Mussel Survey

of the White River at DeValls Bluff

at the Proposed Arkansas Game and Fish Commission Boat Ramp

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Introduction

The Arkansas Game and Fish Commission has proposed to construct a new boat ramp with access to the White River at Devalls Bluff, Prairie County, Arkansas (section 17; R4W; T2N). Figure 1 illustrates the project area.

Two species of freshwater mussels listed as Federally Endangered have occurred historically in the White River drainage (Gordon, 1981, 1982; Gordon, et al, 1980; Harris and Gordon, 1987; Miller and Harris, 1987). These are the fat pocketbook (Potamilus capax (Green, 1832)) and the pink mucket (Lampsilis abrupta Say, 1831).

As requested by the U.S. Fish and Wildlife Service, an endangered species survey was performed 8 November 1989 to determine the status of the pink mucket and the fat pocketbook in the project area. The survey was performed by personnel of the Arkansas Game and Fish Commission, Arkansas Highway and Transportation Department, and Mr. L. H. Gaither, consultant.

Project Area

The White River at the U.S. Highway 70 bridge has an upstream drainage area of approximately 23,500 square miles. The river is approximatley 400 feet wide with average depths of 20 to

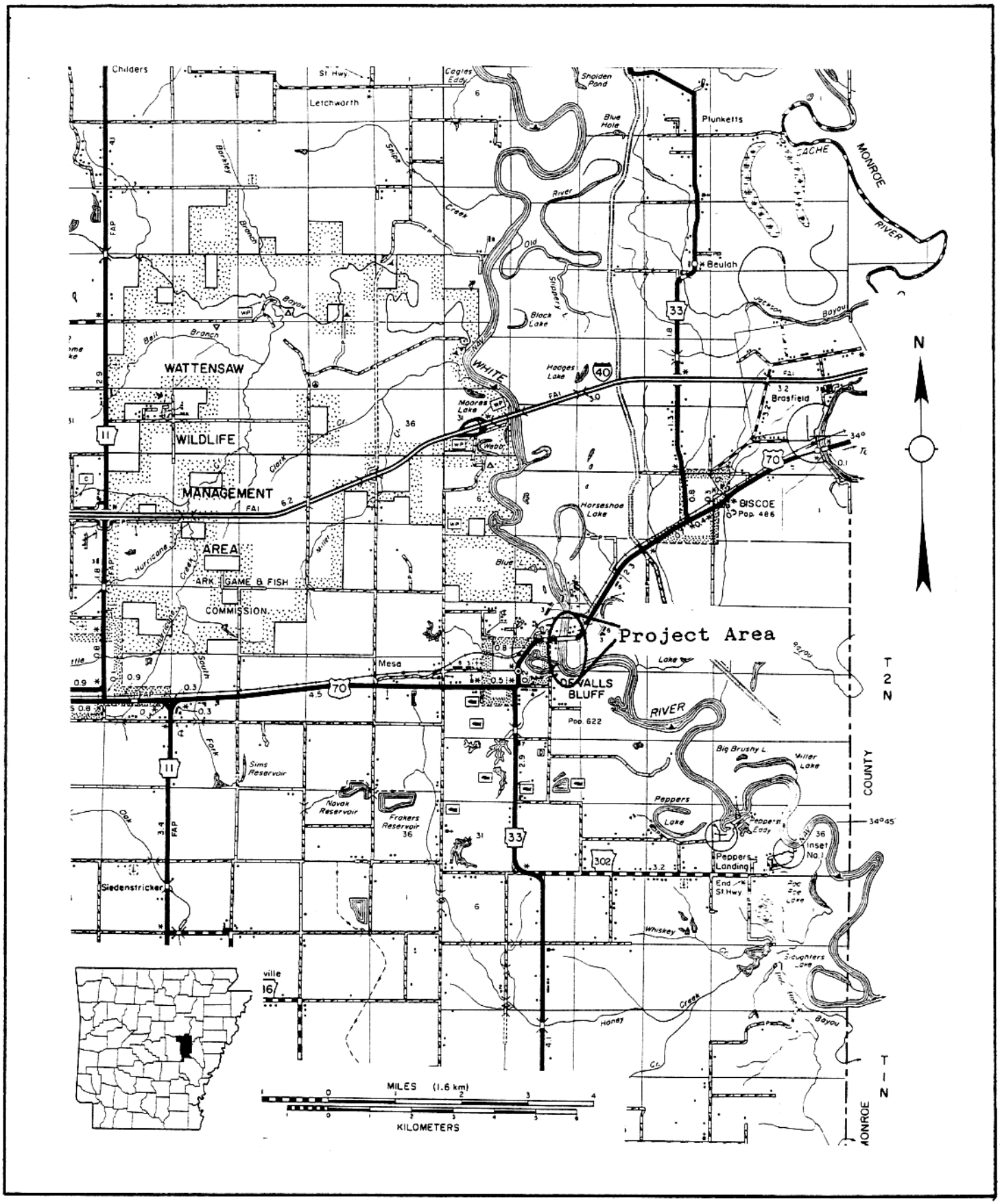

Figure 1. Location of project area.

30 feet. Substrates are predominately sand and sand/mud. A substantial portion of the east bank upstream of the bridge has been modified with shot-rock rip rap that extends approximately 75 feet into the river bed. Immediately downstream of the bridge, plank wall protectors have been constructed on the east bank. These structures deflect current and debris from the bank but are in a state of general disrepair.

Methods

The mussel survey was performed using a hard hat diver with air supplied by boat mounted generator and compressor. The air supply hose also contained wiring to connect two way radio units between the boat and diver. Diving was performed from a 40 foot houseboat powered by twin, two-cylinder, diesel inboard motors. Water depths were recorded using a Hummingbird depth finder.

The survey area extended from the immediate construction zone downstream for a distance of 0.5 miles, and from the east bank out to mid-channel. The survey area was searched in individual cells measuring approximately 150 feet wide and 300 feet long. A total of five cells, four within the half-mile project impact zone, were searched during this survey. Cell 1 covered the area of immediate construction impact, while cells 2 - 5 were located progressively downstream. The location of search cells is illustrated in Figure 2. The diver began cell searches at the upstream cell limit, and searched back and forth across the cell in a descending fashion. All live and dead specimens were collected, brought to the surface for

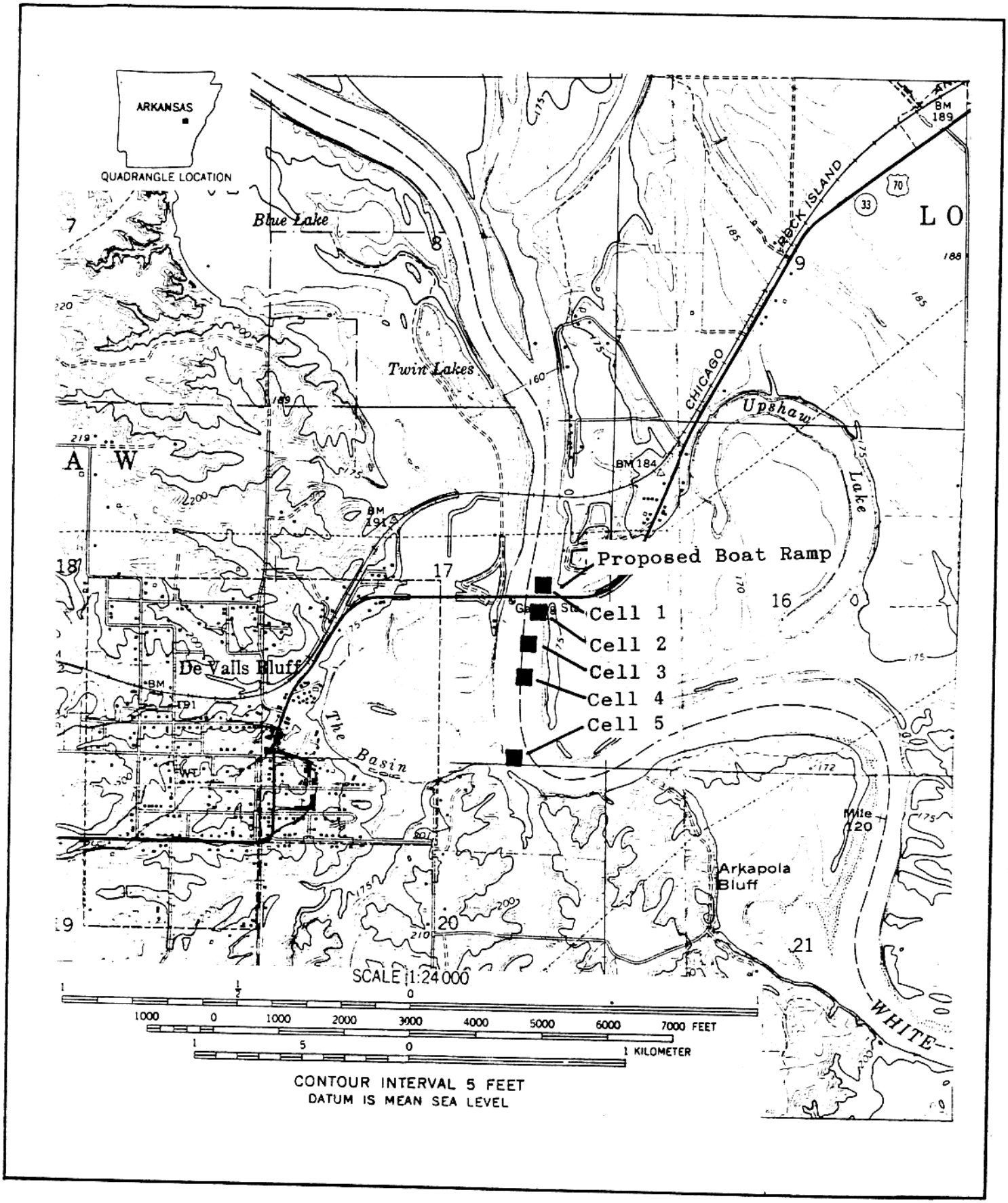

Figure 2. Location of search cells within project area.

identification, and returned to the river. Maximum length was measured to the nearest 0.5 mm using Helios dial calipers.

Water depths and substrate types were recorded for each cell (Table 1). Search time for cells ranged from 15 to 25 minutes.

	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5
Depth	35 ft	25 ft	25 ft	10 ft	40 ft
Substrate	rock, mud, sand	sand	sand	sand	mud, gravel
Current	slow	none	slow	slow	moderate

Table 1. Physical habitat characteristics of search cells.

Results

Mussels collected from search cells are summarized in Table 2. Names follow Turgeon, et al, 1988. A total of 14 species and 101 live specimens were collected during this survey. Ninety percent of the specimens and 10 of the 14 species were collected from Cell 5.

A single female specimen of the pink mucket was collected in Cell 5. Shell dimensions were: length - 121.0 mm, depth - 92.5 mm, width - 61.5 mm.

Discussion

Substrate conditions at Cells 1 - 4 appear unsuitable for establishment of shell beds. The shifting sand and deep silt

Species Common name	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5
Amblema plicata threeridge	0	0	0	0	5
Fusconaia ebena ebonyshell	0	0	0	0	6
Lampsilis abrupta pink mucket	0	0	0	0	1
Lampsilis teres yellow sandshell	0	0	0	0	2
Lasmigona complanata white heelsplitter	0	0	0	0	6
Leptodea fragilis fragile papershell	2	1	0	0	10
Megalonaias nervosa washboard	1	2	0	0	6
Obliquaria reflexa threehorn wartyback	1	1	1	0	12
Obovaria olivaria hickorynut	0	0	0	0	1
Plectomerus dombeyanus bankclimber	1	0	0	0	17
Potamilus purpuratus bleufer	0	0	0	0	11
Quadrula pustulosa pimpleback	0	0	0	0	3
Quadrula quadrula mapleleaf	0	0	0	0	10
Truncilla truncata deertoe	0	0	0	0	1
Total Species	4	3	1	0	14
Total Specimens	5	4	1	0	91

Table 2. Species and specimens collected from search cells.

substrates were inhabited by a few scattered individuals of three species: washboard, fragile papershell, and threehorn wartyback.

Impacts in the area of immediate construction will be minimal due to the presence of rip rap covering the bottom from prior bank stabilization projects. Very few mussels are present in the rock substrate immediately above the U.S. Hwy 70 bridge.

The nearest concentration of shells was located approximately 0.5 miles downstream of the U.S. Highway 70 bridge. Secondary impacts due to sedimentation and turbidity from minor construction activities associated with building the boat ramp are unlikely to impact the mussel bed a half mile away. The potential for adverse impacts exists if large quantities of petroleum products were accidentally spilled during construction. Precautions should be taken to store fuel and lubricants a sufficient distance from the river so that accidental spills can be contained.

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