

Survey of the White River for Endangered Mussels  
at the Proposed Crossing for the Oklahoma - Arkansas  
Pipeline Project, White - Woodruff Counties, Arkansas

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Introduction

The fat pocketbook [Potamilus capax (Green)] and the pink mucket [Lampsilis abrupta (Say)] are federally protected endangered species that have occurred historically in the White River drainage of Arkansas (Gordon, et.al, 1980; Gordon, 1981, 1982; Harris and Gordon, 1987; Harris and Gordon, 1990) The fat pocketbook has occurred in larger streams throughout the Mississippi and Ohio River systems but reproducing populations are known to be present only in the St. Francis River drainage, Arkansas (Dennis, 1984; Ahlstedt and Jenkinson, 1987; Harris and Gordon, 1987; Jenkinson and Ahlstedt, 1987). No specimens of the fat pocketbook have been taken from the White River since the 1960's (Harris and Gordon, 1990).

The pink mucket has occurred historically in 25 river systems of the Interior Basin, mainly in the Tennessee, Cumberland, and Ohio River drainages with occasional records from the Mississippi River drainage. Although widespread, the pink mucket has never been found in large numbers from any one site and has usually been considered rare (Ahlstedt, 1985). Within Arkansas, the pink mucket is known from the Red, Ouachita, and White River drainages with the largest populations occurring in the White and Spring rivers (Harris and Gordon, 1987, 1990).

Numerous surveys and a single relocation effort for the pink mucket have shown it is indeed a widespread but rare component of the White River drainage mussel fauna (AHTD, 1984; Dames and Moore, 1977; Gordon, et al, 1984; Harris, 1989; Miller and Harris, 1987; Miller and Hartfield, 1986; Miller and Nelson, 1984; Stein and Stansbery, 1980).

Systematic and nomenclatorial problems continue to plague the pink mucket complex. Gordon (1981) and Harris and Gordon (1987) summarize the controversy. Nomenclature for this report follows Turgeon, et al (1988).

#### Project Area

The White River is approximately 1210 kilometers long with a drainage basin of 72,520 square kilometers. It originates on the north slope of the Boston Mountains in northwest Arkansas, flows northeasterly into Missouri, and follows a southeasterly route back into Arkansas. It leaves the Ozarks near Batesville, Arkansas, a short distance upstream from the confluence with the Black River. The last 420 kilometers of the river are lowland stream in the Mississippi Alluvial Valley (Gordon, 1982)

Extensive alteration of the White River drainage has occurred due to efforts by the U.S. Army Corps of Engineers to control flood waters and maintain navigation upstream to Newport. Gordon (1982) estimates that about half the White River drainage has been rendered unsuitable to most native mussels due to the presence of a large series of cold-water release reservoirs. In addition, the Corps conducts dredging and snagging operations to

maintain navigation, but these operations have adversely impacted the shell resources of the White River by destroying mussel beds (Gordon, 1982; Miller and Harris, 1987).

The Oklahoma - Arkansas Pipeline Project proposes to construct a trans-Arkansas natural gas pipeline which will cross the White River at approximately River Mile 190.5 (Sec 12;R4W;T7N). The project location is approximately 6.5 miles downstream of the Arkansas Game and Fish Commission boat ramp at Augusta, and approximately 12.0 river miles downstream of the U.S. Highway 64 crossing of the White River. The project area and survey area are illustrated in Figures 1 and 2.

The White River at the survey area was approximately 125 meters (m) wide with water depth ranging from 3 - 12 m. Substrate along the descending left hand bank extending past mid-river was predominately sand or sand-silt. Narrow bands (2 -3 m wide) of gravel-sand and clay existed along portions of the descending right hand bank (RHB) at the junction of the vertical river bank and horizontal river bottom.

The water was slightly turbid and there was limited visibility of approximately 10 centimeters at depths of 6 - 7 m. Water velocity was swift and water temperature was cool indicating coldwater release was occurring from upstream impoundments. Water levels were very high for late summer months with levels of 23.6, 23.7, and 23.6 recorded at the Augusta Gauge Station (Flood Stage = 26.0) during the period 10 - 12 August

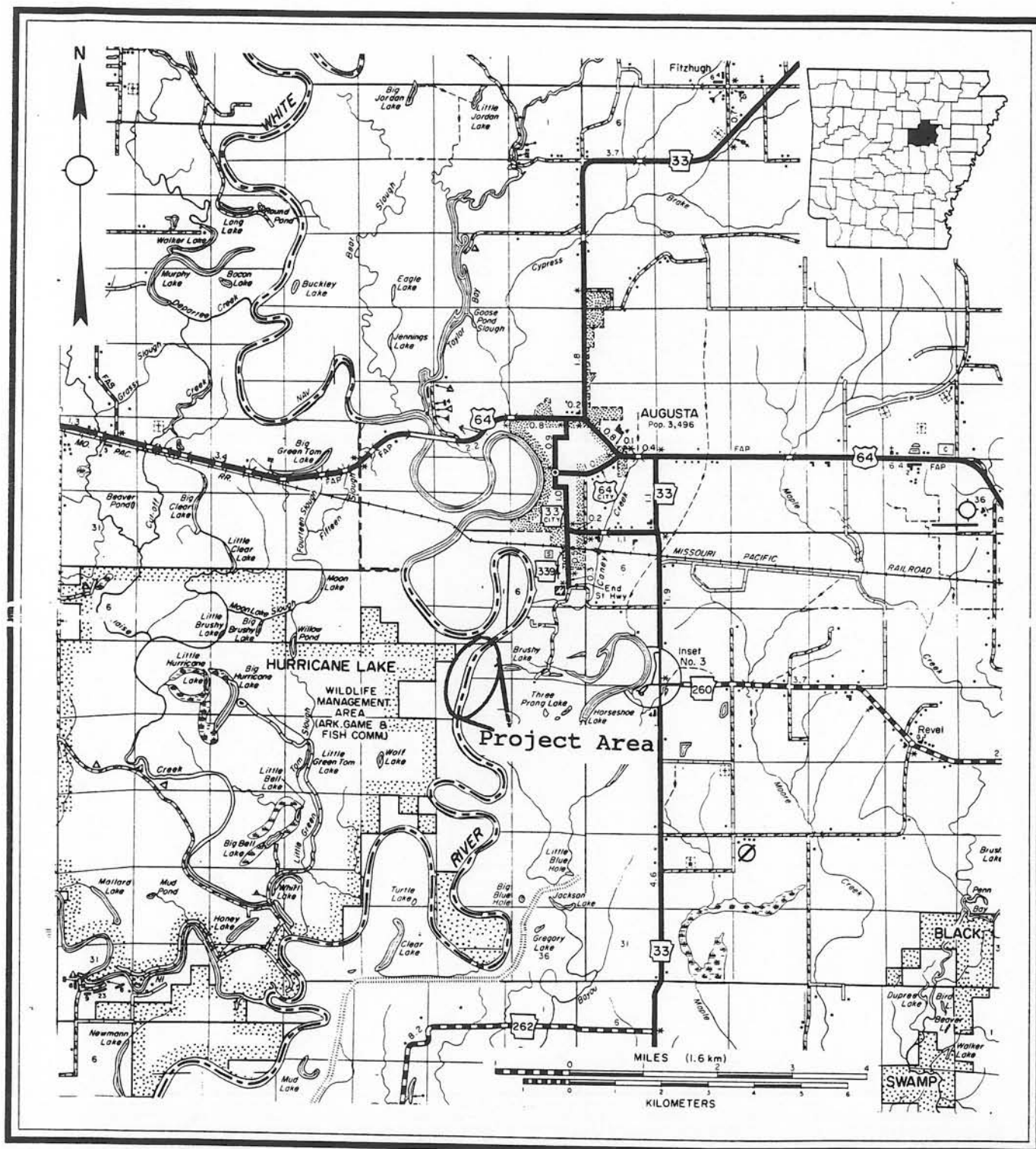


Figure 1. Location of project area.

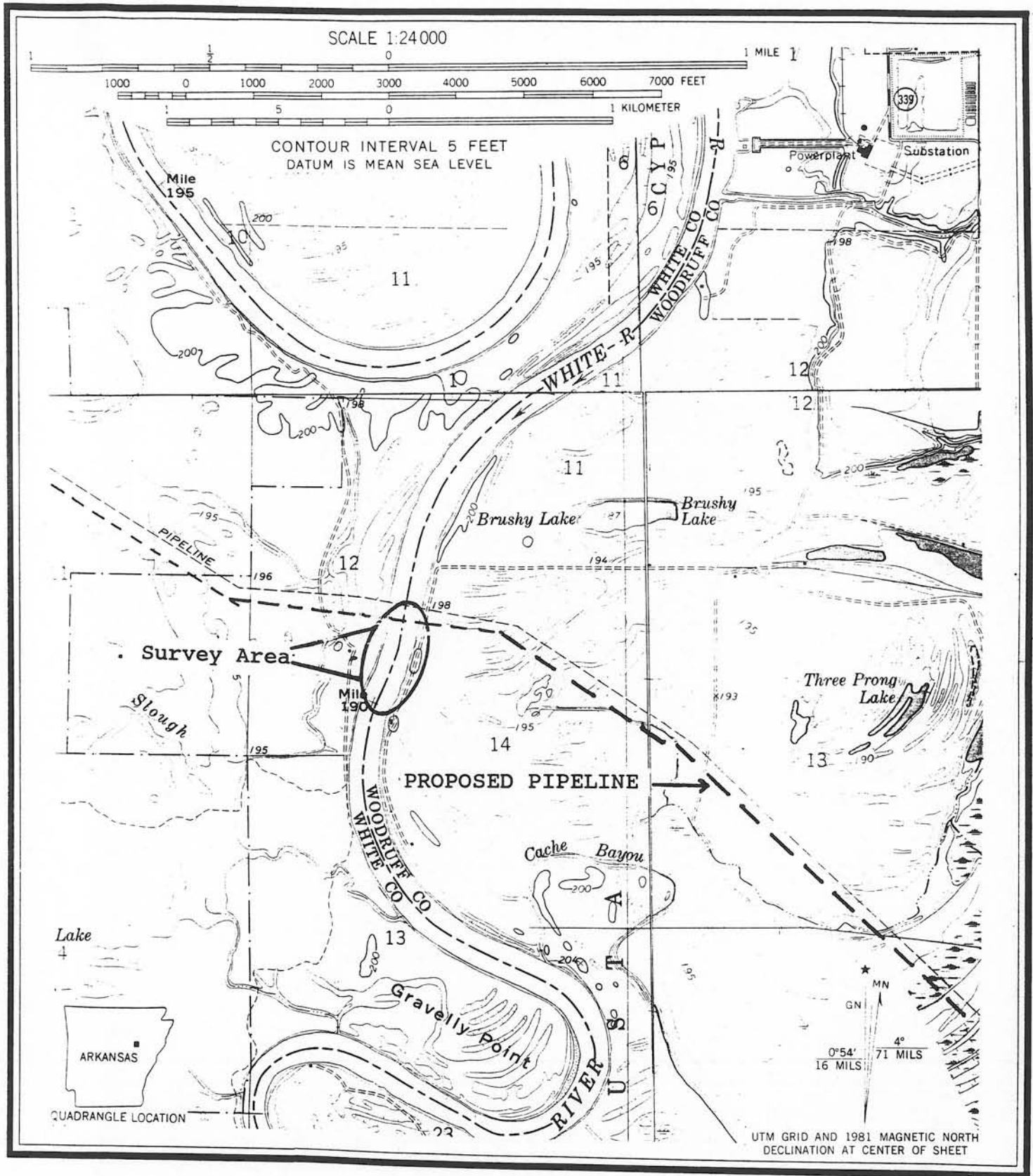


Figure 2. Location of survey area.



1990. Figure 3 illustrates water levels at the survey site during the survey period.

### Survey Methods

The survey was conducted by a single diver using a Sherwood - Hookah regulator connected by a 20 meter length of hose to a Brownie Third Lung compressor. Searches were conducted by feeling/digging the substrate with bare hands. Rectangular cells with long axis parallel to the river bank were searched in a back and forth pattern such that cell width averaged 10 - 12 m and length ranged from 15 - 30 m. Cells were co-terminous such that they formed transects located at RHB, LHB, and mid-river. The transects began approximately 30 m upstream of the proposed pipeline construction centerline and extended approximately 300 m downstream of the centerline.

All mussels encountered during cell searches were bagged, brought to the surface, and identified. The survey was conducted 11 - 12 August 1990. Approximately ten man hours were spent searching for mussels within the specified survey area.

### Results

A summation of species and number of specimens collected is presented in Table 1. All shells collected were taken along the descending right hand bank.

### Discussion

Remnants of a substantial mussel bed were located along RHB extending from 30 m upstream of the proposed pipeline crossing to



Figure 3. White River illustrating water levels during survey.



SPECIES COMMON NAME	STATUS
<u>Actinonaias ligamentina</u> mucket	4 dead
<u>Amblema plicata</u> threeridge	10 dead
<u>Fusconaia ebena</u> ✓ ebonyshell	36 dead 1 live
<u>Fusconaia flava</u> Wabash pigtoe	1 dead
<u>Lampsilis abrupta</u> ✓ pink mucket	1 dead
<u>Lampsilis cardium</u> plain pocketbook	2 dead
<u>Lampsilis teres</u> yellow sandshell	4 dead
<u>Leptodea fragilis</u> fragile papershell	1 live
<u>Obovaria olivaria</u> hickorynut	1 dead
<u>Potamilus purpuratus</u> bleufer	1 dead
<u>Quadrula metanevra</u> ✓ monkeyface	1 dead
<u>Quadrula pustulosa</u> pimpleback	1 dead 6 live

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Table 1. Mussels collected along descending right hand bank.

approximately 100 m downstream. All shells located were within a narrow sand-gravel substrate lens located at the river bank - substrate interface. Most of the specimens recovered were dead, and some were still buried within the substrate in a "normal" position. The cause of mortality is unknown. Based on shell condition, most of the mussels appear to have been dead 2 - 5 years. A total of eight specimens from three species were collected alive during the survey.

Suitable habitat for mussel beds and the endangered species was scarce within the survey area. The LHB and Mid-river transects had shifting sand or silty mud substrates that are unsuitable for concentrations of mussels. Conversation with a local commercial fisherman revealed that during normal summer low-water, an extensive sandbar reaches more than halfway across the river water surface at survey water levels.

The RHB "mussel bed" was searched twice during the course of this survey. More than two hours were spent covering this 3 m X 130 m area. Although a single dead specimen of the pink mucket was recovered, it is very unlikely that additional live specimens are present at this time.

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