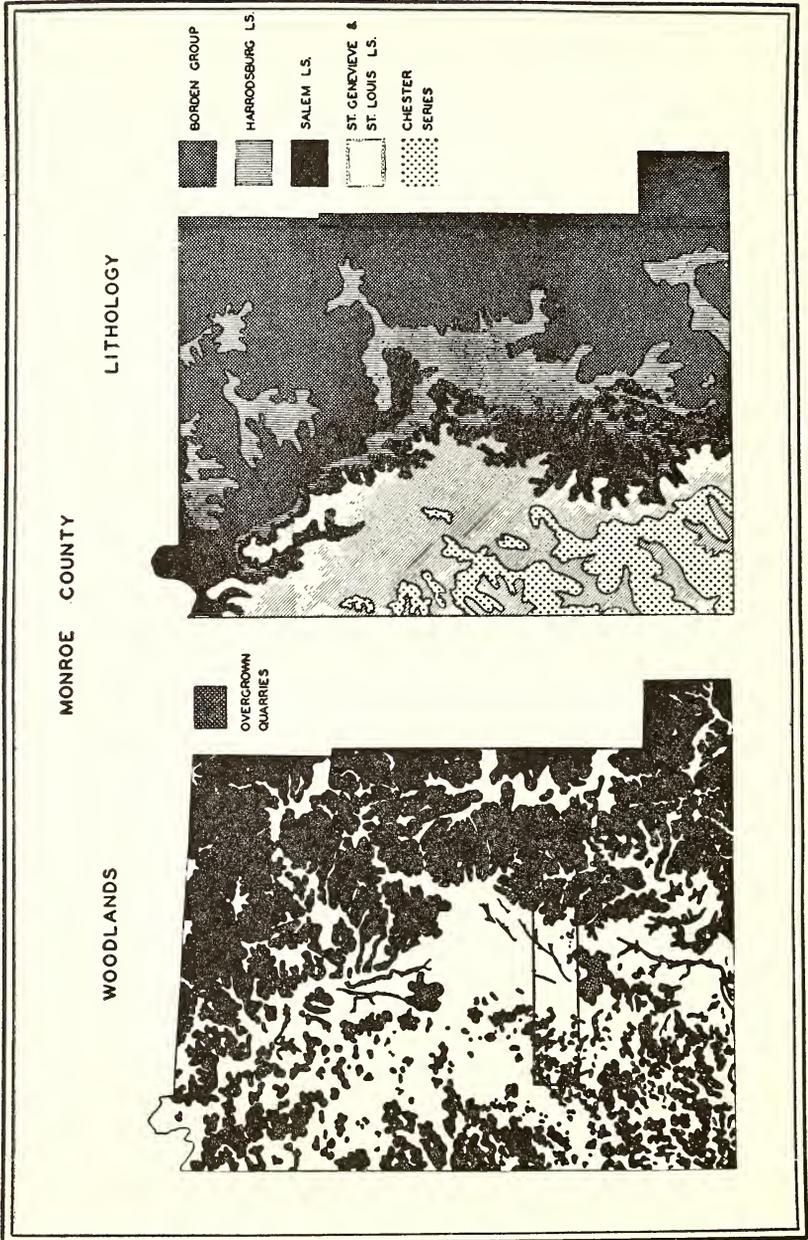


Figure 2

part of the county. The monotonous forest cover is marked by uniformity of type and distribution.

The western boundary of the Norman Upland cannot be traced as a straight line. The Borden rocks dip under the limestones of the Mitchell Plain but not along a definite line (3). Ridges with Norman Upland characteristics extend deep into the plain, and limestone valleys characteristic for the plain reach in long tongues into the upland.

The poorly defined boundary between these two provinces shows as such on the woodland map. The long forest-free valleys represent Mitchell Plain limestones which do not support heavy woodland.

The Mitchell Plain is a dip slope area underlain by Harrodsburg, St. Louis, and St. Genevieve Mississippian limestones. This westward sloping plain is characterized by low local relief and karst topography.

In Monroe County the Mitchell Plain is narrow and very irregular. Nevertheless, on the woodland map the plain stands out as a distinct area generally devoid of trees except in the glaciated north-west corner, along the surface streams, and in the areas of abandoned quarries.

The western boundary of the Mitchell Plain is a zone of transition from limestone sinkhole plain to a highly and irregularly dissected upland of clastic rocks, rising to a considerable altitude. Extension of the plain features into the plain, in the form of outliers, makes it very difficult to trace the boundary between the plain and the upland to the east of it.

The Crawford Upland is an area of the Chester series of Mississippian rocks and some Mansfield (Pennsylvanian) sandstones. Erosion of alternating non-resistant shales and limestones, and resistant sandstones created the rugged, irregular, angular topography, with considerable local relief. The most characteristic feature of this upland, in contrast to Norman Upland, is the extreme diversity of topographic features and relief. The valleys, hills, and ridges, vary greatly in size and shape (6).

This sort of topography creates strikingly different pattern of woodland distribution. The patchy pattern developed here mirrors the irregular distribution of physical features of the upland. The woodlands coincide closely with the sandstone-capped hills; the wide, irregular valleys around them are clear of forest.

#### Detailed Examination of These Relationships as a Result of Field Mapping

This study was conducted by a group of students from Indiana University<sup>1</sup> in connection with a seminar on land utilization taught by Dr. J. Fraser Hart. An east-west strip about half mile wide running across the county was chosen as a study area. The choice was made in such a way as to include a part of each physiographic province represented in the county, with the exception of the glaciated north-west

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<sup>1</sup>A. Lal from Pakistan, P. Karan from India, R. Krueger from Canada, R. Joppa from Minnesota, R. Perera from Ceylon, and B. Zakrzewska from Poland.

corner, which is not typical physiographic region for the heavily wooded part of the state. The mapping key included two types of forests: the better forest with trees of a diameter over six inches, and the poorer forest with trees of a diameter below six inches. Aerial photographs were used as base maps.

Examination of this narrow strip traversing three physiographic provinces reveals that the details of woodland distribution are primarily attributable to differences in bedrock which produce differences in slopes, dissection, and drainage in the three provinces. In addition to this, the study of the small area shows the types of forest which are associated with certain physical features of the provinces.

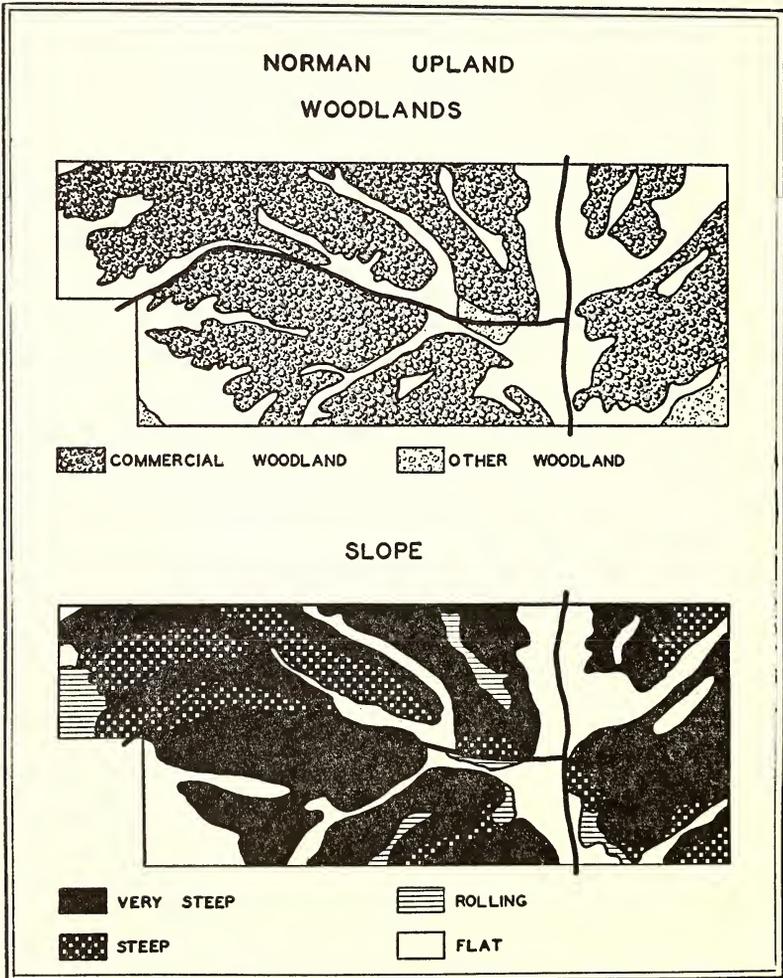


Figure 3

The Norman Upland strip (Fig. 3) reveals uniform, dense forest cover with limited clear land in the valleys and on level hilltops. Better forest is found on steeper slopes with thin soil, unsuited for agriculture, which have apparently never been cleared. Poorer forest, if found at all, is on gentler slopes once cleared but now abandoned for agricultural purposes. The flat hilltops are obviously abandoned lands and are now used for pasture or covered with thorny brush. The western edge of the woodlands shows the distinct difference between the heavy woodland of the Norman Upland and the woodless Mitchell Plain.

The Crawford Upland strip (Fig. 4) shows the patchy type of forest distribution, from both locational and qualitative point of view.

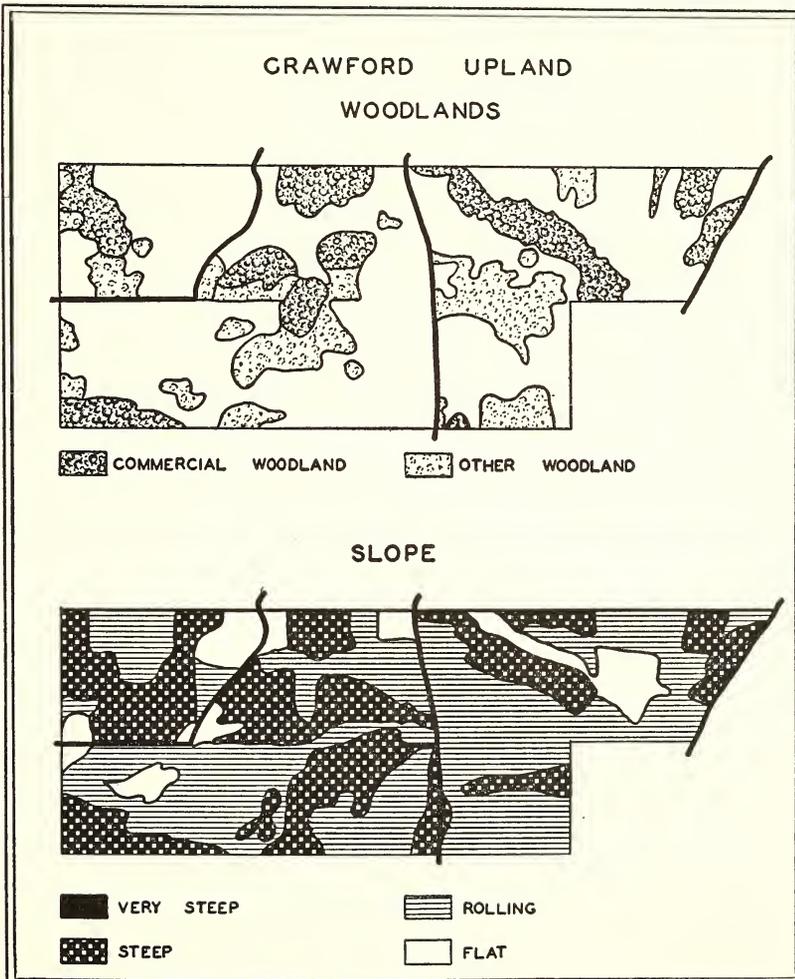


Figure 4

There are wider valleys and gentler slopes here; as a result, more land has been used agriculturally than in the Norman Upland. More land has also been abandoned and has grown into a poor type of forest.

The Mitchell Plain strip (Fig. 5) shows very little woodland. The elongated woodland strip represents trees along streams. The poor type of forest in the north-west corner of the strip covers a piece of land between a railroad and a highway which is not economically suitable for any other use except tree growth. The patch in the middle is an overgrown quarry. The poor forest in the south-east corner is a wooded sinkhole. The Mitchell Plain is still used agriculturally and there is little abandoned land here. The only forest worth mentioning

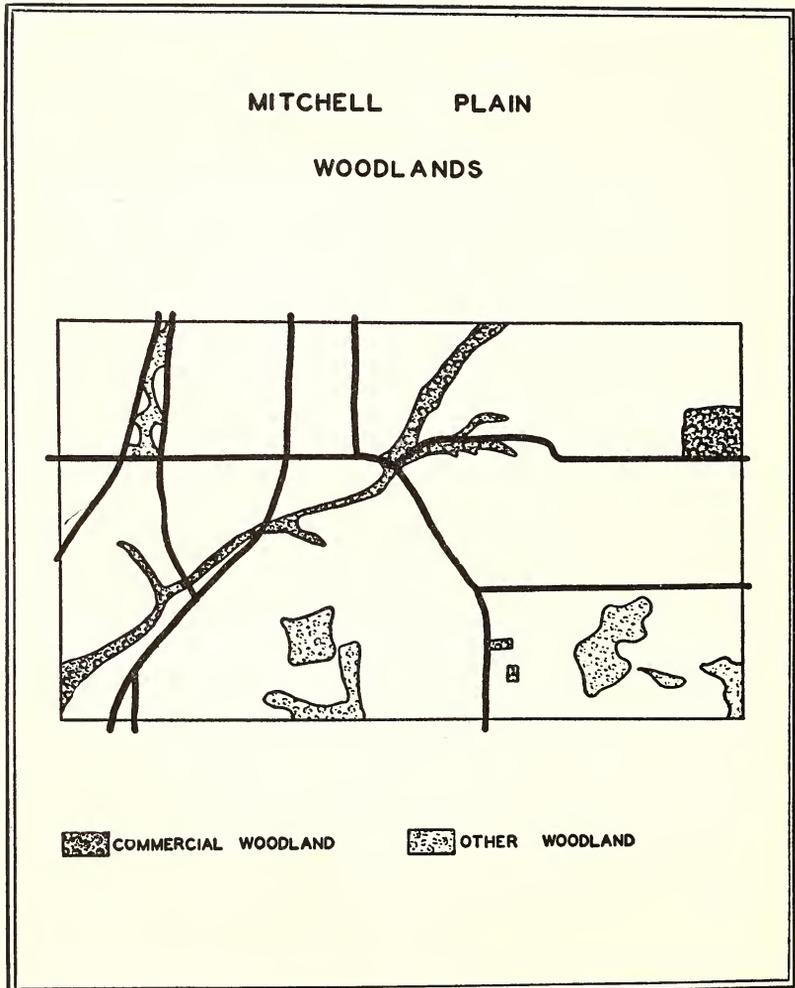


Figure 5

for its quality is the extension of the Norman Upland forest and the two small plots reforested by forest-conscious farmers.

Two conclusions can now be drawn from the above information: first, the county study reveals the close relation between the woodlands and the lithology and topography of the area; second, the study of the small area leads one to believe that the forest distribution is also a result of the history of land use.

### The Future of Monroe County Woodlands

While this study was conducted, some observations were made concerning the quality of the forests and their utilization.

Most of the woodlands of this area are second growth forest in the state of wilderness and neglect. The woods are full of dead logs and branches and are generally understocked, especially in saw timber. Many trees are thin, dwarfed, distorted, or no more than shrubs.

Of the three areas studied the Norman Upland has the best forest. Here there is some material of commercial value, even though the forests consist of a great number of species with poor quality trees. There seems to be no selective cutting or proper management which would lead to better growth.

Grazing is practiced in the forests of both the Crawford and Norman Uplands. These upland woodlands show much erosion which is probably due to the destruction of underbrush by cattle. In contrast to this, the relatively scarce Mitchell Plain woodlands are generally protected by fences and seldom grazed.

Only one instance of logging operations was found in the study area. In Norman Upland there was a farm which had some simple equipment for handling logs. In the nearby woods, several fallen trees were found, but there was no sign of any extensive operation. Woodlands here seem to be the additional means of subsistence for the inhabitants of the hill who are unable to draw income from the limited land available for cultivation.

There is no proper management of Monroe County woodlands. The southern uplands' topography indicates that forests are the best land use for this area. Wise forest management, however, is imperative. Ninety-five percent of the forest in the state is privately owned, and three-fourths is in the hands of small farmers (1). It is, therefore, up to the small farmers to understand the problem and handle it properly.

The state can do its part by buying the forested areas, converting them into recreational parks and wild life reservations, and providing proper care for state owned woodlands. This would give the forests the necessary chance to recover from the human destruction which has devastated them so thoroughly in the last sixty years.

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