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THE STATUS OF *EPIOBLASMA PENITA* (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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EPIOBLASMA PENITA (CONRAD, 1834)

Southern Comb Shell

Synonymy

Unio penitus Conrad, 1834.

Original Description: New fresh water shells of the United States, with colored illustrations, and a monograph of the Genus *Anaculotus* of Say: also a synopsis of the American naiades. Philadelphia, pp. 33-34, pl. 5, fig. 1.

Type Locality: "Inhabits the Alabama river [sic], near Claiborne [Monroe County], and is rare." (Conrad, 1834:34).

Type Material: "Figured holotype ANSP 59860." (Johnson and Baker, 1973:165).

Etymology: Conrad (1834:33-34) does not give his reason(s) for selecting the name *penitus*. The Latin word *penitus*, however, means "inward" or "interior" (Jaeger, 1955:187), and may be translated as referring to the interior of the shell. Conrad (1834:34), in fact, emphasizes characteristics of the cardinal teeth, cicatrices, nacre and cavity of the interior of the shell in his description of this species.

Margarita (Unio) penitus (Conrad, 1834). (Lea, 1836:19)

Margaron (Unio) penitus (Conrad, 1834). (Lea, 1852:24)

Truncilla penita (Conrad, 1834). (Simpson, 1900:518)

*Dysnomia** *penita* (Conrad, 1834). (Frierson, 1927:93)

*Epioblasma** penita* (Conrad, 1834). (Stansbery in Boschung, 1976:48)

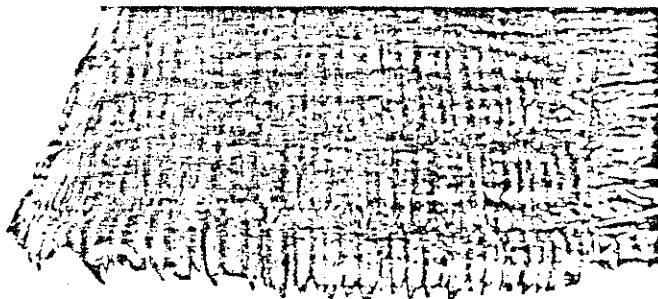
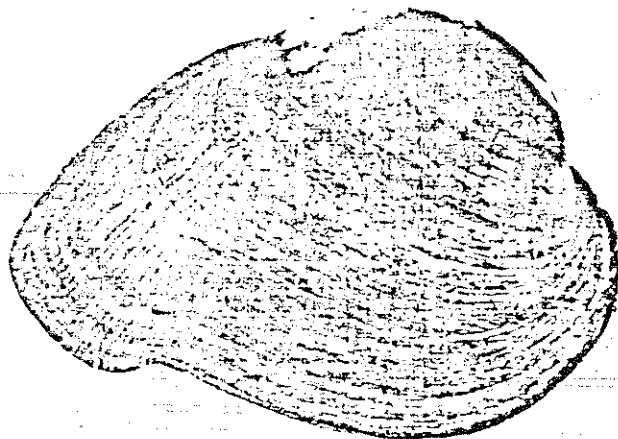
Plagiola (Plagiola) penita (Conrad, 1834) *in partim*
(Johnson, 1978:254-255)

Taxonomic Status

Taxonomic problems are not surprising when dealing with one or more of a series of sibling species. This is especially true when some or all of the species involved occupy different parts of the same drainage system. If one or more of the species is (are) rare the problems are even further compounded due to the lack of available material for study. *Epioblasma penita* belongs to a group having all of these characteristics.

*The name *Dysnomia* Agassiz, 1852 was first used as a generic name in recent years by Ortmann and Walker, 1922:65.

**The name *Epioblasma* Rafinesque, 1831 was first used in recent years by Clench in Edmondson, 1959:1157.

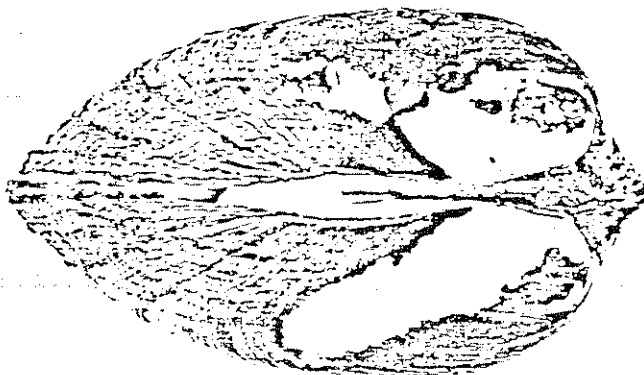


Epioblasma penita
(Conrad, 1834).

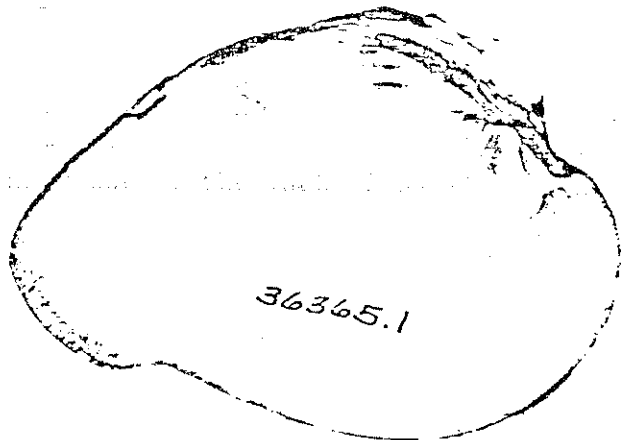
OSUM 36365.1; female

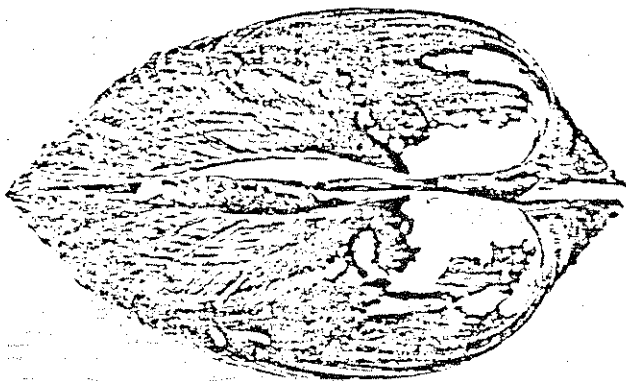
Tombigbee River about 5
mi. N of Gainesville,
Sumter/Greene Co.,
Alabama.

8 June 1972.



Length = 55 mm
Height = 36 mm
Width = 31 mm



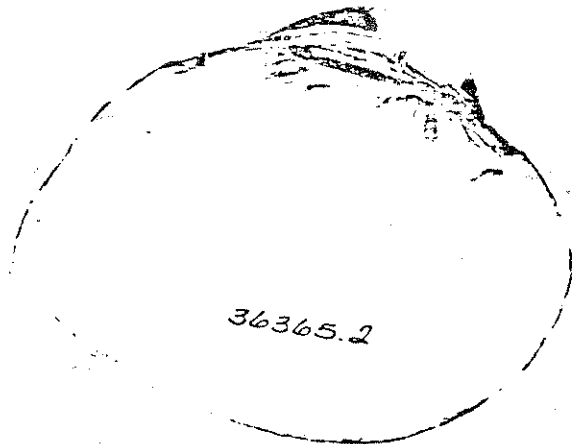


Epioblasma penita
(Conrad, 1834).

OSUM 36365.2, male

Tombigbee River about 5
mi. N of Gainesville,
Sumter/Greene Co.,
Alabama.
8 June 1972.

Length = 61 mm
Height = 44 mm
Width = 36 mm



Epioblasma penita is the type species of the subgenus *Penita* Frierson, 1927. The described forms within this subgenus are: *Unio brevidens* Lea, 1831; *Unio penitus* Conrad, 1834; *Unio metastriatus* Conrad, 1838 and *Unio compactus* Lea, 1859.

Obliquaria (Plagiola) interrupta Rafinesque, 1820, *Unio othcaloogensis* Lea, 1857 and *Unio modicellus* Lea, 1859 were placed in this group by Johnson (1978:254-255) but are other taxa as follows:

Obliquaria (Plagiola) interrupta Rafinesque, 1820 is a synonym of *Obliquaria (Ellipsaria) fasciolaris* Rafinesque, 1820, as can be determined by a comparison of the original description with the characteristics of *Ptychobranhus fasciolaris*. This fact may require a different name for the Genus *Ptychobranhus* Simpson, 1900, but is not a matter to be dealt with here.

Unio othcaloogensis Lea, 1857 is a distinct species (*Epioblasma othcaloogensis*) which does not belong to the subgenus *Penita*.

Unio modicellus Lea, 1859 is a junior synonym of *Unio othcaloogensis*. The figured holotype of *U. othcaloogensis* is a young female while the figured holotype of *U. modicellus* is a male of this species.

The northern *E. brevidens* is morphologically distinct from the species of this subgenus in the Mobile River drainage and has a range which does not include any streams in this basin.

Of the three described forms of the subgenus *Penita* in the Mobile system, *Unio compactus* is generally agreed (Frierson, 1927:93) (Haas, 1969:482) (Stansbery, 1976:49) to be a synonym of *E. metastriata*. Johnson (1978:254-255), however, places this name in the synonymy of *Plagiola (Plagiola) penita* along with that of *Unio metastriatus* and others dealt with above. A careful examination of *E. penita* and *E. metastriata* reveals the two to have consistent morphological differences. The posterior outline of female *E. penita* is diagonally straight and terminates at the postventral extreme of the shell. The posterior outline of female *E. metastriata* is rounded and terminates beneath the pallial expansion on the ventral margin of the shell anterior to the posterior extreme.

Thus the subgenus *Penita* has only two sibling species in the Mobile basin: *E. penita* and *E. metastriata*. The problem here appears to be one of discerning between sibling species where the available material is scant. There is little doubt, however, that *E. penita* is a valid species. The only question remaining in the minds of some is whether or not *Unio metastriatus*, *Unio othcaloogensis*, *Unio modicellus* and *Unio compactus* are synonyms of *E. penita*. It is my opinion that they are not.

Nomenclatorial Status

The name *penita* has been used for this species since the time of its original description by Conrad in 1834. The only older species in the subgenus *Penita* is *brevidens*, described by Lea in 1831. I know of no evidence that *penita* and *brevidens* are conspecific. Thus the specific part of the scientific name appears to be very stable.

As in most North American unionid species with complete hinge dentition,

Unio penitus was retained in the Genus *Unio* until Simpson's Synopsis of the Naiades . . . in 1900. Since that time *penita* has been used in combination with four different generic names (*Truncilla* Rafinesque, 1820; *Plagiola* Rafinesque, 1820; *Epioblasma* Rafinesque, 1831; *Dysnomia* Agassiz, 1852) as systematists struggled to develop an accurate classification for a group of poorly known and highly variable animals. The generic names *Truncilla* and *Plagiola* are both typed upon species (*truncata* Rafinesque, 1820 and *interrupta* Rafinesque, 1820 respectively) which belong to different genera than does *E. penita*. *Epioblasma* Rafinesque, 1831 has priority over *Dysnomia* Agassiz, 1852, and both have the same species, *Epioblasma flexuosa* (Rafinesque, 1820) as their type.

Thus the current name *Epioblasma penita* is stable unless it becomes necessary to elevate the subgenus *Penita* to generic rank. The very fact that the Genus *Epioblasma* has been divided into subgenera (Simpson, 1900: 517-524) (Walker, 1918:80-83) makes this a stronger probability than otherwise but the fact that there is substantial uncertainty in this undertaking indicates that it may be some time before such action is taken. Even so the nomenclatorial change would simply be from *Epioblasma penita* to *Penita penita*. Stability in the species part of the name, where it is important, would be preserved.

Diagnostic Characteristics

Although Lea early (1863:440) described the gross anatomy of the soft parts of *E. penita*, so few of the *Epioblasma* have had their soft parts studied that this information is of little value currently for comparative diagnostic purposes. Lea (1863:440) does mention that the [female] mantle is "furnished below the branchial opening with minute papillae and with a small white fleshy mass, on each side, of a sigmoid form, rounded at the bottom and pointed at the top, and furnished with some crenulations in the middle, outside of which there is a small, expanded, nearly black flap." Unfortunately there is no drawing or photograph of this unusual structure. Ortmann (1912:357) notes that he has "not seen anything like it in *T. triquetra*," but I have seen similar structures in both *E. brevidens* and *E. metastriata* indicating that this feature may be diagnostic for the soft parts of the females of this subgenus.

Fortunately there are shell characters, at least in the case of female individuals, that appear to be diagnostic of this species. Walker (1910:77) characterizes these species through the construction of keys, one for male individuals and one for females. The summation of characteristics used to identify the *E. penita* in each key would constitute a diagnosis of each sex respectively of this species. Walker's summation (1910:79-80) for the female shell of *E. penita* is as follows:

1. Marsupial expansion swollen 2
2. Marsupial expansion an inflation of the posterior ridge 3
3. Posterior ridge roundly inflated and curved forward . . . 5

- 5. Base of expansion distinctly projecting beyond the basal line 6
- 6. Posterior ridge not inflated, basal expansion flattened, its margin subquadrate *penita*

However, 2 and 3 above conflict with 6 and render this diagnosis confusing at best. A relatively simple diagnosis may be the best. I have noticed that each female of the subgenus *Fenita* has a different outline. They may be characterized as follows:

- Posterior margin having an indentation or constriction *Epioblasma brevidens* (Lea, 1831).
- Posterior margin rounded *Epioblasma metastriata* (Conrad, 1838).
- Posterior margin a diagonal straight line *Epioblasma penita* (Conrad, 1834).

The above diagnosis could easily be expanded but only with the risk of becoming more involved and, perhaps, confusing.

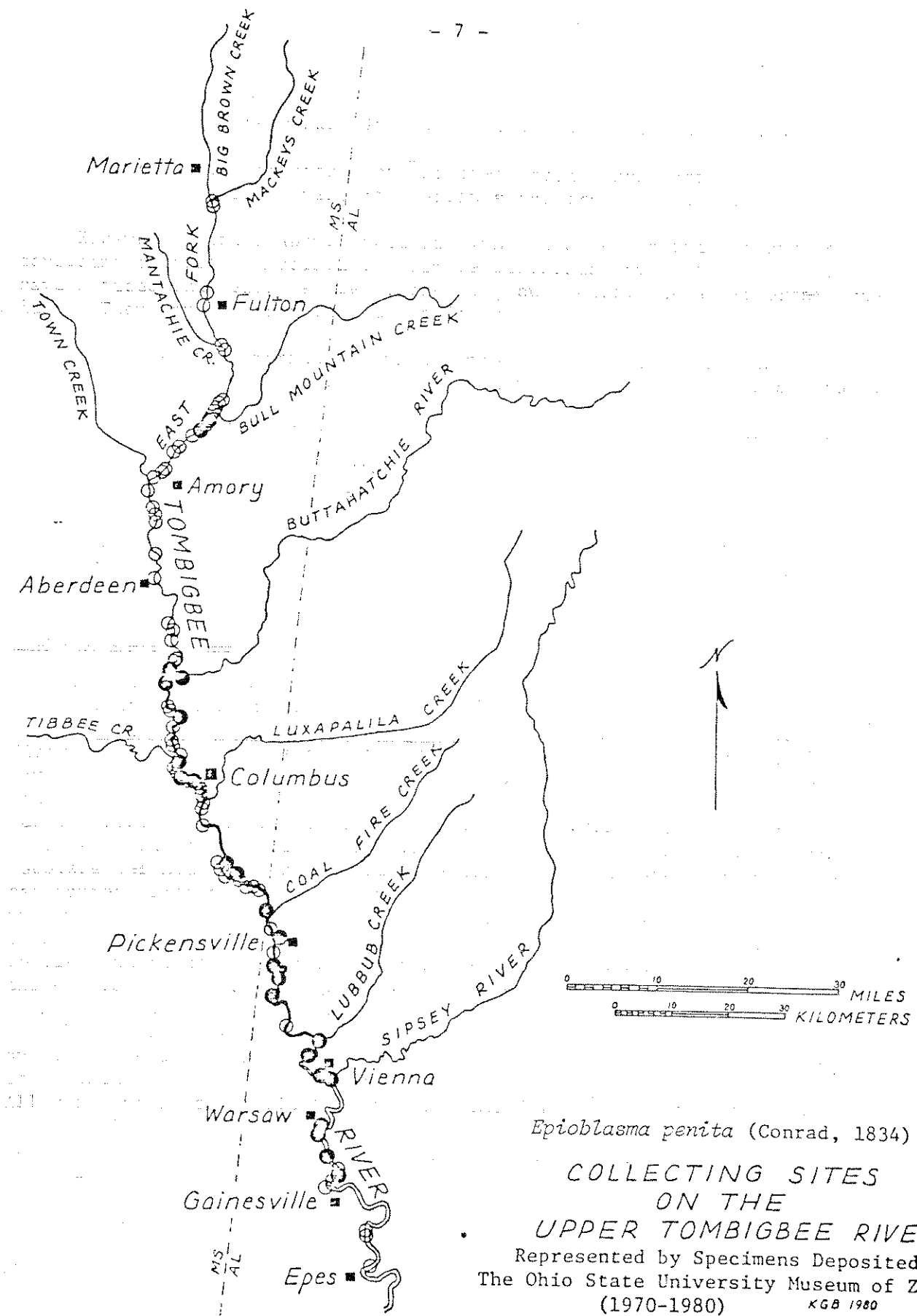
Former Distribution

Conrad described *E. penita* from the Alabama River near Claiborne, Monroe County, Alabama in 1834. In 1870 in the fourth and last edition of his Synopsis of the Family Unionidae Lea includes a "Geographical Distribution..." and lists "*penitus*" as simply "Alabama river[sic]." Simpson (1900:518) has "*penita*" from "Alabama and Tombigbee river [sic] drainage." In his descriptive catalog of the naiades Simpson (1914:8-9) has the range as "Lower Alabama and Tombigbee River drainage." Haas (1969:481) seems to have simply translated Simpson's range into German: "Gebiete der Alabama - und Tombigbee-Flusse," while Burch (1975:18, 112) has copied Simpson verbatim. Hurd (1974) searched six of the major museums of the United States for unionid records in his work on the Coosa River fauna and found only 22 lots of *penita*. These persuaded him to list the range as "Mobile River system" and I find at least nine of these lots plotted on his Coosa River distribution map for this species. This constitutes a major addition to our knowledge of the range of *penita*.

The Smithsonian collection has five lots of one specimen each of this species (see appendix). Two are from the Tombigbee River, two are from the Alabama River and one is from the Cahaba River, Perry Co., Alabama. All were apparently collected at some time during the last century. Van der Schalie (1938) in his study of Cahaba River unionids did not record *E. penita*, leaving us with the single record for this river being the specimen in the National Museum.

Recent collections (1971-1975) by Williams, et al. and Yokley (1975) from the main stem of the Tombigbee and by Yokley (1978) from the Butta-hatchie River have established that *E. penita* was living there at the time of those studies.

All 37 lots of *E. penita* in OSUM are from the Tombigbee River or one



Epioblasma penita (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

of its tributaries.

Johnson (1978) has recently completed a study of this genus (under the generic name *Plagiola*) in which he lists species records from seven major museum collections. This does not help here, however, since Johnson places both *E. metastriata* and *E. othcaloogensis* into the synonymy of *E. penita*. His records are consequently for individuals of the subgenus *Penita* rather than for *E. penita* alone.

The above literature and museum records reveal *E. penita* to have been found entirely within the Mobile River basin. The greatest development and concentration was apparently in the Tombigbee River system but the range extended, however diffusely, into the Alabama River proper and up into the Cahaba and Coosa River tributaries of the Alabama. The paucity of records from the Alabama River and its tributaries may be due to the sustaining population being in the adjacent Tombigbee basin.

Present Distribution

-- The present distribution of any wild species should be based upon recent data if it is to be reasonably accurate. Recent survey studies on unionids within the range of *E. penita* include five major efforts as well as a number of casual collections. The major efforts are as follows:

<u>River Collected</u>	<u>Year(s)</u>	<u>Collector(s)</u>	<u>Report(s)</u>
Tombigbee River	1971-1975	James Williams, et al.	1982(in part)
Cahaba River	1972(Sept.,Oct.,Nov.)	James Williams, Charles Baldwin, et al.	- - - -
Coosa River system	1972-1973	John C. Hurd	1974
Tombigbee River	1974(Sept., Oct.)	Paul Yokley	1975
Buttahatchie River	1977	Paul Yokley	1978

In all, the OSUM has 336 collections from the Mobile River system taken from 1962 to 1981. These were taken from a total of 77 different Mobile basin streams representing sites ranging from intermittent tributaries through master streams such as the Tombigbee and Alabama rivers including a very few collections from the Mobile River itself. It is interesting that *E. penita* appeared in only three of the 77 streams and that these are either the Tombigbee River proper, the East Fork Tombigbee River (in many ways the true upper Tombigbee River) and the Buttahatchie River, a main tributary of the Tombigbee.

The sister species of *E. penita* is *E. metastriata* which was also found in only three of the 77 streams collected. These are the Coosa River proper (1966), the Cahaba River main stem (1968) and Terrapin Creek (1968), a tributary of the Cahaba.

It would appear from these data that the range of *E. penita* is today restricted to the Tombigbee River system and this may be the case. Hurd (1974) did not find it among the unionids he collected from the Coosa River system nor did Williams and Baldwin (1972) find it in their Cahaba River collecting. It should be kept in mind, however, that the Alabama

River has never been carefully collected, much less in recent times, although none of the casual collections at known "*E. penita* sites" on the Alabama has yielded any evidence of its continued existence there within the past decade. Thus present evidence indicates that the present range of *E. penita* is the Tombigbee River system with that part of the species population in the Alabama River system having been extirpated.

Habitat

Recent records of *E. penita* from the main stem of the Tombigbee River extend from just below the mouth of Bull Mountain Creek, about 12 miles south of Fulton, Itawamba County, Mississippi, downstream to a point about 2 miles north of Gainesville, Sumter County, Alabama. The 27 OSUM sites yielding specimens of this species within this stretch of river were, in nearly every instance at, or associated with, shallow, fast moving water over a stable, sand-gravel to gravel-cobble substrate; typical riffle-run or "shoal" habitat. Williams (1982:80), who participated in nearly all of these collections, characterizes the habitat as

"shoals with moderate to swift current. Substrate in shoal areas was predominantly gravel or gravel mixed with sand. The depth of the shoals was variable, ranging from 0.3 to 1.5 m."

The Buttahatchie River was collected by Yokley (1978:tables 3-13) in a series of eleven float trips from the headwaters to the mouth. He found the river to have frequent log jams, down trees, sand and gravel bars and other obstructions to flow. These features, in my experience, create stable areas where unionids are protected and where they can grow to maturity and reproduce over a period of years. Streams cleared of such obstacles to flow typically have their unionid fauna greatly reduced if not eliminated. A tabulation of *E. penita* specimens taken from each of Yokley's collection areas indicates that the optimal stream habitat for this species in this river is in the lower reaches even though it is found for an impressive distance upstream.

	Downstream										
Yokley Table Number	3	4	5	6	7	8	9	10	11	12	13
Individuals of <i>E. penita</i>	0	0	8	3	9	8	1	4	27	57	35

Combining these data with those from my own and Williams' observations we may conclude that the habitat of *E. penita* is the firm, relatively stable, sand-gravel to gravel-cobble substrate of the shallow riffles and runs ("shoals") of medium to large streams.

The fact that the type of habitat described above is found generally throughout the Mobile basin indicates that factors as yet unrecognized are probably active in restricting this species to its known range within the system. This emphasizes the fact that there is a critical difference between the habitat of a species and its ecological niche. One must be

familiar with the ecological niche of a species if he or she hopes to find those factors that limit range, population size or habitat.

Potential Threats

The greatest threat to the continued existence of *E. penita* appears to be habitat destruction. The transformation of the major part of the Tombigbee River into a barge canal may eliminate all or most of the suitable habitat in that river's main stem. If the population(s) of this species in the Buttahatchie is self-sustaining it may survive there and/or in other such streams IF others exist. We do not know to what extent the Buttahatchie population(s) depends for its continued existence upon the Tombigbee population(s) -- or the Tombigbee upon the Buttahatchie.

Populations of *E. penita* outside the Tombigbee River system appear to have been extirpated or reduced to very low numbers. If the Tombigbee habitat is also largely destroyed the species would be dependent upon the tributary population(s) that remain.

Recommendations For Preservation In Nature

The preservation of any species in nature depends, first of all, upon our being familiar with its geographic distribution and having a clear knowledge of its requirements for individual survival and successful reproduction. Some measure of the genetic variability of the species and its geographic distribution is also necessary if care is to be taken to preserve maximum variability in order to enhance survival. We now know that a high degree of genetic homogeneity is reflective of a high susceptibility to extinction by any agent of selection to which all individuals are equally vulnerable.

Once the geographic range has been determined and the genetic variability of the species worked out, an effort should be made to preserve the elements of the habitat necessary for survival. In our present embarrassing state of ignorance, with little in the way of time to gain the information needed, our best action is to "let it be" or, in other words, to preserve the habitat areas as the American pioneers found them. In the case of *Epioblasma penita* this translates into river preservation --- commonly admitted to be the most difficult natural area preservation ever attempted. But is there any other realistic choice? Attempted preservation in aquaria, zoos or artificially maintained habitats is flawed not only with dangerously low genetic diversity but has the additional hazard of dependency upon the continuing care and concern of another species, *Homo sapiens*. Our track record in such matters is poor at best.

And so our best action to preserve *E. penita* at the present time is to seek out all of its populations and do what can be done to preserve these rivers or parts of rivers. Present evidence indicates that these rivers would include the Tombigbee and lower Alabama river systems. Relatively undamaged rivers within these systems should be carefully searched for the possible existence of populations as yet undiscovered.

Acknowledgements

Studies of this kind must, of necessity, be based upon collections of specimens and literature in conjunction with field observations. Even so, it is only those collections and related data that find their way into museums and libraries that are preserved and available for such use on into the future.

This paper is based almost entirely upon the collections of specimens made by Dr. James D. Williams, Mr. Randall Grace and their associates and upon the unionid library assembled over many years at the O.S.U. Museum of Zoology.

Numerous student assistants labored long hours to remove the environment from the surface of the shells so that they could be processed into the research collection.

The Curatorial Assistant of the Bivalve Division, Kathy G. Berror, prepared the map and the tables and proof-read the manuscript with a perfectionism that has become second nature.

The pictures of specimens were taken, developed and printed by our photographic specialist, Mr. A.E. Spreitzer, with his characteristic care and concern for correctness and quality.

The United States Fish and Wildlife Service should be commended for their interest in preserving biological diversity for the benefit of society and for making this concern felt through their support of this study.

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EPIOBLASMA PENITA (CONRAD, 1834)

SPECIMENS DEPOSITED IN
THE UNITED STATES NATIONAL MUSEUM

AND

THE OHIO STATE UNIVERSITY MUSEUM OF ZOOLOGY

SPECIES DISTRIBUTION SUMMARY

Museum Specimens or Literature Records

SPECIES

Epioblasma penita (Conrad, 1834).

Drainage System	Locality		Collector Coll. Date	Catalog No. Coll. No.	Recorded as Specimens	Author Year: Page
	State	County				
Mobile	AL		"Cahawba R., Perry Co., Ala." 18--	USNM 84472	1 female	
Mobile	AL		"Selma, Ala." "F.W. Witter" "Shimek Coll." 18--	USNM 512400	1 female	
Mobile	AL		"Tombigbee R., Ala." ?	USNM 159953	1/2 male	
Mobile	MS		"Columbus, Miss." "Spillman" 18--	USNM 84473	1 female	
Mobile	AL		"Alabama" "Dr. Budd" 18--	USNM 84471	1 male; 5 juv.	

Researched by David H. Stansbery

Date

14 Feb. 1980

SPECIES DISTRIBUTION SUMMARY
Museum Specimens or Literature Records

SPECIES

Epioblasma penita (Conrad, 1834).

Drainage System	Locality		Collector	Catalog No.	Recorded as	Author	
	State	County					Specific
Mobile River	Alabama	Sumter	Tombigbee River about 0.2 mi. above Warsaw, about 7.8 mi. NNW of Gainesville, Sec. 28, T 23 N, R 2 W	J.D. Williams, et al.	35991	2 d.	
Mobile River	Alabama	Sumter	Tombigbee River about 2 mi. N of Gainesville, T 22 N, R 2 W	J.D. Williams, et al.	34965	8 d.	
Mobile River	Mississippi	Lowndes	Tombigbee River, 50 yds. below U.S.Rt. 82 bypass bridge, 2.3 mi. W of Columbus, 11.8 mi. NE of Artesia, Sec. 30, T19N, R18E	J.D. Williams, et al.	27294	1 1/2 d.	
Mobile River	Mississippi	Lowndes	Tombigbee River, E bank above mouth of Oak Slush Cr., 3.1 mi. W of Columbus, 3.2 mi. SW of Flynn, Sec. 13, T 19 N, R 19 W	J.D. Williams, et al.	27355	4/2 d.	
Mobile River	Mississippi	Lowndes	Tombigbee River at island below mouth of Tibbee Cr., 4.4 mi. W of Columbus, 11.7 mi. NE of Artesia, Sec. 11, T 19N, R17E	J.D. Williams, et al.	27410	2 2/2 d.	
Mobile River	Mississippi	Lowndes	Tombigbee River 1.2 mi. W of mouth of Kincaide Cr., 5.8 mi. ESE of Trinity, 11.8 mi. SSE of Columbus, Sec. 24, T17N, R18E	J.D. Williams, et al.	27453	2 d.	
Mobile River	Alabama	Pickens	Tombigbee River at Pickensville, 300 yds. above boat landing, about 10 mi. NW of Aliceville, Sec. 14, T 21 S, R 3 W	D.H. Stansbery, et al.	32365	16 d.	
Mobile River	Mississippi	Lowndes	Tombigbee River about 0.5 mi. above Ms.Rt. 50 bridge, 7.3 mi. NW of Columbus, 11.8 mi. SW of Caledonia, Sec. 14, T17S, R19W	Randall Grace	40421	1 d.	
Mobile River	Alabama	Pickens	Tombigbee River about 300 yards above Pickensville boat landing, about 10 mi. NW of Aliceville, Sec. 14, T21S, R3W	J.D. Williams, et al.	48363	2 d.	
Mobile River	Alabama	Pickens	Tombigbee River about 1.3 mi. above mouth of Bogue Chitto Creek, 6.7 mi. WSW of Aliceville, Sec. 1, T 24 N, R 3 W	J.D. Williams, et al.	48328	2 d; 2 wd.	
Mobile River	Alabama	Sumter	Tombigbee River about 3 mi. N of Gainesville, 5.5 mi. SSE of Warsaw, Sec. 26, T 22 N, R 2 W	J.D. Williams, et al.	48324	1 wd.	
Mobile River	Alabama	Sumter	Tombigbee River about 2 mi. N of Gainesville, 6.5 mi. SSE of Warsaw, Sec. 26, T 22 N, R 2 W	J.D. Williams, et al.	48346	18 d.	

Researched by David H. Stansbery

Date 14 Aug. 1980

SPECIES DISTRIBUTION SUMMARY
Museum Specimens or Literature Records

SPECIES

Epioblasma punita (Conrad, 1834).

Drainage System	Locality		Collector	Catalog No.	Recorded as	Author
	State	County				
Mobile River	Alabama	Pickens	J.D. Williams, et al.	36342		
Mobile River	Alabama	Sumter/Greene	7 June 1972	OSUM:1972:92	1 1/2 d.	
Mobile River	Alabama	Sumter	J.D. Williams, et al.	36365	3 d.	
Mobile River	Alabama	Sumter	8 June 1972	OSUM:1972:95		
Mobile River	Alabama	Pickens	J.D. Williams, et al.	36389		
Mobile River	Alabama	Sumter	8 June 1972	OSUM:1972:96	5 3/2 d.	
Mobile River	Alabama	Sumter	J.D. Williams, et al.	36468		
Mobile River	Alabama	Sumter	4 June 1972	OSUM:1972:87	1 sf.	
Mobile River	Alabama	Sumter	J.D. Williams, et al.	36745		
Mobile River	Mississippi	Monroe	8 June 1972	OSUM:1972:97	1/2 sf.	
Mobile River	Mississippi	Clay	J.D. Williams, R. Grace	35505		
Mobile River	Mississippi	Clay	28 July 1974	OSUM:1974:131	1 d.	
Mobile River	Mississippi	Clay/Lowndes	J.D. Williams, R. Grace	35561		
Mobile River	Mississippi	Monroe	8 Aug. 1974	OSUM:1974:150	1/2 sf.	
Mobile River	Mississippi	Monroe	J.D. Williams, R. Grace	35526		
Mobile River	Mississippi	Itawamba	10 Aug. 1974	OSUM:1974:154	1 d.	
Mobile River	Mississippi	Sumter	J.D. Williams, R. Grace	35473		
Mobile River	Mississippi	Itawamba	6 Aug. 1974	OSUM:1974:153	17 d.	
Mobile River	Alabama	Sumter	J.D. Williams, et al.	35557		
Mobile River	Alabama	Sumter	28 July 1974	OSUM:1974:124	1 d.	
Mobile River	Alabama	Sumter	J.D. Williams, et al.	35805		
Mobile River	Alabama	Sumter	21 Aug. 1974	OSUM:1974:205	1/2 sf	
Mobile River	Alabama	Sumter	J.D. Williams, et al.	35870		
Mobile River	Alabama	Sumter	21 Aug. 1974	OSUM:1974:206	1 d.	

Researched by David H. Stansbery

Date 14 Aug. 1960

SPECIES DISTRIBUTION SUMMARY
Museum Specimens or Literature Records

Epioblasma penita (Conrad, 1834)

Drainage System	Locality			Collector	Catalog No.	Recorded as	Author
	State	County	Specific				
Mobile River	Alabama	Pickens	Tombigbee River about 1 mi. below (SE of) landing at Vienna, [8.7 mi. S of Aliceville,]	J.D. Williams, et al. 25 May 1977	40967 OSUM:1977:191	7/2 wd.	
Mobile River	Alabama	Pickens	Tombigbee River about 300 yds. above Pickensville boat landing, about 10 mi. NW of Aliceville, Sec. 14, T 21 S, R 17 W	J.D. Williams, et al. 20 Aug. 1974	41341 OSUM:1974:202	1 1/2 wd.	
Mobile River	Mississippi	Lowndes	Tombigbee River at mouth of Buttahatchie River, 12 mi. NW of Columbus, 11 mi. WSW of Caledonia, Sec. 22/27, T16S, R17E	J.D. Williams, et al. 25 July 1972	34016 OSUM:1972:301	2 w.	
Mobile River	Alabama	Sumter	Tombigbee River about 2 mi. N of Gainesville, about 11.5 mi. N of Epes, Sec. 25, T 22 N, R 2 W	D.H. Stansbery, et al. 24 June 1972	34351 OSUM:1972:112	2 w; 31 2/2 d.	
Mobile River	Alabama	Pickens	Tombigbee River about 4 mi. S of Pickensville, 8 mi. NW of Aliceville, Sec. 2, T 22 S, R 17 W	J.D. Williams, et al. 28 July 1972	34424 OSUM:1972:297	3 1/2 d.	
Mobile River	Alabama	Pickens	Tombigbee River about 0.5 mi. E of Memphis, 8 mi. W of Aliceville, Sec. 14, T 22 S, R 17 W	J.D. Williams, et al. 28 July 1972	34741 OSUM:1972:315	12 1/2 d.	
Mobile River	Mississippi	Lowndes	Tombigbee River about 9.5 mi. S of Columbus 14 mi. ENE of Crawford, Sec. 11, T 17 N, R 18 E	P. Mundy, T. Jambour July 1972	34741 OSUM:1972:335	1 d.	
Mobile River	Mississippi	Lowndes	Tombigbee River at island below mouth of Tibbee Creek, 4.4 mi. NW of Columbus, 11.7 mi. NE of Artesia, Sec. 11, T 19 N, R 17 E	D.H. Stansbery, et al. 29 May 1972	37205 OSUM:1972:100	3 2/2 d.	
Mobile River	Mississippi	Lowndes	Buttahatchie River about 0.5 mi. above its mouth, [12 mi. NW of Columbus], T 16 S, R 19 W	J.D. Williams, R. Grace 4 Oct. 1974	36290 OSUM:1974:300	1 w; 1 d.	
Mobile River	Alabama	Pickens	Tombigbee River at large island about 2.8 mi. SSW of Pickensville, [9.3 mi. WNW of Aliceville], NW 1/4 Sec. 35, T21S, R17W	J.D. Williams, R. Grace 19 Aug. 1974	36236 OSUM:1974:204	2 d.	
Mobile River	Alabama	Pickens	Tombigbee River at island above mouth of Lubbub Cr., 3.8 mi. N of Vienna, 4.4 mi. SW of Aliceville, Sec. 10, T24N, R2W	J.D. Williams, et al. 7 June 1972	36267 OSUM:1972:93	1/2 sf.	
Mobile River	Alabama	Pickens	Tombigbee River about 1 mi. above mouth of Sipsev R., just below Vienna, 8.3 mi. SSW of Aliceville, Sec. 34, T 24 N, R 2 W	J.D. Williams, et al. 7 June 1972	36290 OSUM:1972:94	8 2/2 sf.	

Researched by

David H. Stansbery

Date

14 Aug. 1980

