Southeastern Fishes Council Proceedings

Number 4 (June 1997)

6-1-1977

A Status Report on the Bayou Darter,*Etheostoma Rubrum*, and the Bayou Pierre System

Royal D. Suttkus

Glenn H. Clemmer

A Status Report on the Bayou Darter,*Etheostoma Rubrum,* and the Bayou Pierre System

Southeastern Fishes Council
PROCEEDINGS

DEDICATED TO THE PRESERVATION OF SOUTHEASTERN FISHES

VOL. 1 NO 4 JUNE 1977

A STATUS REPORT ON THE BAYOU DARTER, ETHEOSTOMA RUBRUM, AND THE BAYOU PIERRE SYSTEM

By
Royal D. Suttkus
Tulane Museum of
Natural History
and
Glenn H. Clemmer,
Mississippi State University

The bayou darter, *Etheostoma rubrum,* (Figure 1) is endemic to the Bayou Pierre system, a tributary of the Mississippi River in southwestern Mississippi. The bayou darter is included in

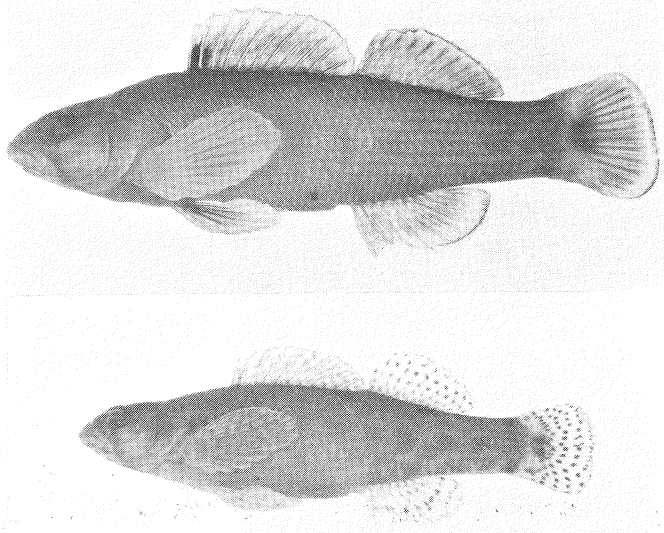

Fig. 1. *Etheostoma rubrum.* **Male 42.9 mm is standard length. Female 35.9 mm. Both specimens catalogued as TU 40368.**

the Mississippi Game and Fish Commission listing of endangered vertebrates (Clemmer, Suttkus, Ramsey, 1975) and is considered threatened under the federal provisions of the Endangered Species Act of 1973 (Federal Register, Vol. 40, No. 77, p. 17590, 21 April 1975). Described in 1966 (Raney and Suttkus) from two sites, the darter is now known to be more widespread in the system, (Teels, 1976) but is limited to approximately 60 km of the main channel and the lower segments of several of its major tributaries (Figure 2).

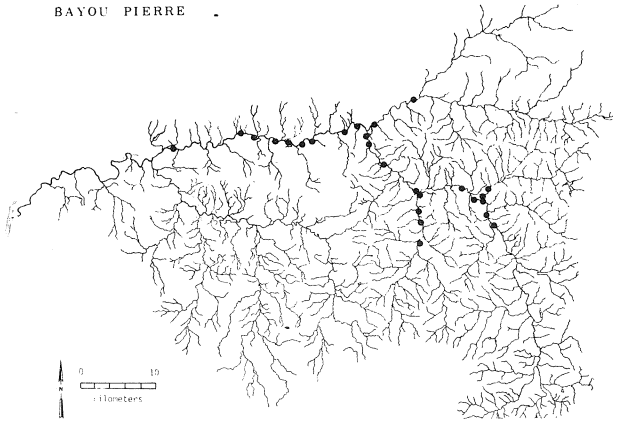

Fig. 2. Distribution of *Etheostoma rubrum.*

The Bayou Pierre watershed comprises about 2500 km^2 and has a comparatively rich fish fauna. A listing of 77 species has been compiled for the Bayou Pierre system from our studies which began in December of 1963. We have not sampled the lower part of the system, so additional species will surely be added to the list when this is done.

The type locality of the bayou darter, about midway in the drainage system is at the state highway 18 crossing 3.1 km west of Carpenter and 10.7 km east of Carlisle (Figure 3). During a two year intensive study a total of 70 species was obtained at this site.

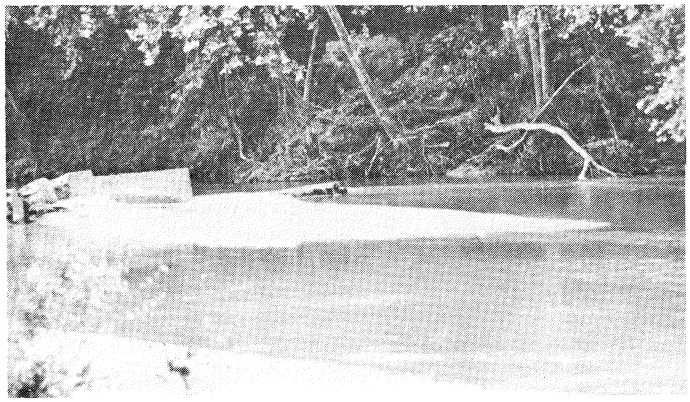

Fig. 3. Bayou Pierre at state Highway 18, Copiah Co., MS.

Included in the rich assemblage of fishes is the crystal darter, *Ammocrypta asprella,* which is in the Mississippi Game and Fish Commission listing of endangered vertebrates. The crystal darter has been taken from the main stream from near Dentville downstream nearly to Port Gibson. Also it was taken by us at one site in the lower part of Little Bayou Pierre.

In addition to providing the only natural habitat for the bayou darter and a suitable habitat for the crystal darter, we believe that the Bayou Pierre drainage system served an important role in the past as a dispersal route for a number of fishes. Bayou Pierre probably served as a pathway for dispersal of Gulf Coastal fishes westward into the Mississippi River drainage. Perhaps the upper part of the Pearl River system represents the captured headwaters of the former Bayou Pierre system. In an early Mississippi Geological report a postulation was made that the Big Black River captured the upper part of the Pearl River system, but we find little biological evidence to support this view.

The southern population of the silverjaw minnow, *Ericymba buccata,* has its westermost distribution in the Bayou Pierre system. (Wallace, 1973) This is its only representation in the lower Mississippi River system. The cherryfin shiner, *Notropis roseipinnis,* is an eastern Gulf Coastal form which also has made it into the Bayou Pierre system and several other tributaries of the lower Mississippi River (Snelson, 1972). The bluehead chub, *Nocomis leptocephalus,* another southeastern form has its western limits in the lower, eastern tributaries of the Mississippi River from Bayou Pierre southward to Thompson Creek (Lachner and Wiley, 1971). The bluehead chub may have gained access to the Mississippi drainage through the Bayou Pierre system and then spread into other tributaries.

Movements of fishes from the Mississippi River eastward via Bayou Pierre into the Pearl River may be illustrated by the bluntface shriner, *Notropis camurus,* and the northern studfish, *Fundulus catenatus.* These two species are present in the upper Pearl River and its tributaries at the same latitude as the upper part of Bayou Pierre. The transfer may have been the result of the capture of lateral tributaries of the Pearl River system by the upper Bayou Pierre system rather than the reverse capturing as presented above.

Teels (1976) reference to the association of the bayou darter and the crystal darter with the eroded portion of Bayou Pierre is somewhat misleading. However, he clearly stated the habitat relationship in the section (Results) on page 75. He noted that, "The bayou darter prefers the more stable gravel riffles with larger gravel or rock. No bayou darters have been collected in riffles composed primarily of loose gravel or sand." Our observations are essentially in agreement with those of Teels. With regards to the crystal darter, we have collected and observed the species over most of its range, and invariably it is more abundant in areas of moderate to fast clear water over a stable substrate composed of packed gravel or mixture of gravel and sand.

Thus, there are multiple reasons for maintaining the entire Bayou Pierre drainage system in an unmodified state. If implemented, proposals by the Soil Conservation Service toward modifying the streams of the Bayou Pierre watershed could jeopardize the bayou darter and alter or destroy the rich assemblage of fishes. Currently there are plans to build headwater impoundments for flood control and recreation. A public hearing held in review of the project on 21 December 1976 elicited considerable opposition from the public, and the project has not been approved for operation as yet. A final environmental impact statement has not been filed.

The current major problem with regards to deterioration of Bayou Pierre is the gravel mining operations along the main channel. Added to the mining activities are road grading, bridge construction and clearing of riparian vegetation with subsequent cultivation to the very edge of the river bank. The combined activities have accelerated the erosion during the last ten years.

During the middle 60's the type locality had considerable exposed hardcapped clay and sandstone outcropping. The surface was very rough and the pockets and depressions were filled with hard packed gravel. There was some attached riverweed, *Podostemum,* on the bedrock; however, none was observed during recent visits to the site. Most of the outcropping is now buried under a thick layer of loose gravel and sand.

We are opposed to impounding and floodwater retarding structures. These structures change the flow patterns, change chemical and physical parameters and promote long-range biological changes to the detriment of the assemblage of native species. Upstream modification will undoubtedly have an effect on the downstream areas where the bayou darter lives.

We recommend that plans be implemented to retain the top soil in its place and to retard erosion. We suggest the following:

1. That all mining of gravel be stopped within and near the main channel and in all contiguous low areas.
2. That native vegetation be restored along the main stream and all major tributaries and that an appropriate riparian buffer zone of vegetation be maintained.
3. That contour planting be practiced in the flood plains and immediate slopes.
4. That soil holding crops be encouraged for use in the flood plains and immediate slopes.
5. That better road maintenance measures be established that would reduce the erosion of embankments directly into drainage system.

Specimen photographs are by Jeanne Suttkus. Mona Suttkus provided the photograph of the type locality.

LITERATURE CITED

Clemmer, G.H., R.D. Suttkus and J.R. Ramsey. 1975. A preliminary checklist of endangered and rare fishes of Mississippi. *in*: A preliminary list of rare and threatened vertebrates in Mississippi. Ms. Game and Fish Comm. Jackson, MS.

Lachner, E.A. and M.L. Wiley. 1971. Populations of the polytypic species *Nocomis leptocephalus* (Girard) with a description of a new subspecies. Smithsonian Contrib. to Zool. No. 92.

Raney, E.C., and R.D. Suttkus. 1966. *Etheostoma rubrum,* a new percid fish of the subgenus *Nothonotus* from Bayou Pierre, Mississippi. Tulane Stud. Zool. 13(3):95-102.

Snelson, F.F., Jr. 1972. Systematics of the subgenus Lythrurus, genus *Notropis* (Pisces: Cyprinidae). Bull. Fla. State Mus. Biol. Sci. Vol. 17(1).

Teels, B.M. 1976. The ecology of endangered fishes in Bayou Pierre. *in:* Proc. Miss. Water Resources Conference, 73-78.

Wallace, D.C. 1973. The distribution and dispersal of the silverjaw minnow, *Ericymba buccata* Cope. Amer. Midl. Nat. Vol. 89(1).