GEOLOGICAL SURVEY OF ALABAMA

Berry H. (Nick) Tew, Jr.
State Geologist

WATER INVESTIGATIONS PROGRAM

Patrick E. O'Neil
Director

AN ASSESSMENT OF THE FRESHWATER MUSSEL FAUNA IN THE ALABAMA RIVER DOWNSTREAM OF CLAIBORNE LOCK AND DAM, 2006

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By
Stuart W. McGregor[1] and Jeffrey T. Garner[2]

[1]Geological Survey of Alabama, Water Investigations Program
[2]Alabama Department of Conservation and Natural Resources, Division of Wildlife and Freshwater Fisheries

A cooperative effort of the Geological Survey of Alabama and the Alabama Department of Conservation and Natural Resources, Division of Wildlife and Freshwater Fisheries

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AN ASSESSMENT OF THE FRESHWATER MUSSEL FAUNA IN THE ALABAMA RIVER DOWNSTREAM OF CLAIBORNE LOCK AND DAM, 2006

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ABSTRACT

Sampling for mussels by diving with a surface air source was performed at 19 stations in the tailwaters of Claiborne Lock and Dam in Clarke and Monroe Counties, Alabama, during the summer of 2006. Total sampling time was 14.4 hours bottom time, which yielded an aggregate total of 3,054 mussels among 19 species. A high of approximately 884 live and fresh dead individuals of the ebonyshell, *Fusconaia ebena*, represented 28.9 percent of the total. The elephantear, *Elliptio crassidens*, was represented by 462 individuals (15.1 percent), and the bankclimber, *Plectomerus dombeyanus*, by 404 individuals (13.2 percent), following the ebonyshell in abundance. No federally listed endangered or threatened species were encountered. However, individuals of highest to moderate conservation priority species in Alabama were collected: the delicate spike, *Elliptio arctata*, the monkeyface, *Quadrula metanevra*, and the fawnsfoot, *Truncilla donaciformis*.

INTRODUCTION

The freshwater mussel fauna of the Mobile River basin, the largest Gulf of Mexico river basin east of the Mississippi River, is second only to the Tennessee River in diversity. The pre-impoundment fauna included more than 40 species of mussels and was noteworthy for numerous endemic species. That diversity was attributed to the presence of numerous aquatic habitats due to a variety of physiographic types, the geological antiquity of the basin providing ample time for speciation, and abundance of fresh water in the basin (Williams, 1982; McCullagh and others, 2001). However, significant changes in the quality of water and habitat in the river basin related to human activity have been made. These changes include impoundment, eutrophication, sedimentation, pollution, and channel modifications, and have caused a drastic decline in the freshwater mussel fauna (Hartfield, 1994; Mott and Hartfield, 1994).

In 2005 the Geological Survey of Alabama entered into a contract with the Alabama Department of Conservation and Natural Resources to assess the current mussel faunas downstream of dams on the Alabama River, paying special attention to federally listed endangered and threatened species and species of conservation concern in Alabama. This report summarizes results of that study, which was funded by Section Six of the Endangered Species Act.

STUDY AREA

The Alabama River drains 6,023 square miles of the Mobile River basin and has three dams on the main stem (fig. 1) (Mettee and others, 1996). These dams include Claiborne Lock and Dam, Millers Ferry Lock and Dam, and Robert F. Henry Lock and Dam. During the 2006 field season, effort was concentrated in the tailwater of Claiborne Lock and Dam in Clarke and Monroe Counties from about Alabama River mile (ARM) 38 upstream to about ARM 71, just downstream of the dam.

METHODS

The objective of this study was to ascertain the presence of federally listed endangered or threatened species and/or species of conservation concern in Alabama in a short designated stream reach of the Alabama River. Due to the nature of the project and limited resources, a qualitative sampling protocol was employed where more effort was expended in habitat favorable for occupation by target species than in less favorable habitat (Strayer and Smith, 2003). Numbers of mussels that occurred in high densities were estimated during each dive, while those that were encountered in lower numbers were collected and tallied. Sampling effort varied with the quality of habitat and/or the mussel fauna encountered at each station.

Mussels were collected by hand while diving with the aid of a surface air source. All mussels encountered during each dive were identified to species with nomenclature following Turgeon and others (1998) with the exception of the southern mapleleaf, *Quadrula nobilis*. The Southern mapleleaf has long been recognized by some researchers, and recent genetic evidence supports that it is a valid species (Art Bogan, North Carolina State Museum of Natural History, pers. commun., 2006). Condition (alive, fresh dead, weathered dead, or relic) of all mussels collected during each dive was noted and the

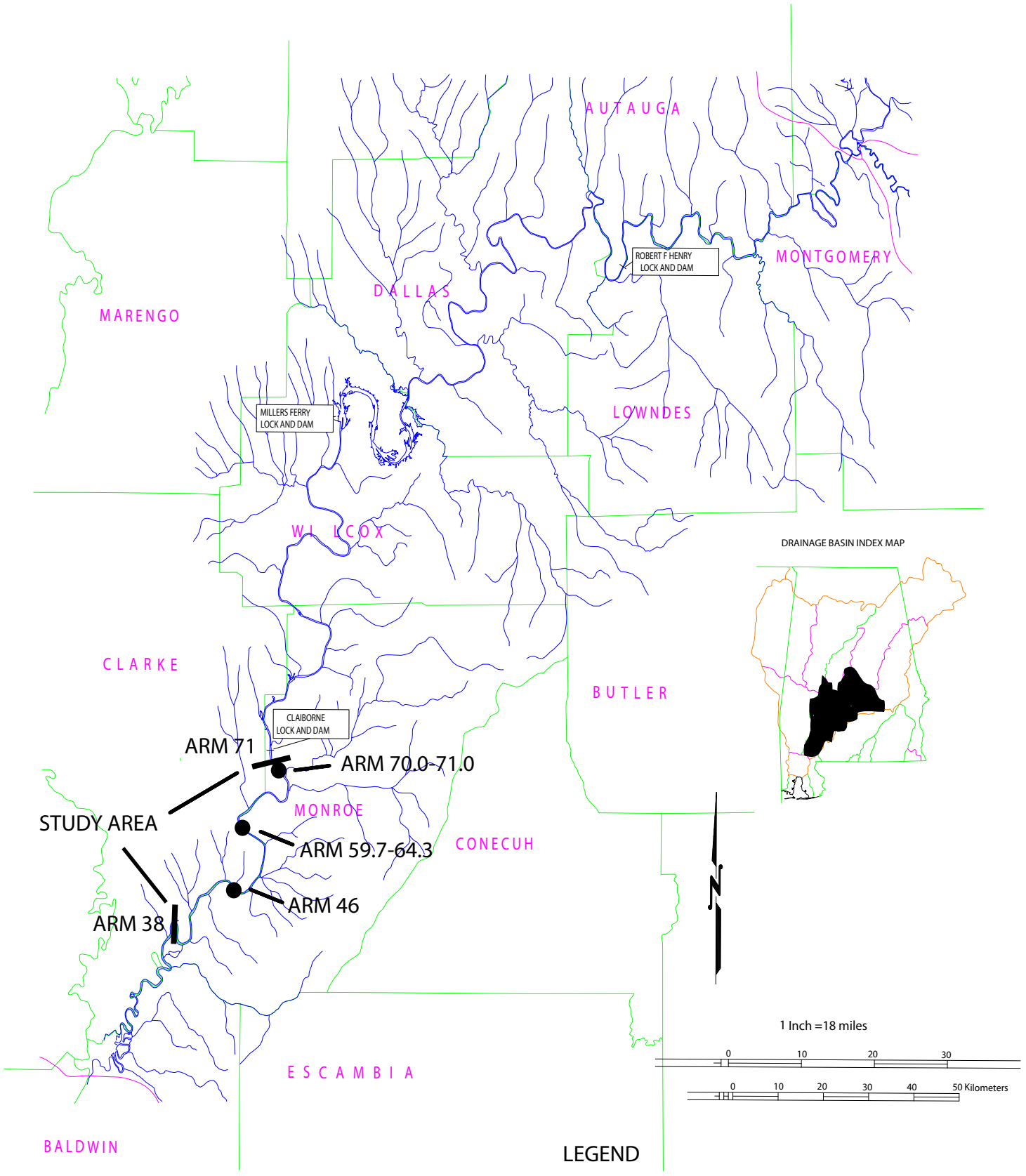

Figure 1. Map of the Alabama River showing downstream and upstream limits of the study area.

numbers of each recorded on a field data sheet. Live individuals were returned to the substrate. Voucher material of some fresh dead specimens will be deposited in the North Carolina Museum of Natural Science collection. Most weathered dead and relic material was discarded.

Habitat data for each station were recorded, sampling stations were referenced to nearby landmarks, and river miles were determined with the aid of U.S. Army Corps of Engineers river mile markers. Data collected in the field were subsequently transferred into an Excel database at the Geological Survey of Alabama for permanent storage and future reference. Sampling locations were georeferenced with the aid of a hand-held global positioning system unit. Status of conservation concern in Alabama follows Mirarchi (2004) with the following designated rankings of priority (P): P1-Highest Conservation Concern, P2-High Conservation Concern, P3-Moderate Conservation Concern, P4-Low Conservation Concern, and P5-Lowest Conservation Concern.

RESULTS AND DISCUSSION

Sampling was performed at 19 stations during August and September 2006 and ranged from about ARM 38 in Clarke and Monroe Counties upstream to about ARM 71 in Monroe County, in the tailwaters of Claiborne Lock and Dam (fig. 1, appendix). Total sampling time was 14.4 hours bottom time, for an average of about 1.3 hours per station. Sampling effort ranged from 0.08 hour (5 minutes) to 2.7 hours (160 minutes) per station and was dictated by the habitat or fauna encountered. An aggregate total of 3,054 mussels representing 19 species were encountered live and fresh dead in the study area. Table 1 shows relative abundance of species collected, which ranged from a low of one live individual of the ridged mapleleaf, *Quadrula rumphiana* (P4), representing less than one percent of the total collected, to a high of approximately 884 live and fresh dead individuals of the ebonyshell, *Fusconaia ebena* (P5), representing about 28.9 percent of the total. The elephantear, *Elliptio crassidens* (P5), represented by 462 individuals (15.1 percent) and the bankclimber, *Plectomerus dombeyanus* (P5), represented by 404 individuals (13.2 percent), followed *E. crassidens* in abundance.

No federally listed endangered or threatened species were encountered. However, individuals of three species of highest to moderate conservation priority were collected: the delicate spike, *Elliptio arctata* (P1), the monkeyface, *Quadrula metanevra* (P3), and

Table 1.—Freshwater mussels and abundance for each species collected from the Alabama River downstream of Claiborne Lock and Dam, 2006

Species [1]	Conservation priority[1]	Abundance[2]	
		Number	Percent of total catch
Ellipsaria lineolata	P4	12	<1.0
Elliptio arctata	P1	37	1.2
Elliptio crassidens	P5	462	15.1
Fusconaia cerina	P5	5	<1.0
Fusconaia ebena	P5	884	28.9
Lampsilis straminea	P4	3	<1.0
Lampsilis teres	P5	10	<1.0
Leptodea fragilis	P5	67	2.2
Megalonaias nervosa	P5	204	6.7
Obliquaria reflexa	P5	264	8.6
Plectomerus dombeyanus	P5	404	13.2
Potamilus purpuratus	P5	116	3.8
Quadrula apiculata	P5	74	2.4
Quadrula asperata	P5	494	16.2
Quadrula metanevra	P3	2	<1.0
Quadrula nobilis[3]	--	5	<1.0
Quadrula rumphiana	P4	1	<1.0
Truncilla donaciformis	P3	7	<1.0
Utterbackia imbecillis	P5	3	<1.0
Total		3,054	100%

[1] P1=Priority 1 (Highest Conservation Concern), P2=Priority 2 (High Conservation Concern), P3=Priority 3 (Moderate Conservation Concern), P4=Priority 4 (Low Conservation Concern), P5=Priority 5 (Lowest Conservation Concern).

[2] Aggregate total number of live mussels and fresh dead shells among all stations sampled.

[3] *Quadrula nobilis* was not recognized by Mirarchi (2004).

the fawnsfoot, *Truncilla donaciformis* (P3) (table 1). *Elliptio arctata* (n=37, 1.2 percent of the total collected) was listed due to its limited distribution (endemic to the Mobile basin) and specialized habitat requirements (usually found under or around large rocks in at least moderate current). It has previously been listed as threatened throughout its distribution (Williams and others, 1993) and imperiled in Alabama (Lydeard and others, 1999). This population may represent the most robust currently known. *Quadrula metanevra* (n=2) and *Truncilla donaciformis* (n=7), each representing less than 1 percent of the total, were considered P3 species due to decreasing population trends and habitat vulnerability. They are both known to occupy riverine habitats with at least moderate

current. The Southern mapleleaf, *Quadrula apiculata*, was formerly considered a species of special concern in Alabama (Harris, 1990), but subsequent accounts have led to its designation as a P5 species. It represented 2.4 percent of the total during this study (table 1).

The stretch of river sampled during this field season that yielded the most diverse and abundant mussel fauna was along a bluff on the right descending bank of the river just downstream of Claiborne Lock and Dam (about ARM 71). Specimens of all 19 species collected during this study were found in that vicinity, including the only occurrences of *Elliptio arctata* (table 2). An estimated total of 2,066 live or fresh dead mussels were found in that area, representing about 68.4 percent of the total collected. A total of 8.3 hours of bottom time was spent there, yielding a catch per unit effort (CPUE) of about 248.9 mussels per hour. Habitat was composed of boulders and cobble with

Table 2.—Comparison of diversity of freshwater mussel species collected live or fresh dead from selected stations in the Alabama River downstream of Claiborne Lock and Dam, 2006

Species	Claiborne Lock and Dam tailwater (ARM 70.0-71.0)	Near Gainestown (ARM 46.0)
Ellipsaria lineolata	X	
Elliptio arctata	X	
Elliptio crassidens	X	X
Fusconaia cerina	X	
Fusconaia ebena	X	X
Lampsilis straminea	X	
Lampsilis teres	X	
Leptodea fragilis	X	
Megalonaias nervosa	X	
Obliquaria reflexa	X	
Plectomerus dombeyanus	X	X
Potamilus purpuratus	X	X
Quadrula apiculata	X	
Quadrula asperata	X	X
Quadrula metanevra	X	
Quadrula nobilis	X	X
Quadrula rumphiana	X	
Truncilla donaciformis	X	
Utterbackia imbecillis	X	
Total	19	6

pockets of gravel and sand on the channel slope and gravel and sand on the river floor. There was a layer of silt 1 to 3 mm thick on most surfaces.

Diversity appears to diminish with downstream progression from that point. However, that could be due to effort expended. At about ARM 59.7, there were only 12 species found live or fresh dead (table 2). Sampling in that vicinity yielded 554 live or fresh dead individuals in 2.3 hours of bottom time, for a CPUE of 240.9 mussels per hour. Habitat at that point was composed primarily of gravel and sand on the river floor with some outcroppings of bedrock. The channel slope had a 1-3 cm layer of sandy mud over gravel. Farther downstream, at about ARM 46, only 11 individuals in six species were encountered in one hour of bottom time for a CPUE of 11 mussels per hour. There the substrate was composed of soft, cobble-sized stones in the channel with some interstitial gravel, sand, and silt. The channel slope was purely soft bedrock with a 1 to 3 mm layer of silt on most surfaces. In the lower stretch of river sampled during this study, numerous stations had poor quality habitat and yielded no mussels.

RECOMMENDATIONS

Based on these results, primarily the discovery of a robust population of *Elliptio arctata*, we make the following recommendations:

- Further sampling should be executed to find additional locally diverse mussel populations in the Alabama River.
- Upon finding those populations, extensive sampling should be performed on each to accurately assess the fauna at each station and to determine the range limits of target species.
- Observations of potential limiting factors to habitat quality and other aspects of mussel life history should be noted.
- Upon determination of possible limiting factors, effort should be made to reverse or minimize those factors.

REFERENCES CITED

Harris, S. C., 1990, Preliminary considerations on rare and endangered invertebrates in Alabama: Journal of the Alabama Academy of Science, v. 61, no. 2, p. 64-92.

Hartfield, Paul, 1994, Status review of select mussel species in the Mobile River basin: Jackson, Mississippi, U.S. Fish and Wildlife Service, 3 p.

Lydeard, Charles, Garner, J. T., Hartfield, Paul, and Williams, J. D., 1999, Freshwater mussels in the Gulf region: Alabama: Gulf of Mexico Science, v. 2, p. 125-134.

McCullagh, H. W., Williams, J. D., McGregor, S. W., Pierson, J. M., and Lydeard, Charles, 2001, The unionid (Bivalvia) fauna of the Sipsey River in northwestern Alabama, an aquatic hotspot: American Malacological Bulletin, v. 17, nos. 1, 2, p. 1-15.

Mettee, M. F., O'Neil, P. E., and Pierson, J M., 1996, Fishes of Alabama and the Mobile Basin: Birmingham, Alabama, Oxmoor House, 820 p.

Mirarchi, R. E., 2004, Alabama wildlife, Volume 1, A checklist of vertebrates and selected invertebrates: Aquatic mollusks, fishes, amphibians, reptiles, birds, and mammals: Tuscaloosa, The University of Alabama Press, 209 p.

Mott, Seth, and Hartfield, P. D., 1994, Status review summary of the Alabama pearlshell *Margaritifera marrianae*: Jackson, Mississippi, U.S. Fish and Wildlife Service, 6 p.

Strayer, D. L., and Smith, D. R., 2003, A guide to sampling freshwater mussel populations: American Fisheries Society, Monograph 8, Bethesda, Maryland, 103 p.

Turgeon, D. D., Quinn, J. F., Jr., Bogan, A. E., Coan, E. V., Hochberg, F. G., Lyons, W. G., Mikkelsen, P. M., Neves, R. J., Roper, C. F. E., Rosenberg, G., Roth, B., Scheltema, A., Thompson, F. G., Vecchione, M., and Williams, J. D., 1998, Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks, second edition: Bethesda, Maryland, American Fisheries Society, Special Publication 26, 526 p.

Williams, J. D., 1982, Distribution and habitat observations of selected Mobile basin unionid mollusks, *in* Miller, A. C. ed., Report of freshwater mollusks workshop: Vicksburg, Mississippi, U.S. Army Corps of Engineers, Waterways Experiment Station, p. 61-85.

Williams, J. D., Warren, M. L., Jr., Cummings, K. S., Harris, J. L., and Neves, R. J., 1993, Conservation status of freshwater mussels of the United States and Canada: Fisheries, v. 18, no. 9, p. 6-22.

APPENDIX

Summary of field notes for 19 mussel sampling stations downstream of Claiborne Lock and Dam, Clarke and Monroe Counties, Alabama, August and September, 2006

ARM 38.0 at upstream end of bluff, left descending bank
N31° 20.351' W87° 43.474'
Clarke/Monroe Counties, Alabama
September 7, 2006
Poor, loose substrate; 10 minutes bottom time
Obliquaria reflexa- 1 live
Fusconaia ebena- 2 weathered dead

ARM 38.7 downstream of Eureka Landing, left descending bank
N31° 21.562' W87° 43.267'
Clarke/Monroe Counties, Alabama
September 7, 2006
Poor substrate of soupy mud, 5 minutes bottom time
No mussels

ARM 43.1 upstream of Eureka Landing, right descending bank
N31° 25.074' W87° 40.478'
Clarke/Monroe Counties, Alabama
September 7, 2006
Poor substrate of muddy sand, 5 minutes bottom time
No mussels

ARM 46.0 upstream of Gainestown Landing on bedrock (probably limestone) bluff, right descending bank
N31° 25.243' W87° 38.712'
Clarke/Monroe Counties, Alabama
September 7, 2006
Soft, cobble-sized stone (limestone?) with interstitial gravel/sand/silt in channel; stone on slope; 65 minutes bottom time
Fusconaia ebena- 2 live
Plectomerus dombeyanus- 3 live
Potamilus purpuratus- 3 live
Quadrula nobilis- 1 live
Elliptio crassidens- 1 live
Quadrula asperata- 1 live
Corbicula sp. present

ARM 48.0 along gravel shore opposite training dikes, left descending bank
N31° 24.892' W87° 37.843'
Clarke/Monroe Counties, Alabama
September 7, 2006
Poor substrate of unstable gravel, 5 minutes bottom time
No mussels

ARM 49.5 along stone shore downstream of training dikes, left descending bank N31° 24.655' W87° 35.966'
Clarke/Monroe Counties, Alabama
September 7, 2006
Poor substrate of bedrock, 10 minutes bottom time
Quadrula asperata- weathered dead fragments
Fusconaia ebena- weathered dead fragments
Obliquaria reflexa- weathered dead fragments
Corbicula sp. present

ARM 50.0 along large gravel bar with three training dikes, right descending bank N31° 25.239' W87° 35.578'
Clarke/Monroe Counties, Alabama
September 6, 2006
Poor substrate of mud, 5 minutes bottom time
No mussels

ARM 51.5 along large gravel bar, left descending bank
N31° 26.145' W87°34.367'
Clarke/Monroe Counties, Alabama
September 6, 2006
Bedrock slope, very loose coarse sand on channel floor, 5 minutes bottom time
Elliptio crassidens- 5 live
Fusconaia ebena- 28 live
Leptodea fragilis- 1 weathered dead
Megalonaias nervosa- 2 live
Obliquaria reflexa- 7 live
Plectomerus dombeyanus- 1 live
Potamilus purpuratus- 1 live
Quadrula asperata- 6 live
Corbicula sp. present

ARM 54.6 at Marshall's Bluff near left descending bank among boulders
N31° 28.404' W87°33.722'
Clarke/Monroe Counties, Alabama
September 6, 2006
Flat bedrock with many pockmarks and scour holes, 30 minutes bottom time
Lampsilis teres- 2 live
Plectomerus dombeyanus- 1 live
Corbicula sp. present

ARM 57.5 along bluff downstream of sand and gravel banks, right descending bank
N31° 29.880' W87°36.141'
Clarke/Monroe Counties, Alabama
September 6, 2006
Loose sand/gravel in channel, stable at foot of slope among rocks,
40 minutes bottom time
Elliptio crassidens- 5 live
Fusconaia ebena- 2 live
Leptodea fragilis- 1 live
Megalonaias nervosa- 15 live
Obliquaria reflexa- 15 live
Plectomerus dombeyanus- 15 live
Potamilus purpuratus- 1 live
Quadrula apiculata- 2 live
Corbicula sp. present

ARM 59.7 downstream of Pigeon Creek, along right descending bank
N31° 31.174' W87°37.233'
Clarke/Monroe Counties, Alabama
September 6, 2006
Stable gravel and sand on channel floor, slope with sandy mud over gravel,
80 minutes bottom time
Ellipsaria lineolata- 1 live
Elliptio crassidens- 1 live
Fusconaia cerina- 1 live
Fusconaia ebena- 300 live
Lampsilis teres- 1 weathered dead
Leptodea fragilis- 1 weathered dead
Megalonaias nervosa- 1 live (subadult)
Obliquaria reflexa- 75 live
Plectomerus dombeyanus- 1 live
Potamilus purpuratus- 1 live
Quadrula apiculata- 12 live
Quadrula asperata- 125 live
Truncilla donaciformis- 2 live
Corbicula sp. present

ARM 60.4 downstream of Nancy Hill Landing, near left descending bank
N31° 31.558' W 87°36.085'
Clarke/Monroe Counties, Alabama
September 5, 2006
Slope with bedrock outcrops, cobble and boulders and a heavy coating of silty sand, channel floor with silty sand, 60 minutes bottom time
Ellipsaria lineolata- 1 weathered dead
Elliptio crassidens- 1 weathered dead
Fusconaia ebena- 18 live
Lampsilis teres- 2 weathered dead
Leptodea fragilis- 1 live
Megalonaias nervosa- 1 relic
Obliquaria reflexa- 4 live
Plectomerus dombeyanus- 3 live
Potamilus purpuratus- 1 live
Quadrula apiculata- 2 relic
Quadrula asperata- 6 live
Corbicula sp. present

ARM 64.3 at Strode Landing, near right descending bank
N31° 33.355' W 87° 33.663'
Clarke/Monroe Counties, Alabama
August 1, 2006
Slope with cobble and boulders, bedrock at base of slope, channel floor with silt and gravel, unstable, 60 minutes bottom time
Elliptio crassidens- 25 live
Fusconaia cerina- 1 live
Fusconaia ebena- 150 live (including 21 subadults)
Lampsilis teres- 1 live
Leptodea fragilis- 2 live
Megalonaias nervosa- 5 live
Obliquaria reflexa- 60 live
Plectomerus dombeyanus- 40 live
Potamilus purpuratus- 10 live
Quadrula apiculata- 20 live
Quadrula asperata- 120 live
Quadrula metanevra- 1 live
Truncilla donaciformis- 1 weathered dead
Corbicula sp. present

ARM 66.5 downstream of U.S. Highway 84 bridge, along left descending bank
N31° 32.693' W 87° 31.099'
Monroe County, Alabama
August 1, 2006
Slope with cobble and boulders, bedrock at base of slope, channel floor with silt and gravel, unstable, 60 minutes bottom time
Ellipsaria lineolata- 4 live
Elliptio crassidens- 25 live
Fusconaia cerina- 1 live
Fusconaia ebena- 100 live (including 21 subadults)
Lampsilis teres- 1 live
Megalonaias nervosa- 5 live
Obliquaria reflexa- 40 live
Plectomerus dombeyanus- 40 live
Potamilus purpuratus- 5 live
Quadrula apiculata- 10 live
Quadrula asperata- 80 live (including 7 subadults)
Quadrula metanevra- 1 live
Truncilla donaciformis- 1 weathered dead
Corbicula sp. present

ARM 70.0 at downstream end of bluff downstream of Claiborne Lock and Dam
Right descending bank
N31° 35.307' W 87° 32.214'
Monroe County, Alabama
August 3, 2006
Slope cobble and boulders with bedrock outcrops with gravel/mud/sand pockets, channel floor sand and gravel, 80 minutes bottom time
Ellipsaria lineolata- 1 live
Elliptio arctata-17 live
Elliptio crassidens- 50 live
Fusconaia ebena- 30 live
Leptodea fragilis- 30 live (mostly subadults)
Megalonaias nervosa- 30 live
Obliquaria reflexa- 10 live
Plectomerus dombeyanus- 50 live
Potamilus purpuratus- 30 live
Quadrula apiculata- 5 live
Quadrula asperata- 25 live
Truncilla donaciformis- 2 live
Corbicula sp. present

ARM 70.3 along bluff downstream of Claiborne Lock and Dam,
along right descending bank,
N31° 35.532' W 87° 32.569'
Monroe County, Alabama
August 3, 2006
Slope cobble and boulders with bedrock outcrops with gravel/mud/sand pockets, channel floor sand and gravel, 40 minutes bottom time
Elliptio arctata-1 live
Elliptio crassidens- 70 live
Fusconaia ebena- 10 live
Lampsilis teres- 1 weathered dead
Leptodea fragilis- 3 live
Megalonaias nervosa- 20 live
Obliquaria reflexa- 5 live
Plectomerus dombeyanus- 30 live
Potamilus purpuratus- 2 live
Quadrula apiculata- 1 live
Quadrula asperata- 10 live
Corbicula sp. present

ARM 70.5 along bluff downstream of Claiborne Lock and Dam, right descending bank
N31° 35.232' W 87° 32.066'
Monroe County, Alabama
August 2, 2006
Slope cobble and boulders with bedrock outcrops with gravel/mud/sand pockets, channel floor sand and gravel, 160 minutes bottom time
Ellipsaria lineolata- 1 live
Elliptio arctata- 6 live
Elliptio crassidens- 105 live
Fusconaia ebena- 200 live
Lampsilis straminea- 1 live
Lampsilis teres- 3 live (including 1 subadult)
Leptodea fragilis- 25 live (mostly subadults)
Megalonaias nervosa- 51 live
Obliquaria reflexa- 35 live
Plectomerus dombeyanus- 80 live (including 2 subadults)
Potamilus purpuratus- 20 live (including 2 subadults)
Quadrula apiculata- 15 live
Quadrula asperata- 75 live
Quadrula nobilis- 2 live
Quadrula rumphiana- 2 weathered dead
Truncilla donaciformis- 1 live
Utterbackia imbecillis- 2 live (including 1 subadult)
Corbicula sp. present

ARM 70.75 along bluff downstream of Claiborne Lock and Dam, right descending bank
N31° 35.537' W 87° 32.560'
Monroe County, Alabama
August 1, 2006
Slope cobble and boulders with bedrock outcrops containing gravel/mud/sand pockets, channel floor sand and gravel, 60 minutes bottom time
Ellipsaria lineolata- 4 live
Elliptio arctata- 2 live
Elliptio crassidens- 100 live
Fusconaia cerina-2 live
Fusconaia ebena- 40 live
Lampsilis straminea- 2 live
Lampsilis teres- 1 live
Leptodea fragilis- 3 weathered dead
Megalonaias nervosa- 50 live
Obliquaria reflexa- 11 live
Plectomerus dombeyanus- 100 live
Potamilus purpuratus- 20 live
Quadrula apiculata- 5 live
Quadrula asperata- 40 live
Quadrula nobilis- 2 live
Quadrula rumphiana- 1 live
Truncilla donaciformis- 2 fresh dead
Corbicula sp. present

ARM 71.0 along bluff downstream of Claiborne Lock and Dam, right descending bank
N31° 35.390' W 87° 32.346'
Monroe County, Alabama
August 1, 2006
Slope cobble and boulders with bedrock outcrops containing gravel/mud/sand pockets, channel floor sand and gravel, 45 minutes bottom time
Elliptio arctata- 11 live
Elliptio crassidens- 75 live
Fusconaia ebena- 5 live
Lampsilis teres- 2 live
Leptodea fragilis- 5 live (all subadults)
Megalonaias nervosa- 15 live
Obliquaria reflexa- 1 live
Plectomerus dombeyanus- 40 live (1 subadult)
Potamilus purpuratus- 20 live
Quadrula apiculata- 2 live
Quadrula asperata- 5 live
Utterbackia imbecillis- 1 live
Corbicula sp. present

GEOLOGICAL SURVEY OF ALABAMA
P.O. Box 869999
420 Hackberry Lane
Tuscaloosa, Alabama 35486-6999
205/349-2852

Berry H. (Nick) Tew, Jr., State Geologist

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