

Starting a Planted Tank

Starting your first aquatic planted tank.

By Scott Hieber

Anyone who ever bought a single strand of anachris (*Egeria densa*) or cabomba (*Cabomba* spp.), threw it into a fish tank, poked the stem end down into the gravel, then watched it slowly decay and die may tell you that aquatic plants are hard to grow and fraught with algae problems. Of course, if you bought a tropical fish, put it in an aquarium and then just left it there waiting for it to grow, you would notice that eventually the fish would become malnourished that the water quality was now poor, the glass was covered with algae, and the fish eventually died prematurely.

It actually takes some effort to keep fish, and the same is true for aquatic plants. You might have heard someone without practical aquatic gardening experience say that aquatic plants have difficult lighting requirements, need expensive pressurized equipment, bring snails into the aquarium and promote algae. None of this is true — or need be. Generally speaking, aquatic plants are no harder to keep than tropical fish, and in some ways an aquatic garden is easier to maintain than a fish tank. More importantly, very often a fish tank can be easier to maintain and keep attractive if it is well planted.

Many of the same basic principles apply to fish tanks and aquatic gardens. They both need food and clean water to be healthy, for example. Of course, plants do have some different needs, such as carbon dioxide (CO₂), which is freely available in the air and water. Luckily, the needs of fish and plant mesh very well, except for certain fish that insist on vigorously rearranging their environment and chewing plants to shreds (some African cichlids come to mind).

If you enjoy keeping fish and appreciate the variety of body types, coloring, and behaviors, then you probably also enjoy a visually pleasing aquarium scene — a lovely aquascape. Aquatic plants are one of the nicest ways to decorate an aquarium. While nice plantless aquascapes are certainly possible with rocks and/or driftwood or little ceramic castles or plastic burping clams (if that's how your taste runs), simply seeing a lush, well-planned, nicely maintained aquatic garden is enough to convince many hobbyists to add plants.

Benefits for Fish

Aesthetics aside, plants can do very desirable things for a fish tank. They provide hiding places and breeding sites for fish, supply oxygen, absorb ammonia, nitrates and phosphate. They also make a dynamic visual environment — an aquatic garden changes over time, much like a regular garden does.

In a way, plants are more territorial than fish. A rooted plant tries to claim its ground steadfastly (and quite literally). Plants will “fight” for the same ground, one trying to shade out the other or obtain nutrients faster. Despite this somewhat anthropomorphic observation, we can note that plants are, on the whole, quite peaceful. With the care of an attentive gardener, a great many plants can share the environment in an aquarium. Plants won't jump out of the tank, although some of them eventually will try to “climb” out if not pruned.

Let's first take a moment to recount the benefits of a planted aquarium. (Of course, one can have plant-only aquariums, but typically there are at least a few small fish.)

A more natural-looking aquarium. Live plants do look more natural than plastic decorations.

Visual interest. A little planning before planting a garden provides interesting and sometimes stunning natural variations in size, form and color.

Safe harbor for fish. A garden provides many places for fish to hide, and ironically enough, it seems that the availability of nearby safe harbor causes fish to enjoy swimming out in the open more, being aware that shelter is near if needed.

Natural borders. Fish can more easily establish territories with plants demarcating different zones.

Added oxygen. A lot of plants means a lot of oxygen, and photosynthesis creates free oxygen in the water (sometimes you will even see bubbles forming on or escaping from plants, affectionately referred to as “pearling”).

Natural filtering. Plants feed on ammonia, nitrates and inorganic phosphate compounds (a.k.a., orthophosphates). Plants

are a biological filter you can enjoy looking at.

Every endeavor worth the effort has pitfalls, even aquatic gardening. So, let us now consider those.

Algae and Light

Contrary to the myth of years ago, an aquatic garden does not promote algae growth. In fact, a healthy garden will actually inhibit new algae growth. However, you must clean up what algae does appear by scraping the glass (an old credit card can be inexpensively effective), rubbing off of leaves or just pruning away leaves with marked algae growth on them. Once the tank is clean, keep it that way. A little regular tidying up is much easier than infrequent major overhauls.

If you use a lot of light (more than 2 watts of fluorescent illumination per gallon) or use a lot of fish food, do 40 to 50-percent water changes weekly. This prevents accumulation of organics in the water — which some algae can use — and wipes away a multitude of sins, such as overfeeding and overfertilizing the plants. Water changes are even more important in a fish-only aquarium because it lacks the chemical filtering that plants perform.

But do not expect your plants to make for a perfectly balanced closed micro-ecosystem. Watch the plants. If they are healthy and growing, you might be able to decrease the frequency of water changes. In an aquarium with less than 2 watts per gallon of light and no overstocking of fish, you might not need to do water changes more than once every few weeks or once a month.

Too much light can promote algae, and too little light prevents plants from photosynthesizing enough, in which case they won't grow as much or absorb as much nutrition from the water. Yet the acceptable light range is very broad, from about 1½ to 3 or 4 watts per gallon. The ideal is roughly 2, which gives a nice balance between addressing plant needs without having more light than they can use. Any more than this and you will need to supplement with CO₂ so that the plants can make use of the additional light.

Getting Enough To Eat

As with fish, too little nutrition is harmful to plant health, and too much is an invitation for algae and excess build-up of nitrates and organic compounds. Luckily, some of what fish give off as waste are just the things plants hunger for, namely nitrogen (ammonia or nitrates) and phosphate.

An easy way to control the plant nutrient levels is to dose potassium nitrate and dipotassium phosphate (available at hydroponics stores), and do the weekly water changes. This ensures that nutrients are present while preventing any accumulation of excess. A benefit of this method is that you don't need any test kits to monitor changes in nutrient levels.

Net Results

It is terribly difficult to net fish in a lush aquatic garden. Various gardeners have found ways to deal with this complication. One way is to be very skilled at working with a net — which means patiently waiting for a fish to seek a bit of bait in the net and not chasing the fish into a panic. Indeed, patience rather than skill might be the greater requirement. I find this the most effective method.

Another method is to keep plants in pots at one end of the aquarium so that they can be easily removed at netting time. Another method is to use bottle traps to catch fish. You can make a bottle trap easily with a small water bottle. Cut off the top where the straight sides meet the shoulder of the top, then invert the top and place it back on the body of the bottle. Poke some holes in the body and top, and place some pieces of toothpick into the holes to hold the inverted top in place. Put some fish food in the bottle, and place the bottle in the aquarium. Eventually, you catch the fish you want. It does not take as long as you might first suspect, but it might take a few days. And you might find that a fish you do not want to trap repeatedly enters the bottle. If that happens, put in a second trap (some fish just can't be trained).

Yet another technique — one that works well if you need to net fish often — is to use plants that grow clinging to rocks or driftwood rather than rooted in substrate. Good, easy-to-grow examples of such plants are Java fern and the various species of Anubias.

Spending More On Plants Than Fish

Although aquatic gardening need not be expensive, there is no limit to the degree of involvement one might indulge. Consummate involvement affects only a small percentage of those who take up aquatic gardening. In its more extreme form, it can lead to multiple aquariums, room additions to your house to accommodate them and a higher electric bill. Early signs of extreme are increased humidity in the house all year around, a momentary dimming of the household lights when timers on the aquariums lights all switch on and the realization that the drained water from your water changes has eliminated the need to run the lawn sprinklers even during droughts.

It can be difficult for the aquatic gardener to notice when a mere penchant turns to fervent passion or fervent passion to obsessive preoccupation. However, friends can sometimes be a source of independent assessment, leading to tempered behavior (or, less often, seeking new friends). In addition, spousal support or an “intervention” may help abate the condition, as may the bank’s refusal to grant yet another mortgage on your house. In most cases, your natural propensity for prudence and balancing priorities will suffice to temper your aquatic gardening tendencies.