How to Not Kill Fish: the Saltwater Aquarium Hobbyist

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April 9th, 2010

Aquarium Types

- **Freshwater** – often are heavily planted.
- Salinity 1.0.
- Usually duller coloured fish.
- Barana's are common exotic freshwater.
- Canister filters popular.

- **Marine** or **Saltwater** systems.
- Salinity 1.025 (*ocean level*)
- Bright coloured fish, reef and coral setups.

- **Brackish** Systems
- Half salt/half fresh.
- Salinity 1.005-1.010
- Some fish can adapt to low or high salt levels.
- Usually smaller, river type fish.

Aquarium Myths and Facts

- Freshwater is easier to maintain than salt.
  - After your system is setup, maintenance is similar to both.
  - Saltwater has initial higher cost for extra equipment.
- For *colourful* fish, you need saltwater.
  - You can get tropical looking fish in both setups.
  - Saltwater fish are pretty cheap too. Only rarities can get extremely pricy.
- Setup a tank for the species you want. Both setups can be expanded on later.

Saltwater Types

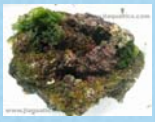
- Tropical vs. Cold Water
  - *Tropical* is the most common. Heat around 26 C.
  - *Atlantic* or *Cold Water* setups very expensive.
  - Special equipment (chillers) are needed to cool the tanks. Usually required larger tank volumes.

Saltwater Types

- Fish Only (**FO**)
  - Cheapest: No special lighting required, just filtering equipment.
- FO with Live Rock (**FOWLR**)
  - Live Rock can be expensive (around $600 for 60G tank).
  - Require more powerful light setups.
  - Adds the best biological filtering. More on Live Rock soon.
- Reef Tanks
  - Live Rock and Coral setups. Usually invertebrates and corals. With some reef safe fish.
  - Corals require high water quality maintains. More difficult to maintain.

Filtration

- Most setups use a combination of **biological** and **mechanical** filters. **Chemical** filters also are used sometimes.
- Biological preferred… no maintenance.



- Live Rock / Live Sand (*Biological*)
  - Algae on rocks convert waste from the water to useable nutrients.
  - Self maintains. No extra work for the owner.

- Protein Skimmer
  - Cleans tank similar to how the waves clean the ocean.
  - Forces waste into a collection cup to be empty.

Filtration

- Wet/Dry Trickle Filter (*Mechanical*)
  - More popular before. A set of mechanical filters.
  - Must be replaced often, else becomes "nitrate traps"… polluting the tank.

- Canister Filter (*Mechanical/Chemical*)
  - Seen more often in freshwater setups.
  - Filters inside are replaced. Easy to setup and get started.
- Deep Sand Bed (*Biological*)
  - Creates dedicated layer to convert nitrates.

Filtration - SUMPS

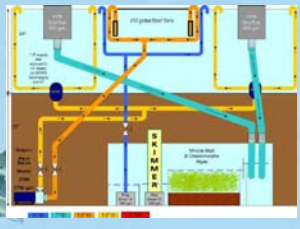
- Separate aquarium from your main tank – increases water volume of tank.
- Used to hide filtration and other equipment.
- Can contain a **Refugium**:
  - Separate "sanctuary" from animals in your fish.
  - Grow macro algae which would normally get eaten in your tank.
  - Keep helpful invertebrate to clean the water.
- Baffles to remove micro bubbles from water-clearer water.

Other Equipment

- Lighting
  - Expensive and many types (depends on setup).
  - Fluorescent/Power Compact/LED/Metal Halide.
- Powerheads
  - For water circulation.
- Pumps
  - Bring water from Sump to tank.
- Heaters/Fans
- Water filter (*Reverse Osmosis Water Filter*)
  - For cleaning tap water.

Setup Your System

- Now to set up your tank.
- Usually you will need to do your own piping.
  - PVC Pipes used. Saltwater tanks will come with SUMP holes in the back to pipe down.

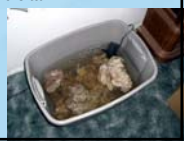


Setup Your System

- Standpipes
  - The start of the process.
  - Can be very noisy. Many different standpipe designs.
  - *Durso* is a popular choice. Many personal designs as well found on internet.
  - Goal reduce noise.
- Small overflows setup too.
  - In case of power outages.

Cycling the Tank

- At this point you do a wet run.
  - No leaks, not *excessively* noisy.
- Live Rock needs curing.
  - Living organisms on the rock. Will initial have large die off rate.
  - Ammonia will shock the system if not cured first.
  - Wait until reaches **equilibrium**:
    - Enough ammonia eating organisms to handle die-off.
    - And enough nitrite eating organism to handle tank.



Cycling the Tank

- Live Rock Curing:
  - Very smelling process (*rotten seaweed*).
  - Depending on rock and organisms, can take up to a month to cure.
- Can add hardy fish (like damsels) to make the cycling process quicker.
- They add a extra level of nitrate (fish waste) to the tank.

Aquarium Life

- Clean Up Crew:
  - Invertebrates – snails/crabs/shrimp.
  - Clean bad algae off glass, algae off rocks.

- Macro algae for Sump
  - Provide *biological* buffer for the water.
  - Introduces nutrients/food into the water.
- Decorative invertebrates can be added.
  - Like starfish or clams (require high light).

Aquarium Life

- Fish / Morays / Seahorses / etc
- *Like humans, not all aqua animals get along*.
  - Keep predators with predators, and tams with tams – unless you want to give someone an expensive snacks.
  - Always check compatibility prior to adding fish.

- Fish are **hardy**! Easy to maintain.

Aquarium Life

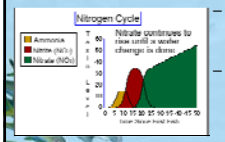
- Corals require better water conditions, higher lighting
- *Hard SPS & LPS Corals* - Small/large polyp stony coral.
  - Require high light usually.
  - Some hardy… some very picky.
- Soft Corals
  - Often easier and less picky.
  - Mushrooms, Xenia's, amoebae like corals.
  - Some of these can be aggressive… they move around the tank.

Monitoring the Tank

- *Salinity* and *PH* levels need to be monitored:
  - Refractometers or hydrometers for salinity.
  - Add salt if necessary. Any salt will do, but there is specific marine salt which have trace elements for your aquarium.
- Waste products:
  - Bacteria die, create ammonia.
  - Ammonia eating bacteria creates Nitrite (waste). Fish create nitrite as well. Stress levels and such increases this.
  - Nitrite eating bacteria create Nitrate. Need water change to remove. Safe in low levels.

Monitoring the Tank

- With a fully equipped tank. *Maintenance* usually only includes:
  - Changing or adding water (frequency depends on size of tank and setup).
  - Emptying skimmers collection cup when full.
  - Feeding the fishes.
- Want to monitor *Ammonia/Nitrite/Nitrate* levels.
  - Ammonia/Nitrite levels may indicate something is wrong with the tank (ie fish are abnormally stressed, are sick)
  - Nitrate indicates a water change is needed.



Resources

- Valuable Online Resource:
  http://www.wetwebmedia.com/
- Any specific questions, local aquarium shops are best for quick and direct answers.
- *J&L Aquatics* is a famous saltwater shop located locally in Vancouver:
  http://www.jlaquatics.com/

Questions?

- Thanks!

http://aquarium.codybrown.ca/