

The SandBox

Like many aspiring killifish hobbyists, my first view of the spectacular Blue Gularis, *Fundulopanchax sjoestedti*, led not only to awe-stricken reverence but also to a desire to have them reproduce in my home aquariums. And, as many a hobbyist before me had discovered, this goal seemed to be just out of reach for far too long. This species, some strains more so than others, is often a challenge for the aquarist; sometimes being stingy with eggs, but more often producing many hundreds of eggs that appear not to be viable. Hand-picking huge quantities of mostly white, fungus-covered eggs from a yarn mop often became an hour long exercise in futility that left me seeking a more efficient process.

My typical breeding setup for *Fp. sjoestedti* is now exceptionally simple: a 20-gallon tank with good cover, air operated sponge filter, and a “sandbox” - the bottom half of a sandwich sized food storage container with about 1/2” of fine black sand. The breeder stock might be a simple pair, if that is the best available, but I usually try to utilize at least two males and four females in order to keep the gene pool from shrinking more rapidly than necessary. This is a permanent breeder setup, meaning the breeders will spend their time there as long as I plan to collect eggs. I also utilize several sandboxes in the larger grow-out tanks that might contain 50- 100 young adults just coming of breeding age. I often use eggs collected from the grow-out tanks for future breeders; this again helps keep the gene pool robust and diverse.



The black sand I use is Tahitian Moon© aquarium sand made by CaribSea, Inc©., chosen primarily because it was the first one I found. I did try one other brand, but discovered that it was actually too fine and became packed like concrete; eggs tended to sit on top where they were either eaten or swept out during the next spawning or sparring event. I chose black because it seemed a reasonable facsimile for the mud killifish are known to employ in nature and because eggs might be easily seen during extraction but I am sure other colors might work as well or better.



The fish are fed heavily and frequently with favored meaty foods like live black worms, chopped red worms and live brine shrimp, supplemented with frozen brine shrimp, bloodworms, mysid shrimp and plankton. One of the side benefits of containing the spawning media is that very little food falls into the box and the little that does is often swept out by the spawning and dueling activities of the breeders. Like most of my tanks, the breeder tanks get weekly 50% water changes.

Other than at feeding time, there is normally a male inhabiting the sand box. If no other fish are in the vicinity, he will just relax there, either resting on the sand, or more often trying to catch the girls' attention by hovering slightly above it. If there are other males, one will regularly attempt to usurp the former, and vigorous flaring, fanning and sparring will occur. More rarely, two males will seem comfortable with sharing the box.

Females will venture into the area only when they are looking to spawn they are eagerly welcomed by the dominant male of the moment.

Over the years, I have heard many theories about the ideal age or size at which to breed *Fp. sjoestedti*. My overall experience has been the younger the better, usually 4-6 month old fish averaging about 3-4 inches long. However, there are enough exceptions to make it clear that there are other factors involved as well. I recently had a group of the Warri strain produce almost no good eggs until they were 6 inches long and a year old; interestingly, their progeny produced good eggs at 4 months and 3 inches. When breeding larger specimens, the technique is the same, but a larger, deeper sand box is employed to keep the breeders from kicking the sand out during the spawning sequence.

The sandbox technique can be used with any bottom spawning killifish whose eggs aren't too adhesive, but to varying degrees of success. Some species prefer the sand over peat or mops, while others will seek out any alternative, even a small batch of mulm on the tank bottom, upon which to deposit their eggs. I use it routinely to collect and count most *Nothobranchius* eggs, from *guentheri* to *rachovii*, but rarely find even a single *fuscotaeniatus* egg in the sand. I have also tried it with fair results on a few of the South American “plover” species but it seems somewhat cruel and risky to even offer it to any of the “divers”.

When I use the sandbox technique with *Nothobranchius* and other species, there is no urgency to extract the eggs. I sometimes let the sandbox sit undisturbed for weeks or a month. However, I've found *sjoestedti* eggs need to be removed at least weekly or the media takes on a foul odor and most of the eggs will develop a white spot and then fail. This is likely due to the fact that *sjoestedti* produce so many (hundreds per week) large eggs, including a lot that are non-viable and decaying. If the sand media does go foul, I either run hot water through it for a few minutes; or more likely, just replace it with fresh sand and toss the old sand in a container for future bleaching or boiling before reuse.

Harvesting the eggs from the sand is far easier and much faster than picking hundreds of individual eggs from mops. The sand box is removed from the tank, placed on a flat, level surface, and the contents are stirred using fingers, small spoon or other implement. Eggs are somewhat less dense than the sand so they settle on top, and are poured off into another container. Additional water from the breeder tank is added to the sandbox and the process repeated until the bulk of the eggs are extracted. Then the sand box is put back to work in the breeder tank. Eggs are poured into a shallow container where the good, clear eggs can be removed with a dropper and set up to incubate either in water, in peat, or on peat.

Since the eggs never come into contact with human hands, tweezers or other tools, there is a bit less risk of contamination or crushing physical damage.. For my purposes, the main advantage is the ability to extract hundreds of eggs from the media in seconds with a minimum of muss and fuss.



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