

CROSSBREEDING OF RIVER DARTER & BLACKSIDE DARTER (*Percina shumardi* & *P. maculata*)

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Crossbreeding of many closely related fishes has been well documented. Somewhat rare in nature, it seems relatively frequent among species of North American minnows (Cyprinidae), sunfishes (Centrarchidae), and the two main darter groups, Percina and Etheostoma. Nature's deterrents to hybridization include preferred breeding habitat, availability of sexual partners, and recognition of those partners. In the home aquarium, it is easy to remove many of the barriers that nature provides.

This article is about two species of Percina that were crossbreeding in a community tank: the River Darter (P. shumardi) and the Blackside Darter (P. maculata). According to the two books that summarize most known darter information (The American Darters and Handbook of Darters), no hybrid specimens produced by crosses of these species have been captured in nature. In his extensive review of darter hybridization for AMERICAN CURRENTS, Clark Hubbs does not cover P. maculatum. He did find that P. shumardi could be crossed with other species of both Percina and Etheostoma in the laboratory, and the babies raised to juvenile stage.

In 1984, in the trip described in a previous AC article ("Redbelly Dace in Wisconsin," AC, Feb. '87), my brother and I travelled to an upstream area of the Black River near Greenwood, Wisconsin. In the various pools, we captured many Blackside Darters by dragnet seining. In the shallow, sandy areas, Johnny Darters (Etheostoma nigrum) were caught, and in the nearby riffles were Rainbow Darters (E. caeruleum) and Banded Darters (E. zonale). Ten years earlier, this area had these species as well as a large assortment of predatory ones, including Burbot (Lota lota), juvenile Muskellunge (Esox masquinongy), and many bullhead and sunfish species. Previous collections here produced Gilt Darters (Percina evides) as well. All these fish had disappeared, nor did I find an albino tadpole as I had ten years ago. How that conspicuous tadpole escaped predation by the numerous carnivores defies logic.

A week later, I persuaded my brother to go collecting once again. This time it would be in localities in the mighty Mississippi River. Across from Winona, Minnesota were my favorite collecting haunts. In one spot where a backwater slough entered the main channel, we caught a single River Darter, as well as some Gizzard Shad (Dorosoma

cepedianum). Western Sand Darters (Ammocrypta clara) were caught nearby, as well as Troutperch (Percopsis omiscomaycus) and some Orangespotted Sunfish (Lepomis humilis). In one day these fish would be going back with me to California.

Except for several Blackside Darters, all the remaining fish survived the trip and readily adapted to their captive surroundings in a 55-gallon aquarium. This aquarium was equipped with a 400-gallons-per-hour powerhead mounted onto the undergravel filtration system. Aeration was provided through two Silent Giant airpumps. One large mound of rocks was situated in the center of the tank with a fairly large piece of driftwood just to the right of it. Temperature ranged from 67° to 75° Fahrenheit, with breeding occurring at the lower end of this range. Other occupants of the aquarium were Western Sand Darters, Rainbow Darters, several Mud Darters (Etheostoma asprigene), Longnose Dace (Rhinichthys cataractae), and a half-dozen Threadfin Shad (Dorosoma petenense). The Blackside Darters took up residence in the various nooks and crannies of the central rockpile. The single River Darter seemed content to swim into the various currents formed primarily on the left side of the tank.

The darters were fed the normal aquarium foods offered to darters--live and frozen brine shrimp, live tubifex worms, and occasional feedings of frozen bloodworms. This diet proved sufficient for their well-being and growth, but breeding behavior did not really commence until live glassworms were included in their diet. The three remaining (obviously male) Blacksides transformed from the rather drab, indistinct black and white bars to metallic gold bars intervened by distinct black bars--very attractive fish indeed. The River Darter started becoming quite distended with eggs, but her color remained virtually unchanged except at actual spawning time, when she faded from gray to a very light gray, with her suborbital bar becoming very pronounced.

Spawning activity was first observed in the third week of January, 1985. It continued until the end of March. This timetable would definitely be too early for spawning in their native Wisconsin, so conditioning probably played the largest role in spawning inducement. Temperature probably had limited influence, as the aquarium was maintained continuously at room temperature. The male Blacksides made few attempts to pursue, or attempt spawning with, the female River Darter. Instead, they would wait near or inside their rocky lair. When the River Darter would encroach on their territory, in or by the piece of driftwood, the Blackside

Darters approached. Sometimes two males would approach and inevitably some head-and-tail chase fighting would occur, but more often than not, only one male would attempt spawning. Courtship entailed fin displays by the male and some head-bopping. Courtship generally took very little time; the female would bury herself slightly, with the male then mounting her and vibrating. Mating took several minutes. The male would briefly leave and the female usually remained buried up to fifteen minutes. This would be repeated from two to five times during each series. I did observe several series in a single day, and apparently there were breaks in spawning of several days at a time.

After the spawning act was complete, each darter would go its own way. Occasionally I would stir the gravel where spawning took place, and generally three to seven eggs were found, with an average of five. No attempt was made to save the eggs for hatching as all my tanks at the time were occupied or being used to breed more colorful darter species. Several months after spawning ceased, all of the adult darters died for unknown reasons.

Because of the extremely different habitats these two darters occupy, there is probably little chance of natural hybridization.

Crossing of darters is probably going to open up a whole world of interesting color varieties for the aquarium world. Although I consider myself a species purist, these avenues of hobby enrichment should be and currently are being explored. If tropical-fish hobbyists do it, then we should take advantage of all the possibilities with numerous North American fish species.

#### References

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