

# The Darter That Gets No Respect: The Mud Darter

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**W**hen your name is mud, it is difficult to become the recipient of respect and indeed, the Mud Darters (*Etheostoma asprigene*) are the Rodney Dangerfields of the darter world. Despite their name, mud darters can be extremely colorful and certainly deserve a better name than “mud.” Exceptionally colored adult males are not that uncommon and females, albeit lacking in color (typical of most of the sexually dimorphic darters), do possess a striking pattern of strong vivid lines along their sides. The author’s first encounter with this species was somewhat unorthodox. In a Mississippi River backwater (which was quite literally the front yard in my youth), I often took an opportunity to procure specimens from unlikely sources. I would, on occasion, pick up discarded cans from the river bottom and drain them into a net to determine what might be hiding. This would work to capture an occasional Tadpole Madtom, (*Noturus gyrinus*) or Johnny Darter (*Etheostoma nigrum*), but on this particular day, it would work to catch something unfamiliar to me at this time. Several cans later (it wasn’t an all-nighter!) I had captured about a half dozen juvenile specimens of some Mud Darters. At their young age and size, about

one inch, they displayed little coloration albeit they did display hints of some vermilion red, present within adult males. Over the years I would capture more specimens that were more truly reminiscent of the darter clan, displaying fantastic colors but also proving to be quite variable depending upon time of year but more so depending upon the individual themselves. If you capture a hundred males you will get a hundred variables in degree of color and/or pattern. With selective breeding (something the author is currently attempting) one should be able to affix a colorful strain that would be even more spectacular. All that aside, muds are more conducive to typical aquarium conditions compared to most darters. They often occupy swamps and in summer in relatively warm water conditions. They are a hardy, mild-mannered aquarium fish that also do extremely well in ponds.

The Mud Darter belongs to the family of Perches (*Percidae*) and is a member of the genus *Etheostoma*. Within *Etheostoma* it is classified within the subgenus *Oligocephalus*, which collectively is known as the Rainbow Darter group. The Mud Darter is slightly aberrant in this group as most, but not all, Rainbow Darter species are substrate spawners, depositing their eggs within the gravel. Mud Darters



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Fig. 1.

A breeding male Mud Darter (*Etheostoma asprigene*).

deposit their eggs on plant material, twigs, submerged roots or occasionally on top of the substrate. Many darters that occupy silty habitats have adopted this variance in egg deposition, which is really a survival instinct since their eggs would likely not if deposited in a muddy, oxygen deprived location particularly when the adults do not prepare (clean) a nest location. Within *Oligocephalus* it appears to be closely related to the extremely rare Coldwater Darter (*E. ditrema*) which occupies a few coldwater springs in the upper Conasauga drainage of Tennessee and Georgia. They share the habit of egg attaching, possess fully scaled cheeks, do not develop tubercles (common amongst plant-spawning darters) and share several other common features. Coldwater Darters, however, are far removed from the Mud Darters' range and if they are a direct relative from muds, it would be interesting to determine their range once merged and then became dissected and provided the avenue speciation. The Tennessee River could have provided this avenue for dispersal since in the extreme lower sections of the Tennessee, muds are found. The Mud Darter displays a strong affinity to and ranges mostly within the Mississippi River and lower tributaries only. They range from the Lower St. Croix River of Minnesota and Wisconsin, southward within the Mississippi River to nearly the Gulf of Mexico. Much of the state of Illinois contains this species ranging eastward to the Wabash system barely into Indiana. It is found in the Sabine-Neches River system in eastern Texas. They are often found within the Mississippi River proper, having adapted to life in North America's largest river.

The Mud Darter is reported to live in impoundments, backwaters, overflow ponds, over gravel and rock in large rivers (Etnier and Starnes 1993). In Wisconsin and Minnesota, the author has collected them extensively and found them sporadic to common with the Mississippi River itself, but found them common to abundant in tributaries near their mouths leading into the Mississippi. In upper reaches of these tributaries the muds decline in abundance often despite plenty of seemingly appropriate habitat. These miniature delta regions generally contain mud or sand bottoms and the muds can be specifically common within masses of submerged and eroded roots of common sawgrass. When these roots are exposed to sediment then the muds have a definite tendency to occupy them. They are also common in piles of twigs, woody debris, anything providing substantial cover. My observations contradict George Becker's observations expressed within one of the best regional fish books of all time, *The Fishes of Wisconsin*. George relates muds as one of the rarest of all Wisconsin darters. In one casual afternoon of collecting I caught 125 specimens in one-and-a-half hours. Many juveniles were seen escaping through the holes of the net and were not counted. This discrepancy could

merely be the result of a sampling bias. Routine use of a seine net does not yield many specimens and this is the method of choice by many fish collectors (fish surveyors) and biologists. The areas where muds seem common often are characterized by steep muddy banks on their sides making seining and collecting difficult. A trick Konrad Schmidt (editor and collector bar none of North American fishes) imparted to me was utilizing dip nets in these types of habitats. Holding the net portions in or downstream of the tangled mass where muds prefer, step and dislodge fish and lifting the net up often yields large numbers of fish and works particularly well on muds. I take it a step further and remove all but a small portion of the handle on the dip net handle and lift the net through the tangled mess thereby yielding even more specimens per average net load. During the author's 30 years of collecting muds they pop up nearly every area of the Mississippi River wherever there is significant cover. Once you have caught some specimens transport them carefully and avoid warm temperatures and overcrowding. Otherwise they are pretty much undemanding. While not too particular about water parameters they do prefer a neutral pH, live or frozen foods with frozen bloodworms or glassworms as their preferred diet. The bloodworms would duplicate one of their favorite foods in nature, the various chironomids. The aquarium should have at least subtle aeration and plenty of caves, vegetation, or driftwood for them to hide in. They are timid but get along with a large number of fishes. They reach a size of two-and-a-half inches. One specimen I had lived to be five years old but three to four years in the aquarium is more normal which duplicates their longevity in the wild. Both sexes appear to mature after one year when cultured, which matches observations in the wild.

As suggested before the Mud Darter gets no respect hence their name but males can be very colorful as suggested by this upcoming description. Along the males sides are alternating vertical bars of brick red and blue green. Sometimes the belly area is bright red. Both sexes' heads possess a black vertical bar which continues through the eye, a common darter characteristic. On the males' first and spiny dorsal fin, the exterior margin is a thin blue band. Below this is a thin clear thin band. Below this is a wider red band. Below this is another clear, thin band and a basal band is blue and/or black. In the second soft dorsal fin the exterior is clear and the median is a red band with interior basal generally clear. Females and juveniles have black vertical bands with cream and/or marbled interspaces. Fins are generally mottled bands with the spiny dorsal fin displaying faint red and blues. As in all darter species the older males are the most striking. The marbling on the females can be quite pleasant at times and if I did not mention it enough already, both sexes can be extremely variable. While the author has only retained one possible hybrid, he has caught several specimens

which appear to be crosses with the Iowa Darter (*Etheostoma exile*) which occupies transitional type habitats with the Mud Darter and possess a similar spawning mode, attaching their eggs to plants, plant roots, twigs, etc. At least in Wisconsin and Minnesota many areas contain both species offering many opportunities for crossbreeding or perhaps just a mixing of gametes in a preferred spawning area thereby producing a hybrid. The author has yet to see a superb male mud photographed really displaying their true colors. Specimens often photographed that are seen in literature are from museum specimens which are preserved. In the author's experience, many of the mud's colors and color intensity fades immediately after the fish have succumbed to preservative; more so than most any other darter. The delicate blues especially fade away rapidly.

Spawning muds is a relatively easy process but they do need to be provided an extended overwintering period. Pond culture can be accomplished by several means but merely placing some adults in a favorite fish pond and waiting for fry to present themselves the following summer is the lazy man's (and certainly effective) way to culture this darter. Depending upon which latitude your muds are from they can spawn from February to late April and early May. In Wisconsin it appears in the wild, they spawn mostly in April with some years extending into May. Page and Cummings (1982) described spawning of the Mud Darter. Males did not defend territories but were aggressive towards other males. Males court females by circling and fin displays. Females select spawning sites on elevated surfaces or eggs are released over surfaces. Males mount females with an s-shaped configuration where one to three eggs are released directly on underwater plants whereas 5-10 eggs were released above vegetation. The author has utilized green yarn spawning mops for egg deposition sites which work considerably well. When no mops or egg attaching sites were available the author has noticed the muds will scatter eggs over gravel substrate. In nature, especially during their early spawning period their primary habitat generally is devoid of vegetation therefore it seems likely that the muds utilize a primary different type of egg attaching site. During the author's extensive collection trips for this species, their primary haunts are difficult to sample during breeding season due to springtime floods occurring during the same time. It is difficult to ascertain if they prefer to spawn amongst the flooded terrestrial grasses or amongst their roots, which is this author's opinion. When their streams are accessible during this period this habitat is where they are most often found. The plants' roots would offer a filamentous-type surface sit to attach eggs, which seems preferred within aquaria. To breed muds in captivity merely set up an aquarium, 10 gallons or larger, provide spawning mops or other fine material for them to deposit them upon and wait for them to deposit




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Fig. 2.

A non-breeding male Mud Darter (*Etheostoma asprigene*).

their eggs. As with most fish, an enhanced diet of better and/or more foods will help promote spawning condition. The parents prefer some current as a cue to commence spawning the fry are better off with only subtle aeration. Either remove the eggs as they are deposited or remove the parents as soon as you feel you have enough eggs to work with. One can also place any eggs into a pond and the fry can rear themselves there as well. They spawn at fairly cool temperatures starting out at 57° F and upwards to the middle 60s. The fry hatch in 5-10 days depending upon temperature and are small. The first food the author has offered them is infusoria then switching to microworms. About 10 days after their free-swimming stage they start consuming newly hatched artemia. In one year they reach a size of about 1.5 inches and are mature enough for spawning.

The Mud Darter is one of nature's more-ignored darters by hobbyists, and when the name is mentioned - mud - it conjures up images of some despicable creature. At the very least it does not promote an image of being colorful but colorful these fish are and deserve more attention than they seem to get. If the more colorful forms are fixed into a formalized strain, this could be a darter aquarists could enjoy for many generations. Time to respect the darter that gets no respect. 

### References

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