

The Relative Relief of Monroe County

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It is the purpose of this paper to study the relative relief of Monroe County, Indiana in relation to the regional physiographic units which cross the county.

The first step was the preparation of a map of relative relief of Monroe County. The relative relief of each of the 422 square mile sections within the county was determined from United State Geological

RELATIVE RELIEF

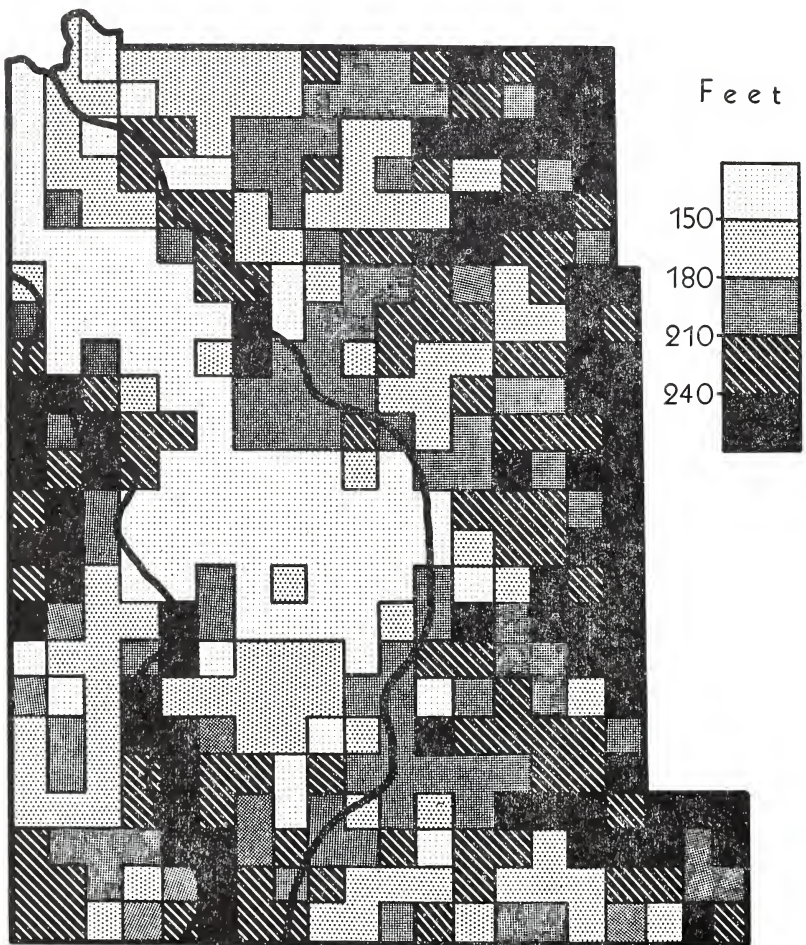


Figure 1. Relative Relief Map of Monroe County.

Survey topographic sheets Fig. 1. These data were plotted on the base map provided by the General Highway and Transportation Map of Monroe County, prepared by the State Highway Commission of Indiana.

Since a smaller area might be expected to have less relative relief than a larger area, two basic procedures were used in the preparation of this map in order to avoid determination of the relative relief of sections less than one square mile in area. The four sections in the extreme northwest section of the county bounded by the west fork of White River were considered in their entirety. Considering only the portion of each of these townships southeast of the river (i.e. in Monroe County) would have conveyed a distorted conception. For the same reason sections 6, 7, 18, 19, 30, and 31, in the northeast portion of the county which are less than a square mile in area were combined with adjacent sections to the east and west in the determination of the relative relief of six sections of only one-half square mile. The boundary line was then drawn dividing these sections into equal parts, half to the east and half to the west, attached to their respective adjoining sections. Some sections are shown as being less than one square mile because of correction lines. The pattern shown on this map also assumes that all section lines in the county appear as straight lines meeting at right angles while in fact, they do not.

In order to determine the relative relief of all of the sections of the county, it was necessary to use sixteen topographic sheets at a scale of 1:24,000 prepared by the Geological Survey. These sheets as titled on the current Geological Survey Index Map to Topographic Mapping in Indiana are: Hindustan, Modesto, Gosport, Morgantown, Belmont, Unionville, Bloomington, Whitehall, Elkinsville, Allens Creek, Clear Creek, Stanford, Norman, Barlettsville, Oolitic, and Owensburg. As the relative relief of each section was determined it was recorded in its respective section on the base map.

The next step was to prepare an array of these figures and determine the number of times each occurred. The range of relative relief in the 422 sections in Monroe County was between 60 feet and 350 feet. The most frequently occurring relative relief was 240 feet. Also common were 170 and 200 feet. A map based solely upon the relative relief in feet showed only 9 sections of the county with relative relief of under 100 feet and, only eleven of 300 feet or over. Thus, the majority of the land in Monroe County has relative relief between 100 and 300 feet.

The next step in the preparation of the final map was to divide the total number of sections of the county into quintiles in terms of the array of relative relief values. The boundaries of the three physiographic provinces of Monroe County—the Crawford Upland, the Mitchell Plain, and the Norman Upland were superimposed on the map of the relative relief (1).

In the central and northwestern portions of the county the Mitchell Plain coincides with the area of lowest relative relief but the southern portion of the Mitchell Plain, which is dissected by Clear Creek and its tributaries, has greater relative relief, including some of the most extreme relief in the county. The escarpment of the Crawford Upland

is clearly evident along the western border of the map but interior portions of the Crawford Upland have rather slight relief. In the Norman Upland relative relief increases in an easterly direction away from the Mitchell Plain.

This map bears evidence that the relative relief of Monroe County reflects, to some extent, the geologic character of the county and the physiographic provinces which cross its boundaries. It is hoped that this paper will be merely the first of a series of studies of relative relief in other Indiana counties. A relative relief map of the entire state compared to the physiographic sub-provinces of Indiana would be an appropriate subject for future research.

Literature Cited

1. W. J. WAYNE. 1956, Indiana Geol. Survey Rept. Progress 7, fig. 1; modified from C. A. Malott, 1922, Indiana Dept. Conserv. Pup. 21, pt. 2, pl. 2.