

BREEDING FANTAIL DARTERS (*ETHEOSTOMA FLABELLARE*)



Kara Million

Indiana University

In 2016, I decided to try my hand at breeding Fantail Darters (*Etheostoma flabellare*). I contacted Brian Torreano at BT Darters, who sent me six fantails (four females and two males) he caught out of the Mississippi/Fox (Illinois) River drainage. As soon as they arrived in January I acclimated them to a 10-gallon tank with power filtration, plus an air pump with an enormous airstone attached that I mounted on one side of the tank. The filter and airstone provided lots of water circulation and aeration to keep the darters happy. I also included river rock gravel as a substrate and flat limestone pieces and terra cotta pots as “caves.” I performed weekly water changes using water I conditioned with Amquel Plus to remove ammonia, nitrites, and nitrates. I started the darters on a diet of frozen brine shrimp and bloodworms, which they took readily (the current in the tank made the worms and shrimp “dance” in the water, enticing the darters to chase and capture their “prey”). I kept the ambient room temperature at 20° C and

started the fish on a 14 hour light/10 hour dark cycle. The water in my city comes out of the tap hard, so it was not difficult to keep the pH above 7.2. The darters settled into their home and got along...well, swimmingly. I gave them an acclimation period of at least a month.

To get the darters into breeding condition, I used an external temperature controller to gradually cool the water down from 20° C to 16° C over the course of about a week. At the same time, I gradually shortened the artificial day cycle to 10 hours light/14 hours dark. Then I kept the darters in “winter” mode for about a month.

To make “spring” arrive, I gradually warmed the water back up to 18° C (no higher, because I wanted to make sure dissolved oxygen in the water stayed high), and I lengthened the days back to 14 hours light/10 hours dark. Sure enough, I started to see changes in the darters. They all began eating more voraciously, especially the ladies. The males darkened in color, and the largest male developed amber egg mimics on his dorsal fin. The males became more aggressive and territorial, each staking out his cave to defend (the largest male, of course, got the best spot in the tank, a lovely piece of slanted limestone). Eventually the males satisfied themselves with their territories and settled down a bit. Meanwhile, the females became more animated as well, and soon their bellies were gravid with eggs. They would swim past the cave entrances and the males would get excited and attempt to entice the females into the cave. Sometimes a male would come out and nudge the female to get her into his pad (Figure 1).



Figure 1. Fantails about to drop the hottest album of 2017.

Photos by the author.

Kara Million has been studying and interacting with native fishes, especially darters, since her undergraduate days in the lab of Bruce Stallsmith at University of Alabama in Huntsville. She is currently earning her PhD in Ecology, Evolution, and Behavior at Indiana University. Kara uses fish as models to study the relationships between parasitism and host reproductive behaviors and conditions. She hopes to continue her research and to educate the public about the importance and beauty of native fishes.

Finally, in May, I observed the first signs of spawning behavior. One male and one female were under a rock, positioned nose to tail with the female upside down. I observed quivering with occasional pauses. The activity lasted about an hour. I saw only a couple of eggs following this first event, and they were shortly consumed by the male.

Over time, however, I began finding larger egg clutches ranging in size from 20 to 50 eggs. I had to act quickly to remove the eggs from the tank, because the male would eat his entire clutch if given the chance. It took me some time to perfect my brooding setup, but eventually I settled on a small



Figure 2. Fantail Darter at two months.

bucket or tank with clean water and a large airstone mounted under the cave to aerate the eggs. I used low-dose Pimafix to combat fungus and removed any eggs that turned white. Nearly all the clutches belonged to the largest male, although the smaller male did get at least one clutch during the season. I would remove the cave after a spawning event and replace it with a fresh cave. Spawning events were spaced generally between three days and two weeks apart. On at least one occasion I observed two females spawning simultaneously with one male, which surprised me (and made me blush just a bit).

The spawning activity halted in August, as I expected. However, to my utter astonishment, the darters unexpectedly resumed spawning again in the fall starting in October! These eggs were in larger clutch sizes (50–60 eggs). I began to worry that the darters might...wear themselves out, so I shortened the day length back to winter mode, and after about a week the darters calmed back down and stopped spawning in late November. It was unnecessary to adjust the water temperature, since they responded to the light cue just fine.

Meanwhile, the darter eggs were amber in color and transparent. After five days I could see eyes developing and little embryos wiggling inside their eggs. Full-term fry started

hatching at 12–14 days, and within one week all the eggs in a clutch hatched (with the exception of a couple of “duds”).

At first I had a difficult time keeping the fragile fry alive, but eventually I figured out the method that allowed them to thrive. I set up small pods of roughly four gallons of water in long, flat containers; this setup was designed to resemble a small streambed. I used an air pump and an airstone in each pod to generate a gentle current. I put small satchels of crushed coral in the water to regulate the pH and to provide hiding places for the fry. I also included small flat stones for hiding places or perches. I performed water changes every other day in each pod.

Newly hatched fry were transparent in color and 5–7 mm in length with yolk sacs attached. They were very good swimmers from the start and had well-developed heads and eyes. The yolk sacs were absorbed within five days, and the fry immediately took newly hatched brine shrimp. Within a few days their bellies turned orange from eating the food. Eventually they learned to associate my appearance with food and began opening and closing their little jaws greedily when they caught sight of me. Over time they grew larger and developed darker coloring in the form of bars and stripes (Figure 2). The fry began taking adult food at three months of age, although I still broke the bloodworms and shrimp up into small pieces for them. At first they were reluctant to take the adult food, as they had become spoiled on the baby brine shrimp, but once the first little one took a bite the others soon followed suit. Before long they were chasing worms like their parents, and even getting a bit mischievous and stealing worms from each other and fleeing to a hiding place to consume their plunder in peace. It was not uncommon for me to observe them chasing each other around the pod, perching together in small groups, or occasionally head-butting each other and swimming away before retaliation could be taken. I did my best to spread them out as they grew to avoid overcrowding.

Currently the adults are still in good condition. To date I have managed to raise more than 100 fantail darter fry from hatching to 60 days. The oldest fry I have are approximately nine months old (Figure 3). Hopefully I can rear them to adulthood. Who knows? Maybe I can get a second generation.

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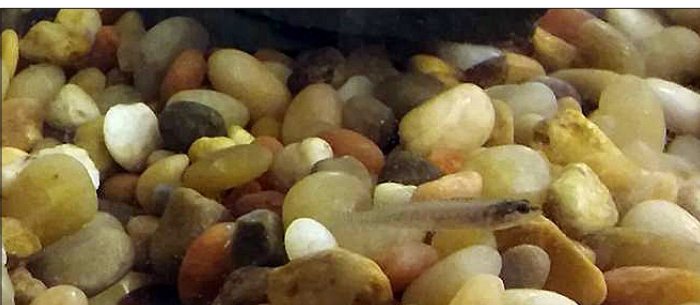


Figure 3 and 3a. Fantail Darter at seven (top) and nine months.