THE STATUS OF *LAMPSILIS PEROVALIS* (CONRAD, 1834)

(MOLLUSCA:BIVALVIA:UNIONOIDA)

by

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for

Office of Endangered Species
Fish and Wildlife Service
U.S. Department of the Interior
Jackson, Mississippi Office

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LAMPSILIS PEROVALIS (CONRAD, 1834)

Orange-nacred Pocketbook

Synonymy

Unio perovalis Conrad, 1834. * (Conrad, 1834:43)
Original Description: New freshwater shells of the United States, with colored illustrations, and a monograph of the Genus Anculotus of Say: also a synopsis of the American naiades. Philadelphia, p. 43-44, pl. 2, fig. 2.
Type Locality: "I found a very few specimens of this shell at Claiborne, on the Alabama river [sic]." (Conrad, 1834:44).
Type Material: "Figured holotype ANSP 56416a." (Johnson and Baker, 1973:176).
Etymology: Although Conrad (1834:43) does not explain his selection of the name *perovalis*, the root *per* may be interpreted as "very" (Brown, 1956:598), and *ovalis* undoubtedly refers to the regular oval outline of the male shell. Although characteristic of the species it is far from being diagnostic.

Margarita (Unio) perovalis (Conrad, 1834). (Lea, 1836:24)

Margaron (Unio) perovalis (Conrad, 1834). (Lea, 1852:27)

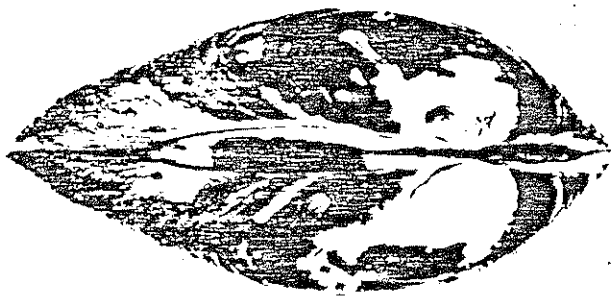
Lampsilis perovalis (Conrad, 1834). (Simpson, 1900:531)

Taxonomic Status

That *U. perovalis* belongs to the Genus *Lampsilis* Rafinesque, 1820, is verified by the presence of a flap-like modification of the inner-margin of the mantle of mature female specimens (OSUM 19030.4 and .6) of this species. Within the Genus *Lampsilis*, *L. perovalis* belongs to a (subgeneric?) group

* Both Frierson (1927:69) and Haas (1969:457) consider *Unio doliaris* Lea, 1865 to be a synonym of *L. perovalis* and Hurd (1974:86-88) considers both *U. perovalis* Conrad and *U. doliaris* Lea to be junior synonyms of *Lampsilis altilis* (Conrad, 1834). (See Taxonomic Status below).

NOTE: The type lot of *Unio spillmani* Lea, 1861 is USNM 84925, as is the figured holotype (Lea, 1862:pl. 15, fig. 246). The holotype is a male having the outline of *V. altilis* and the shell weight of *L. perovalis*. It is a poor selection since the 10 specimens remaining in the type lot are clearly either *V. altilis* (5) or *L. perovalis* (5). No further attempt to determine the systematic position of *U. spillmani* will be made in this report.

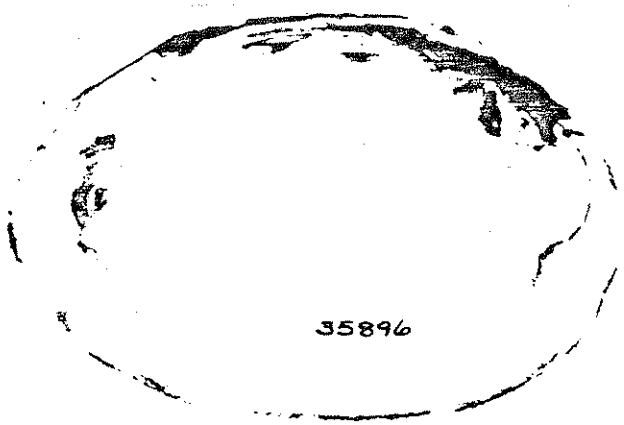


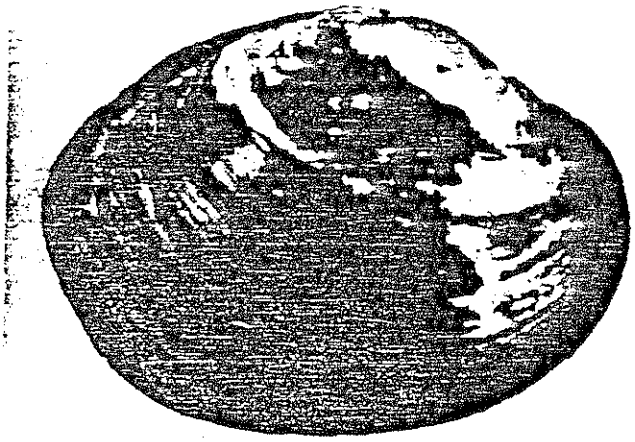
Lampsilis perovalis
(Conrad, 1834).

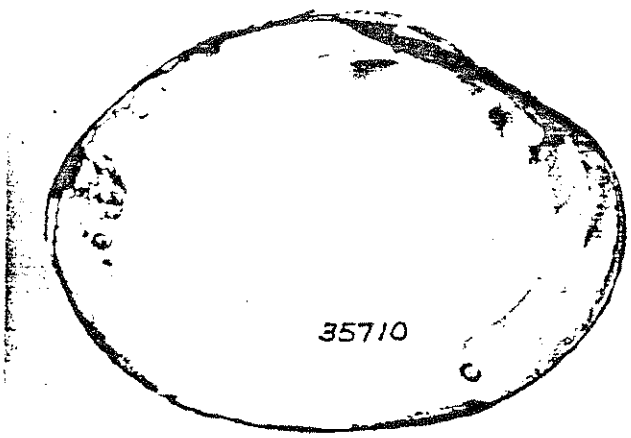
OSUM 35896, male

East Fork Tombigbee
River 6.0 mi. NNE of
Amory, Monroe Co.,
Mississippi.
6 Aug. 1974.

Length = 82 mm
Height = 52 mm
Width = 37 mm





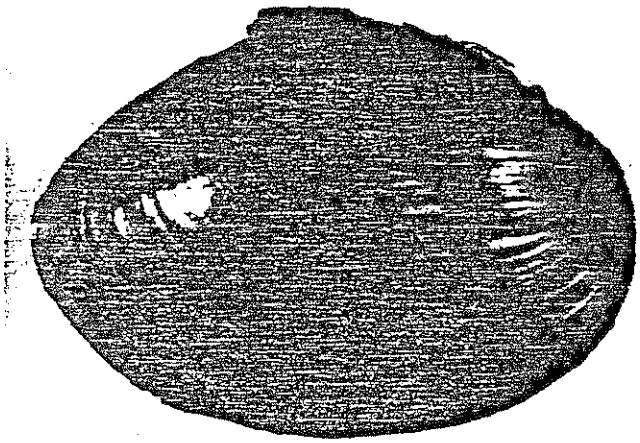


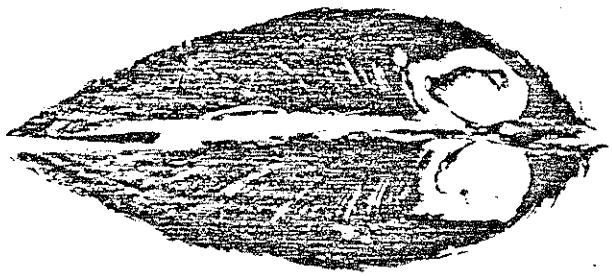
Lampsilis perovalis
(Conrad, 1834).

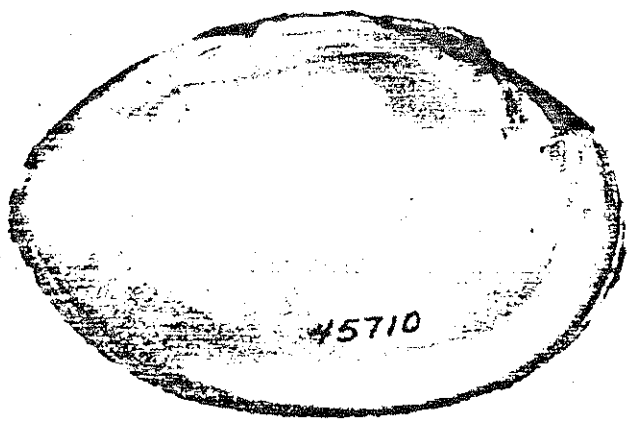
OSUM 35710, female

East Fork Tombigbee
River 11.2 mi. S of
Fulton, Itawamba Co.,
Mississippi.
18 Aug. 1974.

Length = 74 mm
Height = 52 mm
Width = 37 mm







Lampsilis perovalis
(Conrad, 1834).

OSUM 45710

Sipsey River 12.3 mi.
WNW of Tuscaloosa,
Tuscaloosa Co., Alabama.
3 Sept. 1978.

Length = 56 mm
Height = 37 mm
Width = 24 mm

of described taxa characterized by *Lampsilis fasciola* Rafinesque, 1820. Any consideration of the systematic position of *L. perovalis* should deal with each of the described forms in this complex. They are as follows:

TYPE LOCALITIES OF DESCRIBED FORMS OF THE *LAMPSILIS FASCIOLA* COMPLEX

Described Taxon	Type Locale
Lampsilis fasciola Rafinesque, 1820.	"... especе vue dans le Kentuky [sic]" (p. 299)
Unio multiradiatus Lea, 1829.	"Hab. Ohio (p. 435)
Unio altilis Conrad, 1834.	"Inhabits the Alabama river [sic], near Claiborne." (p. 43)
Unio perovalis Conrad, 1834.	"...at Claiborne, on the Alabama river [sic]." (p. 44)
Unio crocatus Lea, 1841.	"Hab. Savannah River, Geo." (Lea, 1842:238)
Unio clarkianus Lea, 1852.	"Hab. Williamsport, Tenn., ... Georgia or Alabama, ..." (p. 274)
Unio perradiatus Lea, 1858.	"Florence, Alabama." (p. 40)
Unio spillmani Lea, 1861.	"Luxpalila [sic] Creek, near Columbus, Mississippi." (p. 39)
Unio gerhardti Lea, 1862.	"Chattanooga, Geo." (p. 168)
Unio doliaris Lea, 1865.	"Etowah River, Georgia." (p. 88)

The primary basis for the recognition of each of the above forms has been morphological characteristics of the shell. Few of these described forms have even had the benefit of a gross examination of the soft parts. Experience with other unionid groups has revealed, however, that nearly all species examined have consistently different shell characters with a hiatus between their characteristics and analogous characters of other species. There are some sibling species, however, that overlap in shell characters. This remains a hazard to the simplistic merging of described species on the basis of intergrading shell characters alone. Three of the taxa listed above are restricted to the Ohio River system: *fasciola, multiradiatus* and *perradiatus*. The soft parts of all three of these described forms throughout their range in the Ohio River basin are indistinguishable. Their shell characters also intergrade. Thus, both *multiradiatus* Lea, 1829, and *perradiatus* Lea, 1858 are junior synonyms of *fasciola* Rafinesque, 1820.

Lampsilis crocata (Lea, 1841) is an Atlantic slope species that super-

ficially resembles *Leptodea ochracea* (Say, 1817) and has never, to my knowledge, been confused with *L. perovalis*.

The other names listed above were, for the most part, described from somewhere in the Mobile River basin. The species *L. perovalis* has had a history of either being "carried on the books" from one author to another down through the years, of being "made a synonym" of *L. clarkiana* by being labeled that species in collections, or being simply ignored.

A careful examination of Mobile River basin specimens of *L. clarkiana* reveals them to have the same shell and soft part characteristics as *V. altilis* (Conrad, 1834). Thus *L. clarkiana* (Lea, 1852) becomes the junior synonym of *V. altilis* (Conrad, 1834).

I have compared the characteristics of both shells and soft parts of *altilis* and *perovalis*. Even though their shells are superficially similar, the two taxa are distinct. The inner margin of the mantle is the chief feature used to differentiate between the genera *Lampsilis* and *Villosa*. In *altilis*, the mantle margin is distinctly of the *Villosa* type. However, the mantle margins of *perovalis* specimens have the distinguishing characteristics of BOTH *Lampsilis* and *Villosa*. By present generic concepts, the two species are members of two different genera!

For the purposes of this paper, I prefer to retain *perovalis* in the Genus *Lampsilis*, since it is far more likely to remain with that group in future systematic revisions than is *altilis*.

Hanley (1983:94) states:

> "After examining over two hundred specimens, I feel that both *altilis* and *perovalis* deserve recognition; while Lea's names represent ecophenotypes of Conrad's species, and hence should be placed in synonymy."

The "over two hundred specimens...[of]...both *altilis* and *perovalis* ..." represent more material of these two species than any other student of the unionids has, until now, ever had available for study. It is because of this generous sample size, and the fact that his conclusions match my own, that I believe Hanley's (1983:94) observations in this regard are valid.

The task of determinging the taxonomic status of Lea's names *gerhardti*, *spillmani* and *doliaris* has yet to be accomplished. Once this is done, we will be able to determine the typical habitat, geographic range and morphological variability of both *perovalis* and *altilis*. I am hopeful that this long-standing taxonomic problem may soon be solved.

Nomenclatorial Status

The name *Unio perovalis* Conrad, 1834, is the earliest name of the four potentially available for this taxon (*perovalis*, *gerhardti*, *spillmani* and *doliaris*). This means that all of the anticipated synonyms to be established will be junior synonyms, and hence the name *perovalis* will stand as valid for this species.

The Genus *Lampsilis* has long served as a recipient of taxa of the subfamily Lampsilinae whose shell characteristics were more similar to established species of this genus than to any others in this subfamily. It seems certain that the Genus *Lampsilis* will eventually be revised into

a number of smaller genera, but hopefully not before the information necessary for a stable classification has been assembled. The type species of the Genus *Lampsilis* is *Unio ovatus* Say, 1817, so the generic name *Lampsilis* will necessarily go with the *L. ovata* group. Whether or not the *L. fasciola* complex (including *L. perovalis*) is a part of the *L. ovata* group has yet to be worked out. It is my opinion that the *L. fasciola* group will be recognized as a separate genus, in which case *perovalis* would have its generic name changed. Considering the impressive amount of information needed for such a study, I suspect that we will be using the name *Lampsilis perovalis* for some years into the future. It is certainly stable for the present.

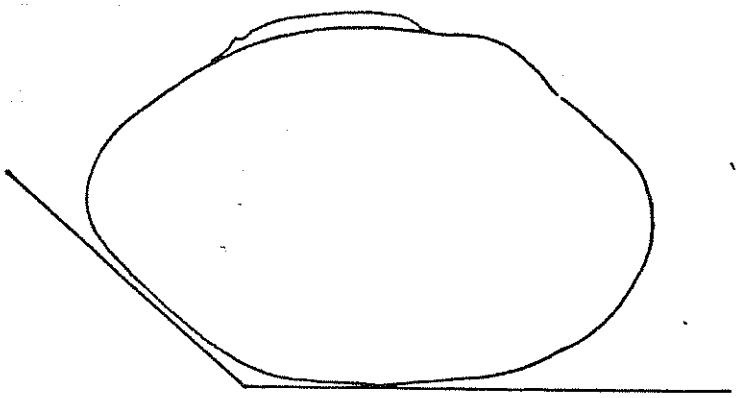
Diagnostic Characteristics

At the present time *L. perovalis* is the only species of which I am aware which has the inner margin of the female mantle just anterior to the incurrent aperture modified medially into a "flap" or flange and also modified distally into papillae. This combination of features appears to be both diagnostic and unique but is useful only for living or preserved specimens of mature females with soft parts intact. Most researchers wishing to have identifications made usually have only the empty shell, or wish to identify living specimens using only the external characteristics of the shell. This presents a problem, since this species resembles *V. altilis* so closely in external shell characters and opening the valves far enough to make an identification could seriously damage or kill the individual.

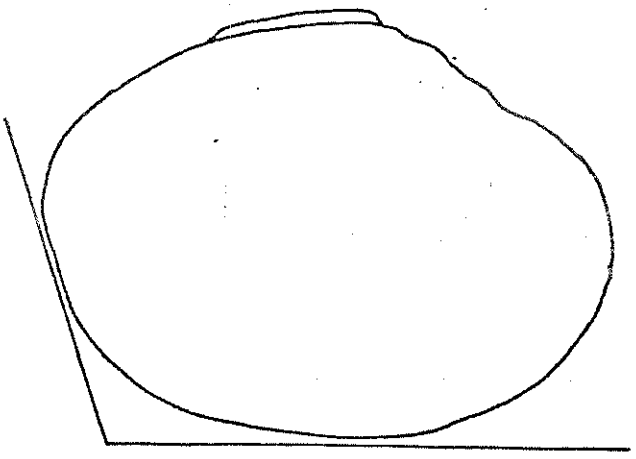
A comparison of the 9 shells of *L. perovalis* and the 45 shells of *V. altilis* in the OSUM collection reveals that *L. perovalis* has a consistently greater height index (higher for its length), a thicker shell, and colored nacre. Conrad (1834:44) notes that the nacre of the type from "...Claiborne, on the Alabama river..." is "rose coloured." The OSUM specimens from 3 tributaries of the upper Tombigbee River have nacres varying from light cream through yellow to orange; none are either rose or white. The nacre of *L. altilis* is always white or nearly so.

The outline of mature females of *V. altilis* has the ventral margin distinctly angled about 60% of the distance from the anterior margin (see outline drawings). This produces a pointed posterior margin. The outline of mature females of *L. perovalis* has the ventral margin distinctly angled about 80% of the distance from the anterior margin. This produces a posterior truncation of the otherwise oval outline.

I can not identify any external diagnostic shell characteristics for both male and female *L. perovalis*. Most specimens can be distinguished from their sibling species in the Mobile River system, however, by the relatively heavy weight of the living animal (shell and soft parts) and the near-regular oval outline of its shell. Hanley (1983:94) notes that "The shell of *altilis* tends to be more elongate than that of *perovalis*, and the lateral teeth of the former are straight." The more elongate shell of *V. altilis* is reflected in the OSUM specimens, but the greater curvature of the lateral teeth of *L. perovalis* seems not to be apparent.



V. altilis FEMALE
OSUM 19030.6



L. perovalis FEMALE
OSUM 86184

Shell outline, shell weight and the position of the post-ventral angulation of female specimens appear to be the only useful external characteristics known.

Former Distribution

Lampsilis perovalis was described from Claiborne, Monroe County, Alabama, on the Alabama River by Conrad in 1834. Isaac Lea lists *perovalis* with the "NORTH AMERICA" unionids in his second (1838:39) and third (1852:62) editions of his synopses and as from the "Alabama river" in his fourth and last edition (Lea, 1870:99). Hanley (1843:191), Wheatley (1845:11) and Kuster (1848:258) also mention its distribution simply as the Alabama River in one abbreviated form or another. Before 1900 there appear to be only seven authors that mention the distribution of *L. perovalis*, and they could all have been repeating the information given with the original description.

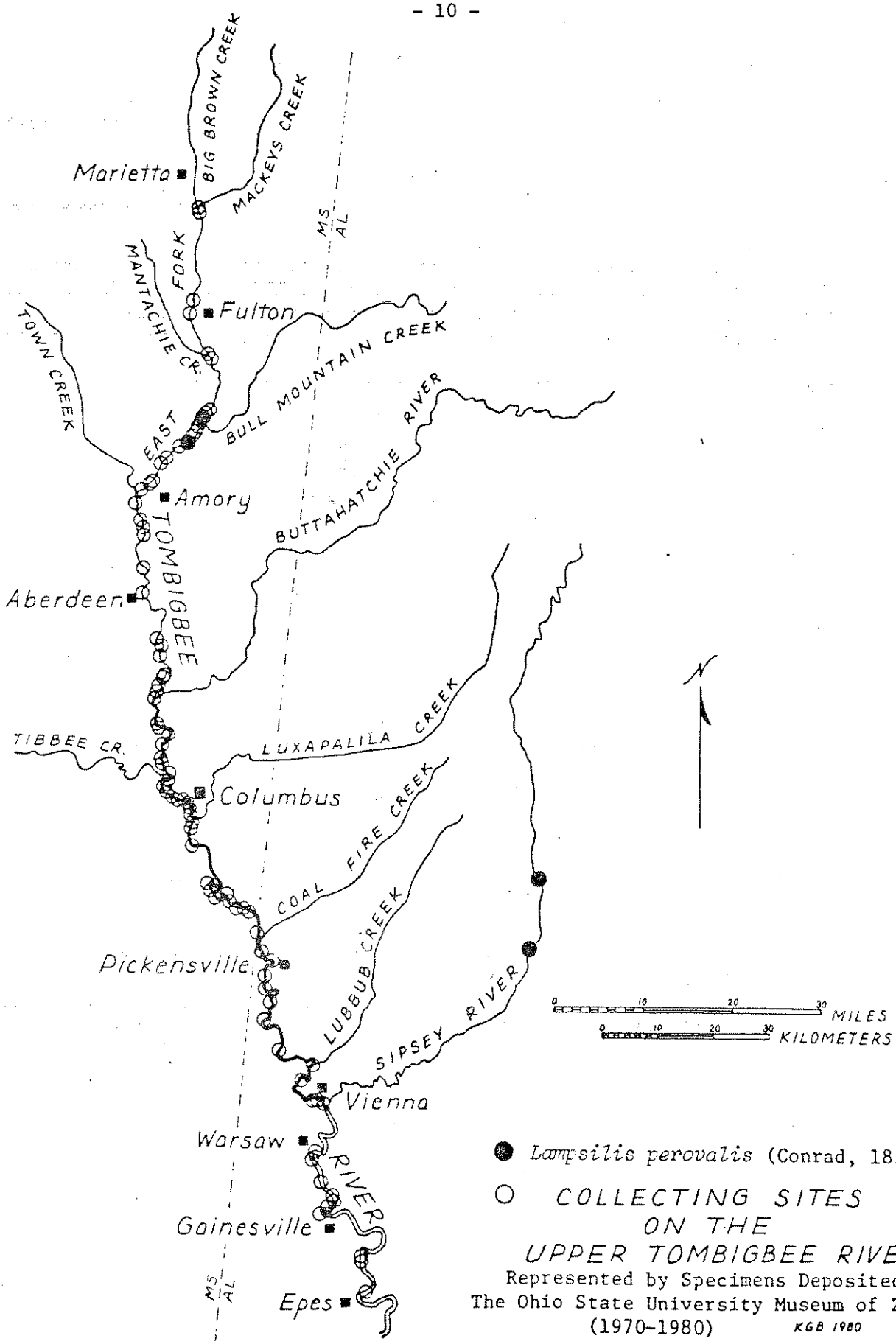
Simpson (1900:531) expands the distribution to "Alabama and Black Warrior rivers." This is a significant range extension since the Black Warrior is the major tributary of the Tombigbee River which is confluent with, but not part of, the Alabama River system. The collection reported by Simpson (1900) may have actually been made by Hinkley since he (1904: 57) lists such a record from Mulberry River, a tributary of the Black Warrior. Simpson (1914:5) gives the same distribution in his Descriptive Catalogue of the Naiades, ... as does Haas (1969:457) in his analogous study some years later.

The known distribution of *L. perovalis* until fairly recent times appears to be limited, so far as the literature reveals, to the Alabama River at Claiborne and the Mulberry River of the Black Warrior system. Both of these sites are within the Mobile River system.

Present Distribution

Several comprehensive unionid studies made in relatively recent years help to clarify the nature of the range of *L. perovalis* both within and without the Mobile River system. Clench and Turner (1956) collected East Gulf Coast streams from the Escambia to the Suwanee without a single record of *L. perovalis* or its siblings. Grantham (1969) in his doctoral dissertation failed to find any trace of *L. perovalis* in the streams of the state of Mississippi. This confirms that *L. perovalis* is restricted to the Mobile River system.

Within the Mobile River system some care must be taken in accepting literature records because of the superficial similarity of *V. altilis* to *L. perovalis*. Van der Schalie (1938), in his study of the Cahaba River unionids, did not find *perovalis*, but did report *V. altilis* (as *L. clarkiana*). A single large collection taken from the Tombigbee River at Epes in Sumter County by McGlamery lacked *L. perovalis* (van der Schalie, 1939: 4). This same paper (van der Schalie, 1939:5) does, however, report *V. altilis* (as *L. clarkiana*) from the "Sipsey River, Elrod, Tuscaloosa Co., Alabama." This record may be based upon specimens of *L. perovalis* (see below).



● *Lampsilis perovalis* (Conrad, 1834)

○ COLLECTING SITES ON THE UPPER TOMBIGBEE RIVER

Represented by Specimens Deposited in The Ohio State University Museum of Zoology (1970-1980) KGB 1980

The salvage activities of Williams and his colleagues between 1971 and 1975 resulted in numerous collections of shell midden specimens being gathered from the upper Tombigbee River system and sent to OSUM for processing into the research collection there. Among these collections were found 3 fresh shells (OSUM 35710, 35896, 36184) of *L. perovalis* from 3 sites on the East Fork Tombigbee River. Stansbery (1976:48) used these and previous records in summarizing the status of *L. perovalis* at that time. Later Yokley (1978:5, 12, 13, 15, 24) recorded *L. perovalis* in a comprehensive study of the Buttahatchie River, where he found it to be rare (4 specimens only). Lynn and Wayne Starnes succeeded in locating a single fresh shell (OSUM 45710) in the Sipsey River in 1978 and Leroy Koch found 2 fresh shells (OSUM 50239) in the Sipsey in 1981. These specimens, supplemented by an additional 3 from the Buttahatchie collected by Michael Hoggarth during field work for his M.S. degree, confirm the presence of this species in the Tombigbee River system.

Burch (1973, 1975) in his illustrated key to the unionaceans of North America omits mention of *L. perovalis* in either edition. Hurd (1974:42, 86-88) includes *perovalis, clarkiana, spillmani, gerhardti* and *doliaris* in the synonymy of *V. altilis* (as *L. altilis*) in his study of the Coosa River unionids. Since he records (Hurd, 1974:42, Table 2) 24 lots comprising 122 specimens for the Coosa River system, there is the possibility that *L. perovalis* may be found there. OSUM has 12 lots of *V. altilis* comprising 49 specimens randomly collected over the years from various sites in the Alabama River system, but all OSUM *L. perovalis* are from the Tombigbee River system.

The above facts suggest that *L. perovalis* may be centered in the Tombigbee River system and that the type, collected from the Alabama River at Claiborne, may have been on the fringes of the range at that time. In any event, the present known distribution includes the Buttahatchie, Sipsey, East Fork Tombigbee and Mulberry Rivers of the Tombigbee system and the Alabama River main stem of the Alabama River system. There remains the unlikely possibility that *L. perovalis* populations may exist elsewhere in the smaller streams of the Alabama River system.

Habitat

No information labeled "habitat" for this species was found in a search of the literature. The available locales of collection can, however, be used to draw inferences as to the most probable habitat.

All of the OSUM specimens came from fairly large tributaries of the upper Tombigbee River: 3 from the East Fork Tombigbee River and 3 from the Sipsey River. Specimens collected by both Yokley (1978) and Hoggarth (1983, personal communication) were from the Buttahatchie River. All of the 9 specimens at hand are from the upper Tombigbee tributaries and none are from the main stem of the upper Tombigbee proper, in spite of intensive comprehensive collecting there from 1970 to 1975. It is also interesting that these tributaries are among the 4 largest tributaries of the upper Tombigbee River. These streams are perhaps best described as small rivers or large creeks. We can infer from these records that *L. perovalis* is most probably a species characteristic of medium-sized streams, rather than small tributaries or large rivers.

Some further insight can be gained from an examination of the distribution of those specimens collected from the Buttahatchie River. Yokley

(1978:3) notes that the upper Buttahatchie, above Sulligent, Lamar County, Alabama, has both the bottom and banks consisting of sand. This headwater stretch covers numbers 3 to 5 in the table below. Stable substrates of sand are, in my experience, rare -- especially in the absence of gravel. They rarely have much, if any, bivalve fauna. The Buttahatchie River substrate from Sulligent downstream to its mouth was described by Yokley (1978:3) as usually of "gravel and some sand..." Both Yokley (pers. com.) and Hoggarth (pers. com.) were impressed by the number of log jams in the river. Obstructions to flow such as logs, down trees or sand-gravel-cobble bars create areas of protected stable substrate immediately downstream. These stable areas frequently serve as favorable habitats in which unionids can grow to maturity and reproduce over the years in an otherwise unstable (and hence unfavorable) stream. Collection data from the Buttahatchie are presented in a series of 11 tables (Yokley, 1978: tables 3-13 incl.). When substrate type and Hoggarth's *L. perovalis* records are added to the Yokley data in linear fashion, the following table results:

KNOWN DISTRIBUTION OF *LAMPSILIS PEROVALIS* IN THE BUTTAHATCHIE RIVER IN MISSISSIPPI AND ALABAMA

	——— Downstream ——→										
Stream Segments	3	4	5	6	7	8	9	10	11	12	13
Substrate Type	←sand→			←——— sandy-gravel ———→							
Yokley *L. perovalis*	0	0	0	0	0	1	2	0	1	0	0
Hoggarth *L. perovalis*	0	0	0	0	1	0	0	0	2	0	0	0

This table demonstrates that all 7 specimens taken were from the relatively stable sandy gravel substrate stretch of the stream. None were taken from the unstable sandy substrate upstream nor from the larger downstream stretch of the same river.

The data upon which these inferences rest are scant at best, but they comprise all that is available at this time.

It is probable that the habitat of *L. perovalis* is the stable sandy-gravel substrate stretches of the middle reaches of large creeks and small rivers.

Potential Threats

Lampsilis perovalis is known today with certainty only from three of the larger tributaries of the upper Tombgibee River system. The major threat is destruction or alteration of the ecological niche occupied by this species. A large and obviously important part of the ecological niche is the habitat. The principal economic activity of this region is agriculture. Any stream modification which may increase crop yield in the short run should be anticipated. Included among these potential modifications are:

Fertilizers. Runoff from large generously fertilized fields into small streams can raise nutrient levels far above the stream's ability to assimilate. This can lead to algal blooms or excesses of other aquatic vegetation which can produce stream eutrophication, resulting in the death of all or most of the native fauna. Unionids as benthic animals are especially susceptible to the accumulation of toxic materials and conditions at the substrate-water interface.

Pesticides. Herbicides, insecticides, fungicides and other pesticides are easily washed from the fields into streams along with silt particles to which they are usually attached. While in suspension, these toxins are transported downstream and may be ingested by living forms for which they were not intended. Filter-feeders, such as unionid mollusks, are particularly susceptible. A slackening of the current allows the toxin-laden silt to precipitate and increase in concentration near the bottom before becoming the upper stratum of the substrate itself. In a stream such as the Buttahatchie, these areas very frequently coincide with the protected stable areas having unionid mollusks.

Dredging, Channel Clearing and Straightening. Efforts to hasten the runoff of flood waters frequently result in physical changes of the stream channel(s) which remove all or most of the stable sites suitable for unionids. We are just beginning to understand rivers as naturally having three channels of their own construction which function to advantage during high, normal and low flow. The high flow channel of the river is its flood plain, while the low flow channel is the only one functional during a drought. To remove either of these channels is to invite biological degradation as well as a host of other problems that have beset river managers since the dawn of history.

Impoundments. Dams typically produce relatively deep pools in streams. If the pools were relatively shallow their effect on riverine life would be the same as natural stream pools that alternate with riffles ("shoals") and runs. Deep pools are silt traps, however, and organic silts may generate excess carbon dioxide, producing carbonic acid and an abnormally low pH. Many miles of productive free-flowing stream can be transformed into something approaching a biological desert behind a high dam unless some current is maintained over the surface of the substrate. Unionids are typically eliminated from such habitats. The abnormally high-temperature water skimmed by the dam from the surface of a reservoir frequently raises the downstream temperature above the range of tolerance of many native species including unionids, leading to their elimination. Top-water from impoundments has also lost its sediment load by precipitation and has greater erosive power moving downstream from the dam tailwaters. This can be a factor in reducing stable substrates suitable as unionid habitat. Water released from the base of a dam is abnormally

cold. This modification is frequently used to transform a natural warm-water stream into a "trout stream." The gain is an abnormal habitat that may maintain trout but the loss is measured in the host of warm-water species, including most unionids, that cannot survive in the new environment.

Wastewater Treatment Plant Effluent. Growing human populations have generated increasing problems of human waste disposal. The most popular effort in recent years has been secondary treatment which removes over 90% of the suspended solids by digestion and adds chlorine to the effluent before releasing it into a stream. This effectively eliminates downstream sludge bars and their odors and keeps water-borne human pathogens under control. Since none of the digested nitrates or phosphates are removed, it also creates eutrophic conditions in those streams not having a sufficient volume to dilute these nutrients to levels of usefulness. A number of industrial wastes such as toxic metals pass through our sewage treatment plants and into the receiving stream withour alteration.

The added chlorine is an effective agent in killing human pathogens but there is growing concern as to whether or not riverine species are also being killed by this means. Since many recognized carcinogens are chlorinated hydrocarbons, there is considerable interest in the results of mixing chlorine with the high hydrocarbon effluents of treatment plants just before release into our streams.

Tertiary treatment, which removes dissolved nutrients and toxic wastes, can be very effective, but few communities vote to take on this cost burden if it can be avoided. The price of destroyed riverine life is largely out of sight and out of mind, but is nevertheless real, extensive and growing. Most rivers below the water treatment plant effluents of our larger cities are without unionid life for many miles downstream.

Recommendations For Preservation In Nature

No specimens of *L. perovalis* have, with certainty, been found living outside the upper Tombigbee River tributaries during this century. It appears that the preservation of this species in nature may be firmly linked to preserving the naturalness of the tributaries.

At the minimum, these few remaining populations should be protected from the more obvious threats listed above. Some attention should, however, be given to this species' dependency upon the less obvious requirements for survival. An optimal set of habitat conditions would be of no value if the necessary host fish of this unionid, also unknown, were prevented from being present when the glochidia are released.

The best generalized recommendations for preserving *L. perovalis* or any species in nature can be given in these statements:

1) Do whatever can be done to preserve those remaining known functional habitats.
2) Do a comprehensive survey throughout the reasonably possible range

of the species in question and its closely related forms in order to determine the range of habitat conditions under which it lives.

3) Do a thorough life-history study of the species so as to determine the nature of those requirements that are critical even though not at all obvious.

The logical follow-up would be to apply the knowledge gained above in designing "recovery plans" that would have a really good chance of being successful. The problem solving ability of future generations depends upon how much of the earth's biological diversity we can preserve for use in that future.

Acknowledgements

Status reports such as this are dependent upon information available in the form of labeled museum specimens, their related field collection data records, collection record cards and from the published literature. These data were (and are being) assembled by a number of interested and concerned scholars, amateurs and others with the conviction that it will someday be of value in bringing about a much better understanding of the biosphere in which we live and revealing the kinds of relationships that will maximize the satisfaction derived from living.

The assembly of this report has been largely the responsibility of the author but a number of others have been instrumental in making it a better communication than it would have been.

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LAMPSILIS PEROVALIS (CONRAD, 1834)

SPECIMENS DEPOSITED IN

THE UNITED STATES NATIONAL MUSEUM

AND

THE OHIO STATE UNIVERSITY MUSEUM OF ZOOLOGY

AND

MICHAEL HOGGARTH COLLECTION

SPECIES DISTRIBUTION SUMMARY
Museum Specimens or Literature Records

SPECIES Lampsilis perovalis (Conrad, 1834)

Specimens in the United States National Museum

Drainage System	Locality: State	Locality: County	Locality: Specific	Collector / Coll. Date	Catalog No. / Coll. No.	Recorded as / Specimens	Author / Year: Page
Mobile River	Alabama		"Warrior Riv., Ala."	[Truman] "Aldrich" [18__]	USNM 150412	1 d.	
Mobile River	Alabama		"Claiborne, Ala."	[Charles] "Tait" [18__]	USNM 84938	1 d.	
Mobile River	Mississippi		"Columbus, Miss." [on shell] "Luxpalila Creek near Columbus, Miss." [on label]	"Dr. Spillman" [18__]	USNM 84925 TYPE LOT *	5 d. *	

Researched by David H. Stansbery Date 14 February 1980

* This is part of the type lot of Unio spillmani Lea, 1861. Five of the specimens in the type lot are Villosa altilis and five are Lampsilis perovalis.

The Ohio State University, Museum of Zoology, Division of Bivalve Mollusks

SPECIES DISTRIBUTION SUMMARY
Museum Specimens or Literature Records
Specimens in The Ohio State University Museum of Zoology

SPECIES *Lampsilis perovalis* (Conrad, 1834).

Drainage System	Locality: State	Locality: County	Locality: Specific	Collector / Coll. Date	Catalog No. / Coll. No.	Recorded as: Specimens	Author / Year: Page
Mobile River	Alabama	Tuscaloosa	Sipsey River at U.S.Rt.82 and Al.Rt.6 bridge [1.5 mi. W of Buhl, 12.3 mi. WNW of center of Tuscaloosa, Sec. 3, T21S, R3E]	W. Starnes, L. Starnes 3 Sept. 1978	45710 OSUM:1978:417	1 d.	
Mobile River	Mississippi	Itawamba	East Fork Tombigbee River 0.5 mi. NE of mouth of Bull Mountain Cr., 11.3 mi. S of Fulton, SW 1/4 Sec.24, T11S, R8E	J.D. Williams, R. Grace 20 July 1974	36184 OSUM:1974:125	1 d.	
Mobile River	Mississippi	Itawamba	East Fork Tombigbee River 0.5 mi. NE of mouth of Bull Mountain Cr., 11.3 mi. S of Fulton, SW 1/4 Sec.24, T11S, R8E	J.D. Williams, et al. 18 Aug. 1974	35710 OSUM:1974:207	1 d.	
Mobile River	Mississippi	Monroe	East Fork Tombigbee River island area about 3 mi. W of Smithville,[6.0 mi.NNE of Amory], NE 1/4 Sec. 3, T 12 S, R 8 E	J.D. Williams, R.Grace 6 Aug. 1974	35896 OSUM:1974:153	1 d.	
Mobile River	Alabama	Tuscaloosa	Sipsey River below Rt. 21 bridge [1.3 mi. W of Brownville, 16.8 mi. NW of Tuscaloosa]	Leroy M. Koch 10 Oct. 1981	50239 OSUM:1981:218	2 w (1♂, 1 ♀)	

Researched by David H. Stansbery Date 14 Aug. 1980

The Ohio State University, Museum of Zoology, Division of Bivalve Mollusks

SPECIES DISTRIBUTION SUMMARY
Museum Specimens or Literature Records

SPECIES Lampsilis perovalis (Conrad, 1834)

Specimens in the Michael Hoggarth Collection

Drainage System	Locality			Collector / Coll. Date	Catalog No. / Coll. No.	Recorded as Specimens	Author Year: Page
	State	County	Specific				
Mobile River	Mississippi	Lowndes	Buttahatchie River at Gottman Bridge, 0.6 mi. N of Gottman, 15.3 mi. SE of Amory	M. & K. Hoggarth 25 August 1979	MAH:1979:8	1	
Mobile River	Mississippi	Lowndes/Monroe	Buttahatchie River from Cochran Bridge, 6.6 mi. NE of Hamilton, 13.7 mi. E of Aberdeen, to Caledonia access point, 2.0 mi. NW of Caledonia, 14.8 mi. N of Columbus	M. & K. Hoggarth 8 September 1979	MAH:1979:5	2	

Researched by David H. Stansbery Date December 1983