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A BOTANICAL AND ECOLOGICAL SURVEY OF THE  
DAHOMY WOODS, BOLIVAR COUNTY, MISSISSIPPI

by

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The Dahomey Woods are on the alluvial plain of the Mississippi River in the northwestern part of Mississippi. This part of Mississippi, which is known regionally as the Mississippi Delta, was once covered by a major temperate zone bottomland hardwood forest that largely has been replaced by catfish ponds or fields of cotton, rice, and soybeans. A remnant of this forest known locally as the Allen Grey Woods, the 7500 acres of the Dahomey Woods have for a number of years been used by the members of the Benoit Hunting Club.

The Dahomey Woods (Allen Grey Woods) lie in western Bolivar County, Mississippi, within 7 miles of the Mississippi River and about 3.5 miles east of the artificial levee which flanks the river. The meandering Bogue Phalia flows within 0.1 mile of the eastern border of the woods. The northern boundary lies more or less on Lat. 33 45 N; the western edge is within two miles of Long. 91 W. Mississippi Highway 446 divides the woods into northern and southern parts each composed of about six squares miles of wooded land. Mississippi Highway 1 lies within 0.5 mile of the western edge of the woods. The town of Benoit is about four miles to the southwest; Cleveland is 15 miles to the east.

According to the range and township system of description, the Dahomey site includes all or part of the following sections:

T22N, R7W (north of highway 446)  
Sections 17, 19, 22, 27-34

T21N, R7W (south of highway 446)  
Sections 1-4, 9-12

In subsequent discussion of the site, the designation of sections will be abbreviated and used without reference to range and township, viz., S30 NW4 for the northwest quarter of Section 30, T22N, R7W. With the exception of a small area in S17 all of the site is mapped on the USGS 7.5' Lobdell quadrangle.

Elevations above mean sea level range from about 140 to about 125 feet. Except in S32 and along watercourses, the land is essentially flat and local changes in elevation rarely exceed one foot. The land slopes downward gradually from west to east and north to south with highest elevations in the northwestern part.

According to the USDA Bolivar County Soil Survey (1958), soils on most of the site are Sharkey Clays on slackwater flats and Dowling Clay in sloughs and swales. A significant exception to this pattern occurs for soils developed on ridges on both sides of Christmas Lake Branch. Soils on these low ridges are reported variously as Dundee Silty Clay, Dundee Silty Clay Loam, Forestdale Silty Clay, and Tunica Silty Clay. Most of the Tunica soils are in cultivation.

## GENERAL VEGETATION AND SPECIES COMPOSITION

The southward slope of the land is so gradual that local changes in elevation are of equal or greater significance in determining the local drainage and soil moisture. Although there is much uniformity of species composition throughout the woods, fairly distinct patterns occur which can be related to hydric factors associated with these slight differences in elevation. Inextricably meshed with this is the complex depositional history of the site which has involved sedimentation from the Mississippi River as well as Bogue Phalia and its tributaries. As a result there occurs a mosaic pattern as species with slightly different but overlapping preferences for soil texture and soil moisture become established and grow.

A characteristic feature of the vegetation is the presence of woody vines and climbers including Parthenocissus quinquefolia (L.) Planchon (Virginia creeper), Bignonia capreolata L. (cross-vine), Berchemia scandens (Hill) K. Koch. (rattanvine), Toxicodendron radicans (L.) Kuntze (poison-ivy), Smilax sp. (green briar), and Ampelopsis arborea (L.) Koehne (pepper vine).

Herbaceous plants are common but these were not given major attention in this survey. A few that were seen frequently include Myosotis macrosperma Engelm. (forget-me-not), Arisaema dracontium (L.) Schott (green dragon), Samolus parviflorus Raf. (water pimpernel), Carex cherokeensis, Carex frankii, Impatiens capensis Meerb. (jewel weed), Trepocarpus aethusae, Viola spp. (violets) and Penstemon laxiflorus Pennell (beard tongue).

Among the shrubs, Asimina triloba (L.) Dunal (paw paw) ranges from common to abundant on much of the site but is less common or absent on some of the wetter sites. Canebrakes of Arundinaria gigantea (Walter) Muhl. vary from dense stands to scattered stems to total absence. In general, the densest stands are near the forest edges. Sabal minor (Jacq.) Pers. (palmetto) appears to be of sporadic occurrence. Its greatest frequency may be on the isolated 40 acres in S1 NW4 NE4. Ilex decidua Walter (deciduous holly) is common throughout. Cercis canadensis L. (redbud) and Morus rubra L. (red mulberry) are often seen in the understory. Cornus stricta Lamarck (swamp dogwood) is also common.

Common canopy species on better drained sites are Quercus michauxii Nutt. (swamp chestnut oak), Q. pagoda Raf. (cherrybark oak), Q. nigra L. (water oak), Carya ovata (Mill.) K. Koch. (common

shagbark hickory), C. cordiformis (Wang.) K. Koch. (bitternut hickory), C. illinoensis (Wang.) K. Koch. (pecan), and Diospyros virginiana L. (persimmon). Q. phellos L. (willow oak), Q. texana Buckley (Nuttall oak), Q. lyrata Walter (overcup oak), C. aquatica (water hickory), Ulmus americana L. (American elm), Ulmus crassifolia Nutt. (cedar elm), Fraxinus pennsylvanica Marsh. (green ash), Liquidambar styraciflua L. (sweetgum), Gleditsia triacanthos L. (honeylocust), and Celtis laevigata Willd. (sugar hackberry) more often occur on somewhat wetter land.

On the wettest sites with long hydroperiods, Taxodium distichum (L.) Rich. (baldcypress), Planera aquatica J. F. Gmel. (water-elm), Forestiera acuminata (Michaux) Poir. (swamp privet), and Styrax americana Lamarck (American snowbell) occur.

It is important to keep in mind that the local occurrence patterns of these species are more complex than some of the preceding statements may suggest. On a given local site, the mixture of species is not so predictable.

#### OBJECTIVES OF THE SURVEY

This survey, undertaken at the request of the Mississippi field office of the Nature Conservancy, had as its goal the identification of "potential habitat for endangered, threatened and sensitive plants and natural plant communities." The specific plants sought were those listed federally as endangered or threatened that could reasonably be expected to occur on the site, or those listed by the Mississippi Natural Heritage Program as being of special concern for the state. These are discussed later in this report.

Natural communities are less easily defined and identified than are their component species. Further, classification schemes for natural communities reflect not only the inclinations of the classifier but also the peculiarities of the region. Thus, the canebrake (Arundinaria) community is noted to occur within other bottomland hardwood communities in the unpublished and preliminary outline of James Wiseman, formerly of the Mississippi Natural Heritage Program. The approach followed in this survey was to take note of the portions of the Dahomey Woods which in my view were most intact biologically and physically. Considering the magnitude of the alteration and removal of forest in the Mississippi Delta one could argue that no natural communities exist, if for no other reason than the ubiquitous occurrence of edge effect which precludes the existence of any of the former deep woods habitat. However, I have chosen to look for those areas which most closely approach my concept of their pre-settlement condition or which are of the type least often seen now. Also, I have kept in mind that large areas of the site will probably be flooded to form green tree reservoirs, although the extent to which prolonged winter flooding will affect species other than mast producing trees is unknown to me.



## SURVEY METHODS

Visits to the site were begun on February 11, 1990 and continued until early June. During this period the site was visited 30 times. Wandering traverses were walked through all sections of the woods giving special attention to areas that seemed to have greatest potential as habitat for Lindera melissifolia. These areas were found either by accidental discovery or by use of a topographic map or aerial photograph. Notes were made regularly while in the woods.

Much of the woods was wet to varying degrees throughout the course of the study. Walking in one to three inches of water was commonplace and there were few trips in which no wading was required. The choice of specific areas to be surveyed was frequently influenced by the extent and depth of inundation.

Occasionally collections for herbarium specimens were made of species on the state list or for other species of special interest.

Pertinent literature surveyed included Carter (1978), Carter et al. (1990), Gunn, et al. (1980), Jones (1975), Morris (1987), Webster, (1978), and Watson (1968). Charles Bryson, Ken Gordon, and Sidney McDaniel were also consulted concerning the distribution of certain species of plants.

## STREAMS, CHANNELS, AND DITCHES

Major drainage in the northern portion is by southeast trending Stokes Bayou and its tributary Belman Bayou, both of which receive sediment-laden water off cultivated fields north of the woods; water from these two channelized streams enters Bogue Phalia just east of the site. Christmas Lake Branch drains the woods in S31 and S32.

South of highway 446 the dominant drainage features are Stillwater Bayou flowing southward through the center of the woods and two major channels, one bordering the eastern boundary of the site in S12 and the other carrying water south and southwest through S4 and S9.

Imposed on the natural drainage systems of the site are many ditches that differ in size and extent of maintenance. Even in the heart of the largest wooded areas, especially in S10 and S11, shallow, straight ditches occur; some have not been dug out for years. These usually lead to larger, more recently excavated channels bordering the woods and adjacent fields.

Another form of channel or linear depression is that formed by the use of all-terrain vehicles ("three-wheelers"). Some of these trails seem to follow former roads but other appear to have been opened more recently. Apparently as the result of heavy use during wet weather these trails frequently are lower than the land through which they pass and water stands longer here.

Beaver dams are common and are a significant factor in the retention of water on parts of the site.

This blend of ditches and highly altered natural streams is a major feature of the site. In several instances streams which originate in the woods appear natural for short distances and carry clear, organically-stained water before joining the sediment-laden channels bordering or entering the site from plowed fields. One of these is found in S34 NE4 where a meandering stream flows northward to join muddy Stokes Bayou.

A shallow, seemingly natural stream drains more or less southeastward across S33. Near the center of the section where it lies almost due east and west it has the appearance of a fairly stable but narrow swamp in spite of the prominent ditch extending due south from the center of S33 to highway 446. An important factor here is a beaver dam across the mouth of the ditch which prevents the ditch from draining the swamp. This small swamp is a center of much animal activity especially that of birds whose calls fill the air. Access to this "natural" area is through a woods where heavy logging has resulted in a broken canopy and a dense understory.

Both of the examples given in the two preceding paragraphs are included to point out to the need to pay attention to complex details on a small scale to prevent further damage when implementing management plans designed for use on a different scale.

(The paragraph above was written prior to my becoming aware that beaver dams were being dynamited to facilitate the removal of water from the woods on the site. In the case noted above the beaver dam is not blocking a natural drainage; the removal of the dam would not restore natural flow. Beaver dams on artificial streams should be evaluated differently from those on natural streams. This provides a specific instance of the question of scale and detail alluded to in the above paragraph.)

#### CONDITION OF THE WOODS

The entire woods have been highly disturbed by logging, digging of ditches, channelization of natural streams, roadbuilding, trailmaking, emplacement of deer stands, dumping of trash, dwellings, and farming.

Logging was frequently of the high-grading variety with oaks especially being heavily taken. This appears to have most recently occurred in S28 and S29 where the forest is now dominated by hackberry, green ash, sweetgum, and cedar elm, some of the latter being quite large and attractive. However, for the forest as a whole, oaks of mast-producing size are of regular occurrence and acorns are seen commonly on the floor of the forest. Oaks with diameters exceeding 30 cm are seen frequently in most areas. Some areas have been left undisturbed for a sufficient period that oaks

greater than 0.5 m in diameter are common. This is true in parts of S32 and to some extent in S27 and S28.

The common occurrence of drainage ditches and the presence of channelized streams has been noted earlier. Decisions on the maintenance of these waterways should be made carefully. In some cases, filling of ditches could protect and enhance. A candidate for such blocking is the ditch mentioned above which extends south from the center of S33.

For the most part the three-wheeler trails and abandoned roads do not seem likely to have a serious, persisting effect. Secondary succession will soon remove the major influences of traffic as the canopy closes and roots penetrate the mostly ungravelled roadbeds. Enough traces will remain to make speculations on their origins interesting for those who come later.

Deer stands are almost ubiquitous. They come in a number of varieties with older ones made of wood and later ones one of metal except where creosoted poles have been used to support more spacious accommodations than is afforded by an unrailed, sitting platform for one person. Most of the wooden stands will soon decay and fall; however, both these and some of the metal stands could, as their condition deteriorates, prove hazardous to careless climbers. Some stands appear sufficiently durable to be retained for natural history studies. Before the stands disappear someone might even do a M.S. thesis on "Deer Stands of the Mississippi Delta in the Mid to Late Twentieth Century."

In the northeastern corner of the woods in S32, the remains of low parallel ridges beneath a young stand of sweetgum indicate the presence of an old field.

A few trash piles and former house sites were noted. For the most part these seem to be of little long-term ecological import except in S19 NE4 NE4 where, on the northeastern side of Stokes Bayou, the forest floor of a small corner of the woods is dominated by Vinca sp. (periwinkle) and other escapes from cultivation.

Cutting and stripping of canes (presumably for use as bean poles) occurred recently on a small scale in S29.

#### SELECTED SPECIES OF PLANTS

Discussed in this section are several species of plants to which reference has been made in the section on the objectives of the survey.

The only federally listed species considered in this survey was Lindera melissifolia (Walter) Blume, a member of the Lauraceae, which is known as pondberry, swamp spicebush, or Jove's fruit. This small, aromatic shrub occurs in the eastern part of Bolivar

County and adjacent western Sunflower County in the watershed of the Sunflower River, a tributary of the Mississippi River.

Several plants on the list of the Mississippi Natural Heritage Program were sought. These are shown on the attached copy of a letter from Ken Gordon, Director of the Mississippi Natural Heritage Program.

Lindera melissifolia (Walter) Blume  
[Lauraceae]  
(Swamp spicebush, Pond berry, Jove's fruit)

This species which is on the federal list of endangered species was not found, although habitat that appears superficially to be suitable is present. Only 15 miles away on the northeastern edge of Cleveland, a small colony of L. melissifolia occurs in a periodically wet wooded slough. A few miles further east across the Sunflower River, two more small colonies are known. The colony near Cleveland grows on an area whose greatest dimension is about six steps. Clearly, this survey was too superficial to justify a strong negative conclusion on the possibility of finding the species in the Dahomey woods. However, further search for the species should perhaps be undertaken with special attention paid to hydroperiod and soil texture. The apparently suitable sites in the Dahomey woods may be wet longer than those where the plants occur 15-20 miles away. The same was likely the case before the lands surrounding those sites was settled and cleared. Also, the plants near Cleveland are in a shallow slough surrounded by soils mapped as silt loam; although the slough is mapped as a clay soil, it almost certainly has received sediment from the surrounding soils. Kral (19-- ) mentions silt in his description of the habitat of L. melissifolia and Godfrey (1988) lists "sandy sinks" as one type of habitat for the species. As noted earlier some soils on either side of Christmas Lake Branch are reported as silty clays or silty clay loams.

The following specific locations "look" suitable to me for this species. Not all of these are associated with silty soils.

1. In the southwest corner of the 40 acres in S1 NW4 NE4.
2. Around several remnant sloughs in S10 and S11 west of Stillwater Bayou. These are very shallow, wooded, arcuate, linear depressions in which water has remained but fluctuated in depth and area throughout the spring.
3. Another linear depression extending northward from the center of S11.
4. A small swamp in S12 SW4 SE4. The swamp is truncated on the southern end by a drainage ditch that borders the woods; going northward it soon shallows into a slight depression.

5. Along the section line common to S19 and S30.

6. Arcuate linear swales of point bar origin in S32.

Lindera benzoin (L.) Blume (common spicebush) is common in S32, S33 W2, and S4 NE4. It diminishes eastward and southeastward from Christmas Lake Branch and was not seen elsewhere. These plants, many of which bloomed vigorously and set fruit in late February and early March, may comprise the largest population known for the Delta.

Menispermum canadense L. (state list)  
[Menispermaceae]  
(Moonseed)

This attractive twining plant appears to occur throughout the Dahomey woods. It was seen in S2, S9, S10, S17, S22, S31, S32, and S33. Healthy plants in full bloom were seen in S22 and S33. Collections were made in S22 and S33 (Robert A. Stewart 3697 & 3710).

Glyceria arkansana Fernald (state list)  
[Poaceae or Gramineae]  
(Manna grass)

Along moist to wet roadsides and in wet openings in the woods, this grass grows vigorously. Although I did not always make a note of its presence, it was collected in S33 and S27 (Robert A. Stewart 3698 & 3707). At the latter location Iris fulva was found.

Fraxinus profunda Bush (state list)  
[Oleaceae]  
(Pumpkin ash)

Pumpkin ash may be more common here than my observations would indicate but its presence was recorded only when I had in hand fruits (last season's) or twigs and leaves that were distinctly pubescent. Small trees or old fallen fruits attributed to this species were seen in S10 (S3?), S12 SW4 SE4 (fruit), S17, section line of S19 and S30 (fruit). Vegetative material was collected in S17 (Robert A. Stewart 3688). These locations include the extreme southeastern and northern margins of the site; therefore, it seems reasonable to conclude that Fraxinus profunda is to be expected throughout Dahomey woods where suitable habitat occurs.

My experience in this survey led me to the tentative conclusion that the bark of pumpkin ash is of lighter color than the ever abundant green ash, E. pennsylvanica var. subintegerrima (Vahl) Fernald. If the pubescent E. p. var. pennsylvanica should be found here, I would have to begin again on vegetative identification of ashes in this area.

Iris fulva Ker. (state list)  
 [Iridaceae]  
 (Copper iris)

Copper iris with its brownish-red flowers was seen only in S22 and S27. Small stands of fruiting and late blooming plants were seen in both sections. A collection was made in S27 (Robert A. Stewart 3708).

Carva laciniosa (Michaux f.) Loudon (state list)  
 [Juglandaceae]  
 (Bigleaf shagbark or shellbark hickory)

Several trees, the largest of which was about 30 cm dbh and bore catkins, were identified as bigleaf shagbark hickory on the basis of large fallen fruits and pubescent leaves which consistently bore seven leaflets. The trees grow on the northern edge of the small swamp in the center of S33 by a road that formerly crossed here. I am unaware of other occurrences in the Mississippi Delta. The closely related C. ovata (Miller) K. Koch, another of the "scaly bark" hickories, grows nearby and is of frequent occurrence here and elsewhere in Dahomey woods. Collection: Robert A. Stewart 3714.

Hymenocallis sp. (state list)  
 [Liliaceae]  
 Spider lily

One vegetative plant of this taxon was seen on a ridge in S32.

Cynoglossum virginianum L.  
 [Boraginaceae]  
 (Hound's tongue)

Numerous, large fertile plants of hound's tongue were seen in S31 and S32, and nowhere else. The species is included in this report because it has not been reported from the Mississippi Delta. It was seen in both flower and fruit. Collection: Robert A. Stewart 3684.

Botrychium virginianum (L.) Swartz  
 [Ophioglossaceae]  
 (Rattlesnake fern)

This species is also included because it is apparently a new record for the Mississippi Delta. Fertile plants were seen in S3 (infrequent), S4, S32, and S33 SW4. Collection: Robert A. Stewart 3681.



Carex bulbostylis MacKenzie  
[Cyperaceae]

This species was found in S33 SW4 by Charles Bryson. According to him this extends the record of its occurrence in the Mississippi Delta northward from Washington County.

### NATURAL COMMUNITIES

The pervasive effects of disturbance throughout the site have been discussed. Nevertheless, some areas show sufficient recovery and retention of natural features to merit special attention. These will be considered individually. A natural community form was prepared for the area lying within the loop of Christmas Lake Branch.

#### Christmas Lake Branch area

Included here is the land within the loop of Christmas Lake Branch, an area known to members of the Benoit Hunting Club as Calico, and land on natural levee deposits outside the loop. North of highway 446 the "Cut Through Road" lies northwest to southwest across some of these deposits in S33 SW4.

Christmas Lake Branch appears to be a very old remnant of an oxbow lake occupying a former meander of the Mississippi River. Within the loop is found the ridge and swale topography of a point bar deposit. Sloping gently away from the outside of the loop are natural levee deposits. Together the point bar deposits and the natural levee sediments form an edaphic and botanical unit which can be recognized in parts of S3, S4, S31, S32, and S33. Several species appear to be associated only with this complex of sediments. Lindera benzoin, Botrychium virginianum and Viburnum rufidulum Raf. (rusty blackhaw) occur on both sides of Christmas Lake Branch. Carpinus caroliniana Walter (American hornbeam) was seen only in S33 SW4 not far from the main concentration of Viburnum. Cynoglossum virginianum seems to be confined within the loop on the point bar deposits in S31 and S32.

No records of the occurrence of Cynoglossum virginianum and Botrychium virginianum in the Mississippi Delta were found. Both species are common in the mesic habitats of the loess bluffs some 50 miles to the east.

Two other species which on the Dahomey site are largely but not entirely confined to this area are Zanthoxylum clava-herculis L. (Hercules-club) and Aralia spinosa L. (devils-walkingstick). Zanthoxylum is locally common in the western part of S32.

The eastern part of the woods in S32 inside the loop of Christmas Lake Branch deserves special attention. Here the more or less parallel but frequently merging ridges and swales form

gently undulating arcs left by the eastward migrating meander. On the ridges Q. michauxii, Q. pagoda, Q. shumardii, Q. nigra, Carya ovata and C. cordiformis are important canopy species. In the wetter soils of the swales Celtis laevigata, Ulmus americana and Q. texana are dominants. Many of these trees have diameters greater than 0.5 m. Although the canopy is only partially closed, shade is often heavy.

Among the shrubs A. triloba and L. benzoin are abundant and sometimes form thickets. In other places the forest is more open and gives a hint of what was here once and what may be again. It is possible to feel a sense of incipient grandeur beneath trees whose trunks already are partially limb-free and whose crowns are well up in the air.

Although point bar deposits and natural levees are common along the Mississippi River, it is doubtful if any in the Mississippi Delta are both protected and heavily wooded.

#### Northeast Woods (S34 NE4, S22, S27)

The area included under the heading of Northeast Woods lies to the east of Belman and Stokes bayous except for a small part in S34 between the interior road extending north to Stokes Bayou from the clubhouse and the eastern margin of the site. In S22 and the northern half of S27 east of Belman Bayou there has been sufficient recovery from logging to have a rather open forest floor. Quercus pagoda with diameters of about one half meter occur here along with other species typical of the forest as a whole. Iris fulva was seen only in these two sections. This area shows some similarity with those associated with Christmas Lake Branch in that Aralia spinosa also occurs here (in S34 and S22).

A scarlet snake (possibly a scarlet king snake, but I don't think so) and a pileated woodpecker were seen in S22.

The part of this area in S34 was noted earlier to have a small drainage system carrying water that was essentially sediment-free. It is to encourage the protection of this drainage system that I am suggesting minimum disturbance here. Not far from this small stream occurs one of several colonies of the adder's tongue fern Ophioglossum pycnostichum (Fernald) Love & Love, a species found more commonly south of highway 446 on wetter land.

Flooding in S27 and the southern part of S22 would probably not be harmful to the stands of I. fulva if the water were removed by the end of February. I would prefer, however, that this part of the woods be left more or less alone.

#### Section 33 Swamp

Reference has been made above to this small area.

## Section 12 Swamp

✓ This very small swamp was listed as a possible site for Lindera melissifolia. As noted earlier it is cut off on the southern end by a drainage channel bordering the woods. It lies about 200 m from the eastern border of the woods with an attractive intervening area of high ground on which are found Q. michauxii, Q. pagoda, and Ulmus crassifolia. Fairly large trees of Planera aquatica, Forestiera acuminata, Salix nigra Marsh. (black willow), Taxodium distichum, and Q. lyrata, occur along with Fraxinus pennsylvanica, Acer rubrum L. (red maple), and, on the slightly depressed land draining south to the swamp, Fraxinus profunda. Preservation of this small area might simply involve ignoring this small corner of the site.

## Shrub Swamp (S2 NE4)

✓ This swamp was not given much attention in this survey because its presence was already well-known. It should certainly be kept intact.

## Southwest Woods (S4 SW4 and S9 NW4)

This is a section of low woods and ridges that lie in a northeast to southwest orientation. I include mention of it not for any special features but because it is an attractive area including a mix of readily flooded land and higher ground with a scattering of good-sized trees. Some parts of the interrIDGE swales resemble habitat of L. melissifolia. The area is bounded on the east by a canal which joins a channelized stream that lies to the southwest.

## RECOMMENDATIONS

In this section are listed the portions of the site that seem to me to be worthy of special care which largely means little or no cutting of trees or other management practices that could harm not only the woody flora but also the herbaceous flora. On sites that might normally be subject to prolonged or frequent winter flooding, artificial flooding for waterfowl should be acceptable. (What are the effects of green tree reservoirs on soil invertebrates and burrowing vertebrates?) On the other hand, artificial drainage of areas that would normally retain water during the warmer months is not recommended.

1. Land within the loop of Christmas Lake Branch (S31 and S32). Leave alone.
2. Natural levee deposits associated with Christmas Lake Branch (S33 SW4 and S4 NE4). No artificial flooding.

3. S22, S27 (east of Belman Bayou), S34 E2 (east of interior road running north from club house of Benoit Hunting Club) No artificial flooding; the stands of I. fulva would probably suffer if people (or beavers) kept water on them for months.

4. Swamp in center of S33. Keep the drainage ditch extending south from here blocked at its northern end. To get water out of woods to the south and southeast, beaver dams nearer highway 446 could be removed which should allow water to follow a more natural course to the southeast.

5. Truncated swamp in S12 SW4 SE4. Leave alone. Don't deepen the outlet on the southern end. In fact, it might need to be made shallower.

6. Shrub swamp in eastern half of S2. To the extent possible keep intact and manage to encourage establishment and survival of Taxodium distichum.

7. Small swampy area on section line of S2 NW4 and S3 NE4. Allow enough water to remain to encourage reproduction and establishment of Taxodium distichum. Don't disturb "Kelly's" deer stand stump.

8. Wooded land of S4 SW4 and adjoining woods in S9 NW4. No problem with some flooding here but leave the ridges alone.

9. Wooded area in S19 and S30. Don't do anything heavy-handed here. Although flooding may not be a problem, this resembles habitat of Lindera melissifolia.

I have not included here any of the sloughs or depression in S10 and S11 noted earlier as potential habitat for Lindera melissifolia. Although my survey of these areas was rather limited, the species was not seen. Further these areas apparently regularly undergo prolonged flooding. They seemed to me to be in the middle of choice areas for waterfowl flooding and there was no concrete reason to suggest their exclusion from such management.

## LITERATURE CITED

Carter, James Richard, Jr. 1978. A floristic study of the Delta National Forest and adjacent areas. M.S. Thesis, Mississippi State University.

Carter, Richard, M. W. Morris, and C. T. Bryson. 1990. Some rare or otherwise interesting vascular plants from the Delta region of Mississippi. *Castanea* 55 (1):40-55.

Godfrey, Robert K. 1988. Trees, shrubs, and woody vines of northern Florida and adjacent Georgia and Alabama. University of Georgia Press, Athens.

Gunn, Charles R., et al. 1980. Vascular flora of Washington County, Mississippi, and environs. Agricultural Research (Southern Region), Science and Education Administration, U. S. Department of Agriculture.

Jones, Samuel B., Jr. 1975. Mississippi flora IV. Dicotyledon families with aquatic or wetland species. *Gulf Research Reports* 5(1):7-22.

Morris, M. Wayne. 1987. The vascular flora of Grenada County, Mississippi. M.S. Thesis, Mississippi State University.

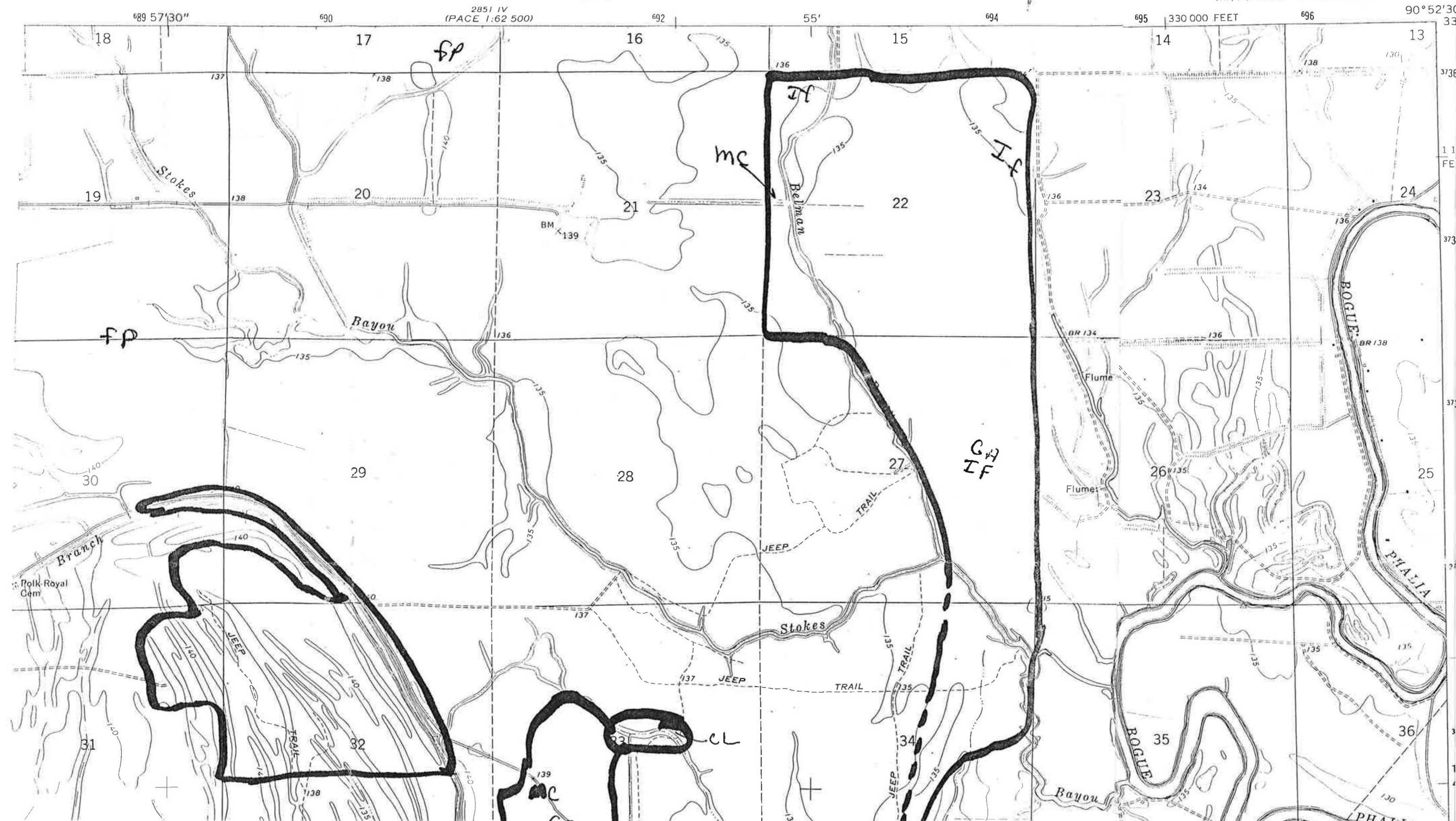
Webster, Robert Dale. 1978. A floristic study of Diamond Point Island in Warren County, Mississippi.

Dahomey  
ROBERT STEWART  
June 1990

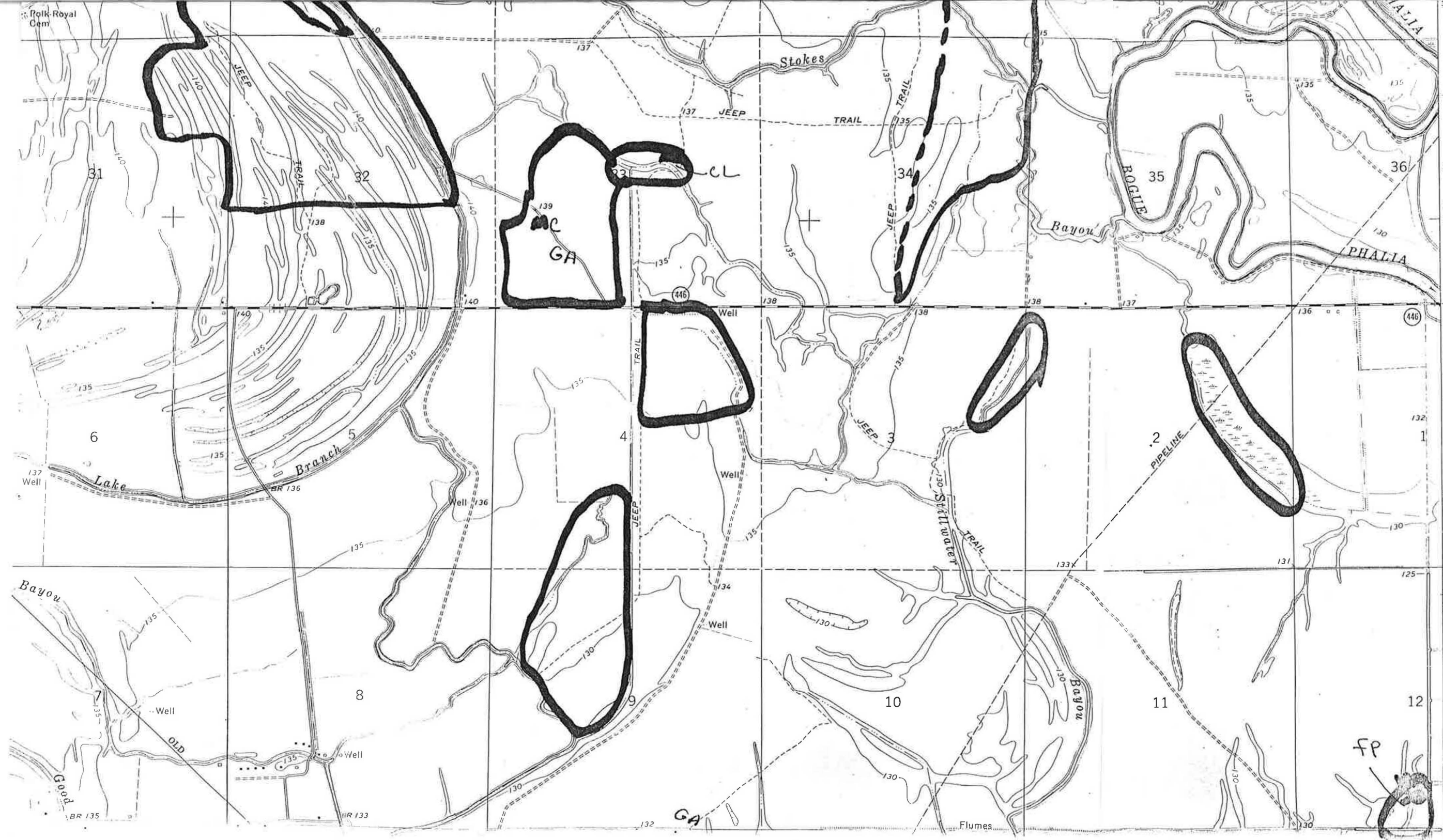
Dahomey

R7W

LOBDELL QUADRANGLE  
MISSISSIPPI-BOLIVAR CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
NW/4 CHOCTAW 15' QUADRANGLE







[illegible]

SITE DESCRIPTION /DISCUSSION

(use additional pages as necessary)

Written description - DESCRIBE the site in the space below. Try to convey a mental image of the site's features (including vegetation, significant species, aquatic features, notable landforms, natural disturbances, scenic qualities, natural hazards, etc.):

This is a periodically logged bottomland hardwood forest on slackwater flats, natural levee deposits, and point bar deposits. Major streams have been channelized and ditches are common. Vegetation ranges from stands with well-developed canopies and open understories to high-graded stands with scattered trees, open canopies, and understory thickets. Dense canebrakes, small swamps, well-developed forest on ridge and swale topography, and thick stands of paw paw and common spicebush are attractive features.

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Evidence of disturbance - DESCRIBE any unnatural on-site disturbances (e.g., livestock grazing, structures, past logging, mining, plantations/orchards, exotic flora, etc.).

All areas have been logged, some within the last 25 years. Less significant disturbance includes trash, trails, deer stands, former dwelling sites with local occurrences of introduced species, and cutting of canes for garden use.

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Surrounding land use - DESCRIBE physical structures and land use practices in the surrounding area (e.g., residential and commercial buildings; agricultural, recreational, residential, and commercial uses):

Adjoining lands are intensively farmed and both paved and unpaved roads border and cross the site. Some agricultural land occurs within the boundaries of the site. Several irrigation wells are present.

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Threats to site/Management needs - DISCUSS on-site and off-site threats to site and management

Implications; If applicable, discuss why sought species/communities may no longer exist here.

Potential threats include the effects of artificial drainage and flooding including agricultural runoff and pesticide drift from aerial application.

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COMMUNITY SURVEY FORM

Site Name: DAHOMAY Date: march - may 1990 Source Code: \_\_\_\_\_  
 Quad Name(s): LOBDELL 7 1/2 Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Code(s): \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 State: MS County(ies): BOLIVAR Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Field Quad Margin #: \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Full extent of EO known and mapped? yes no  
 Precise location of community mapped on base map? X yes no

S31 - 2532

BIOLOGICAL DESCRIPTION

Element Name: CHRISTMAS LAKE BRANCH woods (Calico) Element Code: \_\_\_\_\_ Occ# \_\_\_\_\_

Included plant communities (name each PC using 1, 2 or 3 dominant species):

- (1) Ridge (Quercus michauxii, Q. pagoda, Carya cordiformis) additional PC's  
 (2) Swale (Celtis laevigata, Q. texana, Liquidambar styraciflua)  
 (3) \_\_\_\_\_

For each PC list the canopy dominants (tree-T, shrub-S, herb-H) and % cover.

(1)					(2)					(3)				
Name	T	S	H	% cover	Name	T	S	H	% cover	Name	T	S	H	% cover
Q. michauxii					Celtis laevigata									
Q. pagoda					Q. texana									
C. cordiformis					Liquidambar styraciflua									
Q. nigra					Q. lyrata									
					Ulmus americana									

For each PC list the stratal dominants or codominants (tree-T, shrub-S, herb-H) and % cover.

Name	T	S	H	% cover	Name	T	S	H	% cover	Name	T	S	H	% cover
<u>Asimina triloba</u>					<u>Lindera benzoin</u>									
<u>Lindera benzoin</u>														

were cover values determined visually?, quantitatively?

% bare ground: \_\_\_\_\_ Species list generated? yes X no

Characteristic species: Diospyros virginiana, Acer negundo,  
Acer rubrum, Zanthoxylum clava-herculis (western part)

Exotics: \_\_\_\_\_

Rare taxa: \_\_\_\_\_

General description and comments (word picture of the NC):

A well-developed bottomland hardwood forest on ridge and swale topography of a point bar deposit inside the loop of an old meander of the Mississippi River. The canopy is partially closed with many trees of about 0.5 m dbh. The understory is open to thicket-like; shade is frequently heavy. Major species of ridges include Quercus michauxii, Q. nigra, Q. pagoda, Q. shumardii, Q. cordiformis and Q. ovata. The swales where water stands for varying periods support Q. lyrata, Q. texana, Celtis laevigata, Ulmus americana, and Acer rubrum. Asimina triloba and Lindera benzoin are major components of the shrub layer. Scattered to locally common in the herb layer are Cynoglossum virginianum, Botrychium virginianum, Arisaema dracontium, and Impatiens balsamifera.

The ridges and swales form slightly curving arcs that are convex to the east. The resulting topography is a gently undulating surface composed of shallow swales and low rounded ridges.

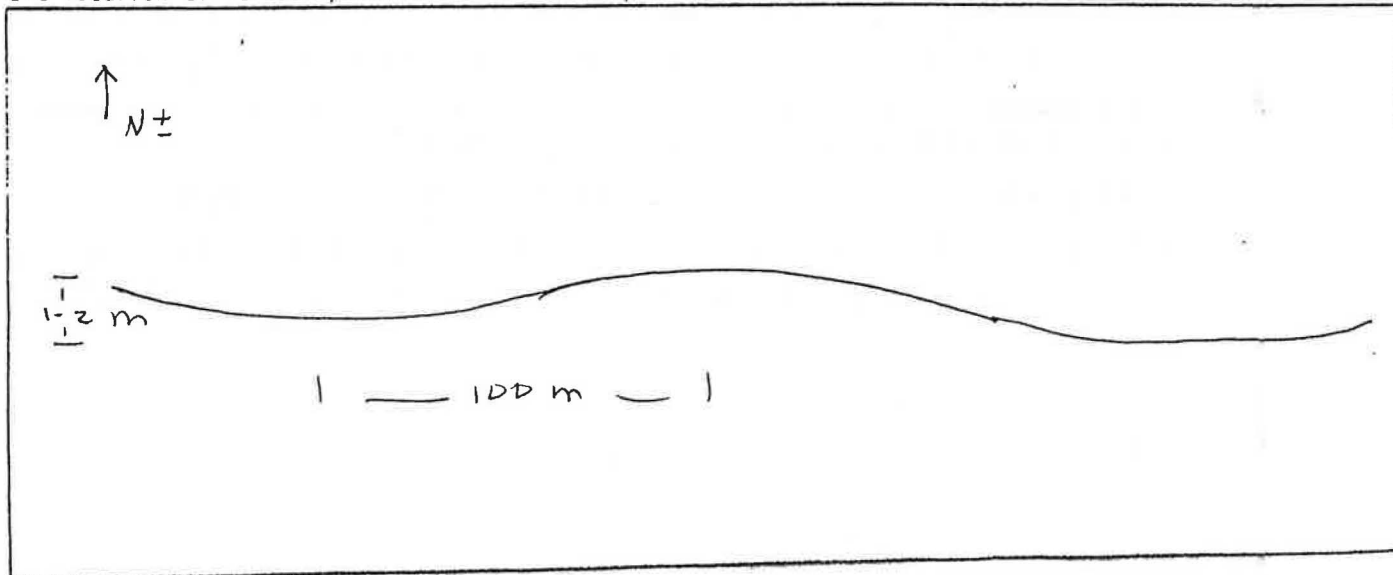
PHYSICAL DESCRIPTION

Size : 375 ACRES

Elevation: 135 ft to 140 ft

Aspect		Slope	Topographic position	Moisture
<u>N</u>	<u>NE</u>	<u>✓ 0-3%</u>	<u>Crest</u>	<u>Inundated (Hydric)</u>
<u>E</u>	<u>NW</u>	<u>3-8%</u>	<u>Upper slope</u>	<u>Saturated (Wet-Mesic)</u>
<u>S</u>	<u>SE</u>	<u>8-15%</u>	<u>Mid-slope</u>	<u>Moist (Mesic)</u>
<u>W</u>	<u>SW</u>	<u>15-35%</u>	<u>Lower slope</u>	<u>Dry-Mesic</u>
<u>✓ Flat</u>		<u>35%-Vertical</u>	<u>Bottom</u>	<u>Dry (Xeric)</u>

Cross section of natural community, showing topographic and aquatic features, vegetation structure, and location of various plant communities or species. Include scale and direction.





## SPECIAL PLANT SURVEY FORM

Site Name: DAHOMEV Date: May 26 1990 Source Code: \_\_\_\_\_  
 Quad Name(s): LBDELL 7 1/2 Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Code(s): \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 State: MS County(ies): BOLIVAR Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Field Quad Margin #: \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Full extent of EO known and mapped? yes ☒ no  
 Precise locations of individuals or groups mapped on base map? ☒ yes ☐ no  
S33 CENTER of Section

## BIOLOGY

Element Name: CARYA LACINIOSA Loud. Element Code: \_\_\_\_\_ Occ. #: \_\_\_\_\_

Phenology	Population Size	Population Area	Age Structure	Vigor
% in leaf	Ramets	Genets	% Seedlings	Very feeble
% in bud	actual #	1 yd <sup>2</sup>	% Immature	Feeble
% in flower	estimated #	1-5 yd <sup>2</sup>	% 1st year	Normal
% Immature fruit	1-10	5-10 yd <sup>2</sup>	% Mature	Vigorous
% Mature fruit	11-50	10-100 yd <sup>2</sup>	(established)	Exceptionally
% Seed dispersing	51-100	100 yd <sup>2</sup> -2ac	% Senescent	vigorous
% Dormant	101-1000	2 ac+	Age structure	
	1001-10,000	actual	unknown	
	10K+	area (if known)		

Comments on above: Largest tree est. dbh 30 cm  
 Evidence of reproduction? ☒ yes ☐ no Explain: old fruits + staminate catkins  
 Type of reproduction: ☒ sexual ☐ asexual ☐ both  
 Any symbiotic or parasitic relationships? ☐ yes ☐ no Explain: \_\_\_\_\_  
 Evidence of disease, predation or injury? ☐ yes ☐ no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
Reproduction					<input checked="" type="checkbox"/>
Dispersal					
Establishment					
Maintenance			<input checked="" type="checkbox"/>		

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
N NE	<input checked="" type="checkbox"/> 0-3%	Open	Crest	Inundated (Hydric)
E NW	3-8%	Partial	Upper Slope	Saturated (Wet-mesic)
S SE	8-15%	Filtered	Mid-Slope	<input checked="" type="checkbox"/> Moist (Mesic)
W SW	15-35%	Shade	Lower-Slope	Dry-Mesic
> Flat	35%-vertical		Bottom	Dry (Xeric)

Elevation: 135 ft to — ft  
 Cross section of topography (habitat)/Include scale, direction, element position



HABITAT (continued)

Associated natural community/plant community: Bottomland hardwoods

Natural community form completed? yes ☒ no

Associated plant species: Quercus michauxii, Q. pagoda, Q. lyrata

Ilex decidua, Gleditsia triacanthos, Fraxinus pennsylvanica

Ulmus crassifolia, Celtis laevigata, Ulmus americana

Soil name(s)/Substrate: Sharky clay

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

IDENTIFICATION

Photograph taken? yes ☒ no

Specimen taken? ☒ yes no If yes, give collector, collection # and repository: \_\_\_\_\_

ROBERT A. STEWART 3714

DSC

Do other members of this genus co-occur at this site? ☒ yes no If yes, complete below:

List: CARYA OVATA (MILL.) K. KOCH

Hybridization? yes no

Identification problems? ☒ yes no Explain: Possibly C. ovata w/ 7 leaflets

CONSERVATION

Owner aware of EO? yes no unknown Owner protecting EO? yes no unknown

Evidence of disturbance: \_\_\_\_\_

Threats to EO: \_\_\_\_\_

Conservation/management needs: \_\_\_\_\_

Research needs: \_\_\_\_\_

Data security? yes no Explain: \_\_\_\_\_

SUMMARY

EO Quality: (i.e., How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

?

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: Local population of ca half a dozen trees

EO Condition: (i.e., Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: \_\_\_\_\_

EO Viability: (i.e., What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: \_\_\_\_\_

EO Defensibility: (i.e., Can this occurrence be protected from extrinsic human factors?)

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: \_\_\_\_\_

EO Rank: (i.e., a summary of all factors listed above)

A

B

C

D

## SPECIAL PLANT SURVEY FORM

march-may 1990

Site Name: DAHOMAY Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Name(s): LOBDELL 7 1/2 Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Code(s): \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 State: MS County(ies): BOLIVAR Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Field Quad Margin #: \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Full extent of EO known and mapped? yes ☒ no  
 Precise locations of individuals or groups mapped on base map? yes ☒ no  
APPEARS TO BE SCATTERED THROUGHOUT

## BIOLOGY

Element Name: FRAXINUS PROFUNDA Bush Element Code: \_\_\_\_\_ Occ. #: \_\_\_\_\_

Phenology	Population Size	Population Area	Age Structure	Vigor
\$in leaf	Ramets	Genets	\$ Seedlings	Very feeble
\$in bud	actual #	1 yd <sup>2</sup>	\$ Immature	Feeble
\$in flower	estimated #	1-5 yd <sup>2</sup>	\$ 1st year	Normal
\$immature fruit	1-10	5-10 yd <sup>2</sup>	\$ Mature	Vigorous
\$Mature fruit	11-50	10-100 yd <sup>2</sup>	(established)	Exceptionally
\$Seed dispersing	51-100	100 yd <sup>2</sup> -2ac	\$ Senescent	vigorous
\$Dormant	101-1000	2 ac+	Age structure	
	1001-10,000	actual	unknown	
	10K+	area (if known)		

Comments on above: \_\_\_\_\_

Evidence of reproduction? ☒ yes ☐ no Explain: OLD FALLEN FRUITS  
 Type of reproduction: ☒ sexual ☐ asexual ☐ both  
 Any symbiotic or parasitic relationships? ☐ yes ☐ no Explain: \_\_\_\_\_  
 Evidence of disease, predation or injury? ☐ yes ☐ no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
reproduction					
dispersal					
establishment					
maintenance					

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
N NE	0-3%	Open	Crest	<input checked="" type="checkbox"/> Inundated (Hydric)
E NW	3-8%	Partial	Upper Slope	<input checked="" type="checkbox"/> Saturated (Wet-mesic)
S SE	8-15%	<input checked="" type="checkbox"/> Filtered	Mid-Slope	<input checked="" type="checkbox"/> Moist (Mesic)
W SW	15-35%	Shade	Lower-Slope	Dry-Mesic
<input checked="" type="checkbox"/> Flat	35%-Vertical		Bottom	Dry (Xeric)

Elevation: 125 ft to 140 ft

Cross section of topography (habitat)/include scale, direction, element position

HABITAT (continued)

Associated natural community/plant community: BOTTOM LAND HARDWOODS

Natural community form completed? yes no

Associated plant species: Fraxinus pennsylvanica, Quercus texana

Alnus incana, Bumelia lycoides

Penstemon laxiflorus, Myosotis macrocarpa

Soil name(s)/Substrate: Sharkey or Dawling clay

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

IDENTIFICATION

Photograph taken? yes X no

Specimen taken? X yes no If yes, give collector, collection # and repository: \_\_\_\_\_

ROBERT A. STEWART 3688 OSC

Do other members of this genus co-occur at this site? X yes no If yes, complete below:

List: F. pennsylvanica var. subintegra (Vahl) Fern.

Hybridization? yes no

Identification problems? X yes no Explain: NEED FRUIT AND TWIGS

CONSERVATION

Owner aware of EO? X yes no unknown Owner protecting EO? yes no X Unknown

Evidence of disturbance: LOGGING, ROADS, TRAILS

Threats to EO: \_\_\_\_\_

Conservation/management needs: \_\_\_\_\_

Research needs: \_\_\_\_\_

Data security? yes no Explain: \_\_\_\_\_

SUMMARY

EO Quality: (i.e., How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: UN CERTAIN

EO Condition: (i.e., Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: all parts of site have been logged

EO Viability: (i.e., What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: \_\_\_\_\_

EO Defensibility: (i.e., Can this occurrence be protected from extrinsic human factors?)

A-Excellent

B-Good

C-Marginal

D-Poor

Comments: Effects of artificial flooding?

EO Rank: (i.e., a summary of all factors listed above) A B C D

Comments: \_\_\_\_\_

## SPECIAL PLANT SURVEY FORM

Site Name: DAHOMEY Date: April 30, 1990 Source Code: \_\_\_\_\_  
 Quad Name(s): LOBDELL Date: May 7, 1990 Source Code: \_\_\_\_\_  
 Quad Code(s): \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 State: MS County(ies): BOLIVAR Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Field Quad Margin #: \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Full extent of EO known and mapped? yes X no  
 Precise locations of individuals or groups mapped on base map? yes no  
SCATTERED TO ABUNDANT IN OPEN, WET SITES

## BIOLOGY

Element Name: GLYCERIA ARKANSANA FERN. Element Code: \_\_\_\_\_ Occ. #: \_\_\_\_\_

Phenology	Population Size	Population Area	Age Structure	Vigor
<u>\$</u> in leaf	Ramets	Genets	<u>\$</u> Seedlings	<u>Very feeble</u>
<u>\$</u> in bud	actual #	1 yd <sup>2</sup>	<u>\$</u> Immature	<u>Feeble</u>
<u>\$</u> in flower	estimated #	5-10 yd <sup>2</sup>	<u>\$</u> 1st year	<u>Normal</u>
<u>\$</u> immature fruit	1-10	10-100 yd <sup>2</sup>	<u>\$</u> Mature	<u>Vigorous</u>
<u>\$</u> mature fruit	11-50	100 yd <sup>2</sup> -2 ac	(established)	<u>Exceptionally</u>
<u>\$</u> seed dispersing	51-100	2 ac+	<u>\$</u> Senescent	<u>vigorous</u>
<u>\$</u> dormant	101-1000	actual	Age structure	
	1001-10,000	area (if known)	unknown	
	10K+			

Comments on above: \_\_\_\_\_

Evidence of reproduction? X yes no Explain: FLOWERSType of reproduction: X sexual asexual bothAny symbiotic or parasitic relationships? yes no Explain: \_\_\_\_\_Evidence of disease, predation or injury? yes no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
reproduction					
dispersal					
establishment					
maintenance					

Comments: \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
<u>N</u> <u>NE</u>	<u>0-3%</u>	<u>Open</u>	<u>Crest</u>	<u>X</u> Inundated (Hydric)
<u>E</u> <u>NW</u>	<u>3-8%</u>	<u>Partial</u>	<u>Upper Slope</u>	<u>X</u> Saturated (wet-mesic)
<u>S</u> <u>SE</u>	<u>8-15%</u>	<u>Filtered</u>	<u>Mid-Slope</u>	<u>X</u> Moist (Mesic)
<u>W</u> <u>SW</u>	<u>15-35%</u>	<u>Shade</u>	<u>Lower-Slope</u>	<u>Dry-Mesic</u>
<u>6</u> Flat	<u>35%-Vertical</u>		<u>Bottom</u>	<u>Dry (Xeric)</u>

Elevation: 125 ft to 140 ft

Cross section of topography (habitat)/include scale, direction, element position

HABITAT (continued)

Associated natural community/plant community: BOTTOMLAND HARDWOODS

Natural community form completed? yes ☒ no

Associated plant species: mixed bottomland hardwoods, roadside vegetation & ml. Irian talva, Juncus spp. Carex spp.

Soil name(s)/Substrate: shale clay / Tunic silty clay

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

IDENTIFICATION

Photograph taken? yes ☒ no

Specimen taken? ☒ yes no If yes, give collector, collection # and repository: \_\_\_\_\_

ROBERT A. STEWART 3698, 3207 DSC

Do other members of this genus co-occur at this site? yes ☒ no If yes, complete below:

List: \_\_\_\_\_

Hybridization? yes no

Identification problems? yes no Explain: \_\_\_\_\_

CONSERVATION

Owner aware of EO? ☒ yes no unknown Owner protecting EO? yes no ☒ Unknown

Evidence of disturbance: LOGGING ROADS TRAILS

Threats to EO: \_\_\_\_\_

Conservation/management needs: \_\_\_\_\_

Research needs: \_\_\_\_\_

Data security? yes no Explain: \_\_\_\_\_

SUMMARY

EO Quality: (ie, How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

A-Excellent

B-Good

C-Marginal

D Poor

Comments: \_\_\_\_\_

EO Condition: (ie, Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent

B-Good

C-Marginal

D Poor

Comments: \_\_\_\_\_

EO Viability: (ie, What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent

B-Good

C-Marginal

D Poor

Comments: EFFECT OF SUCCESSION UNKNOWN

EO Defensibility: (ie, Can this occurrence be protected from extrinsic human factors?)

A-Excellent

B-Good

C-Marginal

D Poor

Comments: MAY BE AFFECTED BY ROADSIDE MAINTENANCE

EO Rank: (ie, a summary of all factors listed above) A B C D

## SPECIAL PLANT SURVEY FORM

Site Name: DATHOMEYDate: Mar. 31 Source Code: 1990Quad Name(s): LOBDELL 7 1/2

Date: \_\_\_\_\_ Source Code: \_\_\_\_\_

Quad Code(s): \_\_\_\_\_

Date: \_\_\_\_\_ Source Code: \_\_\_\_\_

State: MS County(ies): BOLIVAR

Date: \_\_\_\_\_ Source Code: \_\_\_\_\_

Field Quad Margin #: \_\_\_\_\_

Date: \_\_\_\_\_ Source Code: \_\_\_\_\_

Full extent of EO known and mapped? yes ☒ noPrecise locations of individuals or groups mapped on base map? yes ☒ no532 - one plant

## BIOLOGY

Element Name: HYMENOCALLIS sp.

Element Code: \_\_\_\_\_

Occ. #: \_\_\_\_\_

Phenology	Population Size		Population Area	Age Structure	Vigor
<input type="checkbox"/> In leaf	Ramets	Genets	1 yd <sup>2</sup>	<input type="checkbox"/> Seedlings	<input type="checkbox"/> Very feeble
<input type="checkbox"/> In bud	actual #		1-5 yd <sup>2</sup>	<input type="checkbox"/> Immature	<input type="checkbox"/> Feeble
<input type="checkbox"/> In flower	estimated #		5-10 yd <sup>2</sup>	<input type="checkbox"/> 1st year	<input type="checkbox"/> Normal
<input type="checkbox"/> Immature fruit	1-10	<input checked="" type="checkbox"/>	10-100 yd <sup>2</sup>	<input type="checkbox"/> Mature	<input type="checkbox"/> Vigorous
<input type="checkbox"/> Mature fruit	11-50		100 yd <sup>2</sup> -2ac	(established)	<input type="checkbox"/> Exceptionally
<input type="checkbox"/> Seed dispersing	51-100		2 ac+	<input type="checkbox"/> Senescent	<input type="checkbox"/> vigorous
<input type="checkbox"/> Dormant	101-1000		actual	<input type="checkbox"/> Age structure	
	1001-10,000		area (if known)	unknown	
	10K+				

Comments on above: one vegetative plant seenEvidence of reproduction? yes ☒ no Explain: \_\_\_\_\_Type of reproduction: sexual ☐ asexual ☐ bothAny symbiotic or parasitic relationships? yes ☐ no Explain: \_\_\_\_\_Evidence of disease, predation or injury? yes ☐ no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
reproduction					
dispersal					
establishment					
maintenance					

Comments: \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
<u>N</u> <u>NE</u>	<u>0-3%</u>	<u>Open</u>	<u>Crest</u>	<u>Inundated (Hydric)</u>
<u>E</u> <u>NW</u>	<u>3-8%</u>	<u>Partial</u>	<u>Upper Slope</u>	<u>Saturated (Wet-mesic)</u>
<u>S</u> <u>SE</u>	<u>8-15%</u>	<u>Filtered</u>	<u>Mid-Slope</u>	<u>Moist (Mesic)</u>
<u>W</u> <u>SW</u>	<u>15-35%</u>	<u>Shade</u>	<u>Lower-Slope</u>	<u>Dry-Mesic</u>
<u>Flat</u>	<u>35%-Vertical</u>		<u>Bottom</u>	<u>Dry (Xeric)</u>

Elevation: 135 ft to \_\_\_\_\_ ft

Cross section of topography (habitat)/include scale, direction, element position





HABITAT (continued)

Associated natural community/plant community: \_\_\_\_\_

Natural community form completed? ☒ yes ☐ no

Associated plant species: Quercus michauxii, Q. pagoda

Soil name(s)/Substrate: ?

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

IDENTIFICATION

Photograph taken? ☐ yes ☒ no

Specimen taken? ☐ yes ☒ no If yes, give collector, collection # and repository: \_\_\_\_\_

Do other members of this genus co-occur at this site? ☐ yes ☒ no If yes, complete below:

List: \_\_\_\_\_

Hybridization? ☐ yes ☐ no

Identification problems? ☐ yes ☐ no Explain: \_\_\_\_\_

CONSERVATION

Owner aware of EO? ☐ yes ☐ no ☐ unknown Owner protecting EO? ☐ yes ☐ no ☐ Unknown

Evidence of disturbance: \_\_\_\_\_

Threats to EO: \_\_\_\_\_

Conservation/management needs: \_\_\_\_\_

Research needs: \_\_\_\_\_

Data security? ☐ yes ☐ no Explain: \_\_\_\_\_

SUMMARY

EO Quality: (ie, How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Condition: (ie, Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Viability: (ie, What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Defensibility: (ie, Can this occurrence be protected from extrinsic human factors?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Rank: (ie, a summary of all factors listed above) A B C D

## SPECIAL PLANT SURVEY FORM

Site Name: DAHOMEX Date: Feb. 24, 1990 Source Code: \_\_\_\_\_  
 Quad Name(s): LOBDELL 7 1/2 Date: May 7, 1990 Source Code: \_\_\_\_\_  
 Quad Code(s): \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 State: MS County(ies): Bolivar Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Field Quad Margin #: \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Full extent of EO known and mapped? \_\_\_\_\_ yes ☒ no  
 Precise locations of individuals or groups mapped on base map? ☒ yes \_\_\_\_\_ no

## BIOLOGY

Element Name: IRIS fulva KER Element Code: \_\_\_\_\_ Occ. #: \_\_\_\_\_  

Phenology	Population Size	Population Area	Age Structure	Vigor
\$In leaf	Ramets	Genets	\$ Seedlings	Very feeble
\$In bud	actual #	1-5 yd <sup>2</sup>	\$ Immature	Feeble
\$In flower	estimated #	5-10 yd <sup>2</sup>	\$ 1st year	Normal
\$Immature fruit	1-10	10-100 yd <sup>2</sup>	\$ Mature	Vigorous
\$Mature fruit	11-50	100 yd <sup>2</sup> -2ac	(established)	Exceptionally
\$Seed dispersing	51-100	2 ac+	\$ Senescent	vigorous
\$Dormant	101-1000	actual	Age structure	
	1001-10,000	area (if known)	unknown	
	10K+			

Comments on above:

Evidence of reproduction? ☒ yes \_\_\_\_\_ no Explain: FLOWERS; IMMATURE FRUIT  
 Type of reproduction: \_\_\_\_\_ sexual \_\_\_\_\_ asexual ☒ both  
 Any symbiotic or parasitic relationships? \_\_\_\_\_ yes \_\_\_\_\_ no Explain: \_\_\_\_\_  
 Evidence of disease, predation or injury? \_\_\_\_\_ yes \_\_\_\_\_ no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
reproduction					
dispersal					
establishment					
maintenance					

Comments: \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
N NE	0-3%	Open	Crest	<input checked="" type="checkbox"/> Inundated (Hydric)
E NW	3-8%	<input checked="" type="checkbox"/> Partial	Upper Slope	<input checked="" type="checkbox"/> Saturated (Wet-mesic)
S SE	8-15%	<input checked="" type="checkbox"/> Filtered	Mid-Slope	<input type="checkbox"/> Moist (Mesic)
W SW	15-35%	Shade	Lower-Slope	<input type="checkbox"/> Dry-Mesic
<input checked="" type="checkbox"/> Flat	35%-Vertical		Bottom	<input type="checkbox"/> Dry (Xeric)

Elevation: 130 ft to 135 ft

Cross section of topography (habitat)/include scale, direction, element position

HABITAT (continued)

Associated natural community/plant community: BOTTOMLAND HARDWOODS

Natural community form completed? yes no

Associated plant species: Celtis laevigata, Fraxinus pennsylvanica,  
Glyceria arkanzans, Penstemon laxiflorus(?)

Soil name(s)/Substrate: Sharkey clay

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

IDENTIFICATION

Photograph taken? yes X no

Specimen taken? X yes no If yes, give collector, collection # and repository: \_\_\_\_\_

ROBERT A. STEWART 3708

DSC

Do other members of this genus co-occur at this site? yes X no If yes, complete below: \_\_\_\_\_

List: \_\_\_\_\_

Hybridization? yes no

Identification problems? yes no Explain: \_\_\_\_\_

CONSERVATION

Owner aware of EO? X yes no unknown Owner protecting EO? X yes no unknown

Evidence of disturbance: LOGGING ? ROADS, TRAILS

Threats to EO: \_\_\_\_\_

Conservation/management needs: \_\_\_\_\_

Research needs: \_\_\_\_\_

Data security? yes no Explain: \_\_\_\_\_

SUMMARY

EO Quality: (ie, How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

A-Excellent B-Good C-Marginal D Poor

Comments: \_\_\_\_\_

EO Condition: (ie, Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent B-Good C-Marginal D Poor

Comments: \_\_\_\_\_

EO Viability: (ie, What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent B-Good C-Marginal D Poor

Comments: TOTAL NUMBER OF INDIVIDUALS IS NOT GREAT

EO Defensibility: (ie, Can this occurrence be protected from extrinsic human factors?)

A-Excellent B-Good C-Marginal D Poor

Comments: DRAINAGE AND FLOODING ?

EO Rank: (ie, a summary of all factors listed above) A B C D

## SPECIAL PLANT SURVEY FORM

April - May 1990

Site Name: DAHDMEY Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Name(s): LD BDELL Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Code(s): \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 State: MS County(ies): BOLIVAR Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Field Quad Margin #: \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Full extent of EO known and mapped? yes ☒ no  
 Precise locations of individuals or groups mapped on base map? yes ☒ no

SCATTERED THROUGHOUT SITE

## BIOLOGY

Element Name: MENISPERMUM CANADENSE L. Element Code: \_\_\_\_\_ Occ. #: \_\_\_\_\_

Phenology	Population Size	Population Area	Age Structure	Vigor
\$In leaf	Ramets	Genets	\$ Seedlings	Very feeble
\$In bud	actual #	1 yd <sup>2</sup>	\$ Immature	Feeble
\$In flower	estimated #	1-5 yd <sup>2</sup>	\$ 1st year	Normal
\$Immature fruit	1-10	5-10 yd <sup>2</sup>	\$ Mature	Vigorous
\$Mature fruit	11-50	10-100 yd <sup>2</sup>	(established)	Exceptionally
\$Seed dispersing	51-100	100 yd <sup>2</sup> -2ac	\$ Senescent	vigorous
\$Dormant	101-1000	2 ac+	Age structure	
	1001-10,000	actual	unknown	
	10K+	area (if known)		

Comments on above: \_\_\_\_\_

Evidence of reproduction? ☒ yes ☐ no Explain: FLOWERSType of reproduction: ☒ sexual ☐ asexual ☐ bothAny symbiotic or parasitic relationships? ☐ yes ☐ no Explain: \_\_\_\_\_Evidence of disease, predation or injury? ☐ yes ☐ no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
reproduction					
dispersal					
establishment					
maintenance					

Comments: \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
N NE	0-3%	Open	Crest	Inundated (Hydric)
E NW	3-8%	Partial	Upper Slope	Saturated (Wet-mesic)
S SE	8-15%	Filtered	Mid-Slope	Moist (Mesic)
W SW	15-35%	Shade	Lower-Slope	Dry-Mesic
<input checked="" type="checkbox"/> Flat	35%-vertical		Bottom	Dry (Xeric)

Elevation: 125 ft to 140 ft

Cross section of topography (habitat)/include scale, direction, element position

HABITAT (continued)

Associated natural community/plant community: BOTTOMLAND HARDWOOD

Natural community form completed? yes no

Associated plant species: Cocculus carolinianus, Asimina triloba  
Liriodendron benzoin, Quercus pagoda, Carya ovata, Carya cordiformis  
Celtis laevigata

Soil name(s)/Substrate: Shaley clay, Tunica silty clay, Dundee silty clay

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

IDENTIFICATION

Photograph taken? yes X no

Specimen taken? X yes no If yes, give collector, collection # and repository: \_\_\_\_\_

ROBERT A. STEWART # 3697 + 3710 DSC

Do other members of this genus co-occur at this site? yes X no If yes, complete below:

List: \_\_\_\_\_

Hybridization? yes no

Identification problems? yes no Explain: \_\_\_\_\_

CONSERVATION

Owner aware of EO? X yes no unknown Owner protecting EO? X yes no unknown

Evidence of disturbance: LOGGING, ROADS, TRAILS

Threats to EO: \_\_\_\_\_

Conservation/management needs: \_\_\_\_\_

Research needs: \_\_\_\_\_

Data security? yes no Explain: \_\_\_\_\_

SUMMARY

EO Quality: (ie, How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Condition: (ie, Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Viability: (ie, What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Defensibility: (ie, Can this occurrence be protected from extrinsic human factors?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Rank: (ie, a summary of all factors listed above) A B C D

HABITAT (continued)

Associated natural community/plant community: BOTTOM LAND HARDWOODS

Natural community form completed? yes no

Associated plant species: Asimina triloba, Liriodendron benzoin, Carya ovata,  
Arisaema dracontium, Ophioglossum pycnostichum

Soil name(s)/Substrate: Du-see silty clay / silty clay loam / shaly clay

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

IDENTIFICATION

Photograph taken? yes X no

Specimen taken? X yes no If yes, give collector, collection # and repository: \_\_\_\_\_

ROBERT A. STEWART 3681 DSC

Do other members of this genus co-occur at this site? yes X no If yes, complete below: \_\_\_\_\_

List: \_\_\_\_\_

Hybridization? yes no

Identification problems? yes no Explain: \_\_\_\_\_

CONSERVATION

Owner aware of EO? X yes no unknown Owner protecting EO? yes no X unknown

Evidence of disturbance: \_\_\_\_\_

Threats to EO: FLOODING?

Conservation/management needs: \_\_\_\_\_

Research needs: DETERMINE if UNIQUE OCCURRENCE for DELTA

Data security? yes no Explain: \_\_\_\_\_

SUMMARY

EO Quality: (ie, How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

A-Excellent B-Good C-Marginal D-Poor

Comments: SCATTERED IN LOW NUMBERS OF INDIVIDUALS

EO Condition: (ie, Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Viability: (ie, What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent B-Good C-Marginal D-Poor

Comments: SITES SHOULD NOT BE FLOODED

EO Defensibility: (ie, Can this occurrence be protected from extrinsic human factors?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Rank: (ie, a summary of all factors listed above) A B C D



## SPECIAL PLANT SURVEY FORM

Site Name: DAHOMEYDate: May 4, 1996 Source Code: \_\_\_\_\_Quad Name(s): LOBDELL 7 1/2Date: May 30 Source Code: \_\_\_\_\_

Quad Code(s): \_\_\_\_\_

Date: \_\_\_\_\_ Source Code: \_\_\_\_\_

State: MS County(ies): BOLIVAR

Date: \_\_\_\_\_ Source Code: \_\_\_\_\_

Field Quad Margin #: \_\_\_\_\_

Date: \_\_\_\_\_ Source Code: \_\_\_\_\_

Full extent of EO known and mapped? yes ☒ noPrecise locations of individuals or groups mapped on base map? yes ☒ noS4, S32, S33 SW4, less common in S3 - NOT SEEN elsewhere

## BIOLOGY

Element Name: BOTRYCHIUM VIRGIANUM (L.) SWARTZ Element Code: \_\_\_\_\_ Occ. #: \_\_\_\_\_

Phenology	Population Size		Population Area	Age Structure	Vigor
\$In leaf	Ramets	Genets	1 yd <sup>2</sup>	\$ Seedlings	Very feeble
\$In bud	actual #		1-5 yd <sup>2</sup>	\$ Immature	Feeble
\$In flower	estimated #		5-10 yd <sup>2</sup>	\$ 1st year	Normal
\$Immature fruit	1-10		10-100 yd <sup>2</sup>	\$ Mature	Vigorous
\$Mature fruit	11-50		100 yd <sup>2</sup> -2ac	(established)	Exceptionally
\$Seed dispersing	51-100		2 ac+	\$ Senescent	vigorous
\$Dormant	101-1000		actual	Age structure	
	1001-10,000		area (if known)	unknown	
	10K+				

Comments on above: \_\_\_\_\_

Evidence of reproduction? yes no Explain: \_\_\_\_\_Type of reproduction: sexual asexual bothAny symbiotic or parasitic relationships? yes no Explain: \_\_\_\_\_Evidence of disease, predation or injury? yes no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
Reproduction					
Dispersal					
Establishment					
Maintenance					

Comments: \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
<u>N</u> <u>NE</u>	<u>0-3%</u>	<u>Open</u>	<u>Crest</u>	<u>Inundated (Hydric)</u>
<u>E</u> <u>NW</u>	<u>3-8%</u>	<u>Partial</u>	<u>Upper Slope</u>	<u>Saturated (Wet-mesic)</u>
<u>S</u> <u>SE</u>	<u>8-15%</u>	<input checked="" type="checkbox"/> <u>Filtered</u>	<u>Mid-Slope</u>	<input checked="" type="checkbox"/> <u>Moist (Mesic)</u>
<u>W</u> <u>SW</u>	<u>15-35%</u>	<input checked="" type="checkbox"/> <u>Shade</u>	<u>Lower-Slope</u>	<u>Dry-Mesic</u>
<input checked="" type="checkbox"/> <u>Flat</u>	<u>35%-Vertical</u>		<u>Bottom</u>	<u>Dry (Xeric)</u>

Elevation: 135 ft to 140 ft

Cross section of topography (habitat)/Include scale, direction, element position

#### HABITAT (continued)

Associated natural community/plant community: BOTTOMLAND hardwood - ridge & swale

Natural community form completed? ☒ yes ☐ no

Associated plant species: Quercus michauxii, Q. pagoda, Camelia cordiformis

Impatiens balsamifera, Lindera benzoin, Asimina triloba

Aruncum dioctium

Soil name(s)/Substrate: Dundee silty clay & silty clay loam

Estimated # of acres of potential habitat in the immediate area: 200+ acres (ridges)

#### IDENTIFICATION

Photograph taken? ☐ yes ☒ no

Specimen taken? ☒ yes ☐ no If yes, give collector, collection # and repository:

ROBERT A. STEWART 3684

DSC

Do other members of this genus co-occur at this site? ☐ yes ☒ no If yes, complete below:

List: \_\_\_\_\_

Hybridization? ☐ yes ☐ no

Identification problems? ☐ yes ☐ no Explain: \_\_\_\_\_

#### CONSERVATION

Owner aware of EO? ☒ yes ☐ no ☐ unknown Owner protecting EO? ☒ yes ☐ no ☐ unknown

Evidence of disturbance: Logging, old roads

Threats to EO: \_\_\_\_\_

Conservation/management needs: \_\_\_\_\_

Research needs: DETERMINE if this population unique to DELTA

Data security? ☐ yes ☐ no Explain: \_\_\_\_\_

#### SUMMARY

EO Quality: (i.e., How representative is this occurrence? Consider the size and productivity of the population and the vitality and vigor of the individuals.)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Condition: (i.e., Is the habitat supporting the EO pristine or degraded? Is there a potential for the habitat to recover from disturbances?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Viability: (i.e., What are the long-term prospects for continued existence of this occurrence at the indicated level of quality?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Defensibility: (i.e., Can this occurrence be protected from extrinsic human factors?)

A-Excellent B-Good C-Marginal D-Poor

Comments: \_\_\_\_\_

EO Rank: (i.e., a summary of all factors listed above) A B C D

## SPECIAL PLANT SURVEY FORM

march-may 1990

Site Name: DAHOMEY Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Name(s): LOBDELL 7 1/2 Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Quad Code(s): \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 State: MS County(ies): BOLIVAR Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Field Quad Margin #: \_\_\_\_\_ Date: \_\_\_\_\_ Source Code: \_\_\_\_\_  
 Full extent of EO known and mapped? yes ☒ no ☐  
 Precise locations of individuals or groups mapped on base map? yes ☒ no ☐  
SCATTERED TO LOCALLY COMMON IN 531 / 532

## BIOLOGY

Element Name: CYNDOGLOSSUM VIRGINIANUM L. Element Code: \_\_\_\_\_ Occ. #: \_\_\_\_\_  

Phenology	Population Size	Population Area	Age Structure	Vigor
% in leaf	RAMETS	GENETS	% Seedlings	Very feeble
% in bud	actual #	1 yd <sup>2</sup>	% Immature	Feeble
% in flower	estimated #	5-10 yd <sup>2</sup>	% 1st year	Normal
% Immature fruit	1-10	10-100 yd <sup>2</sup>	% Mature	Vigorous
% Mature fruit	11-50	100 yd <sup>2</sup> -2ac	(established)	Exceptionally
% Seed dispersing	51-100	2 ac+	% Senescent	vigorous
% Dormant	101-1000	actual	Age structure	
	1001-10,000	area (if known)	unknown	
	10K+			

Comments on above:

Evidence of reproduction? ☒ yes ☐ no Explain: FLOWERS AND IMMATURE FRUIT  
 Type of reproduction: ☒ sexual ☐ asexual ☐ both  
 Any symbiotic or parasitic relationships? ☐ yes ☐ no Explain: \_\_\_\_\_  
 Evidence of disease, predation or injury? ☐ yes ☐ no Explain: \_\_\_\_\_

## Success at Each Stage of Life Cycle

	good	fair	poor	none	uncertain
reproduction	<input checked="" type="checkbox"/>				
dispersal					
establishment					
maintenance					

Comments: \_\_\_\_\_

## HABITAT

Aspect	Slope	Light	Topographic position	Moisture
<input type="checkbox"/> N <input type="checkbox"/> NE	<input type="checkbox"/> 0-3%	<input type="checkbox"/> Open	<input type="checkbox"/> Crest	<input type="checkbox"/> Inundated (Hydric)
<input type="checkbox"/> E <input type="checkbox"/> NW	<input type="checkbox"/> 3-8%	<input checked="" type="checkbox"/> Partial	<input type="checkbox"/> Upper Slope	<input type="checkbox"/> Saturated (Wet-mesic)
<input type="checkbox"/> S <input type="checkbox"/> SE	<input type="checkbox"/> 8-15%	<input type="checkbox"/> Filtered	<input type="checkbox"/> Mid-Slope	<input type="checkbox"/> Moist (Mesic)
<input type="checkbox"/> W <input type="checkbox"/> SW	<input type="checkbox"/> 15-35%	<input checked="" type="checkbox"/> Shade	<input type="checkbox"/> Lower-Slope	<input type="checkbox"/> Dry-Mesic
<input checked="" type="checkbox"/> Flat	<input type="checkbox"/> 35%-Vertical		<input type="checkbox"/> Bottom	<input type="checkbox"/> Dry (Xeric)

Elevation: 135 ft to 140 ft

Cross section of topography (habitat)/include scale, direction, element position

