Spawning the Banded Topminnow, *Fundulus cingulatus*

~~~~~~~

by

David M. Schleser

310 Appian Way, Dallas, TX 75216, natimg@flash.net

In mid-April 1998 I obtained two males and three females of the pink form of *Fundulus cingulatus*, the banded topminnow, from Robert Rice in Florida. After quarantining them indoors for three weeks, they were all moved into a 250-gallon outside fiberglass pond that was heavily planted with both floating and submerged plants, including *Ceratophyllum* (hornwort), *Ergeria densa* (anachris), *Cabomba* sp., and *Azolla* sp. From my experiences with the related golden topminnow (*Fundulus chrysotus*) and various species in the starhead killie complex, I expected that within virtually no time this small pond would be crammed with young banded topminnows. It should be mentioned that this species is much less of a "topminnow" than many others in its genus, and like the golden-ear topminnow, spends considerable time in midwater or near the bottom searching for food.

By mid May the females were obviously filling with eggs and the males were exhibiting behaviors of both dominance and courtship. I fed them daily and waited . . . and waited . . . and waited some more, but no fry made an appearance. Meanwhile, an adjacent and identically set up pond that had been stocked with a trio of the beautiful black-speckled form of *F. chrysotus* was producing large quantities of young fish. I was totally at a loss to explain the difference. Since I spend a considerable time in late spring and summer participating in rare plant surveys in Utah, and leading tropical fish study and collecting trips to the Amazon, I did not have time to analyze the situation.

By September the adult *F. cingulatus* were still actively courting, but there were still no fry to be seen. I reasoned that even if this species was an efficient egg or fry eater, a few young still would survive. The vegetation was certainly thick enough to provide adequate hiding places. I then contacted Ray Wolff, a very talented breeder of native fishes, who had also received some of these fish from Robert. He had also placed them in an outside pond, and had experienced the same frustrating lack of fry.

With this species' natural breeding season coming to an end, I emptied the pond and brought all the fish inside. My luck did not improve. One male quickly killed the other, and then committed suicide by jamming himself headfirst into a sponge filter's lift tube! Ray wasn't doing any better and was down to only one female and three males. When I told him about my situation he immediately sent two of his males to me. It was now about October 1, and only one of my females seemed to still be heavy with eggs. I placed her in a 20- gallon "long" aquarium with the more robust of Ray's males. The only furnishings were a sponge filter, two large bottom spawning mops, and two equally large floating mops. As an experiment, one of the floating and bottom mops was made of dark brown Dacron yarn, the others were made of white. The water was medium hard (150 ppm). The pH was 6.8.

I fed the breeders in the morning with flake food and in the evening with live mosquito larvae. At first the male was a bit overly zealous in his courtship, and kept the female hidden much of the time among the strands of the mops. This aggressiveness subsided after less than a week, whereupon I could see eggs in the bottom mops. This answered one of my questions: this species does not
~~~~~~~

seek out its eggs for food. Every four or five days I removed the mops from the aquarium and checked for eggs. Apparently, unlike the golden and starhead (*Fundulus dispar*) topminnows, this species is a confirmed bottom-spawner (like the plains killifish, *Fundulus zebrinus*), since I found eggs only in the bottom mops, and virtually all of them in the dark brown mops. After picking them from the mops, I moved the rather large eggs (almost 2 mm) to a separate container—a clear plastic shirt box with about one inch of water taken from the breeding aquarium—for incubation. I didn't use aeration, but as a precaution against the eggs fungusing, I added a bit of methylene blue to the water.

At 74°F, the eggs began to hatch after 10-12 days of incubation. The newly hatched fry were very large, and had no trouble consuming newly hatched brine shrimp nauplii. This was their sole food for about 10 days. I then alternated the nauplii with powder-fine dry food.

At the time of this writing (Dec. 19, 1998), I have over 50 healthy *F. cingulatus* fry. They are growing rapidly. The oldest are now a little over 1/2-inch long.

By the end of November, the female's egg production had ceased but the male still was courting. In order to prevent any damage to the female, I removed the pair from the breeding tank and placed them into a 110-gallon, heavily planted native fish community tank that also housed the other trio. In these larger quarters, it was easier for the females to keep away from the male. Except for the larger male occasionally chasing the smaller one, all has been peaceful, with no other intra- or interspecific aggression. Among the many other fishes in this aquarium are two pairs of golden topminnows. I find it interesting that these two related and somewhat similar killifish have been mutually compatible.

In summary, I still do not know why *F. cingulatus* proved non-productive in an outdoor pond, but it is a beautiful and easily accommodated species that appears to be quite easily spawned and raised in an aquarium.

A word of advice: courting males can be a bit rough on the female. I therefore recommend using at least a 10-gallon tank for breeding them, outfitted with plenty of mops to provide hiding places as well as safe retreats for the female. My experiences also indicate that only one male should be used. If you are lucky enough to have more than one pair of this fish, I recommend switching out males and females periodically as a means of assuring as much genetic diversity in the fry as possible.

By the way, in speaking with Ray Wolff, I have learned that after he brought his adult fish inside, he also started collecting eggs from them.

I would be interested in hearing from other members who have had experience with the banded topminnow.

Mark your calendars!

NANFA 2000

August 18-20 • Jackson, MS

Details are in the early planning stage, but this much we know for sure:

- two main collecting sites (Saturday and Sunday)
- optional side trips (involving a little more driving), including fossil collecting and a trip to bluenose and flagfin shiner country
- tours of the new Mississippi Aquarium (projected to open in early 2000)
- fish ID workshop (using fishes we collect on Saturday)
- fascinating talks and presentations
- "mystery meat" banquet featuring unusual fish dishes
- tons of auction items, including a huge assortment of aquarium goods donated by Robert Carillio

Watch these pages and your mailbox for lodging details, schedule updates, and a complete list of speakers. Early registration (prior to April 15) is $65 and includes three meals (the banquet and two meals in the field). After April 15, registration is $75.

Send fees to D. Martin Moore,
155 David Henderson Rd.,
Pelahatchie, MS 39145