



TEACHER GUIDEBOOK

EQUIPMENT SETUP & TROUBLESHOOTING

CHEMICAL STANDARDS

FISH HEALTH & FEEDING FAQ'S

WEBCAM & YouTube INSTRUCTIONS

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Filter Setup & Trouble Shooting

Fluval User Manual

https://fluvalaquatics.com/manuals/A440-50_07_Manual_INT_Mar4_19_WEB.pdf

Fluval 07 Filter: How to Setup Install & Prime | 407 - Video

<https://www.youtube.com/watch?v=kZOaBxwYt88>

Fluval 407 Canister Filter Setup & Review - Video

<https://www.youtube.com/watch?v=toQd6aK90aM>

Fluval Set up & Maintenance Series - Video

https://www.youtube.com/playlist?list=PLP5OXTIIDO8PRpx-RbKsLopU54H_0JImN

Arizona TIC Equipment Link Page

https://aztic.org/?page_id=4346

Chiller Setup & Trouble Shooting

Chiller User Manual

<https://www.tradewindchillers.com/downloads/instructions.pdf>

Chiller Troubleshooting

<http://www.seafrost.com/pdfs/BD-TW/Troubleshooting%20BD%20Systems.pdf>

General Chiller Specs & Information

<https://www.customaquatic.com/estore/control/product/~product=CH-TWDI-25>

Air Pump Setup & Trouble shooting

Air Pump General Specs and Fact Sheet

<https://www.tetra-fish.com/products/aeration/whisper-aquarium-air-pump.aspx>

How to Set up the Tetra Whisper Air Pump - Video

https://www.youtube.com/watch?v=AU5Wu8_uniw

How To Set Up the Tetra Whisper Air Pump (Version 2) - Video

<https://www.youtube.com/watch?v=ut0BJ-ofxfQ>

What should I do if my Whisper® Air Pump is not producing air or is very loud?

<https://www.tetra-fish.com/ask-tetra/faqs/aquarium/aquarium-equipment-problems/what-should-i-do-if-my-whisper-air-pump-is-not-producing-air-or-is-very-loud.aspx>

TROUT IN THE CLASSROOM HELP GUIDE

Step-by-Step Aquarium Set Up

Set up your aquarium at least 2-3 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 DIAGRAM at the end of this step-by-step setup 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 aquarium with water	Wash cloth to wipe down the aquarium inside and out	Towels to dry any spills
Bucket to soak and rinse gravel	5 gallon bucket to place your filter base into (<i>if your filter leaks the water will stay in the bucket</i>)	Velcro strips with sticky back to connect foam board to aquarium

Aquarium location and preparation:

- Locate a suitable place in the classroom for the aquarium. Place it away from heat, excessive light, and lots of student activity. If it is next to a window, pull the shade. Make sure the aquarium is on a stable level surface. The Fluval 407 filter must be below the level of the water, but the bottom should be no more than 4.5 feet below the water surface. It should be positioned to allow short mostly vertical lengths for inflow and outflow hoses.
- Position aquarium on top of your insulation board (cut to fit the bottom of the tank with ½” overhang on sides). Can be purchased at (Lowe's, Home Depot etc.)
- 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. 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. (Flagstaff & Northern Arizona Schools may have this provided by their volunteers)
- 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. Vinegar is also a useful agent to remove hard water stains.

- e) Locate an electrical outlet and plug in power strip. This should be right behind or underneath the aquarium. Turn off the power strip. Note: Make sure you place a note above the outlet stating “DO NOT UNPLUG”

Step-by-Step Aquarium Set Up

Gravel:

- a) Rinse gravel two or three times to remove dust. Then layer about ½ of the bottom of the aquarium. Gravel is important to your aquarium system. It encourages growth of good bacteria that assists with the nitrogen cycle.

Filter:

- a) Assemble using the company directions. Place canister filter next to or underneath aquarium. 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 opposite end of aquarium from the filter intake. Place outflow just at or immediately above water level to encourage slight aeration at the surface.
- c) Place the filter intake ¾ 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 into the filter system.

Create water circulation:

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

TROUT IN THE CLASSROOM HELP GUIDE

Step-by-Step Aquarium Set Up

Airstone and air pump:

- a) Attach one end of airline tubing to each of the two air stones, and the others to the air pump. Place the air pump near the aquarium or above the aquarium about 6-12 inches.
- b) If the 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.

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.
- 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 set up 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 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. Use a -3+ differential to allow for some buffer each way.

Adding water:

- a) Fill aquarium about $\frac{3}{4}$ full of tap water using any clean container or tubing. 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

Step-by-Step Aquarium Set Up

water from the tap to your aquarium. 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 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:** Unplug the filter before making any adjustments or opening connections. Check the AquaStop valve to make sure the levers are fully open, allowing unrestricted water flow through the hoses. on top of the filter unit. Pump it up and down rapidly to pull water from the aquarium and force the trapped air out of the hoses and into the canister. Tilt the canister gently from side to side and back and forth while the water settles to “burp” any remaining air pockets trapped around the motor head and media baskets. Restart the power only after the pumping action produces a steady, quiet flow without sputtering or spitting air bubbles.

TROUT IN THE CLASSROOM HELP GUIDE



Aquarium Setup

Chemicals: How To Precycle Tank

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 2-3 weeks before receiving eggs. Here is how to get started:

1. Add the Sea Chem Prime water conditioner to your aquarium at the recommended dosage (per manufacturer instructions) for your aquarium capacity. (This will ensure your water is dechlorinated)
2. Add the “Special Blend” to your aquarium at the recommended dosage (per manufacturer instructions) for your aquarium capacity. (Promotes and jump starts bacterial growth)
3. Leave your chiller turned off at this time. Having 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 the food per day to initiate the Nitrogen cycle. This food will decay and produce ammonia for your system
5. 5. Now that you’ve begun your cycling process, you will want to test the ammonia and nitrite levels regularly. The levels will be elevated for some time while the N cycle is established. 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

Chemicals: How To Precycle Tank

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.

TROUT IN THE CLASSROOM HELP GUIDE

When To Feed the Fish

Day 1: Eggs arrive and are placed in an unmodified fine mesh cloth net breeder basket. The tank size is 55 gallons with a temperature range of 50 - 53 degrees Fahrenheit.

Day 5-7: Eggs begin to hatch and finish hatching in about 48 hours.

Day 7-21: Swim-up starts two (2) weeks after hatching; 50% swim-up at 48 hrs. (day 23) and 80 - 90% swim up (day 24). Remove the tank cover to allow light to encourage swimming.

Day 25: The morning after swimming-up "completes" take the smallest amount of size #0 trout food, crush it between your fingers and drop it in the breeder basket. A suggestion is to use the wide end of a flat wooden toothpick as a measuring spoon and just use about the amount of food that covers about 1/16 of an inch of the end of the toothpick. Stir the floating food with the end of the toothpick to sink some of the food to the bottom of the basket. Approximately 10% of the Alevin may feed. Expect a poor feeding response because the fish still have yolk reserves from the egg sac even though it is "buttoned -up" in their abdomen and no longer visible. DO NOT overfeed your fish. Their gut is not fully developed, and too much food can kill them.

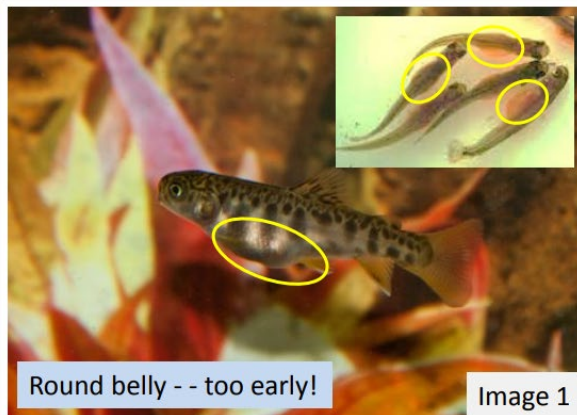
Day 26-28: The fry may be photo phobic. Observe them with overhead lighting turned off. You may need to feed them with the overhead lights off and just the ambient light from the windows lighting the tank in the morning. After about 4 - 5 days the photo phobia will subside, and the fry will swim up for the food. Continue feeding small amounts of food from the toothpick, stirring to sink some of the food into the bottom of the basket.

Feed fish once a day for the first 2 - 3 days. If the fry clears the food from the water surface in less than 5 minutes start to feed them two times a day for one to two days. Then begin to feed them 3 times a day. Then try a little more food at the end of the toothpick (say 1/8th inch). It is better to provide several small meals throughout the day than 1 - 2 larger meals. It is suggested to leave the fry in the breeder basket for two reasons: first, the food is concentrated in a small area and is easy for the fish to find and second, the aggressive feeders "teach" the weak feeders how to feed.

10 Days post Swim-up: At this time, it is suggested to feed 3 - 4 "toothpicks" of food throughout the day. The net breeder basket will need to be cleaned with a turkey baster after 7 - 10 days of feedings to remove the fish waste. Suggestions are to: - feed the fry in

the net breeder basket for about 3 - 4 weeks before releasing them into the tank. - clean the breeder basket daily with the turkey baster. - begin using finger pinches of food instead of the toothpick. If you are feeding 3 - 4 finger pinches a day, measure how much that is with a 1/16th measuring spoon and begin to use a measuring spoon to guide how much you feed your fish each day. - make notes to follow next year and allow your students to feed them only what you have premeasured with a measuring spoon for a daily ration. - not feed directly from the bag of fish food – results in guessing how much you are feeding the fish.

There are two major causes of fish mortality in the TIC program. The first is failure to pre-cycle your tank which will cause ammonia levels to injure your fish when you start to feed them. The second is releasing your fish too early (i.e., at swim-up) from the breeder basket into a large tank before they learn to feed and hunt for food. This causes the fry to starve and explains why some classrooms have perfectly good water chemistry levels, but their fish are dying.



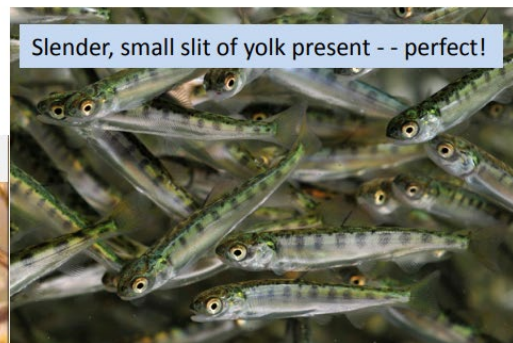
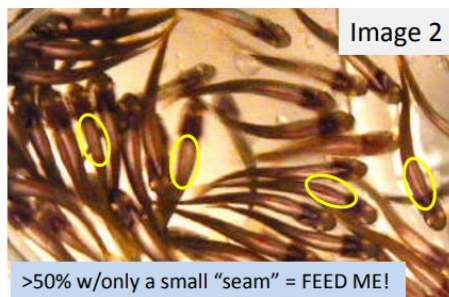
When Do I Feed?

The timing of "first-feed" is critical in young trout. Initially, fry will "swim up" to inflate their air bladders - - independent of the need for food (Image 1). It is important to delay first-feed until the vast majority of fish (>50%) have only a small slit of yolk visible; research indicates that fish still have considerable yolk reserves when only a slit is present. Feeding too early is not advantageous to the fish and only creates a fouled tank environment. If you are in doubt, place a small number of fry in a clear glass beaker/jar to examine the ventral surface (belly) from below (Image 2).

Yolk material remaining (seam appearance):

I = No!

I = Yes



IDFG – Heindel, T.I.C. – Initial Feeding

Webcam – YouTube Instructions

Create a personal channel

Follow these instructions to create a channel that only you can manage.

1. Sign in to YouTube on a computer or the mobile site.
2. Click your profile picture  > Settings .
3. Go to the **Account** section and select **Add or manage channel(s)**.
4. Click **Create a channel**.
5. Choose a profile picture, type in your name and Handle.
6. Click **Create channel**.

To start a YouTube live stream with your webcam, log in to YouTube, click the Create icon (a camera with a plus sign), then select Go Live. Choose the Webcam option, grant access to your camera and microphone, set your stream title, description, and privacy. Adjust additional settings and click Next until you reach the preview. Finally, select your webcam and microphone, and click Go Live to start your broadcast.

Before you start:

- **Verify your channel:**

Ensure your channel is enabled for live streaming, which typically requires phone number verification.

- **Check requirements:**

Your computer needs a webcam and a compatible web browser like Chrome 60+ or Firefox 53+.

Webcam – YouTube Instructions

Step-by-step instructions:

1. **Sign in to YouTube:** Open YouTube in your web browser and log in to your account.
2. **Initiate the stream:** Click the Create icon (a camera with a plus sign) in the top right corner of the page and select Go Live.
3. **Select the Webcam option:** From the live stream setup screen, choose Webcam from the available streaming methods.
4. **Grant permissions:** Give YouTube permission to access your webcam and microphone.
5. **Enter stream details:** Provide a title and description for your live stream.
6. **Configure settings:** Adjust privacy settings (public, private, unlisted), audience options, and other preferences.
7. **Preview and start:** Click Next to view the stream preview. Confirm your webcam and microphone are selected correctly, then click Go Live to begin your broadcast.

During your live stream:

- A live chat window will be available for viewers to interact with you.
- You can manage chat settings, share your screen, and access other tools from the Live Control Room.

To end the stream:

- Click the End Stream button when you are ready to finish your broadcast.
- A summary of your stream's performance will be provided, and you can edit the video in YouTube Studio afterwards.