Breeding Bettas

Advice on breeding bettas from an experienced tropical fish breeder.

By John Benn

Having been involved in breeding betta fish for many years, I can honestly say that it is one of the most fulfilling challenges in the tropical fish aquarium hobby. Not only is the fish spawning process immensely interesting, but the results can produce some of the most brilliantly colorful freshwater fish you have ever seen. Once bitten by the betta fish bug, your interest in these fish will continue to grow. No matter what your level of experience, from a beginner learning the basics of animal biology to an advanced competition-oriented breeder, spawning betta fish is both easy and fun.

The betta fish that are bred by most hobbyists are bubblenest breeders. In preparation for spawning, the male betta fish will construct a floating bubblenest, often of immense size. When completed, the male will entice the female to swim underneath the bubblenest. Embraced by the male, the female will release her eggs, which are fertilized by the male. As the eggs fall to the bottom of the aquarium, the male scoops them up and place them inside the bubblenest. A few days later, small betta fish fry will be observed swimming near the surface of the water.

To successfully breed betta fish, care and attention must to be focused on this spawning behavior. Understanding the spawning process and following a few simple steps will ensure a successful effort on your first attempt.

The first step in a breeding program is to select a suitable breeding site. This can be a standard small aquarium (10 gallons or less), a plastic box that is watertight or even a clay pot. You should look for a container that will hold at least 2 to 3 gallons of water. If you don't have an extra aquarium available, try one of the clear plastic boxes sold for clothing storage. About the only consistent requirement for a spawning aquarium that it has a water depth of 4 to 6 inches. In my breeding setups, I always keep a dozen 2½-gallon plastic aquariums prepared for spawning fish.

The next step is to prepare the spawning aquarium. Due to the aggressive spawning tendencies of some betta fish, suitable hiding areas need to be provided in the aquarium so that the less aggressive fish can find shelter. I prefer to use a number of plastic plants and several pieces of Java fern (Microsorium pterropus) in a spawning aquarium. I also find that live plants aid greatly in the success of the breeding program. The plants encourage the development of infusoria colonies, which can provide a supplemental source of food for the fry.

I have had success with what are commonly known as spawning mops, which are made from yarn. Although the betta fish do not use the mops for spawning, these mops do provide cover for hiding. Because I use smaller aquariums to spawn betta fish, I make sure there are more places for the fish to hide than would be necessary in a larger aquarium.

An opaque plastic lid from a styrofoam coffee cup or even a piece of styrofoam cut from the cup itself should be floated on the surface of the water. This provides the location were the male will build his bubblenest.

I do not provide any filtration in this setup. The lack of surface agitation assists the male in maintaining the integrity of the bubblenest. I also try to place the spawning aquarium at or near eye level so I can easily monitor the progress of breeding. It is much easier to tell if the pair has spawned by looking up at the bubblenest, or even viewing it at eye level, than it is when looking down. This also makes it much easier to observe the developing fry.

Selection of the betta fish to breed is the next step. Once selected, the potential mates should be housed separately — unable to even see each other — for several days prior to placing them in the spawning aquarium. Although most betta fish are sexually mature in as few as four to five months, it is best to select breeders that are approximately the same physical size and proportion, as well as age. Sexually mature female betta fish can be distinguished by the rounded belly area and the presence of a whitish breeding tube. Mature males are usually seen building bubblenests in their bowls or aquariums.

The breeders you select should have already been physically conditioned for weeks on a varied, well-balanced diet. I normally select my breeders one week before formally introducing them into the spawning aquarium. During this week, the fish are fed generously and the bowls or aquariums are carefully maintained.

Once the pair are placed in the spawning aquarium, they should be checked periodically. Usually, the male will begin construction of his bubblenest — most often directly underneath the floating plastic lid — in less than 24 hours. Courtship

involves the male betta fish chasing the female in short spurts. Often, the male will nip the female's fins, attempting to entice her to spawn. During this period, the male's attention will alternately focus on building the bubblenest and courting the female. My experience indicates that the breeders should not be fed during courtship.

If the male (or sometimes the female) is too aggressive, I suggest stopping the breeding process at this point. Due to the inherent aggressiveness of the fish, either of the breeders is capable of inflicting significant physical damage to the other. If a badly damaged male or female is noted in the first several hours of being together, this should be a warning that perhaps these are not suitable breeders. This is not to say that a "normal" spawn will progress without any fin damage. It is a rare breeding pair that will spawn without at least some fin damage.

The male with a suitable bubblenest will entice the female to swim under the nest, at which time the two will embrace, with the male wrapping his body around the female. Both fish will be temporarily motionless as the female releases eggs and the male fertilizes them.

Within a few seconds, the two will escape from their embrace and the male (and sometimes the female) will gather up the eggs that have slowly drifted toward the bottom of the aquarium. The eggs are gathered in their mouth and blown into the bubblenest. The eggs remain in the bubblenest as they begin development. I usually try to monitor a spawn at least two or three times per day during this time.

The entire spawning sequence can last from a few amorous minutes to several hours. I usually look for a female that is no longer near the bubblenest as an indicator that the spawning ritual is over. The female is placed in a container of fresh water that has been conditioned to remove any chlorine or chloramine, and is monitored for signs of bacterial infection. I always remove the female from the aquarium as soon as I am certain that the pair has mated.

Even at this early point, I can usually observe the presence of the eggs in the bubblenest. They appear as opaque spots against the clear adhesive air sacs of the bubblenest. The number of eggs produced in the spawning process can be quite varied. I would estimate that an average number is around 30 to 40 eggs. It is not rare, however, to have fewer than a dozen eggs or as many as several hundred. The largest spawn I have seen was close to 500 eggs.

Twelve hours after first noticing the eggs, I will add five or six drops of Liquidfry mixture for egglayers. There are other products available with similar names, but this is the brand I prefer. For the next several days I neither add any other fish food for the developing fry nor any food for the male tending the fry. Other betta fish breeders use microworms and infusoria cultures. In terms of money and convenience, I find the Liquidfry food formula most practical.

As the young fry emerge from the egg casings during the next 36 hours, they will exhaust the available air inside the bubbles, causing them to collapse. All during this time the male betta fish will remain vigilant to catch the falling young fry and blow them back into the bubblenest. The fry become visible at this point as vertical wigglers. For the next 24 hours I usually only monitor the aquarium, along with making sure my written records about the spawn are brought up to date. Given the diverse genetic challenges with betta fish, adequate recording keeping is a must. For each of the spawns I track information concerning lineage and genetic results of spawning (both phenotype and genotype), as well as special notes about the offspring.

I usually keep a thin three-ring binder with information on the last 50 spawns handy in the fish room and archive older sheets in a larger binder. When I have a chance, I try to summarize the results of spawns in a tabular reference sheet. This can also be done using a spreadsheet or database computer program. The spawn records not only track information about the parents for two generations, but also allow me to immediately identify the source of the fish. There is a lot of trading of betta fish among breeders and hobbyists, and being able to identify the source of the spawn is quite useful. It also allows me to track which color lines are uniquely from my fish room.

I also have found the form useful for identifying young fish from the spawn. Using the identification scheme that males have odd numbers (i.e., 86-3) and females even numbers (i.e., 86-8), I can easily assign numbers to the fish when bowled — tracking the information from this sheet. Perhaps the best use of the sheet, however, is in the "objectives" box. This permits me to jot down any special reasons why I spawned a particular pair of fish, so that many months later I'll have something to remind me of the fact.

Continuing to observe the developing fry, I next look for the fry to begin moving in a horizontal motion. This usually happens three to four days after the mating. This is an important stage. The male parent needs to be removed at this point. The fry will be able to continue to develop without any parental care. A brine shrimp hatchery should also be set up at this stage. For the next several weeks, twice-per-day feedings of newly hatched brine shrimp will provide the main diet for the young betta fish.

Either a sponge filter or a slowly bubbling airstone should be added at this time. Although this setup will not provide adequate biological filtration, I am more concerned with surface agitation, because the young betta fish have not yet developed their labyrinth organs, which allow the fish to take in air directly from the atmosphere. Weekly water changes can be accomplished by using a piece of rigid plastic tubing connected to standard air line tubing to siphon out water. At about three to four weeks, I normally beginning adding supplemental water to increase the total volume. Eventually, the fish and the sponge filter will be moved to a 10-gallon rearing aquarium. From the rearing aquarium I will begin bowling males and selected females when they are about 8 to 10 weeks of age. At this point, I also begin to supplement their diet with a quality pelletized staple fish food and begin feeding adult brine shrimp.

The steps I've described above have proven both practical and rewarding in rearing show-quality fish. For me, this obsessive interest in betta fish started over a decade ago with a simple spawning. This is one of the easiest fish to breed for the beginning aquarist. For the more advanced fish breeder there is the challenge of competitive exhibition of betta fish. To raise outstanding show-quality fish, additional consideration needs to be given to coloration and finnage.

Color in betta fish is quite diverse both in shading and pattern. Currently, solid-colored betta fish are available in red, black, royal blue, green, blue, white, yellow and various shades of pastel morphs. The results of selective breeding have resulted in fish that are pure in color with outstanding finnage to match their glorious colors. In addition to the solid colors, there are also a number of interesting patterns. One of the more common is referred to as "bi-color." In these fish, the body of the betta fish is one color, with the fins being an entirely separate color. One of the more common bi-colors is the popular traditional cambodian in which the body is a light color with the fins a solid red.

Another striking pattern is referred to as "butterfly." The anal, tail and dorsal fins are displayed in two different colors. Ideally, this pattern is equal throughout the finnage. The current show circuit boasts butterfly patterns of blue/white, red/clear and black/clear. The color combinations are nearly endless.

A somewhat related pattern is marbling. This is a most mysterious trait and is often observed in fish showing butterfly patterns. The marble pattern causes the color pattern on both the body and fins to appear in a pinto-like motif. Sometimes the marble pattern shows up with a half-and-half body pattern, while in others it may be a nearly perfect spotting of colors. These fish are currently available as black marbles, green marbles and red marbles, with varying color mixes to match. This genetic trait is quite unpredictable. In marble betta fish I've bred, the fish can change coloration patterns from one extreme to the other in the span of just a few days.

Equally important to color is finnage. Aquarists will seldom see truly outstanding finnage in fish at the local pet store. The key is to select the best females for breeding. Look for tail fins with larger overall dimensions and dorsal fins with good fin rays. The females that are frequently found among the breeding stock of the accomplished betta fish hobbyists will produce spectacular finnage in their male offspring.

I have not said much about the finnage of males because, in my experience, the quality of the male finnage seems to have little relationship with similar finnage in the offspring. I have seldom observed outstanding finnage in the first generation (F1) offspring if the male parent exhibited it. However, in situations in which the female exhibits outstanding finnage, most of the F1 offspring will show it too.

I hope that in some measure I have encouraged you to try your hand at breeding betta fish. In many ways, they are a simple fish to spawn. Yet they also hold the challenge of producing exceptional colors and finnage that make the fish worthy of its scientific name, Betta splendens. I urge you to become involved in breed betta fish. Perhaps you will be the hobbyist to develop a new color variety.

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