AQUARIUM FISH KEEPING AND MAINTENANCE OF AQUARIUM

JOE SHALINI S
Introduction

Aquarium: (Latin) aqua – water; arium – a place for relating to
• Hobby, pleasure, fun

Definition:
An Aquarium is a transparent tank or a bowl or an artificial pool where live fishes and other aquatic animals are kept.
History

Sumerians
More than 4,500 yrs – ponds & tanks

Roman Empire
Indoors - sea barbel
In 50 – glass panes

Ancient glass aquarium

Glass aquarium of Romans
Philip Henry Gosse — AQUARIUM

(The Aquarium: An Unveiling of the Wonders of the Deep Sea, 1854)
The London Zoo Fish House at Regent's Park, circa 1857.
TYPES OF FISH KEEPING SYSTEMS

FRESH WATER
SALT WATER
BRACKISH WATER
FRESHWATER
<table>
<thead>
<tr>
<th>Fish</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cichlid</td>
<td><img src="image1.jpg" alt="Cichlid Fish" /></td>
</tr>
<tr>
<td>Gold</td>
<td><img src="image2.jpg" alt="Gold Fish" /></td>
</tr>
<tr>
<td>Guppy</td>
<td><img src="image3.jpg" alt="Guppy Fish" /></td>
</tr>
<tr>
<td>Fighter</td>
<td><img src="image4.jpg" alt="Fighter Fish" /></td>
</tr>
<tr>
<td>Koi</td>
<td><img src="image5.jpg" alt="Koi Fish" /></td>
</tr>
<tr>
<td>Silver Dollar</td>
<td><img src="image6.jpg" alt="Silver Dollar Fish" /></td>
</tr>
</tbody>
</table>
SALTWATER
MARINE FISHES

Angelfish

Orchid Dotty Back

Puffer

Clown

Damsel

Lion Fish
BRACKISH WATER
BRACKISHWATER FISHES

Archer

Monos

Siamese Tiger

Bumble Bee

Cichild

Black Molly
SETTING UP AN AQUARIUM

LOCATION
Sufficient place
Electrical outlets
Best view

Avoid
Direct sunlight (algal growth, over heating)
Windows & doors (temp. Changes)
Trafficked areas
TANK SIZE

Volume of the tank = Length x Height x Depth x 0.00433

1 gallon = 3.78541178 liters

<table>
<thead>
<tr>
<th>SMALL AQUARIUMS</th>
<th>L x W x H</th>
<th>Filled Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1/2 gallon</td>
<td>12&quot; x 6&quot; x 8”</td>
<td>27 lbs</td>
</tr>
<tr>
<td>15 gallon High</td>
<td>20&quot;x 10” x 18”</td>
<td>170 lbs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MID-SIZED AQUARIUMS</th>
<th>L x W x H</th>
<th>Filled Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 gallon High</td>
<td>24&quot; x 12&quot; x 16”</td>
<td>225 lbs</td>
</tr>
<tr>
<td>40 gallon Long</td>
<td>48&quot; x 12&quot; x 16”</td>
<td>455 lbs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LARGE AQUARIUMS</th>
<th>L x W x H</th>
<th>Filled Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 gallon</td>
<td>36&quot; x 18&quot; x 19”</td>
<td>600 lbs</td>
</tr>
<tr>
<td>180 Gallon</td>
<td>72&quot; x 24&quot; x 25”</td>
<td>2100 lbs</td>
</tr>
</tbody>
</table>
Stocking fish

- Note the adult size for stocking
- Amount of waste
- Swimming capacity
- Aggressiveness
- Comfortable with other fishes

Hatchet fish (leap high)
WATER FOR AQUARIUM

Most important
Routine water change
  * maintains N2 cycle
  * pH
  * stress on fish
ESSENTIAL EQUIPMENT FOR SETUP

AQUARIUM FILTERS
Remove physical & chemical waste
Simplify maintenance

✓ Mechanical filtration
✓ Chemical filtration
✓ Biological filtration

1. Intake
2. Mechanical filtration
3. Chemical filtration
4. Biological filtration
5. Outflow to tank
• Mechanical filtration
  Remove large suspended particles

• Chemical filtration
  Remove medications & heavy metal traces

First mechanical aquarium, 1908
Biological Filtration

- Restraining Mesh
- Floating Media
- Process Air
- Settled Waste Water
- Biological Aerated Filter (Upflow Type)
- Effluent Outlet
- Drain for Sludge Return to Headworks
Filtration Materials

- Ceramic Ring
- Activated Carbon
- Bio Ball
- Lava Stone
- Filter Sponge
- Filter Mat
## Types of Aquarium Filters

<table>
<thead>
<tr>
<th>External filters</th>
<th>Internal filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canister</td>
<td>Airlift</td>
</tr>
<tr>
<td>Diatom</td>
<td>Undergravel</td>
</tr>
<tr>
<td>Trickle</td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td></td>
</tr>
<tr>
<td>Baffle</td>
<td></td>
</tr>
</tbody>
</table>
Undergravel Filter System

- Water Flow
- Air Line
- Filter Stack - Clear Pipe
- Water Flows Down Through the Gravel
- Water Flow
- Air Stone
- Gravel
- Undergravel Filter Plate
Aquarium Lighting

- Used to illuminate tank
- Replicate natural environment
- Day light & warmthness
- Plant growth
Bulb Types

- Incandescent/Halogen
- Normal Output (NO) Fluorescent
- High Output (HO) or Very High Output (VHO) Fluorescent
- Power Compact (PC) Fluorescent
- Metal Halide
- LED
Heater & Thermometer

Check and maintain Temperature

Heater  Thermometer
Aquarium Substrates
Decoration & Background
Test Kits

pH
Ammonia
Nitrite
Nitrate
Oxygen
Setting up

- Leak test (tank check)
- Aquascaping (arranging plants, rocks, stones, etc.)
- Install equipments
- Water filling
  (water → substrate → water → plants → water)
✓ Introducing fish
Turn off lights (reduce stress)
Add feed (reduce aggression)
More than 1 fish at a time
Fish food

Specific food for specific fish

- Protein, carbohydrates, vitamins

Worms
Shrimp
Beef
Poultry
Spinach
Potato
Lettuce

Frozen food (reduce disease)
COMPOUND FISH FOODS SERIES

COLOR ENHANCER  STAPLE PELLET  KOI WHEAT GERM
KOI COLOR RENDERING  MICRO GRANULES  FLAKE FOOD
STICK FOOD  TABLET FOOD  SPIRULINA WAFER
MAINTENANCE OF AQUARIUM

- Healthier
- Long life
- Joy for hobbyist

- Ugly
- Short life
Basics
• Liquid nutrients (correct dosage)
• Lightings (change every 6 months)
• CO2 (using test kits maintain CO2 -25-35ppm)

Biological Loading
• Tank capacity (rate of biological decay in proportion to tank volume)
• Tank size
Water conditions

- Purify
- Salinity
- pH
- Chlorine
- Natural water source (for large aquarium)
## Temperature

<table>
<thead>
<tr>
<th>Tropical</th>
<th>Cold water</th>
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<tr>
<td>25°C</td>
<td>below room temp.</td>
</tr>
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</table>

- Temp. Consistency
  (sudden change cause shock and disease)
- Thermometer & heater
- Aeration (pumps, power heads, water flow)
Maintenance Equipments

GRAVEL VACCUM
Remove excess water

SCRAPER
Remove algae from wall

NET
Move fishes

PUMP

BRUSH

SIPHON
Quarantine Tank

Means - place of isolation

(either a sick one or a "newly acquired" one which needs to be closely observed for some time)
Lighting timers & Auto fish feeder

Lighting timers

Auto fish feeder
Daily

Temperature (thermometer = heater’s thermostat)

Water level (check dissolved nutrients; fill evaporated water)

Unusual behaviour (loss of appetite, swimming pattern, rubbing) – (move to quarantine tank)

Dead fish (remove before decompose)
Weekly Water change

- Prepare replacement water
- Add conditioner or dechlorinator
- Leave to room temperature
- Rinse equipments & materials in the tank
- Leave fish in quarantine tank
- Remove algae using scrubber
- Discard dead organisms
- Remove water using siphon
- Add new water using siphon
- Add fish without disturbance
Monthly

- Replace filter cartridges
- Rinse all materials before water change
- Wash all equipments
- Clean air stones using boiling water then soak in vinegar for a day
- Record monthly maintenance
Twice a year

• Replace bulbs
• Use gloves to remove metal halide bulb
• Clean intake & outlet pipes
• Clean pumps & filters
• Lubricate moving materials
• Record biannual maintenance
BASIC RULES

Not to over stock
Not to over feed
Do Frequent water changes
World’s smallest Aquarium with live fish
Aquariums Of India

• Kollam Aquarium, Kollam, Kerala
• Travancore Royal Aquarium, Shangumukham Beach, Trivandrum, Kerala
• Bangalore Aquarium, Bangalore
• Calcutta Aquarium, Calcutta
• Kankaria Aquarium, Ahmedabad
• Lal Bagh Aquarium, Bangalore
• Marine Life Aquarium, Chennai
• Marine Biological Research Station, Ratnagiri
• Matsyadarsini Aquarium, Visakhapatnam
• Sanjay Gandhi jaivik udhan, Patna
• Taraporewala Aquarium, Mumbai
TOP 10 AQUARIUMS OF THE WORLD
10. Aquarium of Western Australia
9. Aquarium of Genoa
8. Shanghai Ocean Aquarium
7. uShaka Marine World
6. Monterey Bay Aquarium
5. Turkuazoo
4. L'Oceanogràfic
3. Okinawa Churaumi Aquarium
2. Dubai Mall Aquarium
1. Georgia Aquarium
Conclusion

Soon fishes will be used to their environment and become more active. They may even recognize when you come close. That is the reward of fish keeping!
THANK YOU