

Welcome!



pennsylvania
FISH AND BOAT COMMISSION

LOCATE

"CHAT" function on your device –

- Make sure your "chat" is set for "everyone"
- Find the chat box in the bottom right corner of your screen
- In the chat box – Type your (First and Last Name)

TECH CHECK

AUDIO and VIDEO - Can you hear and see us?

MUTE – Make sure you are on mute to decrease background noise.

MAKE SURE YOU HAVE

Materials needed for class

- Pen/paper
- Snacks and drink
- Any materials you were asked to have with you

Agenda



pennsylvania
FISH AND BOAT COMMISSION

Welcome and Introductions

PA TIC Basics

**Introduction to the PA TIC
program**

PA TIC Partnerships

PA TIC Curriculum Overview

Questions and Wrap-Up



pennsylvania
FISH AND BOAT COMMISSION



Pennsylvania Trout in the Classroom New Teacher Workshop

Presented By: Amidea Daniel (NC ROEC) and Rachael Hersh (SC ROEC)
Resources Provided By: Coja Yamashita (Fish Health Unit Leader) and Scott Ray (PFBC Species Recovery Biologist)

Agenda



pennsylvania
FISH AND BOAT COMMISSION

Welcome and Introductions

PA TIC Basics

Introduction to the PA TIC program

PA TIC Partnerships

PA TIC Curriculum Overview

Questions and Wrap-Up

Trout In the Classroom (TIC)



pennsylvania
FISH AND BOAT COMMISSION

Partnership between:

Pennsylvania Fish and Boat Commission (PFBC)

Mission: *To protect, conserve, and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities*

Pennsylvania Trout Unlimited (PATU)

Mission: *To conserve, protect, restore, and sustain Pennsylvania's coldwater fisheries especially our wild trout resources.*



Our Organizations

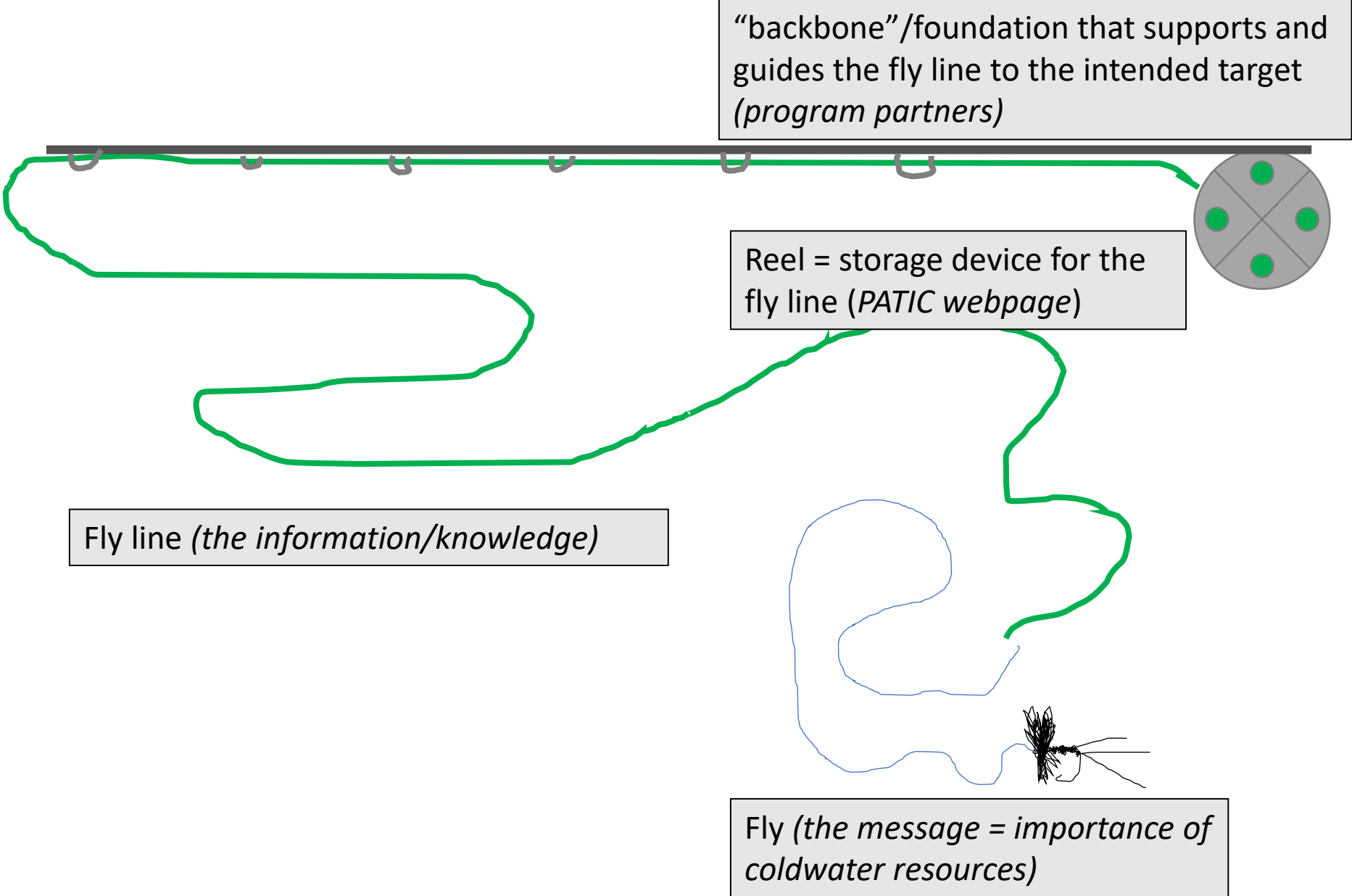


pennsylvania
FISH AND BOAT COMMISSION

We are user-funded, independent, organizations relying on fishing license sales and/or memberships to continue our efforts in protecting, conserving, and enhancing the Commonwealth's Aquatic Resources and Provide Fishing and Boating Opportunities.



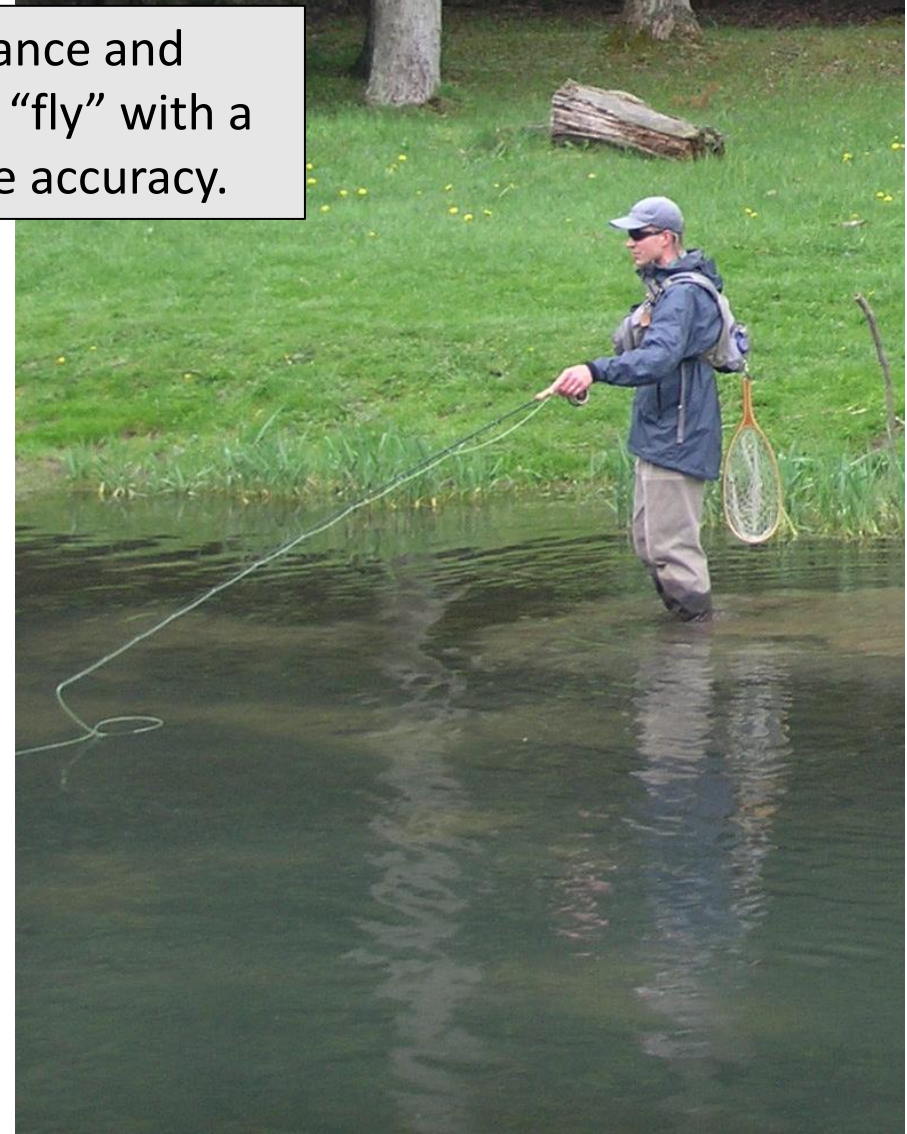
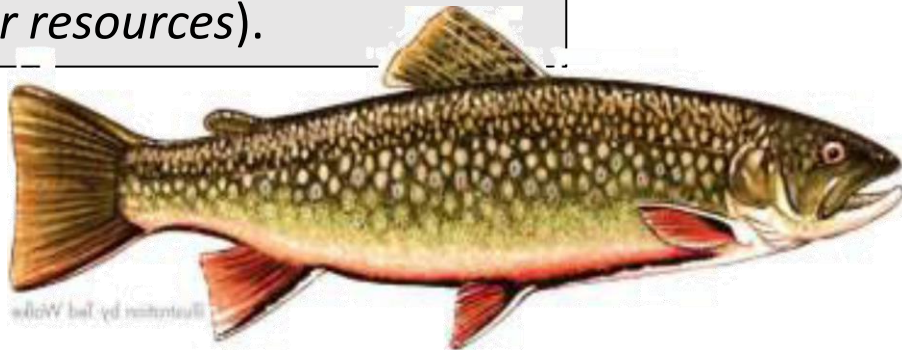
TIC framework



TIC framework continued

Anglers (*teachers*), using the guidance and support of the rod will deliver the “fly” with a steady, yet gentle, grip and precise accuracy.

If all components (*line, reel, rod and angler*) work together to provide a seamless “presentation”, the trout (*the students*) will “rise to the fly” and share the message (*importance of coldwater resources*).





Welcome to the TIC Community!

- 2008 TIC became a statewide program
 - 90 classrooms participated
- TIC teachers from 2022-2023 school year reported
- *(383 of 400 reported)*
 - Reaching 49,500+ students
 - Taught 8,700+ hours on TIC related topics
 - 200 school districts
 - 61 Counties
- 2023-2024 school year = 430 classrooms participating

TIC Annual Registration and Assessment



pennsylvania
FISH AND BOAT COMMISSION

PA TIC Registration

- **Registration deadline August 31st**
- Egg application & designation of agent letter
- Registration link sent after workshop

PA TIC End of Year Report

- **End of year report deadline August 31st**
- Must complete along with registration to participate the next school year.
- What we collect:
 - Number of students
 - Estimated Hours of teaching TIC related topics
 - Release Numbers
 - Program partner hours
 - Amount spent on program
 - Estimated hours of teaching fishing related topics



Trout In the Classroom Objectives



pennsylvania
FISH AND BOAT COMMISSION

Students

1. Raise trout by observing and monitoring a coldwater ecosystem in a classroom aquarium
2. Identify stages of the trout life cycle
3. Recognize Brook Trout as "indicator species" for healthy coldwater streams
4. Describe conditions needed for trout survival in your classroom aquarium and in nature



Agenda



pennsylvania
FISH AND BOAT COMMISSION

Welcome and Introductions

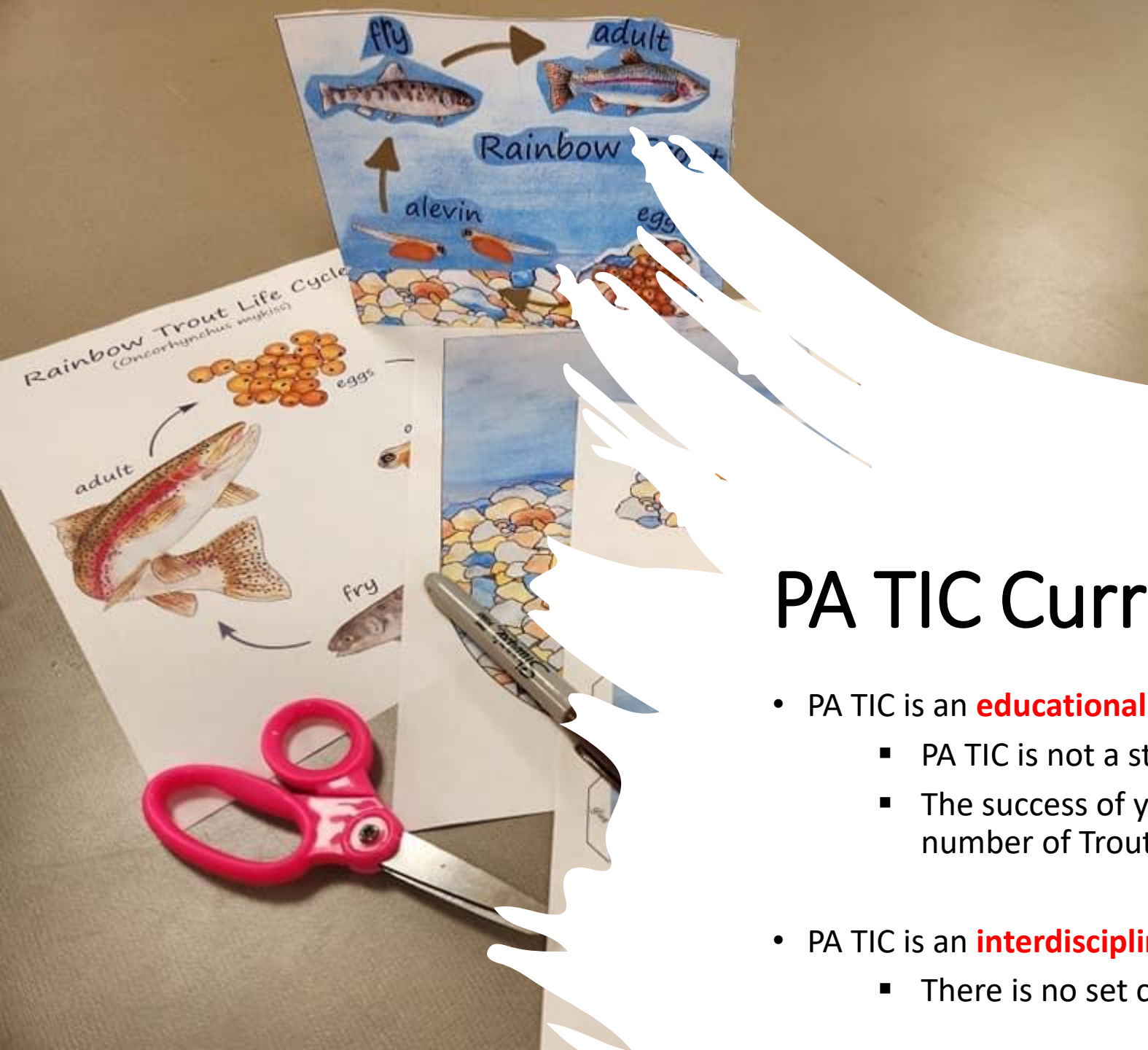
PA TIC Basics

**Introduction to the PA TIC
program**

PA TIC Partnerships

PA TIC Curriculum Overview

Questions and Wrap-Up



PA TIC Curriculum Overview

- PA TIC is an **educational program**.
 - PA TIC is not a stocking program.
 - The success of your TIC program is not measured in the number of Trout released.

- PA TIC is an **interdisciplinary program**.
 - There is no set curriculum that you must follow.

PA TIC curriculum resources



pennsylvania
FISH AND BOAT COMMISSION

Build your TIC program to fit your classroom needs

- Start by reviewing the PATIC webpage
 - Review the Curriculum Connections page for TIC resources
 - Check out what happens and when on the PATIC timeline
- Review the following videos
 - Aquarium set-up
 - Aquarium cycling
 - Fish health
 - TIC aquarium troubleshooting and fish care
 - Making connections
 - Virtual field trip videos

Additional online resources

[PA TIC Timeline](#)

[Trout Unlimited National Website](#)

[PFBC Activities and Education Portal](#)

[PA Trout In the Classroom Facebook Page](#)

TeachEngineering.org



PA Trout In The Classroom (PATIC)

Private group · 436 members

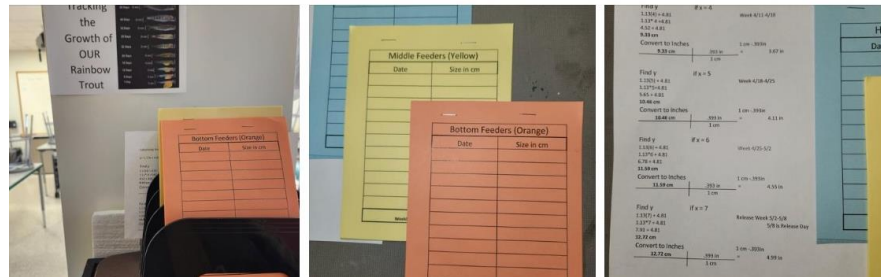
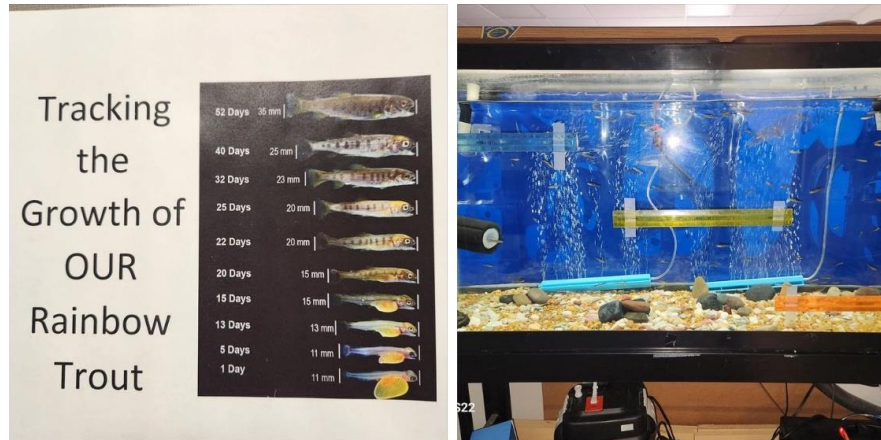
Join group



PA TIC curriculum resources continued



pennsylvania
FISH AND BOAT COMMISSION



Agenda



pennsylvania
FISH AND BOAT COMMISSION

Welcome and Introductions

PA TIC Basics

**Introduction to the PA TIC
program**

PA TIC Partnerships

PA TIC Curriculum Overview

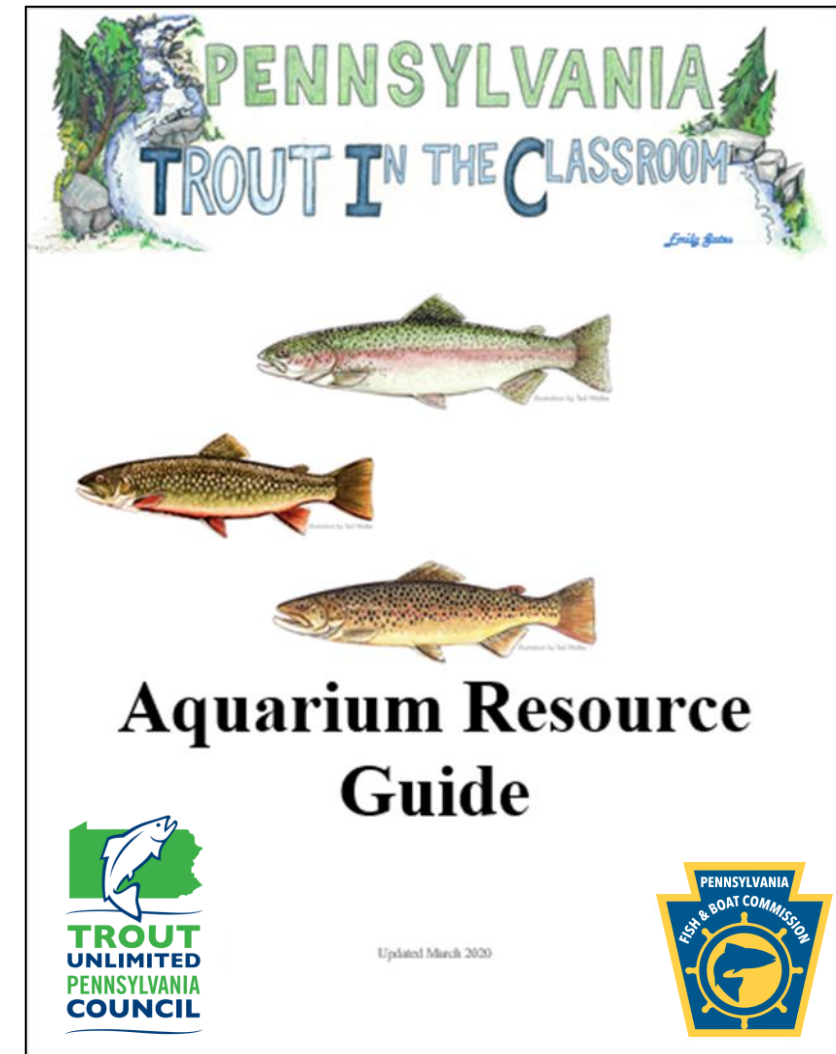
Questions and Wrap-Up

Resource guide

- reference the guide as needed
- worksheet examples (*water quality sampling etc.*)
- aquarium set-up and take down
- trout care (*e.g. feeding; mortality expectations, acclimation*), troubleshooting

Online

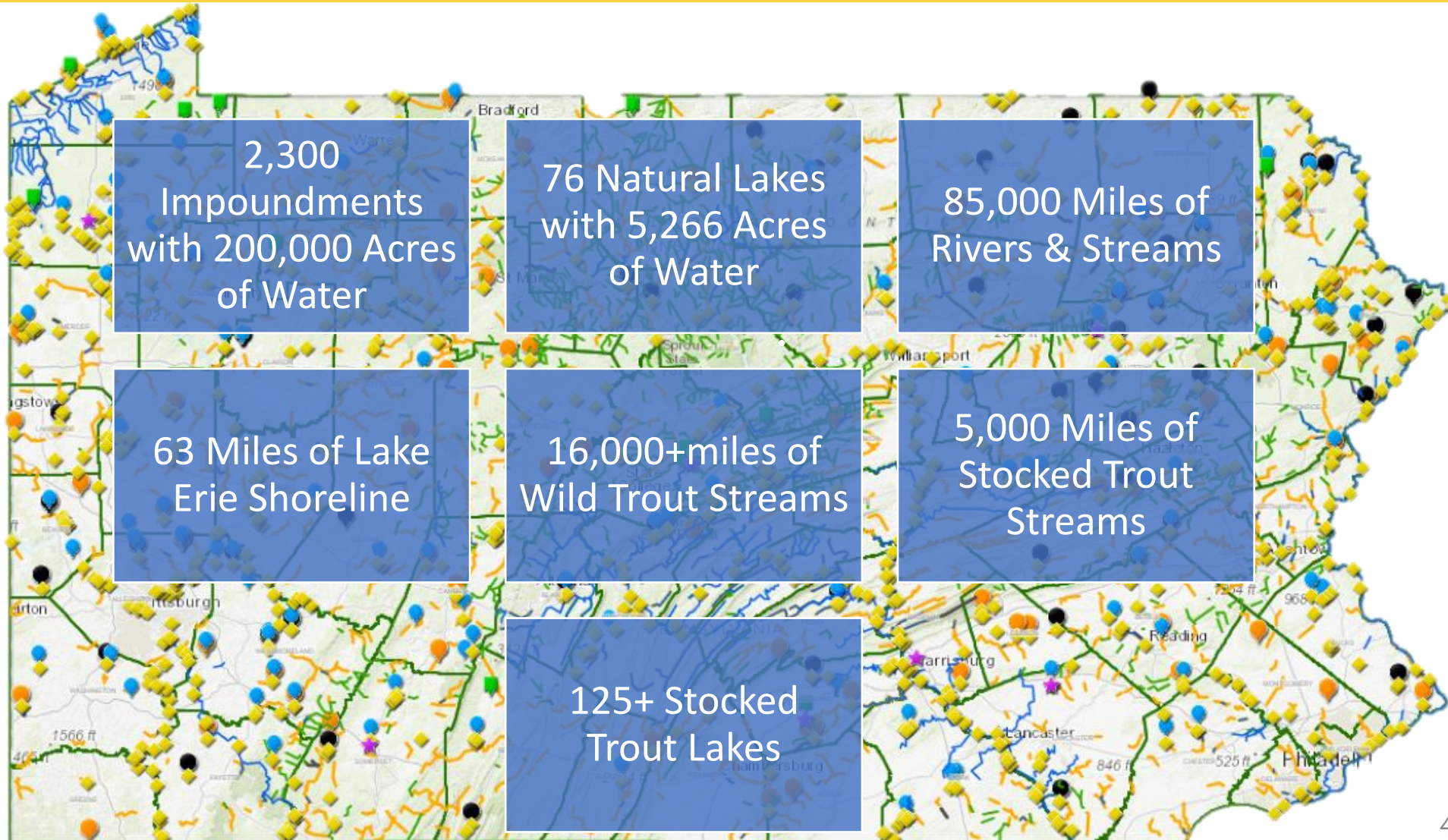
- Print out for student use
- Use “ctrl+f” to search the online document



Pennsylvania Waterways



pennsylvania
FISH AND BOAT COMMISSION



2,300
Impoundments
with 200,000 Acres
of Water

76 Natural Lakes
with 5,266 Acres
of Water

85,000 Miles of
Rivers & Streams

63 Miles of Lake
Erie Shoreline

16,000+ miles of
Wild Trout Streams

5,000 Miles of
Stocked Trout
Streams

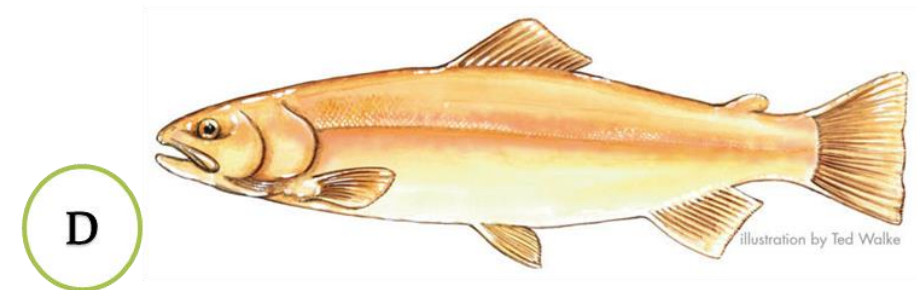
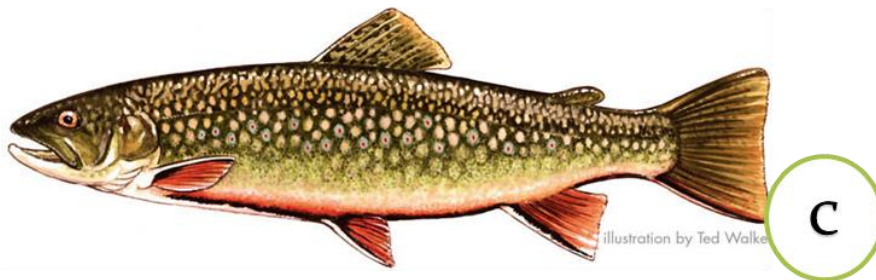
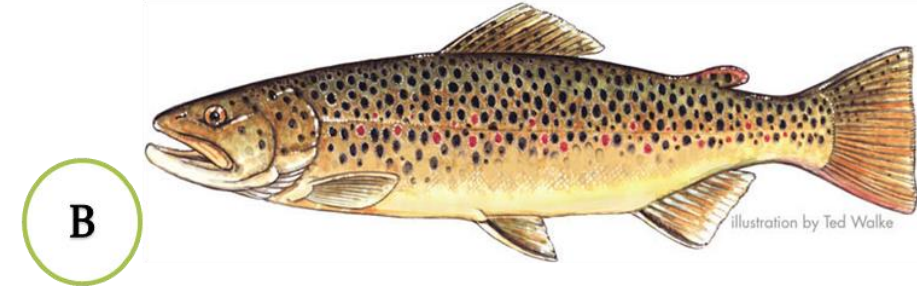
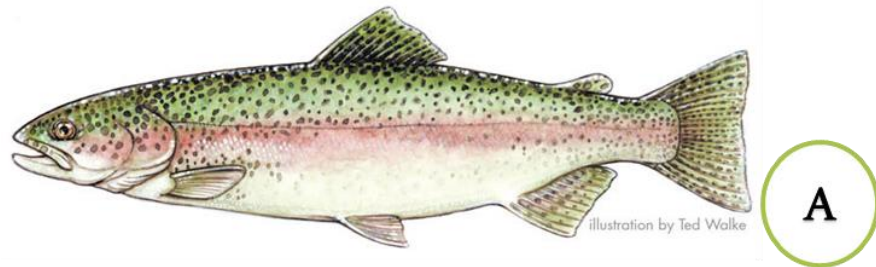
125+ Stocked
Trout Lakes

Trout found in PA



pennsylvania
FISH AND BOAT COMMISSION

Of the following Salmonids, which is native to Pennsylvania's waterways?



Pennsylvania's native trout



pennsylvania
FISH AND BOAT COMMISSION

Brook Trout (*Salvelinus fontinalis*)

Even though PA TIC utilizes Rainbow Trout, it is essential to discuss the importance of native fishes with your TIC students.



TIC egg shipment



pennsylvania
FISH AND BOAT COMMISSION

When

- Occurs in mid-late January
- Ships from one central location

Important notes

- Inform all teachers and staff at school of expected arrival
- Save the “return label” ship back immediately
- Have a severe weather contingency plan
 - Inform PATIC staff if box doesn't arrive



Egg arrival and acclimation



pennsylvania
FISH AND BOAT COMMISSION

Acclimation: As soon as the box arrives –

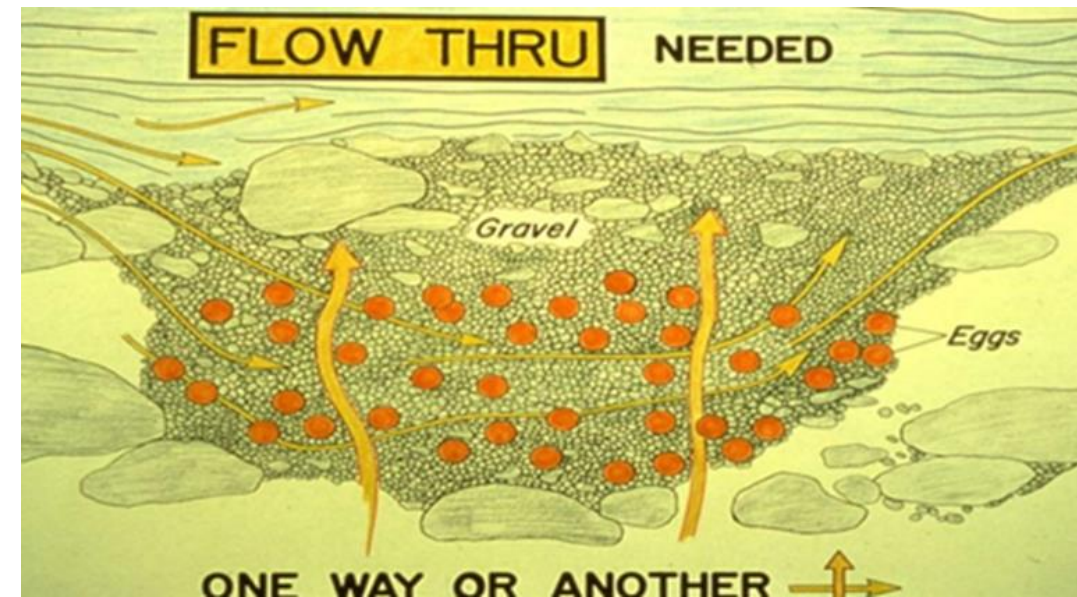
- 1) Open box
- 2) Take the bag out of box
- 3) **DO NOT open the bag.**
 - Once the bag is open you lose oxygen trapped inside
 - The water inside is ridden with ammonia and becomes more toxic
- 4) Float the bag in aquarium water for 20-30 minutes.
- 5) Open the bag and test the water temperature.
 - If the water temperature is within five degrees of tank water temperature, scoop the eggs out with a net and release them into your egg basket.
 - **DO NOT ADD THE BAG WATER INTO YOUR TANK.**
- 6) If the water temperature is not within five degrees of your tank water, add water from your aquarium immediately to mix it until you get to that point.

Trout life cycle: Eyed eggs



pennsylvania
FISH AND BOAT COMMISSION

- Visible developed eyes
- Require
 - steady, oxygenated water flow
 - darkness
- No feeding
 - Nutrients supplied by egg yolk
- In nature, 1-2% survival



Track TIC trout survival



pennsylvania
FISH AND BOAT COMMISSION

Track survival

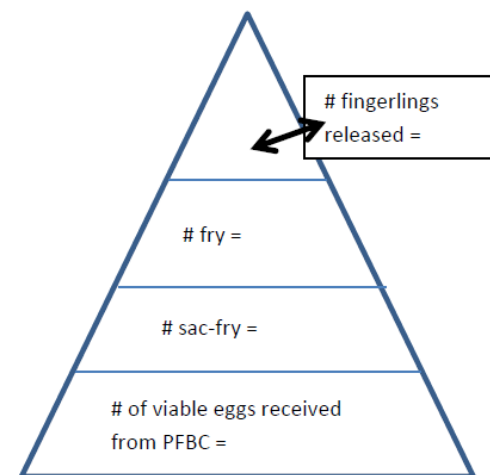
- Day 1 = Egg arrival
 - Take a photo of eggs you placed in basket
- OR
 - Take a photo of eggs in egg bag
 - Have students look at photos to count number of eggs received



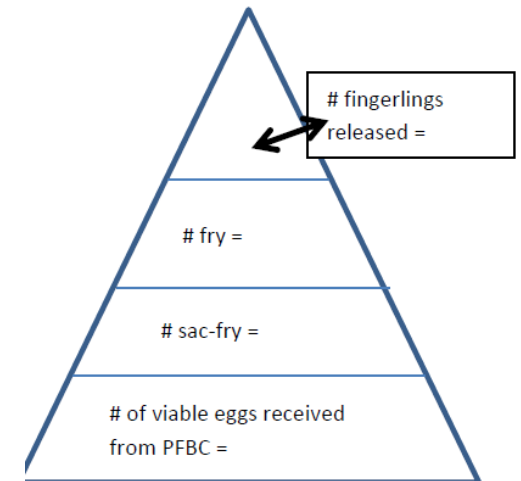
Activity for the school year: Survival pyramid

- Track survival of your TIC trout
- Create 3 survival pyramids
 - Actual survival pyramid – track all TIC year
 - Natural survival pyramid
 - Predicted survival pyramid
 - Students estimate their TIC trout survival
- Compare your TIC survival pyramid with the natural one

Predicted TIC survival pyramid:



Actual TIC survival pyramid:



Aquarium “redd” or egg basket



pennsylvania
FISH AND BOAT COMMISSION

Aquarium “redd”

- Place eyed eggs in aquarium gravel

Egg basket

- Artificial means of creating a trout redd
 - * Not provided in your TIC equipment
- Placed at the top of your aquarium
 - 3-4 inches beneath the aquarium water surface
- Make sure the eggs are spread out
 - Decreases fungus growth and loss of eggs



Darkness can be fun



pennsylvania
FISH AND BOAT COMMISSION

Creating darkness with foam board for eggs doesn't have to be boring

- Be creative
 - Decorate the foam board
 - Use it as a lesson: design the ideal trout habitat
 - Design own science experiment (*e.g. cup of cold water; insulated cup vs. non-insulated cup OR cup in sun vs. cup in dark area of class*)



Trout life cycle: Sac Fry/Alevin



pennsylvania
FISH AND BOAT COMMISSION

Sac Fry/Alevin

- Newly hatched Trout
- No feeding
 - Yolk Sac: nutrient supply
- Darkness



Trout life cycle: Swim-up fry



pennsylvania
FISH AND BOAT COMMISSION

Swim-up fry

- Yolk sac absorbed
- Start feeding
 - As soon as you see the 1st trout swim-up
 - Feed small amounts a few times a day to teach them to eat
- Feed only what they will eat



Feeding Guidelines



pennsylvania
FISH AND BOAT COMMISSION

- Guidelines are approximate
- Systems are unique
- A more scientific method - [BIO002-FeedGuidelines2021.pdf \(bio-oregon.com\)](https://bio-oregon.com/BIO002-FeedGuidelines2021.pdf)

PA TIC TROUT FEEDING GUIDELINES				
**Guidelines are for 100-150 trout.				
<i>(Less or more trout = adjust accordingly & 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)	mid – January through early February	0	1/16	3-4/day
	Early February Through mid March	1	1/4	3-4/week
1/2- 1"	Mid March to Mid April	1	1/4	3-4/week
	Mid April to mid May	2	1/2	3/week
1 ½"-3"	Mid May to late May	2	1/2	3-4/week

Trout life cycle: Fingerling



pennsylvania
FISH AND BOAT COMMISSION

Size

- 1 - 3 inches

Notes

- Follow suggested feeding guidelines
- Cannibalism is natural and will occur
- Over crowding: early release a few of your trout
 - Signs of over crowding
 - Can't keep up with water changes based on water chemistry
 - Lots of cannibalism despite additional feedings



Lifecycle question



pennsylvania
FISH AND BOAT COMMISSION

Using the photos below, which image depicts sac fry also known as alevin?



A



B



C



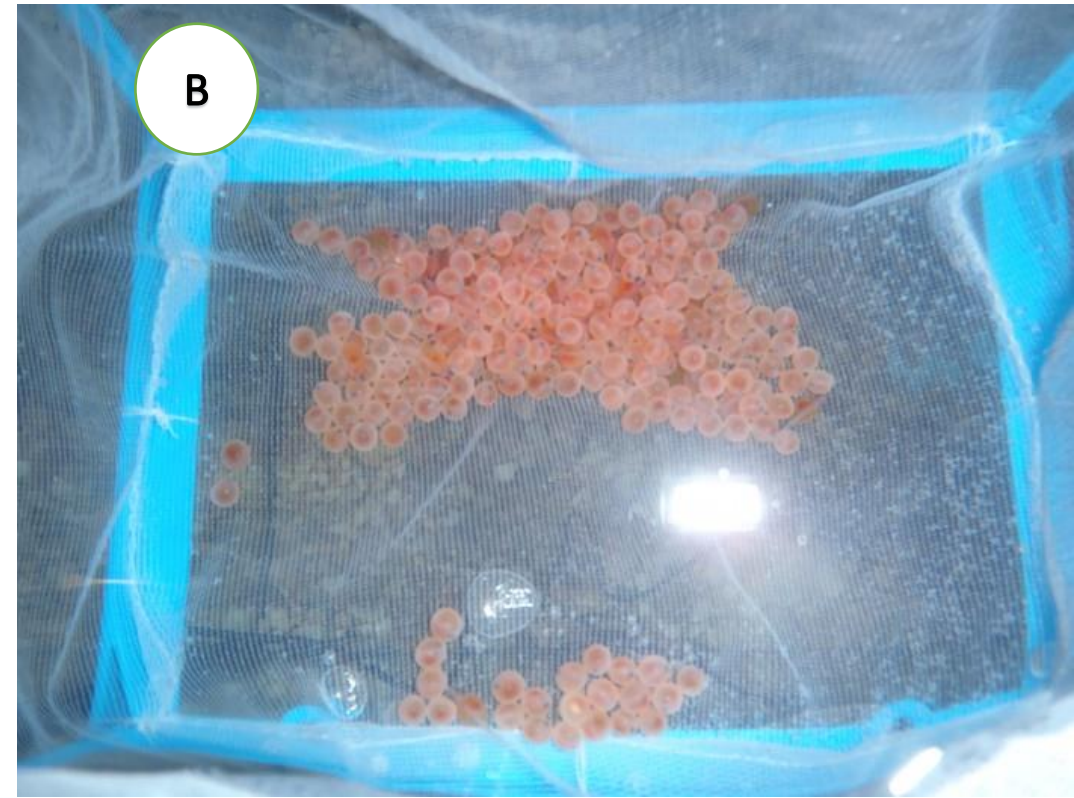
D

Egg placement question



pennsylvania
FISH AND BOAT COMMISSION

Which photo depicts proper placement of eggs in the egg baskets?



Feeding guideline question



pennsylvania
FISH AND BOAT COMMISSION

Which life stage depicts when you can begin feeding?



A



B



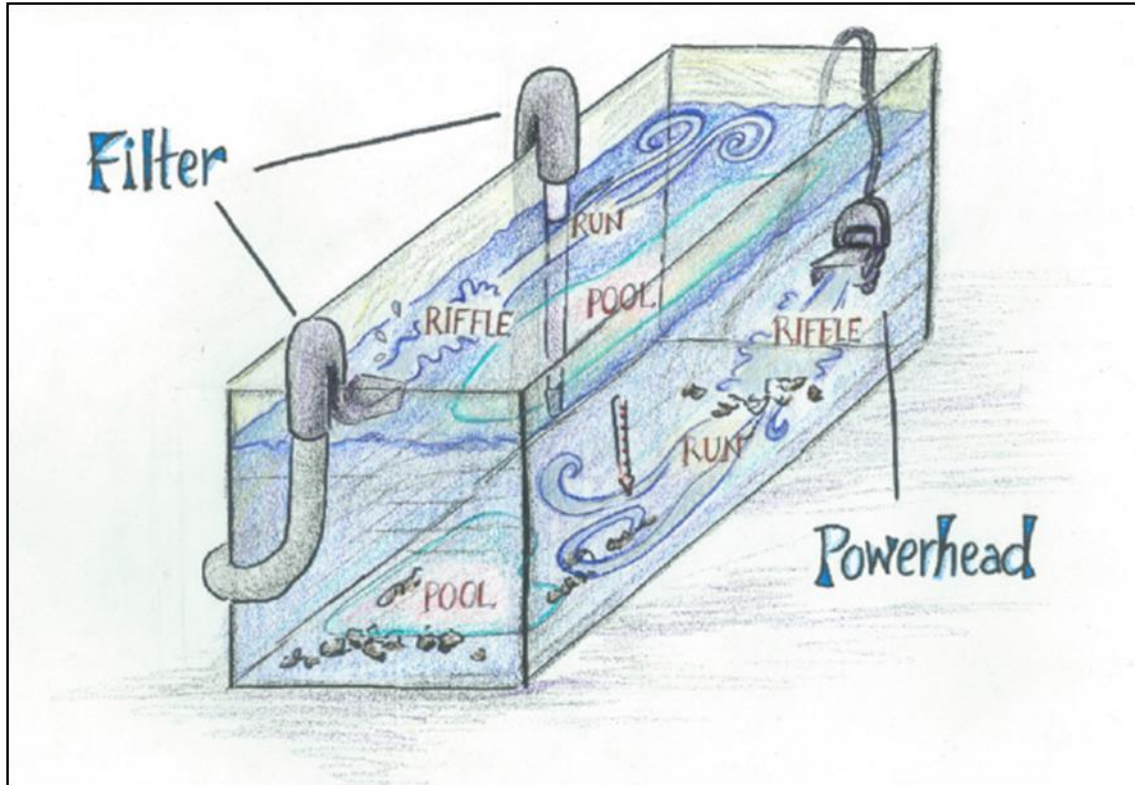
C

Making the connection



pennsylvania
FISH AND BOAT COMMISSION

Aquarium to nature comparison

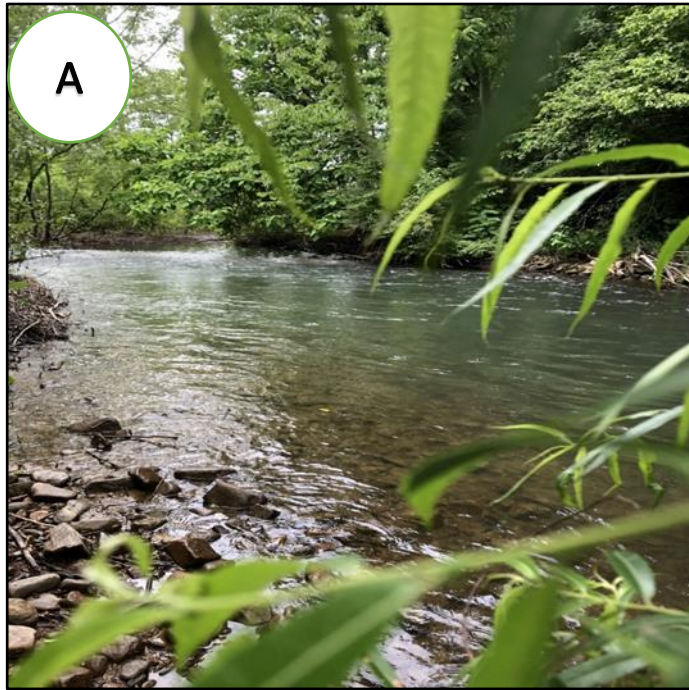


Habitat needs



pennsylvania
FISH AND BOAT COMMISSION

Which habitat will most likely sustain a population of healthy Trout?



PA TIC aquarium set-up



pennsylvania
FISH AND BOAT COMMISSION

Red arrows

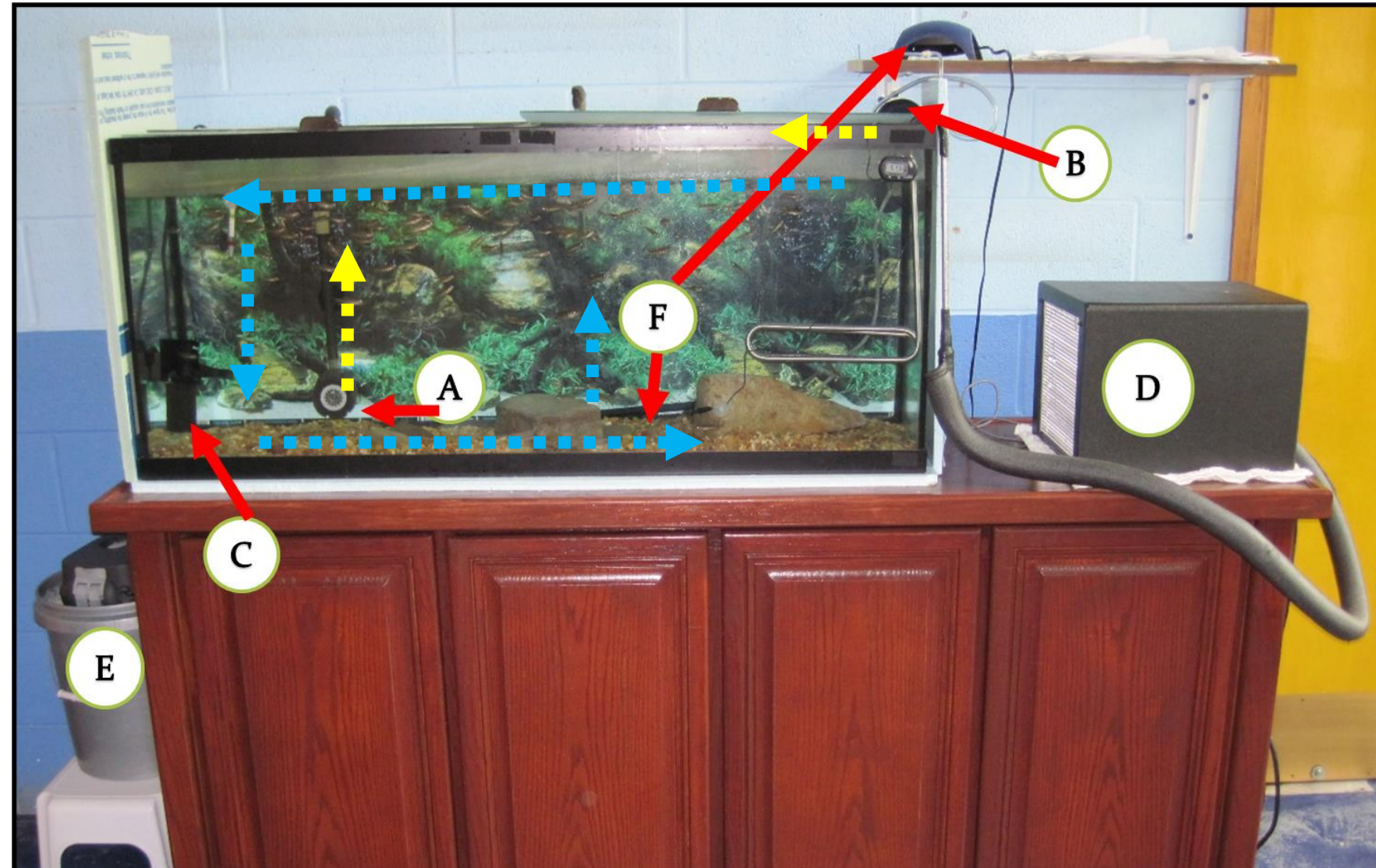
- A = Filter intake
- B = Filter Output
- C = Powerhead
- D = Chiller
- E = Filter
- F = Air stone and pump
- G = Thermometer

Blue arrows

Water flow direction

Yellow arrows

Filter intake & output



TIC Troubleshooting Steps



pennsylvania
FISH AND BOAT COMMISSION

Steps

1. Check the PATIC Resource Guide
2. Consult your program Partner
3. Consult PATIC Facebook group
4. Contact PATIC team! RA-troutclass@pa.gov

Details to provide when sending troubleshooting information

1. Email subject line – Troubleshooting and main issue
2. Provide
 - Water quality data
 - Data prior to current situation and now (*temperature; pH; ammonia; nitrites; nitrates*)
 - Details on trout/egg appearance and behavior
 - Photos, video, short descriptions of when change occurred and anything that happened leading up to current situation
 - Additional details
 - When did you notice the change – after a water change, long break, feeding etc.

Release days



pennsylvania
FISH AND BOAT COMMISSION

Plan ahead

- Begin planning in October/November.
- Reach out to partner organizations: *TU, DCNR, Conservation Districts, Penn State Master Programs, etc.*

You MUST Have the following with you on your release day!

- Approved Stocked Trout Waterways
- Designation of Agent Letter
- Approved List



pennsylvania
FISH AND BOAT COMMISSION

April 7, 2022


Cody Whipple
PA Fish and Boat Commission
595 East Rolling Ridge Drive
Bellefonte, PA 16823

Re: Designation of Agent of the Executive Director

Registered Trout In the Classroom (TIC) participants (list attached) and you are hereby designated as Agents of the Executive Director of the Pennsylvania Fish and Boat Commission pursuant to Section 302(b) of the Fish and Boat Code, 30 Pa.C.S. §302(b), subject to the following limitations:

1. This Agent Status permits the possession of no more than 300 trout eggs, fry or fingerlings for the sole purpose of educational use during the TIC Program.
2. The trout raised through your TIC program must be released in the stocked trout waterway listed next to your classroom name in the attached list. (Look for your last name. The list is organized alphabetically by last name.)
3. A copy of this designation must be kept with the trout at all times. You must show this document, with some other positive form of identification during the TIC program, to any officer authorized to enforce the Fish and Boat Code.
4. This designation will expire automatically on June 30, 2022.

Sincerely,


Timothy D. Schaeffer
Executive Director

Attachments: TIC Approved Release Site Listing

cc: BLE Regions
BOEM ROECs
BOEM Agent File

Release days continued



pennsylvania
FISH AND BOAT COMMISSION

- Educational Field Trip – Rotating Stations
- Partnerships
- The culmination of your PA TIC program!



Agenda



pennsylvania
FISH AND BOAT COMMISSION

Welcome and Introductions

PA TIC Basics

Introduction to the PA TIC program

PA TIC Partnerships

PA TIC Curriculum Overview

Questions and Wrap-Up

Program Sponsors vs. Program Partners

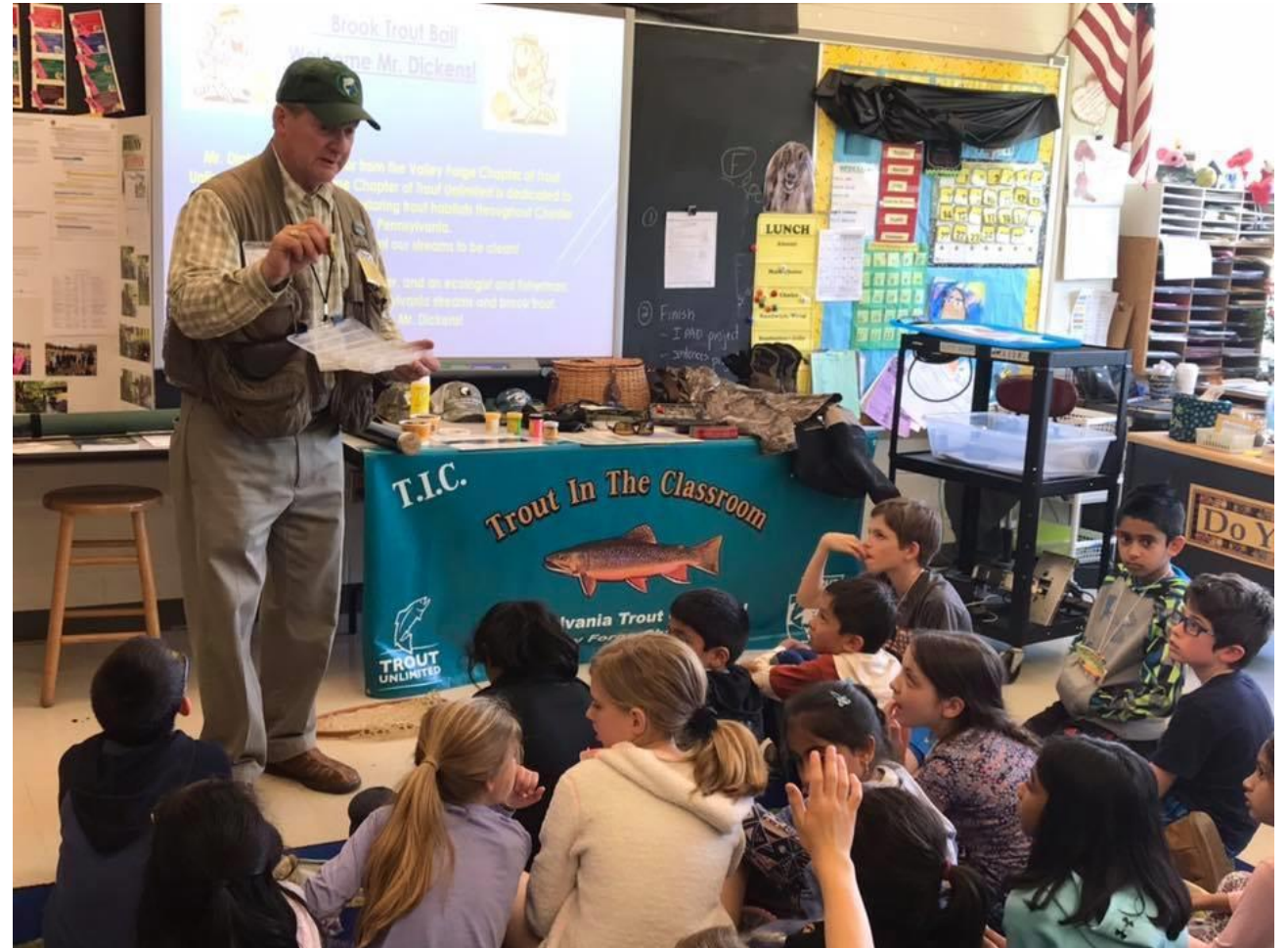


Program Sponsor:

An organization or individual that provides funding to support the TIC program in a classroom but does not engage TIC students in other ways.

Program Partner:

An organization or individual that actively engages TIC students in various presentations, lessons, and activities relating to the TIC program to help teachers achieve the highest rate of program success possible.



Role of Program Partners



Program partners may:

- Visit classrooms to provide educational programs.
- Help with aquarium setup and troubleshooting.
- Provide outdoor educational field trips and experiences.
- Plan and/or engage students in release day activities.
- Engage students in local watershed projects.
- Expose students to careers in E-STEM (environmental science, technology, engineering, and math)
- Provide funding for equipment and field trips.





Potential Program Partners

- Trout Unlimited Chapters
- Watershed Associations
- County Conservation Districts
- Conservancies
- Sportsmen/Conservation Organizations
- Penn State Master Watershed Stewards
- PA Senior Environment Corps
- PA Fish & Boat Commission
- PA Game Commission
- PA DCNR (Bureau of State Parks)
- PA DEP
- Environmental Education Providers
(<http://www.paee.net/find-ee-near-me.html>)



Program Sponsors



Potential sponsors may include:

- TU chapters, watershed associations, and others discussed under “partners”
- Community foundations
- Local businesses
- Corporations
- County/municipal governments
- Water authorities
- Fraternal clubs (Elk, Moose, Lions, etc.)
- See PA TIC website for grant possibilities
 - “Funding” tab

Be creative and think outside the box when brainstorming partners and sponsors for your TIC program!



Agenda



pennsylvania
FISH AND BOAT COMMISSION

Welcome and Introductions

PA TIC Basics

Introduction to the PA TIC program

PA TIC Partnerships

PA TIC Curriculum Overview

Questions and Wrap-Up

QUESTIONS?



pennsylvania
FISH AND BOAT COMMISSION



Thank you!



pennsylvania
FISH AND BOAT COMMISSION



THANK YOU!

Pennsylvania Trout in the Classroom is growing fast! Everything you do helps foster coldwater conservation! Your PA TIC program continues to educate and grow the conservation, preservation, and enhancement of the Commonwealth's Aquatic Resources.