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# ARCHAEOLOGICAL INVESTIGATIONS AT 40LK3 AND IMPLICATIONS FOR FUTURE MANAGEMENT DECISIONS AT REELFOOT LAKE, TENNESSEE

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ABSTRACT

Archaeological investigations at mound site 40LK3 under drought conditions discovered intact features within an area submerged during the New Madrid earthquake of 1811-1812. Associated ceramic vessel forms suggest an occupation of post A.D. 1050 to 1150. The identification of intact prehistoric features explicitly illustrates that recently proposed water level changes pose a serious threat to archaeological sites below as well as above the current pool elevation.

## Introduction

Archaeological investigations along the bluffs and bottoms near Reelfoot Lake in northwest Tennessee have recorded numerous prehistoric sites (Mainfort 1989). Temporally sensitive artifacts from these locales document habitation of the Reelfoot area primarily within the Late Woodland and Mississippian periods. Few indications of Paleo-Indian or Archaic use have been recorded to date. This article presents the results of limited test excavations at 40LK3, a late prehistoric mound and habitation site on the shores of Reelfoot Lake. In addition, we will discuss the implications of these results for recently proposed management decisions at Reelfoot Lake.

## Environmental Setting of Reelfoot Lake

Reelfoot Lake is situated primarily within Obion and Lake counties in the extreme northwest corner of Tennessee. The northern tip of the lake extends into Fulton County, Kentucky. This natural lake, which measures 19 km (12 miles) long and up to 7.25 km (4.5 miles) wide, covers approximately 6200 ha (15,500 acres) at a normal pool elevation of 282.2 ft. While it is popularly believed that Reelfoot Lake was created by subsidence during the 1811-1812 New Madrid earthquakes (Fuller 1912), geological and archaeological data indicate that these seismic events only served to enlarge a series of existing oxbow lakes and cypress sloughs within meander scars of the Mississippi River (Russ 1979; cf. Shelford 1963).

The Reelfoot Lake Basin represents a fairly typical Mississippi River floodplain biotic community. Prior to lumbering and clearing for agricultural purposes, the margins of the lake were covered by a cypress-ash forest, with walnut also present. A hackberry-gum or oak-hickory forest occupied slightly higher areas, while the uplands supported a tulip-oak climax forest. Although

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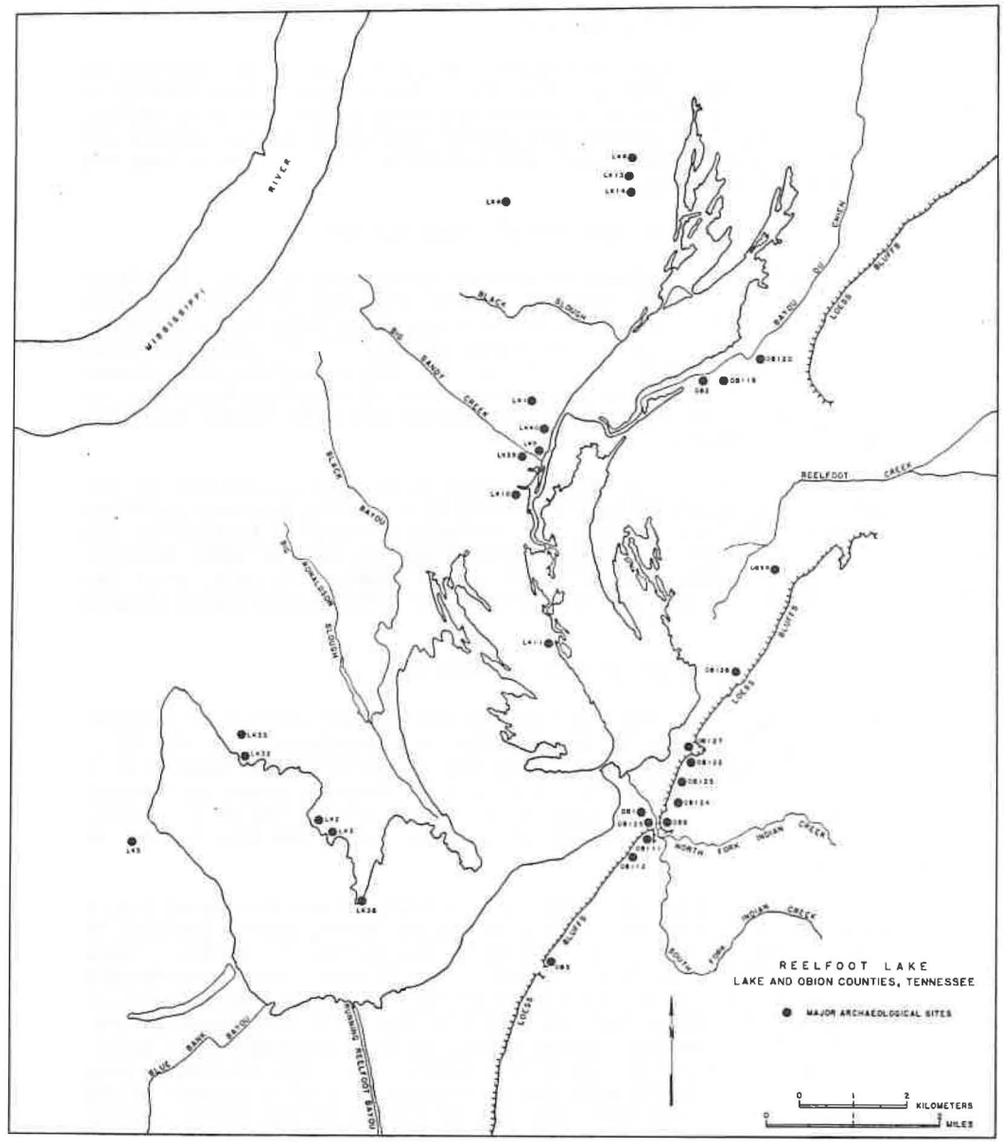


Figure 1. Site Location of 40LK3 and Other Major Archaeological Sites Along Reelfoot Lake.

now protected by levees along the Mississippi River, lower-lying portions of the area were formerly inundated almost every year (Shelford 1963). Today, most of the floodplain is under row crop cultivation.

Each winter, several hundred thousand migratory waterfowl descend on Reelfoot Lake, and a large number of heron and egrets are year-round residents. The lake is particularly noted as a winter breeding ground for bald eagles. White-tailed deer, rabbits, raccoons, and several species of aquatic mammals are common in the region, while both sport and commercial fishing have a long and productive history at the lake.

## Previous Archaeological Investigations

Although long known for impressive archaeological remains (e.g., Donaldson 1946), the Reelfoot Lake area received little attention from professional archaeologists until the early 1980s (cf. Morse and Morse 1983; Phillips 1970). Several 19th-century investigators described the mounds at Sassafras Ridge (15FU3) and others nearer to Reelfoot Lake (Collins 1882; Loughridge 1888; Thomas 1894). C.B. Moore (1916) tested the habitation area at Sassafras Ridge and, in their overview of Kentucky archaeology, Funkhouser and Webb (1932) described several sites in the region.

More recently, several contract projects have been undertaken in the Reelfoot Lake Basin (Dickson and Campbell 1979; McGraw 1981; McNerney and Nixon 189; Schock 1986; Smith 1979). Also, the Tennessee Division of Archaeology and University of Illinois have conducted extensive surveys (Kreisa 1987; Mainfort 1989; Mainfort et al. 1986; Mainfort and Kreisa 1988). To date, over 140 archaeological sites have been recorded within the Reelfoot Lake Basin (Figure 1).

## Site Location and Setting

Site 40LK3 is located on Choctaw Island in the southern portion of Reelfoot Lake in Lake County, Tennessee, at an elevation of approximately 284 ft. AMSL. The most prominent feature at the site is the severely eroded remains of a platform mound at least 1.5 meters tall and roughly 30 meters square at the base (Figure 2). Wave action has destroyed an estimated 60% to 70% of the mound. With the exception of the mound, the above-pool portion of the site is covered with bald cypress.

During a deliberate drawdown of the lake in 1985, it was discovered that a normally submerged habitation area is present to the north, south, and west of the mound, making the total site area at least one hectare in extent. These submerged deposits reflect the fact that the site area experienced considerable downwarping during the New Madrid earthquake of 1811-1812. An almost identical site (40LK2) is located several hundred meters to the north and, based on the distribution of cultural remains observed during the 1985 drawdown, it is quite possible that 40LK2 and 40LK3 are actually a single site. The habitation area extends roughly 70 meters to the west and is bounded by a relic channel of the Mississippi River. The floodplains and natural levees of the former channel would have provided fertile fields for prehistoric agriculture.



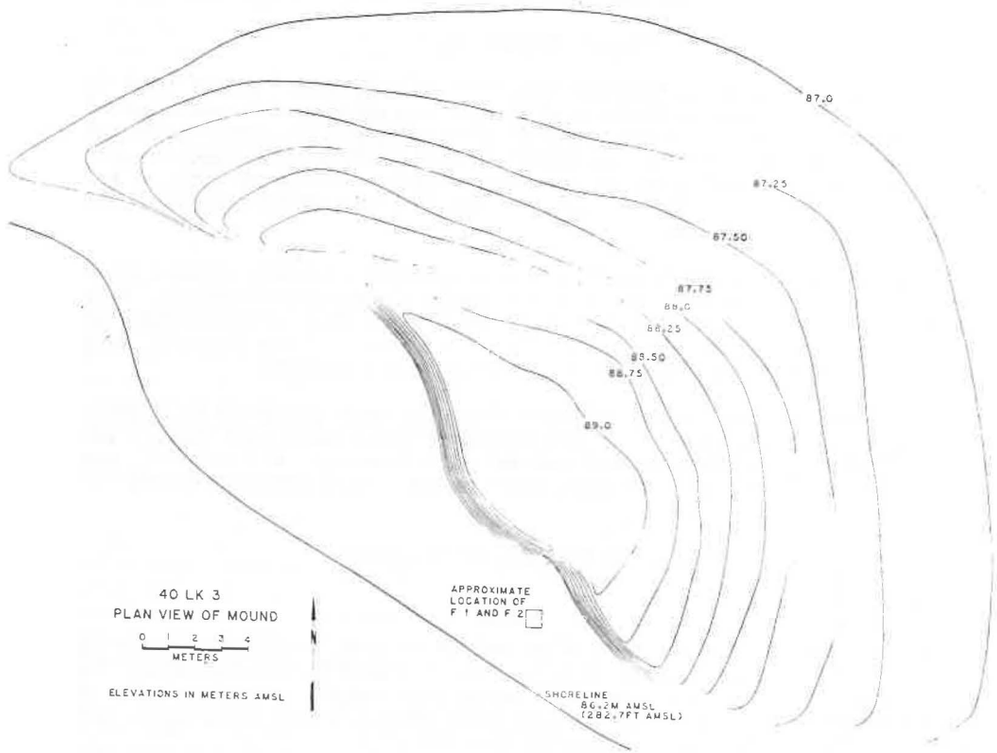


Figure 2. Contour Map of 40LK3 Mound.

Examination of the mound profile revealed no evidence of structural remains or sequential construction stages. However, our investigation did record an apparent burned zone (denoted by charcoal and burned earth) at the base of the mound on top of the original ground surface. From these observations, we currently believe the mound was constructed on top of a structure that burned. There is no indication that the mound was used for residential purposes after it was built. Potentially comparable non-substructural platform mounds have been found on the bluffs above the east side of the lake (e.g., Schock 1986).

## Project Methodology

During October of 1987, Reelfoot Lake fell to its lowest natural level in recent years. The Tennessee Division of Archaeology opted to take advantage of this opportunity to examine 40LK3, specifically to assess the damage sustained by the mound from wave action and determine if any intact cultural deposits were present in areas that were usually underwater. Upon reaching the site, it was discovered that an area extending roughly 10 meters west from the mound had been exposed and was available for inspection.

A dense scatter of artifactual material, including ceramics, chipped stone debris, and fire-cracked rock was observed across the exposed shoreline. Also observed were several dark-stained areas associated with concentrations of pottery, charcoal, and well-preserved faunal remains. These deposits were further examined to determine their exact nature and dimensions.

The intact remains of two refuse-filled pits were uncovered by lightly shovel-skimming the surface. Over the course of three days, each feature was exposed, photographed, mapped, and removed with trowels. All pit fill was waterscreened through 1/4" wire mesh, with several small samples removed for finer waterscreening.

## Feature and Artifact Descriptions

### Feature 1

Feature 1 represented the base of an oval to rectangular pit which measured 138 cm long, 54 cm wide, and 12 cm deep. Basin shaped in cross-section, the eastern edge of this pit was lined with white clay roughly three cm thick. A moderate number of pottery sherds, chipped stone debris, ground stone tools, and faunal and floral remains were recovered from the fill.

A total of 66 shell-tempered ceramic sherds, representing a minimum of 14 vessels, was obtained from Feature 1. Virtually all are tempered with coarse to medium-crushed shell. Traces of reddish or tan pigment are present on at least 27 sherds and four vessels. Approximately 50% (N-25) of the sherds appear to derive from a single flat-bottomed bowl or seed jar. Other identifiable vessel forms include five (perhaps seven) jars, two bowls, and a red-filmed pan. Among the jars, four vessels exhibit angled/sharply angled shoulders. Jar rim forms include four unmodified and a single angled; rims on the two problematic jars include single examples of angled and unmodified. Excluding the application of pigment to vessel surfaces, only two decorated sherds are present. One of these exhibits three incised parallel, undulating lines (Mound Place Incised?) on a



fine shell-tempered rim (Figure 3, top); both surfaces are smoothed and may be black smudged. A small shell-tempered cordmarked body sherd may be related to Crosno or Cahokia Cordmarked. Two thin Mississippi Plain strap handles were also recovered.

Chipped stone debris and several abraders comprise the relatively sparse lithic assemblage (N-88) from this feature. No chipped stone tools were identified in this sample. However, hoe rejuvenation flakes of Mill Creek chert comprised one of the more populous artifact categories. Tested cobbles and waste flakes of locally available cherts were also common lithic categories. The abraders were manufactured from local white sandstone.

A number of extremely well-preserved faunal remains were obtained from Feature 1, including deer, raccoon, squirrel, and several varieties of duck and fish (Table 1). A more detailed analysis of these remains has been recently published by Hoffman (1990).

Fragments of charred seeds, maize, nut hulls, wood, and cane were retrieved from the feature fill (Tables 2-4). Identified seeds in the small sample of botanical remains includes 44 persimmon, seven Chenopodium, and three wild bean. Two specimens of maize (a cob fragment and a cupule) were also recovered. Hickory, pecans, black walnut, and acorn comprise the analyzed nutshell sample. Excluding cane, hickory and oak are the dominant species among the wood charcoal specimens, with maple, willow and honey locust also present. A sample of wood charcoal from Feature 1 yielded a calibrated radiocarbon date of A.D. 897 (990) 1023 (TX-5915; 1050+/-70BP) at one sigma.

### Feature 2

Much larger than Feature 1, Feature 2 also is a pit with a basin shaped cross-section. This oval to circular pit measured 188 cm long, 150 cm wide, and 40 cm deep. Feature 2 was easily identified by a layer of white clay lining the west and south pit boundaries and a charcoal zone along the north and east border. The clay layer was observed to line virtually the entire pit. Large amounts of pottery, chipped stone artifacts, and faunal and floral remains were recovered from this feature.

The ceramic sample from Feature 2 includes 334 shell-tempered sherds from a minimum of 31 vessels. A shell-tempered ceramic disk was also recovered from the feature fill (Figure 3, top). Traces of reddish pigment appear on 184 sherds and 19 vessels. Identified vessel forms include 13 jars, five bottles, two plates (one example each on coarse and fine shell-tempered paste), two pans, one beaker (represented by a black smudged handle), and an effigy vessel of unidentified form. Shoulders were observable on eight vessels which, with the exception of a single probable rounded example, were angled (N=5) or sharply angled (N=2). Rim forms include four everted/angled, three everted, three extruded/everted, two angled, and one unmodified. The following decorated specimens were recovered: one Mound Place Incised bottle rim on a fine shell-tempered paste; one O'Byam Incised, var. unspecified plate rim that exhibits a possible stylized waterfowl motif on relatively fine shell-tempered paste (Figure 4, top); one partially restorable Barton Incised jar with an extruded/everted rim, angled shoulder, modeled loop handle, and traces of red pigment (see Perino

Table 1. Identified Faunal Remains From 40LK3.

| Taxa | Feature 1 NISP/MNI | Feature 2 NISP/MNI | TOTAL |
|---|---|---|---|
| Deer | 33/2 | 35/2 | 68/2 |
| Beaver | - | 215/6 | 215/6 |
| Raccoon | 7/2 | 61/4 | 68/6 |
| Eastern Cottontail | - | 20/3 | 20/3 |
| Swamp Rabbit | 1/1 | 1/1 | 2/2 |
| Muskrat | - | 8/2 | 8/2 |
| Cotton Rat | - | 9/1 | 9/1 |
| Marsh Rice Rat | 31/2 | 9/1 | 40/3 |
| Striped Skunk | - | 2/1 | 2/1 |
| Squirrel | 2/1 | 1/1 | 3/1 |
| Chipmunk | - | 1/1 | 1/1 |
| Canada Goose | 6/2 | 14/2 | 20/4 |
| Mallard Duck | 163/7 | 38/2 | 201/9 |
| Wood Duck | 10/2 | 6/2 | 16/4 |
| Sandhill Crane | 6/1 | - | 6/1 |
| Teal | - | 1/1 | 1/1 |
| Common Goldeneye | - | 1/1 | 1/1 |
| Common Merganser | - | 1/1 | 1/1 |
| Miscellaneous Duck | 76 | 1 | 77 |
| Great Blue Heron | - | 1/1 | 1/1 |
| Horned Grebe | - | 2/1 | 2/1 |
| Turkey | - | 6/2 | 6/2 |
| Bowfin | 83/3 | 158/6 | 241/9 |
| Bowfin vertebra | 42 | 151 | 193 |
| Gar | 30/2 | 114/5 | 144/7 |
| Gar scales/vertebra | 242 | 1087 | 1329 |
| Buffalo | 8/1 | 89/10 | 97/11 |
| Freshwater Drum | 1/1 | 38/4 | 39/5 |
| Drum spines/teeth | - | 47 | 47 |
| Largemouth Bass | 7/2 | 60/6 | 67/8 |
| Catfish | 4/1 | 7/2 | 11/3 |
| Northern Bluegill | 16/2 | - | 16/2 |
| Crappie | - | 9/3 | 9/3 |
| Sunfish | - | 4 | 4 |
| Northern Pike | - | 4/1 | 4/1 |
| Creek Chub | - | 1/1 | 1/1 |
| Miscellaneous Fish | 669 | 1203 | 1872 |
| Slider Turtle | 20/2 | 339/11 | 359/13 |
| Musk Turtle | - | 19/5 | 19/5 |
| Mud Turtle | - | 4/1 | 4/1 |
| Musk/Mud Turtle | - | 74 | 74 |
| Softshell Turtle | - | 8/1 | 8/1 |
| Map Turtle | - | 1/1 | 1/1 |
| False Map Turtle | 1/1 | - | 1/1 |
| Painted Turtle | 4/1 | - | 4/1 |
| Map/Painted Turtle | 3 | 64 | 67 |
| Miscellaneous Turtle | - | 386 | 386 |
| TOTAL | 1465/36 | 4300/93 | 5765/129 |



Table 2. Floral Sample Composition Recovered From Feature 1, 40LK3, Reelfoot Lake.

| Sample Composition | Coarse Waterscreen | Fine Waterscreen |
|---|---|---|
| Wood/Cane | 14.7g (78.2%) | 8.3g (6.4%) |
| Nutshell | 2.1g (11.2%) | 1.0g (0.8%) |
| Seeds/Fruits | 2.0g (10.6%) | 1.0g (0.8%) |
| Maize | <0.1g (<0.1%) | 0.1g (<0.1%) |
| Residual (1.0 mm/0.25 mm) | - | 120.0g (92.0%) |
| TOTAL | 18.8g | 130.4g |

g = grams.

Table 3. Floral Species Identified From Feature 1, 40LK3, Reelfoot Lake (excluding maize).

| Species | Coarse Waterscreen | Fine Waterscreen |
|---|---|---|
| WOOD/CANE CHARCOAL (no. of specimens) | | |
| Maple (Acer) | 2 | 3 |
| Hickory (Carya) | 6 | 6 |
| Cane (Arundinaria) | 12 | 11 |
| Honey Locust (Gleditsia triacanthos) | 1 | - |
| Oak (Quercus) | 5 | 6 |
| Willow (Salix) | 4 | 4 |
| NUTSHELL (wt. of specimens) | | |
| Hickory (Carya) | 1.4g | 0.3g |
| Pecan (Carya illinoensis) | - | 0.7g |
| Walnut (Juglans nigra) | 0.7g | - |
| Acorn (Quercus) | <0.1g | <0.1g |
| SEEDS/FRUIT (no. of specimens) | | |
| Chenopodium (Chenopodium) | - | 4w,3f |
| Persimmon (Diospyros virginiana) | 7w,15f | 4w,18f |
| Wild Bean (Fabaceae) | - | 3f |

g = grams, w = whole, f = fragment.

1967:85 and Morse and Morse 1983:279 for similar design motifs); and six sherds of a Kimmswick Fabric Marked vessel with a red filmed interior and very coarse shell temper.

Feature 2 exhibited a much larger (N=504) and more diverse lithic assemblage than did Feature 1. This sample includes projectile points (one Madison, two unidentified), modified flake scrapers, bifaces, tested cobbles, cores, waste flakes, and abraders. Most of these artifacts were made from local resources. However, similar to Feature 1, hoe rejuvenation flakes of Mill Creek chert comprised a sizeable percentage of the Feature 2 sample.

Deer, beaver, raccoon, rabbit, turkey, and varieties of duck, turtle, and fish were among the faunal species identified from Feature 2 (Table 1). Despite the difference in species identified from Feature 1, both trash pits yielded species commonly associated with an oxbow lake setting.

The floral sample included charred maize, squash, seeds, nut hulls, wood, and cane (Tables 5 and 6). A number of maize specimens (probably 10-12 row) were recovered from Feature 2, as was a small sample of squash rind (Table 4). Non-cultigen seeds include persimmon, grape, and cherry. The same four nut taxa identified in Feature 1 are present in Feature 2, although black walnut is poorly represented. The diverse wood charcoal assemblage is dominated by oak and hickory; other taxa of note are maple, honey locust, ash, elm, and cherry. A calibrated radiocarbon date of A.D. 904 (995) 1023 (TX-5916; 1040+/-60 BP) was obtained from wood charcoal associated with Feature 2.

## Surface Collection

During the partial drawdown of Reelfoot Lake during the summer of 1985, the following ceramic sherds (see Figure 5) were collected from the normally submerged area to the south and west of the mound and features excavated in 1987:225 Mississippi Plain, var. Mississippi (50 rims); 11 Mississippi Plain (three rims) with traces of red pigment (perhaps examples of Varney Red or a later, related type); 22 Bell Plain, var. New Madrid (four rims); five Bell Plain, var. Nickel (one rim); one Mississippi Plain, var. Mitchell; one Baytown Plain (coarse grog temper); three Mulberry Creek Cordmarked; two thick, grog-tempered, red-filmed sherds that appear to represent a grog-tempered variety of Varney Red; seven Varney Red; one unidentified fine line incised with traces of red filming on fine grog-tempered paste; one unidentified broad incised on a coarse shell-tempered paste; one fine line incised rim with red interior on coarse shell-tempered paste; one crude curvilinear incised (Ramey?) with red interior on a fine shell-tempered paste; three Wickliffe Thick (two rims) with broad deep incising and traces of red pigment on the interior of one rim; one Coles Creek Incised rim exhibiting part of a finely incised sunburst motif; two zoned punctate; one punctated effigy fragment (facial portion); one bold incised; and three Mound Place Incised rims (Figure 5, bottom). Many of the rims are unmodified and probably derive from large jars and pans. There also are at least five examples of flared neck jars, several of which exhibit extruded/everted rims.

The ceramics collected during the drawdown are not strictly comparable to the material derived from the two excavated features, in the sense that the drawdown collection includes materials that were undoubtedly derived both from the fill of the eroding mound as well as features similar to those excavated. Hence, the differences in vessel and rim form frequencies from the two contexts is expectable. Nonetheless, the two collections are sufficiently similar that a strong case can be made for contemporaneity.



Table 4. Measurements of Analyzed Maize From Features 1 and 2, 40LK3, Reelfoot Lake (in mm).

| Sample Type | Cupl Wid | Cupl Lgth | Glume Wid | Kern Thk | Kern Wid | Row No./ Cupule (est) | Row No./ Actual Cob |
|---|---|---|---|---|---|---|---|
| Feature 1 | | | | | | | |
| Cob frag | 6.5 | 1.5 | - | - | - | - | - |
| Cupule | 6.0 | 1.5 | - | - | - | - | - |
| Feature 2 | | | | | | | |
| Cob (a) | 5.0-7.0 | 3.0 | 3.0 | - | - | - | 10 |
| Cob (b) | 7.0 | 2.5 | 5.0 | - | - | 10 | - |
| Cob frag | 6.0 | 3.0 | 4.0 | - | - | 10 | - |
| Cupule | 8.0 | 2.0 | - | - | - | 10 | - |
| Cupule | 6.0 | 2.0 | - | - | - | 10 | - |
| Cupule | 5.0 | 2.5 | - | - | - | 14 | - |
| Cupule | 7.0 | 1.5 | 3.5 | - | - | 14 | - |
| Cupule | 8.0 | 2.0 | - | - | - | 8 | - |
| Cupule | 5.0 | 1.0 | 4.0 | - | - | 12 | - |
| Cupule | 6.0 | 2.0 | - | - | - | 10 | - |
| Cupule | 6.0 | 1.5 | - | - | - | 10 | - |
| Cupule | 6.0 | 1.5 | - | - | - | 10 | - |
| Cupule | 6.0 | 1.0 | 3.0 | - | - | 8 | - |
| Kernel | - | - | - | 7.0 | 4.0 | - | - |
| Kernel | - | - | - | 7.0 | 3.0 | - | - |
| Kernel | - | - | - | 8.0 | 5.0 | - | - |
| Kernel | - | - | - | 8.0 | 4.0 | - | - |
| Kernel | - | - | - | 7.0 | 4.0 | - | - |

a = cob fragment with the complete diameter.
b = cob fragment with two or more cupules.

## 40LK3 in a Regional Context

Although extensive surveys have been undertaken in the region, little excavated data and few reliable radiocarbon determinations are available for the Reelfoot Lake Basin (Mainfort and Kreisa 1988). Unfortunately, the dates from 40LK3 serve more to muddy the area chronology than to clarify it.

The two radiocarbon age estimates obtained from the excavated features at 40LK3 are puzzling and disappointing. In both instances, the largest fragments of collected wood charcoal were submitted for assaying; although neither sample

was examined microscopically, cane was pointedly excluded from the submitted samples.

Although the two samples yielded almost identical results, the mean uncorrected dates of circa A.D. 900-910 are not credible for the associated artifact assemblage (cf. Baeris and Porter 1984; Holley 1989; Morse and Morse 1983). Calibration of the assays yields a mean of circa A.D. 990, which, while less unbelievable, is still unacceptable. A small sample of wood charcoal obtained from a burned zone near the base of the mound was also submitted for dating. The resulting calibrated date of A.D. 780 (1004, 1008, 1019) 1256 (TX-6859; 1000+/-200 BP) does not clarify the situation.

The presence of several plates and a beaker handle, as well as the shoulder and rim profiles of jars, all suggest an age within the latter half of the Stirling Phase in the American Bottom, i.e., circa A.D. 1100-1150 (Holley 1989), for the assemblage. This inference is supported by dates from two excavated sites in the Reelfoot Lake Basin.

Table 5. Floral Sample Composition Recovered From Feature 2, 40LK3, Reelfoot Lake.

| Sample Composition | Coarse Waterscreen | Fine Waterscreen |
|---|---|---|
| Wood/Cane | 115.3g (52.9%) | 183.5g (34.4%) |
| Nutshell | 20.3g (9.3%) | 8.5g (1.6%) |
| Maize | 0.5g (<0.1%) | 0.2g (<0.1%) |
| Seeds/Fruit | 0.3g (<0.1%) | 0.1g (<0.1%) |
| Squash Rind | <0.1g (<0.1%) | - |
| Tuber/Rhizome | 1.0g (<0.1%) | - |
| Residual (1.0 mm/0.25 mm) | 80.6g (37.0%) | 340.6g (63.9%) |
| TOTAL | 218.1g | 532.9g |

g = grams.



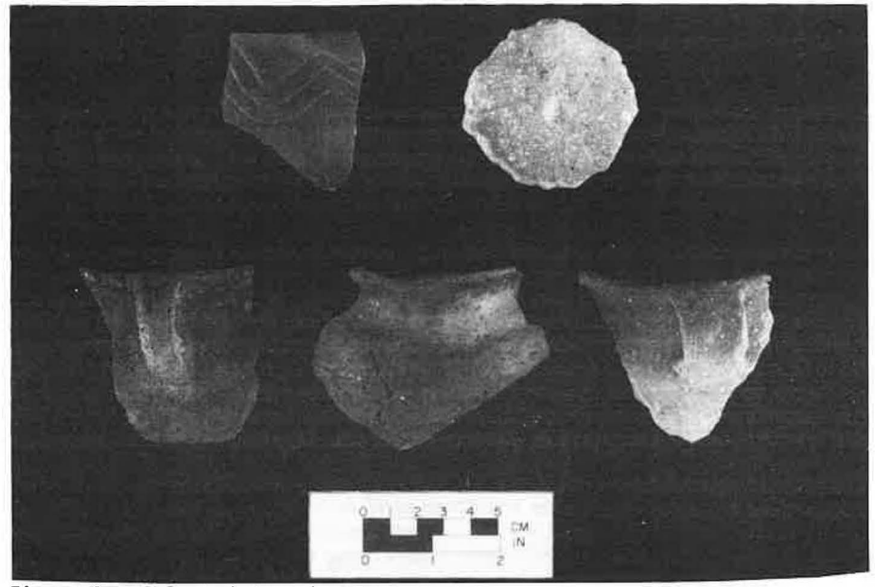


Figure 3. Selected Ceramics Recovered from Features 1 and 2, 40LK3, Reelfoot Lake. Top: Mound Place Incised(?); ceramic disk. Bottom: Mississippi Plain jar rims.

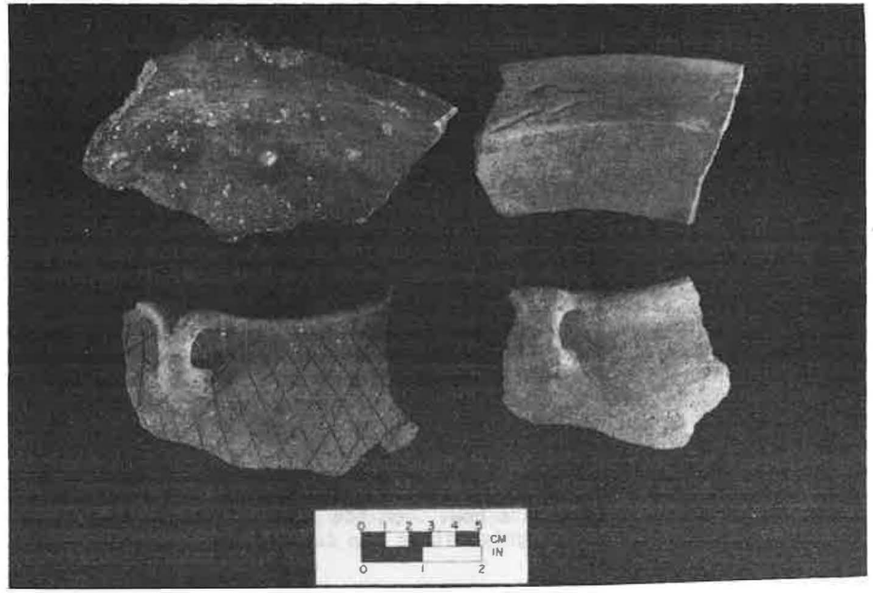


Figure 4. Selected Ceramics Recovered from Feature 2, 40LK3, Reelfoot Lake. Top: Mississippi Plain plate/shallow bowl; O'Byam Incised plate. Bottom: Barton Incised jar; Mississippi Plain jar.

Table 6. Floral Species Identified From Analyzed Portion of Feature 2 Sample, 40LK3, Reelfoot Lake (excluding maize).

| Species | Coarse Waterscreen | Fine Waterscreen |
|---|---|---|
| WOOD/CANE CHARCOAL (no. of specimens) | | |
| Maple (Acer) | 1 | 6 |
| Hickory (Carya) | 13 | 9 |
| Cane (Arundinaria) | 33 | 30 |
| Honey Locust (Gleditsia triacanthos) | 3 | 8 |
| Oak (Quercus) | 17 | 9 |
| Willow (Salix) | - | 1 |
| Persimmon (Diospyros virginiana) | - | 2 |
| Ash (Fraxinus) | 2 | 5 |
| Sweetgum (Liquidambar Styraciflua) | - | 1 |
| Poplar (Liriodendron tulipifera) | - | 1 |
| Cherry (Prunus) | 1 | 2 |
| Sassafras (Sassafras albidum) | - | 1 |
| Elm (Ulmus) | 2 | 3 |
| NUTSHELL (wt. of specimens) | | |
| Hickory (Carya) | 6.3g | 3.2g |
| Pecan (Carya illinoensis) | 6.4g | 3.6g |
| Walnut (Juglans nigra) | 0.3g | - |
| Acorn (Quercus) | 7.3g | 1.5g |
| SEEDS/FRUITS (no. of specimens) | | |
| Composite Family, Fruithead (Asteraceae) | 1w,2f | - |
| Persimmon (Diospyros virginiana) | 2w,2f | 4w,6f |
| Cherry (Prunus) | 1w | 3f |
| Grape (Vitis) | 2w | 3w,1f |

g = grams, w = whole, f= fragment.

Unpublished data from site 400B6 (Schock 1986), located near the mouth of Indian Creek on the east side of Reelfoot Lake, provide an instructive comparison with the 40LK3 material. 400B6 consisted of three blufftop mounds, of which two were excavated in 1985 as part of a salvage project. The smaller earthwork proved to be an accretional burial mound as approximately 50 individuals in various states of preservation and/or disturbance were recovered. Although the larger mound yielded possible evidence of one or more interments, its primary function seems not to have been as a repository for the dead. A large burned post was found at the base of this earthwork near the center.

The sparse artifact assemblage from 400B6 includes several hooded water bottles, two jars with sharp-angled shoulders and modified rims, and a miniature red-filmed seed jar or small incurvate bowl. On the basis of vessel form, the ceramics from 400B6 should fall roughly within the Lohmann time period in the



American Bottom, which may date as early as A.D. 950 and continues until approximately A.D. 1050 (Holley 1989). The three calibrated dates on wood charcoal from the non-mortuary earthwork cluster tightly around A.D. 990. This date falls within the mid-range of calibrated dates from the burial mound and is reasonably compatible with the associated vessel forms.

The ceramic assemblage from 40LK3 clearly dates later in time than 400B6. Particularly relevant is the occurrence of plates and beakers at 40LK3, which suggest contemporaneity with the Cherry Valley (Morse and Morse 1983) and Late Stirling (Holley 1989) phases, i.e. post-A.D.1050 and perhaps post-A.D. 1150. These time periods somewhat fall within the upper calibrated date ranges for Features 1 and 2.

Recent data from 40LK1, a large substructural mound on the west side of Reelfoot Lake, is also relevant to the temporal placement of 40LK3. Ceramic vessels associated with a large structure on the mound include several examples each of O'Byam Incised, var. Stewart and decorative motifs indicate that 40LK1 postdates 40LK3, as confirmed by two calibrated radiocarbon dates of approximately A.D. 1280 (Lawrence and Mainfort 1990).

Examination of the 40LK3 lithic assemblage indicates that local cherts were by far the predominate materials utilized by site residents (Table 7). However, several non-local resources from north and east of Reelfoot Lake, including Mill Creek, Burlington, and Dover cherts (flints), have been identified in variable quantities. Mill Creek comprises a significant percentage (30%) of the total

Table 7. Material Type Percentages For Chipped Stone Artifacts From 40LK3, Reelfoot Lake.

| Material | GenSur | Fea 1 | Fea 2 | Total | Percent |
|---|---|---|---|---|---|
| Local | 32 | 23 | 357 | 412 | 65.8% |
| Mill Creek | - | 56 | 138 | 194 | 31.0% |
| Burlington | 1 | 1 | 8 | 10 | 1.6% |
| Unidentified | 2 | 3 | 3 | 8 | 1.3% |
| Dover | 2 | - | - | 2 | 0.3% |
| TOTAL | 37 | 83 | 506 | 626 | 100.0% |

lithic sample from 40LK3. This high percentage is primarily a reflection of the large number of flakes produced by the resharpening of one or more Mill Creek hoe(s). The presence of a hoe or other large tools made from a non-local resource should not be surprising in this area since the locally available cherts occur as small nodules of questionable quality. In contrast to the large percentage of Mill Creek, artifacts of Burlington and Dover represent less than 2% of the recovered lithic sample.

The impressive list of faunal remains identified in Features 1 and 2 illustrates the diverse types of animals available to the site residents for consumption and other uses. The reader is referred to Hoffman (1990) for a more detailed analysis and discussion of the 40LK3 faunal assemblage.

Excluding the specimens of cane, the analyzed charcoal is dominated by species of oak and hickory, both of which are upland taxa not found in the vicinity of the site today. Both the wood and nut remains suggest the presence of a floodplain oak-hickory forest immediately adjacent to the site at circa A.D. 1100. The New Madrid seismic events of 1811-1812 produced considerable downwarping in the region, particularly around the southern portion of Reelfoot Lake where 40LK3 is located. This subsidence (and/or subsidence caused by earlier major seismic activity) rendered the area surrounding the site unsuitable for oaks and hickory and produced the current cypress swamp environment.

The relatively large number of cane specimens are of interest because today canebrakes are generally associated with disturbances in forested areas around Reelfoot Lake (Shelford 1963:102). Hence, the cane may reflect aboriginal clearing of the site area. Such clearing may in part be associated with the cultivation of corn and squash, both of which were recovered from the site.

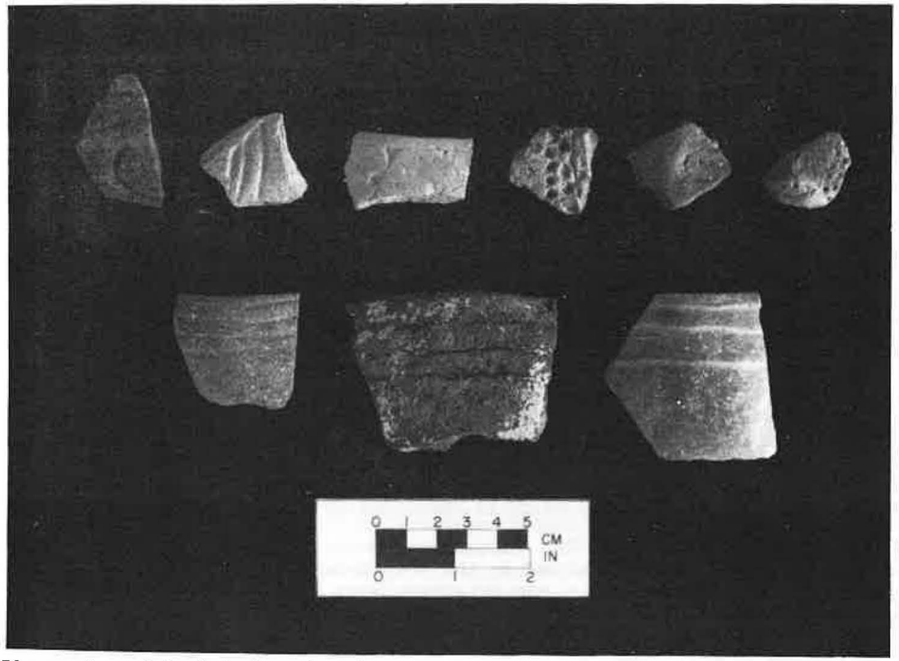


Figure 5. Selected Ceramics Recovered from Surface Collections of 40LK3, Reelfoot Lake. Top: curvilinear incised; bold incised; Coles Creek Incised; zoned punctate; zoned punctate; punctated effigy. Bottom: Mound Place Incised rims.



Nutshell remains were relatively abundant, particularly in Feature 2, and suggest that gathering was an important component in the subsistence system. The maize remains presumably reflect consistent cultivation of this tropical cultigen, while the Chenopodium seeds may indicate persistence of the starchy seed horticultural complex developed during the Middle Woodland period (cf. Johannessen 1984).

## Future Management Decisions for the Reelfoot Lake Bottoms

The test excavations at 40LK3 have documented that intact, well-preserved cultural remains do exist in areas around Reelfoot Lake which are currently underwater. This fact becomes important when proposed changes to the lake water levels are considered.

Active management of the lake level to control seasonal flooding and recession within the Reelfoot bottoms began in the early 20th century. This program was initiated through the construction of a spillway, with various levees and ditches built afterward. These efforts succeeded in stabilizing the water levels, but at the same time initiated a rapid buildup of deposits on the lake bottoms. Through the years, this sedimentation process has created serious problems for fish reproduction and has enhanced undesirable lake vegetation growth.

In an effort to alleviate this problem, a drawdown of Reelfoot Lake was proposed and initiated by the Tennessee Wildlife Resources Agency (TWRA) in 1985 to expose the lake bottom and allow it to dry. As might be expected, the drawdown became quite a controversy, and local residents went to court to stop this action until the environmental consequences could be assessed. The U.S. Fish and Wildlife Service, designated the federal agency over this project (since they control the spillway and ultimately the lake level), was ordered to prepare an Environmental Impact Statement. This EIS was to present and evaluate several different alternatives that would correct the siltation and related problems at Reelfoot Lake.

The final EIS was issued in July of 1989, with the preferred alternative consisting of a dynamic lake level fluctuation combined with periodic major drawdowns (USFWS 1989). This alternative involves major changes from the currently managed lake level. The primary components of this alternative include the maintenance of a fluctuating pool elevation between 280.0 ft. and 284.0 ft., as well as a major drawdown every five to ten years, as needed. The consequences of the preferred alternative upon archaeological sites are briefly discussed.

The proposed dynamic fluctuation involves seasonal management of the lake level between 280.0 ft. and 284.0 ft., or an approximate 2.0 ft. fluctuation from the current normal pool elevation of 282.2 ft. Although a water level increase of two feet may not seem excessive, the study area is very flat and any increase in the water level has significant consequences for the surrounding terrain. Many of the mound and habitation sites within the Reelfoot lowlands occur just one to three feet above the present lake level. Raising the water level two feet will submerge a number of these sites and subject the mounds to continuous wave

action (for example, site 40LK33 which includes at least 18 mounds). The destructive potential of this force has been previously illustrated by erosion at 40LK3; the platform mound has been almost completely destroyed.

Another consideration is the increased accessibility to sites (by boat) afforded by a raised lake level. Many sites in the Reelfoot Lake bottoms are not easily reached by foot unless a determined effort is made to get there. Increasing the area of the lake will make some of these sites more convenient to approach.

On the other hand, two drawdown options have been proposed. One would lower the lake level by four feet (from 282.2 ft. to 278.2 ft.) and expose approximately 50% of the lake bottom. The second option involves lowering the pool elevation by eight feet (from 282.2 ft. to 274.2 ft.), thereby uncovering 85% of the lake bottom (this option is dependant upon the construction of a new spillway).

Regardless of which option is used, such an action will have two major impacts upon the archaeological resources. First, considerable concentrations of artifacts on the lake bed from prehistoric sites covered by water (during the 1811-1812 earthquake) would be exposed. The recovery of two refuse-filled pits from 40LK3 demonstrates that intact archaeological features indeed exist within areas now underwater. Exposure of the remains will most assuredly be interpreted as an open invitation for local relic hunters to add to their collections.

A second concern is that the drawdown will affect soil moisture levels at many of the newly exposed sites. The excellent condition and preservation of bone artifacts from 40LK3 and other sites in the area can be directly attributed to the consistent environment afforded by being underwater. Drying and the return of the cultural material to an aerobic environment could severely affect artifact preservation.

## Conclusions

Test excavations at 40LK3 have yielded cultural material and radiocarbon dates which document a Mississippian occupation within the Reelfoot Lake area. These excavations also identified the presence of intact and well-preserved cultural materials within areas now underwater.

Should plans to implement the preferred alternative, which combines dynamic lake fluctuation with intermittent drawdowns, ever become a reality, then numerous recorded and as yet unknown archaeological sites around Reelfoot Lake will be negatively impacted. Fortunately, the U.S. Fish and Wildlife Service has stated in the final EIS that the preferred alternative will not be implemented until all cultural resources within the impacted area have been identified and assessed, and a data recovery plan to mitigate the impacts has been prepared. Specific plans to deal with this proposed action are currently under consideration.



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