Planted Tanks for Goldfish

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Goldfish and planted tanks may sound like an impossible dream, so many people say it can't be done – after all, they eat plants, they dig, they blunder about, they pull up plants, and they like cold water whereas many aquatic plants are tropical. But goldfish really benefit from having live plants in their tanks, they are just as deserving of a nicely planted set-up as their tropical counterparts.

Goldfish enjoy the sensory experience of playing around with plants, swimming through them, hiding in them and of course snacking on them. It makes a more natural habitat for them and encourages natural behaviours. Goldfish are intelligent, busy, 'doing' fish – they really do benefit from an interesting environment with plenty of things to do.

So, goldfish and planted tanks? Of course it can be done; it just takes a little trial and error. This article is written from personal experience and my own opinions; other people will agree/disagree so use this as part of your research into finding the best planted set-up for you and your goldfish.

When designing your set-up be realistic in your expectations. Those amazing aquascapes in the magazines and websites are beautiful but are not likely to last against a tank of goldfish. Consider the maintenance of the tank; goldfish tanks need to be robust and easy to maintain. Goldfish make a mess, they eat a lot and they produce a lot of waste so their tanks need to be easy to clean.

At what point can I add plants?
If you are just starting out and have not yet set-up your tank and added your fish it is a good idea to get the plants in first so they can establish their roots while the tank is cycling (click here for fishless cycling article: http://www.fishkeeping.co.uk/articles_51/fishless-cycling-article.htm).

If your fish are in the tank already and you are looking for ideas to re-vamp their tank you may need to take extra measures to help keep the plants in place while they establish. It is a good idea to put some heavier stones or terracotta planting weights around the base of new plants in tanks which already have fish living in them. This will stop the fish from getting close to the roots when they are digging and help weigh down stems against being pulled up.

Do I go for stems, bunches or potted plants?
Plants come in a variety of 'formats'; bunched, single stems, rooted in rockwool or in some cases attached to bogwood or terracotta sticks. If you do not yet have fish in your tank you have a greater choice of 'formats'. For example you can buy stem plants, push them into the substrate and leave them to root while the tank cycles. Stem plants added to a tank which already has fish in it are very likely to get pulled up before they have a hope of rooting. If you have no fish then I would suggest stems as these are cheaper, but if you have fish already I would suggest going for rooted in rockwool as the established roots will help the plant hold onto the gravel.

What about substrate?
There are many commercial substrates available but I'm not going to go into detail about the majority of them in this article, I've personally only used soil and gravel so cannot comment from experience on other substrates – there is plenty of information available though so have a look through the forum or post a question if you would like more information on planting substrates

My personal suggestion for substrate in a planted goldfish tank is quartz gravel, very fine pea gravel or a mix of the two. My reason for this is that I like to be able to keep the substrate clean. Goldfish produce a lot of waste and the substrate can get very dirty which can lead to pollution and health problems if it is not able to be properly vacuumed. Having a soil or other planting substrate under the gravel makes it harder to vacuum – the substrate gets all mixed up with the gravel and in my experience you end up with a muddy mess! Not forgetting the fact that goldfish dig and can quite easily dig up a planting substrate which also makes quite a mess.

Quartz gravel is fine enough for plants to root in; pea gravel needs to be the smallest grade available – about 2mm diameter. This is also fine enough for plants to root in.

Which plants will work?
Goldfish cannot resist nibbling, snacking, pulling at plants, digging around them, and blundering through them. Plants need to be robust and able to withstand the fishes' attentions. Very delicate frondy plants or those with small or fine leaves are not likely to last long. Floating plants also have limited success as the fish like to eat the roots followed by the rest of the plant!

It will more than likely be a case of trial and error before you find the right plants for your particular goldfish. Some goldfish destroy certain plants while others leave those same plants well alone. I have used the following plants with varying degrees of success:

Giant vallis (vallisneria gigantica): This does live up to its name so be warned! It can grow well over 3 feet long and benefits from a deeper tank. The leaves are broad and quite tough. They can grow quite fast but this is good news with goldfish! You can get smaller varieties of vallis such as Americana, Spiralis and Tortifolia. These are a little more delicate due to their smaller size but are still capable of withstanding goldfish. If it gets too long it can be trimmed by cutting the leaf at an angle.
Amazon sword (Echinodorus Amazonicus): These have large, tough leaves and can generally hold their own against most goldfish. You can get smaller dwarf swords, these are also good as they still have the same tough leaves.
Java fern (microsorium pteropus): Goldfish are not meant to like the taste of these but this doesn't stop them pulling at the leaves even if they don't actually eat them. The plants are quite tough though and propagate quite happily. They are best grown attached to bogwood or terracotta sticks. An additional bonus of this is that you can easily take them out of the tank to clean around them. My fish dig vigorously in the ferns but so far have not damaged them. You can buy them already attached to bogwood/terracotta however, if you want to make your own you can simply tie the plant on with some fishing line. They will take root and overgrow the fishing line so you won't be able to see it.
Hygrophila: There are various types; polysperma seems to be the most common. These grow quite quickly and are quite happy in the water conditions goldfish prefer. I've had mixed results with these, some have done well and been left alone for months only to be eaten almost overnight when the fish suddenly take a fancy to them. Probably a trial and error plant.
Ludwigia: This comes in different colours and has reasonably robust leaves and stems, another

mixed result plant so again, trial and error.
Cryptocorynes: There are a huge number of different types of "crypts", in my experience the larger ones such as wendtii or becketii seem to fare the best.
“Pond weed” (Elodea densa, elodea crispa): Densa has straighter leaves and is quite dense in growth while crispa is the curly leaved one most commonly thought of as pondweed. They do root but I prefer to keep them bunched in strips of sponge and lead. These are what I call ‘sacrificial’ plants – they will almost undoubtedly get eaten but are cheap, fast growing and keep the fishes’ attention away from other plants. Keeping them bunched makes it easy to tidy them up when the fish have pulled at them; just take the bunch out, rearrange and replace stray bits and then push it back into the gravel. This is a good plant for removing nitrates.
Hornwort (Ceratophyllum demersum): This is one of my personal favourites. It does not root so can be bunched or left floating. I prefer to bunch mine, the fish prefer to pull it up and have it float! Like elodea it is cheap, fast growing and keeps the fish away from other plants. Another good plant for removing nitrates.
Moss balls (Chladophora aegagropila): Some goldfish will shred these to pieces, others don’t bother with them so another trial and error one. I like my fish to have them even if they shred them as they are great for removing nitrates. If you buy these online it’s a good idea to contact the seller first to check the size of ‘large’ ones.

So how do I plant them?
The only plants I keep bunched are elodea and hornwort. If anything else comes wrapped in sponge and lead strips remove these and separate out the plants. Stems should be individually pushed into the gravel. If you have bought potted and/or rooted plants you should remove the rockwool and plastic pot then push the roots gently into the gravel. Vallis needs to be planted so the top of the roots are level with the top of the gravel, do not cover the stems with gravel. You may need to protect the area around the roots if you have fish in the tank.

What about layout?
Taller plants should be at the back and sides of the tank, shorter ones in the foreground. Don’t forget to leave an area of clear water for swimming and a clear area of gravel where you feed the fish. There is no point having plants directly under the area you drop their food in as they will damage the plants while looking for their food. I like to have one end more heavily planted than the other, my fish have a preferred area of the tank for sleeping so I put lots of plants around that area – this helps them feel secure when resting. Find out how the currents work in your tank with the filter and any airstones you have – make sure the plants do not restrict flow too much as this will lead to areas where debris collects.

What about lighting?
I am by no means an expert on lighting but we do have an excellent article on lighting here http://www.fishkeeping.co.uk/articles_28/lighting-your-aquarium.htm . Please feel free to post in the forums for more information on your specific set-up and requirements. My own lights are flora-glo and sun-glo fluorescent tubes which are sufficient for my plants. My tanks will take four tubes but I only use two as I’ve found four can heat the water up too much for goldfish.

Do I need to use fertilisers?
Certain plants do require additional nutrients at root level; swords and cryptocorynes in particular. You can buy root tabs which are little tablets of fertiliser that you push into the gravel underneath the roots. There are also plenty of liquid fertilisers on the market; I would advise you to post on the forum with your particular plants and details so we can advise you on the most appropriate one for

you. I use root tabs but don't use liquid fertilisers on a regular basis.

What maintenance will I need to do?
If you are fortunate your plants may need pruning occasionally. Stem plants such as elodea, hornwort, hygrophila and ludwigia can be cut and the cut ends replanted or rebunched to make new plants. The fish will undoubtedly pull up some plants so these will need to replanted or rebunched. I do mine on a weekly basis when I do my water change. You will need to replace elodea and hornwort every now and then as they become shorter and barer of leaves …

Bunching in sponge and lead strips is simply a matter of gathering some stems together then wrapping them in wet sponge (most bought as bunches will come with sponge around them) then wrapping some planting lead around the sponge to hold it in place and weigh the bunch down in the water. It is worth checking the sponges regularly as I've found some of mine have developed anaerobic patches in the sponge. If the sponge smells 'eggy' it has developed anaerobic bacteria and needs replacing.

Small pieces of elodea and hornwort can be left to float until they get big enough to include in a bunch.

Any other ideas?
As well as planting directly into the gravel you can set-up containers such as terracotta plant pots with planting substrate and a gravel top layer to put your plants in. These can be arranged on the bottom of the tank and removed for cleaning or if you need to catch the fish for any reason (trying to catch a fish in a heavily planted tank can be quite a mission!). You can also use plastic containers as plant pots but these must be food grade so they do not leach anything into the water.

Some plants can be attached to bogwood or terracotta sticks, for example java fern and anubias. Again, this means you can remove the plant easily to clean around it.

But won't the fish eat all my plants?
Goldfish are generally good eaters and need to be kept well fed. Many people are warned of the dangers of over-feeding and in their attempts not to they actually end up under-feeding. Feeding lightly is advocated more for the purposes of keeping the waste products to a minimum and so keeping the water quality under control in aquaria that are often too small, overstocked and under-filtered. With a correctly sized, correctly stocked and correctly filtered tank this should not be a concern. Feed your fish well and they will be less inclined to munch on your plants.

If you are going on holiday it is possible to leave your fish unfed for up to two weeks if they have been well-fed beforehand. However, in the absence of their daily rations they will turn to their plants when they want a snack. If you are going on holiday it is a good idea to buy a few extra bunches of elodea and put them in the tank before you go. This should help minimise damage to other plants. If the fish are nibbling at the plants more you may find the filter becomes clogged more quickly – make sure the filter is cleaned before you go on holiday and then give it a clean when you come home.

A final note …
The most important thing is that you and your fish enjoy your tank. If something doesn't work for you don't be down-hearted, something else will work just fine. Goldfish tanks can be a bit of a permanent work in progress but this is part of the joys of keeping these hugely entertaining and big-personality fish.

Please feel free to post on the forum with any questions you may have and we'll be happy to help.