PATIC:
Trout Care

Trout Care Egg Preparation & Placement

Keep it dark and cold!
Egg Stage- Leave all panels in place unless checking on aquarium and eggs (keep exposure under 15 minutes) since light can harm eggs. You can use a cardboard front with a cut out window.
Hatched Trout- Remove the front insulation cover. DO NOT remove all sides. There should still be insulation on both sides, back and bottom of your aquarium.

EGG PLACEMENT INSTRUCTIONS
(SEE VIDEO: TIC- Egg Shipment Unpacking and Acclimation)

1. Remove egg bag from insulated box and place in aquarium water for 30 minutes so temperature can acclimate.
2. Remove tape and zipties from bag and check temperature.
    a. If the temperature is within 5 degrees you can transfer eggs to your baskets or artificial redds.
    b. If the temperature difference is greater than 5 degrees, add a cup of water from your aquarium to your egg bag to help acclimate the eggs.
3. Using a net, scoop the eggs out of the bag and place them in the basket/ redd. **DO NOT DUMP WATER FROM THE BAG INTO YOUR AQUARIUM.**
4. Separate eggs
    a. Separate dead eggs by using spoons, eye droppers, and/or pipettes to pick up eggs. **DO NOT use your fingers**.
        i. Dead eggs appear white in color; live eggs appear orange in color and eyes are visible
        ii. Count live and dead eggs while separating. These numbers are needed to complete your survival pyramid.
5. Make sure to spread eggs out in the basket or in the gravel. This will increase survival rates.
    a. If you have placed them in a homemade egg basket, near the surface of the water, make sure there is some circulation, but not so much that the eggs get pushed all together.
    b. If the circulation on the surface pushes your eggs together, adjust your filter output by changing the angle of the output, putting it further under water, or by relocating the egg basket out of the direct flow of the filter.

After your eggs are settled into their new home, use the provided return UPS label and send the ice pack and egg box back to us.

Trout Care Basic Daily Care

Provide a "stress free" environment

(SEE VIDEO: Fish Health and Causes of Disease Part 2: Environment)

a) Locate aquarium in an area away from lots of student traffic.

b) Add your biological enhancer, 50ml of Nite Out II, twice weekly to help the nitrification process along.

c) Keep all insulation on except the front panel and keep water temperature between 55-59°F. Consistency is key. Trout will survive at either end (and outside) this temperature range but sudden changes in temperature are stressful.

d) Monitor water parameters once every other day or at least twice a week. Change water only when parameters indicate a need. Refer to the "water quality" section of this guide for guidelines.

e) DO NOT overfeed.

Daily Check List

a) Check aquarium temperatures; an increase in temperature might indicate a chiller problem.

b) Check equipment and make sure everything is working properly.

c) Once trout have hatched and are free-swimming, feed them according to guidelines provided in feeding guidelines.

d) Check and remove dead fish or debris from aquarium. Note the number of dead eggs/trout. Keep track of trout behavior in "trout journals."

e) Water changes – conduct depending upon your water quality parameters.

f) Store food in a dry, cool place.

Weekly Check List

a) Monitor your water quality parameters approximately 2 times a week (e.g. Tuesday & Thursday).

b) Check all hose connections and tighten if any are loose, check for leaks.

c) Ensure chiller and filters are working properly.

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Trout Care for Stressed Trout

(SEE VIDEO: Preventing and Treating Disease in Your TIC Aquarium)
Fish can become stressed for a variety of reasons including but not limited to: Poor water quality, too much handling or exposure (i.e. several feeding times, daily water monitoring, daily water changes or cleaning, constant student activity around aquarium), overcrowding, and/or frequent or significant temperature changes (i.e. tank increases in temperature >5 degrees within 24 hours).

If your trout seem sick or stressed:

- Remove any trout that seem infected immediately (reference your trout journals to know what seems out of the normal). Infection will spread quickly. Deformed trout can be placed back in a breeder basket where they can be kept under observation.
- Place the front cover back on the aquarium. Less interaction with humans will help decrease stress. If your students still want to see their trout create viewing doors/windows that they can flip up.
- Don't feed them for at least a day or two.
- Reduce aquarium temperature to 50-52 degrees Fahrenheit.
- Conduct a "Static Salt Bath" *(directions below)*.
- Continue to add 50ml of NiteOut II every other day.

THERAPUETIC SALT TREATMENTS

Something as simple as a salt bath often eliminates infections and/or parasites in an aquarium. Use this treatment for entire aquarium or utilize a dip treatment for a few sick/stressed trout and for new trout you are introducing to your aquarium.

Aquarium therapeutic instructions:

1. Make sure you remove dead or infected trout ASAP.
2. Make a "static salt bath treatment": This salt bath will help get rid of the bacterial problem and is used as an osmoregulatory (osmosis balancing of your trout) aid to relieve stress.
3. Do not feed trout the day of treatment.
4. Turn off any filtration but continue to run your chiller and aeration.
5. Remove about 1 gallon of water from aquarium and place in a bucket with appropriate mixture of salt (*see recipe below*).
6. Mix it up and dump back into the aquarium.
7. After 30 minutes remove 10 gallons of water and replace with 5 gallons of aged or treated water ready for your aquarium.
8. Be sure that your temperature and pH of the new water is suitable for the trout. Stagger water changes over the next 2 days.
    - 10 gallons immediately after treatment
    - 10 gallons the following day

Trout Care for Stressed Trout Continued

(SEE VIDEO: Fish Care Tips and Troubleshooting Your TIC Aquarium)
Use Hi-grade, non-iodized, granular, untreated salt with **NO additives** (Available at feed stores)
Salts to avoid: Rock salt, Water softener salt, Salt blocks

Therapeutic aquarium recipe
Lbs of salt = (salt lbs/gal) X (gal of water)
Lbs of salt = (0.0834 lbs/gal) X (53 gal)
Lbs of salt = ***4.4202 lbs***

Therapeutic dip Treatment for trout that are stressed and/or new trout coming in:

1. Place 2-3 gallons of freshwater into 2 buckets (*must be conditioned/ hardened and close in temperature to aquarium water*).
2. Mix salt in one bucket with 2-3 gallons of water to produce a 3% salt solution (113g per gallon).
3. Place aeration in the bucket.
4. Dip a net full of fish in the bucket until fish lose equilibrium (10-60 seconds).
5. Dip the net full of fish in the rinse bucket (1-2 seconds) and place in aquarium.

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

Trout Care: Mortality

SEE VIDEO: TIC Egg Removal Survival Pyramid Activity

Comparison to our State Trout and only native trout/char to PA – Brook Trout - In nature a female Brook Trout, depending on size *(spawning brook trout range between 5 – 8 inches in length with a 12 inch brook trout being a trophy)* will lay approximately 100-1,000 eggs. Out of these eggs, only about 1 – 2% (1 to 20 trout) will survive to spawning age depending on the health of the watershed, food availability, and trout stamina.

a) In general, a brook trout 5-8 inches long could be anywhere from 2-5years old. The age of a brook trout depends on several variables including type of stream, health, and available food sources.
b) Trout mortality is a natural cycle within all watersheds, including your "mini-coldwater ecosystem".

MORTALITY
a) Trout mortality is a natural cycle within all watersheds, including your "mini-coldwater ecosystem". When you receive 120-150 Rainbow Trout eggs, you may end up with 25-75 +/- to release. b) Do not be alarmed when picking out dead trout. TIC focuses on cold water resource education and learning about the importance of our State Trout, not the number OR size of trout released.

ICH PROTOCOL
If your aquarium somehow gets ich and you lose your trout because you were unable to control the spread of ich: View video - Preventing and Treating Disease in Your TIC Aquarium c) You will need to dispose of your trout (compost or flush them) d) Empty your aquarium and clean your aquarium using the end of year clean-up directions found in this manual. e) Start with new gravel and water. f) Once you are all set-up contact PA Fish and Boat Commission's TIC coordinator to get more trout.

EXPECTED MORTALITY (during the TIC school year)
Three periods during the TIC school year when you will experience trout mortality are: 1. Just after hatching (sac fry/alevin stage) **WHEN: mid/late January – early February** 2. During the "swim-up stage"; when your trout are learning to feed. Some trout never learn to feed and will die as a result. **WHEN: mid February – early March**

3. During the aquarium cycling process, stage 2 (nitrite spikes) Pre-cycling should reduce the possibility of this happening especially if NiteOut II is added as required.

WHEN: early/mid March – early April

REMOVE DEAD EGGS
Fungus that forms on dead eggs can harm healthy eggs; therefore, careful removal of these dead eggs must occur immediately. Live or viable eggs appear pink to orange. Dead eggs appear white or milky in color. Check the aquarium regularly, at least twice every day. Use an eye dropper/pipette to remove dead eggs. During the aquarium cycling process, stage 2 (nitrite spikes)

HATCHING
The embryo produces an enzyme which dissolves the egg shell. You may notice a white foam on the surface of the water during hatching time. This is normal and will not harm the trout. It is best to remove the egg shells as much as possible to remove other sources of biological activity leading to ammonia . The turkey baster can be used for this Just after hatching, eggshells must be removed to prevent fungus. When the eggs hatch expect a spike in ammonia levels. In the sentence above it is stated that egg shell are NOT a problem. This needed to be rewritten to remove conflicting information

ALEVIN/ SAC FRY
Little care is required at this stage. Check for dead fish and remove them immediately. The tiny alevin will remain in the gravel and avoid light. Keep the incubator in darkness. Do not feed the alevin until they come to the surface searching for food. As soon as you see them swimming to the surface, begin feeding with a very small pinch of size 0 food, making sure no food is left. Remember extra food = extra waste and potential ammonia spikes.

Trout Care Feeding Guidelines

The chart shows approximate dates and amounts of food to feed your trout. By following these guidelines you should not run out of food. TIC staff developed these feeding guidelines based on experience with trout in the office (TIO). **REMEMBER:** The TIC program is not about who can grow the largest trout or the most trout.

PA TIC BROOK TROUT FEEDING GUIDELINES

Guidelines are for 100-150 trout.

(Less or more trout = adjust accordingly & feed only what your trout will eat within the first 30 seconds)

Trout size	Approx. date	Size food	Teaspoons/feeding	Times
Swim-up fry *(no more yolk sac)*	End of January	**0**	1/16	3-4/day
	Mid-Late February	**0**	1/8	2-3/day
1/2- 1"	Mid March to late March	**1**	1/4	3-4/week
	Early March to mid April	**1**	1/4	4/week
1 ½"-3"	Mid April to late May	**2**	1/2	4/week

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SUGGESTIONS FOR FEEDING

Do not feed eggs or sac fry. Only feed swim-up trout.

Remember: Swim-up typically happens approximately 28 days after they hatch. ***Once your trout hatch out of their egg, slightly increase your water temperatures to 54-56 F.***

- Begin feeding AS SOON AS YOU SEE YOUR FIRST TROUT swimming up off the bottom of the basket or gravel, free of it's yolk sac. DON'T wait for all of them to swim up. Just feed a small amount to try and get the first trout to eat. Others will soon follow. It is best to keep the fry in the basket for about a week after they begin to feed so that most learn to eat. The guideline we used in MD was to wait until about 50% were coming up before attempting to feed them. You can start a bit earlier, but only with a very small pinch of food. Raising trout in redds or in the bottom of tank is not recommended
- **Swim-up trout:** Feed small amounts regularly throughout the day for the first 3-4 weeks to ensure their survival. This usually occurs by the **end of January/early February** depending on the temperature of your aquarium water (e.g. 55F+ = faster development; under 55F= slower development).
- By **mid-late February** you can reduce feeding to 1-2 times every other day. Less food = less clean-up and water quality issues. The trout will seem "hungry" all the time; remember, they are opportunistic feeders and their instinct is to eat as often as possible.

The chart above is a guide on how much you should be feeding your trout. When switching food size, mix 50% of the smaller size with 50% of the larger size. This will allow smaller trout to continue to feed while your larger trout will feed on larger size.

OVERFEEDING - What happens if I overfeed?
You may see ammonia and/or nitrite spikes, decrease in pH, trout mortality, and/or run out of food before release day. Overfeeding can also lead to cloudy water with a brown cast and a bad smell caused by decaying uneaten food.

One way to remedy overfeeding consequences is to remove excess food 20 minutes after feeding using the aquarium vacuum. If you must remove food, you should decrease the amount you are feeding. Don't feed more food than the fish consume in 5 minutes.

Feeding "smaller fish or fish at the bottom of the aquarium"
The turkey baster can be used to provide food to fish (usually the runts)that tend to hang out on the tank bottom and only consume food that happens to settle. To feed these fish fill a beaker with tank water and add a small amount of food. Use the turkey baster to suck up the food in the beaker and inject it into water towards the tank bottom. This way it avoids getting eaten by the fish that feed at the surface.

Trout Care Vacation/Holiday Preparation

SEE VIDEO: Prepare TIC Aquarium for Long School Break
If your trout have been regularly eating 2-3 weeks prior to any type of school break, they can survive 2-4 days without food. If they swim-up late or haven't started the "swim-up" prior to a school break, you will need to come in over the break to check on your trout and see if it's time to begin training them to feed.
During vacations it is best for someone to check on the aquarium to make sure the equipment is working.

Prepping for short vacations (3 or 4 day weekends)

- Feed in the morning Friday. Remove any excess food from the bottom of the aquarium using aquarium vacuum. Use a net to collect excess food on the surface. This will decrease potential ammonia spikes while you are gone. If you are concerned you may want to skip feeding all together.
- Conduct a small water change (5-7 gallons).

Prepping for mid-length vacations (7-10 days)

- Trout are wild animals that can survive leaner times; however, you should feed at least twice during a long vacation. It is natural to experience some cannibalism, which could lead into a carrying capacity lesson or survival of the fittest lesson.
- Continue with the normal feeding cycle in the days leading up to vacation. Feed in morning and afternoon. Conduct a small water change (5-10 gallons).
- Place the front insulation panel back in place and lower aquarium water to 52 degrees Fahrenheit prior to leaving.

Prepping for LONG vacation (11+ days)

- Same preparation as above.
- Come in at least twice, if possible, leaving only 3-4 days between visits.