IMPROVING YOUR BAP RESULTS, PART 2

By Chase Klinesteker SWAM, July-Aug 1986

Chases' Fish Room, 9'X10', right side

This is the second part of a 2-part article about breeding tropical fish. The first article covered 1)INFORMATION AND RECORDS, 2)ORGANIZATION, and 3)TANK CLEANLINESS. This article will cover 4)BREEDING CONDITIONS, 5)HATCHING, and 6)MENTAL ATTITUDE. It is my hope that the information contained in these articles will help more club members to participate in and enjoy our fine Breeders Award Program at SWAMAS.

4) BREEDING CONDITIONS

Proper **A) Selection of Breeders, B) Conditioning, C) Breeding Environment, and D) Spawning Stimulants** are all important factors when attempting to breed fish. I will cover each factor separately.

A)---Selection of Breeders starts with healthy, robust fish. If you are going to raise a small group and let them pair off, six should be an adequate number. Chances of not getting at least one pair are very remote, and as we all have limited tank space, more are not necessary. We then tend to raise larger, healthier fish. Consult on past Fry Raising articles in our newsletter for points on how

to raise them. Basically, warmth, light, live plants, frequent feedings of a varied diet, an efficient filter, and frequent water changes will promote the best growth and health for your breeders. If you are purchasing fish at an auction or pet store, be very critical as to their health and age. Auction fish are sometimes bagged with dirty water or insufficient air and should be avoided. Fish in a pet store should be closely examined also. Each and every fish in the tank should be examined for any sign of disease. Look for alert, active fish in good coloration. Poorly fed fish are in weaker condition and generally more difficult to sex. Fish kept undernourished or in polluted conditions may be infertile anyway, and it doesn't pay to purchase them. Fortunately, in our area, we have several pet stores that take the time to maintain healthy fish. If there is any fish with even minor signs of ick, tail rot, fungus, or other infections, don't buy fish from that tank. Fish shop owners generally appreciate being shown these fish, as they can quarantine and treat it early. The age of breeders is a factor in selecting fish also. The first spawn or two of a young pair may be infertile or hatch poorly, so some patience may be needed. Old fish, especially barbs and tetras, may become eggbound and unable to spawn. Avoid the super-fat females that look like they will drop eggs any second. The best breeders are young fish of adult size that have been kept and raised under optimum conditions. Sexing of breeders can get fairly involved for some species, and references should be consulted if there is any question.

B)---Conditioning the Breeders involves optimal environment and optimal feeding. The principles of Fry Raising work here nicely. Water changes must be done frequently. The water hardness and pH is not critical, but should be in the range that the species prefers. Clean the filter and siphon the bottom frequently, as you will be feeding more heavily and more often than usual. The temperature should be in the middle of the range that the species prefers, with a good average temperature for most species around 75-77 degrees. If at all possible, use light and live plants. Plants adsorb pollutants, are a salad snack for some fish, and provide cover. A relaxed environment, free of bullies, is very important for many fish to eat properly and reproduce, especially the shy species. Think of that as a little "wine and music" for fish! Optimal feeding involves offering a varied diet at least 2 or 3 times a day. This should include live foods, frozen meats, and dry foods. In foods for humans, some nutrients are lost when we process foods. Then we add sugar, flour, and numerous chemicals to make them taste, look, and smell good. As a general rule, the least processed foods are the best nutritionally for us. In many respects, our fish may be eating better than their owners!

At the top of the list for fish are live foods. Newly hatched brine shrimp, daphnia, and white worms seem to work best, since they are easy to cultivate and readily available. They are very nutritious and very little, if any, is left over to pollute the tank. For frozen meats, I use scraped beef heart, beef liver, and frozen brine shrimp. All of these can pollute the water with beef liver being the worst. I feed some beef liver because many species, especially tetras, seem to prefer it over other frozen foods. Liver is a rich organ meat containing appetite stimulant vitamins B6 and B2. Feed it carefully and use heavy filtration, but it can do wonders to condition some fish. Alternate the liver with frozen brine shrimp and beef heart for best results. I also feed a good quality flake food at least once a day, since there are nutrients present in it that are not in meats, especially spirulina (vegetable products) that many fish require. For species of fish that need plant matter in their diet, it would be best to use an algae flake food (spirulina) as well as having live

plants present. Many of the home-prepared food mixes are cooked and frozen and have many different food items in them. But look at it this way---how would you like to have leftover beef-stew-goulash for every meal for the rest of your life? Pretty boring! Variety is the spice of life, and fish seem to do best on a varied diet. Even the biological filters seem to work more efficiently if a variety of foods is fed---maybe the bacteria do better on a varied diet also!

C)---The Breeding Environment is the actual conditions needed to get a pair or group of fish to spawn. This can vary widely with the different species of fishes. Some factors include temperature, light intensity and duration, water chemistry, water flow, filtration, water changes, diet, plants, bottom substrate, caves, cover available, quietness of tank location, and water depth. We begin by setting up an aquarium with the recommended conditions needed for the group of fishes our species is in (e.g. barbsa, anabantoids, tetras, etc.). Then we research several articles and references on the particular species we are trying to breed. It is here that my "3X5 computer" cards really help . By summarizing all articles read in the past about a given species, I don't have to re-read them. When I get to the point where I can read articles, memorize the information, and recall it all several weeks, months, or years later, I will throw away my 3X5 card files. Guess when that will be!!

Here are a few general tips on breeding some groups of fishes:

BARBS—Medium hardness water that is clean but aged works well. Some species like softer water. A night-day light cycle with growing plants seems to stimulate their breeding, especially if the temperature goes up slightly during the day. Barbs need lots of plant cover in the breeding tank, as they are aggressive and avid egg eaters. With some species, males can be very nasty and even kill females. With others, 2 males may be necessary to get a female started spawning. Watch them closely to avoid damage to breeders.

TETRAS---A very clean tank and absolutely fresh water seems to stimulate many tetras to spawn. Dim light is quite important, as many tetra eggs and fry are sensitive to light. In fact, neon and cardinal tetras spawn mostly at night. Artificial spawning grass is easier to keep clean and helps maintain a very low bacterial level. Ion exchange softened water works best for me to get fish to spawn. Hatching conditions, however, are very different, as I will explain later. I have had limited success using acidifiers and peat extract.

KILLIFISH---Peat moss treated water (box filter) with 1 teaspoon of salt per gallon works for me. They do well on live foods, but I feed frozen rinsed brine shrimp for variety. By adding a few small snails and changing water frequently, water conditions are kept clean for spawning. Dark colored spawning mops of soft acrylic yarn work well. For bottom substrate spawners, I use two or Three mops on the bottom in a pile. They dive into this and lay eggs as if it were peat moss. The eggs are picked from the mops, siphoned from the bottom, and put in moist peat.

LIVEBEARERS---They often need harder water or even salt added to their water (especially mollies), but some fish don't always go by the book. I have bred 12 species of goodeids in softened (DH-6) water when the references said they needed quite hard water. Many livebearers prefer warmth

and live plants to nibble on. An algae flake food (spirulina) is very beneficial. Some species are quite sensitive to pollution in the water and need strong filtration and frequent water changes.

ANABANTOIDS---Most bubble nest builders like a low water level and high temperatures (82-85 degrees) to spawn. Summer is a good time to spawn them, as it is easier to maintain higher temperatures and humidity levels. Strong light and live plants, especially floating, seem to stimulate spawning. Use clean water but little or no aeration or filtration as water movement seem to discourage them from spawning. Hiding areas are important to protect the female.

CICHLIDS, AFRICAN

My experience with this group is somewhat limited, although I have bred several species in my softened water using dolomite undergravel filters to harden it. They need lots of cover, rocks, and structures to identify their territory. Larger bunches of plastic plants work well also. Some plants, algae, or spirulina flake will help with their diet. Water changes seem to stimulate most spawns. Observe these fishes frequently. Their aggressive behavior and secretive spawning habits need close scrutiny.

CICHLIDS, SOUTH AMERICAN

Generally, soft water works best for these fishes, especially the dwarf varieties, who often need lots of heat (82 to 85 degrees) and super clean water. Most larger South American cichlids feed heavily, are messy, and will do fine in harder water. Breeding them requires many water changes and heavy filtration. Raising the temperature can often trigger spawning. A cave rock, or slate present will often promote spawning. With dwarf cichlids, live plants seem to be very helpful, as they provide cover and adsorb pollution. With the species that are shy, a few small tetras in the tank will bring them out more.

D)---Spawning Stimulants More often than not, a person will research the group and species to spawn, set up a tank with “ideal” breeding conditions, and still the fish won’t spawn. At this point, many would separate the breeders, recondition them, and try again later. However, this doesn’t always work either. Rather than give up on the species or run out to get a new pair, I like to try some different conditions first. From the research done, there will usually be an article or two by authors who have succeeded in breeding the species under different than usual conditions. Also, ask club members who have bred the fish what they felt was important in getting them to breed. Changing the temperature, light, water, and environment conditions can often be done with the fish still in the tank to try again. It is this aspect of breeding fish that I find very exciting, challenging, and rewarding. If breeding fish had cookbook directions and predictable results, I probably would not be interested. After several more tries, sometimes it pays just to sit back and wait for the fish to breed. Some fish are known to breed only when they are good and ready. This is likely an ckspoonpl1@aol.com, stevenmurray4502@comcast.net, 01cent@comcast.net, silka@msms.org, patterson715@yahoo.com, squails2000@yahoo.com, cnh2600@att.net, n.manett@comcast.net, alicevfrancis@comcast.net, sre.peace@yahoo.com, ellamaebergman@yahoo.com, blbhale@yahoo.com, b.weems@grtumc.org, henwoodjaandij@comcast.net, lsproul@iserv.net, pastordavid@grtumc.org, douglas.m.brant@gmail.com, laurabrant34@att.net, ran.hamstra@gmail.com, skeisele@yahoo.com,

rdspafford@gmail.com, excuse for the fact that there is much more to learn about breeding them. Finally, if there is good reason to believe that your breeders are old, eggbound, or not in top health, by all means obtain new breeding stock and try again.

5) HATCHING

Getting eggs to hatch and fry to the free-swimming stage is the most difficult part of raising egg laying fish. Environmental conditions are much more critical at this stage than when breeding fish. Countless times I have spawned fish only to watch the eggs fungus or the fry die before free-swimming. And with cichlids, it is frustrating to sit by and watch spawn after spawn get eaten by the parents! For these reasons, I prefer to remove the eggs from the spawning tank and hatch them separately on all fish except mouthbrooders. The eggs are removed by using an airline hose siphon, one end to which a foot long stick is attached for control. In the case of cichlids, the end of the siphon is maneuvered to the rock where the eggs are and gently moved through the eggs to pick them up as loosened. Smaller rocks and pots can be removed to another container of the same water and "blown off" the rock by squirting water at them with an eye dropper. If you desire to give the parents a chance also, take only half the eggs and quickly replace the rock. This removal doesn't seem to bother the eggs at all, and few if any will stick together. The only eggs this doesn't seem to work on are corydoras catfish eggs, which are ultra-sticky. For egg scatterers (tetras, barbs, etc), use a glass bottomed tank with no gravel to spawn the fish in, and the eggs can be easily siphoned from the bottom after removing the plants. Shining a flashlight along the bottom will make the eggs visible. Next, I clean the eggs off in fresh hatching water by swirling them in a one quart plastic semi-translucent container. The viable eggs are heavier and will collect in the center, and the lighter infertile ones will be farther out. It is easy to collect the viable eggs in the center with an eyedropper (no, this will not produce dizzy fry!). This procedure is extremely important with tetra eggs, as the sperm and infertile eggs in the water will quickly raise the bacteria level and kill the remaining eggs.

At this point, the eggs are placed in their preferred water for hatching. With tetras, this means clean, slightly acid rainwater (or RO) with 2-4 drops per gallon of 5% methylene blue added to decrease the light and reduce fungus. Barb eggs will do well in this water also. This is fine for apistos, but many South American cichlid eggs do better in water with some hardness. In about a day, the tetra eggs have hatched and must be swirled and cleaned again, since the eggshells pollute the water. If there are around 100 or more eggs to hatch, at least a gallon container would be best to use. After hatching, the methylene blue does not have to be used, but there is a period of 5 or 6 days the fry are developing and should not be fed, but lightly aerated. Keep in mind that some fry are light-sensitive, so dim light is best. If I am trying to hatch eggs from a new or unfamiliar species, I will split the eggs into 2 or 3 different containers and try different hatching conditions in each. This is one way to determine the best hatching conditions. Killifish eggs are picked from the mops and placed in floating containers in my "killie hatcher" where salted and peat treated water is filtered and circulated around the eggs from beneath (see "Killie Hatcher" article).

Hatching eggs is very unpredictable and many factors are important. The health and conditioning of the parents may affect viability. Temperature also has an effect. If the water is too warm, a

high rate of mutation may occur. If it is too cool, there will be a very slow, or possibly no hatch. There may be a sex determining factor with hatching temperature in several species where the ratio of males to females could be way off. Once the fry are free-swimming, they can be moved to larger quarters, fed, and scavengers added (see "Feeding Tiny Fry" article.

6) MENTAL ATTITUDE

This section could just as easily be called "Philosophy" or "Outlook". The outlook for SWAMAS and the hobby in general is positive. Keeping and breeding tropical fish is an exciting and rewarding hobby. The learning and sharing of knowledge is very stimulating. Fish and their environment are constantly changing, which adds to the challenge. In the same light, the hobby of tropical fish is a great way to unwind in a stressful world. What could be more relaxing than a quietly bubbling tank full of gracefully gliding fish? I would like to mention a few suggestions that members might use to help maintain their interest in the hobby and the BAP program in particular:

Try breeding difficult fish. What have you got to lose? A lot of knowledge is gained even if you don't succeed. And if you do spawn them, you feel great all over!

Try breeding all groups of fishes. Don't limit yourself. Knowledge gained from one group can be used to help you in other areas. Don't be afraid to try one group because you don't have the "proper" water. By learning and adjusting, you may surprise yourself.

Keep on breedin' (fish, that is). SWAMAS has several very capable Master Breeders as members who are willing to answer questions on breeding that others may have. My wish is to encourage them as well as other breeders in the club to fully participate in the BAP.

Now you see it, now you don't. Don't put off breeding fish till later. It may be that species you can now obtain won't be available later in our area. There are thousands of species of fish that have been bred by BAP participants over the years, with new fish being added constantly, meaning lots of opportunity.

On again, off again. Be aware that your time and interest spent on your fish will vary. Accept this fact and adjust your schedule and set-up accordingly. I seem to do more breeding of fish in the late spring and summer since my professional and outside activities are less at this time. This also is the natural time for breeding of many species, and fish ship better then.

Above all, don't get discouraged. Fish dying, jumping out, eggs not hatching, etc. are all learning experiences. Keep on trying. What a tremendous feeling you get when you finally do succeed! One success can wipe out the memory of many failures. By keeping several species you are trying to breed at the same time, your chances of success will be much greater.

In conclusion, there are many different facets in breeding tropical fish. Much of what I have written is no more than the basics of fishkeeping. Any suggestions or techniques used must be altered to fit each individuals' set-up and disposition. Breeding fish can be as simple or as complex as each person wants to make it. The Breeders Award Program (BAP) is very important in helping our hobby keep active and growing. It is also essential in maintaining and distributing species of fish. The purpose of this article was to increase the interest of members in breeding tropical fish and to participate in the BAP more fully.