

# WATERSHED WARRIORS

## TEACHER LESSON PLAN | GRADES 6-8

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### PRE-DOCUMENTARY MINI-LESSON 10 MINUTES

Use the Grades 6-8 Pre-Documentary Mini-Lesson slides to help students prepare for the *Watershed Warriors* documentary.

#### **Learning Objectives:**

At the end of this Mini-Lesson, students will...

- Be able to explain how a watershed is formed.
- Be able to define an ecosystem.
- Be able to identify one indicator species.

### PRE-DOCUMENTARY MINI-LESSON – CONTINUED

15 MINUTES

- **Slide 1:** *Watershed Warriors* is a documentary about the Friends of the Fox River non-profit organization who help to teach people about river ecosystems and water health. Before we watch the documentary, we will answer these questions together as a class:
  1. What is a watershed?
  2. What is an ecosystem?
  3. What are indicator species?
- **Slides 2 & 3:** Ask students “What is a watershed?” After taking a few student answers, show slide 3 to share the definition.
- **Slide 4:** Share how rivers make up watersheds.
- **Slide 5:** Show slide 5 and read aloud.
- **Slides 6 & 7:** Ask students “What is an ecosystem?” After taking a few student answers, show slide 7 to share the definition.
- **Slide 8:** Show slide 8 and read aloud.
- **Slides 9 & 10:** Ask students “What is an indicator species?” After taking a few students answers, show slide 10 to share the definition.
- **Slides 11 & 12:** Show slides 11 & 12 and read aloud.
- **Slide 13:** Introduce the documentary.

# WATERSHED WARRIORS | GRADES 6-8

## DOCUMENTARY SCREENING

13-26 MINUTES

Students should answer the grades 6-8 video questions while watching the *Watershed Warriors* documentary.

We recommend playing the video twice if time allows.

## VIDEO QUESTIONS

5-10 MINUTES

### Learning Objectives:

At the end of these video questions, students will:

- Be able to explain what Friends of the Fox River does.
- Be able to list three species to look for in a water quality sample.
- Be able to explain how humans impact water quality in the environment.

Discuss the following questions as a class:

### Answer Key:

#### 1. What inspired Jenni to paddle more than 200 miles of the Fox River?

**A:** *Growing up near the river and playing in and along it as a kid.*

#### 2. What is the Friends of Fox River (FOTFR) organization?

**A:** *It is a non-profit organization that teaches people about the Fox River and water quality health.*

### VIDEO QUESTIONS – CONTINUED

5-10 MINUTES

**3. Water quality testing is all about analyzing river health. Why might water quality be important to track for people living downstream?**

*A: Pollution flows downstream so if there is pollution going into the river upstream, those living downstream are affected.*

**4. What are three organisms Gary looks for to analyze river health? List them.**

*A: Any of the following: flies, aquatic worms, snails, leeches, and crayfish.*

**5. Fertilizers are known to pollute rivers by “runoff”. Where does Jenni say this happens the most and what could be changed to prevent it from happening?**

*A: Jenni says that fertilizer from the golf course can get into the river if there is no barrier between the edge of the golf course and the water. Constructing a barrier or leaving enough space between the edge of the golf course and the river’s edge would help prevent these chemicals from going into the river.*

**6. What evidence is there to show mussel populations are affected by dams?**

*A: Mussels cannot survive in the murky water above a dam. They need flowing water to filter feed.*

### VIDEO QUESTIONS – CONTINUED

5-10 MINUTES

**7. Mussel populations are impacted by dams. What can we infer about human-ecosystem interactions?**

*A: Dams prevent water from flowing. Mussel populations can exist below the dam but cannot exist above it.*

**8. “\_\_\_\_\_ science is crucial to how we all live. It adds value to our lives and adds value to the community.”**

*A: Environmental*

**9. Why do Gary and Jenni believe it is important to teach the next generation about the Fox River?**

*A: Gary and Jenni believe that by teaching the next generation about the Fox River, they will inspire others to care about the water quality of the river and continue to make the Fox River cleaner and healthier.*

**10. Explain why healthy rivers are worth protecting.**

*A: Answers may vary: Healthy rivers support biodiversity. Biodiversity is important for a healthy ecosystem to “survive and thrive.” Fresh water is also a natural resource necessary for life on Earth. All people and animals need it.*

### **MUSSELS: NATURE'S WATER FILTER CREATURES ACTIVITY** **50-90 MINUTES**

#### **Learning Objectives:**

At the end of this activity, students will:

- Be able to define a hypothesis.
- Be able to demonstrate how to order water tests based on turbidity.
- Be able to explain why a mussel is called a “filter feeder.”

#### **Instructions:**

##### **Part 1**

1. Pass out the Mussels: Nature's Water Filter Creatures worksheet to students.
2. Read aloud the activity introduction.
3. Place students in groups of two or three for this activity.
4. Read aloud the materials checklist and ensure each group has all supplies necessary for the activity.
5. Read aloud the directions "Form a Hypothesis," and have students answer the questions in their groups.
6. Read aloud the directions "Create a Funnel," and have students follow along and complete the funnels.

### MUSSELS: NATURE'S WATER FILTER CREATURES ACTIVITY - CONTINUED 50-90 MINUTES

#### Part 2

1. Read aloud the instructions for the "Filtration Test."

*The instructor may choose to have the student test do one kind of filter at a time (i.e. the whole class does their coffee filter tests, the whole class does their sponge tests, etc.) or may choose for all groups to test filters at their own pace and then wait for further instructions.*

2. Read aloud the "Results Analysis" and have students answer the questions in their groups.

3. Have each group read aloud their answers and compare as a class.

*For 8th grade, the instructor should record the data from each group's data table/chart and demonstrate how to find mean, median, mode, and range for each filtration material.*

4. Give the students time to complete the discussion questions on their own before reviewing the answers as a class.

### MUSSELS: NATURE'S WATER FILTER CREATURES ACTIVITY – CONTINUED

30–45 MINUTES

#### Discussion Questions Answer Key:

**1. Is the polluted water a solvent, mixture, or pure substance?  
How can you tell?**

*A: The polluted water is a mixture because it has solid particles inside a liquid.*

**2. How does the water look after filtering through the cotton gauze compared to the gravel?**

*A: The water has fewer solid particles after filtering through the cotton gauze compared to filtering through the gravel.*

**3. What part of this experiment represents a mussel's gills?**

*A: The filtration materials (coffee filter, cotton gauze, fabric, sponge, and gravel) all represent the mussel's gills.*

**4. If there is a lot of pollution and muck, then a mussel has to do a lot of filtering. How does pollution and mucky water affect a mussel's gills and respiration?**

*A: Pollution and a lot of muck can build up in the mussel's gills, make it sick and kill it.*

**5. What might happen to the river's water health if mussels disappear from the ecosystem?**

*A: Answers may vary: If mussels disappeared from the ecosystem, the river's water health would decline/get worse/become unhealthy/become more polluted.*



## WATERSHED WARRIORS | GRADES 6-8

### MAKE IT LOCAL

30+ MINUTES

#### Learning Objectives:

At the end of Make It Local, students will:

- Be able to list three local rivers/lakes.
- Be able to locate a local river conservation organization.
- Be able to explain a plan with the supplies needed for a river cleanup.

The instructor may assign the research portion of the activity for students to complete as a homework assignment or have the students complete it independently during class.

Whether at home or in class, students need to have access to the internet via iPads/tablets/chromebooks/laptops to complete the research portion.

The Make It Local activity may be duplicated and assigned electronically in Google Classroom or printed out for students. To extend the activity, the instructor may have students prepare to share their completed Make It Local plans in small groups and prepare a presentation to the class via PowerPoint or Google Slides.

### MAKE IT LOCAL – CONTINUED

30+ MINUTES

#### **Read aloud this script for the Introduction in class:**

Towards the end of the documentary, Gary says “Environmental science is crucial to how we all live. It adds value to people’s lives individually and adds value to the community.”

Through speaking with the public at Friends of the Fox River educational events like “Fox River Day” Gary and Jenni encourage people to join in evaluating river water quality and provide experiences to connect with the Fox River. They hope to inspire people to care for the river ecosystem through personal experiences like water quality testing with macro-invertebrates and activities like kayaking.

During this final activity, we will learn about issues affecting our local environment, discover how local organizations are already addressing these matters, and plan how to get involved.