

# A NEW SPECIES OF DARTER FROM MISSOURI: KEEPING AND CULTURING THE MERAMEC SADDLED DARTER (*ETHEOSTOMA ERYTHROZONUM*)



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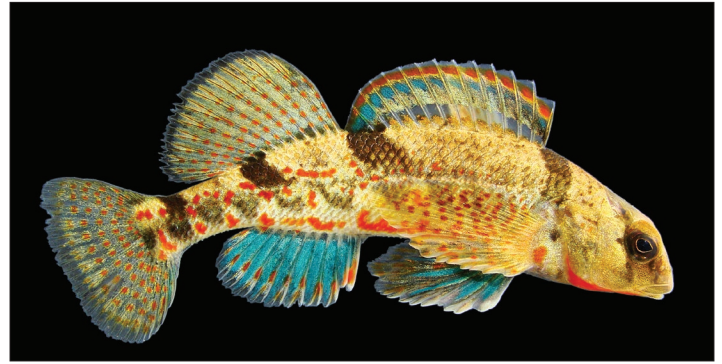
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The saddled darter species complex is a unique and widespread clade of darters distributed from the western Missouri Ozarks to the Appalachians of Virginia. A recent reorganization of related darter groupings by Thomas Near (2011) has placed the saddled darters in the subgenus *Poecilichthys*. For whatever reason saddled darters do not range too far south in the continental United States and not all that far north albeit the Variegate Darter (*Etheostoma variatum*) ranges up into southwestern New York. Two regions appear to be species-rich in saddled darters, the Ozarks of Missouri and northern Arkansas and the Appalachians of Virginia and West Virginia. The subject of this article is the recently recognized Meramec Saddled Darter (*E. erythrozonum*) from eastern Missouri. Long considered to be the Missouri Saddled Darter (*E. tetrazonum*), the Meramec Saddled Darter was finally described as a new species in 2009 by Switzer and Wood. In 2002 Switzer and Wood performed a phylogenetic analysis of the Missouri Saddled Darter complex. This study initially revealed a unique population of a potentially new species of saddled darter. Colored patterns of nuptial males also varied from the regular Missouri Saddled Darter. As the name implies, Meramecs are endemic to the Meramec River system of eastern Missouri. The specimens mentioned in this article were captured from the Big River, a tributary of the Meramec River. The third species of Ozarkian saddled darters is the Arkansas Saddled Darter (*E. euzonum*), which is divided into two subspecies: *E. euzonum erizonum*, which ranges within the Current River system and *E. euzonum euzonum*, which occupies the remaining range of the White and Black river systems of Missouri and Arkansas. In the book, *The American Darters* by Kuehne and Barbour (1983), they discuss the possible historical range of saddled

darters ranging from the eastern Variegate Darter to the western Missouri Saddled Darter and on pages 84 and 85 they discuss several scenarios on how this may have occurred and why there is a gap in ranges between the eastern and western species of saddled darters.

In the Spring of 2010 the author had his first opportunity to collect the Meramec Saddled Darter through the gracious hospitality of Bob Hrabik (Missouri Department of Conservation), who guided us to a known locale of this fine species, the Big River at St. Francois State Park in St. Francois County, Missouri. The author has had experience working with and culturing the Missouri Saddled Darter so a chance to keep and possibly culture another saddled darter was a fantastic opportunity (Katula 2006). When I was notified we would be attempting to collect this new species, a web search revealed very few images and the few I found did not really appear to do this species justice. This provided a little intrigue into just what this species would really appear like and how does it compare to the beautiful Missouri Saddled Darter. Also, would it spawn in the same manner as the other saddled darter species? Little literature exists specifically pertaining to this newly described species.

Before elaborating on collection and culture techniques, I will discuss the differences between Missouri and Meramec Saddleds. The most obvious first step in identifying this species is to determine where your specimen(s) came from. If collected in the Meramec River system of eastern Missouri and it is a saddled darter, it should be this species. The Missouri Saddled Darter is found in Gasconade, Osage, and Moreau River systems. While the Missouri Saddled Darter possesses a fair amount of green to blue coloration between the



Female (left) and male Meramec Saddled Darters from the Big River (St. Francois County, Missouri). (Photos by Lance Merry)

orange vertical bands along their body, the Meramec displays only orange bands interspaced on the light tan or brownish body. Also, the saddles of the Meramec can appear to be more of a chocolate brown versus black in the Missouri Saddled. Orange spots appear somewhat randomly throughout their sides and they have an orange belly. The Missouri lacks the orange spots. The anal fin is blue-green with red-orange spots forming two rows across the fin; spots are rarely observed in the Missouri. The first dorsal fin of the Meramec lacks the broad blue base present in the Missouri. Colors are more enhanced during their spawning period. Females, as is typical for this subgenus, are more plain aside from the dorsal saddles residing over their dorsal regions. Compared to the Missouri saddles the Meramec appears to have a stouter body. The author has not seen a description of the maximum size for this species but it is probably similar to its cousin, the Missouri Saddled Darter, which is around 3.5 inches.

Before heading out to collect Meramec Saddled Darters, the weather forecast was not promising. Saddled darters generally prefer larger fast-flowing rivers and reports indicated the water was high in the streams/ivers where we needed to collect. Upon arrival at the Big River we could see water levels were high and that collecting in the fast water, which this species prefers could be a formidable task. Fortunately, we had a dream team of collectors along: Todd Crail, Nick Proulx, Lance Merry, Konrad Schmidt, Robert Hrabik, and lastly the author. Before arriving at the park we initially collected in Coonville Creek, a tributary of the Big River where we collected a very unusual variety of the Orangethroat Darter (*E. spectabile*). The Orange-throats possessed a good deal of bluish white on their bodies and red body banding was nonexistent. We also collected Southern Redbelly Dace (*Chrosomus erythrogaster*) and some Mottled Sculpin (*Cottus bairdii*). We then proceeded to the main river where it appeared to be fairly deep with persistent current, not a good combination with temperatures not real

warm either. Todd Crail had collected at this locale previously but the water level had been much lower. After much effort, only a few specimens were captured so we proceeded to an upstream location. Here access was more easily obtained and more favorable water depths were encountered. Collecting turned out to be more fruitful, although it was still exhausting kick seining through cobble rock with fast-flowing water. After several hours we had about a dozen specimens for Nick Proulx and myself to take home for enjoyment and captive culture attempts. Other species caught included numerous Rainbow Darters, (*E. caeruleum*), Gilt Darters, (*Percina evides*), and one Gravel Chub, (*Erimystax x-punctatus*). Since the saddled darters occupy oxygen-rich riffle habitats we would have to handle them carefully. They were kept cool and uncrowded to ensure their survival. It would be the first day of a three-day collecting trip so I felt very relieved when all the fish arrived safely home.

The six darters I brought home were placed into a 55-gallon aquarium with a powerhead supplying the aggressive water currents this species desires. These specimens readily accepted frozen brine shrimp, bloodworms, glassworms, along with live whiteworms. Just in case they had a different spawning behavior than other saddles, which all deposit ova within the grave/sand substrate, I placed several rock caves and artificial plants around the tank to offer alternative spawning sites. The Meramecs did nothing in the first year, but the following year they spawned readily. The fish room where they are maintained received relatively transitional temperatures of outdoor temperatures so they experience an overwintering conditioning period. Timers on the lights were adjusted for shortened daylight hours as well during this cooler period and then increased with the warmer temperatures. The setup was the same as formerly described. On April 27th, at a temperature of 56°F, the Meramecs were observed spawning. The females would bury themselves within the gravel substrate. The males would then mount them, head to head, vibrate, and then leave. Fe-

males generally would stay put but occasionally would swim away after spawning. Being substrate spawners I was not going to estimate the number of ova deposited since an accurate number would only be a guess. I did siphon some gravel to determine that eggs were actually being deposited and they were. The parents were removed from the nursery tank at this time. As of May 16th the temperature was up to 68°F and the fry were averaging 10 days old. The larval fry were swimming pelagically, a behavior exhibited by many primitive darter species after hatching and reminiscent of behavior displayed by other Saddled Darter fry I have cultured. At this time the fry were being weaned off microworms and onto freshly hatched artemia (i.e., brine shrimp). An estimated 40 fry were observed at this time. On May 28th the first Meramec Saddled Darters congregated on the bottom, which is typical of adult darter swimming patterns. The temperature of the nursery tank now was at 72°F. Fry size was about ¾ of an inch. On June 20 the Meramec fry were fed and accepted whiteworms and chopped frozen adult brine shrimp. By July 23 the saddles on the fry were becoming visible; temperature in my air-conditioned fish room was 75°F. By fall the sexes were becoming discernable with the males' red coloration developing and size discrepancy becoming more pronounced. Males typically grow much faster than females. Maturity at one year of age was not reached and unlikely within my captive parameters. At two years of age females began developing eggs, confirmation that maturity had been achieved. At the time of this writing (early 2015) the author still has most of the wild specimens captured in that spring of 2010 and considering some of those specimens at the time were likely two years of age, one could expect a relatively long life span from their captive specimens. Most other saddled darter species maintained in captivity by the author generally last 4 to 6 years, which is currently the age of the Meramecs.

In conclusion, the Meramec Saddled Darter is a colorful hardy species when kept properly maintained and should satisfy the native fish hobbyist for many years. As with any saddled darter species they should be provided with generous current flow, good frozen or live foods, and clean water. As with any Ozarkian endemic they would prefer water with a pH of 7.8 or higher. They do have a limited range so hopefully their native habitat can be maintained for us to enjoy this fish for years to come.

Special thanks to Bob Hrabik for his generous hospitality and guidance during this collecting trip as well as Konrad Schmidt and Nick Proulx for joining in on this fantastic collecting trip to add to the list of many over the years.

#### References:

- Switzer, J.F., and R.M. Wood. 2002. Molecular Systematics and Historical Biogeography of the Missouri Saddled Darter *Etheostoma tetrazonum* (Actinopterygii: Percidae). *Copeia* 2002(2):450–455.
- Katula R.S. 2006 Back into Saddleds: A Review of the Saddled Darters of North America. *American Currents* 32(3):1–6.
- Kuehne, R.A., and R.W. Barbour. 1983. *The American Darters*. University Press of Kentucky, Lexington, KY. 177 p.
- Near, T.J., C.M. Bossu, G.S. Bradburd, R.L. Carlson, R.C. Harrington, P.R. Hollingsworth, Jr., B.P. Keck, and D.A. Etnier. 2011. Phylogeny and temporal diversification of darters (Percidae: Etheostomatinae). *Syst. Biol.* 60(5):565–595. Doi: 10.1093/sysbio/syr052. Epub 2011 Jul 20. Oxford University Press.
- Switzer, J.F., and R.M. Wood, 2009. *Etheostoma erythrozonum*, a new species of darter (Teleostei: Percidae) from the Meramec River drainage, Missouri. *Zootaxa* 2095:1:7.

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