

Healthy Wetlands

Grade 5 – Science and Technology



Lesson Details

Grade Level:	5	Curriculum Links:	Science and Technology	Time Needed:	1.5 hours
Learning Goal	To learn about the importance of wetlands in relation to water filtration and the role turtles play in a wetland. Students will also learn how ecosystems are connected, and without one element, how ecosystems can collapse.				
Success Criteria	By the end of this lesson, students will understand a turtle's role in wetland ecosystems. Students will also understand the role clean water plays in the environment, recreation, and human health.				
Specific Expectations	<p><i>Understanding Life Systems: Human Organ Systems</i></p> <ul style="list-style-type: none"> Assess the effects of social and environmental factors on human health, and propose ways in which individuals can reduce the harmful effects of these factors and take advantage of those that are beneficial; Evaluate the impact of society and the environment on structures and mechanisms, taking different perspectives into account (e.g., the perspectives of golfers, local bird-watching groups, families, a school board), and suggest ways in which structures and mechanisms can be modified to best achieve social and environmental objectives. 				
Materials Needed	Worksheet (attached), Pencil, 1 Jug of Clean Water, 4 Jugs of Water Mixed with Coffee Grinds, Four 2L Bottles (empty), 4 Coffee Filters, 4 Sponges, 4 Bags of Small Rocks, 4 Bags of Leaf Litter (if possible, use a plant with roots instead of leaf litter), Access to a Sink.				

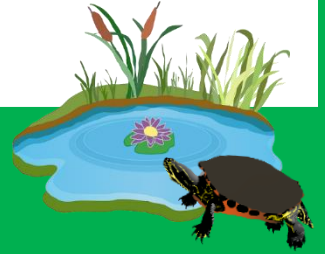
Lesson Description

Overview	Students will learn about water filtration and wetland health through a hands-on water filtration activity.
Activity	<ol style="list-style-type: none"> Before the lesson, cut the 2L bottles in half and insert the open mouth of the bottle into the bottom half – acting as a funnel. Begin by holding up two glasses of water, one clean and the other “dirty” (filled with coffee grinds). Ask the students which glass they would rather drink from and/or swim in? Why? Then discuss how “dirty” water in nature becomes polluted (e.g. soil erosion or agricultural lands, pollutants, bacteria, etc.). Ask the students what would happen if the dirty water went directly into the lakes, or even our homes? Explain the importance of wetlands and turtles in wetlands. You may also share some photos of healthy wetlands. Next, divide the class into 4 groups and hand out the activity worksheet (attached) with supplies (one of each item/bag) to all students instructing them to begin the water filtration activity, following the steps provided on the worksheet. After the students have completed the activity, discuss the importance of wetlands as nature's filtration system and any observations the students wish to share from the activity. End the lesson by discussing how wetlands are important for human health and

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	ask the students what would happen to our bodies if we did not have clean water?
Background Information	<p>Wetlands are crucial to the health of water systems. If a wetland was part of the human body, it'd be known as our kidneys. They filter water and regulate the distribution of its flow. Without wetlands, bacteria and other pollutants would flow directly into our lakes and rivers.</p> <p>It is important to note that wetlands are also a home to many species, not just plants. Turtles are most often found in wetlands. They are considered keystone species, in other words, incredibly valuable and integral to the health of the water. Likewise, wetlands provide turtles a home and contribute to their overall well-being. Wetlands teach us the relationships between the environment, plants, and animals. Wetlands have systems to filter water, which benefits turtles. In return, turtles provide valuable services to wetlands. When turtles are young, they consume small fish and mammals, and dead carcasses. As they get older, turtles eat mainly vegetation and seeds – then when they roam, they spread these seeds creating new vegetation that will filter the water.</p>
Blacklist Masters	<ul style="list-style-type: none"> • Worksheet (attached) • Video Link(s): Wetlands and Turtles in Ontario • For more information, please visit https://www.turtleguardians.com/sample-page/turtle-habitats/
Place-Based Learning	After the lesson, plan a visit to a wetland or local water area so students can see which plants work to help filtrate the water. Discuss with the students where the water in your community comes from and how it is cleaned.
Inquiry-Based Learning	<p>Using Confirmation and Structured Inquiry, students will use their observational skills to confirm the importance of wetlands and turtles for cleaning water.</p> <p>Ask the students:</p> <ul style="list-style-type: none"> • What pollutes water? • Which glass would you rather drink from and/or swim in? Clean or “dirty”? • What would happen if the “dirty” water went directly into the lakes? • What would happen if we didn’t have turtles to help clean the water? • How important is clean water to human health? • How do we use clean water?
Turtle Stories	What other natural objects (like plants) help to filter water? Have you visited a wetland or other water area recently? What was the condition of the water like? Clean or “dirty”? What types of plants were in the water, or were there plants missing that affected the filtration of the water? Try this experiment at home and use other items to try to filtrate the water. Did anything work better? Worse? Students are encouraged to share their experience, pictures, and worksheets on the Turtle Stories website, found here: https://www.turtlestories.ca/
Turtle Guardian Program Links	After completing Level 1 (Ontario Turtle Identification) of the Turtle Guardian Program , students can move onto Level 2 (Wetland Watchers). In this level the students learn how to monitor wetland habitats, contribute to knowledge of wildlife-biology in the region, and are able to adopt a wetland to monitor for turtles, birds, and other animals. For more information, please visit https://www.turtleguardians.com/what-is-a-turtle-guardian/

My Notes

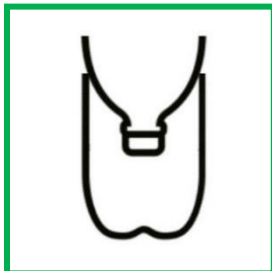


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You have been given 1 bottle (cut in half and turned into a funnel), 1 jug of “dirty” water, 1 coffee filter, a sponge, a bag of small rocks, and a plant. With these supplies you are going to become a water filtration expert.

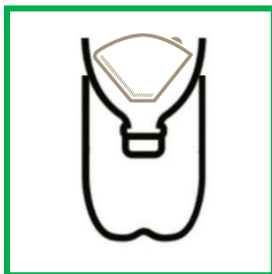
NOTE: After each observation you must pour the water and debris back into the jug and, using a sink, clean the funnel and bottle so no dirty water remains.

Step 1. Pour the dirty water into the funnel without a filter. Has anything changed about the water colour or amount of debris within the water? Write down your observations. Clean the bottle.



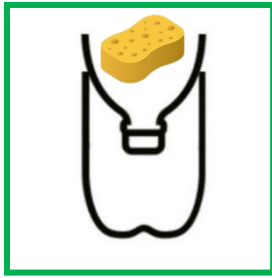
No Filter (Control) Observations:

Step 2. Place a coffee filter into the funnel. Pour the dirty water into the funnel. Has anything changed about the water colour or amount of debris within the water? Write down your observations. Clean the bottle.



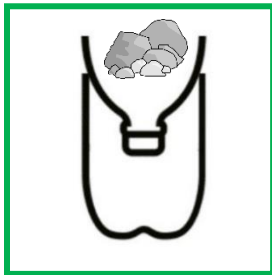
Coffee Filter Observations:

Step 3. Place the sponge into the funnel. Pour the dirty water into the funnel. Has anything changed about the water colour or amount of debris within the water? Write down your observations. Clean the bottle.



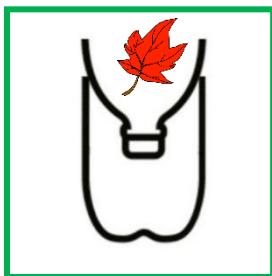
Sponge Observations:

Step 4. Place the rocks into the funnel. Poor the dirty water into the funnel. Has anything changed about the water colour or amount of debris within the water? Write down your observations. Clean the bottle.



Rocks Observations:

Step 5. Place the plant into the funnel. Poor the dirty water into the funnel. Has anything changed about the water colour or amount of debris within the water? Write down your observations. Clean the bottle and return your supplies.

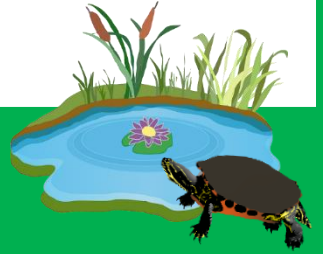


Plant Observations:

Which filter worked the best? _____

Turtles contribute to the amount of plants in a wetland by eating plants and dispersing seeds for new plant growth. What would happen if turtles were not present in wetlands? If turtles were not present in wetlands than new vegetation would grow at much slower rates. As a result the water within a wetland would not be filtered properly.

Wetlands are considered the kidneys of nature. Why is the filtration of water through wetlands important for nature and for human health? Without wetlands, bacteria and other pollutants would flow directly into our lakes and rivers. If not properly treated this water can deeply affect human health.

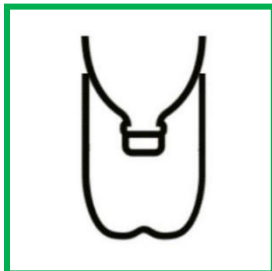


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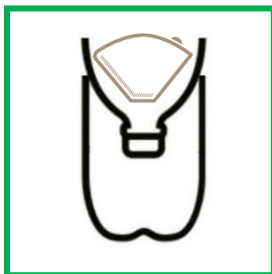
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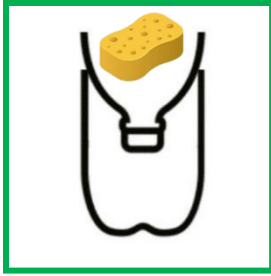
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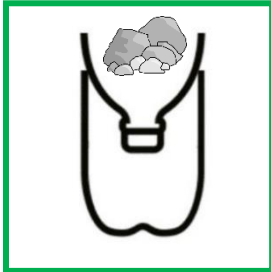
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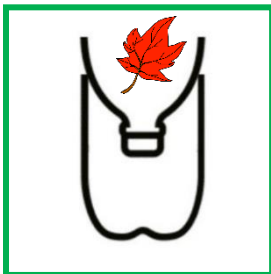
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Step 4. Place the rocks into the funnel. Poor the dirty water into the funnel. Has anything changed about the water colour or amount of debris within the water? Write down your observations. Clean the bottle.



Rocks Observations:

Step 5. Place the plant into the funnel. Poor the dirty water into the funnel. Has anything changed about the water colour or amount of debris within the water? Write down your observations. Clean the bottle and return your supplies.



Plant Observations:

Which filter worked the best? _____

Turtles contribute to the amount of plants in a wetland by eating plants and dispersing seeds for new plant growth. What would happen if turtles were not present in wetlands? _____

Wetlands are considered the kidneys of nature. Why is the filtration of water through wetlands important for nature and for human health? _____
