SPAWNING SPOTFINS

by Michael J. Lucas, East Rochester, New York

Over the last couple of years I've often kept pairs of Spotfin Shiners (Notropis [or Cyprinella] spilopterus) in my basement fishroom to observe the beautiful color and magnificent displays of the spawning males.

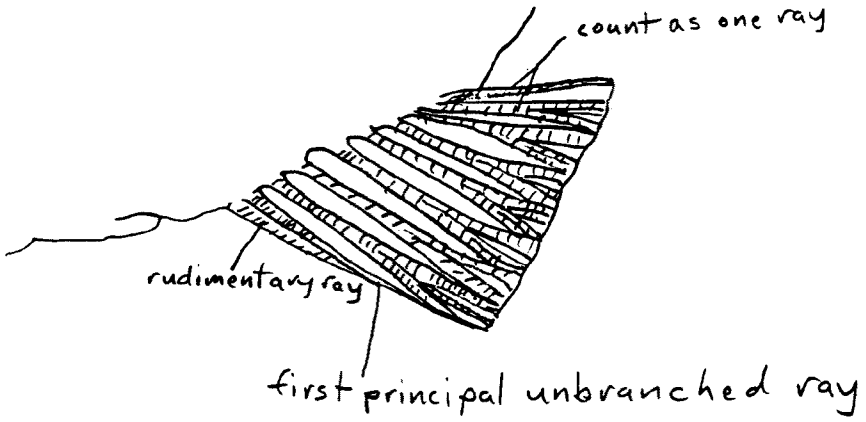
The male's overall dorsal-fin color is a definite yellow, not just an occasional reflection or wash as is sometimes reported. Between the last few dorsal rays, there are prominent black splotches, enlargements of the black streaks of the females and non-spawning males. Small spots of dark pigment can be seen throughout the rest of the dorsal fin, though much lighter than the black of the splotches. Non-spawning males and females also have these spots of pigment, though they are so much less noticeable that without close scrutiny, the fin appears clear.

Breeding males also have a prominent, luminescent blue-white border along the front corner of the dorsal fin, whereas the back corner is bordered in black. The tail or caudal fin is yellow to dusky with blue-white points at the tips of the lobes. The other fins--pectoral, pelvic, and anal--all appear to be even deeper yellow than the dorsal or caudal fins. They have the same luminescent blue-white edges.

The top of the body from the dorsal fin to the snout is dark to dusky gray-blue and has small tubercles. The snout itself is a lighter shade. Behind the gill covers is a steel blue-gray bar. A midlateral stripe of the same color, but slightly less prominent, occurs from below the dorsal fin to the caudal fin base and continues through the tail fin itself. This stripe continues in the other direction from the dorsal fin to the gill cover, though very faintly. The scales are all outlined in black, and at different times reflect a blue-silver or pink-violet metallic sheen.

Females have clear fins with the exception of the black streaks in the dorsal fin and a dusky tail fin. They have the same bar behind the gill cover and the same midlateral stripe that the males have, but the females' markings are much less prominent. They also have a thin gold line on top of the midlateral stripe. The scales are outlined, but not as darkly as the males'. The belly is white while the other scales reflect a dull silver-gray.

Much has been written on the difficulties of telling Spotfins from Satinfin Shiners (Notropis analostanus), so I counted anal fin rays and lateral-line scales. The numbers--8 and 38 respectively, determined their identity as Spotfin Shiners. Satinfin Shiners have 9 anal rays and 34-37 lateral-line scales.



After pp. 21 & 22, Freshwater Fishes of New York State, a Field Guide, by Robert G. Werner, Syracuse U. Press, 1980.

As can be seen in the illustration, counting minnow anal-fin rays can be misleading if you aren't sure how to count them properly. Remember, don't count the short rudimentary rays in front of the first principal unbranched ray, and count the last two rays as one if they are joined at the base or if they look like they will join shortly after entering the body.

Although I've had them spawn numerous times, I've never before made an effort to do more than enjoy the show--mostly because I can easily obtain specimens from local collecting; also I just haven't had time to raise fry. In the home aquarium, they spawn year-round, as long as they are well conditioned and the water temperature is about 70°F. This temperature requirement is easily met during the winter heating season, and during the heat of summer my basement tanks stay around that temperature most of the time. Conditioning is easy, as Spotfins are aggressive, eager feeders, taking anything offered. Mine even take commercial turtle sticks. They flash around with them sticking out of their months, like kids sucking on a Sugar Daddy, afraid someone is going to ask for a lick!

In late October of 1988, I decided it was time to put some flash in my living room's 30-gallon display tank, since the resident Northern Redbelly Dace (Phoxinus eos) refused to color up. After only about ten days, the two pairs of 3-3½" Spotfins started a dress rehearsal, with short, periodic displays and gradual coloring-up. During this time the displays were mostly male to male, head to head, tail to tail, all fins fully stretched and flared. After a short quivering,

both males would circle away from each other only to end the circles parallel to their opponent and repeat the procedure. Females were not ignored, and their passing would terminate these displays, but females gave no encouragement to the males, so eventually the males would start up again.

A few days later, November 9, 1988, at about 11 p.m., I noticed that the activity had heated up--which is scary, considering these fish normally behave like live lightning. The poor Northern Redbellies, shy to begin with, looked to be on the edge of a nervous breakdown. The other fish--Golden Shiners (Notemigonus crysoleucas), Fathead Minnows (Pimephales promelas), and Banded Topminnows (Fundulus diaphanus)--seemed more annoyed than anything else. All the activity and an occasional nip kept these fish penned into the half of the tank opposite the chosen spawning site.

The site was a column of four rocks piled one on top of the other till they reached out of the tank. These rocks were covered with algae and had many cracks, holes, and crevices. An outside power filter returned water over these rocks. The rest of the tank was planted with pond lilies and hornwort.

The males now almost constantly displayed to each other until either one noticed a female near the rock column. Then the male would circle the female very rapidly, occasionally swimming in a figure-eight over the female.

If the female stopped, the male would often swim slowly in front of her, rubbing his belly in a crevice as if to demonstrate his intentions. Eventually a female would squeeze her vent area into a crack or hole, not necessarily the one the male pointed out. The male would either touch his snout to the female's head near her mouth, facing her from the front or from above, or touch the top of her head, facing the same direction. The female would then lay a few eggs with a rapid shiver of her body. The male would usually fertilize the eggs after the female swam away, but not always directly afterwards. A few times, it appeared that the male was fertilizing the eggs alongside the female, as she laid them.

The fish spawned in crevices from the bottom to the top of the rock column, showing no apparent preference. Spawning occurred with both females and one dominant male, though the other male did get into the act several times.

When I had first noticed what appeared to be spawning activity, it also seemed obvious that the Spotfins were eating any eggs they could. I quickly got my magnifying glass and began to inspect every nook and cranny for eggs. When I found them, I tried unsuccessfully to suction them off using a small eyedropper. The eggs were pinhead-size and definitely adhesive. I had better luck using the eyedropper to force a

current into the cracks, blowing the eggs loose, then quickly suctioning them out of the current with the eyedropper.

This was extremely difficult and inefficient due to a lack of space between the rocks and the sides of the tank. This forced me to blow the eggs out into the space where the other fish were contained. The sudden snack of caviar seemed to inspire a temporary cure for the anguished redbellies! Picking a moving egg out of the current with a tiny eyedropper took a degree of skill and agility I had not yet acquired. I had great difficulty forcing the eggs I did catch back out of the eyedropper, as they kept sticking to the inside of the tube. Only violent expulsion of water from the eyedropper would eventually free the eggs.

Meanwhile, the Spotfins, undaunted, kept spawning between my egg-gathering intrusions. While resting, I discovered an enterprising small male Banded Topminnow. It had wedged itself in a space between two rocks, and it casually dined on the eggs whenever the females expelled the eggs into that crack.

I managed to gather a very small percentage of the spawn, only about 20 eggs, which I hoped to keep long enough to see hatch and become free-swimming. I had some serious doubts they would make it after such rough handling in the gathering process.

The fish continued to spawn over the next few days. During that time, all but four of the gathered eggs had fungused, even though I used an anti-fungal medication. On the 15th, these remaining eggs did show tiny eye spots and faint outlines of developing embryos. Luckily, a couple days later three of the four did hatch. They became free-swimming less than three days later. After feeding them a liquid egglayer food for a couple days, I abandoned the project, since I didn't care to raise three fry. The newly hatched fry were tiny slivers, and would, I believe, do best with a few days of smaller foods before baby brine shrimp. They never did really fatten up on the liquid fry food, though most fish I've started that way haven't either.

As I finish this article in February, 1989, the Spotfins have just spawned again, at least the second time since the November spawning.

References

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