

SURVEY OF ENDANGERED AND THREATENED MOLLUSKS
IN TENNESSEE STREAMS

State: Tennessee

Project No. E-2

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This work was partially financed with grant-in-aid
funds under Section 6 of the Endangered Species Act
of 1973 (P.L. 93-205)

Project Dates: July 1, 1979 - December 31, 1981

Preparation Date: March, 1982

PCAN No. 0064

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ABSTRACT

Cursory surveys were made of 14 Tennessee streams that potentially support endangered species of mussels and for which inadequate recent information was available. Two federally endangered mussels were found in previously unknown areas: Villosa trabalis in the Big South Fork of the Cumberland River and Fusconaia cuneolus in the Sequatchie River. Rich and diverse mussel populations were found in these rivers and also in the Wolf, West Fork Obey, and Hatchie Rivers. It is possible that more detailed sampling would reveal the presence of additional endangered mussels. Needed protection of these streams is indicated by the presence of these rich mussel populations, including existing and potential endangered species.

INTRODUCTION - PROBLEM AND NEED

There are 16 species of Tennessee mussels that are listed by the U. S. Fish and Wildlife Service as endangered. Recent limited surveys have demonstrated declines in the number and abundance of these species. Inadequate data is available concerning the status of these species in most of Tennessee's streams.

Tennessee's 16 Federally-listed endangered mussels are:

Birdwing pearly mussel	<u>Conradilla caelata</u>
Dromedary pearly mussel	<u>Dromus dromas</u>
Yellow-blossom pearly mussel	<u>Epioblasma (-Dysnomia) florentina</u> <u>curtisi</u>
Green-blossom pearly mussel	<u>Epioblasma (-Dysnomia) florentina</u> <u>florentina</u>
Tubergid-blossom pearly mussel	<u>Epioblasma (-Dysnomia) torulosa</u> <u>torulosa</u>
Turgid-blossom pearly mussel	<u>Epioblasma (-Dysnomia) turgidula</u>
Tan riffle shell pearly mussel	<u>Epioblasma (-Dysnomia) walkeri</u>
Fine-rayed pigtoe pearly mussel	<u>Fusconaia cuneolus</u>
Shiny pigtoe pearly mussel	<u>Fusconaia edgariana</u>
Pink mucket pearly mussel	<u>Lampsilis orbiculata orbiculata</u>
White warty-back pearly mussel	<u>Plethobasis cicatricosus</u>
Orange-footed pimpleback	<u>Plethobasis cooperianus</u>
Rough pigtoe pearly mussel	<u>Pleurobema plenum</u>
Cumberland monkey face pearly mussel	<u>Quadrula intermedia</u>
Appalachian monkeyface pearly mussel	<u>Quadrula sparsa</u>
Pale lilliput pearly mussel	<u>Toxolasma (-Carunculina) cylindrella</u>

There is no recent data concerning streams in which endangered mussels were once known. Little or no information is available concerning their presence in several other potential habitats.

OBJECTIVE

The objective was to survey Tennessee streams that potentially contain endangered mussels and for which inadequate recent information is available. From this somewhat cursory survey, it was expected to identify areas needing greater protection and/or to determine which areas should be surveyed in more detail.

APPROACH AND PROCEDURES

Personnel of the Tennessee Wildlife Resources Agency (TWRA) surveyed streams that potentially contained endangered species of mussels, except in those stream segments where adequate recent data was available. Streams with known previous records were sampled with greater intensity.

Surveying consisted primarily of collection of all freshly dead specimens from muskrat deposits. These were forwarded to TVA mussel specialists who have been authorized to verify and identify and report on species composition from each site at no charge to the project. A field workshop was conducted concerning systematic sampling and shipment methods. Written procedures were provided as described in the Appendix.

RESULTS AND DISCUSSION

A. Cumberland River Basin

1. Big South Fork Cumberland River

- a. Scott County: At Station Camp Creek, approximately 8 miles NW Oneida. Collected by Jerry Webb and Bill Upchurch (TWRA Regional and Area Endangered Species Coordinators, respectively) on June 13, 1980. Collected were:

Alasmidonta atropurpurea - 2
Fusconaia ebena - 6
Lampsilis fasciola - 2 fresh dead
Quadrula pustulosa - 1
Proptera alata - 5
Ptychobranchus fasciolaris - 1 fresh dead
Villosa trabalis - 1

- b. Scott County at Leatherwood Ford - Approximately eight miles west of Oneida. Collected by Jerry Webb and Bill Upchurch, June 13, 1980.

Lampsilis ovata - 1
Tritogonia verrucosa - 1

- c. Comments: Based on the excellent diversity of species found at these two sites, additional sampling of this river system is highly recommended. The Federally-listed Villosa trabalis is known to be downstream in Kentucky but is unlisted for Tennessee. Alasmidonta atropurpurea is also rather rare, though not listed. Historically, the Cumberland system had a rich mussel fauna. Other endangered species are very possible here.

2. Wolf River

- a. Fentress County: York Chapel, near York Mill.

Collected by Jerry Webb, 1980.

Alasmidonta viridis - 1 fresh dead
Anodonta grandis - 1 fresh dead
Lampsilis ovata - 1 fresh dead
Medionidus conradicus - 1 fresh dead

- b. Fentress County, at Ford approximately 0.5 mile SE Forbus and four miles NW Jamestown. Collected by Jerry Webb, 1980.

Lampsilis fasciola - 1 fresh dead
Medionidus conradicus - 2 fresh dead
Villosa iris ssp. - 1
Villosa taeniata - 1 fresh dead

- c. Pickett County; at Burnt Mill Ford approximately 0.5 mile NE Byrdstown. Collected by Jerry Webb, August 23, 1980.

*Actinonaias pectorosa - 1 live
Lampsilis fasciola - ½ valve fresh
Medionidus conradicus - 2 (1 live, 1 fresh dead)
*Ptychobranchus subtentum - 2 (1 live, 1 fresh dead)
*Villosa iris ssp. - 1 live
Villosa taeniata - 2 live

- d. Comments: Wolf River has a fairly diverse mussel fauna. Endangered species not found but could be present. Recommend continued sampling.

3. West Fork Obey River

- a. Overton County - Three miles E. Livingston, 150 yards upstream of Highway 52. Collected by Jerry Webb, 1980.

Anculosa sp. - 2 specimens

- b. Overton County - Approximately 4 miles SE Livingston, ½ mile upstream from Shiloh Church. Collected by Jerry Webb, August 23, 1980.

* * Alasmidonta viridis - 1 live
~~Lampsilis mediata~~ - 1 live
Medionidus conradicus - 3 (2 live, 1 fresh dead)
Ptychobranchus fasciolaris - 1 live
Ptychobranchus subtentum - 2 (1 live, 1 fresh dead)
*Villosa iris ssp. - 1 live

- c. Comments: West Fork Obey River was historically rich in mussel fauna, which is still indicated by this preliminary survey. More detailed sampling is warranted.

*Verified by Dr. David Stansbery, Ohio State University.

* * Actually Villosa iris, as on page 17.

4. Stones River (East and West Forks) - Rutherford County:

Collections by Tom Grelen, TWRA Regional Endangered Species Coordinator, September, 1980.

a. East Fork at Readyville:

Corbicula sp. - 11

Snails: Anculosa subglobosa - 3

b. East Fork below Walter Hill Dam:

Corbicula sp. - 3 live

c. West Fork at four crossings between Christiana and Murfreesboro:

Villosa taeniata - ½ valve fresh

Corbicula sp. - 1 live

- d. Comments: Historically, the Stones River had a diverse mussel fauna, which has apparently been reduced somewhat by the common practice of gravel dredging, pollution and reservoir inundation. John Schmidt, graduate student of Tennessee Technological University made detailed surveys of the basin during the same period; he reports 30 living mussel species in the Stones River system above Percy Priest Reservoir (see Appendix).

5. Harpeth River - Williamson County: Checked by Tom Grelen at four sites in Williamson County: (1) at confluence with Lynnwood Branch, one mile east of junction of Harpeth and West Harpeth Rivers, (2) near confluence of Lynnwood Branch, (3) and (4) main river stations.

Only relic shells found at all stations.

Comments: Only dead and relic mussel shells were also found in the Harpeth River by Steven Ahlstedt

in 1976. Therefore, the Harpeth River is given low priority for further sampling in the near future.

6. Red River - Robertson County: Checked by Tom Grelen between Port Royal and Kentucky State Line at the four road crossings on September 24, 1981. Some shoals observed, but no live or freshly dead shells collected.

Comment: The federally-listed species, Epioblasma walkeri, has been found in the Red River, but little information is available about the overall mussel population. More detailed sampling is warranted, especially to determine the need to protect for endangered species.

B. Tennessee River System

1. Little River

Blount County: River Mile 19.0, collected by Bill Yambert, 1981.

Dysnomia capsaeformis - 1 fresh dead
Fusconaia barnesiana - 4 fresh dead
Lampsilis ovata - 1/2 fresh valve

Comment: TVA biologists found Fusconaia cuneolus (Fine-rayed pigtoe pearly mussel), a federally-listed species, alive in Little River. However, few additional species were found and this river is heavily impacted by silt runoff from adjacent farmlands. No further sampling of this river is recommended at this time.

*Verified by Dr. David Stansbery, Ohio State University.

2. Daddys Creek

- a. Cumberland County at Antioch Bridge, collected by Jerry Webb on October 18, 1979.

Corbicula sp. - numerous

- b. Cumberland County at Center Bridge, collected by Dick Hurd, TWRA wildlife biologist, on October 18, 1979.

Lampsilis fasciola - 1 live
Corbicula sp. - numerous

- c. Morgan County at Devil's Breakfast Table, collected by Jerry Webb on October 18, 1979.

Corbicula sp. - numerous

- d. Comment: Not enough information concerning mussel fauna of this stream. Possible to find Villosa trabalis in this creek, but not found. Further sampling recommended.

3. Obed River

Cumberland County at Potters Ford, collected by Allen Ricks, Cumberland County Wildlife Officer, October 18, 1979.

Snail: Sphaerium sp. - 1

One old relic mussel shell found.

Comments: Obed River should contain a good freshwater mussel fauna because of its relative absence of pollution. More sampling is needed for this river due to insufficient information.

4. Sequatchie River, collections by Jerry Webb.

- a. Bledsoe County, two miles NE of Sequatchie County line,
June 26, 1980.

Lampsilis ovata - 1 fresh dead
Corbiculata sp. - 9 fresh dead

- b. Sequatchie County, two miles north of Dunlap, June 26,
1980.

Lexingtonia dolabelloides - 1
Fusconaia barnesiana - 1
Lampsilis ovata - 1 live
Villosa taeniata - 1 live
Elliptio dilatatus - 2 live
Corbicula sp. - 1

- c. Sequatchie County, approximately two miles north of
Dunlap, 100 yards below Mt. Airy Bridge, June 26, 1980.

Dysnomia capsaeformis - 1 fresh dead
Elliptio dilatatus - 3 live, 1 freshly dead
Villosa taeniata - 1 live, 1 freshly dead
Villosa vanuxemi - 1 live

Snails: Anculosa praerosa - 8
Campeloma sp. - 1

- d. Sequatchie County, two miles NE Dunlap, 1/3 mile below ford,
June 26, 1980.

Lampsilis ovata

- e. Sequatchie County, 1½ mile north of Dunlap, June 26, 1980.

Elliptio dilatatus - 2 live
Fusconaia barnesiana - 1 live
Villosa rubulosa - 1 live

- f. Sequatchie County, one mile NE Dunlap, June 26, 1980.

Elliptio dilatatus - 1 live
Lampsilis ovata - 1 freshly dead

- g. Sequatchie County, one mile below Euton Bridge, June 26,
1980.

Elliptio dilatatus - 1 live

- h. Sequatchie County, 1/2 mile east of Dunlap, 1/2 mile below Euton Bridge, June 26, 1980.

Elliptio dilatatus - 1 live
 *Fusconaia cuneolus - 1 live
Lampsilis fasciola - 1 live
Proptera olata - 1 freshly dead

- i. Marion County, 1/2 mile east of Red Hill next to bridge, July 25, 1980.

Lampsilis ovata - 1 freshly dead

- j. Marion County, two miles NE Whitwell, one mile upstream from mouth of Griffith Creek, July 25, 1980.

Lampsilis ovata - 1

- k. Comment: This survey revealed excellent population of mussel fauna, including a new location for the endangered Fusconaia cuneolus (Fine-rayed Pigtoe Pearly Mussel). Due to the inadequate prior studies and the results of this cursory study, detailed sampling of this river system is warranted.

- C. Conasauga River (tributary to Coosa River of Georgia and Alabama). Polk County, 1/2 mile below confluence with Sheeds Creek, collected by Jerry Webb, June 18, 1981.

**Lasmigona holstonia - 1 live

Comment: Inadequate information to date concerning this stream. Continue sampling Conasauga River.

*Endangered (verified by Dr. David Stansbery, Ohio State University).

**Verified by Dr. David Stansbery, Ohio State University.

D. Hatchie River - 1980 and 1981

In a complementary study, TWRA Region I Endangered Species Coordinator, Don Miller, cooperated with Don Manning (Box B, Bells, TN 38006), who had scheduled an independent survey of the Hatchie River from the McNairy-Hardeman County Line downstream to approximately two miles below the U. S. Highway 51 Bridge (Lauderdale-Tipton County Line). Brief descriptions of 29 mussel species of the Hatchie River are given in the Appendix. Mr. Manning plans publication of a more detailed report of this survey. Due to this excellent survey, the Hatchie River is given low priority for follow-up sampling, except possibly up and downstream of this survey. See also the Appendix - letter of December 4, 1981 from David Stansbery to Robert Currie.

SUMMARY AND CONCLUSIONS

Two federally endangered mussels were located in previously unknown areas.

Big South Fork Cumberland	- <u>Villosa trabablis</u>
Sequatchie River	- <u>Fusconaia cuneolus</u>

These areas should be periodically monitored to assure perpetuation, and, if possible enhancement, of these species.

Rich and diverse mussel populations were indicated by surveys

of:

Big South Fork of the Cumberland River
 Wolf River
 West Fork Obey River
 Sequatchie River
 Hatchie River

It is possible that more detailed studies would also indicate the presence of other undetected endangered mussels in some of the above river systems. Such sampling is recommended, as described in the "comments" for each stream review. In the meantime, these areas should be protected for their known mussel populations and/or potential endangered species.

These cursory surveys revealed lower than expected mussel populations at:

Red River
Daddys Creek
Obed River
Conasauga River
Stones River

Some of this could be attributed to varying knowledge by the collectors of mollusk sampling techniques. Some of these five streams could support endangered species. The priority for more detailed sampling of these streams is in the order listed, based on possible endangered species, expected mussel diversity, and lack of other studies.

It is concluded that this information will be an aid to identification of areas needing more protection and for priority of more detailed sampling.

APPENDIX

PROCEDURES FOR COLLECTING MOLLUSK SPECIMENS

Steven Ahlstedt and Bob Hatcher

October, 1979

Upon location of shoal or riffle area to be sampled the following procedures will be followed:

Procedure

1. Walk the banks of the sample area. Muskrat and raccoon middens are extremely important at collecting sites and many of these middens can contain hundreds of freshly dead shells.
2. Collect all the freshly dead shells that are found except Corbicula (the Asian clam) and place in cloth bags or any kind of collecting bag which can be tied shut. Be sure to place a label in the bag, preferably a sturdy label made of white cardboard or 100 percent rag content paper. Mark the label by river (Clinch River), site location (Kyles Ford), river or creek mile (river mile 120.2), county (Anderson), date (September 29, 1979), and collector. Each collecting site will have a different label for each site sampled.
3. All live mussels will be collected at each site and sorted as to individual species collected. Upon location of an endangered species, each species will be photographed and returned to the water or staked out in an open mesh bag (citrus fruit bag, etc.) for verification by Steven Ahlstedt of TVA; call him at (615) 494-9800 in Norris to check his availability. One live mussel of each non-endangered species collected at the sampling site will be preserved in 90-95 percent ethanol. All specimens will be stored in plastic gallon wide-mouth

bottles or any similar container which has a lid on it which does not leak. A label will be inserted in each jar as indicated in Procedure 2.

4. All snails will be collected at each site and placed in containers with 90-95 percent ethanol. Collect at least a pint jar of snails at each site and insert a label with the proper documentation on it.
5. All samples can be shipped to Tennessee Wildlife Resources Agency's Buffalo Springs Office for transfer to TVA, or directly to Division of Water Resources, Norris, Tennessee 37828 by Greyhound Bus to the Knoxville Greyhound Bus Terminal where these specimens can be picked up.
6. All specimens will be identified to species and when possible, some will be returned to the sender for use as a reference collection.

22 January 1982

Mr. Steven Ahlstedt
 U.S. Fish and Wildlife Service
 Region 4/TVA
 Box 460
 Norris, TN 37828

Dear Steve:

The specimens you sent for identification arrived here in good condition. Each site is listed below with the species listed including the number of each. Thanks for including the soft parts where possible.

Little River at River Mile 19.0 below David Ford, Blount Co., TN

June 1980

Jerry Webb TWRA

1 wd. Epioblasma capsaeformis (Lea, 1834).

This appears to be a somewhat malformed, badly eroded male of this species.

Duck River at Lillard Mill Dam, [Milltown], Marshall Co., TN

22 Oct. 1981

Steve Ahlstedt, TVA

3 d. Fusconaia barnesiana (Lea, 1838).

These demonstrate beautifully the rather extreme variation of this species at this site.

Tennessee River at River Mile 517.5 below Watts Bar Dam, TN.

Aug. 1978

Steve Ahlstedt, TVA

1 d. Fusconaia maculata maculata (Rafinesque, 1820).

This is what Ortmann (1918+) would have called Fusconaia pilaris (Lea, 1840) and later (1925+) Fusconaia subrotunda (Lea, 1831). Both of these are junior synonyms of the earlier name above.

Conasauga River 0.5 mi. below mouth of Sheeds Creek, Polk Co., TN

18 June 1981

Jerry Webb, TWRA

1 w. Lasmigona holstonia (Lea, 1838).

This is a very large specimen of the "georgiana" form of this species.

Clear Fork River at Burnt Mill Bridge, at River Mile 4.0,
Scott Co., TN
11 Sept. 1980

Steve Ahlstedt, TVA

Note: tributary to Big South Fork Cumberland River

2 w., 1 d. Alasmidonta atropurpurea (Rafinesque, 1831).

This species is turning up rather regularly from the cool, clear, high-gradient small streams of the upper Cumberland and Big South Fork Cumberland Rivers. It may have occurred in the main stem of these rivers at the time of its original discovery ("In the river Cumberland, . . .") but seems gone from the big rivers of that region today. In fact, our material from the Rockcastle River is Alasmidonta marginata Say, 1818.

Wolf River at Burnt Mill Ford, 0.5 mi. NE of Byrdstown, Pickett Co., TN

23 Aug. 1980

Jerry Webb, TWRA

1 d. Ptychobranhus subtentum (Say, 1825).

1 w. Actinonaias pectorosa (Conrad, 1834).

1 w. Villosa iris ssp.

These are a number of possible names in the literature that are obviously part of the Villosa iris (Lea, 1829) complex in that region but no one has yet taken the time to determine which ones refer to this subspecies and, of those, which is the earliest available name. I have had the best of intentions but, so far, other things have seemed more important. I did go far enough once to discover that neither U. vibex Conrad, 1834, nor V. nebulosa Conrad, 1834, apply to the Cumberlandian form of V. iris. Following others, I have been guilty of using Villosa iris nebulosa for this form but this name applies to a related form in the upper Mobile River system of the south. *

West Fork Obey River 4 mi. SE of Livingston, 0.5 mi. upstream from Shiloh Church, Overton Co., TN.

23 Aug. 1980

Jerry Webb, TWRA

1 w. Villosa iris ssp.

Please see comments above. The best name to use in print at present is Villosa iris ssp. The names Villosa iris nebulosa and Villosa nebulosa have been used in the past in error and so should be included in any complete synonymy of this subspecies as "of authors not of Conrad, 1834" whenever we

work out the correct name. Based on experience I suspect it will take several weeks to a month or more to do this once the necessary literature has been gathered together. This then should be published in a clear, precise and complete manner so that any serious student of the unionids can understand both the problem and the solution.

John Jenkinson wrote me some time back concerning my comments in a letter to you about the valid name for what most of us have been calling Lampsilis orbiculata (Hildreth, 1828). I plan to answer John's letter today and wish to put your mind at ease lest there is any misunderstanding. I appreciate John's concern and trust that I can clear up the obvious "miscommunication".

It is clear from Hildreth's own description and writings that Unio orbiculatus is either a large, sphaerical Obovaria subrotunda (Raf., 1820) or Obovaria retusa (Lamarck, 1819). It is most probably an old male O. subrotunda with the rosy nacre that occasional specimens of this species have. Hildreth, in his collection catalogue (1830+) changes his entry of Unio orbiculatus to "U. circulus." The name Unio circulus Lea, 1829 is a well known synonym of Obovaria subrotunda. The next available name for this species is Unio abrupta Say, 1831 BUT I would not recommend using it until or unless the correctness of the name is verified by having the evidence supporting it set down in the literature for all to see.

I enjoyed talking with you on the phone this afternoon. I'm especially pleased that you are still gainfully employed as a malacologist by the TVA. Let's hope that you continue to weather these budget-cutting days and that you can visit us here in Columbus at OSUM some time soon.

Sincerely,

David H. Stansbery
Director and Professor

Naiad Mussels Species found in the Upper Stones
River Basin from April 1980 to March 1981.*

Anodonta imbecillis Say 1829
Anodonta grandis grandis Say 1829
Strophitus undulatus undulatus(Say 1817)
Alasmidonta viridis(Rafinesque 1820)
Lasmigona complanata(Barnes 1823)
Lasmigona costata(Rafinesque 1820)
Megalonaias nervosa(Rafinesque 1820)
Tritogonia verrucosa(Rafinesque 1820)
Quadrula cylindrica cylindrica(Say 1817)
Amblema plicata plicata(Say 1817)
Fusconaia flava(Rafinesque 1820)
Cyclonaias tuberculata(Rafinesque 1820)
Pleurobema oviforme(Conrad 1834)
Elliptio dilatata(Rafinesque 1820)
Ptychobranhus fasciolaris(Rafinesque 1820)
Obliquaria reflexa Rafinesque 1820
Actinonaias pectorosa(Conrad 1834)
Obovaria subrotunda(Rafinesque 1820)
Truncilla truncata Rafinesque 1820
Leptodea fragilis(Rafinesque 1820)
Potamilus alatus(Say 1817)
Toxolasma lividus lividus(Rafinesque 1831)
Medionidus conradicus(Lea 1834)
Villosa iris(Lea 1829)
Villosa taeniata taeniata(Conrad 1834)
Villosa vanuxemi(Lea 1838)
Villosa lienosa(Conrad 1834)
Lampsilis ventricosa(Barnes, 1823)
Lampsilis ovata(Say 1817)
Lampsilis fasciola Rafinesque 1820

* From Schmidt, J.E. 1982. The Freshwater Mussels of the Stones River above J. Percy Priest Reservoir, Tennessee. Unpublished M.S. Thesis. Tennessee Technological University. Cookeville, TN.(in press)

MUSSEL SHELLS FOUND IN THE HATCHIE RIVER BASIN DURING THE
1980-81 SURVEYS CONDUCTED BY DON MANNING AND THE TENNESSEE
WILDLIFE RESOURCES AGENCY

1. Amblema costata - Live specimen encountered at most collecting stations. Previously reported from the Obion River at Union City by Ortmann as costata and from Reelfoot Lake by Pilsbry and Rhoads as peruviana.
(U. plicatus)
2. Fusconaia ebenus - No live shells were encountered but several relic and recently dead specimen were collected in restricted areas. This shell has never been reported from the direct drainage of the Mississippi River in West Tennessee.
3. Fusconaia flava - One live shell collected indicating that this specie is very restricted in the Hatchie. Previously reported from the Obion as flava and flava trigona by Ortmann.
4. Plectomerus dombeyanus - This specie is widespread in the Hatchie with live shells encountered at most stations. Previously reported from the Obion at Union City by Ortmann as trapezoides and Reelfoot Lake by Pilsbry and Rhoads as trapezoides.
5. Quadrula pustulosa - This is a common shell at all stations in the Hatchie. Previously reported from the Obion at Union City as pustulosa mortoni and in the Wolf River in Shelby County by Pilsbry and Rhoads as Unio turgidus.
6. Quadrula quadrula - This shell is widespread but not abundant at any station. Numerous live shells were encountered. Previously reported from Reelfoot Lake by Ortmann and as Unio asperrimus by Pilsbry and Rhoads.
7. Tritogonia verrucosa - This shell is widespread in the Hatchie with live shells seen at most collecting stations. Previously reported from the Obion River at Union City by Ortmann and from the Wolf River in Shelby County as Quadrula verrucosa.
8. Megalonaias gigantea - This shell is widespread in the Hatchie River and is abundant in restricted areas. Numerous live shells were encountered. Previously reported from the Obion River at Union City by Ortmann.
9. Plethobasus cyphus - Only one relic shell was encountered. This specie is probably very restricted in the Hatchie River. This specie has never been reported from the direct drainage of the Mississippi River in West Tennessee.
10. Pleurobema cordatum - This shell is apparently very limited in the Hatchie as only one live specimen was encountered. This specie has never been recorded from the direct drainage of the Mississippi River in West Tennessee.

11. Uniomerus tetralasmus - This specie is common in the entire Hatchie River drainage in sloughs, ponds and borrow pits on the floodplain. No shells were collected in the river proper. This specie has not been previously reported from the direct drainage of the Mississippi River in West Tennessee.
12. Uniomerus declivis - Most modern malacologists lump this specie with the preceding specie. It has been included here because an isolated population was discovered on a tributary of the Hatchie River which were distinctly different from all other examples collected. These examples have a very arcuate form and a rough periostracum. This specie has never been recorded from West Tennessee.
13. Anodonta grandis and Anodonta corpulenta - Both of these shells are common throughout the Hatchie River basin with live shells seen at most collecting stations. Live examples were collected from ponds, sloughs and borrow pits as well as the river proper. Several modern malacologist lump these two species; others treat them as subspecies. Since they are found together in the Hatchie and they are readily separable they are listed here as separate species. Previously reported from Reelfoot Lake by Ortmann as grandis gigantes (he indicated that this is a synonym for corpulenta) and from Reelfoot Lake by Pilsbry and Rhoads as grandis.
14. Anodonta suborbiculata - This specie is widespread in the Hatchie basin but is not found abundantly at any station. Live examples were collected in oxbows, ponds and borrow pits and, rarely, in the river proper. Previously reported from Reelfoot Lake by Ortmann, Pilsbry and Rhoads.
15. Anodonta imbecillis - This specie is widely distributed but not common in the Hatchie basin. Live examples were seen in ponds, sloughs and borrow pits on the floodplain. No shells of this specie were collected in the river proper. Previously reported from Reelfoot Lake by Ortmann, Pilsbry, and Rhoads.
16. Arcidens confragosus - Live examples of this shell were seen at most stations on the lower Hatchie. Previously reported from Obion River at Union City by Ortmann and from Reelfoot Lake by Pilsbry and Rhoads.
17. Lasmigona complanata - Live examples of this specie were seen at most stations on the lower Hatchie. Previously reported from the Obion River at Union City by Ortmann.
18. Strophitus undulatus - This shell is apparently very restricted in the Hatchie River as only one relic specimen was collected. Previously reported from "Horn Lake Creek, Shelby County, Tennessee" by Lea as Anodonta shaefferians.
19. Obovaria jacksoniana and Carunculina texasensis - Both of these shells are common throughout the Hatchie basin. Numerous live examples were seen in ponds, sloughs and borrow pits but no shells of these species were collected in the river proper. Most malacologists lump these two species. Dr. David H. Stansbery of Ohio State Museum still maintains the distinctions. Both species were previously reported from Reelfoot

Lake by Ortmann, Pilsbry and Rhoads. Ortmann insisted that the two species were readily separable and the examples from the Hatchie tend to bear him out.

20. Lampsilis teres form teres and Lampsilis teres form anodontoides - These shells are common in the Hatchie River with live examples found at most stations. There is considerable confusion in the literature regarding these species with most authors using anodontoides anodontoides and anodontoides fallaciosa. Subspecies should not exist at the same locality and the Hatchie River examples exhibit intergrading. The forms are listed to show that the two historic subspecies are present but they should be lumped under teres. Previously reported from the Obion River at Union City by Ortmann as anodontoides fallacilsa and from the Wolf River in Shelby County by Pilsbry and Rhoads as Unio anodontoides.
21. Lampsilis satur - This specie is fairly common in the Hatchie River with live examples found at most stations. Most malacologist who have examined the Hatchie River series have assigned this shell to ventricosa but Richard I. Johnson of the Museum of Comparative Zoology at Harvard University favors satur and satur was reported from the Obion River at Union City by Ortmann as ovata satur.
22. Leptodea fragilis - This is a common mussel in the Hatchie River with live examples at most stations including ponds, sloughs, borrow pits and the river proper. Previously reported from the Obion River at Union City by Ortmann and from the Wolf River in Shelby County by Pilsbry and Rhoads as Unio gracilis.
23. Leptodea laevisisima - This is a rare shell in the Hatchie River basin with only one live specimen found in a borrow pit. This specie has not previously been reported from the direct drainage of the Mississippi River in West Tennessee although it is found in the Obion and Forked Deer Rivers (per. coll. of author).
24. Ligumia subrostrata - This is a common shell in the Hatchie River basin with numerous live examples collected in ponds, sloughs, and borrow pits. No examples were collected in the river proper. Previously reported from Reelfoot Lake by Ortmann, Pilsbry, and Rhoads.
25. Obovaria jacksoniana - This is a rare shell in the Hatchie River with one recently dead and one live example collected. Both specimen were from the river proper. This shell has never been reported from the state of Tennessee and, apparently, is rare in its historic range as it is listed as endangered in the state of Alabama.
26. Proptera purpurata - This is a common shell in the Hatchie River with live examples found at most stations. Previously reported from the Wolf River in Shelby County by Pilsbry and Rhoads.
27. Truncilla truncata - This mussel is, apparently, of very limited distribution in the Hatchie River. Only two live examples were collected at one station. Previously reported from Reelfoot Lake by Pilsbry and Rhoads as Unio clagans.

28. Villosa lienosa - This shell is widespread and common in the Hatchie River. Live examples were collected at most stations. Previously reported from the Obion River at Union City by Ortmann as Micromya lienosa.
29. Villosa vibex - This is a fairly common shell in the Hatchie River with live examples found at most stations. This specie has not been reported from the state of Tennessee before.
30. Corbicula fluminae - The introduced Asian Clam is quite common at all stations collected on the Hatchie River. It has not been reported from the West Tennessee drainages.

Ortmann, A. E. 1925 Unionidea from the Reelfoot Lake region in West Tennessee. Nautilus 39: 87-94.

Pilsbry, H. A. and S. N. Rhoads 1896 Proc. Acad. Philadelphia 48, pp. 500-506.



The Ohio State University

Museum of Zoology

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Mr. Robert Currie
United States Fish and Wildlife Service
Room A-5
50 South French Broad
Ashville, NC 28801

Dear Mr. Currie:

This letter is to verify that I have examined the unionid specimen collected from the Hatchie River in west Tennessee by Mr. Don Manning and identified by others as either Toxolasma cylindrellius (Lea, 1868) or Toxolasma parvus (Barnes, 1823).

The specimen is a small, somewhat abnormal, damaged female Obovaria jacksoniana (Frierson, 1912). Information on this species may also be sought in the literature under the name Unio castanea Lea, 1831. This latter name would be valid except that it is preoccupied by Unio castaneus Rafinesque, 1831.

It is not surprising that O. jacksoniana has been found in the Hatchie River since it also lives in the St. Francis River in adjacent Missouri and Arkansas. It is typically a more southern species, however, with a range in Gulf Coast rivers from Alabama west into eastern Texas. The main stem of the lower Mississippi is apparently largely devoid of unionid mollusks and may divide this species into eastern and western sections today.

The female of O. jacksoniana superficially resembles the Toxolasma species of the central Mississippi basin in being small, dark, and in having complete hinge dentition. It differs in a number of characters including details of dentition, proportions, outline, texture and color of both the periostracum and nacre. Female Toxolasma also have a post-ventral modification of the inner margin of the mantle called a caruncle which is not shared by male Toxolasma or by other unionid genera.

The generic name Toxolasma Rafinesque, 1831 has over 60 years priority over the next available name for this genus, Carunculina Simpson in Baker, 1898. I am presently preparing a paper on THE SPECIFIC DISTINCTNESS OF TOXOLASMA LIVIDUS (RAFINESQUE, 1831) AND TOXOLASMA CYLINDRELLUS (LEA, 1868) (MOLLUSCA: BIVALVIA: UNIONOIDA). I hope this will provide solutions to several systematic and nomenclatural problems of long standing and that it will be in press by early summer.

If I can help further please let me know.

Sincerely,

David H. Stansbery
Director and Professor

cc to Steve Chambers TVA - S. Ahlstedt
Marshall Jones
TVA - J. Jenkinson
" - Ralph Jordan
College of Biological Sciences
Department of Zoology

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