

# Caring for a freshwater aquarium

## Equipment Checklist

- Aquarium
- Filter (rated for your tank size and type of fish)
- Heater (if tropical species are being kept) - generally at least 1 watt per litre is recommended
- Thermometer
- Lighting (essential if a planted tank is desired)
- Substrate (sand, gravel, bioactive soil or a combination)
- Dechlorinator (eg. Seachem Prime)
- Test kits (ammonia, nitrite, nitrate, pH)
- Fish food (species-appropriate)
- Other equipment – substrate vacuum, glass cleaner, dedicated buckets

## Choosing an aquarium

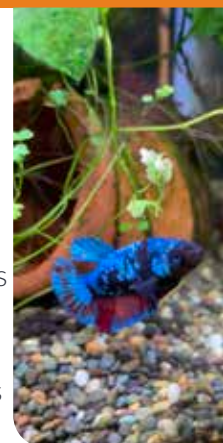
The size of aquarium will dictate what type of fish can be kept and the number. The general rule is to stock 1cm of fish to 1 litre as a loose guideline. It is also important to stock with compatible species (temperament and water requirements) and for schooling needs (eg. tetras need to be in a group of at least 6). It is not recommended to house fish with turtles.

TANK SIZE	
<10L tank	Shrimp or snails
20L tank	Shrimp, snails, 1 betta
20 – 40L tank	Small community (e.g. tetras, corydoras)
40-75L tank	Larger communities, angelfish, dwarf cichlids
75L + tank	Larger cichlids, goldfish, schooling fish groups

## Match Compatibility

Most fish will try and eat anything they can fit in their mouths, including much smaller fish. Some species are much more aggressive towards other fish regardless of the size of the other fish.

- **Peaceful:** Tetras, rasboras, guppies, corydoras
- **Semi-aggressive:** Gouramis, barbs, some cichlids
- **Aggressive:** Betta (fighting fish), large cichlids (keep alone or with care)



**Tip: Always quarantine new fish, shrimp, snails and plants for at least 2 weeks before adding to an established tank.**

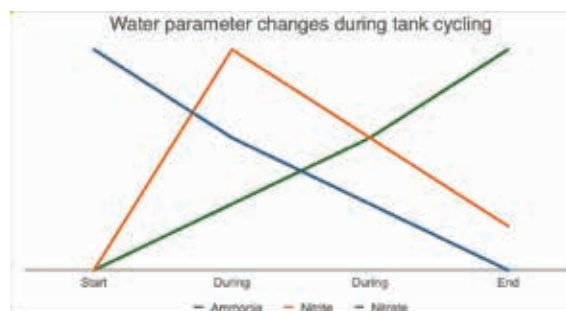
## Setting up a freshwater aquarium

### Cycling the tank

It is ideal to perform a 'fishless cycle' which means preparing a tank before adding fish. This allows the biological filtration (bacteria) to build up in the tank so that when fish are added, there are enough bacteria to deal with the fish waste. The tank substrate, driftwood, rocks and ornaments should all be added prior to starting the cycle and the filter should be run immediately. Cycling a tank with a fishless cycle involves adding a source of ammonia. There are commercial preparations of ammonia available or other alternatives are adding fish food to the tank. Daily water parameter testing is essential to ensure that the cycle is complete. Once complete ammonia will be 0, Nitrite will be low and Nitrate will be high.

### Changes in water parameters during the cycling process

Vitamin C is a particularly important vitamin for healthy bones, gums and the periodontal ligaments. The periodontal ligament acts like glue, holding teeth tightly within the sockets. Diets deficient in Vitamin C can cause to weakening of this ligament, leading to loosening of the teeth in the sockets. Guinea pigs with loose teeth don't chew properly, resulting in overgrowth and misalignment of the molars.



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## Substrate

The substrate will be determined by the species of fish kept and whether a live planted tank is desired. Live plants will either take nutrients from the water (eg. Elodea, Anubias or Java Ferns) or require planting in a bioactive soil (eg. Amazon swords, Vallisneria). In many cases a combination can be used to achieve the desired function or appearance. Typically gravel is considered the easiest to maintain

## Live plants

Live plants have the benefit of absorbing nitrates from the water and providing oxygen, which helps keep maintenance relatively low. When starting an aquarium, many plants can initially 'melt' and die off before growing back and it is often easier and less risk to not have animals in the tank until the plants have become more established.

## Lighting

A full spectrum light is essential for planted tanks. LED lighting is generally recommended. Lighting intensity is measured in watts, lumens or PAR and will depend on the requirements of the plants in the aquarium.

INTENSITY REQUIRED FOR PLANTS	LUMEN/LITRE
Low	15-25
Medium	25-50
High	50 and over

## Filtration

Every aquarium needs a reliable filter to support water quality. Even Betta fish, despite some claims, require filtration and management of water quality. There are several options for filtration including sponge, internal, under gravel, hang on the side and canister. The filter should be able to turn over the aquarium volume 4-10 x per hour.

There are usually at least mechanical and biological components to most filter systems with larger filters also capable of also providing chemical filtration (eg. activated carbon).

**Tip: Don't over-clean filters! Rinse in tank water (not tap) to preserve the bacteria that provide the biological filtration.**

## Water quality management

A healthy aquarium runs on a stable nitrogen cycle. This process converts harmful fish waste into less toxic substances. Bacteria that live in the aquarium and in the filter are responsible for this process. Ammonia is produced by fish and decaying food. It is considered highly toxic. Ammonia is converted to Nitrite (which is also toxic) and is then converted to Nitrate. Nitrate is less toxic but can cause problems when levels become too high. This is one reason why water changes are important because they remove part of the nitrate build up. Aquarium plants will use nitrate as fertiliser and nitrates will often be low in heavily planted tanks.

A general rule for water maintenance for stable and established tanks:

1. Replacing 10% weekly to fortnightly. Never replace more than 50% of tank water in a 24 hour period.
2. Test the water parameters frequently to ensure schedule is appropriate
3. It is essential when using tap water to dechlorinate it with a water conditioner prior to adding to the tank.
4. Rinse the filter/components in a bucket with old aquarium water every 1-2 months (try not to clean all components at once)

## Ideal range for water parameters

Ammonia 0 ppm

Nitrite 0 ppm

Nitrate < 40 ppm (preferably < 20)

pH 6.5 – 8.0 (species-dependent)

Other parameters: KH and GH (species specific)

