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Reintroduction of an Undescribed Species of *Elassoma* into Pryor Branch, Limestone County, Alabama

REINTRODUCTION OF AN UNDESCRIBED SPECIES OF *ELASSOMA* INTO PRYOR BRANCH, LIMESTONE COUNTY, ALABAMA

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Specimens of an undescribed species of *Elassoma* were first collected in 1937 from Cave Spring (T3S, R13W, S15), in Lauderdale Co., AL; and in 1941 from Pryor Springs (T4S, R4W, S22), Limestone Co., AL. Both localities are in the Tennessee River drainage. The Cave Spring locality was later inundated by Pickwick Reservoir, which apparently destroyed the spring habitat. Repeated sampling of Pryor Springs and other likely habitats within and without the Tennessee drainage has revealed no additional specimens of *Elassoma*. As a result, this Alabama endemic species was believed to be extinct until 17 February 1973, when D. A. Etnier and students collected specimens from Beaverdam Spring (T4S, R3W, S10), in Limestone Co., AL. Subsequent sampling by other ichthyologists has revealed additional populations within the Beaverdam Creek watershed.

In 1982, the U.S. Fish and Wildlife Service, Alabama Department of Conservation and Natural Resources, and landowners in the Beaverdam Creek watershed signed a 3-year, renewable conservation agreement (CA) to manage and protect the Beaverdam Creek habitat. A secondary goal involved the possible reintroduction of the species back into the Pryor Spring area.

On 17 February 1984, the authors and several associates collected 36 adult specimens (11 males and 25 gravid females) of *Elassoma* from Moss Spring (T4S, R3W, S16), a tributary to Beaverdam Creek (Fig. 1). All individuals were immediately transported to an unnamed spring tributary (T4S, R4W, S21) to Pryor Branch, which is located approximately 300 yards west of U.S. hwy. 31. This spring, herein called Lower Pryor Spring, is located a short distance downstream of Pryor Spring, the original site from which the species was collected. After a brief acclimation period, the individuals were released into the spring.

Lower Pryor Spring was not surveyed again until 13 September 1985, when approximately 10 minutes of sampling yielded 4 juvenile specimens (1 male and 3 females) from different areas along the spring margin. Satisfied that the *Elassoma* was present and appeared to be surviving, we returned to Moss Spring and collected 120 juveniles (37 males and 83 females) in approximately 30 minutes. These were then transported to Lower Pryor Spring and released.

The collection of *Elassoma* in Lower Pryor Spring is noteworthy for two reasons. First, measurements made *in situ* at the time of the original introduction indicated the following slight differences in water quality between Moss and Pryor springs (values for Moss Spring indicated first): temperature 16°C vs. 14.5°C; specific conductivity (umhos/cm) 55 @ 16°C vs. 142 @ 16°C; pH (as units) 5.7 vs. 6.3; alkalinity (as HCO₃ mg/l) 20 vs. 66. These differences were apparently not sufficient to preclude spawning success and survival of the eggs and larvae. Second, based on studies of its reproductive behavior and development (Mettee 1974), supplemented by repeated sampling during various times of the year, the senior author feels that this *Elassoma* likely is an

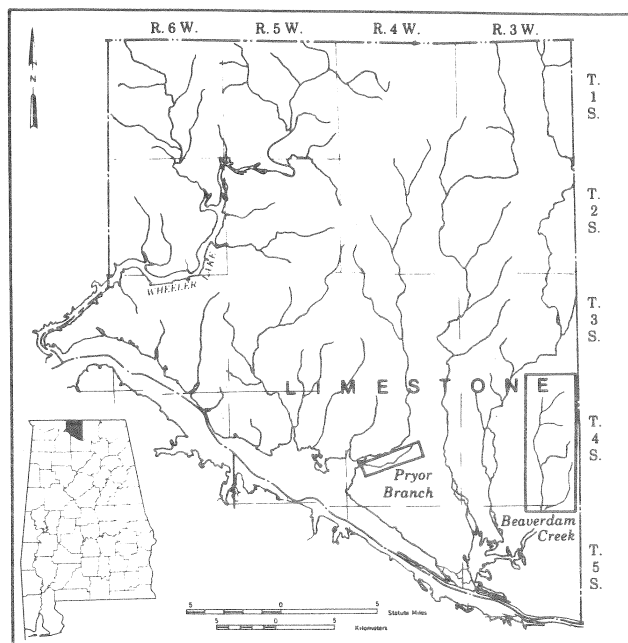


Figure 1.--Pryor Branch and Beaverdam Creek in Limestone County, Alabama.

annual species. Assuming this hypothesis is correct, the specimens collected from Lower Pryor Spring represent the progeny of two successful spawnings in this new habitat.

Although the *Elassoma* collected in September 1985 were not individually measured, a distinct difference in size range was observed between populations. Specifically, all four individuals collected from Lower Pryor Spring were noticeably larger than most, if not all, of the 120 plus individuals collected at Moss Spring. Differences in water quality, the relative abundance of other fish species, and physical setting of the two springs could account for part or all of this variation in growth rate. Since Lower Pryor Spring contained no pygmy sunfishes prior to February 1984, increased growth could also reflect optimum utilization of a new environment and its previously untapped food supply by an introduced species. Lower Pryor Spring may contain fewer predator and competitor fish species. *Esox americanus*, *Gambusia affinis*, *Lepomis cyanellus*, *L. macrochirus*, *L. microlophus*, and *Etheostoma tuscumbia* were collected in both Moss Spring and Lower Pryor Spring, but fewer individuals of these 5 species were collected at the latter site. Differences in physical setting and use by man of the two springs may influence the abundance of pygmy sunfishes in ways not immediately obvious. Most of Moss Spring and its run is located in a pasture and is essentially unshaded, has a substrate comprised principally of silt and clay, and is regularly used as a livestock watering area. The spring and spring run nevertheless continue to support a thriving population of *Elassoma*. Lower Pryor Spring is located in a wooded area shaded by trees, has a substrate consisting principally of Tuscumbia Limestone with very little silt and sand, and is not utilized as a watering hole. Aquatic vegetation in both springs is comprised predominantly of *Myriophyllum*, an excellent spawning medium for *Elassoma*.

The CA for the Beaverdam Creek habitat is scheduled for renewal in 1986. Monitoring of both populations of *Elassoma* will continue on an annual basis. Consideration is also being given to the reintroduction of *Elassoma* into one additional spring in the Pryor Branch or Beaverdam Creek watershed, possibly within Wheeler National Wildlife Refuge.

Acknowledgments

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In answer to various inquiries received during the past year, this is the first issue of the *Southeastern Fishes Council Proceedings* to appear since August 1984. I apologize for the delay, which results from several factors, all related ultimately to economics. First, as can be seen from the contents, this issue contains four separate articles, which is much more economical than having these appear separately, and represents continuation of a policy begun with the preceding issue of the *Proceedings*. Thus, publication is delayed until a sufficient number of papers are available to fill out a 16-page issue. Second, I have personally taken on the tasks of entering all the edited manuscripts onto a word processor and then doing the layout. (Photographic reduction of the final typed manuscripts was done by the FSM photographer). This has resulted in substantial savings, which are crucial considering our limited budget. At the present time, one additional manuscript is on hand, which will appear in the next issue. Submission of additional manuscripts will ensure more rapid publication in the future. Beginning next year, the job of editor will be turned over to Dr. Michael M. Stevenson, Department of Biological Sciences, University of New Orleans, New Orleans, Louisiana 70148. All new manuscripts should be sent to that address.

The following news relating to southeastern fishes results from conversations with various colleagues, as well as information appearing in the *Endangered Species Technical Bulletin*. According to the June 1986 issue of that publication (vol. 11, no. 6), an individual of the Maryland darter (*Etheostoma sellare*) was seen in Deer Creek, Harford County, Maryland (its only known place of present occurrence) on 16 May, the first confirmed sighting of the species since September 1983.

Noel Burkhead and Bob Jenkins (Roanoke College) indicate that their Virginia fish book is almost ready to go to press. They also report that the Roanoke logperch (*Percina rex*), a Roanoke drainage endemic, will soon be listed as a nationally threatened species. However, the orangefin madtom (*Noturus gilberti*), another Roanoke endemic proposed for similar status, will not be listed because of the presence of a healthy introduced population in Craig Creek, in the upper James River drainage. The U.S. Army Corps of Engineers has denied permission to local interests to build a pump-storage reservoir on one of the tributaries of the

upper Roanoke. Were this facility to be built, it would result in seriously reduced water levels in the main river at certain times, which in turn would impact the biota living there.

Nature Conservancy has purchased Pendleton Island (the site of a large mussel shoal), located in the Clinch River of western Virginia near the mouth of Copper Creek. The yellowfin madtom (*Noturus flavipinnis*) still occurs in Copper Creek. There had been some concerns expressed regarding its survival at this locality, inasmuch as efforts to locate it there in recent years had been unsuccessful. Recent monitoring work indicates that the rare pygmy madtom (*Noturus stanauli*) is still doing well at its type locality (Frost Ford, on the Clinch River). Dave Etnier (University of Tennessee) reports that his and Wayne Starnes' book on Tennessee fishes should go to press around the end of 1986. Dave has recently begun efforts to reestablish *Noturus flavipinnis* and the Smoky madtom (*Noturus baileyi*) in Abrams Creek (which flows out of Great Smoky Mountains National Park), from which stream the two species were eliminated via rough-fish removal operations in the mid-1950's. The first part of this operation (culturing in the lab) was initially successful, but the developing individuals of *N. baileyi* (though not *N. flavipinnis*) died as an apparent result of contamination of the air supply to the aquaria. Twenty-five *N. flavipinnis* were reared and introduced into Abrams Creek, and efforts will be repeated again next year for *N. baileyi*. Dave also reports the discovery of several additional populations of a rare, undescribed darter (genus *Etheostoma*, subgenus *Nothonotus*), which lives in fast-flowing water behind boulders in the main channel of the Elk River of south-central Tennessee and northern Alabama. His continuing work on Tennessee fishes has also revealed that the population of johnny darter (*Etheostoma nigrum*) inhabiting tributaries of the Mississippi River in western Tennessee and western Mississippi represents an undescribed species more similar superficially to the tessellated darter (*Etheostoma olmstedii*) of the Atlantic slope. Finally, he reports the apparent continuing recovery of fish populations in the lower Duck River, which had recently taken a "nosedive" for reasons not yet fully explained. Included in a recent collection of 45 species was the first specimen of the silvery minnow (*Hybognathus nuchalis*) recorded from the Tennessee River drainage in many years. Jim Grady (University of New Orleans), who has been studying systematic relationships among madtoms, tells us that the Duck River population previously called *Noturus elegans* is electrophoretically distinct, and externally may be distinguished from the true *N. elegans* by a more strongly mottled body pattern.

Thomas Spring (one of three known sites for the watercress darter (*Etheostoma nuchale*)) is now a national wildlife refuge under control of the U.S. Fish and Wildlife Service. There has recently been concern that the Roebuck Springs population of this species would suffer because of a new commercial development nearby. However, according to Fred Bagley (U.S. Fish and Wildlife Service), hydrological studies indicate that the danger is less than first thought, partly because there is a knoll between the spring and the area being developed (thus causing most of the drainage to be away from the spring), and also because the spring's recharge area is well below the surface of the ground and is not confined to the immediate area. This population of *E. nuchale* will of course continue to be closely monitored. Mike Howell (Samford University) is continuing efforts to locate and introduce the species into other suitable springs within the area. Bob Stiles (Samford University) and one of his students have recently completed a life history study of the undescribed Cahaba shiner. Bob indicates that the species may be found in concentrations close to shore following the first spring rains, but not at other times. Malcolm Pierson has been conducting a distributional survey of the species, and indicates that the present known range of the species encompasses about 35 miles of the Cahaba River (down from 60 miles historically). However, most of the population is concentrated in a 12-mile area between Centreville and Helena, Alabama, with only scattered

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individuals having been found in the lower 23 miles. Malcolm also has found the Alabama distribution of the formerly widespread blue shiner (Notropis caeruleus) to be limited to a few tributaries of the Coosa River in Cherokee, Calhoun, and Coosa counties. The last remaining "stronghold" for this species continues to be the upper Conasauga River of Georgia and Tennessee, where it is still common. He reports the following post-1975 sightings of the undescribed shovelnose sturgeon (genus Scaphirhynchus) from the lower Mobile Bay basin: Tensaw River in Monroe, Baldwin, and Wilson counties (5), Miller's Ferry Reservoir (1), and the lower Cahaba River, in Dallas County (1). The frecklebelly madtom (Noturus munitus), freckled darter (Percina lenticula), and crystal darter (Ammocrypta asprella), each of which has had a major portion of its preferred big-river habitat in the Mobile Bay basin eliminated as a result of the Tenn-Tom waterway, continue to exist in a few widely scattered places throughout the basin. One of the most interesting records involved the collection of a single

P. lenticula from the channel of the Coosa River, below Jordan Dam, in the only remaining part of the original free-flowing river. The goldline darter (Percina aurolineata) continues to do well in the lower Cahaba River, particularly in its main tributary, the Little Cahaba River. It is otherwise known only from the upper Coosa River drainage, in Georgia. Finally, Bob Cashner (University of New Orleans), who has been working on systematics of the genus Fundulus, emphasizing electrophoretic techniques, says that the population of Fundulus stellifer occurring in the Tallapoosa River system of eastern Alabama and western Georgia differs from other populations in both color pattern and in six fixed alleles, and likely deserves species recognition.

It was recently learned that Jim Williams will be leaving the Office of Endangered Species office in Washington, and will be transferred to the new U.S. Fish and Wildlife Service laboratory in Gainesville, Florida, early next year. We want to take this opportunity to welcome Jim to his new home.