

Classroom Fish Tanks

Setting up a classroom fish tank that works.

By Karen Randall

Adding the Plants

When the tank is about three-quarters full, it's time to plant. Plan on covering about 75 percent of the bottom of the tank with plants. Most of these should be fast-growing varieties (see "Recommended Plants" below for possibilities) that will go to work right away at removing excess nutrients from the system.

"Rosette" or "crown" plants, like swordplants (*Echinodorus*) and *Cryptocoryne* species, are planted individually in the substrate. Make sure the crown itself is above the substrate surface. Only the roots should be buried. This is also true for the thick rhizome of *Anubias* plants.

Stem plants, such as *Hygrophilia polysperma*, *H. diformis* and *Rotala rotundifolia*, are usually sold in rootless "bunches." They should be removed from their elastic band or lead weight and planted no more than three stems at a time. Under good conditions they will quickly root themselves. If they tend to float out of the substrate in the beginning, you can place a few small stones around the base. Another trick is to leave them floating for a week or so. They will usually have begun to develop roots in that period of time and it will be much easier to plant them.

Water sprite (*Ceratopteris* species) can either be left floating or planted in the substrate. *Salvinia* (and several other similar small plants) are floaters and they multiply quickly. Remove most of them when you do other tank maintenance. Don't let more than a third of the water surface become covered with these plants.

Java moss can be either left loose or tied (or stapled) onto driftwood. Java fern does not usually do well with its roots in the gravel. It is best to tie or rubber band this plant to rocks or driftwood. You can even just wedge some in between two stones.

Any plants that come in plastic pots should be removed from these containers (this may require cutting the pot away with scissors) and the rockwool removed from their roots before planting. Rockwool is used to grow the plants and to protect the roots during shipment, but it may contain hydroponic solution that can cause algae problems in the aquarium.

Now that the tank is fully planted, it is time to fill it to the top. It should be filled to above the plastic "frame" and close to, but not touching, the lip that holds the cover glass. This is where the water level should be kept at all times, for several reasons. If you allow the water level to drop, the water returning from the filter will splash down onto the surface, creating a great deal of turbulence. This will drive off the CO₂ we are trying to add to the tank.

Additionally, the greater distance that light travels through the air, the more it will scatter and the less will reach your plants within the tank. In a very brightly lit tank this is a minor consideration. With a moderately lit tank, such as the one we are setting up here, we need to conserve our resources! Do not, however, go in the opposite direction and keep the tank so full the water touches the glass. This would completely stop gas exchange, which is not a good idea either.

The last thing to do is to plug in all your equipment and set the light timer for about 12 hours on and 12 hours off. Now you're in business!

Adding the Fish

Wait at least one week, preferably two, before adding fish to the tank. At the two-week mark you can add algae-eating fish. My favorites are *Otocinclus* cats, which should be purchased in groups of at least three, and Siamese algae eaters (*Chrossocheilus siamensis*). Siamese algae eaters are not available in all areas of the country. If you can't find them, bushynose plecos (*Ancistrus* species) are a reasonable alternative, as are some of the clown plecos (*Peckoltia* species). Ghost or glass shrimp are also good algae eaters and are interesting to watch, but will most likely become fish food once the tank is fully populated. You'll have to decide whether your kids (and parents!) can handle that or not.

Do not feed your algae-eating residents for another two weeks. Their job is to eat any algae as it appears, and they won't do that if you make life too easy for them.

At the end of the first month, your plants should have settled in and be growing well, and the algae eaters should be

keeping up with most algae, although it is still normal to need to clean the glass from time to time. At this point, you can start stocking your tank with its final residents. You can also begin your regular maintenance routine.

Don't fall into the trap of overstocking the tank, either in terms of numbers of fish or numbers of species. The fish will display more natural behaviors, particularly schooling species, and the children will learn more if the tank is not stocked with the "ark mentality" (two of these and two of those).

My personal preference for classroom tanks is to stick with compatible fish from a single geographic area, particularly if you can pick an area that is relevant to other classroom studies. Of course, this is a matter of personal preference. As long as the species chosen are compatible and occupy different areas of the tank, the fish will not care that they come from different continents. If you want to be completely true to your geographic theme, you can choose plants native to those areas as well.

If possible, pick one species that stays near the surface, one that is a mid-water swimmer and another that stays near the bottom. Make sure you buy multiples of any schooling fish. An absolute minimum number of any schooling species is four to five individuals. Twelve or more will allow the children to observe true schooling behavior.

Steer clear of fish that are known to be scrappy unless you have the experience to plan a community around them. There are so many beautiful, interesting and peaceful species available that it makes no sense to set yourself up for problems. Also, avoid fish that are known plant eaters. There are many, many variations.

Let the children in the classroom research what fish might work well together during the month you are waiting for the tank to settle in. Do not allow children (or teachers) to bring in unsolicited "donations" or "orphan" fish for the tank. If, as inevitably will happen, other parents want their children to be able to participate in stocking the tank, give them a specific shopping list. When possible, suggest a specific local store you know is trustworthy.

Once you have decided on the population mix for your tank, add the fish slowly. Bring in one species the first week, another the next, until the tank is fully stocked. This will allow the good bacteria in the filter to adjust slowly to the increasing bioload. I have also found that it gives the children time to focus on just that new species, to learn about them and observe their behavior.

Maintenance

Maintenance must be done by the teacher, an aide or supervised children on a daily basis. Make sure you adequately train the adults overseeing these activities. In our schools, we have a checklist in a plastic slip sheet beside each tank to make sure that nothing is forgotten.

Daily maintenance should take no more than a couple of minutes and should include the following:

- 1) Feed fish.
- 2) Quick check of the tank. Are the lights on? Is the filter running? Is the temperature between 74 to 80 degrees Fahrenheit?
- 3) Check for sick or dead fish (dead fish must be removed). In the case of sick fish or equipment problems, there should be a contact person listed — you or a knowledgeable staff member.

Plan to do biweekly maintenance yourself, unless the teacher wants to learn to do it. Remember, teachers have a lot to do as it is. Some will feel that as much as they appreciate the educational value of an aquarium, they just can't take on the responsibility of maintenance. Biweekly chores shouldn't take much more than about a half hour.

Water changes should be done biweekly (25 percent, and remember the dechlorinator). At the same time, trim the plants and remove any dead leaves. Vacuum the surface of the gravel lightly and clean algae off the glass. Add fertilizer (complete trace element supplement). Clean the outside glass and dust covers, and so on (use only aquarium-safe products!). Change the yeast reactor. Clean the filter monthly.

What happens over the weekend and vacations? Unless there are fry (babies) in the tank that you really want to raise, a tank of healthy, well-fed fish and plants can easily go for a week to 10 days without food. If you want to raise fry, you will have to make arrangements to have them fed at least on weekdays through vacations.

Educational Opportunities

Incorporate the tank into other classroom activities. You will find that some teachers very naturally work a tank into their curriculum, while others need a little more help. It will help if you can provide information on the various plants and animals in the tank.

Create coloring pages for the younger children. Have the children examine the different mouths and body shapes of their fish. Can they determine which are surface feeders, bottom feeders? Lend a class of older children some aquarium books so they can do research of their own. Suggest some good aquarium Web sites they might visit on the Internet.

I found that every time I walked into a classroom, I was swamped with questions and really good observations from the class. To streamline the flow of information a bit, we have installed journals beside the tanks in each classroom. The children write their observations and questions in the journal, and when I come in to do maintenance, I answer the questions.

We are now arranging for some outside speakers to come in to discuss various aquatic subjects with the kids. We have speakers scheduled to speak on various topics including collecting in the Amazon, running a public aquarium and conservation of our local lakes and streams.

What About the End of the Year?

There are several options for summer break. Some teachers may want to take their tank home for the summer or you may opt to do the same. With a 20-gallon tank or smaller, this is really not much trouble. The water can be drained down to within a couple of inches of the gravel and you can leave the fish right in the tank. Lay wet paper towels over any leaves that are out of the water, and close the whole tank up with plastic wrap. With a person on each end of the tank to keep it as level as possible, it can be carried out to a waiting mini-van or other transportation with a flat surface.

If the tank will be moving to a different town with a different water supply, it is best to bring at least half of the water removed from the tank along with you. If 50 percent new water is added slowly, the fish should still do fine.

Some school buildings are still open during the summer months for office staff, summer programs and so on. If this is the case, it may be possible to arrange for someone there to do daily chores, while you attend to biweekly maintenance. In our schools we manage the larger common area tanks in this manner and try to get the teachers to make arrangements for their classroom tanks.

If all else fails, tanks can be broken down and restarted the next year. Pet stores are often willing to take healthy, well-grown fish and plants in exchange for credit to get you started at the beginning of the next school year. This is particularly true if you have developed a good working relationship with them during the year. The wise pet store owner should be able to see the value of introducing a large number of children to the joys of aquarium keeping.

Now That the Ball Is Rolling

We have found that manufacturers, retailers and individuals have all been very generous in support of our school-wide tank project, which has been dubbed "Treasures in Glass Boxes." The local newspapers have run stories on the project and let people know that we are always looking for more equipment.

Parents have gotten involved as well. I am even teaching classes several nights a week to parents from all over the area who are interested in starting a similar program in their areas.

The pet store where we do most of our business gives the school system a discount on all purchases and has found our program beneficial enough in terms of increased business that they have donated setups to other school systems in the area as well! While it is nice to have new equipment donated, we never turn down a donation of used equipment either. Even if we can't use all the pieces on our own tanks, we can often trade various pieces for other things we need more.

Your local aquarium society is a good source of interesting fish and plants that are hard to find, as well as used equipment. We had one generous gentleman donate enough *Cynolebias whiteii* fry to produce instant fish in a number of classrooms last year.

You may find, as I have, that a little enthusiasm can gain momentum at an amazing rate. Get involved. I guarantee you'll find it rewarding!

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