NATIONAL AQUARIUM IN BALTIMORE
Conservation Education Department
Pier 3, 501 East Pratt Street
Baltimore, MD 21202

Ask the Aquarium

Fact Sheets from the Conservation Education Department

How to Set Up an Aquarium

A Diligent Aquarist ...

This information is only a basic guide; further research may be necessary for setting up and maintaining your tank. Your local pet shop or library may have a number of good books on freshwater aquariums. These books are important resources for topics such as disease recognition and treatment, special dietary needs, and breeding. Being a diligent aquarist means learning how to provide the best possible care for your fish.

Owning and caring for a freshwater aquarium allows you to observe the behavior of a number of fascinating fish and invertebrates. Once you become familiar with its requirements, maintaining a freshwater aquarium is not difficult.

Setting Up

If a brand-new aquarium is being used, certain precautions can save a lot of potential work. Rinse out the tank using hot water to remove any residues and dust. Do not use any soaps, as this could affect the bacteria or animals once the tank is filled. It is a good idea to test for leaks by completely filling the aquarium with water and letting it sit for twenty-four hours. If the tank is watertight, it is ready for the set-up.

Place the undergravel filter (see equipment list) in first and add the columns. Airline hosing can wait until the aquarium is in its final position. Rinse the gravel with fresh water until the water is clear. Layer it over the filter using one pound of gravel per gallon of water or add a one to two-inch layer of crushed coral or rock gravel to the bottom. Put the aquarium in its final position, on a sturdy stand or table, before filling it with water. Water weighs 8.5 pounds per gallon; moving a full tank can damage not only your back but also the aquarium. Start adding dechlorinated freshwater by pouring it over your hand or a dish in order to break its flow, otherwise it will disturb the gravel and leave a pit. The water will be very cloudy at first; this will clear within a day. Hang the mechanical power filter on the back of the tank, prime it with water and plug it in. No animals should be added yet, but plastic plants, shells, tubes, and broken pots can be arranged and will provide future hiding spots and make the aquarium more attractive. Air hoses can be cut to length to begin aerating the system.

Starting your own freshwater aquarium is a great hobby, and possibly the first step to an Aquarium career.

Preparing for Fish: Establishing the System

Although fish and other animals can be acclimated directly into an established system, a new aquarium must be conditioned first.

The temperature must be constant, but more important is the biological and mechanical filtration of wastes. Fish and invertebrates produce toxic waste products found in the form of ammonia. Bacteria living in the gravel on the bottom and in the mechanical filter convert this toxic ammonia to less toxic nitrate. In a new system, the bacteria will be slow to break down the ammonia. Therefore, only hardy fish should be put in the tank for the first six weeks while the bacteria population is growing and converting wastes. After this point, more delicate species may be introduced.

It is also possible to "seed" a new tank by taking some gravel from a healthy, established tank that already has a large bacterial growth in it. Be sure that the tank that you are taking the gravel from is from a freshwater aquarium and free of disease. This culture approach will lessen the time needed to condition the water, but relies on an existing aquarium. Whichever conditioning method you use, the bacteria need waste products to start the conversion cycle, so one or two hardy fish and about 10 gallons of water (depending on size of tank) should be present from the beginning.

Biological filtration can only handle so much; resist the temptation to overstock your aquarium. To maintain good water quality, research and buy a filter that offers mechanical (traps solid debris) and chemical (carbon pouches) filtration as well. A good rule of thumb is to only add one inch of fish (its full grown size) per one gallon of water. Do a water change every month. Replace fifteen to twenty percent of the volume with new fresh water in order to reduce the nitrate levels that eventually become toxic. Use a gravel cleaner to assist with this process. A hose with a vacuum attachment will siphon water out of the tank while also cleaning the gravel of excess food, debris, and fish waste. To avoid thermal shock, the new water should be the same temperature as that which it replaces. If the water level decreases between changes due to evaporation, simply add enough dechlorinated tap water to make up the difference.

Settling Your New Animals

Any fish or invertebrates that you have bought must be acclimated to the new environment. There are several gradual steps to follow to prevent shock from different temperatures and water. The easiest method for home aquarists is to use a shallow plastic bowl and pour the animal into this with its original water. Float this on the surface of the aquarium and temperatures will begin to equalize. As it floats, add small portions of tank water to the bowl every ten to fifteen minutes for at least one and a half hours until the bowl is nearly full and the temperatures are the same. Then, gently scoop the animal out of the bowl and add it to the tank. Discard the water in the bowl.

Another option is to use the plastic bag in which your animal arrived and float this in the tank. Again, add tank water slowly so that both temperature and water quality will equalize. In order to prevent disease transmission, never add the water that the fish came in to your tank.

What Does It Eat?

Because of the wide variety of species you may choose, it is impossible to list all of their diet requirements. Since some animals require special foods or are simply more picky eaters than others, research and experiment until a suitable diet is found. A selection of flake, pellets, dried krill, frozen brine shrimp, and dried tubifex worms are a good example of a staple diet. Brine shrimp and black worms are some of the live foods that are good for some species. Commercial flake foods are acceptable, and some types of fish may also nibble on leafy vegetables.

If the tank has enough sun or artificial light, algae may grow on the sides and can be beneficial. When you scrub, leave a small amount of this green growth on one side of the aquarium so that fish and invertebrates can graze on it. An important note to remember is that no matter what the diet, resist the temptation to overfeed any animal. Do not expecting the fish to snack on left-over food. It's best to feed fish only until they stop eating, or for 2-3 minutes, and then clean up any extra food remaining in the tank.

Equipment List

Fish tank - gallon sizes vary; choose according to how small or large of a tank you would like

Undergravel filter - a plastic tray that covers bottom of tank, with spaces for airlift columns

Gravel - provides surface area for bacteria to colonize and for the placement of plastic or live plants

Air pump - circulates air through airlift columns to keep the tank oxygenated (by exposing water to the surface air) and maintains bacteria in gravel

Plastic tubing - connects the columns (usually two per tank) to the pump

Heater - different types of fish require different temperature ranges

Thermometer

Power filter - an external filter that hangs on the edge of the tank to increase mechanical, chemical, and biological filtration of the water

Freshwater - add the proper dose of dechlorinator to the water before putting it in the tank.

Tank cover - reduces evaporation from the tank and prevents fish from escaping

Light source - light promotes fish and plant health

Timer - ensures a constant light cycle by automatically turning the light source on and off

Plastic bucket - for holding freshwater, washing gravel, and siphoning old water

Dechlorinator - follow product instructions for proper dosage

Gravel cleaner - a hose with vacuum attachment for siphoning excess food, debris, and fish waste from the gravel

Water quality test kit - provides tests to perform on the water to check for ammonia, pH, nitrite, and nitrate levels; test your water quality bi-weekly or monthly

Log book - for recording water changes, feedings, new additions, mortalities, and water quality test results