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DISTRIBUTION OF CORBICULA FLUMINEA THE ASIATIC CLAM, IN MISSISSIPPI<sup>1</sup>

Paul D. Hartfield and Charles M. Cooper

ABSTRACT

*Corbicula fluminea* (Müller, 1774) is recorded from 10 of the 12 major drainage basins of Mississippi. The absence of this clam is associated with shallow, sandy rivers and short coastal drainages influenced by tides.

In Mississippi, the Asiatic Clam was first discovered in the Yazoo River in 1963 (Hubricht, 1963). It has since been found in the Pearl, Leaf, and Coldwater Rivers (Heard, 1965); the Pascagoula and Chickasawhay Rivers, and the Tennessee River tributaries in northeastern Missis-

sippi (Grantham, 1967); the Tombigbee River (Grantham, 1969); the Tangipahoa and Amite Rivers (Stern, 1976); the Yalobusha River and Grenada Lake (Cooper and Johnson, 1980); and the Big Black River (Hartfield and Rummel, 1981).

Mississippi (Fig. 1) is divided into 12 major drainage basins. We made 51 collections of Asiatic Clams in ten of these systems with the following observations:

<sup>1</sup>Contribution of the Mississippi Museum of Natural Science, Jackson, MS, 39202 and the Sedimentation Laboratory, ARS, U.S. Department of Agriculture, Oxford, MS 38655.

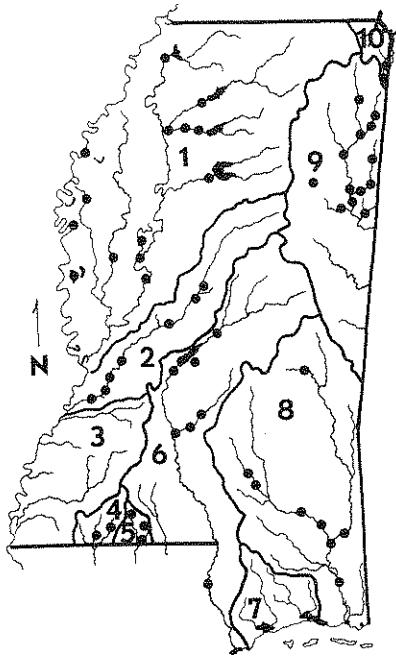


FIG. 1. Drainage systems in Mississippi (After Cook, 1959). Black dots (•) indicate collections by the authors.

1. Yazoo-Sunflower Basin. Dispersed throughout Bear Creek, the Sunflower, Yazoo, Tallahatchie, Yocona, Yalobusha and Coldwater rivers, and in Lakes Bolivar, Ferguson and Washington.
2. Big Black River. Locally abundant in the lower half of the Big Black River and is occasionally found north of Madison County.
3. Southwest Mississippi. Absent from Bayou Pierre and the Homochitto and Buffalo Rivers.
4. Amite River. Common, but we have not found any dense populations.
5. Tangipahoa River. Locally common.
6. Pearl River. Abundant throughout the drainage including the Yockanookanay and Strong Rivers, and Ross Barnett Reservoir.
7. Coastal Terrace. Absent.
8. Leaf River. Locally abundant throughout the drainage including Okatoma Creek. Dense populations are found in the lower part of the river between Hattiesburg and the mouth.
9. Chickasawhay River. Locally abundant including Chunky River.
10. Pascagoula River. Abundant above tidal

influence but not found in the Black and Red Creeks.

11. Tombigbee River. Locally abundant populations throughout the drainage including the Buttahatchee River and the Tibbee, Luxapalila and Bull Mountain Creeks.

12. Tennessee River. Very abundant in Bear Creek. Animal middens on the creek bank are almost exclusively *Corbicula*.

There are two general regions of Mississippi where Asiatic Clams have not been collected. The first consists of the tributaries which drain into the Mississippi River below Vicksburg, Mississippi and includes Bayou Pierre, Homochitto River and Buffalo River. The absence of *Corbicula* from these streams does not appear to be due to inaccessibility, since the clam is well-established to the north in the Big Black River, to the east in the Pearl River, to the south in the Amite River and to the west in the Mississippi River. Other bivalves are also quite rare in these three streams. Only five species of unionids were found in Bayou Pierre: *Potamilus purpuratus*, *Lampsilis ovata ventricosa*, *L. straminea claibornensis*, *Leptodea fragilis*, and *Tritogonia verrucosa*. Only two species, *Lampsilis radiata luteola* and *Villosa lienosa* have been collected in the main channel of the Homochitto River, but four additional species (*Toxolasma texasensis*, *Fusconaiia flava*, *Uniomereus declivus*, *Anodonta imbecillis*) have been found in a small tributary. No bivalves were collected from the Buffalo River.

Physical characteristics shared by the three streams explain their limited bivalve fauna. Substrates are primarily sand or gravel mixed with sand. Quicksand varying from 15 to 60 cm deep is found throughout the drainages. In general the sand can be considered a very unstable and shifting substrate on which few bivalve species, including *Corbicula*, can survive. The streams have a low flow channel which meanders within wide, sandy flood channels. In the Homochitto River the flood channel may be 400 m wide while the low flow channel is less than 30 m. The low flow channel also meanders extensively as a result of seasonal flooding. One collecting site in the main channel of the Homochitto in 1981 was

dry sand and over 25 m from the low flow channel in 1982. In the headwaters where the ratio of the flood channel is much less, long stretches of sand and gravel are exposed during low flow. These sand and gravel bars act as solar collectors during the summer months and water temperatures reach or exceed 35°C. It appears likely that shifting sandy substrates and high summer water temperatures are limiting factors to all bivalve fauna including *Corbicula* in this drainage.

The second region where *Corbicula* could not be found consists of the streams that drain into the Mississippi Sound between the Pearl and Pascagoula Rivers, i.e. the Jordan, Wolf, Biloxi, and Tchoutachabouffa Rivers. All of these streams have comparatively short and narrow drainages, are bayou-like at their mouths with tidal influences extending upstream for several km. Their headwaters above tidal influence are shallow and often have sandy substrates, characteristics common with the streams in the lower Mississippi drainage. Naiad molluscs are also rare in these coastal drainages. Grantham (1969) reported three species from the Wolf River (*L. claibornensis*, *Villosa vibex*, *Rangia cuneata*), two from the Jordan (*Villosa lienosa*, *Rangia cuneata*), four from the Biloxi (*Lampsilis claibornensis*, *V. lienosa*, *V. vibex*, *R. cuneata*) and one from the Tchoutachabouffa (*R. cuneata*). During our survey, we also found *Fusconia cerina* and *Villosa lienosa* in the Wolf River, but were unable to add to the faunal lists

of the other streams.

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## THE PLANORBID SNAIL *MICROMENETUS DILATATUS AVUS* (PILSBRY) IN THE WEST INDIES AND CENTRAL AMERICA

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During recent years I collected several samples of a minute planorbid snail in Haiti and Jamaica. The specimens are indistinguishable

from a form described as a Pliocene fossil from Florida. This is also the same as a form described from Panama. The snail is properly