

## Chapter 7: Trout Care



*Photos provided by TIC educator Stephanie Machmer*

[\(back to table of contents\)](#)

## Egg preparation & placement

### Provide darkness

Light can harm eggs. Keep light exposure to less than 15 minutes. Insulation placed around the aquarium will not only keep out light, but will also keep aquarium water cold.

### When to take off front cover

Once trout hatch, remove the front insulation cover. DO NOT remove all sides. There should still be insulation on both sides, back and bottom of your aquarium.

**\*\* BEFORE** your eggs arrive, if you choose not to place your eggs in the gravel you can make an egg basket by using any of the egg basket designs found here:

([http://patroutintheclassroom.org/Libraries/Resources/MAKE\\_YOUR\\_OWN\\_EGG\\_BASKET\\_3.sflb.ashx](http://patroutintheclassroom.org/Libraries/Resources/MAKE_YOUR_OWN_EGG_BASKET_3.sflb.ashx) ).

### Egg placement instructions SEE VIDEO:

[https://www.youtube.com/watch?v=ycD\\_WJ7p0bU&feature=youtu.be](https://www.youtube.com/watch?v=ycD_WJ7p0bU&feature=youtu.be)

### 1. Remove egg bag from insulated box

Take off the duct tape and castrator bands

### 2. Separate eggs

#### Tools needed:

- 2 clear plastic cups/beakers (*1 cup for dead eggs; 1 cup filled half with aquarium water and half with water from egg bag for live eggs*)
- Separation tools: spoon/eye dropper/pipette. DO NOT use your fingers.

#### How to separate:

- Dead eggs appear white in color; live eggs appear orange in color and eyes are visible
- Place aquarium water into the container for live eggs.
- Use a recommended separation tool to separate eggs into designated containers.
- Count live and dead eggs while separating. These numbers are needed to complete the “egg conformation form”.

### 3. Acclimate viable eggs

Gently place your “live egg” cup on the flat surface of your nesting basket or secure it to the inside of your aquarium so the cup doesn’t spill, but is still in contact with the aquarium water.

Allow your eggs to acclimate for at least 1 hour OR until the cup water temperature reads the same as the water temperature of the aquarium water. When temperature is the same in the cup you may add a small amount of water to adjust the eggs to the water parameters. You may add enough water until you have increased the total water volume by 100%, then your eggs should be ok to add to the aquarium.

### 4. Place your eggs into your homemade egg basket OR in the aquarium gravel

- Make sure you spread the eggs out in the egg basket OR in the gravel. This will increase survival rates.
- 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.
- Adjust your filter output if the circulation on the surface pushes your eggs all together. You can angle the output, put it further under water etc.

### 5. Use the provided return UPS label and send the ice pack and egg box back to us.

## Basic Daily Care

### Provide a “stress free” environment

- a) Monitor water parameters at least twice a week. Partial water changes are recommended (e.g. 1/month, 2/month) on a regular basis, pending your aquarium size, filtration and parameters when tested. Refer to the “water quality” section of this guide for guidelines.
- b) Add your biological enhancer (e.g. Microbe Lift Special Blend or StressZyme) as per directions, and after every partial water change, even if water quality levels are good.
- c) Locate aquarium in an area away from lots of student traffic
- d) Keep all insulation on except the front and keep water temperature at or between 54-56F
- e) DO NOT overfeed, Fingerlings should eat all food in less than 5 minutes. If any uneaten food remains, remove from aquarium to reduce the chance of an ammonia spike

### 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, old food 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) Food Storage – dry cool place. Some people keep it in the refrigerator.

### Weekly Check List

#### 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.

## Stressed/Sick Trout

### If your trout seem sick or stressed:

- Remove any trout that seem infected immediately. These trout, if infected, will spread pathogens quickly to healthy fish.
- Place the front cover back on the aquarium. Less interaction with humans will help decrease the 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 so
- Maintain COLD water temperatures (50-52 degrees Fahrenheit)
- Conduct a "Static Salt Bath" Directions are on the next page.
- Continue to add your biological enhancer as per directions (e.g. Microbe Lift Special Blend OR StressZyme)

### Fish can become stressed for a variety of reasons:

- a) Poor water quality
- b) Too much handling or exposure (*i.e. several feeding times, daily water monitoring, daily water changes or cleaning, constant student activity around aquarium*)
- c) Over crowding
- d) Temperature

### **Therapeutic salt treatments for aquarium, Dip treatment for a few sick/stressed current trout and for new trout you are introducing to your aquarium:**

Something as simple as a salt bath often eliminates infections and/or parasites in an aquarium.

**\*Note – This treatment is separate from the salt treatment that is recommended for your aquarium water.**

### **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. This is a very simple process.
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.
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 water ready for your aquarium.
  - Be sure that your new water is suitable for the trout: Temperature and pH
8. Stagger water changes over the next 2 days.
  - 10 gallons immediately after treatment
  - 10 gallons the following day

### **Therapeutic aquarium recipe. What type and how much salt:**

- 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 current trout that are stressed and/or new trout coming in:**

- Mix salt in a bucket with 2-3 gallons of aquarium water, replace water removed with freshwater into the aquarium, **NEVER** add the dip back into the aquarium
- Place aeration in the bucket
- Dip a net full of fish in the bucket until fish lose equilibrium (10-60 seconds)
- Return net full of fish back directly to your aquarium

### **Therapeutic dip treatment recipe: what type and how much:**

- Replacement fish or current fish (if possible)
- 3% salt solution
- 1 bucket with 3% salt solution
- Bucket water and aquarium water must be close in temperature
- Refrigerate/chill if necessary

***(back to table of contents)***

# Trout Care

<b>Mortality</b>	<p>In nature a female trout, depending on size (<i>spawning trout range between 5 – 8 inches in length with a 12 inch brook trout being a trophy</i>) will lay approximately 500-1,000 eggs. Out of these eggs, only about 1 – 2% (10 to 20 trout) will survive to spawning age depending on the health of the watershed, food availability, and stamina of the trout.</p> <ol style="list-style-type: none"> <li>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.</li> <li>Trout mortality is a natural cycle within all watersheds, including your “mini-coldwater ecosystem”. When you receive 200-300 eggs, ultimately you will end up with an ending number of 25-75 to release.</li> <li>Do not be alarmed when picking out dead trout. TIC focuses on cold water education and brook trout natural heritage, not the number OR size of trout released.</li> </ol>
<b>Ich protocol</b>	<p>If your aquarium somehow gets ich and you lose your trout because you were unable to control the spread of ich:</p> <ul style="list-style-type: none"> <li>You will need to dispose of your trout (compost or flush them)</li> <li>Empty your aquarium and clean your aquarium using the end of year clean-up directions found in this manual.</li> <li>Start with new gravel and water, and begin your cycling process again</li> <li>Once you are all set-up contact PA Fish and Boat Commission’s TIC coordinator to get more trout</li> </ul>
<b>Expected mortality</b> (during the TIC school year)	<p>Three periods during the TIC school year when you will experience trout mortality are:</p> <ol style="list-style-type: none"> <li>Just after hatching (sac fry/alevin stage) <b>WHEN: mid/late November – early December</b></li> <li>During the “swim-up stage”; when your trout are learning to feed. Some trout never learn to feed and will die as a result. <b>WHEN: mid December – early January</b></li> <li>During the aquarium cycling process, stage 2 (nitrite spikes) <b>WHEN: early/mid January – early February</b></li> </ol>
<b>Remove dead eggs</b>	<p>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.</p>
<b>Hatching</b>	<p>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.</p> <p>Just after hatching, eggshells must be removed to prevent fungus. When the eggs hatch expect a spike in ammonia levels.</p>
<b>Alevin/sac fry</b>	<p>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.</p> <p>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.</p>

(back to table of contents)



## 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				
<i>Guidelines are for 100-150 trout.</i>				
<i>(Less or more trout = adjust accordingly &amp; feed only what your trout will eat within the first 30 seconds)</i>				
Trout size	Approx. date	Size food	Teaspoons/feeding	Times
Swim-up fry (no more yolk sac)	Late November	0	1/16	3-4/day
	Early January	0	1/8	2-3/day
1/2- 1"	Mid January to late January	1	1/4	3-4/week
	Early February to mid March	1	1/4	3/week
1 1/2"-3"	Mid March to late May	2	1/2	3/week

### 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.* This will ensure an earlier yolk sac absorption date.

- 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 begin swimming around. Just feed a small amount to try and get the first trout to eat. Others will soon follow.
- Swim-up trout: **Feed small amounts regularly throughout the day** for the **first 3-4 weeks** to ensure their survival. This usually continues through Christmas break. If your trout have been eating regularly 2-3 weeks prior to Christmas break they will be able to survive 2-4 days over break without food. IF they swim-up late you will need to come in over Christmas break to feed your trout to be sure they survive through January.
- By mid January you can reduce feed 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?

1. Ammonia and/or nitrite spikes
2. Trout mortality
3. Run out of food before release day
4. Decrease in pH

One way to remedy overfeeding consequences is to remove excess food 20 minutes after feeding using a turkey baster. If you have to remove food, you should decrease the amount you are feeding.

[\(back to table of contents\)](#)

## Vacation/holiday preparation

Your trout will survive over a 2-4 day weekend without any food, but 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 a turkey baster. 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 partial water change (20-25%).

### **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.
- Conduct a partial water change (20-25%) 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.

*(back to table of contents)*



## Release day

Your hard work has paid off and your release day has arrived. This day can be delightful for herons, kingfishers and fish in the stream. To keep predation to a minimum, place your fingerlings into calm water with available cover from predators.

**Your trout should be released into the waterway you have listed on your Designation of Agent letter. This is the only stream you have state permission to release your trout into.**

Materials needed:	
✓	Sturdy cooler, tupperware or bucket with a loose-fitting lid
✓	Ice made with dechlorinated water -- or -- ice in a Ziploc bag or 2-liter bottle with labels removed
✓	Battery-powered air stone/ bait aerator
✓	Release containers (a cup per student, smaller buckets)
✓	Boots and weather appropriate clothing for your students
✓	Towels for drying student hands
✓	Optional: Stream study equipment if you would like the students to conduct a stream study/water monitoring tests to determine the health of the stream they are releasing their trout into

Travel preparation:	
*	If possible check the temperature and parameters of the release stream, to make the transition easier on the fish, you may be able to adjust your chiller to match the stream temperature a few days prior to release.
1.	Fill cooler or bucket half full with water from aquarium (be sure you can lift the cooler). The reason for filling only half way is that air introduction into the water is more important than the depth of the water. The slight jostling of the water in the bucket/cooler will keep adding oxygen to the water
2.	Transfer trout fingerlings to cooler or bucket using a small net; MAKE SURE you have plenty of buckets and/or coolers available for the number of trout you will be releasing.
3.	DO NOT overcrowd your buckets/coolers. ( <i>i.e. do not put more than 50 trout per 5 gallon bucket</i> )
4.	Add ice baggies to water -- but monitor the temperature, taking care to keep it as consistent as possible
5.	Insert and start air stone or bait aerator.
6.	Place lid over bucket or on cooler, to keep trout from jumping out, but tight enough to pink your aerator tube.

Release site instructions:	
a.	Once you have arrived at the stream, slowly acclimate your fingerlings to their new environment;
b.	Monitoring the temperature of your cooler or bucket, slowly add water from their new stream, one or two cupfuls at a time every 5 minutes. The slow addition of water will gently change the temperature and water chemistry of your transport system;
c.	Don't allow the water temperature to change more than a few degrees every 10 minutes;
d.	Once the bucket/cooler temperature is within one or two degrees of the stream/aquarium temperature, remove the fingerlings to their release container (cup/small bucket);
e.	To release the trout, lower their container into the stream and gently tip it to let them out.