Pennsylvania Trout In The Classroom

Chapter 6:

Aquarium

VIEW OF HOW YOUR AQUARIUM SHOULD LOOK ONCE SET-UP



(back to table of contents)

Page **30** of **89**

Equipment Used

WATER QUALITY TESTING and CLEANUP			
Freshwater Master Test Kit	Microbe Lift Special Blend and Microbe Lift NITE-OUT II		
Lees Squeeze Bulb Ultra Gravel Vac with on/off valve	n/off valve Turkey baster (for water quality testing & egg removal)		
5-6 gallon buckets (for water changes)	16.9 oz. Seachem Prime Water Conditioner		
25ft Python Water Change Kit (for teachers with access to sink in classroom)	Poly Bio Marine-Poly Filter 4"x8" Sheet		
Green Killing Machine UV Sterilizer Kit			
TEMPERATURE			
Battery Operated DigitalThermometer	Floating Thermometer		
Tradewinds Drop-in Chiller DI-25 (1/4 HP)	Foam board pieces for insulation: 2 @ 48 ¼" X21"; 2 @ 12 ¾" X 21"; 1 @ 12 ¾" X48 ¼"		
WATER FILTRATION and CIRCULATION			
Fluval 407 Canister Filter	Filter max pre filter (Aquarium Tech) (to place on your filter in-take)		
Foam pre filter (Marineland) (for power head)	Aqua Clear 20 Power Head-Old 201		
Chemi-Pure 5oz	Seachem Tidal 75 matrix Bio Media		
01	XYGEN		
Whisper 60 Aquarium Air Pump	Flexible airline tubing-25 feet		
Lee's Check Valve-1 pack	10" Aqua Mist Add-a-stone		
TROUT HABITAT and FEEDING			
55-gallon, glass aquarium (48 ¼ " x 12 ¾ " x 21 ")	Lid for 55 gallon aquarium (Plexi glass, glass, plastic, etc.)		
Shallow Creek Pebbles-5 lb.	8-inch net with long handle (16" handle length)		
Measuring spoons (1/8 th ; 1/4 th ; 1/2 tsp)			
GENERAL			
Power strip, towels/rags	VELCRO fasteners of tape (for adhering foam to aquarium)		

EQUIPEMTENT THAT MAY NEED REPLACED AT THE END OF THE YEAR			
(NOT ALL items need replaced, the foam blocks, Bio Media can be rinsed off and dried for the following year.			
Only replace items that you KNOW need replaced by their condition)			
*Reusable as condition or expiration allows			
Chemi-Pure Filter Media 5 oz	*Check Valve-1 pack	*Fluval Media (Foam Block).	
Tubing air stone connection	*Fluval BioMax Media-17.63 oz.	*Special Blend (microbe lift & nite out II)	
10" Aqua Mist Add-a-stone	*Fluval filter motor seal ring	*Freshwater Master Test Kit	

(back to table of contents) Page **31** of **89**

Contacts for Specific Equipment Questions

Companies that support TIC and are the main suppliers for the program		
(They can assist with specific equipment questions.)		
That Fish Place, That Pet Place	Tradewind Chillers (2 year warranty)	
ORDER TIC Kit #2 (without chiller and has 406 Fluval Filter)	Website: http://www.tradewindchillers.com/	
Website: http://www.thatpetplace.com/	Contact: Hal Collier	
Contact: Stephanie Welsh	Phone: 760-233-8888	
Phone: 717-299-5691 ext. 1288	Email: twchillers@sbcglobal.net	
Email: Stephanie.welsh@thatpetplace.com		

(back to table of contents) Page **32** of **89**

Aquarium Diagram



(back to table of contents)

Page **33** of **89**

Step-by-Step Aquarium Set Up

Set up your aquarium at least 3 - 4 weeks before receiving your eggs. This will ensure that your equipment is in working order. If something is not working properly you have time to order replacement equipment. **Use the <u>DIAGRAM</u> on the previous page as a visual guide when setting up your aquarium**

Tools needed for aquarium set-up			
Screwdriver	Pair of scissors or utility knife	Pliers to tighten any connections	
Two clean 5 gallon buckets to fill	Wash cloth to wipe down the aquarium	Towels to dry any spills	
aquarium with water	inside and out		
Bucket to soak and rinse gravel	5 gallon bucket to place your filter base	Velcro strips with sticky back to	
	into (if your filter leaks the water will	connect foam board to aquarium	
	stay in the bucket)		

Aquarium location and preparation:

- a) Locate a suitable place in the classroom for the aquarium. Place it away from heat, excessive light, and lots of student activity. If next to a window, pull shade. Make sure aquarium is on a stable level surface.
- b) Position aquarium on top of your **insulation board** (cut to fit the bottom of the tank with ¹/₂"overhang on sides). Can be purchased at (*Lowes; Home Depot etc.*)
- c) Size, cut and place the remaining foam board on all sides of the aquarium. Use Velcro to attach foam to aquarium. This will help keep your water at the appropriate temperature.
 - i. After the trout hatch you can remove the front cover. DO NOT remove the sides or back, this will help continue keeping your water cold.
- d) If your trout become stressed place the front cover back on.
- e) Clean any dirt inside the aquarium with a wet paper towel. Do not use soap or any cleaning agent--the residue will stay in the aquarium and harm your trout.
- f) Locate an electrical outlet and plug in power strip. This should be right behind or underneath the aquarium. Turn off power strip. Note: Make sure you place a note above the outlet stating "DO NOT UNPLUG".

Gravel:

- a) Rinse gravel two or three times to remove dust. Then layer the bottom of the aquarium.
 - i. Gravel is important to your aquarium system. It encourages growth of good bacteria that assists with the nitrogen cycle.

(back to table of contents)

Step-by-Step Aquarium Set Up continued...

Filter:

- a) Assemble using the company directions. Place canister filter next to or underneath aquarium.i. Place filter base in a 5 gallon bucket. This will prevent leaks if something goes wrong.
- b) Place filter outflow near the water surface and at opposite end of aquarium from the filter intake. Place outflow approximately 2-3inches above water level to encourage aeration at the surface.
- c) Place the filter intake ³/₄ way down the aquarium side, just a few inches from the bottom. This will ensure that toxic water accumulating at the bottom is taken out.
- d) Place filter max pre filter on filter intake. The pre filter will prevent your trout from being sucked up into the filter system.

<u>Powerhead:</u> (used for flow at the <u>bottom</u> of the aquarium)

a) Prepare the power head following company directions. On the **<u>opposite</u>** end of the aquarium from the filter output, place the powerhead ³/₄ of the way down the side of the aquarium.

Create water circulation:

a) Make sure your filter output is at the opposite end of the aquarium of the power head. They will work together to create circulation on the surface (*filter output*) of your aquarium and near the bottom (*powerhead*).

Airstone and air pump:

- a) Attach one end of the airline tubing to the airstone, and the other to the air pump. Place the air pump near the aquarium or above the aquarium about 6-12 inches.
- b) If air pump is below water level, use a check valve to prevent backflow of water into the air stone and air pump. To do this, make a cut in the air tubing and use the check valve to connect the two pieces back together. Air should push the flap and compress the spring inside the valve. Then insert the airline tubing into the air stone.
- c) Place air stone in the aquarium, away from the filter intake tube, preferably in the center/back of the aquarium.
- d) Before turning on your airstone, submerge it for at least 1-2 hours.

(back to table of contents)

Step-by-Step Aquarium Set Up *continued*...

Chiller:

- a) Set up your chiller and prep your chiller according to the directions.
- b) Place your chiller at the opposite end of your aquarium from the filter intake and power head.
- c) You may set up your chiller when you set up the rest of the aquarium 3-4 weeks before your eggs arrive.
- d) Once your aquarium is setup and ready to be turned on, turn on the chiller as well to see if it is working. Once you have determined that it works, turn it off until 5 days prior to egg arrival.
- e) 5 days before your eggs arrive turn on your chiller and set it to 65 degrees.
- f) Approximately 2 days before your eggs arrive decrease your chiller temperature to 54 F

Adding water:

- a) Fill aquarium about ³/₄ full with tap water using any clean container or tubing.
 - i. Clean buckets are best for this purpose. Unless you have a sink nearby and can use a Python Water Changer to fill the tank. Using a hose from the sink is not recommended unless you can ensure it is properly attached. Otherwise, use clean buckets to move the water from the tap to your aquarium.
 - ii. Chlorinated tap water can be used for the initial setup, as there will be no fish in the aquarium for a few weeks.
- b) Check to make sure all of the equipment is working appropriately. Then, finish filling the aquarium, but leave at least 2-3 inches to spare at the top.

Prime 407 Fluval Canister Filter:

- a) Fill your canister up with water prior to putting on the lid. This will help jumpstart your filter priming time. Pump the silver key on top (marked "start"). Keep pumping the water through until you see water coming out of the filter outflow. *When turned on, the filter will make a "chugging" noise if not properly filled. Unplug immediately and continue to prime until the water has circulated through.*
- b) If you end up with air in the tubing, get two dixie cups and some helpers. One person will need to detach the pre filter at the intake and begin pouring water into the tube until water is overflowing from the tube. The other person should do the same with the outflow tubing. Once the tubes are completely filled with water, each person with a tube in hand must be ready to submerge the tubes at the same time into the water, while the third person plugs in the filter. This should take care of any air bubbles caught in the tubing.

(back to table of contents) Page 36 of 89

Pre-Cycling Your Aquarium Prior to Receiving Trout

Now that you have your aquarium set up it is recommended that you pre-cycle your aquarium prior to receiving eggs. Pre-cycling will help to establish healthy water chemistry and a bacterial community before introducing fish.

Ideally, you will want to complete these steps **4-6 weeks** before receiving eggs.

Here is how to get started:

- 1. Add the Seachem Prime water conditioner to your aquarium at the recommended dosage (per manufacturer instructions) for your aquarium capacity. (Ensures your water is dechlorinated)
- 2. Add the Microbe Lift Special Blend to your aquarium at the recommended dosage (per manufacturer instructions) for your aquarium capacity. (Promotes and jump starts bacterial growth)
- Leave your chiller turned off at this time. Having the water at room temperature will better promote the growth of beneficial bacteria.
 Do Not add any other chemicals at this point
- 4. Add a pinch or two of food per day in order to initiate the Nitrogen cycle. This food will decay and produce ammonia for your system.
- 5. Now that you've begun your cycling process, you will want to test for the ammonia and nitrite levels regularly. The levels will be elevated for some time while the N cycle is establishing. **Do Not** do any water changes or add any additional chemicals while your tank is cycling.

Typically you will begin to see an ammonia spike peak at 5-10 days. As ammonia is decomposed Nitrites will appear and at approximately 14-21 days they will peak. As Nitrites are decomposed Nitrate will appear, and at approximately 28 days, your ammonia and nitrite should be almost zero, pending how high your initial ammonia spike was. The length of the cycle will vary depending on the water temperature which is why room temperature is recommended to initially cycle the aquarium. A small amount of food may be added to keep the bacterial colonies sustained until your fish arrive. Ensure ammonia and nitrites stay at zero.

6. If ammonia and nitrite levels start to go above 5ppm, stop adding food and continue to monitor. After 2-4 weeks you should begin to see your levels move towards zero.

Pre-cycling your aquarium is a great option to reduce any mortality you may experience through the initial ammonia and nitrite spikes you would otherwise have after introducing fish to your system.

Aquarium Salt Treatment

Once you have your aquarium set-up and ready to receive eggs treating your tank with non-iodized salt otherwise known as aquarium salt as a general tonic is recommended and can never hurt! Benefits include the ease of stress, reducing osmotic pressure, inhibition of nitrite uptake, promoting the slime coat, and helping to heal wounds.

The trick is to add the salt directly to the tank at the recommended rate.

1. As a general rule you can add one tablespoon of salt/5 gallons of water. ***Do not add the salt to your aquarium all at once.**

Aquarium Capacity	Total Dose	Application Rate
35 gallon aquarium	7 tablespoons	2 tablespoons over 3 days
		with 1 on day 4
55 gallon aquarium	11 tablespoons	3 tablespoons over 3 days
		with 2 on day 4
75 gallon aquarium	15 tablespoons	3 tablespoons/day

- 2. Add the salt at the recommended application rate until the total dose is reached for your aquarium.
- 3. Once you complete this the treatment is finished and you **DO NOT** have to add it directly to the aquarium water again. Salt does not evaporate out of the water, If you top off your aquarium there is no need to add salt to that water, only when you remove water from your aquarium during water changes.

You will want to **add the salt** to the water you are using for your water changes at the same rate.

- For example, you will treat the salt like a water conditioner, if you are doing a 10 gallon water change add 2 tablespoons of salt to the water along with your water conditioner (if you use one).
- Add the salt and the conditioner every time you do a water change.
- Salt is a great disease preventative as well as a general tonic and stress reducer. Salt can also be reduced to 1 tablespoon per 10 gallons if you want to save on supplies and all fish are healthy. You may also start out at a half dosage and keep that until/if you have any problems

Egg Nurseries for your Aquarium

Make your own hatching basket:

Making your own hatching basket can be a great project for you and/or your students in September. The benefits of making your own hatching basket are:

- 1. It is much larger than commercially purchased baskets, allowing more water flow and more room for your eggs.
- 2. Decreases crowding issues such as fungus spread and egg die offs

Create a redd (trout nest) in your aquarium:

- a) Create your own "redd" at the bottom of your aquarium by making a small dome in your gravel. In the middle of the dome create an oval depression. Use a turkey baster to take your eggs from their original packaging and place them into the oval depression.
- b) Be sure to spread your eggs out. If you need to, create an additional depression OR use a combination of a homemade hatching basket and the gravel redd.

Commercial hatching basket

- a) If you decide to go with these, you should purchase at least 2 of them to spread your eggs out and avoid overcrowding.
- b) Stretch the net over the outside of the plastic frame. Hang the basket on the aquarium wall by bending the metal clips. If you use a vibert box instead, it will be placed on the floor of your aquarium.

Double check before turning on power:

- a) Plug in all electric cords using the power strip, but keep the power OFF.
- b) Double check all connections and make sure everything is working.
- c) The output tube should be secure; a student can hold this tube in place.
- d) Turn on the power strip and check for any leaks in your equipment.
 - i. The bubbler should be creating a large volume of small bubbles.
 - ii. Place your hand in front of the power head to make sure there is good water flow.
 - iii. Make sure there is a good flow coming out of the filter output.
 - iv. Make sure your filter intake is taking in water by placing your hand in front of it.
- e) Make sure your chiller is working, and then unplug it. 2 days before eggs arrive turn chiller on and temperature to **54 degrees**.

(back to table of contents)

TIC End of Year Clean Up

At the end of the TIC season, it is important to clean the aquarium set-up. Clean equipment lasts longer.

AQUARIUM	
1	Turn off equipment. Empty aquarium almost all the way using the siphon kleen. Then remove gravel.
2	Finish emptying the aquarium and disconnect all tubing.
3	Use solution: 1 part chlorine bleach (Clorox-unscented) and 10 parts water, wipe down interior and exterior of aquarium. You can also use 1 part white vinegar to 5 part water solution. A soft sponge can be used to scrub hard to remove scale and algae growth. For stubborn scale/algae, soak directly with vinegar, and use a safety razor.
4	Use the same solution to clean out the tubing (clean tubes using long brushes purchased at any pet shop.)
5	Rinse the aquarium to remove any chlorine/vinegar and wipe dry with clean cloth, or let air-dry
6	Gravel and any driftwood: rinse thoroughly and dry by laying out on a cloth or towel in the sun. Gravel can also be sterilized with the Clorox/vinegar solution but MUST be rinsed thoroughly and completely dried. DO NOT use Clorox/vinegar solution on driftwood.
7	Place gravel and driftwood inside the aquarium and store it in a safe place. Cover the top with any dust- proof covering.
С	HILLER: Drop-in
1	Using bleach or vinegar solution and dedicated sponge, wipe off the stainless-steel Freon tubing.
2	For difficult scale or build up, a small PLASTIC scrub brush can be used. NEVER USE A WIRE BRUSH ON THESE TUBES.
3	Remove dust and lint from the fins of the coolant tubing (the thin slats on the back of the chiller). This can be accomplished using a small vacuum cleaner, dusting cloth or soft bristle plastic dust brush. Your chiller will run more efficiently if you clean the lint and dust on a regular basis.
40	07 FLUVAL CANISTER FILTER
1	Take apart your filter and scrub out the plastic parts with your 1:10 bleach solution or 1:5 vinegar solution.
2	Thoroughly rinse all filter media with regular water and dry them in the sun. Scrub ceramic cylinders until free of all debris. For most filters, it is suggested that you buy new filter pads, but coarse filter sponges and bio media can be used for several years.
3	When all components are dry, re-assemble the filter and store inside the aquarium.