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Botanical Survey of a Cypress-Tupelo Swamp

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Botanical Inventory of a Cypress-Tupelo Swamp

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Abstract

Collection of plants from a cypress-tupelo swamp located at the eastern border of Independence County was part of a long range plan to document the flora of the county. Efforts were made to determine if the study area would fit the current federal definition of wetlands which requires a periodic or permanent inundation of the soil.

Introduction

This report is part of a three year ecological study of a small cypress-tupelo swamp located in the floodplain of the Black River in eastern Independence County, Arkansas. Bottomland forests with alluvial river swamps were once common throughout the Mississippi Alluvial Delta of Arkansas and several such swamps occurred in the county (Mitsch and Gosselick, 1986). However, much of the floodplains of both the Black and White Rivers in Independence County has been cleared and the land devoted to agriculture. Wooded areas are often restricted to stream banks, low wet areas, and corners of fields. The lower floodplain of the Black River in the county is usually planted with rice, soybeans and sorghum. The rice fields are extensively irrigated with water from the Black River and these irrigation ditches support both woody plants and aquatic plants.

Study Area

Hattie's Brake (Fig. 1) is a small swamp located in the Black River bottom, about four miles northeast of Cord, Independence County, Township 12N, Range 3W, western half of Section 25. It is typical cypress-tupelo swamp which has about 8.1 ha of open water lying within a c-shaped depression bordered by the 220 foot contour on the topographic map. An extension of Milligan Slough carries water into the swamp and there are several small seasonal streams that carry excess water to the Black River about 0.6 m away.

The swamp fits the federal definition of a wetland in the amount of time the swamp is flooded, by the species composition of woody vegetation and the soil type (Field Comm. for Wetland Delineation, 1989). The characteristic soil of much of Section 25 is classified as Forestdale, a silty loam which is poorly permeable and deep (Ferguson et al., 1982). The area is usually flooded annually from the Black River, but some water enters from Old Curia Creek by way of Saltwork and Milligan Sloughs.

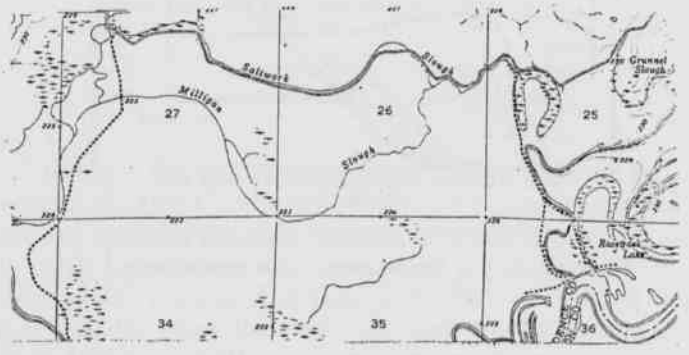

Fig. 1. Topographical Map of Hattie's Brake and Its Environs

Methods and Materials

Plant specimens were identified primarily by the use of the keys in Steyermark (1963). Reed (1986) provides a good list of wetland plants for Arkansas while Smith (1988) provides the best available distributional records of Arkansas plants. Collections of plants were made along the roadsides around the edges of the swamp, in the rice field ditches, and in the low wet areas of Saltwork Slough. Plants collected are preserved in the herbarium of Arkansas College and voucher specimens will be sent to the herbarium at the University of Arkansas.

Results

Table 1 lists plants that have been found in the swamp area that were not identified as occurring in Independence County (Smith 1988). The species composition of woody plants found in Hattie's Brake and its environs are similar to that reported by McKnight et al. (1980)

for alluvial swamps in the Atlantic Coastal Plain and the Mississippi Delta. As expected, the closest correlation is with the Delta. McKnight et al (1980) reported 17 families of trees in the swamps of the Atlantic Coastal Plain and 21 families in the Mississippi Delta. Some 70 species of trees representing 26 families of plants have been identified from Hattie's Brake. Table 1 lists 39 species of plants representing 25 families not previously reported from Independence County.

Table 1. Plants of Hattie's Brake

I.	**Anacardiaceae**
	A. *Toxicodendron toxicarium* (Salisb.) Gillis
II.	**Asclepiadaceae**
	A. *Asclepias sullivantii* Engelm
III.	**Boraginaceae**
	A. *Heliotropium indicum* L.
IV.	**Campanulaceae**
	A. *Lobelia appendiculata* A. DC.
	B. *Lobelia cardinalis* L.
V.	**Asteraceae**
	A. *Pluchea camphorata* (L.) DC.
	B. *Xanthium strumarium* L.
VI.	**Convolvulaceae**
	A. *Convolvulus arvensis* L.
VII.	**Brassicaceae**
	A. *Cardamine pensylvanica* Muhl. ex Willd
	B. *Iodanthus pinnatifidus* (Michx.) Britt.
	C. *Rorippa palustris* (L.) Besser
VIII.	**Cucurbitaceae**
	A. *Sicyos angulatus* L.
IX.	**Fagaceae**
	A. *Quercus falcata* Michx. var. pagodifolia Ell.
X.	**Hydrophyllaceae**
	A. *Hydrolea uniflora* Ref.
XI.	**Lamiaceae**
	A. *Lamium purpureum* L.
XII.	**Lenguminosae**
	A. *Gleditsia aquatica* Marsh.
	B. *Trifolium campestre* Schreb.
	C. *Wisteria frutescens* (L.) Poir.
XIII.	**Loganiaceae**
	A. *Spigelia marilandica* L.
XIV.	**Malvaceae**
	A. *Hibiscus laevis* Allioni
XV.	**Oleaceae**
	A. *Ligustrum sinense* Lour.
XVI.	**Polygonaceae**
	A. *Polygonum hydropiperoides* Michx.
	B. *P. lapathifolium* L.
	C. *P. punctatum* Ell.
	D. *P. scandens* L.
XVIII.	**Rosaceae**
	A. *Crataegus crus-galli* L.
XVIII.	**Scophulariaceae**
	A. *Gratiola virginiana* L.
XIX.	**Solanaceae**
	A. *Physalia virginiana* P. Mill
	B. *Solanum eleagnifolium* Cav.
XX.	**Ulmaceae**
	A. *Celtis laevigata* Willd.
	B. *Ulmus crassifolia* Nutt.
XXI.	**Urticaceae**
	A. *Boehmeria cylindrica* (L.) Sw.
XXII.	**Azollaceae**
	A. *Azolla mexicana* Presl.
XXIII.	**Alismataceae**
	A. *Echinodorus cordifolius* (L.) Griseb.
XXIV.	**Cyperaceae**
	A. *Rhynchospora corniculata* (Lam.) Gray
XXV.	**Lemnaceae**
	A. *Lemna minor* L.
	B. *Spirodela polyrrhiza* (L.) Schleid.
	C. *S. punctata* (G.F.W. Meyer) Thompson
	D. *Wolffia brasiliensis* Weddell

Bald cypress and water tupelo are interspersed evenly through the open water of the swamp and extend up Milligan Slough. There is a low area in the southern part of Section 25 that holds water for extended periods of time and supports a number of very large specimens of both cypress and tupelo trees.

The drier areas support a large population of trees including 14 species of oaks and four species of hickories. Roadsides contain some of the driest soils and are characterized by four species of elms including the late summer fruiting *Ulmus crassifolia* Nutt. Sweetgum, mulberry, persimmon and ashes are scattered throughout Section 25. Three maples have been identified in the environs of the swamp. Both the water and honeylocusts are present and their spines are commonly found on the ground.

There are relatively few emergent aquatics associated with the swamp even though they are present in both irrigated rice fields and in the shallower portions of Saltwork Slough. However, the swamp supports populations of floating aquatics involving species of Lemnaceae and Azollaceae. These species include *Spirodela polyrrhiza* (L.) Schleid., *Lemna minor* L., *Wolffia brasiliensis* Weddell and *Azolla mexicana* Presl.

Clearings, tracks and roadsides often provide space enough for light to reach the ground and this encourages a heavy undergrowth. This undergrowth includes both

poison ivy and oak, greenbriar of several species, grapes and two species of Cucurbitaceae including *Sicyos angulatus* L.

The milkweeds are repesented by *Asclepias sullivantii* Engelm. Terrestrial ferns are not abundant, but the grape fern, *Botrychium biternatum* (Sav.) Underwood was seen. There are probably more species of Asteraceae than any other family, with the ragweeds and species of *Bidens* being represented by the most species.

The rice fields adjacent to the swamp support a greater diversity of aquatic plants than the swamp. The roadside ditches and shallower sections of Saltwork Slough contain several species of Polygonaceae including *Polygonum lapathifolium* L. and *P. pensylvanicum* L. In the fields, *Sphenoclea zeylandica* Gaertn. represents a species recently found in the area. The Pontederiaceae are represented by two species of *Heteranthera*: *H. limosa* (Sw.) Willd. occurring in both a blue - and a white - flowered form and H. *reniformis* R & P.

Saltwork Slough supports a number of species of Alismataceae including *Echinodorus cordifolius* (L.) Griseb. and *Sagittaria latifolia* Willd. The open water is partly covered by *Ludwigia peploides* (H.B.K.) Raven while *L. alternifolia* L. is found in slightly drier areas. *Hibiscus laevis* Allioni and H. *lasiocarpos* Cav. occur around the edges of the slough.

Conclusions

Hattie's Brake and its environs represent an uncommon ecosystem for Independence County. The herbaceous and woody plants listed in Table 1 supports the USF&WS definition of a wetlands which requires the presence of hydrophytic vegetation. The occurrence of this cypress-tupelo swamp represents an extension of the Mississippi Alluvial Plain into the county thereby increasing the biodiversity of the area.

Acknowledgements

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