Freshwater and Saltwater Aquariums

By Jenessa Gjeltema
Choose Your Aquarium Type

The specific aquarium setup will depend upon the requirements of the species you choose.
Choose Your Aquarium Type
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Basic Needs

- Appropriate enclosure/housing
- Nutrition
- Hygiene
- Enrichment
Enclosure Components

- Tank
- Stand/Canopy
- Lid/condenser
- Lights
- Temperature Control

- Environmental Enrichment
- Filtration
- Location
- Water Quality
Enclosure Components: Tank

Consider:
Size
Shape
Materials
Convenience
Aesthetics
Enclosure Components: Tank
Enclosure Components: Lid/Condenser

Why?
- Keeps fish from jumping out
- Prevents evaporation
- Protects lights
Enclosure Components: Lighting

Why?

- Plant Growth
- Coral Growth
- Visualizing the Fish
- Fish health
Enclosure Components: Lighting

Considerations:
Fixtures
Ballast
Wavelength
Light Intensity
Reflectors
Photoperiod (12 hours)
Enclosure Components: Temperature Regulation

How?

• Heaters
• Chillers
• Fans
• Ventilation
Enclosure Components: Environmental Enrichment

Why?
- Evasion
- Breeding
- Quality of life
- Express Personality
Enclosure Components: Environmental Enrichment

Types:
- Wood
- Rocks
- Substrate
- Plants
Enclosure Components: Plants

Why?

- Oxygenation
- Waste removal
- Protection
## Filtration Systems

<table>
<thead>
<tr>
<th>Filtration:</th>
<th>Mechanical</th>
<th>Biological</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types:</td>
<td>Wool, sponge</td>
<td>Ceramics, sponges, rocks (SURFACE AREA!!)</td>
<td>Charcoal, zeolite</td>
</tr>
<tr>
<td>Purpose:</td>
<td>Remove large particulate waste</td>
<td>Removes fish waste products</td>
<td>Removes odors, discoloration, toxins, and some waste products</td>
</tr>
</tbody>
</table>
Filtration Systems

Considerations

- Tank size
- Stocking capacity
- Water flow
- Breeding
- Aeration
Filtration Systems
Filtration Systems
Filtration Systems

Protein Skimmer: Removes organic material from marine systems
Filtration Systems

Underground filter: biological and mechanical
Enclosure Components: Location

Avoid:
- windows/direct sunlight
- drafty doors or fireplaces
- vibrations/sharp noises
Water Composition: Water Testing
Water Composition: Stock Water

- Know what is in your stock water
- Test periodically
- Alternatives available

Test for:
- Chlorines
- Copper
- pH
- Hardness
Water Composition: Testing

Fresh Water:
- pH
- Ammonia
- Nitrite
- Nitrate

Salt Water:
- Salinity

Other:
- Phosphate
- Calcium
- Strontium
Water Quality: Nitrogen Cycle

badmanstropicalfish.com (originally from www.hagen.com)
Water Quality: Nitrogen Cycle

[Diagram showing the nitrogen cycle with graphs for Total Nitrogen, Nitrate, Nitrite, and Ammonia over time (days)].
Water Quality: Cycling A New Tank

Purpose: grow bacteria for nitrogen cycle
- Takes 4-6 weeks

Tips:
- “Seed” the tank
- Monitor values closely
- Avoid water changes
- Can achieve without fish
Water Changes

Why?

- Dilutes waste products
- Corrects pH imbalances
- Can reduce algae growth
Performing Water Changes

- Regular water changes
- 2% every 2 days
- 4% every week
- 20% a month
Adding Fish: Acclimation

- Temperature
- Water composition
- Environmental factors

How:
- 15-30 min. for temperature
- 15 minutes for water composition
Nutrition

Dry:
- Flakes
- Pellets
- Sticks
- Floating
- Sinking
- Wafers
- Seaweed

Live/Frozen:
- Blood Worms
- Daphnia
- Brine Shrimp
- Feeder fish
- Plants
Nutrition

- Know your fish
- Observe mouth
- Use dry food as staple
- Supplement with fresh/frozen foods
- Do not overfeed

Picture from Jeremy Gay’s *The Perfect Aquarium*
Maintenance

**Daily:**
Feed
Monitor
Lighting

**Weekly:**
Replace evaporation
Water testing
Clean algae
Empty protein skimmer
Maintenance

Monthly:
Charcoal replacement
Plant maintenance
Electrical Inspection

6 mos. To Yearly:
Change light bulbs
Additional Considerations

Personal Safety

Euthanasia

Environmental Impact

Veterinary Care
References


References


Special Thank You to:

Fish World
and
Aqua Pros
Thank You! Questions?

If you would like to learn more about fish (as well as coral and amphibian) husbandry, please contact me at jlfgjelte@ncsu.edu.

I can help you get some hands-on experience!