Breeding Angelfish

Introduction At one time or another almost every tropical fish hobbyist makes an attempt at breeding angelfish. It is easy to understand why, since angelfish are one of our most beautiful tropical fish, are relatively easy to care for, make a great show piece, come in many varieties and even fetches a good price at pet shops. With this much going for it, it is no wonder the angelfish attracts so many would-be angelfish breeders. These hopeful aquarists can have a good experience in their attempt to raise and breed angelfish or they can face constant frustration until they eventually give up and go on to something else. It is our hope that after reading this, you too can experience the joys of raising and breeding angelfish. Once you get the procedure down, you should be able to raise at least 90% of the eggs laid, into sellable juveniles. Keep in mind that this procedure will vary, depending on your circumstances. Some people are simply dealing with worse conditions and much more care has to go into the spawn to raise it.

Angelfish Water Requirements Angelfish are endemic to the Amazon basin. In nature, they are found in soft, acid water that is very warm most of the year, usually around 80 degrees F.. Don't worry if you can't match these conditions in your aquariums. The domestic angelfish, most of which are many generations removed from wild stock, are a very adaptable animal. We have experienced little or no problem raising angelfish in water between 4.7 and 8.7 pH, and from very soft all the way up to very hard water. If your water doesn't naturally fall into this range and is extremely hard or alkaline, the use of a de-ionization filter or reverse osmosis (R.O.) filter can bring it into an acceptable range for you. R.O. filters are usually hooked into your main water supply and produce the equivalent of distilled water from the tap. The cost of a unit can range from less than a hundred dollars to over $5000, depending on the size and quality of the filter needed. Another means of altering pH is with easily obtained chemicals. This is one method that we prefer to stay away from, because with the chemical method, pH is prone to radical jumps if the water isn't properly buffered. Try to remember that it can be very time consuming to buffer the water, alter the pH, or adjust the hardness of your water supply. If it isn't stable after altering, the swings in pH are more stressful, than simply keeping the angelfish in less than ideal water. As we said before, most angelfish varieties will do well in a large range of water types, so avoid altering the water if you can.

If you have very hard water and a well-conditioned female angelfish that won't or can't seem to lay eggs, a little experimentation may be needed. To facilitate breeding with these hard-to-do females, you may have to resort to adding water from a Reverse Osmosis filter

or a De-ionizer. This problem is rare for us and usually only occurs when dealing with angelfish that have a large amount of wild blood in them. If you have very poor water parameters or other contaminants in your water, then this extra step may be needed. Before taking any extreme steps, you should try a quality water conditioner like Pro Aqua. This product not only removes chlorine and balances osmotic processes, but it bonds with heavy metals which can be a big problem in many water supplies.

Your aquarium water temperature should probably be between 80 & 84 degrees F. We've had angelfish spawn in the upper 60's as well as in the lower 90's, but we feel the extremes should be avoided. Low temperatures usually mean infrequent spawns and a tendency to be more disease prone. High temperatures reduce the oxygen carrying capacity of the water, encourage bacteria growth and prematurely age the angelfish.

Angelfish Tank Set-Up When setting up an aquarium to house your angelfish pair, remember that this is one fish where a tall aquarium must be considered for reasons other than aesthetics. It is not uncommon for properly cared for veil angelfish to reach 12" or more from the top of the dorsal to the tip of the anal fin. If a breeding angelfish pair is cramped, they may not feel secure. So, make sure you give them plenty of room. We recommend a 20-gallon "high" as the smallest aquarium to house a pair. Angelfish need to feel secure in order to do well and to breed freely. Their natural environment is one of slow moving water that has many hiding places such as roots and tall plants. Although, gravel is not recommended in the breeding set-up, potted plants and/or cured driftwood is fine. If the angelfish spawn on the plants or driftwood, remove these items until they spawn on the desired medium - spawning slate, plastic leaf, etc. After the angelfish pair has had a spawn or two on a spawning slate, they will usually continue to use the slate, even after you put the plants back in. Many angelfish pairs will need nothing special done to their aquarium, but others will not spawn unless careful thought is given to the aquarium set-up. With bare bottom aquariums it sometimes helps to paint the outside bottom of the tank a "matte" dark color. This cuts down on reflection and usually makes an angelfish pair feel more at ease. You may have to do this to a couple of the sides also. With some pairs, you may have to try covering the whole aquarium, try a bigger aquarium, or maybe turning off a light will work. Some angelfish pairs may require a dither fish to distract them or make them bolder. The key is experimentation.

Angelfish cannot handle high concentrations of nitrites and ammonia. A good filtration system will help to eliminate these toxins. To establish the nitrogen cycle you should start with an "active filter", or you should add a quality cycling aid such as Bacter Plus. We find simple aquarium sponge filters to be the most cost efficient. They also do not cause much turbulence, which is good when dealing with angelfish. One or two large sponge filters will handle most aquariums. We prefer the large square sponge filters with weighted slate bottoms. Fry cannot get trapped under them and they are easy to move around when siphoning. Particulate matter will be removed primarily by the large and frequent water changes you are doing. It is best not to rely on filters to remove particulate matter because you are not actually removing it with a filter, just storing it all in one spot. Alternately cleaning (rinsing) one of the two sponge filters (every few weeks) will keep the water crystal clear. Remember to rinse the sponge filter in aquarium waste water. The

chlorine in most tap water may kill the beneficial bacteria the sponge filter contains. Other filters we've had success with include, undergravel filters, fluidized bed filters and outside power filters.

Frequent, partial water changes will remove excess dissolved organics and other toxins that will accumulate without them. Water changes must be done in large amounts if you are to be successful at breeding angelfish. Angels seem to thrive with 40% or greater water changes done as frequently as possible, even daily. You will probably not have much success with breeding angelfish if you can't change at least 50% once a week.

Feeding Angelfish are a typical cichlid. The general rule is a variety of food at least a few times a day. They are voracious feeders and should always act that way. If they don't, suspect that something may not be right. This is one of the hardest parts of raising angelfish properly, because as stated earlier, they are sensitive to poor water quality, and what is the quickest way to bad water? That's right...over feed them! Now, since you want big robust angelfish, you will usually risk overfeeding in order to be sure they are getting adequate amounts. This makes it essential that you check for and remove any uneaten food approximately 3-5 minutes after feeding. You can see now why we recommend a bare bottom aquarium.

Angelfish are generally not picky eaters. Healthy angelfish will accept most foods when hungry enough and eventually learn to love them. Don't feed your angelfish for a day or two prior to introducing a new food. This is usually enough to get them to eat it with enthusiasm. .

Acquisition of Angelfish Breeding Stock There are basically two ways, each with a couple of variations, to obtain a pair. First, you can buy a proven pair or a known male and female, which you can pair up. The second approach would be to buy a dozen or so juvenile angelfish and raise them to breeding size in a large aquarium. If you take the first approach, be careful. If buying an angelfish pair, ask the age of the fish, how many times they have spawned and if good fry have been raised from that pair. With this approach be prepared to spend more money. Also expect to make it back very fast. If you are careful with your selection, pleasant results could occur quickly. Remember, your first spawn will probably pay for the pair and still leave you with a healthy profit. The downside is if the fish don't produce good fry, or enough fry, you do not have other angelfish pairs to choose from, as you would if you raised adults from a dozen juveniles. Even so, all is not lost, you can try crossing the pair with other adults to see what changes a different mate could make.

If you decide to buy male and female adult angelfish separately, be sure their sex has been proven through spawning. No matter what anyone may try to tell you, there are no absolute methods to sex young adult angelfish positively by anatomy (except when breeding tubes are lowered or when an experienced person has examined the breeding tubes with a magnifying glass). Even if they can be sexed, not all male and female angelfish will be compatible. Some older angelfish will have discernable sex characteristics but you don't want older angelfish. You don't really know for sure how old

the angelfish is you're getting, and it may be past spawning age, or greatly slowing down. If you have more time than money then it may be best to get 10-12 juvenile angelfish to raise and pair off. This will require a smaller initial investment in stock, give you the possibility of several angelfish pairs and allow you greater freedom to try and match up the traits you wish to preserve (you get to pick the best ones).

Getting That First Angelfish Spawn If you bought a "proven breeding angelfish pair" it doesn't mean they will spawn immediately. The trip to their new home may have thrown them off their "cycle". They may go through a few weeks of adjustment. Try to make them feel secure, house them in a quiet location and preferably place their aquarium on a high stand or rack. The movement of your head going by is not as fast as the speed of your legs walking by. And you should not put them in with other fish, especially other angelfish. They usually spawn much more readily when they are by themselves.

Breeding angelfish is not considered especially difficult, but even the easiest fish may give you poor results if they have not been kept in good condition. This usually means good water conditions and a steady supply of high quality food. A sign of a poorly conditioned angelfish is one that eats very little, or is visibly thin and without vigor. These angelfish can be brought into spawning condition. It just takes patience and good care. Give them some time and they will usually reward you. If you choose to get a dozen or so juvenile angelfish, and you take very good care of them, you can expect to see pairs start to form around six to seven months of age. Some weaker strains such as double-dose black angelfish or strains with a lot of wild blood in them may take longer. They should all be housed in the same large aquarium. A dozen should have at least a 70-gallon aquarium, and preferably an even larger one. Eventually, you should notice a couple of fish staying together and driving off all other angelfish. When you see a pair acting like this for a day or two (just to make sure) then remove them to a spawning aquarium that is set up well in advance. You may get a spawn right away or it may take a few more weeks of heavy feeding and good care. If nothing happens, there are a couple of techniques that can bring on that first angelfish spawn. You can raise the temperature a few degrees, do a very large water change (75% or more) with slightly cooler water, attempt to give the fish more security with more plants, or even try a larger aquarium or a new location. Another key may be to feed very heavy for a few days with a good live food such as white worms and/or "dwarf" red worms. Baby fish is another great food. Sometimes the sight of another angelfish will do the trick. It can even be in an adjacent tank. If these tricks don't work, then it's time to try adding Reverse Osmosis water or De-ionized water. If everything fails, try pairing them up with different angelfish or put them back into a large group of angelfish in a big aquarium and let them pair-off again. If you place them back into the large aquarium, be sure to watch them for the first day or so. Some fighting will usually occur as they re-establish territories for themselves. Any damage at this point is usually not serious if the aquarium is large enough and has enough hiding places. Valuable, young adult angelfish are worth the effort it takes to keep an eye open for trouble.

If one angelfish out of the pair is simply too aggressive you will have to separate them by putting a divider into their aquarium. To accomplish this, get some "egg crate" material that is normally used to diffuse light on fluorescent fixtures. Cut it so that it will divide the

aquarium in half. This material has holes in it that allow the angelfish to see each other. Each angelfish should be given the proper conditions for spawning i.e., good food, high temperatures, spawning slate, frequent large water changes, etc. When both angelfish act as if they really want to get to the other side, or when their breeding tubes drop, you can then move the egg crate slightly to allow a crack for the angelfish to swim through. If this doesn't work you should try the same procedure with a larger tank. Introduce the less aggressive one into the new tank first. Breeding angelfish successfully sometimes requires a bit of experimentation.

Angelfish will spawn on almost anything. The key is to offer them something that they will usually choose over most other surfaces and to be sure it is something convenient and easy to remove when hatching artificially. Anything that is very porous may harbor harmful bacteria or fungus. If it is translucent, or the wrong color (generally lighter colors), the eggs can be difficult to see. Eggs will not stick well on some materials. The fish must spawn on one side and you must be able to flip it over so a stream of air bubbles can flow near the eggs while they are upside down. If you don't have the eggs upside down when hatching, it is more difficult to get a good flow of water over the eggs. Hatch rate seems to be somewhat lower if the eggs are facing upward. This adequate flow is important to keep the eggs from dying. We use a 2" x 10" spawning slate made specifically for the purpose of artificially hatching angelfish eggs. We put two or three in each breeding aquarium to give the angelfish pairs a choice of spawning locations. This technique almost always works to get them spawning on one of the slates.

Hatching Angelfish Eggs If you want the experience of watching the adult angelfish raise the fry you can leave the eggs with the adults. It may take many spawns before the pair will raise even a few fry without eating them. It appears that stress of any type can cause them to get nervous and eat the spawn. However, we find that good feeding/conditioning of the pair along with a proper aquarium set-up, usually helps to get our angelfish pairs to parent-raise. Sometimes the addition of reverse osmosis water will get them raising their own spawns. We also take care to feed our best foods at frequent intervals to condition our pairs, and we continue this right on through the hatching and rearing period. Keep in mind that some angelfish pairs will not eat well, when guarding a spawn. Be careful not to overfeed them. It also helps to place them in an aquarium, which is away from traffic and sudden movement. Water quality must be maintained as usual. Water changes can be done in a manner that the angelfish are accustomed to. With patience, the pair will usually cooperate. However, as in most cases nothing in life is a certainty and you can be assured that some angelfish pairs will never raise their own fry. But don't let this bother you. You can very successfully hatch and raise the fry artificially.

To hatch the angelfish eggs artificially is fairly easy and can be accomplished in many different ways, but there are two key ingredients. One is aeration and the other is very clean water. Some breeders use fungicides. Others keep them in the dark. Some do both. Many put the angelfish eggs in a small tank or jar. Some put them into a large tank. There are many ways being used by different breeders. I will explain our method, which works very well for us.

After the eggs are laid, a one-gallon jar is prepared by cleaning it thoroughly (no soap!). It is then filled three quarters of the way up with 100% fresh tap water. This is done approximately 24 hours in advance of the expected spawn. Just before moving the slate, we add a fungicide. We usually use Methylene Blue and have had good success with it. Add enough drops to make the water a medium blue shade. To this you can add two drops of Acriflavin Plus, per gallon or you can use the Acriflavin Plus by itself at 4-5 drops per gallon.. Then an airstone is placed at the bottom with a medium stream of bubbles coming out. The spawning slate is then removed from the aquarium and immediately placed in the jar so the eggs are facing the bottom of the jar. Then position the airstone so the bubbles rise near the eggs. The angelfish eggs will hatch in approximately 60 hours at 80 degrees. The fry will then be in a wiggler stage for about 5 more days after they hatch. Do not feed the angelfish fry until they are free-swimming.

At this point we would like to dispel some fallacies that are commonly heard among angelfish breeders. We've heard "experts" say to never allow the angelfish eggs to come in contact with the air. When transferring the eggs from spawning tank to hatching container you are supposed to keep them submersed. However, we do not submerse our angelfish eggs when transferring and do not experience more than a few percent death rate. Just move the spawning slate to an already prepared hatching jar, without stopping to admire them for too long. Keep the hatching jar at about 78-82 degrees F. If the room in which the hatching jar is located, is not heated to this temperature, you can put the jar(s) in an aquarium that has a heater in it. We've also seen a wooden box with a low wattage light mounted in it, work quite well.

Many of the "experts" also say to keep the angelfish eggs dark, to cover them with a towel, or to use very heavy doses of Methylene Blue. We never make an effort to darken our angelfish hatching jars (which sit directly under bright lights) and you already know our hatch rate. Light may be a factor in less than ideal conditions, but if everything is kept clean, light will probably have little effect. Sometimes, you'll hear that you should never let the air bubbles flow directly over the angelfish eggs, but to place it to the side. Well, you guessed it. We frequently place the airstone so that the bubbles flow right over the center of the spawn. The distribution of any dead eggs always appears to be random. We've never observed a greater concentration of dead eggs in the area where the bubbles pass over. And finally, we've heard many times that you should make every effort to keep the fry on the spawning slate until they are free-swimming. The ones that fall to the bottom are supposedly the ones that end up with deformities. I'm sure by now you've guessed that all our fry end up on the bottom. In fact, we put them there on purpose. As soon as they hatch we shake them off the spawning slate, so we can remove any infertile eggs stuck to the slate. We then take a few moments to remove any dead eggs from the bottom of the hatching jar with an eyedropper. We leave the airstone bubbling from the bottom of the jar. Depending on your water, this may be all you have to do until the fry become free-swimming, at which point, they are transferred to a rearing aquarium. Occasionally, if a jar looks a little cloudy or has a larger than normal number of dead eggs, you will have to do a water change on it. We have found that if you have angelfish fry with bent or stubby ventral fins, that bacteria are attacking them in the hatching container, or within the first week after free-swimming in an aquarium. To remedy this

you may need to add an antibiotic such as Myacin to subsequent hatches and/or do very large water changes (95%) each day on the hatching container.

If you think that you've done everything correctly and you still can't get your angelfish eggs to hatch, or a very small percentage is hatching, then the following may apply. The angelfish pair may have a fertility problem. Changing one of the pair may help. Also, we commonly see young male angelfish that have not yet had the spawning instinct fully develop to the point where they properly follow a female up the spawning slate. Most of the time as they get older, they do a better job. Another problem may occur if your water is too hard. In very hard water the egg can fail to "harden". The angelfish egg normally hardens as it takes up water through osmosis from the surrounding tank water. The harder the tank water the lower the osmotic pressure becomes, thus less water flows into the egg and if it does not properly harden, it dies. You can reduce hardness with an R.O. filter or de-ionization filter. If your pH is very high, you may experience fry that bloat and then die before free-swimming. If so, bacteria is probably your problem and you may have to resort to massive water changes. I know some angelfish breeders who must do 95% twice a day in order to combat the bacteria.

Raising Juvenile Angelfish When the angelfish fry are seen swimming in a "cloud" it is then time to transfer them to a rearing aquarium. To do this, siphon out all the water that you can from the hatching jar without sucking up any fry. Then quickly pour the remainder into the prepared rearing aquarium. Be ready with a small container of the aquarium water to rinse any fry out of the hatching jar that didn't make it on the initial pour. The aquarium they go into should contain 100% fresh aged water with an active sponge filter. The aquarium should be sized to the number of fry in the spawn. Aquariums anywhere from a 2.5 gallon to a 10 gallon tank should be able to handle most angelfish spawns. In an aquarium that is too large, the fry may seem frightened and will huddle on the bottom in a corner. They will have difficulty finding the food and will likely have problems. In the first week of their life, a smaller aquarium appears to give them the secure surroundings they desire. When they have grown to fill this space (maybe only a week or two) they are then split up into "grow-out aquariums". Make sure they have plenty of space, and frequent partial water changes are done. There is nothing worse than "chopped" dorsal fins and stunted, thin little angelfish. If you want to know how they should look, put just a few in a tank and take good care of them. Most of the poor juvenile angelfish we've seen came from being crowded and having insufficient water changes. The following would be a very general guideline for angelfish stocking levels.

Nickel size bodies	1 angelfish per gallon
Quarter size bodies	1 angelfish per 2 gallons
Silver dollar size bodies	1 angelfish per 3 gallons
Stock ready to be paired	1 angelfish per 5 gallons
Full grown breeding pair	20 gallon tall

Feeding angelfish fry is simple - feed newly hatched brine shrimp. Brine shrimp that has been hatched for even 12 hours may be too large for some baby angelfish to eat. We've

never had a spawn of angelfish that was not able to eat properly prepared baby brine shrimp right away. We use the Utah brine shrimp eggs, which we think are the best in the world. **Click here** for more details on hatching brine shrimp eggs.

Do not give angelfish fry their initial feeding until they have been transferred to the rearing aquarium. It is best to let them acclimate to the change for at least an hour or two before feeding. They still have a partial yoke sac and can go for at least a full day after free swimming before food is essential. One key to raising angelfish fast, are small, frequent feedings. The object is to keep food in their stomachs at all times. This is likely to foul the water, so great care has to be taken when feeding. Water changes up to 90% also will help to eliminate many problems.

There are some folks out there touting micro feeds that are suppose to replace live baby brine shrimp with equal or better results for angelfish. We have tested many if not most of these and none have lived up to their claims in our experience. We don't think they even come close. In addition to that, most are quite expensive. Little or no money would be saved even if they worked.

After 4-5 weeks of age, we add crushed flake, in small quantities to the juvenile angelfish diet. We gradually increase the amount of flake food. After a couple weeks of them eating this well, we add frozen foods, freeze dried bloodworms and occasional live foods. Properly cared for, juvenile angelfish can easily have a body the size of a dime at five to six weeks of age. We typically switch them completely to flake foods, freeze-dried foods and frozen foods at about 8-10 weeks of age. .

Additional Information on Breeding Angelfish You will find many other places on this website that will give you additional hints on raising and breeding angelfish. Check out the **Breeder Quality Angelfish** pages, **General Care** and **Frequently Asked Questions.**