

## FOREST AND PRAIRIE, BENTON COUNTY, INDIANA

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Benton is one of the northwestern counties in Indiana. It is bounded on the north by Newton and Jasper counties, on the east by White and Tippecanoe, on the south by Warren, and on the west by the state of Illinois. The area of the county is approximately 414 square miles. The soil is everywhere a rich black loam and is not excelled in fertility by any county in Indiana. There is not one acre of waste land in the county. The clay, lying immediately beneath the prairie loam, is of glacial origin.

There are no conspicuous elevations, but three or four prominent ridges or swells, almost parallel to each other, extend in an easterly and westerly direction across the county. Two of the most prominent ones are shown in Figure 1. Generally they are regarded as morainic ridges. The surface of the entire county is high and gently rolling, and the water flows in every direction. Gravel Hill, the highest point in the county, is three and one-half miles northwest of Fowler, the county seat, and rises almost in the center of the county. Gravel Hill is 857 feet (1) above sea level. Other high points are indicated in Figure 1. There is a range in elevation of approximately 200 feet (1) between the highest and lowest points of the county. According to Gorby (5) all the material of the drift is of glacial origin and the topography is probably due to a post glacial agency. In some places the drift is 82 feet deep and in others it has a depth of 262 feet.

The mean temperature of Benton county is 51 degrees. The annual rainfall of 39 inches is evenly distributed. The average length of growing season is 165 days.

The type of natural vegetation of Benton county is prairie. It is an extension of the Grand Prairie of Illinois. In the county there are eight natural groves. These are the result of the extension of the forest from the east toward the west. Thus a record of the species of woody plants in the groves is interesting because this county is in the transition belt between deciduous forest and prairie, although the latter type of vegetation is decidedly dominant. Due to extensive cultivation the natural condition of the Grand Prairie has not been preserved except along roadsides and railroad right-of-ways. Because of clearing and pasturing the natural conditions of the groves do not continue. This is an attempt to record and preserve data concerning the natural groves of Benton county, which with one or two exceptions are being gradually destroyed, as they occur in the only true Grand Prairie county in the state of Indiana. Although the wooded areas along Big Pine Creek were visited and the species noted, this discussion does not include them. There are eight of these "island-like" groves in Benton county.

**History.** In the fall of 1824 (2) a party of land hunters rode through Benton county and reported blue-stem (*Andropogon furcatus*) so high that a horseman could tie the ends over the top of his head.

About 1830-1831 (2) the first settlements in Benton county were made.

In 1862 Richard Owen (6) reported concerning Benton county and stated, "For the Geologist and Physical Geographer, the Botanist and Zoölogist, as well as the lover of scenery such as boundless vision of the day and the gorgeous sunset of the evening afford, this ocean-like prairie region, and these island-like groves are replete with interest and instruction."

History relates that in 1867 a prairie fire swept from Gravel Hill to Remington in Jasper county in about four hours. Prairie fires were almost an annual occurrence from the beginning of the county. The fire of 1867 did not touch or affect any of the groves as far as is known.

In 1870 (2, 3) there were a great many sloughs scattered through the county. The cultivated land was along the ridges and these were seepy and wet. About 1875 or 1876 (2) the first ditches were plowed through the waste land and the swamps were eliminated. Then the blue grass (*Poa pratensis*) started growing. The tile industry began about 1881 and during the next 20 years thousands of acres were prepared for cultivation. Thus there has been a gradual disappearance of the Grand Prairie species except those plants surviving along roadsides and railroad right-of-ways and a continuous decrease in the number of trees in the native groves. The latter condition has been occurring since 1880 when a saw mill was placed in Parish Grove, and the most valuable trees were cut for commercial purposes. Since that date the grove has been gradually disappearing.

In 1886 it was estimated (5) that the groves of limited extent comprised only about 3% of the area of the county, and, as reported by Gorby (5), they dotted the surface of the wide-reaching prairie and had the appearance of verdant islands lying placidly upon the bosom of some gently rolling sea.

**Method.** A general survey of the surface of the entire county was made by field glasses and auto in order to observe the morainic ridges and the general location of the eight groves. Following this, the species of woody plants in each grove were identified and listed and the habitats noted.

**The Groves of Benton County.** Sugar Grove occupies the point of land formed by the union of Sugar and Mud Creeks and extends a short distance north of Sugar Creek. It is located about five miles southwest of Earl Park and one mile from west boundary of the State. This grove consists of approximately 200 acres at the present time.

Turkey Foot Grove is located three miles east of Earl Park. Formerly there was a lake consisting of 100 acres on the south and southwest sides of the grove. Hickory Grove Lake and Turkey Foot Grove Lake were the largest lakes in the county and were wild game resorts. At the present time there are only a few acres in this grove.

North Hickory Grove is one mile directly west of Fowler. About 40 acres of the original 80 remain. In the early days of the county this grove bordered the northern shore of a 200-acre lake. The dominant plants recorded at that time were rushes, willows, and gigantic bullgrass. Hickory Grove Lake was drained completely about 1881.

Denton's Grove or Walnut Grove extends almost to the east boundary of Benton county and is located about eight or nine miles east of Lochiel. Approximately 100 acres of the grove remain, and a portion of it is in low ground.

McConnell's Grove is practically a replica of White Oak Grove and occurs on an undulation on the boundary between Benton and Warren counties, about five miles southwest of Oxford. At present there are approximately 40 acres of the grove in each of the above-named counties.

White Oak Grove is the largest in the county. Oxford has been built in this grove, and the latter extends some distance southwest of Oxford. There are about 1,600 acres at present although there were approximately 2,000 acres originally. The surface of the ground is slightly rolling and broken with a few

shallow ravines. I measured a few of the largest trees when taking notes in this grove. The measurements which follow were taken three feet above the ground: one black walnut 9 ft. 9 in. in circumference; one burr oak, 9 ft. 8 in.; and another burr oak, 10 ft. 3 in.

South Hickory Grove is located two miles northeast of Ambia. Originally this group of trees covered about 10 acres, but at present there are approximately five acres of scattered trees. A creek passes on the northwest side of the grove and boggy conditions occur just southwest of South Hickory.

Parish Grove is seven miles southwest of Fowler. In 1885 it was estimated (5) that this grove covered 700 acres of land. Now there are approximately 300 acres of trees. The surface of the land covered by this grove is not regular like that of the surrounding prairie but is broken in places by shallow ravines. There are numerous springs in this grove, and the water from these flows in the little ravines throughout most of the year. According to history one of the Parish Grove springs supplied sufficient water for the horses and travelers who passed this way in the early 40's (2). The masses of underbrush and tangled vines often barred the way of the hunters and travelers. No such condition exists now due to the processes of clearing and pasturing. According to Gorby (5) the trees in Parish Grove in 1885 were of immense size; e.g., burr oaks 5-6 ft. in diameter, walnuts 7½ ft. in diameter and 4 ft. across 70 ft. above the ground. About 1880 (2) a saw mill was placed in this grove and since that time there has been a gradual destruction of the trees for commercial purposes. The stumps of fallen trees are numerous; some of them are very large and well preserved while others are decaying rapidly. Taking the measurements three feet above the ground, one stately hackberry now measures 12 ft. in circumference, and one American elm has a circumference of 10 ft. After studying the trees in a number of local woods it becomes evident that Parish Grove is outstanding now as well as in former days in its large variety of species of woody plants, especially so for an extent of only approximately 300 acres in the prairie portion of Indiana.

There is apparently nothing peculiar about the kinds of trees growing in these groves since each species, with the exception of *Maclura pomifera* and *Robinia Pseudo-acacia* which are considered here to be escapes, commonly grows in this part of the United States (4), and each one may be found in almost any portion of the state of Indiana (4). Each species here found commonly prefers rich, moist soil, a great abundance of which is found in all parts of Benton county. The most outstanding fact is the large variety of species of woody plants growing in Parish Grove in comparison with the number in the other groves of Benton county and in similar woods in the prairie portions of Newton and Jasper counties (7, 8). There are 45 species of woody plants in Parish Grove, 32 in White Oak, 30 in Sugar, 21 in Denton's or Walnut, 8 in North Hickory, and 7 in Turkey Foot. Since the trees remaining in South Hickory are so few and scattered and since McConnell's Grove is considered to be a replica of White Oak as far as kinds of trees are concerned, these groves were not visited.

The specimens of each species listed have been mounted in book form by Mr. and Mrs. Elmore Barce and deposited in the Public Library of Fowler, Indiana, for the use of those who are increasing their interest and knowledge concerning their native trees. The specimens were collected during the summer of 1929. The nomenclature is that of the seventh edition of Gray's New Manual of Botany.

**Woody Plants of Benton County Groves.** In the following list of the 37 genera and 56 species of woody plants in the groves of Benton county the symbols and their meanings are as follows: P—Parish Grove, WO—White Oak, S—Sugar, D—Denton, H—North Hickory, and TF—Turkey Foot.

<i>Acer saccharinum</i> .....									S.....
<i>Acer saccharum</i> .....	P.....								
<i>Acer saccharum</i> var. <i>nigrum</i> .....	P.....								
<i>Aesculus glabra</i> .....	P.....							S.....	
<i>Asimina triloba</i> .....	P.....							S.....	
<i>Benzoin aestivale</i> .....	P.....								
<i>Carpinus caroliniana</i> .....	P.....								
<i>Carya alba</i> .....							WO.....		
<i>Carya cordiformis</i> .....	P.....						WO.....	S.....	D.....
<i>Carya ovalis</i> .....							WO.....		
<i>Carya ovata</i> .....	P.....						WO.....	S.....	D..... H..... TF.....
<i>Celtis occidentalis</i> .....	P.....						WO.....	S.....	H.....
<i>Cornus paniculata</i> .....	P.....						WO.....		D.....
<i>Corylus americana</i> .....	P.....						WO.....		D.....
<i>Crataegus Crus-galli</i> .....	P.....						WO.....	S.....	D..... H..... TF.....
<i>Crataegus mollis</i> .....	P.....						WO.....	S.....	D..... H..... TF.....
<i>Crataegus punctata</i> .....	P.....							S.....	
<i>Crataegus</i> sp.....	P.....								D.....
<i>Evonymus atropurpureus</i> .....	P.....							S.....	
<i>Fraxinus americana</i> .....							WO.....	S.....	
<i>Fraxinus nigra</i> .....								S.....	
<i>Fraxinus pennsylvanica</i> .....								S.....	
<i>Fraxinus quadrangulata</i> .....	P.....								
<i>Gleditsia triacanthos</i> .....	P.....								
<i>Gymnocladus dioica</i> .....	P.....								
<i>Juglans nigra</i> .....	P.....						WO.....	S.....	D.....
<i>Maclura pomifera</i> .....	P.....						WO.....	S.....	D..... H..... TF.....
<i>Malus ioensis</i> .....	P.....						WO.....	S.....	D.....
<i>Morus rubra</i> .....							WO.....	S.....	
<i>Populus deltoides</i> .....	P.....								
<i>Prunus americana</i> .....	P.....						WO.....		D.....
<i>Prunus serotina</i> .....	P.....						WO.....	S.....	D..... H..... TF.....
<i>Psedera quinquefolia</i> .....	P.....						WO.....		D.....
<i>Quercus alba</i> .....	P.....						WO.....	S.....	
<i>Quercus imbricaria</i> .....							WO.....		D.....
<i>Quercus macrocarpa</i> .....	P.....						WO.....	S.....	D..... H..... TF.....
<i>Quercus rubra</i> .....							WO.....	S.....	
<i>Quercus velutina</i> .....							WO.....		
<i>Rhus glabra</i> .....	P.....						WO.....	S.....	
<i>Rhus Toxicodendron</i> .....	P.....						WO.....	S.....	
<i>Ribes gracile</i> .....	P.....								
<i>Robinia Pseudo-acacia</i> .....	P.....							S.....	
<i>Rosa humilis</i> .....									D.....
<i>Rubus allegheniensis</i> .....	P.....						WO.....		D.....
<i>Rubus occidentalis</i> .....	P.....						WO.....		D.....

<i>Salix nigra</i> .....	P.....	S.....	
<i>Sambucus canadensis</i> .....	P.....	WO.....	D.....
<i>Sassafras variifolium</i> .....	P.....	WO.....	
<i>Smilax hispida</i> .....	P.....		
<i>Staphylea trifolia</i> .....	P.....		
<i>Tilia americana</i> .....	P.....	WO.....	S.....
<i>Ulmus americana</i> .....	P.....	WO.....	S.....
<i>Ulmus fulva</i> .....	P.....	WO.....	S.....
<i>Viburnum prunifolium</i> .....	P.....		S.....
<i>Vitis vulpina</i> .....	P.....	WO.....	S.....
<i>Zanthoxylum americanum</i> .....	P.....		

**Discussion.** The species of trees occurring in these groves prefer moist, rich soil, and the groves have developed in such habitats. These woods have a closer relationship with water than with high ground since Parish Grove is the only one occupying a portion of ridge or swell. Each grove is or has been closely associated with a creek, with a depression such as a pond or lake, or with ground spotted with numerous springs. South Hickory, Sugar, White Oak, and Denton Groves are on the north or northeast sides of creeks or lakes. Parish Grove occupies springy ground. Although we have records stating that prairie fires occurred annually we have no record of any fire touching or affecting any of the

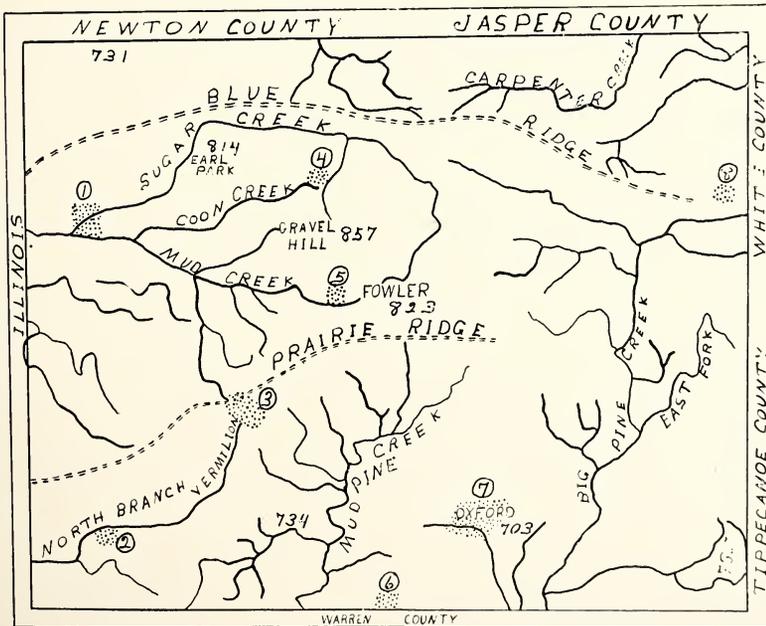


Fig. 1—Map of Benton county, Indiana, showing the location of the eight "island-like" groves in the "ocean-like" prairie. (1) represents Sugar Grove, (2) South Hickory Grove, (3) Parish Grove, (4) Turkey Foot Grove, (5) North Hickory Grove, (6) McConnell's Grove, (7) White Oak Grove, and (8) Walnut or Denton's Grove. The other figures refer to the number of feet above sea level. The remainder of the map is self-explanatory.

groves. Probably their locations protected them, more or less, from this destruction since the prevailing winds upon the prairies, particularly in the autumn, are from the west or southwest. Due to the extensive cultivation of this rich land of Benton County and to the cutting down of the larger and more valuable trees, the forested area has decreased instead of increasing.

The dominant grass in the swampy ground was *Spartina Michauxiana*; that of the higher land was *Andropogon furcatus*. The drainage ditches eventually eliminated the swamps. *Poa pratensis* grew in pastured and cultivated fields and gradually lessened and finally prevented the dangerous prairie fires. Now, valuable farms surround the groves on all sides and the prairie grasses are rarely seen.

**Summary.** 1. Before cultivation commenced, the type of vegetation in Benton county was prairie.

2. *Andropogon furcatus* (Tall Blue Stem) was the dominant upland grass, and *Spartina Michauxiana* (Slough Grass) was dominant in the low lands or wet prairies.

3. Eight native groves mark the extension of the forest into this prairie county. Originally they comprised only 3% of the entire area of 414 sq. miles.

4. The forested areas have developed in moist habitats on the north or northeast sides of creeks or lakes or on ground watered with springs. Here they have been supplied with sufficient water for their proper growth and have been protected from the annual fires which came from the west and southwest and swept across the prairie.

5. Due to extensive cultivation the prairie grasses have almost disappeared.

6. Due to pasturing, clearing, and farming, the forested areas are decreasing in extent and development.

7. There are 37 genera and 56 species of woody plants in the native groves of Benton county. Parish Grove with 45 species has the largest representation of any grove.

8. *Acer saccharum* is a rather frequent species in Parish Grove but *Fagus grandifolia* was not found in the county and never has been reported. Therefore the groves are not considered as climax forest.

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