

Notropis Venustus II: A Chance Observation of Breeding Habits

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This is the second of two articles concerning *Notropis venustus*, a large cyprinid of the southwestern US. The first article dealt with behavior, habitat, habits, and aquarium care (see previous *American Currents* Vol. 6 - No. 3). This article describes a

spawning observed in nature and the subsequent development of the fry.

While collecting one day in the Escambia River, I had the unusual opportunity to observe the spawning habits of *Notropis venustus*, the Spottail Shiner. It was mid-May, about 2:00 PM. The water was turbid with sediment, visibility restricted to three feet and less, a rather normal condition for the river. At this particular spot, the river bottom sloped down rapidly and there could be seen submerged branches of trees near the water's edge. One particular branch about two feet off shore and in about two feet of water was the center of the attention of a number of adult (4" - 5") *N. venustus*. The branch was stuck in the bottom, standing at an angle of about eighty degrees out of the water. The fish would appear out of the turbidity, run its belly on the underside of the branch in an upside-down position, and disappear again into the mirk. Seconds later, it (or its partner) would appear and repeat the action, each time about one foot below the surface. This was the first time I had actually seen an adult in the river; they usually inhabit deep water. In addition to these large adults, there were a few of what I judged to be yearlings which were "playing" downstream in the current near the branch. In spite of the fact that the adults rarely leave the deeper water, they persisted in this behavior even though they saw me.

Of course, that kind of behavior is usually indicative of spawning. Since I had encountered no information of breeding habits of *Notropis venustus*, curiosity was getting the better of me. So I grasped the branch and pulled it from the water. At first I saw nothing. Then I noticed a crevice formed by some bark half peeled away from the branch. Sure enough, down inside could be seen many eggs. I carefully pulled away the bark and placed the eggs in a plastic bag with water and prepared to go home. Before I left, I checked water conditions:

Hardness	80 ppm
pH	7.0 - 7.1
Temperature of water	74°F

At home I placed the eggs and bark in a 2½ gallon tank with the river water; a sponge filter was added to maintain aeration and water movement. The tank temperature stayed at about 74°. There were approximately three hundred eggs measuring about 1.5 mm in diameter and were quite adhesive; they were separated from each other and from the bark with some difficulty.

The following morning I was shocked to see about fifty fry swimming at the bottom, 3/16" long and completely mobile. I looked on the bottom: most of the eggs were undeveloped. They

were slightly milky with a fairly large (1 mm), yellowish yolk within. Apparently, the crevice in the branch had become a depository for a number of spawns, the first of which was deposited a few days previous.

The fry were fusiform; torpedo-like with the blunt head an integral part of and not larger than the rest of the body, much like the adult *Fundulus* shape. There were newly hatched fry on the bottom. These fry still had the egg sac and were generally helpless, but as the sac was absorbed, they began coordinated group swimming around and very near the bottom.

Two days later (the third day), many of the eggs were eyed and embryos could be seen moving within. There were some fry that could be seen helpless on the bottom: just-hatched fry with the egg sac still attached. At this point I began feeding an emulsion of boiled egg yolk. On the fourth day I offered brine shrimp nauplii, which were taken readily. The fish still demonstrated a tendency to school.

By the sixth day, all eggs had hatched; there were 200-300 fry present. The largest were now 3/8", still transparent, with the basicaudal spot beginning to appear.

In the second week I transferred the fish to a ten gallon aquarium and began feeding flake food. As they developed, the larger fry tended to congregate about one inch from the bottom. More and more, the fry lost their transparency as bone structure became apparent, especially in the head area.

Growth was slower afterwards and when most reached about one inch, the fry were released back into the river.

The Escambia River is typical of many larger, moderately swift rivers in the Southeast; there is little or not submerged aquatic vegetation, but there is an abundance of fallen trees, branches, and exposed roots in such rivers. These roots and branches, then, provide most of the available spawning sites for species like *N. venustus*. In fact, these may be at a premium judging from the branch I found. It was apparently the recipient of two and perhaps three separate spawns. Removal of such dead trees, roots, and branches from rivers to improve navigation, seemingly harmless and sound ecologically, could be detrimental to *N. venustus* and others. By removing such spawning sites, the river's balance could be disrupted to the point of actually decreasing game and food fish populations.