

# Trout in the Classroom



# MVTU TIC Presentation Sections

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- Introduction
- Trout Species
- Trout Life Cycle
- Indicator Species
- TIC Preparation
- Trout Food
- Adaptation
- Predators and Prey
- Trout Habitat
- Side Channels
- The Release



# TIC A Hands-On Learning Activity

- STUDENTS in charge
- Connect to real-life water quality issues
- Learn about fish and wildlife
- Seek solutions
- Work as a team



# Why Trout in the Classroom

- Learn about fish, their life cycle, and how to keep them healthy
- Field trip to a local stream
- Learn how to do a long-term science project and problem solve
- Learn about caring for our planet





# Trout in the Classroom

**BROOK TROUT**

**THE STATE FISH  
OF NEW YORK**



# Native Eastern Brook Trout in the Adirondacks



Here for thousands of years – since the ice age



# Trout Species

7

**Brook Trout**

**1-1 ½ years**



# Trout Species

8

**Brook Trout**

**2 - 3 years**





# Trout Species

9

Brook Trout

5 years



# Trout Species

10

**Brown Trout**

**Western  
“Blue Spot”**



# Trout Species

11

## Brown Trout





# Trout Species

12

Rainbow Trout

“Red Band”





# Trout Species

13

## Rainbow Trout



# Trout Species

14

## Cutthroat Trout



# Trout Species

15

## Cutthroat Trout



# Trout Life Cycle

16



Adult

Parr



Eggs

Alevin



Fry





# Where do Brook Trout eggs come from?

17

Redd



# Where do our eggs come from?

18



**SUNY Morrisville Hatchery**



# Stripping the eggs

19





# Storing eggs in the dark at hatchery

20





# Carefully transfer to the tank



# Alevin

22

- ▶ Eggs hatch
- ▶ Alevin
- ▶ Egg Sac



# Alevin

23



Use their egg sacs for nourishment



# Fry

24

Starting to eat food





# Parr

Salmon  
6 months



# Parr

## Brook Trout



# Adult

27

Brook Trout  
2 years  
Parr missing



# Adult

28

## Brook Trout Spawning Colors





Brook Trout are an indicator species

**Tell us how well we are taking care of Earth**



**They like cold, clear, clean fresh water**



What are some other indicator species?



**River Otters also like clear, clean fresh water**



What are some other indicator species?



**Monarch Butterfly – plant pollination**



What are some other indicator species?



**Spotted Owl – old growth (big) forests**





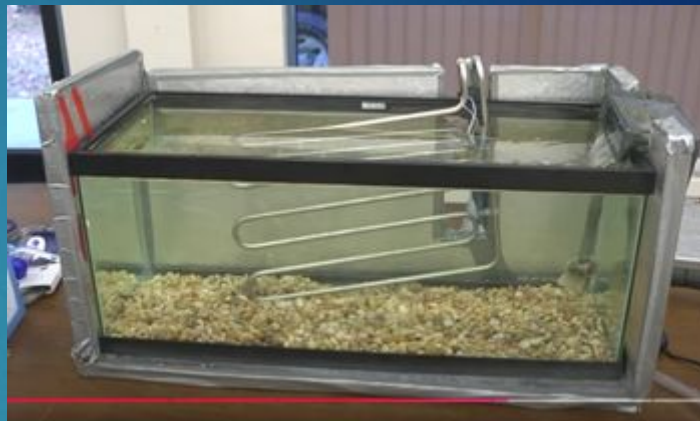
What are some other indicator species?

- **Long-Eared Bats – forests and light**
- **Algae Blooms – too much fertilizer in water**



# TIC Prep – Equipment Setup

- TANK
- CHILLER
- FILTER
- BUBBLER
- HOLDING CELL
- ROCKS – HABITAT
- COVER/INSULATION PANELS
- FOOD
- TEST KITS, THERMOMETER



# TIC Prep – Water Conditioning



# What do we test?

- TEMPERATURE
- PH – ACIDITY
- AMMONIA
- NITRATES/NITRITES
- FREE CHLORINE
- DISSOLVED OXYGEN





# Why do we test?

**FOR THE  
EGGS AND  
FISH TO  
SURVIVE**



# Monitor the tank and keep records

- Create a record keeping table and journal
- Daily record of key tests and any observations
- Water and tank changes
- Egg and fish losses
- Photos help too
- Some classes even have a live tank webcam



# Students monitor the tank and keep records

Trout in the Classroom Observation Log									
Teacher_____					TIC TU Contact_____				
School/Class_____					TIC TU Email/Phone_____				
Start Date_____				Starting #__		Eggs __		Alevin__ Fry__	
		Removed		Water Quality					Comments
Date	Who	Eggs	Fry	Temp	pH	Amm	Nitrate	Nitrite	Observations





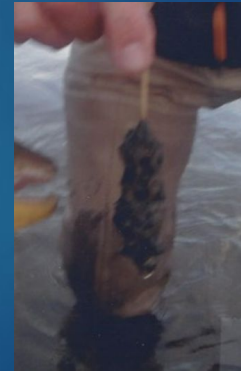
# The Release

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# Trout Food

41





# Trout Food

42

Insects:

Mayfly



# Trout Food

43

Insects:

Golden  
Stonefly  
Nymph





# Trout Food

44

Insects:

Caddis Cases



# Trout Food

45

Insects:

Salmon Fly

(Orange Stone Fly)



# Trout Food

46

## Stream Sampling





# Trout Food

## Worms





# Trout Food

48

Other:

Mice



# Adaptation

49

Cutthroat Trout



# Adaptation

50

Brook Trout  
“Brookie”



# Adaptation

51

## Brook Trout





# Adaptation

52

Spawning  
Cut-bow



# Adaptation

## Brook Trout



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# Predators/Prey

54

Alaska

Brown Bear





# Predators/Prey

55

Bald Eagle  
And other large  
birds





# Predators/Prey

56

Ducks

Merganser



# Predators/Prey

57

## River Otter



# Predators/Prey

58

Otter





# Predators/Prey

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## Bigger Fish





# Predators/Prey

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Humans



# Trout Habitat

Cold, clear, pollution free water

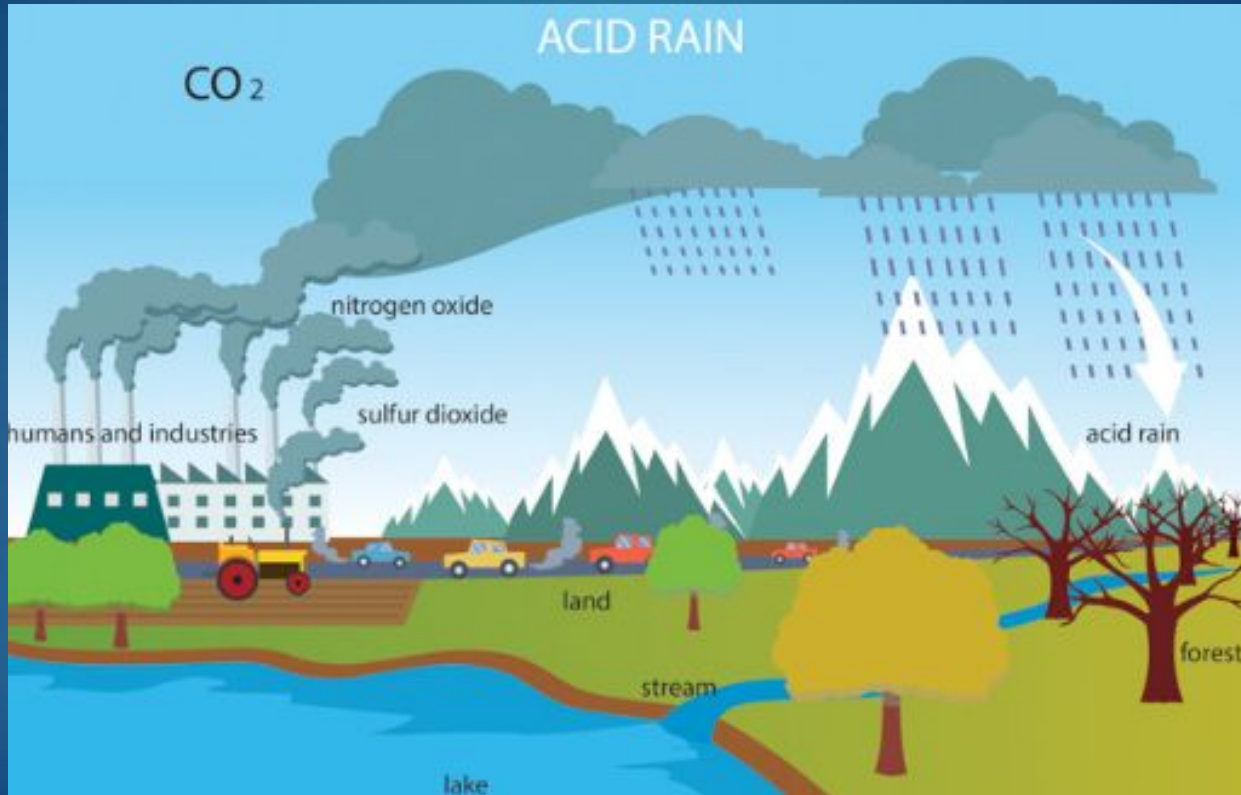
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# Trout Habitat

## Effects of Acid Rain

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# Trout Habitat

Free from Invasive Species

63



Whirling Disease





# Trout Habitat

Oxygen

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# Trout Habitat

## Food Supply

65





# Trout Habitat

## Protection from Predators

66



### WHAT IS GOOD TROUT HABITAT?

Intact forested riparian area provides shading to keep temperatures cool.

Root systems stabilize streambanks.

Downed trees and boulders form diverse and complex habitats for different fish species and sizes.

Clean gravels for spawning.





# Side Channels

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Chesman  
Canyon  
Colorado



# Side Channels

69

## Mastodon Molar



# Side Channels

70

Surprise!





# Side Channels

71

Another  
Surprise!



# Why TIC

72

Humans

Animals

Birds

Fish

Insects



All depend on healthy clean streams and lakes





# Advice from a Trout



## Advice from a TROUT™

Show your true colors

Be a good catch

Don't be lured by shiny objects

Scale back

Cherish clean water

Know when to keep your mouth shut

Don't give up without a fight!

 Your True Nature® 

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# Trout in the Classroom

THANK YOU

GOOD LUCK  
WITH THE  
PROJECT

