

Fooling Fish With Light

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by

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Recently I've had considerable success using light to induce bright colors and spawning behaviors of native darters, topminnows, sunfishes, and one rather confused sucker. I'm sharing my experiences in this article with the hope that you may be able to duplicate my efforts and perhaps induce some native American fishes to spawn that might not otherwise do so under normal aquarium light conditions. My darter experiences in particular should be of use to those who do not have the benefit of a separate fish room in which they can manipulate light and temperature.

## **Rainbow Darter, *Etheostoma caeruleum***

Admittedly, the rainbow darter is ridiculously easy to spawn and raise (assuming basic seasonal changes and moving water are supplied). However, I was quite surprised by an "accidental" spawning that took place in November and December of 1998.

Starting in June, the temperature in my basement fish room begins its summer-long creep towards 80°F, so I reduce the photoperiod to six hours (12 A.M. to 6 A.M.) and run a fan to suck in cool air from 3 A.M. to 6 A.M. This way I am able to keep the tanks down to about 75°F all summer. In the fall I maintain the same schedule until the tanks are cooled down to 50°F. Then I start raising the temperature and extending the photoperiod in January to "force" spring in the middle of winter.

But this time I did something different. Since I was doing a major re-arrangement of my fish collection, I moved my Wisconsin River fishes—five rainbow darters, two males, three females; five common shiners, *Luxilis*

*cornutus*; two orangespotted sunfish, *Lepomis humilus*; and one logperch, *Percina caprodes*—to a temporary 30-gallon tank atop my bedroom dresser. However, I extended the photoperiod to 16 hours so that the fish wouldn't be frightened by traffic (e.g., the turning on and off of room lights) in the area near the tank.

The move took place October 23. On November 12 I was surprised to hear the familiar *BZZZZT* of darter spawning activity, especially in water that went *down* two degrees (68 to 66°F) when I moved them.

This was not a minor fling on their part. The darters went at it every day for *six* weeks, hollowing out a 1" by 6" bowl in the gravel, and cheerfully shoving a 6" logperch out of their way to get to their favorite spot.

Apparently, the extended photoperiod alone was enough to fool them into thinking it was spring.

## **Redfin Darter, *Etheostoma whipplei***

My redfin darters (two males, two females) spent the summer in the same fish room as the rainbow darters. On October 23 I moved them to a tank in my quarantine room along with their Pursley Creek (Alabama) tank mates: five blackside darters, *Percina maculata*; one creek chubsucker, *Erimyzon oblongus*; and four rainbow shiners, *Notropis chrosomus*.\*

This tank's lamp was on the same timer being used on a tank to accelerate the growth of some bluespotted

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\* I'm fudging a little; the blackside darters were taken from near Pursley Creek, although they probably occur there too, albeit in small numbers. See M. F. Mettee, P. E. O'Neil, and J. M. Pierson, *Fishes of Alabama and the Mobile Basin*. Birmingham:

sunfish (*Enneacanthus gloriosus*). The photoperiod was 16 hours and the temperature was 80°F. A couple of weeks after the rainbow darters started spawning, I noticed that my redfins were at it, too. Unfortunately, I wasn't prepared for their spawning, so their eggs wasted away.

The blackside darters in this tank responded to the extended photoperiod as well. They got very dark and fighting increased among the males. However, they did not spawn. The male chubsucker, on the other hand, developed three large tubercles on both sides of his snout, many smaller ones on his enlarged anal fin, and spent a week or so attempting to "mount" a very uncooperative male redfin darter!

Meanwhile, the three male rainbow shiners developed blue on their heads, pectoral fins and dorsal scales, and red above the lateral bands. The blue was so bright you could see it from 15 feet away. (They should rename this fish the *neon* shiner.) But, unlike their redfin darter tankmates, they did not spawn.

#### **Golden Topminnow, *Fundulus chrysotus***

A problem I have with breeding the golden topminnow is that spawning females like to eat their eggs. In September 1996, I had set up a trio—one male, two females—in a 20-gallon high tank with a green nylon spawning mop, which the fish ignored in favor of spawning on the gravel next to logs and rocks. The male had nothing but sex on his mind, but the females took every opportunity to hunt eggs. All I had to show after two weeks of spawning activity was 17 fry.

In the spring of 1998 I set up the same trio in the same 20-gallon high tank, this time with a white mop, having read that it's much harder for the fish to spot the eggs on a light background. Unfortunately, the fish ignored the white mop as well, and continued to spawn on the gravel and eat as many eggs as possible.

After about five days of this activity, I decided to shorten the 16-hour photoperiod I was using to only about one hour of light per day.

For the next week I turned on the lights at about 3 P.M., waited 10 minutes, and fed the adults a good meal of frozen bloodworms, after which they would commence

spawning. When they slacked off, usually after 45 minutes, I turned off the lights until the next day.

After a week of one-hour days, I noticed nine fry swimming at the surface. (I removed the adults and returned them to a community tank, where they continued spawning.) After a second week I counted over 200 fry. Obviously, turning the light on helped initiate spawning activity. But in this case, keeping the light *off* for 23 hours a day had a benefit too, in that it kept the females from finding and devouring their eggs.

#### **Northern Longear Sunfish, *Lepomis megalotis peltastes***

These guys really snuck up on me. I caught my specimens in late August, after their spawning period, and was able to keep five adults and four juveniles over the fall and winter in a 55-gallon tank with only mild aggression (for *Lepomis*). In the spring, Murphy's Law took over as the largest, most colorful male spent every waking moment trying to murder his tankmates, regardless of sex. All my juveniles grew up to be males. And the larger of the two "females" got behind a log and proceeded to fan himself out a nest! (This individual had the shape and small opercular flap of a typical female. Apparently, "sneaker males," which mimic females, exist in this species, as has been documented in the bluegill, *Lepomis macrochirus*.\* Sneaker males probably account for the many reports of trio-spawning by one male and two female bluegills.)

In order to spawn my one genuine female with the large male, I transferred both to a square 50-gallon tank. Inside was a tangle of 10 bogwood logs, so that the female could hide completely out of the line of sight from the open area I left for the male to nest in.

After getting a cloud of about 500 fry about 10 days later, I moved both parents back to the 55-gallon tank in the fish room I had in an alcove off the living room. This tank contained three large logs and some rocks, but not enough cover to hide the other fish from the dominant male. So I decided to leave the lights off, except at feeding time, to reduce aggression.

About 10" at the left side of the tank was illuminated by light coming through the door at an angle. The large male immediately took over this spot and fanned himself

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Oxmoor House, 1996, p. 708 (map). The creek chubsucker is listed in Michigan, so on the advice of the DNR Fisheries Division, I keep a bill of sale from the man who sent me the fishes from down south.

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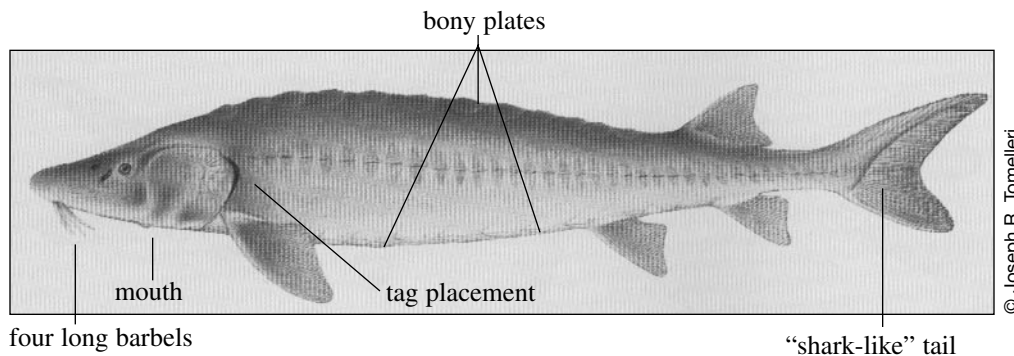
\* W. J. Dominey (1980, 1981), cited in D. A. Etnier and W. C. Starnes, *The Fishes of Tennessee*. Knoxville: The University of Tennessee Press, 1993, pp. 417-418.

a nest. Over the next week the female was able to zip in, spawn, and then run back to the dark side, much as they do in nature, where males occupy the nest cover and females hang out in the weed beds until they're ripe. She suffered no fin damage during this period.

In closing, I should point out that when regulating photoperiod to induce spawning, all my fish are in total darkness during the "night" interval. If you wish to use

this method to condition fish in a general-use area of the house, I recommend you either paint the sides and back of the tank black or dark green (which I do to all my tanks anyway, since wild fish calm down better with only one "danger zone"), or cover them with cardboard or heavy construction paper. During the night interval the front glass should be covered as well.

# Lake Sturgeon Sighting Alert!



Lake sturgeon can exceed 6' in length, 200 lbs. and 100 years of age.

**THE LAKE STURGEON** The lake sturgeon (*Acipenser fulvescens*) is an endangered species in Ohio. A century ago it was a common fish in Lake Erie and other large rivers throughout the Great Lakes basin. However, due to unregulated harvest and habitat destruction, only scattered small populations of these fish have survived. The Ohio Division of Wildlife needs your help to document the occurrence of the remnant lake sturgeon population in Lake Erie.

Traditional approaches are not adequate to sample lake sturgeon at their low abundance. As a result, reports of lake sturgeon sightings, living or dead, past or present, from lake Erie are necessary to help the Ohio Division of Wildlife protect and manage this native Ohio species.

Lake sturgeon are primitive fish and are easily identified by the sharp bony plates along the back and the sides, and their long, pointed snout. Adult fish might also be identified by their size alone. Lake sturgeon can grow to lengths greater than 6 feet and weights of 200 pounds or more in a life-span that can exceed 100 years. Refer to the illustration here for identification details.

**WHAT YOU CAN DO** If you have sighted a lake sturgeon, please report it to one of the offices listed below. Lake sturgeon are being tagged in Lake Erie and connecting waterways. The tags are placed in the left gill cover as indicated in the illustration. If you sight a lake sturgeon, please note any tag information, the date and location of your sighting, and if possible, please photograph the fish. Please leave your name and telephone number when reporting a sighting. Remember, lake sturgeon are endangered in Ohio and must be returned to the water unharmed as soon as possible.

**IN OHIO:**

TOLEDO/SANDUSKY AREA 419-625-8062  
CLEVELAND/FAIRPORT AREA 216-352-6100

**IN MICHIGAN:**

MT. CLEMENS AREA 810-465-4771

**IN PENNSYLVANIA:**

FAIRVIEW/ERIE AREA 814-474-1515

**IN NEW YORK:**

DUNKIRK AREA 716-366-0228  
AMHERST AREA 716-691-5456

