

**Final Report
Ohio River Mussel Survey,
River Mile 162.5 to 172.5
(Willow Island to Marietta)**

prepared for:

Burgess & Niple, Ltd.

prepared by:

Ecological Specialists, Inc.

12 December 1990

Executive Summary

Ecological Specialists, Inc. was contracted by the City of New Martinsville, WV, to survey the Ohio River unionid molluscs downstream of the Willow Island Locks & Dam. The survey was conducted November 6 through November 11, 1990. The area was sampled by brail at half mile intervals. Brailing results indicated few unionids occupy the area from Willow Island to Marietta, Ohio River miles 162.5 to 172.5. Substrate samples consisted of silty sand and cobble, which may have precluded the occurrence of unionids. No major beds were found within ten miles downstream of the Locks & Dam, and no endangered species were recovered.

Table of Contents

	Page
Introduction	1
Methods	2
Results and Discussion	3
References Cited	5

List of Tables

Table 1. Study Area Depth, Temperature and DO.....	6
Table 2. Distribution of Brailled Unionids.....	10

List of Figures

Figures 1-3. Brail Transect Locations, November, 1990.....	11
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Appendix A

Field Data Sheets

1.0 Introduction

The Willow Island Locks & Dam (Ohio River Mile 161.7) has been proposed as a hydroelectric retrofit site. The U.S. Fish & Wildlife Service and the West Virginia Department of Natural Resources are concerned that construction and operation of a hydroelectric station would impact downstream biota, particularly endangered species, through turbine entrainment of host fishes and dissolved oxygen (DO) depression.

The historical range of *Lampsilis abrupta* (= *orbiculata*), a federally endangered unionid species, includes the upper Ohio River. Recent surveys have recovered *L. abrupta* between Ohio River Miles (ORM) 283.3 and 292. It has not been collected in the pool below Willow Island. However, recent surveys in this pool have been limited. The rarity of *Lampsilis abrupta* in nature allows it to escape detection in all but the most intensive surveys. This species frequently occurs in established "beds" containing other unionid species. Therefore, surveys for *Lampsilis abrupta* typically involve, first the location of beds, and second intensive bed sampling for this species.

The City of New Martinsville, WV, contracted Ecological Specialists, Inc., through Dr. G. Thomas Watters, Ohio State University, to characterize the unionid population below the Willow Island Locks & Dam.

2.0 Methods

The study was conducted November 6 through November 11, 1990. The field effort consisted of qualitative brailing to determine unionid presence or absence within 10 miles of the Willow Island Locks & Dam. At each half mile interval, six transects were brailed. Transects were run parallel to shore 100, 200, and 300 feet from each bank. A Ranging 1000 range finder was used to determine distances from each shoreline. At Marietta Island, three runs were conducted in each channel at 100 feet off each bank, and at mid-channel.

A crowfoot brail was deployed from the boat bow at each station and slowly dragged downstream for ten minutes. The boat was slowly motored downstream as current velocity alone was insufficient for brail towing. Each ten minute effort represented approximately 1/5 to 1/4 river mile. Additional transects were brailed at the head and toe of Marietta Island (Buckley Island), at ORM 171.8 in the West Virginia channel of Marietta Island, and at the mouth of the Muskingum River.

Physical and chemical parameters were sampled periodically to characterize available habitat. Substrate was sampled periodically with a petit ponar dredge. DO and water temperature were measured at each 1/2 mile interval on each bank with a YSI model 54A dissolved oxygen meter. Depth, location, and unionids collected were recorded for each run. Brail run locations are shown in Figures 1-3. Measured parameters are summarized in Table 1.

Sampling was terminated at the mouth of the Muskingum River, approximately 10 miles downstream of the Willow Island Locks & Dam. The Ohio River at this point is highly developed. The influence of a hydrofacility on molluscs past this point would be indistinguishable from other point and non-point sources of pollution which could have adverse impacts, masking any possible effects of the hydrofacility.

Data were recorded on standard data sheets. Copies of field data sheets are provided in Appendix A.

3.0 Results and Discussion

The river reach between Willow Island and Marietta is minimally urbanized and industrialized. As such, it has potential to harbor unionid mollusc beds. Despite intensive brailing no such beds were located within 10 miles of the Locks & Dam. Only 15 live unionids of 5 species were collected in the 10 mile stretch. The highest concentration occurred at ORM 168.0, along the West Virginia shore, where all three brail runs collected unionids, but each run yielded only one specimen (one was dead and fortuitously snagged by the brail). The investigators have participated in brail runs over existing beds in other areas of the Ohio River. Brail runs in a unionid bed typically yield over 10 specimens per run and 10 or more species. Results of this project indicate that no appreciably dense beds occur below Willow Island Locks & Dam. Unionids are present, but scattered throughout the area.

The silty nature of the substrate may be responsible for the lack of unionids in this area. Substrate samples revealed a mixture of cobble, *Corbicula* shells, and silty sand. Silt has been shown to foul the unionid gills, causing suffocation. Dr. T. Cavender, Curator of Fishes at the Museum of Zoology of Ohio State University, has also commented on the silty nature of this pool and the lack of fish diversity below Willow Island Locks & Dam (pers. comm.). Most unionids require specific fishes to act as hosts for the parasitic portion of their life cycle. Without these host fishes the unionids cannot reproduce. The combination of lack of fish habitat and unsuitable substrate may prevent unionid bed formation.

Water temperature may influence brail sampling efficiency, however we do not feel temperature effected the study results. It is believed that some unionid species burrow deeper into the substrate in winter, and they therefore would not be within reach of the brailing hooks. The fall of 1990 also was unusually warm, with record high temperatures set on several occasions. The volume and heat capacity of the Ohio River preclude a rapid cooling. Evidence for burrowing is largely circumstantial, and there is no documentation that *Lampsilis abrupta* behaves in this manner. Even if unionids do burrow, the water temperature was above typical winter conditions. In addition, active unionids were collected in creeks, presumably in colder water, north of the Ohio River for several weeks after the completion of this project.

The species collected by brailing are all common Ohio River inhabitants. The two most common living unionids collected in this study, *Amblema plicata plicata* and *Quadrula quadrula*, are widely distributed throughout the Mississippi

River system and are fairly pollution tolerant species. By far the most abundant mollusc in this stretch of the river was the introduced Asiatic clam. However, this species is not a native unionid and is not of concern for protection. None of the collected species are federally endangered. *Quadrula metanevra*, although endangered in Ohio, is a common species in the Ohio River. Shells of other common species were occasionally seen on the river banks, but were not abundant. Several species abundant in other Ohio River pools, such as *Elliptio crassidens crassidens*, *Quadrula pustulosa pustulosa*, and *Obliquaria reflexa*, were conspicuously absent in this study, further evidence of the lack of a substantial unionid population in the area.

Historically, 38 species were known from the upper Ohio River (Ortmann 1919, Williams 1969). Taylor (1980) collected 16 species in this pool and indicated that 15 species historically collected in the Upper Ohio may be extinct. He collected no unionids above ORM 97. However, his records were based on relic shells in most areas. Unionid habitat probably existed in this section of the river historically. But dam construction, urbanization, and industrialization appear to have altered flow regimes and sediment characteristics to the detriment of unionid populations.

The mouth of the Muskingum River marked a valid stopping point for the project. The area is heavily urbanized (Marietta, Vienna, Williamstown, and Parkersburg) and industrialized. Impacts to unionids below this point may be impossible to attribute to any specific cause, such as the operation of a hydroelectric plant. Furthermore, the contribution, either pro or con, of the Muskingum River (the largest system in Ohio) would greatly alter the biotic profile of the Ohio River in this section. The investigators, therefore felt that continuing the survey below this point would not address hydroelectric impacts. Since no unionid beds were found in the project area, the construction and operation of a hydroelectric plant at Willow Island will not significantly effect unionid populations in this river reach.

4.0 References cited.

- Ortmann, E. A. 1919. A monograph of the naiades of Pennsylvania. Part III. Systematic account of the genera and species. *Memoirs, Carnegie Museum* 8(1). Pittsburgh, PA.
- Taylor, R. W. 1980. A survey of the freshwater mussels of the Ohio River from Greenup Locks and Dam to Pittsburgh. Pa. *U.S. Army Corps of Engineers, Huntington, WV District*. 71 pp.
- Williams, J. C. 1969. Mussel fishery investigations, Tennessee, Ohio, and Green Rivers. *Final Report, Murray State Univ. Press, Murray, KY*. 107 pp.

Table 1. Study Area Depth, Temperature and Dissolved Oxygen, November 1990

River Mile	Distance from Shoreline (ft.)	State Shoreline	Depth (ft.)	Temperature (°C)	Dissolved Oxygen (ppm)
162.5	100	OH	17	12	10.8
	240	OH	18	12	10.8
	300	OH	18	12	10.8
	100	WV	15	12	10.6
	180	WV	15	12	10.6
	315	WV	17	12	10.6
163.0	100	OH	22	12	10.4
	190	OH	21	12	10.4
	300	OH	18	12	10.4
	100	WV	19	12	10.4
	180	WV	19	12	10.4
	300	WV	18	12	10.4
163.5	100	OH	5	12	10.4
	190	OH	10	12	10.4
	300	OH	15	12	10.4
	100	WV	6	12	10.4
	200	WV	10	12	10.4
	300	WV	15	12	10.4
164.0	100	OH	5	12.5	10.4
	200	OH	16	12.5	10.4
	300	OH	17	12.5	10.4
	100	WV	16	12	10.2
	210	WV	16	12	10.2
	300	WV	16	12	10.2
164.5	100	OH	9	12.5	10.2
	200	OH	16	12.5	10.2
	300	OH	19	12.5	10.2
	100	WV	5	12.5	10.2
	200	WV	10	12.5	10.2
	300	WV	15	12.5	10.2

continued

Table 1. Continued.

River Mile	Distance from Shoreline (ft.)	State Shoreline	Depth (ft.)	Temperature (°C)	Dissolved Oxygen (ppm)
165.0	100	OH	6	12.5	10.8
	200	OH	22	12.5	10.8
	300	OH	21	12.5	10.8
	100	WV	8	12	10.8
	200	WV	9	12	10.8
	300	WV	11	12	10.8
165.5	100	OH	8	12.5	10.6
	180	OH	15	12.5	10.6
	315	OH	19	12.5	10.6
	100	WV	10	12.5	10.6
	180	WV	17	12.5	10.6
	300	WV	21	12.5	10.6
166.0	100	OH	13	12.5	10.6
	200	OH	13	12.5	10.6
	300	OH	15	12.5	10.6
	100	WV	17	12.5	10.6
	200	WV	20	12.5	10.6
	300	WV	25	12.5	10.6
166.5	100	OH	12	12.5	10.6
	200	OH	12	12.5	10.6
	300	OH	13	12.5	10.6
	100	WV	20	12.5	10.6
	210	WV	16	12.5	10.6
	300	WV	18	12.5	10.6
167.0	100	OH	16	12.5	10.6
	200	OH	16	12.5	10.6
	300	OH	16	12.5	10.6
	100	WV	10	12.0	10.5
	200	WV	13	12.0	10.5
	300	WV	12	12.0	10.5

continued

Table 1. Continued.

River Mile	Distance to Shoreline (ft.)	State Shoreline	Depth (ft.)	Temperature (°C)	Dissolved Oxygen (ppm)
167.6	100	OH	12	12	10.4
	200	OH	16	12	10.4
	300	OH	16	12	10.4
	100	WV	9	12	10.2
	200	WV	18	12	10.2
	300	WV	20	12	10.2
168.0	100	OH	9	12	10.2
	200	OH	12	12	10.2
	300	OH	17	12	10.2
	100	WV	13	12	10.4
	200	WV	16	12	10.4
	300	WV	17	12	10.4
168.5	100	OH	5	12	10.4
	200	OH	15	12	10.4
	300	OH	15	12	10.4
	100	WV	8	12	10.2
	200	WV	10	12	10.2
	300	WV	14	12	10.2
168.6	head of island	-	-	-	-
169.0	100 off OH	-	11	12	10.4
	mid-channel	-	18	12	10.4
	100 off island	-	14	12	10.4
	100 off WV	-	10	12	10.2
	mid-channel	-	9	12	10.2
	100 off island	-	27	12	10.2
169.5	100 off OH	-	10	11	10.0
	mid-channel	-	19	11	10.0
	100 off island	-	26	11	10.0
	100 off WV	-	15	12	10.2
	mid-channel	-	8	12	10.2
	100 off island	-	16	12	10.2

continued

Table 1. Continued.

River Mile	Distance from Shoreline (ft.)	State Shoreline	Depth (ft.)	Temperature (°C)	Dissolved Oxygen (ppm)
170.0	100 off OH	-	19	11.5	10.0
	mid-channel	-	18	11.5	10.0
	100 off island	-	11	11.5	10.0
	100 off WV	-	13	12.2	10.0
	mid-channel	-	20	12.2	10.0
	100 off island	-	16	12.2	10.0
170.5	100 off OH	-	15	10	10.5
	mid-channel	-	19	10	10.5
	100 off island	-	25	10	10.5
	100 off WV	-	17	12	10.2
	mid-channel	-	16	12	10.2
	100 off island	-	13	12	10.2
171.0	100 off OH	-	11	11	10.6
	mid-channel	-	17	11	10.6
	100 off island	-	16	11	10.6
	100 off WV	-	15	12	10.4
	mid-channel	-	17	12	10.4
	100 off island	-	5	12	10.4
171.5	100 off OH	-	15	10	10.5
	mid-channel	-	19	10	10.5
	100 off island	-	17	10	10.5
	100 off WV	-	15	12	10.6
	mid-channel	-	15	12	10.6
	100 off island	-	7	12	10.6
171.7	100 off WV	-	19	11	10.4
	mid-channel	-	19	11	10.4
	100 off island	-	18	11	10.4
171.8	toe of island	-	13	11	10.4
172.5	50 (mouth of Muskingum R.)	OH	7	9.5	11.0

Table 2. Distribution of Brailed Unionids

River Mile	Distance from Shoreline (ft)	State Shoreline	Species	Number	Age (yrs)	Length (mm)	Live, Dead
162.5	100		<i>Amblema p. plicata</i>	1	7	87	L
163.0	100	WV	<i>Amblema p. plicata</i>	1	7	77	L
163.5	100	OH	<i>Quadrula quadrula</i>	1	9	67	L
163.5	300	WV	<i>Amblema p. plicata</i>	1	7	85	L
			<i>Quadrula quadrula</i>	1	8	73	L
164.0	100	WV	<i>Lampsilis ventricosa</i>	1	7	107	L
165.0	200	WV	<i>Lasmigona complanata</i>	1	8	200	L
165.5	100	WV	<i>Quadrula quadrula</i>	1	7	62	L
167.6	100	OH	<i>Amblema p. plicata</i>	1	7	78	L
168.0	100	WV	<i>Amblema p. plicata</i>	1	-	-	D
	200	WV	<i>Amblema p. plicata</i>	1	8	76	L
	300	WV	<i>Amblema p. plicata</i>	1	8	87	L
168.5	100	OH	<i>Quadrula metanevra</i>	1	4	37	L
170.5	100 off WV	-	<i>Amblema p. plicata</i>	1	9	78	L
171.5	100 off island	WV	<i>Quadrula quadrula</i>	2	10,10	68,71	L,L

OHIO

Washington
Co.

Willow Island
Locks & Dams

◆ 162

◆ 163

◆ 164

◆ 165



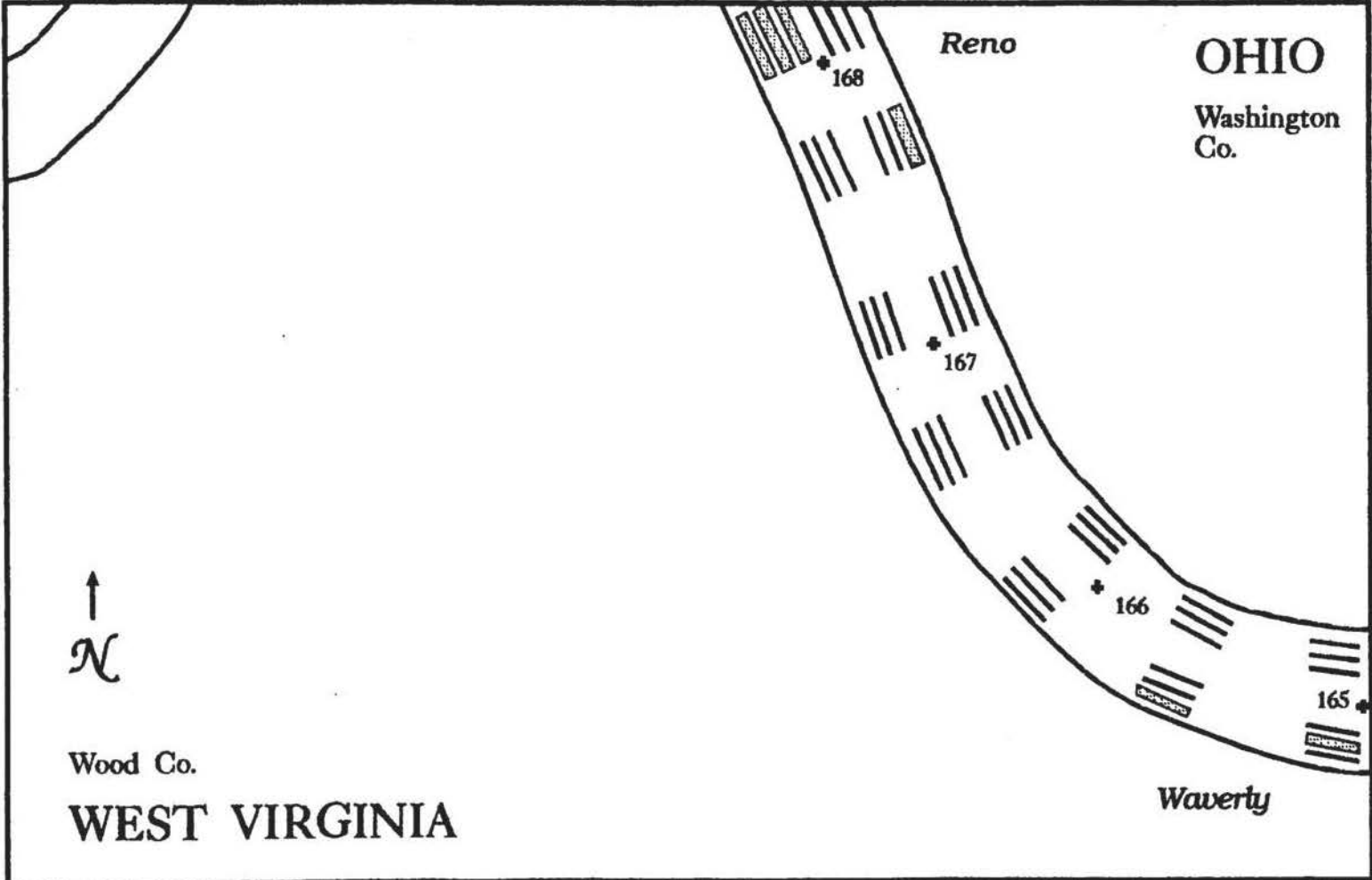
Wood
Co. Pleasants
Co.

WEST VIRGINIA

**ECOLOGICAL
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Figure 1. Brail Transect Locations, November 1990.
Stippled Transects Contained Unionids.

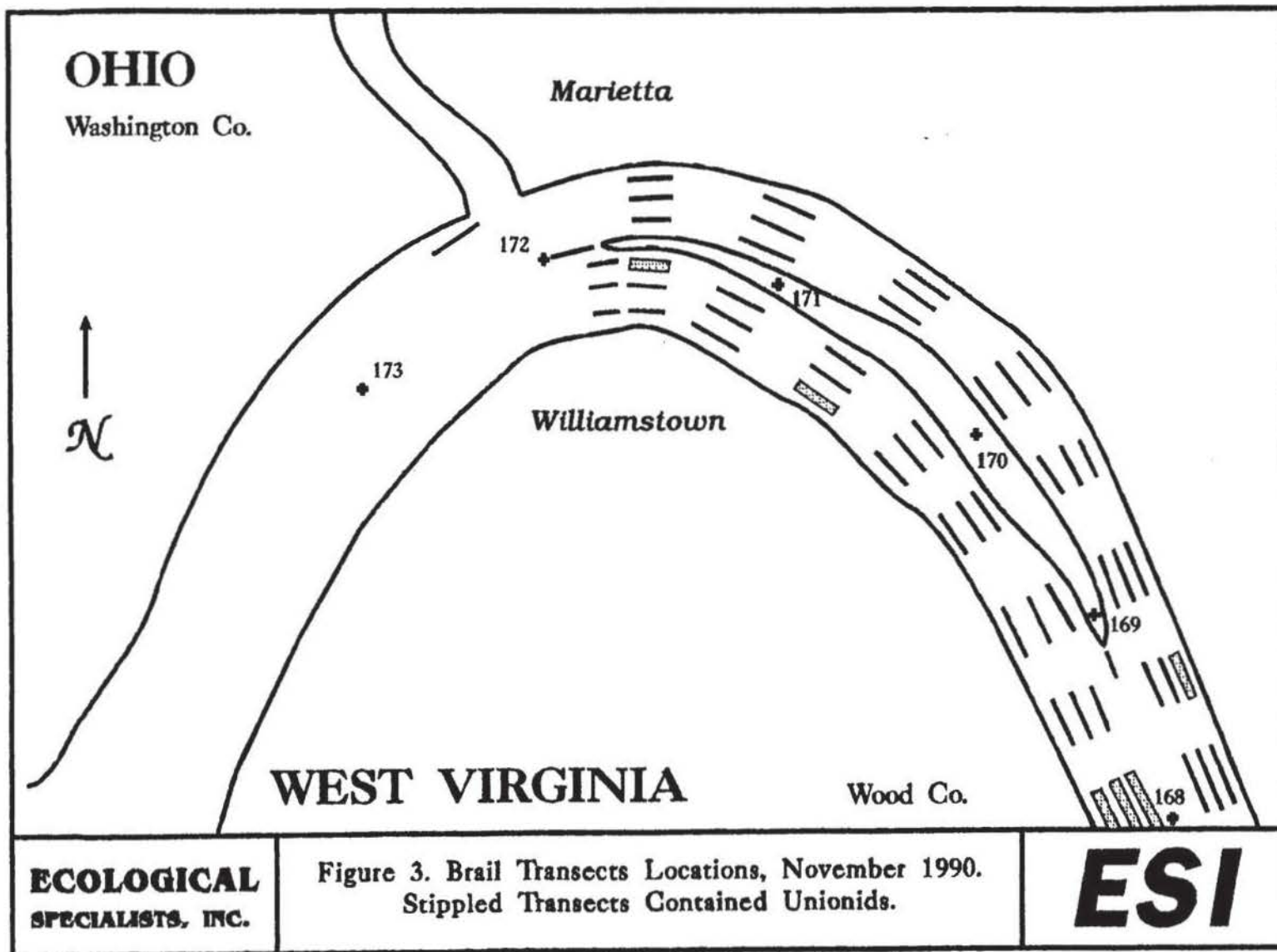
ESI



**ECOLOGICAL
SPECIALISTS, INC.**

Figure 2. Brail Transect Locations, November 1990.
Stippled Transects Contained Unionids.

ESI



12/12/90

Appendix A
Unionid Data Sheets

Date : RM 10 Date : 11/6/90 Stream name : Ohio River Stream system : _____

Collector : HD, TW Locality : ORM 162.5

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	_____	_____	_____	_____
Alasmidonta marginata	_____	_____	_____	_____
Alasmidonta viridis	_____	_____	_____	_____
Amblyema plicata plicata	_____	_____	_____	_____
Anodonta grandis grandis	_____	_____	_____	_____
Anodonta grandis corpulenta	_____	_____	_____	_____
Anodonta imbecillis	_____	_____	_____	_____
Anodonta suborbiculata	_____	_____	_____	_____
Anodontoides ferussacianus	_____	_____	_____	_____
Cyclonaias tuberculatus	_____	_____	_____	_____
Cyprogenia stegaria	_____	_____	_____	_____
Elliptio crassidens crassidens	_____	_____	_____	_____
Elliptio dilatata	_____	_____	_____	_____
Epioblasma obliquata perobliqua	_____	_____	_____	_____
Epioblasma rangiana	_____	_____	_____	_____
Epioblasma triquetra	_____	_____	_____	_____
Fusconaia ebena	_____	_____	_____	_____
Fusconaia flava	_____	_____	_____	_____
Fusconaia maculata maculata	_____	_____	_____	_____
Lampsilis fasciola	_____	_____	_____	_____
Lampsilis ovata	_____	_____	_____	_____
Lampsilis radiata luteola	_____	_____	_____	_____
Lampsilis ventricosa	_____	_____	_____	_____
Lasmigona complanata	_____	_____	_____	_____
Lasmigona compressa	_____	_____	_____	_____
Lasmigona costata	_____	_____	_____	_____
Leptodea fragilis	_____	_____	_____	_____
Ligumia nasuta	_____	_____	_____	_____
Ligumia recta	_____	_____	_____	_____
Magnonaias nervosa	_____	_____	_____	_____
Obliquaria reflexa	_____	_____	_____	_____
Obovaria subrotunda	_____	_____	_____	_____
Plethobasus cyphus	_____	_____	_____	_____
Pleurobema clava	_____	_____	_____	_____
Pleurobema cordatum	_____	_____	_____	_____
Pleurobema sintoxia	_____	_____	_____	_____
Potamilus alatus	_____	_____	_____	_____
Potamilus ohioensis	_____	_____	_____	_____
Ptychobranhus fasciolaris	_____	_____	_____	_____
Quadrula cylindrica cylindrica	_____	_____	_____	_____
Quadrula setanevra	_____	_____	_____	_____
Quadrula nodulata	_____	_____	_____	_____
Quadrula pustulosa	_____	_____	_____	_____
Quadrula quadrula	_____	_____	_____	_____
Simpsonaias ambigua	_____	_____	_____	_____
Strophitus undulatus undulatus	_____	_____	_____	_____
Toxolasma lividus	_____	_____	_____	_____
Toxolasma parva	_____	_____	_____	_____
Tritogonia verrucosa	_____	_____	_____	_____
Truncilla donaciformis	_____	_____	_____	_____
Truncilla truncata	_____	_____	_____	_____
Unionerus tetralasmus	_____	_____	_____	_____
Villosa fabalis	_____	_____	_____	_____
Villosa iris iris	_____	_____	_____	_____

length
87 Age 7

length
62 Age 5

Site # : _____ Date : 11/6/90 Stream name : Ohio Stream system : _____

Collector : HD, TW Locality : WV Shore 100' ft from bank ORM 163

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	_____	_____	_____	_____
Alasmidonta marginata	_____	_____	_____	_____
Alasmidonta viridis	_____	_____	_____	_____
Amblesma plicata plicata	<u>1</u> <u>27</u> <u>3</u>	_____	_____	_____
Anodonta grandis grandis	_____	_____	_____	_____
Anodonta grandis corpulenta	_____	_____	_____	_____
Anodonta imbecillis	_____	_____	_____	_____
Anodonta suborbiculata	_____	_____	_____	_____
Anodontoides ferussacianus	_____	_____	_____	_____
Cyclonaias tuberculatus	_____	_____	_____	_____
Cyprogenia stegaria	_____	_____	_____	_____
Elliptio crassidens crassidens	_____	_____	_____	_____
Elliptio dilatata	_____	_____	_____	_____
Epioblasma obliquata perobliqua	_____	_____	_____	_____
Epioblasma rangiana	_____	_____	_____	_____
Epioblasma triquetra	_____	_____	_____	_____
Fusconaia ebena	_____	_____	_____	_____
Fusconaia flava	_____	_____	_____	_____
Fusconaia maculata maculata	_____	_____	_____	_____
Lampsilis fasciola	_____	_____	_____	_____
Lampsilis ovata	_____	_____	_____	_____
Lampsilis radiata luteola	_____	_____	_____	_____
Lampsilis ventricosa	_____	_____	_____	_____
Lasmigona complanata	_____	_____	_____	_____
Lasmigona compressa	_____	_____	_____	_____
Lasmigona costata	_____	_____	_____	_____
Leptodea fragilis	_____	_____	_____	_____
Ligumia nasuta	_____	_____	_____	_____
Ligumia recta	_____	_____	_____	_____
Magnonaias nervosa	_____	_____	_____	_____
Obliquaria reflexa	_____	_____	_____	_____
Obovaria subrotunda	_____	_____	_____	_____
Pleurobema cyphus	_____	_____	_____	_____
Pleurobema clava	_____	_____	_____	_____
Pleurobema cordatum	_____	_____	_____	_____
Pleurobema sintoxia	_____	_____	_____	_____
Potamilus alatus	_____	_____	_____	_____
Potamilus ohioensis	_____	_____	_____	_____
Ptychobrancheus fasciolaris	_____	_____	_____	_____
Quadrula cylindrica cylindrica	_____	_____	_____	_____
Quadrula metanevra	_____	_____	_____	_____
Quadrula nodulata	_____	_____	_____	_____
Quadrula pustulosa	_____	_____	_____	_____
Quadrula quadrula	_____	_____	_____	_____
Simpsonaias ambigua	_____	_____	_____	_____
Strophitus undulatus undulatus	_____	_____	_____	_____
Toxolasma lividus	_____	_____	_____	_____
Toxolasma parva	_____	_____	_____	_____
Tritogonia verrucosa	_____	_____	_____	_____
Truncilla donaciformis	_____	_____	_____	_____
Truncilla truncata	_____	_____	_____	_____
Unioerus tetralasmus	_____	_____	_____	_____
Villosa fabalis	_____	_____	_____	_____
Villosa iris iris	_____	_____	_____	_____

Date # : _____ Date : 11/6/90 Stream name : Ohio Stream system : _____

Collector : AD, TW Locality : 163-S Ohio R. Shave 100ft offshore

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	-----	-----	-----	-----
Alasaidonta marginata	-----	-----	-----	-----
Alasaidonta viridis	-----	-----	-----	-----
Ablema plicata plicata	-----	-----	-----	-----
Anodonta grandis grandis	-----	-----	-----	-----
Anodonta grandis corpulenta	-----	-----	-----	-----
Anodonta imbecillis	-----	-----	-----	-----
Anodonta suborbiculata	-----	-----	-----	-----
Anodontoides ferussacianus	-----	-----	-----	-----
Cyclonaias tuberculatus	-----	-----	-----	-----
Cyprogenia stegaria	-----	-----	-----	-----
Elliptio crassidens crassidens	-----	-----	-----	-----
Elliptio dilatata	-----	-----	-----	-----
Epioblasma obliquata perobliqua	-----	-----	-----	-----
Epioblasma rangiana	-----	-----	-----	-----
Epioblasma triquetra	-----	-----	-----	-----
Fusconaia ebena	-----	-----	-----	-----
Fusconaia flava	-----	-----	-----	-----
Fusconaia maculata maculata	-----	-----	-----	-----
Lampsilis fasciola	-----	-----	-----	-----
Lampsilis ovata	-----	-----	-----	-----
Lampsilis radiata luteola	-----	-----	-----	-----
Lampsilis ventricosa	-----	-----	-----	-----
Lasmigona complanata	-----	-----	-----	-----
Lasmigona compressa	-----	-----	-----	-----
Lasmigona costata	-----	-----	-----	-----
Leptodea fragilis	-----	-----	-----	-----
Ligumia nasuta	-----	-----	-----	-----
Ligumia recta	-----	-----	-----	-----
Magnonaias nervosa	-----	-----	-----	-----
Moliquaria reflexa	-----	-----	-----	-----
Obovaria subrotunda	-----	-----	-----	-----
Plethobasus cyphus	-----	-----	-----	-----
Pleurobema clava	-----	-----	-----	-----
Pleurobema cordatum	-----	-----	-----	-----
Pleurobema sintoxia	-----	-----	-----	-----
Potamilus alatus	-----	-----	-----	-----
Potamilus ohioensis	-----	-----	-----	-----
Ptychobranthus fasciolaris	-----	-----	-----	-----
Quadrula cylindrica cylindrica	-----	-----	-----	-----
Quadrula setanevra	-----	-----	-----	-----
Quadrula nodulata	-----	-----	-----	-----
Quadrula pustulosa	-----	-----	-----	-----
Quadrula quadrula	1 ⁶ bT A 9	-----	-----	-----
Simpsonaias ambigua	-----	-----	-----	-----
Strophitus undulatus undulatus	-----	-----	-----	-----
Toxolasma lividus	-----	-----	-----	-----
Toxolasma parva	-----	-----	-----	-----
Tritogonia verrucosa	-----	-----	-----	-----
Truncilla donaciformis	-----	-----	-----	-----
Truncilla truncata	-----	-----	-----	-----
Unioemerus tetralasus	-----	-----	-----	-----
Villosa fabalis	-----	-----	-----	-----
Villosa iris iris	-----	-----	-----	-----

Site # : _____ Date : 11/6/50 Stream name : Ohio R Stream system : _____

Collector : HD, TW Locality : ORM 163.5 WV shore 300 ft from bank

Range : _____ Township : _____ County : _____ Comments : _____

Species	#	Living	L	A	freshdead	weathered	subfossil
Actinonaias ligamentina carinata							
Alasmidonta marginata							
Alasmidonta viridis							
Ablema plicata plicata	<u>1</u>	<u>85</u>		<u>7</u>			
Anodonta grandis grandis							
Anodonta grandis corpulenta							
Anodonta imbecillis							
Anodonta suborbiculata							
Anodontoides ferussacianus							
Cyclonaias tuberculatus							
Cyprogenia stegaria							
Elliptio crassidens crassidens							
Elliptio dilatata							
Epioblasma obliquata perobliqua							
Epioblasma rangiana							
Epioblasma triquetra							
Fusconaias ebena							
Fusconaias flava							
Fusconaias maculata maculata							
Lampsilis fasciola							
Lampsilis ovata							
Lampsilis radiata luteola							
Lampsilis ventricosa							
Lasmigona complanata							
Lasmigona compressa							
Lasmigona costata							
Leptodea fragilis							
Ligumia nasuta							
Ligumia recta							
Magnonaias nervosa							
Obliquaria reflexa							
Obovaria subrotunda							
Pleurobema cyphus							
Pleurobema clava							
Pleurobema cordatum							
Pleurobema sintoxia							
Potamilus alatus							
Potamilus ohioensis							
Ptychobranhus fasciolaris							
Quadrula cylindrica cylindrica							
Quadrula metanevra							
Quadrula nodulata							
Quadrula pustulosa							
Quadrula quadrula	<u>1</u>	<u>73</u>		<u>8</u>			
Simpsonaias ambigua							
Strophitus undulatus undulatus							
Toxolasma lividus							
Toxolasma parva							
Tristogonia verrucosa							
Truncilla donaciformis							
Truncilla truncata							
Unioemerus tetralasmus							
Villosa fabalis							
Villosa iris iris							

Site #: _____ Date: 11/6/90 Stream name: Ohio R Stream system: _____

Collector: HO, TW Locality: ORM 164 WV bank 100ft from shore

Range: _____ Township: _____ County: _____ Comments: _____

Species	living			freshdead	weathered	subfossil
	#	L	A			
Actinonaias ligamentina carinata						
Alasmidonta marginata						
Alasmidonta viridis						
Amblema plicata plicata						
Anodonta grandis grandis						
Anodonta grandis corpulenta						
Anodonta imbecillis						
Anodonta suborbiculata						
Anodontoides ferussacianus						
Cyclonaias tuberculatus						
Cyprogenia stegaria						
Elliptio crassidens crassidens						
Elliptio dilatata						
Epioblasma obliquata perobliqua						
Epioblasma rangiana						
Epioblasma triquetra						
Fusconaias ebena						
Fusconaias flava						
Fusconaias maculata maculata						
Laeapsilis fasciola						
Laeapsilis ovata						
Laeapsilis radiata luteola						
Laeapsilis ventricosa	1	107	7			
Lasmigona complanata						
Lasmigona compressa						
Lasmigona costata						
Leptodea fragilis						
Ligumia nasuta						
Ligumia recta						
Magnonaias nervosa						
Obliquaria reflexa						
Obovaria subrotunda						
Pleurobema cyphus						
Pleurobema clava						
Pleurobema cordatum						
Pleurobema sintoxia						
Potamilus alatus						
Potamilus ohioensis						
Ptychobranthus fasciolaris						
Quadrula cylindrica cylindrica						
Quadrula setanavra						
Quadrula nodulata						
Quadrula pustulosa						
Quadrula quadrula						
Simpsonaias ambigua						
Strophitus undulatus undulatus						
Toxolasma lividus						
Toxolasma parva						
Tritogonia verrucosa						
Truncilla donaciformis						
Truncilla truncata						
Unioeris tetralasmus						
Villosa fabalis						
Villosa iris iris						

Collector : HD, TW Locality : 165 W.V. Shore 200ft off bank

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	-----	-----	-----	-----
Alasaidonta marginata	-----	-----	-----	-----
Alasaidonta viridis	-----	-----	-----	-----
Amblyema plicata plicata	-----	-----	-----	-----
Anodonta grandis grandis	-----	-----	-----	-----
Anodonta grandis corpulenta	-----	-----	-----	-----
Anodonta imbecillis	-----	-----	-----	-----
Anodonta suborbiculata	-----	-----	-----	-----
Anodontooides ferussacianus	-----	-----	-----	-----
Cyclonaias tuberculatus	-----	-----	-----	-----
Cyprogenia stegaria	-----	-----	-----	-----
Elliptio crassidens crassidens	-----	-----	-----	-----
Elliptio dilatata	-----	-----	-----	-----
Epioblasma obliquata perobliqua	-----	-----	-----	-----
Epioblasma rangiana	-----	-----	-----	-----
Epioblasma triquetra	-----	-----	-----	-----
Fusconaia ebena	-----	-----	-----	-----
Fusconaia flava	-----	-----	-----	-----
Fusconaia maculata maculata	-----	-----	-----	-----
Lampsilis fasciola	-----	-----	-----	-----
Lampsilis ovata	-----	-----	-----	-----
Lampsilis radiata luteola	-----	-----	-----	-----
Lampsilis ventricosa	-----	-----	-----	-----
Lasmigona complanata	L 200 8	-----	-----	-----
Lasmigona compressa	-----	-----	-----	-----
Lasmigona costata	-----	-----	-----	-----
Leptodea fragilis	-----	-----	-----	-----
Ligumia nasuta	-----	-----	-----	-----
Ligumia recta	-----	-----	-----	-----
Magnonaias nervosa	-----	-----	-----	-----
Obliquaria reflexa	-----	-----	-----	-----
Obovaria subrotunda	-----	-----	-----	-----
Plethobasus cyphus	-----	-----	-----	-----
Pleurobema clava	-----	-----	-----	-----
Pleurobema cordatum	-----	-----	-----	-----
Pleurobema sintoxia	-----	-----	-----	-----
Potamilius alatus	-----	-----	-----	-----
Potamilius ohioensis	-----	-----	-----	-----
Ptychobranhus fasciolaris	-----	-----	-----	-----
Quadrula cylindrica cylindrica	-----	-----	-----	-----
Quadrula metanevra	-----	-----	-----	-----
Quadrula nodulata	-----	-----	-----	-----
Quadrula pustulosa	-----	-----	-----	-----
Quadrula quadrula	-----	-----	-----	-----
Simpsonaias ambigua	-----	-----	-----	-----
Strophitus undulatus undulatus	-----	-----	-----	-----
Toxolasma lividus	-----	-----	-----	-----
Toxolasma parva	-----	-----	-----	-----
Tristogonia verrucosa	-----	-----	-----	-----
Truncilla donaciformis	-----	-----	-----	-----
Truncilla truncata	-----	-----	-----	-----
Unioemerus tetralasus	-----	-----	-----	-----
Villosa fabalis	-----	-----	-----	-----

Collector : HDITW Locality : 165.5 WV Shore 100ft from bank

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	-----	-----	-----	-----
Alasaidonta marginata	-----	-----	-----	-----
Alasaidonta viridis	-----	-----	-----	-----
Amblema plicata plicata	-----	-----	-----	-----
Anodonta grandis grandis	-----	-----	-----	-----
Anodonta grandis corpulenta	-----	-----	-----	-----
Anodonta imbecillis	-----	-----	-----	-----
Anodonta suborbiculata	-----	-----	-----	-----
Anodontoides ferussacianus	-----	-----	-----	-----
Cyclonaias tuberculatus	-----	-----	-----	-----
Cyprogenia stegaria	-----	-----	-----	-----
Elliptio crassidens crassidens	-----	-----	-----	-----
Elliptio dilatata	-----	-----	-----	-----
Epioblasma obliquata perobliqua	-----	-----	-----	-----
Epioblasma rangiana	-----	-----	-----	-----
Epioblasma triquetra	-----	-----	-----	-----
Fusconaias ebena	-----	-----	-----	-----
Fusconaias flava	-----	-----	-----	-----
Fusconaias maculata maculata	-----	-----	-----	-----
Lampsilis fasciola	-----	-----	-----	-----
Lampsilis ovata	-----	-----	-----	-----
Lampsilis radiata luteola	-----	-----	-----	-----
Lampsilis ventricosa	-----	-----	-----	-----
Lasmigona complanata	-----	-----	-----	-----
Lasmigona compressa	-----	-----	-----	-----
Lasmigona costata	-----	-----	-----	-----
Leptodea fragilis	-----	-----	-----	-----
Ligumia nasuta	-----	-----	-----	-----
Ligumia recta	-----	-----	-----	-----
Magnonaias nervosa	-----	-----	-----	-----
Obliquaria reflexa	-----	-----	-----	-----
Obovaria subrotunda	-----	-----	-----	-----
Pleurobema cyphus	-----	-----	-----	-----
Pleurobema clava	-----	-----	-----	-----
Pleurobema cordatum	-----	-----	-----	-----
Pleurobema sintoxia	-----	-----	-----	-----
Potamilus alatus	-----	-----	-----	-----
Potamilus ohioensis	-----	-----	-----	-----
Ptychobranhus fasciolaris	-----	-----	-----	-----
Quadrula cylindrica cylindrica	-----	-----	-----	-----
Quadrula metanevra	-----	-----	-----	-----
Quadrula nodulata	-----	-----	-----	-----
Quadrula pustulosa	-----	-----	-----	-----
Quadrula quadrula	1 ^{LA} 627	-----	-----	-----
Simpsonaias ambigua	-----	-----	-----	-----
Strophitus undulatus undulatus	-----	-----	-----	-----
Toxolasma lividus	-----	-----	-----	-----
Toxolasma parva	-----	-----	-----	-----
Tritogonia verrucosa	-----	-----	-----	-----
Truncilla donaciformis	-----	-----	-----	-----
Truncilla truncata	-----	-----	-----	-----
Unionerus tetralasmus	-----	-----	-----	-----
Villosa fabalis	-----	-----	-----	-----

Collector : HD, TW Locality : ORM 167.6 Ohio shore 100 ft from bank

Range : _____ Township : _____ County : _____ Comments : _____

Species	living			freshdead	weathered	subfossil
	#	L	A			
<i>Actinonaias ligamentina carinata</i>						
<i>Alasmidonta marginata</i>						
<i>Alasmidonta viridis</i>						
<i>Amblema plicata plicata</i>	1	78	7			
<i>Anodonta grandis grandis</i>						
<i>Anodonta grandis corpulenta</i>						
<i>Anodonta imbecillis</i>						
<i>Anodonta suborbiculata</i>						
<i>Anodontoides ferussacianus</i>						
<i>Cyclonaias tuberculatus</i>						
<i>Cyprogenia stegaria</i>						
<i>Elliptio crassidens crassidens</i>						
<i>Elliptio dilatata</i>						
<i>Epioblasma obliquata perobliqua</i>						
<i>Epioblasma rangiana</i>						
<i>Epioblasma triquetra</i>						
<i>Fusconaia ebena</i>						
<i>Fusconaia flava</i>						
<i>Fusconaia maculata maculata</i>						
<i>Laepsilis fasciola</i>						
<i>Laepsilis ovata</i>						
<i>Laepsilis radiata luteola</i>						
<i>Laepsilis ventricosa</i>						
<i>Lasmigona complanata</i>						
<i>Lasmigona compressa</i>						
<i>Lasmigona costata</i>						
<i>Leptodea fragilis</i>						
<i>Ligumia nasuta</i>						
<i>Ligumia recta</i>						
<i>Magnonaias nervosa</i>						
<i>Obliquaria reflexa</i>						
<i>Obovaria subrotunda</i>						
<i>Pleurobema cyphus</i>						
<i>Pleurobema clava</i>						
<i>Pleurobema cordatum</i>						
<i>Pleurobema sintoxia</i>						
<i>Potamilus alatus</i>						
<i>Potamilus ohioensis</i>						
<i>Ptychobranhus fasciolaris</i>						
<i>Quadrula cylindrica cylindrica</i>						
<i>Quadrula metanevra</i>						
<i>Quadrula nodulata</i>						
<i>Quadrula pustulosa</i>						
<i>Quadrula quadrula</i>						
<i>Stapsonaias ambigua</i>						
<i>Strophitus undulatus undulatus</i>						
<i>Toxolasma lividus</i>						
<i>Toxolasma parva</i>						
<i>Tritogonia verrucosa</i>						
<i>Truncilla donaciformis</i>						
<i>Truncilla truncata</i>						
<i>Unio merus tetralasmus</i>						
<i>Villosa fabalis</i>						

Site #: _____ Date: 11/9/80 Stream name: Ohio R Stream system: _____

Collector: HD, TW Locality: ORM 168 WV shore 100 ft off

Range: _____ Township: _____ County: _____ Comments: _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	-----	-----	# ← W	-----
Alasaidonta marginata	-----	-----	-----	-----
Alasaidonta viridis	-----	-----	-----	-----
Amblema plicata plicata	-----	-----	1	-----
Anodonta grandis grandis	-----	-----	-----	-----
Anodonta grandis corpulenta	-----	-----	-----	-----
Anodonta imbecillis	-----	-----	-----	-----
Anodonta suborbiculata	-----	-----	-----	-----
Anodontoides ferussacianus	-----	-----	-----	-----
Cyclonaias tuberculatus	-----	-----	-----	-----
Cyprogenia stegaria	-----	-----	-----	-----
Elliptio crassidens crassidens	-----	-----	-----	-----
Elliptio dilatata	-----	-----	-----	-----
Epioblasma obliquata perobliqua	-----	-----	-----	-----
Epioblasma rangiana	-----	-----	-----	-----
Epioblasma triquetra	-----	-----	-----	-----
Fusconaias ebena	-----	-----	-----	-----
Fusconaias flava	-----	-----	-----	-----
Fusconaias maculata maculata	-----	-----	-----	-----
Lampsilis fasciola	-----	-----	-----	-----
Lampsilis ovata	-----	-----	-----	-----
Lampsilis radiata luteola	-----	-----	-----	-----
Lampsilis ventricosa	-----	-----	-----	-----
Lasemigona complanata	-----	-----	-----	-----
Lasemigona compressa	-----	-----	-----	-----
Lasemigona costata	-----	-----	-----	-----
Leptodea fragilis	-----	-----	-----	-----
Ligumia nasuta	-----	-----	-----	-----
Ligumia recta	-----	-----	-----	-----
Magnonaias nervosa	-----	-----	-----	-----
Obliquaria reflexa	-----	-----	-----	-----
Obovaria subrotunda	-----	-----	-----	-----
Pleurobema cyphus	-----	-----	-----	-----
Pleurobema clava	-----	-----	-----	-----
Pleurobema cordatum	-----	-----	-----	-----
Pleurobema sintoxia	-----	-----	-----	-----
Potamillus alatus	-----	-----	-----	-----
Potamillus ohioensis	-----	-----	-----	-----
Ptychobranhus fasciolaris	-----	-----	-----	-----
Quadrula cylindrica cylindrica	-----	-----	-----	-----
Quadrula metanevra	-----	-----	-----	-----
Quadrula nodulata	-----	-----	-----	-----
Quadrula pustulosa	-----	-----	-----	-----
Quadrula quadrula	-----	-----	-----	-----
Simpsonaias ambigua	-----	-----	-----	-----
Strophitus undulatus undulatus	-----	-----	-----	-----
Toxolasma lividus	-----	-----	-----	-----
Toxolasma parva	-----	-----	-----	-----
Tritogonia verrucosa	-----	-----	-----	-----
Truncilla donaciformis	-----	-----	-----	-----
Truncilla truncata	-----	-----	-----	-----
Unioemerus tetralasus	-----	-----	-----	-----
Villosa fabalis	-----	-----	-----	-----
Villosa iris iris	-----	-----	-----	-----

Date : 11/9/90 Stream name : Ohio R Stream system : _____

Collector : HD, TW Locality : ORM 168 WV shore 200 ft off

Range : _____ Township : _____ County : _____ Comments : _____

Species	living			freshdead	weathered	subfossil
	#	L	A			
<i>Actinonaias ligamentina carinata</i>						
<i>Alasaidonta marginata</i>						
<i>Alasaidonta viridis</i>						
<i>Ablema plicata plicata</i>	1	76	8			
<i>Anodonta grandis grandis</i>						
<i>Anodonta grandis corpulenta</i>						
<i>Anodonta imbecillis</i>						
<i>Anodonta suborbiculata</i>						
<i>Anodontoides ferussacianus</i>						
<i>Cyclonaias tuberculatus</i>						
<i>Cyprogenia stegaria</i>						
<i>Elliptio crassidens crassidens</i>						
<i>Elliptio dilatata</i>						
<i>Epioblasma obliquata perobliqua</i>						
<i>Epioblasma rangiana</i>						
<i>Epioblasma triquetra</i>						
<i>Fusconaia ebena</i>						
<i>Fusconaia flava</i>						
<i>Fusconaia maculata maculata</i>						
<i>Lampsilis fasciola</i>						
<i>Lampsilis ovata</i>						
<i>Lampsilis radiata luteola</i>						
<i>Lampsilis ventricosa</i>						
<i>Lasmigona complanata</i>						
<i>Lasmigona compressa</i>						
<i>Lasmigona costata</i>						
<i>Leptodea fragilis</i>						
<i>Ligumia nasuta</i>						
<i>Ligumia recta</i>						
<i>Magnonaias nervosa</i>						
<i>Obliquaria reflexa</i>						
<i>Obovaria subrotunda</i>						
<i>Plethobasus cyphus</i>						
<i>Pleurobena clava</i>						
<i>Pleurobena cordatus</i>						
<i>Pleurobena sintoxia</i>						
<i>Potamilus alatus</i>						
<i>Potamilus ohioensis</i>						
<i>Ptychobranhus fasciolaris</i>						
<i>Quadrula cylindrica cylindrica</i>						
<i>Quadrula setanetra</i>						
<i>Quadrula nodulata</i>						
<i>Quadrula pustulosa</i>						
<i>Quadrula quadrula</i>						
<i>Simpsonaias ambigua</i>						
<i>Strophitus undulatus undulatus</i>						
<i>Toxolasma lividus</i>						
<i>Toxolasma parva</i>						
<i>Tritogonia verrucosa</i>						
<i>Truncilla donaciformis</i>						
<i>Truncilla truncata</i>						
<i>Unio merus tetralasmus</i>						
<i>Villosa fabalis</i>						
<i>Villosa iris iris</i>						

Site # : _____ Date : 11/9/90 Stream name : Ohio River Stream system : _____

Collector : HD, TW Locality : ORM 168 WV shore 300 ft

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	<u>L A</u>			
Alasmodonta marginata				
Alasmodonta viridis				
Ablema plicata plicata	<u>L 87 8</u>			
Anodonta grandis grandis				
Anodonta grandis corpulenta				
Anodonta imbecillis				
Anodonta suborbiculata				
Anodontoides ferussacianus				
Cyclonaias tuberculatus				
Cyprogenia stegaria				
Elliptio crassidens crassidens				
Elliptio dilatata				
Epioblasma obliquata perobliqua				
Epioblasma rangiana				
Epioblasma triquetra				
Fusconaia ebena				
Fusconaia flava				
Fusconaia maculata maculata				
Lampsilis fasciola				
Lampsilis ovata				
Lampsilis radiata luteola				
Lampsilis ventricosa				
Lasmigona complanata				
Lasmigona compressa				
Lasmigona costata				
Leptodea fragilis				
Ligumia nasuta				
Ligumia recta				
Magnonaias nervosa				
Obliquaria reflexa				
Obovaria subrotunda				
Plethobasus cyphus				
Pleurobema clava				
Pleurobema cordatum				
Pleurobema sintoxia				
Potamilus alatus				
Potamilus ohioensis				
Ptychobranthus fasciolaris				
Quadrula cylindrica cylindrica				
Quadrula metanevra				
Quadrula nodulata				
Quadrula pustulosa				
Quadrula quadrula				
Simpsonaias aabigua				
Strophitus undulatus undulatus				
Toxolasma lividus				
Toxolasma parva				
Tritogonia verrucosa				
Truncilla donaciformis				
Truncilla truncata				
Unio merus tetralasus				
Villosa fabalis				
Villosa iris iris				

Site # : _____ Date : 11/9/90 Stream name : OHIO R. Stream system : _____

Collector : HD, TN Locality : 168.5 Ohio Shore 100 ft from bank

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	# L A	-----	-----	-----
Alasaidonta marginata	-----	-----	-----	-----
Alasaidonta viridis	-----	-----	-----	-----
Amblyema plicata plicata	-----	-----	-----	-----
Anodonta grandis grandis	-----	-----	-----	-----
Anodonta grandis corpulenta	-----	-----	-----	-----
Anodonta imbecillis	-----	-----	-----	-----
Anodonta suborbiculata	-----	-----	-----	-----
Anodontoides ferussacianus	-----	-----	-----	-----
Cyclonaias tuberculatus	-----	-----	-----	-----
Cyprogenia stegaria	-----	-----	-----	-----
Elliptio crassidens crassidens	-----	-----	-----	-----
Elliptio dilatata	-----	-----	-----	-----
Epioblasma obliquata perobliqua	-----	-----	-----	-----
Epioblasma rangiana	-----	-----	-----	-----
Epioblasma triquetra	-----	-----	-----	-----
Fusconaia ebena	-----	-----	-----	-----
Fusconaia flava	-----	-----	-----	-----
Fusconaia maculata maculata	-----	-----	-----	-----
Lampsilis fasciola	-----	-----	-----	-----
Lampsilis ovata	-----	-----	-----	-----
Lampsilis radiata luteola	-----	-----	-----	-----
Lampsilis ventricosa	-----	-----	-----	-----
Lasmigona complanata	-----	-----	-----	-----
Lasmigona compressa	-----	-----	-----	-----
Lasmigona costata	-----	-----	-----	-----
Leptodea fragilis	-----	-----	-----	-----
Ligumia nasuta	-----	-----	-----	-----
Ligumia recta	-----	-----	-----	-----
Magnonaias nervosa	-----	-----	-----	-----
Obliquaria reflexa	-----	-----	-----	-----
Obovaria subrotunda	-----	-----	-----	-----
Pleurobema cyphus	-----	-----	-----	-----
Pleurobema clava	-----	-----	-----	-----
Pleurobema cordatum	-----	-----	-----	-----
Pleurobema sintoxia	-----	-----	-----	-----
Potamilus alatus	-----	-----	-----	-----
Potamilus ohioensis	-----	-----	-----	-----
Ptychobranthus fasciolaris	-----	-----	-----	-----
Quadrula cylindrica cylindrica	-----	-----	-----	-----
Quadrula metanevra	1 37 4	-----	-----	-----
Quadrula nodulata	-----	-----	-----	-----
Quadrula pustulosa	-----	-----	-----	-----
Quadrula quadrula	-----	-----	-----	-----
Stapsonaias ambigua	-----	-----	-----	-----
Strophitus undulatus undulatus	-----	-----	-----	-----
Toxolasma lividus	-----	-----	-----	-----
Toxolasma parva	-----	-----	-----	-----
Tritogonia verrucosa	-----	-----	-----	-----
Truncilla donaciformis	-----	-----	-----	-----
Truncilla truncata	-----	-----	-----	-----
Unionerus tetralasmus	-----	-----	-----	-----
Villosa fabalis	-----	-----	-----	-----
Villosa iris iris	-----	-----	-----	-----

Date: 11/9/90 Stream name: Ohio River Stream system: _____
 Collector: HD, JW Locality: ORM 170.5 WV side channel
 Range: _____ Township: _____ County: _____ Comments: _____

Species	living	freshdead	weathered	subfossil
<i>Actinonaias ligamentina carinata</i>	-----	-----	-----	-----
<i>Alasaidonta marginata</i>	-----	-----	-----	-----
<i>Alasaidonta viridis</i>	-----	-----	-----	-----
<i>Alpheia plicata plicata</i>	<u>1 78 9</u>	-----	-----	-----
<i>Anodonta grandis grandis</i>	-----	-----	-----	-----
<i>Anodonta grandis corpulenta</i>	-----	-----	-----	-----
<i>Anodonta iabecillis</i>	-----	-----	-----	-----
<i>Anodonta suborbiculata</i>	-----	-----	-----	-----
<i>Anodontoides ferussacianus</i>	-----	-----	-----	-----
<i>Cyclonaias tuberculatus</i>	-----	-----	-----	-----
<i>Cyprogenia stegaria</i>	-----	-----	-----	-----
<i>Elliptio crassidens crassidens</i>	-----	-----	-----	-----
<i>Elliptio dilatata</i>	-----	-----	-----	-----
<i>Epioblasma obliquata perobliqua</i>	-----	-----	-----	-----
<i>Epioblasma rangiana</i>	-----	-----	-----	-----
<i>Epioblasma triquetra</i>	-----	-----	-----	-----
<i>Fusconaia ebena</i>	-----	-----	-----	-----
<i>Fusconaia flava</i>	-----	-----	-----	-----
<i>Fusconaia maculata maculata</i>	-----	-----	-----	-----
<i>Lampsilis fasciola</i>	-----	-----	-----	-----
<i>Lampsilis ovata</i>	-----	-----	-----	-----
<i>Lampsilis radiata luteola</i>	-----	-----	-----	-----
<i>Lampsilis ventricosa</i>	-----	-----	-----	-----
<i>Lasmigona complanata</i>	-----	-----	-----	-----
<i>Lasmigona compressa</i>	-----	-----	-----	-----
<i>Lasmigona costata</i>	-----	-----	-----	-----
<i>Leptodea fragilis</i>	-----	-----	-----	-----
<i>Ligumia nasuta</i>	-----	-----	-----	-----
<i>Ligumia recta</i>	-----	-----	-----	-----
<i>Lagnonaias nervosa</i>	-----	-----	-----	-----
<i>Obliquaria reflexa</i>	-----	-----	-----	-----
<i>Obovaria subrotunda</i>	-----	-----	-----	-----
<i>Plethobasus cyphus</i>	-----	-----	-----	-----
<i>Pleurobema clava</i>	-----	-----	-----	-----
<i>Pleurobema cordatum</i>	-----	-----	-----	-----
<i>Pleurobema sintoxia</i>	-----	-----	-----	-----
<i>Potamilus alatus</i>	-----	-----	-----	-----
<i>Potamilus ohioensis</i>	-----	-----	-----	-----
<i>Ptychobranhus fasciolaris</i>	-----	-----	-----	-----
<i>Quadrula cylindrica cylindrica</i>	-----	-----	-----	-----
<i>Quadrula setanevra</i>	-----	-----	-----	-----
<i>Quadrula nodulata</i>	-----	-----	-----	-----
<i>Quadrula pustulosa</i>	-----	-----	-----	-----
<i>Quadrula quadrula</i>	-----	-----	-----	-----
<i>Simpsonaias ambigua</i>	-----	-----	-----	-----
<i>Strophitus undulatus undulatus</i>	-----	-----	-----	-----
<i>Toxolasma lividus</i>	-----	-----	-----	-----
<i>Toxolasma parva</i>	-----	-----	-----	-----
<i>Tritogonia verrucosa</i>	-----	-----	-----	-----
<i>Truncilla donaciformis</i>	-----	-----	-----	-----
<i>Truncilla truncata</i>	-----	-----	-----	-----
<i>Unioerus tetralasmus</i>	-----	-----	-----	-----
<i>Villosa fabalis</i>	-----	-----	-----	-----
<i>Villosa iris iris</i>	-----	-----	-----	-----

Site # : _____ Date : 11/5/50 Stream name : OHIO R Stream system : _____

Collector : HD, TW Locality : ORM 171.5 NV side channel

Range : _____ Township : _____ County : _____ Comments : _____

Species	living	freshdead	weathered	subfossil
Actinonaias ligamentina carinata	-----	-----	-----	-----
Alasaidonta marginata	-----	-----	-----	-----
Alasaidonta viridis	-----	-----	-----	-----
Amblesma plicata plicata	-----	-----	-----	-----
Anodonta grandis grandis	-----	-----	-----	-----
Anodonta grandis corpulenta	-----	-----	-----	-----
Anodonta imbecillis	-----	-----	-----	-----
Anodonta suborbiculata	-----	-----	-----	-----
Anodontoides ferussacianus	-----	-----	-----	-----
Cyclonaias tuberculatus	-----	-----	-----	-----
Cyprogenia stegaria	-----	-----	-----	-----
Elliptio crassidens crassidens	-----	-----	-----	-----
Elliptio dilatata	-----	-----	-----	-----
Epioblasma obliquata perobliqua	-----	-----	-----	-----
Epioblasma rangiana	-----	-----	-----	-----
Epioblasma triquetra	-----	-----	-----	-----
Fusconaia ebena	-----	-----	-----	-----
Fusconaia flava	-----	-----	-----	-----
Fusconaia maculata maculata	-----	-----	-----	-----
Lampsilis fasciola	-----	-----	-----	-----
Lampsilis ovata	-----	-----	-----	-----
Lampsilis radiata luteola	-----	-----	-----	-----
Lampsilis ventricosa	-----	-----	-----	-----
Lasmigona complanata	-----	-----	-----	-----
Lasmigona compressa	-----	-----	-----	-----
Lasmigona costata	-----	-----	-----	-----
Leptodea fragilis	-----	-----	-----	-----
Ligumia nasuta	-----	-----	-----	-----
Ligumia recta	-----	-----	-----	-----
Magnonaias nervosa	-----	-----	-----	-----
Obliquaria reflexa	-----	-----	-----	-----
Obovaria subrotunda	-----	-----	-----	-----
Pleurobema cyphus	-----	-----	-----	-----
Pleurobema clava	-----	-----	-----	-----
Pleurobema cordatum	-----	-----	-----	-----
Pleurobema sintoxia	-----	-----	-----	-----
Potamilus alatus	-----	-----	-----	-----
Potamilus ohioensis	-----	-----	-----	-----
Ptychobranhus fasciolaris	-----	-----	-----	-----
Quadrula cylindrica cylindrica	-----	-----	-----	-----
Quadrula setanevra	-----	-----	-----	-----
Quadrula nodulata	-----	-----	-----	-----
Quadrula pustulosa	-----	71 10	-----	-----
Quadrula quadrula	2	68 10	-----	-----
Simpsonaias ambigua	-----	-----	-----	-----
Strophitus undulatus undulatus	-----	-----	-----	-----
Toxolasma lividus	-----	-----	-----	-----
Toxolasma parva	-----	-----	-----	-----
Tritogonia verrucosa	-----	-----	-----	-----
Truncilla donaciformis	-----	-----	-----	-----
Truncilla truncata	-----	-----	-----	-----
Unionerus tetralasmus	-----	-----	-----	-----
Villosa fabalis	-----	-----	-----	-----
Villosa iris iris	-----	-----	-----	-----