Name(s):_____ Class: _____ Date: _____

Wetland Wonders

Learner Outcomes:

- Analyze an ecosystem to identify biotic and abiotic components, and describe interactions among these components.
- Analyze a local environmental issue or problem based on evidence from a variety of sources, and identify possible actions and consequences.

Key Terms:

Wetland Habitat Water flow

Background Information: Wetlands are areas where the soil is wet for most of the year. In these areas, water drains very slowly, releasing moisture to the surrounding areas. When wetlands are filled in, the flow of water changes, causing changes in moisture and water flow to the surrounding areas. These changes may result in loss of both wetland habitats and their surrounding habits, disrupting the homes of a variety of plants and animals. This is why wetlands are considered one of the most endangered habitats in Canada.

Problem: A developer wants to put a road through the middle of a wetland ecosystem. Your task is to investigate the potential impact of the road, and to come up with a solution that will help preserve the wetland.

Hypothesis: How do you think building a road through the middle of the wetland will impact the water flow in the wetland habitat? Explain.

Variables:

Manipulated Variable _____

Responding Variable _____

Controlled Variables _____

_____

Materials:

2- Rectangular aluminum foil pans
Modeling clay
Bucket or sink
500 mL beaker
Stopwatch
250 mL Graduated cylinder
3-5 small sponges
Colored water

This investigation / activity has been adapted from:
Bullard J, Krupa G, Krupa M, et al. *Science Focus 7*. Toronto, ON: McGraw-Hill Ryerson.

Procedure:

Part A – Water flow in a wetland ecosystem

1. Cut small holes (about 1 cm in diameter) on the bottom at one end of one of the aluminum pans
2. Dampen, then squeeze the water out of one of the sponges and place it in the bottom of the pan. (The sponges are your wetland.)
3. Raise the end of the baking pan so that the holes will drain water into the second pan.
4. Use the beaker to measure out and pour 250 mL of colored water at the higher end of the pan.
5. Time and record how long it takes for the water to flow through the pan and drain into the second pan.
6. Use the graduated cylinder to measure and then record the amount of water that flowed into the second pan.
7. Squeeze out the sponge and replace it in the tilted pan.
8. Repeat steps 1-6 using one additional sponge for each trial until the bottom of the pan is covered. Record your data in your observation table.

Part B – The impact of building a road through a wetland ecosystem

1. Once the pan is filled with sponges, create a "road" that stretches across themiddle of the baking pan using the modeling clay.
2. Pour 250 mL of colored water into the top of the pan and observe what happens by recording the time it takes for water to flow and measuring the amount of water remaining in the second pan.

HINT The lab works better when the sponges are damp to start with, so wet the sponges and then squeeze the water out of them before you begin.

Observations:

Table Title: _____

Number of Sponges	Time to Drain Through (s)	Volume of Water collected (mL)	Observations
0			
1			
2			
3			
4			
5			
5 + "road"			

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Analysis:

1. Describe how the wetlands are like a sponge.

2. Using the data above, formulate a conclusion about the effects wetlands have on water flow in an ecosystem.

3. Record a qualitative observation about what happens when you placed a "road" in the middle of the wetland.

4. How would this disrupt the surrounding habitats?

5. What would happen if the entire wetland habitat was paved over like a parking lot?

6. What alternatives could be used to help the developer get through the wetland without disrupting the habitat?

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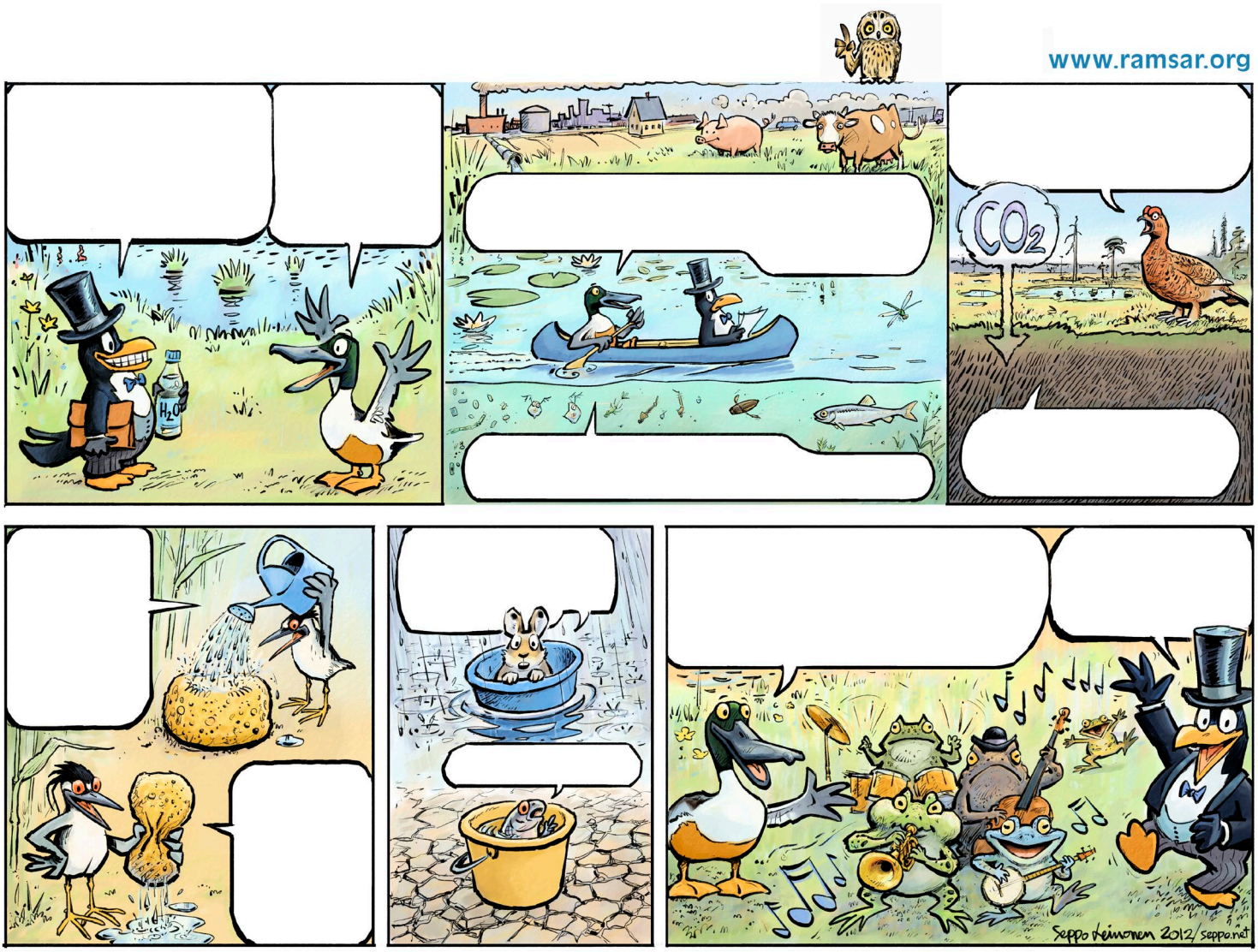
7. Caption the following cartoon.



Conclusion: In your own words, explain why it is important that scientists continue to observe, study and learn about wetlands.

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Extension:

1. Research two different species of plants and two different species of animals that live in a wetland ecosystem and describe how each species might be affected if the wetland a) flooded, and b) dried up.

2. Create a cartoon illustrating an issue related to the wetlands.

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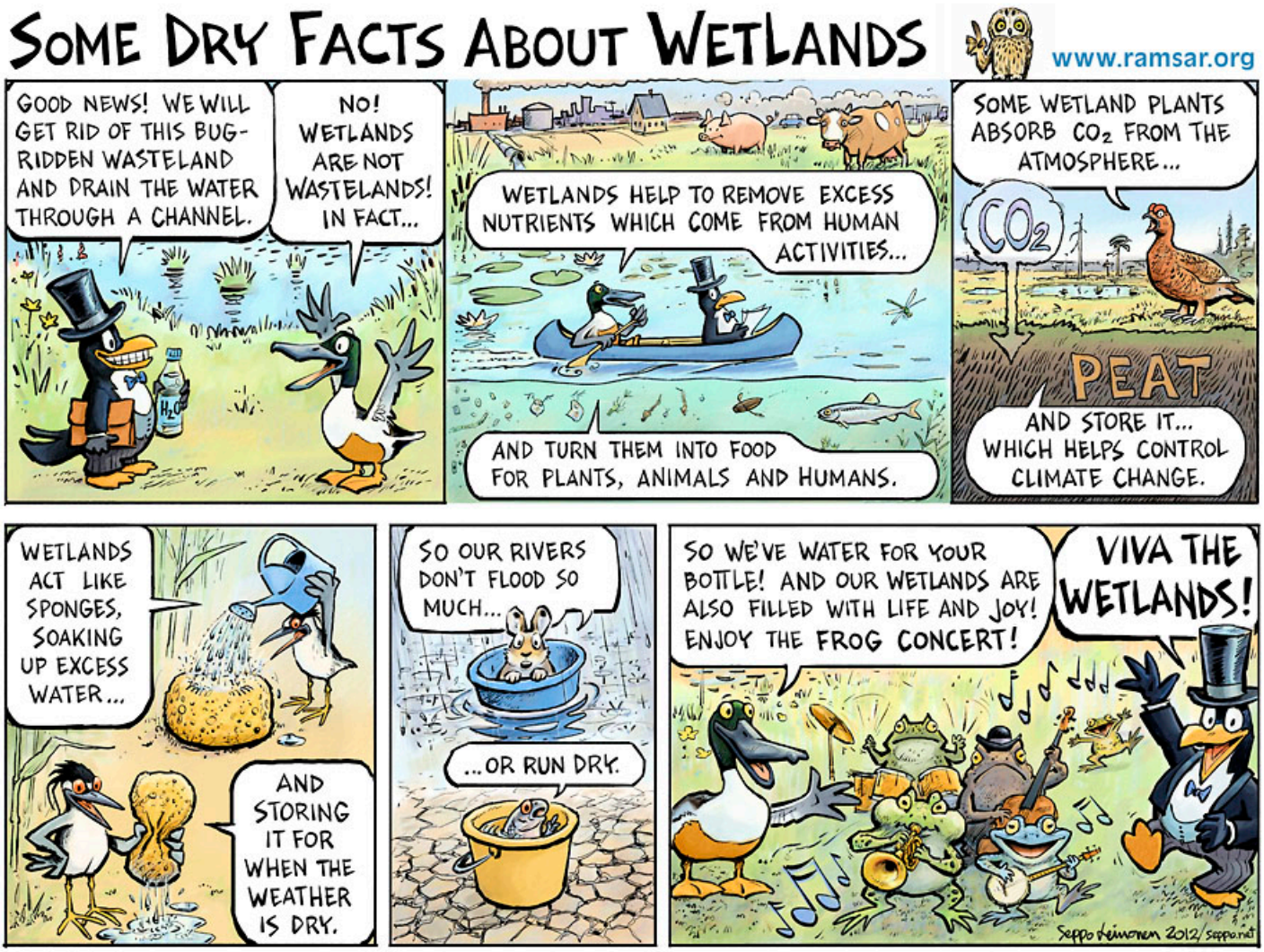

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