

Flora and Forest Community Structure of the Taylor University Arboretum, Grant County, Indiana: A Progress Report.

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Introduction

Taylor University has purchased a 686-acre tract of land with forest, old field, and late successional communities in Grant County, Indiana. The land is bordered to the south by the Mississinewa River and is an important natural area because it preserves a diversity of communities and species characteristic of the Central Till Plain. As part of a developing management plan for the property, we began a two year study of its flora and the structure of the forest community. The project will include: 1) a thorough plant inventory; 2) forest structure obtained from random plots; and 3) a comparison of current forest structure with historical pre-settlement records.

Materials and methods

To compile the plant inventory we collected plants throughout the property. The plants were pressed and dried to preserve them. Mohlenbrocks' *Vascular Plants of Illinois* was used in the identification of the species.

For the tree survey, 40 plots were randomly selected along nine transects in the new property. A sample was taken ten meters to the east and west of each plot marker. Each sample included a 100 sq meter area. In each sample area all the trees more than 2cm in diameter were recorded with the species. To collect the historic data all the data was obtained from microfilm copies of surveyors notes. We used the program PC-ORD 5 to analyze the data from the plots in the new property.

The historical data was obtained from surveyors notes from 1824 found at the Department of Nature Preserves in Indianapolis.

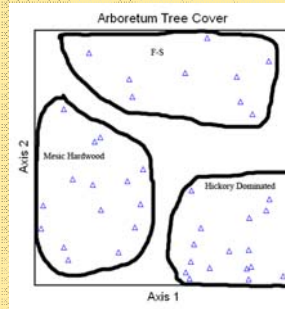


Results

Some of the more interesting plant species found on the property.

Iris virginica - top left
Dasistoma macrophylla - top right
Carex hitchcockiana - bottom left
Carex emoryi - bottom right

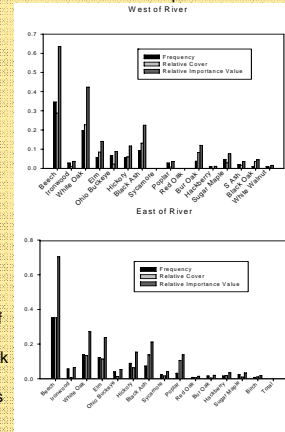
We have currently collected 135 species and expect to find approximately 250 species.



The results of the tree survey showed in this graph. The graph indicates that there are three forest communities: hickory dominated (drier), mesic hardwoods; and floodplain-successional (F-S). Mesic hardwoods characterized by *Quercus alba* and *Caria cordifolius*; F-S had *Platanus occidentalis* and *Cercis canadensis*

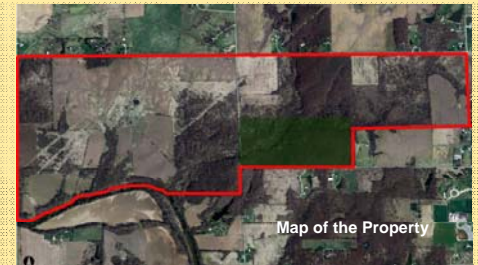
The histograms shows the relative frequency, cover, and importance value determined from the surveyors' notes of 1824. The data tells us that both sides of the river were dominated by beech, oak, and black ash. Except for black ash, the species present are similar to those of the forest communities today. However, there are some differences in the coverage of the tree species. For example, beech was much more common then than today.

Estimated Forest Composition in 1824



Conclusions

1. We have found 135 of species on the new property thus far. We expect to find approximately 250 species on the property.
2. From the data that we collected from the tree survey we can determine that there are three distinct communities – an upland community, a wet bottom land community, and a mesic community .
3. The current communities have similar species but difference relative abundances when compared to historical information. The differences suggest that the area was somewhat more moist in 1824 compared to today.



Acknowledgments

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Literature Cited

Vascular Flora of Illinois by Robert H Mohlenbrock