

# An Introduction to Aquariums



## Setting Up An Aquarium

Congratulations on your decision to set up an aquarium! Aquariums can be a very rewarding hobby, and are wonderful too look at. There are some things to consider before diving in:

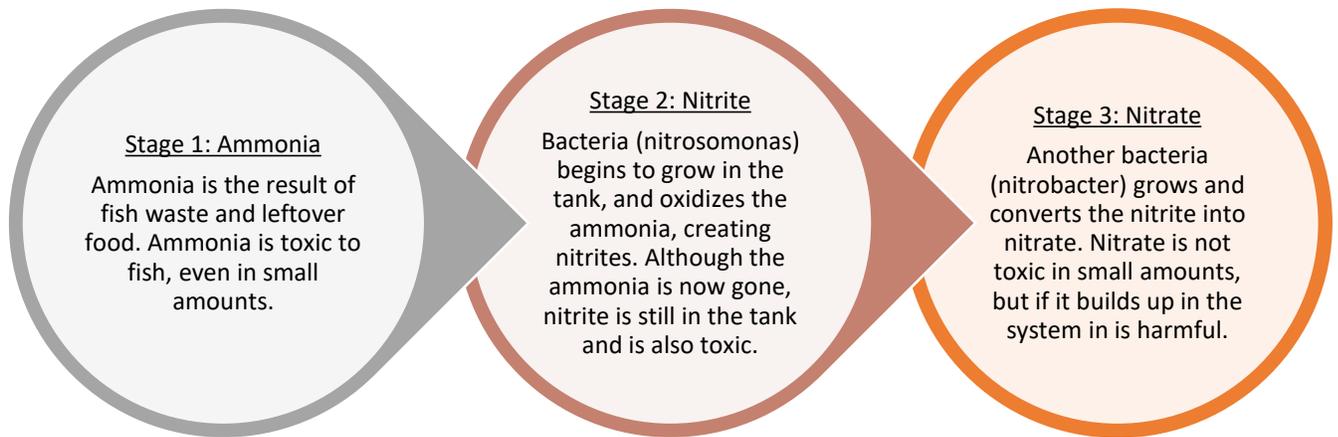
1. **Determine what kind of fish you want to keep.** The first thing you should do when you decide to keep fish is determine what kind of fish you want to keep. Different kinds of fish will require different care, different conditions, different space, and different equipment. If you get your equipment before you decide what kind of fish you are getting, you may find yourself with inappropriate or unusable equipment, or insufficient space.
2. **Research care and compatibility of those fish.** It is very important to learn about the fish you want to keep. This will let you know what conditions they will need, what equipment you will want, and how to set up your tank. When you research your fish, you can determine how big they will get and thereby determine the size of the tank you will need to keep them happy and healthy (1" of healthy mature fish per gallon of water for small fish, 1" of fish per 3 gallons of water for large or messy fish). Also, this will give you a chance to learn if the various fish you have selected are compatible with each other. If different fish's care requirements, size, or temperament are too different, they will not be compatible and should not be kept together.
3. **Determine space.** Now that you know a little more about the fish you wish to keep, you know how large of a tank you will need. Look through your home and select a location for your new aquarium. How much space can you allocate to the tank and accessories? Remember to account for space between the tank and the wall for filters, tubing, and/or cords.
4. **Determine budget.** How much can you afford to spend on your aquarium? If this is your first tank, how much can you afford to spend on a new hobby that you are not sure you will be pursuing long term?
5. **Evaluate budget/space constraints.** How does your budget compare to the cost of the equipment you will need? Can you get a tank large enough for your fish that will fit in the space available in your home? You should address both of these questions, and then evaluate your fish selection, your space constraints and your budget compared to the new information you now have. Can you spend more? Is it a little more or a lot more? How close are you to fitting the appropriate tank into the space available in your home? Is another location available in your home? How committed are you to getting the fish you selected? Is one fish pushing your set-up into a different price bracket? Is that fish even available in your area?
6. **Purchase equipment.** Once you have re-evaluated your fish selections, space limitations, and budget, it is time to purchase equipment. If you need to special order anything, do so early, as it may take time to get equipment by special order. Additional equipment may be needed for planted aquariums.

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|---|---|
| <input type="radio"/> Filter (with media)               | <input type="radio"/> Bacteria Supplement           |
| <input type="radio"/> Heater                            | <input type="radio"/> Water Test Kit                |
| <input type="radio"/> Thermometer                       | <input type="radio"/> Species Appropriate Fish Food |
| <input type="radio"/> Glass Top/Canopy                  | <input type="radio"/> Fish Net                      |
| <input type="radio"/> Lighting                          | <input type="radio"/> Gravel                        |
| <input type="radio"/> Timer (optional, but recommended) | <input type="radio"/> Decorations                   |
| <input type="radio"/> Chlorine Remover                  |   |

Once everything is home, clean it all off and get ready to go. Expect to spend a couple of hours setting everything up if this is your first tank. Fill your tank with water once all of your equipment is set up, and let it settle for a couple of days so you can make sure that everything is working properly and that nothing leaks

## Cycling Aquariums

Cycling is an important step when setting up a new aquarium. Typically this process takes anywhere from 4 – 8 weeks. This process is important since it will build up beneficial bacteria in the system that will help keep the tank water from becoming toxic to your fish as they produce waste. To understand how it works, first you need to understand the nitrogen cycle.



So, how do you get this process started in a fish tank?

1. **Method One: Using Fish to Cycle Your Aquarium:** One of the more popular methods for starting the cycling process is putting a few fish in the tank to create waste. Zebra danios are a popular choice because they are relatively inexpensive and are very hardy. This means that while the bacteria is being established and the water quality is questionable, these fish will usually survive. During the cycle, the fish should be fed sparingly so that they are not over producing waste and so that leftover food is not left rotting in the tank. Only a few fish should be added to prevent the overproduction of waste as well. It will not speed of the cycling process to have more fish.
2. **Method Two: A Fishless Cycle:** The second way to cycle is by adding fish food into the aquarium so that it will rot and produce ammonia. Food will have to be added every so often to maintain enough ammonia to feed the bacteria until the tank stabilizes and fish are added. Since there are no fish, an increase in temperature can be beneficial in growing the bacteria rapidly.

Once you've chosen your preferred method, you'll want to purchase an aquarium test kit to monitor the ammonia, nitrite, and nitrate levels. Test the water at least once a week. It's a good idea to record the levels of the ammonia, nitrite, and nitrate as well so you can easily keep track of what's going on in the tank. You'll also want to purchase a bacteria supplement to add to the tank to help establish the bacteria culture.

During the cycling process, make sure you don't over clean the tank. Until the tank is stabilized, leave the filter alone so that the bacteria can grow in the media undisturbed, and unless otherwise instructed, only do 10 – 15% water changes once a week. While ammonia removing products are good for more stabilized tanks, they do not help during cycling as they will starve the bacteria you are trying to grow.

## Water Chemistry: pH Levels

pH (short for potential hydrogen) is the measure of how acidic or alkaline the water is. The pH scale ranges from 1 to 14, with most aquariums sitting between 6.0 and 8.0. 7.0 is a neutral pH – it is neither acidic nor alkaline.

Different fish prefer different pH levels, so it is important to research the fish you are keeping and provide the proper pH. It is also important to not mix fish that have different pH requirements, as it will be very stressful on the fish that is not having its pH requirements met. This is because the pH scale is logarithmic. This means that a pH of 6.0 is 100 times more acidic than a pH of 8.0; a pH of 5.0 is 1000 times more acidic than a pH of 8.0 and so forth. While 6.0 and 8.0 may not seem that far apart, once you understand how the scale works it's easy to see why fish with different pH requirements are not compatible.

### Adjusting Your pH Levels

Chances are the water from your tap are not correct for the fish you will be keeping. Overtime, the pH levels of the tank will also decrease. There are products available to adjust your pH as needed. Always follow the package instructions, and always make sure to test you pH levels regularly to ensure you are adjusting correctly.

- My pH is too low!
  - Use a buffer to raise the pH as directed by the manufacturer
    - *Alkaline Buffer* by Seachem
    - *pH Up* by API
    - Add crushed coral into your aquarium, either in a filter bag or loose in the gravel
- My pH is too high!
  - Use a buffer to lower the pH as directed by the manufacturer
    - *Acid Buffer* by Seachem
    - *pH Down* by API
    - Remove any coral or shells from the aquarium
    - Add peat granules to the filter, use as directed by package
- I would like to maintain my pH at a specific level
  - Purchase a buffer designed to bring the pH up or down to a certain level
    - *Neutral Regulator* by Seachem; keeps pH at 7.0 when used as directed
    - *Proper pH 7.0*, *Proper pH 7.5*, and *Proper pH 8.2* by API will maintain the pH at the indicated levels when used as directed.

However you choose to adjust the pH, make sure it is done slowly. Fish are sensitive to rapid change, and can become easily stressed or even die if they are not given a chance to adjust to their environment. Never adjust the pH more than 0.3 points in either direction within a 24 hour period.

## Water Chemistry: Ammonia and Nitrite

Ammonia is waste produced by the fish or other tank pollutants, such as excess food. It is toxic to your fish in any amount. Nitrite is the result of bacteria converting ammonia. It is also harmful to your fish. After the cycling process is done, you should try and ensure that ammonia and nitrite does not build up in the aquarium. Testing the water regularly can help detect ammonia and nitrite before it gets out of hand.

### Causes of High Ammonia and Nitrite

- **The Aquarium is Cycling:** The tank has not yet built up enough bacteria in the filter to handle the bio load from the fish; refer back to the Cycling page.
- **Insufficient maintenance:** If water changes are not being done regularly, or the gravel bed is not being cleaned during water changes, ammonia may build up
- **Overpopulation:** A tank and its filter are only able to handle so much waste. If there are too many fish in the aquarium, the filter will not be able to keep up with the amount of waste that they produce, even if the filter is rated for the size of your aquarium.
- **Overfeeding:** Overfeeding will cause the fish to produce more waste. The excess food can also rot in the tank if not removed, producing ammonia.
- **Insufficient Filtration:** If a filter is not capable of handling the bio-load of the aquarium, or if the filter maintenance is not done regularly, ammonia and nitrite will build up.
- **Rotten Material:** Rotten food, plants, or anything that can decay in the aquarium will produce ammonia if left unattended. These types of things should be removed immediately to prevent a buildup.
- **Over Cleaning the Filter:** If too much of the beneficial bacteria living in the filter is washed away, the tank will remain in a constant cycling state, and will never build up the necessary bacteria levels to handle the tank's bio-load

### Correcting High Ammonia and Nitrite

- **Start with a water change.** Depending on the severity of the ammonia, you may need to change 30 – 50% of the water. This will remove a big portion of the ammonia and/or nitrite in the water. Clean the gravel with a water vacuum as well.
- **Remove anything that may be producing ammonia** – excess food, rotting plants etc. Ensure that in the future these items are removed immediately.
- **Cut down on feedings.** Even if there is no extra food left in the tank after you feed your fish, if ammonia is high then you don't want your fish producing more waste than necessary.
- **Add beneficial bacteria** to the aquarium. Giving your filter a boost during an ammonia/nitrite spike will help the nitrifying bacteria convert the ammonia to nitrite, then to the less harmful nitrate.
- **Use ammonia neutralizing products.** This could be ammonia removing filter products or treatments you add to the water (*Ammono-Lock* by Seachem). This is more of a bandage to a larger problem, and other measures taken in addition to this. Do not use this if your tank is cycling.
- **Correct any underlying causes.** Remove some fish if the tank is overpopulated, purchase a larger or an additional filter, or adjust your maintenance routines. If the underlying causes are not fixed, high ammonia and nitrite will strike again.

## Water Chemistry: Nitrates

Nitrate is the final product of the nitrogen cycle. It is not nearly as toxic as ammonia and nitrite, but can be harmful in high levels. Long term exposure to nitrate can make fish more susceptible to disease, interfere with their growth, and affect their reproduction. Nitrate also contributes to algae blooms, even in low levels.

### Causes of High Nitrates

- **Irregular water changes:** Nitrates do not get converted into anything like ammonia and nitrite, it must be removed through water changes. Irregular water changes allow the nitrates to build up.

### Correcting High Nitrates

- **Perform weekly water changes.** Remove at least 10 – 25% of the water each time.
- **Prevent buildups of ammonia and nitrite.**
- **Add live plants.** Live plants will not eradicate the nitrate, but will help maintain it at low levels in conjunction with regular water changes.
- **Use nitrate removing products** in the filter, or chemical additives (such as *De\*Nitrate* by Seachem)

## Filtration

Filters are a key component in maintaining a healthy aquarium. They are responsible for trapping and removing waste, and improving oxygenation. In nature, water is always moving – rivers, large ponds, lakes, and estuaries all create natural filtration. There are a few different types of filtration: mechanical, biological, and chemical filtration. A filter is most effective when it has all three types of filtration.

**Mechanical Filtration:** Mechanical filter medias are fine. They trap debris, and must be cleaned regularly so that the filter does not clog up. Types of media include:

- Foam Filter Blocks
  - Acts like a strainer
  - Prevents waste from clogging the bio and mechanical
- Polishing pads
  - Removes fine particles and debris
- Pre Filter Media
  - Solid form of media, usually in a ring shape
  - Traps large debris

**Biological Filtration:** Biological filter medias provide a home for beneficial nitrifying bacteria that neutralizes ammonia and nitrite. The most popular is BioMax, but others exist as well. Biological medias are porous, which creates a lot of surface area for bacteria to grow.

**Chemical Filtration:** Chemical filter medias can remove specific substances, adjust hardness and adjust pH levels. They include:

- Carbon
  - Natural purifier
  - Traps waste
  - Removes urine, dyes, unwanted chemicals
- Ammonia Removers
  - Removes ammonia by helping to reduce the buildup
- ZeoCarb
  - Blend of carbon and ammonia
- Clearmax
  - Traps phosphate, nitrite, and nitrate
  - Helps to reduce algae
- Peat Granules
  - Softens aquarium water
  - Lowers pH levels

Additional biological filtration can be added in. Types include modified powerheads and sponge filters.

### **Filter Maintenance**

Different filters will have different instructions for maintenance. Always consult the package instructions for how frequently your media needs to be changed. Your filter should be checked at least once a month for maintenance. Never do a water change and a filter clean on the same day, never clean media using tap water, and never replace all the inserts at the same time.

#### **Mechanical Media Maintenance**

- Foam Filter Blocks
  - Rinse using water from the aquarium.
  - Recommended to replace every 2 months, but can be left for 4 – 6 months with regular maintenance
- Polishing pads
  - Rinse as needed
  - Replace every three months
  - Rinse before inserting into filter
- Pre Filter Media
  - Rinse with aquarium water during regular filter maintenance

#### **Biological Media Maintenance**

- BioMax
  - Rinse monthly using tank water
  - Recommended to replace every 3 months, but can be left for 6 – 8 months with regular maintenance
  - Add beneficial bacteria to the aquarium when replacing or cleaning this media

## Chemical Media Maintenance

- Carbon
  - Replace monthly
  - Always rinse the new media bag thoroughly before use.
- Ammonia Removers
  - Replace monthly.
- ZeoCarb
  - Replace monthly
  - Always rinse the new media bag thoroughly before use.
- Clearmax
  - Replace monthly
- Peat Granules
  - Replace as needed to maintain desired pH and KH levels

## Filter Motor & Parts Maintenance

The motor of the aquarium is often neglected, and as a result, it can get clogged to the point of not working, or wear down faster than normal. The motor should be checked every cleaning to ensure that it is free of debris. Consult your filter manual for information on how to access the motor. Once open, the impeller, shaft, and motor should be thoroughly cleaned. Strainers and tubing should also be checked. Consult this chart to see what maintenance parts need. Some filters may not have all of the listed parts.

<b>FILTER COMPONENTS</b>	<b>MONTHLY</b>	<b>EVERY 3 MONTHS</b>	<b>YEARLY</b>
Magnetic Impeller & Impeller Well	Check & Clean		Replace
Shaft	Check & Clean		Replace
Intake Stem/Strainer/Hosing		Check & Clean	
Ribbed Hosing			Check & Clean
Primer Assembly with Primer Cover			
Gasket	Check & Clean	Clean & Lubricate	Replace
O-Ring Gaskets		Clean & Lubricate	

## Water Changes

Water changes are an important part of the weekly maintenance for your aquarium. Once a week, a 10 – 15% water change should be done on the aquarium. More water may need to be changed depending on the condition of the aquarium, so always test the water and consult with the staff at Roger's if you are unsure. First time tank owners often think that much more work is needed to do a proper water change than what is actually required, and as a result can compromise the health of the aquarium.

You will need:

- Aquarium gravel vacuum
- Bucket
- Algae scraper
- Water conditioner

First remove algae from ornaments and the tank sides using the appropriate tools. If your aquarium has algae eaters (plecos, snails, etc.) leave some behind for them to eat.

Using the aquarium gravel vacuum, begin syphoning out the water. Run the vacuum along the bottom to pick up debris, and stick it in and out of the gravel to remove deep dirt and to prevent nitrate pockets. Be careful not to over clean the gravel – cleaning 20 – 30% of it is sufficient. Make sure to clean different areas of gravel every water change. Once 10 – 15% (or more, if instructed by a staff member) has been removed, new water can be added. Extreme changes in temperature can shock the fish, so ensure that the new water is at about the same temperature as the water in the aquarium. You can dechlorinate the water before or after adding it to the aquarium. If done before, you will have to calculate how much water is being added, and follow the package instructions of your dechlorinator to dose accordingly. If done after, follow the package instructions to dose for the entire tank.

Common mistakes made during water changes include:

- ✘ Draining the whole tank and removing the fish
  - This is an unnecessary amount of work, and compromises the health of the fish.
- ✘ Removing all the ornaments, plants, and gravel
  - Unless an ornament is especially dirty, there is no need to remove them or the plants
  - Removing the gravel is more work than what is needed, will create more of a mess, and will get rid of a good chunk of the beneficial bacteria
- ✘ Cleaning the filter
  - Cleaning the filter during a water change puts the aquarium at risk for cycling again – never clean the filter on the same day as a water change, but do ensure that everything is running properly.

## Algae

Having algae in an aquarium is inevitable, but there are ways to ensure that it does not get out of hand. Prevention is key, as once there are major algae problems in the aquarium, it can be a pain to get rid of.

1. **Do regular water changes:** Regular water changes will prevent the buildup nitrates and phosphates in an aquarium, which algae feeds off of.
2. **Test water for buildup of nutrients:** If there is an abundance of nutrients (nitrate, as an example) the algae will feed off of it. Regular testing can ensure that you are removing this nutrients before they become a problem for the fish as well as promoting algae growth.
3. **Lighting:** If the aquarium is in direct sunlight, or the light is on too long, it can lead to major algae growth. Always place the aquarium away from any direct sunlight, and put lights on a timer for 8 hours per day only. It is also important to change bulbs once a year, as the spectrum of the bulb will change over time and promote algae growth. LED lights should not need to be changed.
4. **Stock the tank with algae eaters:** Ask a staff member at Roger's which types of algae eaters are appropriate for your tank as algae eating animals are not a "one size fits all" deal. If the tank space allows, it is a good idea to have more than one type as they will eat different types of algae.
5. **Manually remove algae:** Some types of algae, such as black beard algae and hair algae, should be manually removed from the tank as it pops up to prevent it from over taking the tank. Other types of algae can be scraped off during water changes, and vacuumed up using the aquarium gravel vacuum.

### Targeted Algae Solutions

Type of Algae	Causes	Solutions
Black Beard Algae	Low CO2, excess or intense lighting, inadequate flow, nitrate or phosphate buildup	Add CO2, trim affect plants and remove, spot treat with Seachem Flourish Excel, add Siamese algae eaters, reduce phosphates and nitrates
Green Dust Algae	Spores in water, drastic changes in light, nitr, remove ogen peaks	Wait out life cycle, remove with scrubber/blade, water changes, add algae eaters, assess lighting schedule
Green Spot Algae	Low phosphate, low CO2, excess light (too bright/on too long), excess nutrients	Add phosphate, add CO2, scrape with razor, add nerite snails
Hair Algae	Excess nutrients, silicates	Water changes, treat with Seachem Flourish Excel, reduce food, manually remove, add Siamese algae eaters
Blue/Green Algae (Cyanobacteria)	Nutrient imbalance – low nitrate, high phosphate. Excess lighting	Blackout, add nitrate, treat with erythromycin if possible, starve out bacteria – super clean all surfaces in the tank, lower phosphate levels, turn off the lights, and feed less food

## Bringing Fish Home

It is extremely important to acclimate new fish slowly, as every aquarium has different water parameters. Moving into a new environment can be very stressful for fish, especially if they do not adjust properly. By introducing fish slowly, they will become accustomed to differences in water chemistry and temperature. When fish are stressed, their immune system suffers, and risk of disease and/or death increases. Below are some steps to follow when purchasing new fish:

1. **Water Test:** Always test your water for ammonia, nitrite, nitrate, and pH before buying new fish. Ensuring your aquarium is healthy will help with the successful transition into their new home. If there is any ammonia, nitrite, or nitrate, or if the pH is not suitable for the type of fish you keep, correct the situation before introducing new fish.
2. **Bag Time:** Bring the fish home as quickly as possible. The more time they spend in the bag, the more likely they will die from stress, temperature changes, lack of oxygen, and ammonia buildup. Never leave fish in the car, especially on very cold or hot days. Also make the pet store your last stop of the day.
3. **Float the Bag:** Float the bag of fish in the aquarium. Try and secure it to the side of the aquarium by rolling down the top of the bag and hooking it onto the lid or side of the aquarium.
4. **Add Water:** Add a small amount of water from your aquarium into the bag.
5. **Repeat:** Every five minutes add more water into the bag. Repeat this approximately four times, unless otherwise instructed.
6. **Release the Fish:** Use a net to remove the fish from the bag and release it into the aquarium. Do not put the water from the bag into the aquarium, as there may be a buildup of toxic ammonia in the bag.
7. **Observe:** Watch your fish to ensure they are adjusting to their new home. Make sure there is no aggression between your old fish and the new addition(s). Sometimes when fish are stressed they will not eat for a few days, and may hide a lot. If your fish continues to not eat, or shows any sign of disease, test your water and treat appropriately.

## Our Fish Guarantee

Fish are guaranteed for 3 days after purchase. Should something happen within 3 days from purchase, you must bring the fish back in one bag, a sample of water in a separate bag (at least 50mL) and the receipt. We will warranty the fish if your water quality is good – adequate pH for the species, no ammonia, no nitrite, and no more than 40 ppm of nitrate. Damage from other fish will not be covered. Fish sold as final sale will not be warranted.

## My Tank

*Keep this sheet handy, and bring it in when you visit our store so we can better assist you.*

Tank Gallon Size: \_\_\_\_\_

Tank Dimensions: \_\_\_\_\_

Filter Brand and Size: \_\_\_\_\_

Light Fixture Brand and Size: \_\_\_\_\_

Light Bulb Wattage: \_\_\_\_\_

Fish in Aquarium (Quantity, Type, and Size):

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**More questions? Get in touch with us!**

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