

AQUARIUM SPAWNING AND REARING OF THE SOUTHERN REDBELLY DACE

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The Southern Redbelly Dace (Phoxinus erythrogaster) has been a favorite with aquarists for many years. It is peaceful, easily fed, and takes well to life in an aquarium. During the spring and summer, the underside becomes a brilliant red, especially in the males; but large females (at least of the population from east-central Illinois and adjacent Indiana) may at times be as colorful as the males, particularly during spawning activity. B.G. Smith (1908) observed spawning groups in a small stream near Lake Forest, Illinois, and reported that females were rarely bright except for large ones, which closely resembled the red males. Innes (1932) wrote that during the breeding season, the belly, mouth, and base of the dorsal fin of both sexes were bright red. In my aquarium conditions, both sexes were at times red from March through July, especially during the morning; males did maintain the red coloring more persistently, though. Forbes and Richardson (1920) and P. Smith (1979) described only the males as red during the spawning season.

I can find no detailed observations of aquarium spawning activity by the Southern Redbelly Dace. Innes (1932) placed six fish in a 3'x5' tank in May and later took out 30 well-developed young, but he did not observe the spawning process. Stoye (1932) reported that the species had not been bred in the tanks of American aquarists; he implied that it had been spawned by European aquarists such as Hermann Meinken, but I have not found a published account. Holly, et al. (1934), discussed keeping the species but did not describe spawning.

B.G. Smith (1908) observed spawning under natural conditions. He saw small to large groups of fish, some in pools and others in current. Spawning activity began in areas with current, but once started, the fish continued to spawn even in pools with little or no current. The fish faced upstream while spawning, usually with two males per female, the males pressing closely against the sides of the female between them. At the same time, they drove her toward the bottom. The spawning act was brief. He also noted that the parents frequently searched for and appeared to eat their eggs, behavior not uncommon with cyprinids.

In August of 1985, I captured fourteen adult Southern Redbelly Dace from a small headwater tributary of Big Creek that flows through a wooded area in Clark County, Illinois. At the site where the fish were caught, the stream is little more than a connected series of pools with very little water flowing between them. Several hundred feet downstream, the small tributary joins Big Creek, which flows into the Wabash River ten miles away.

A surprising number of fish were present. In addition to the Southern Redbelly Dace, there were Orangethroat Darters (Etheostoma spectabile), Creek Chubs (Semotilus atromaculatus), and Blacknose Dace (Rhinichthys atratulus). The latter two were by far the commonest species; I estimate Southern Redbelly Dace at less than one percent of the fish population.

The Southern Redbelly Dace were kept in a 40-gallon aquarium from August until spring. The aquarium was in a cold part of a greenhouse, where the winter water temperature dropped to 45-50°F. No lights were used, so the fish experienced only natural day and night. Sponge filters and aeration were used. The aquarium was planted on three sides with Valisneria and a few Echinodorus cordulifolius ("radicans" in the aquarium trade). Most of the space was open. Tankmates consisted of a few darters and sunfish. The fish were fed frozen brine shrimp, live mosquito larvae, and Tetramin flakes.

On April 9, 1986, I transferred three males and two females to a 25-gallon aquarium planted along the back with Valisneria. There were two small Chinese Algae Eaters, and a number of Philippine livebearing snails that escaped my search and removal. A sponge filter was used for life support. In addition, to create a current, I used a water pump (Aquaclear powerhead 200). Directing the flow of water at a downward angle maintained a current within a few inches of the bottom sand. The pH was 6.8 to 7.0, the temperature near 70°F, and daylength natural. A fluorescent light was on during late morning and early afternoon.

Several days after transfer to the breeding aquarium, the fish began again to show red coloring. On April 14, I observed the fish spawning. The two females were heavy with eggs. During spawning, both sexes were red. The females' color was as intense as the males', but it was not quite as extensive on the upper sides of the belly. The anal papilla of the females was much larger than that of the males.

The spawning act varied--sometimes one, sometimes two males close to and pressing against a female. There was no wild chase. Each act lasted only a few seconds. The fish always faced into the current, with most of the activity a few inches from the bottom. I did not see them actively press into the substrate. Spawning took place intermittently over several hours. When not spawning, the five fish maintained a fairly tight formation, facing into the current.

The adults were returned to their original aquarium on April 16. On several occasions, the dace were observed spawning there. Tankmates (darters, sunfish, and minnows), attracted to the spawning sites, fed excitedly on the eggs. There was no current at the spawning sites, indicating that moving water may not be needed.

On April 22, eight days after spawning, the first fry were seen. There were at least 50, all swimming from one to four inches below the water surface in a current eddy. The next day there were about 100 fry. The fry were fed Wardley's Liquid Small Fry Baby Fishfood (Egglayer formula) and fine Tetramin. They were seen feeding the next day, with filling of the intestines noticeable. By April 28, the fry had dispersed, some swimming near the surface and others in midwater or near the bottom, nearly always where there was weak current. On May 7, I began to feed them live brine shrimp nauplii, while continuing with the Liquid Fry and Tetramin.

I estimated the average total length at about 6 mm April 30. By May 7, they averaged close to 8 mm, with the caudal fin becoming slightly forked. There was a single distinct dark line along each side. On May 13, the fry showed the first evidence of surface feeding; this became more pronounced each day. By May 21, the average length was about 12 mm. The 50-plus young were 30 to 35 mm long by December 1. The double dark line with a pale gold band the length of the fish had developed, but there was still no hint of red coloration.

Perhaps I was lucky, but spawning this species in an aquarium was remarkably easy. Of course, modern equipment and technology give a distinct advantage over the conditions of many years ago.

#### References

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