Lesson 2-3: Riparian Zones and Biodiversity

Time of Lesson: 1.5 hours

Instruction Objectives: Student can define biodiversity and retell how organizes are linked in the ecosystem. Students can make the link between sturgeon and riparian zone health.

Strategies and Activities: Discussion about biodiversity, explore concept of ecosystem, create a poem of the importance of biodiversity in a riparian zone.

Materials:

- SMARTboard PowerPoint presentation: *The Fallen Leaf*.
- Handout: *Worksheet 2d - The Fallen Leaf*.
- Activity: *Worksheet 2e - Ecosystem Cartoon*.

Student Assessment:

- Observation and participation in class and small group activities.
- Ability to identify how organisms, ecosystems and biodiversity link together.
- Understanding of how humans influence the riparian zone ecosystem.

LESSON PLAN

Introduction (20 minutes)

Discuss the definitions of organism, ecosystem and biodiversity.

Organism: Individual animal, plant, or single-celled life form.

Ecosystem: A biological community of interacting organisms and their physical environment.

Biodiversity: The variety of life in the world or in a particular habitat or ecosystem.

Key Points

Different places on the earth have different numbers and variety of organisms. Each organism plays a part in the functioning of the ecosystem. Biodiversity is the count of how many organisms live within an ecosystem.

In general, the higher the biodiversity, the healthier the ecosystem.

The organism may be as small as a leaf, or as large as a sturgeon - they all have their important role in keeping the ecosystem functioning.

If one organism is removed (through extirpation or extinction) then the ecosystem either fails (other organisms can not succeed/survive or invasive organisms enter the ecosystem), or the organisms within the ecosystem have to adapt.

Activity (30 minutes)

Display on the SMARTboard the PowerPoint presentation *A Fallen Leaf* (the presentation includes a short animation that shows the connection between different organisms within the riparian zone).

Key Points

The variety of organisms in the riparian zone each add to the success or health of the riparian zone.

A healthy riparian zone includes all the links between organisms.

Either before or after the animation is shown, give students the Handout *Worksheet 2c: The Fallen Leaf*. Allow students to fill in the answers as the animation is shown, pause at the appropriate times, or use the Handout as a review after the animation is complete.

Begin the presentation and pause where discussion is needed.

At the end of the PowerPoint presentation, review the cycle and consider where humans fit into the cycle of the leaf. Brainstorm with the students what impacts on biodiversity humans have, particularly in the riparian zone.

Ask

Where do humans fit in the cycle and how do we influence the ecosystem in the riparian area? *Humans have an impact at almost every step. Below are some examples:*

- *humans cut down trees in the riparian zone - remove leaves from the forest and material to feed microorganisms*
- *this also reduces the amount of trees that fall into the water that create habitat for fish and invertebrates*
- *humans put chemicals onto the ground and into the water - poor conditions for invertebrates to live*
- *humans fish out the fish - less food for larger fish as well as land predators like bear*

Transition to next activity.

Activity (30 minutes)

Split the class into small groups or as individuals and take out pens and paper. Have the students create a 4 scene cartoon about organism interactions in a riparian zone. The cartoon can show a different example of a cycle like the *Fallen Leaf*, or it can be about one part of the cycle (eg. fish eating invertebrates). Be creative!

Review (10 minutes)

Ask

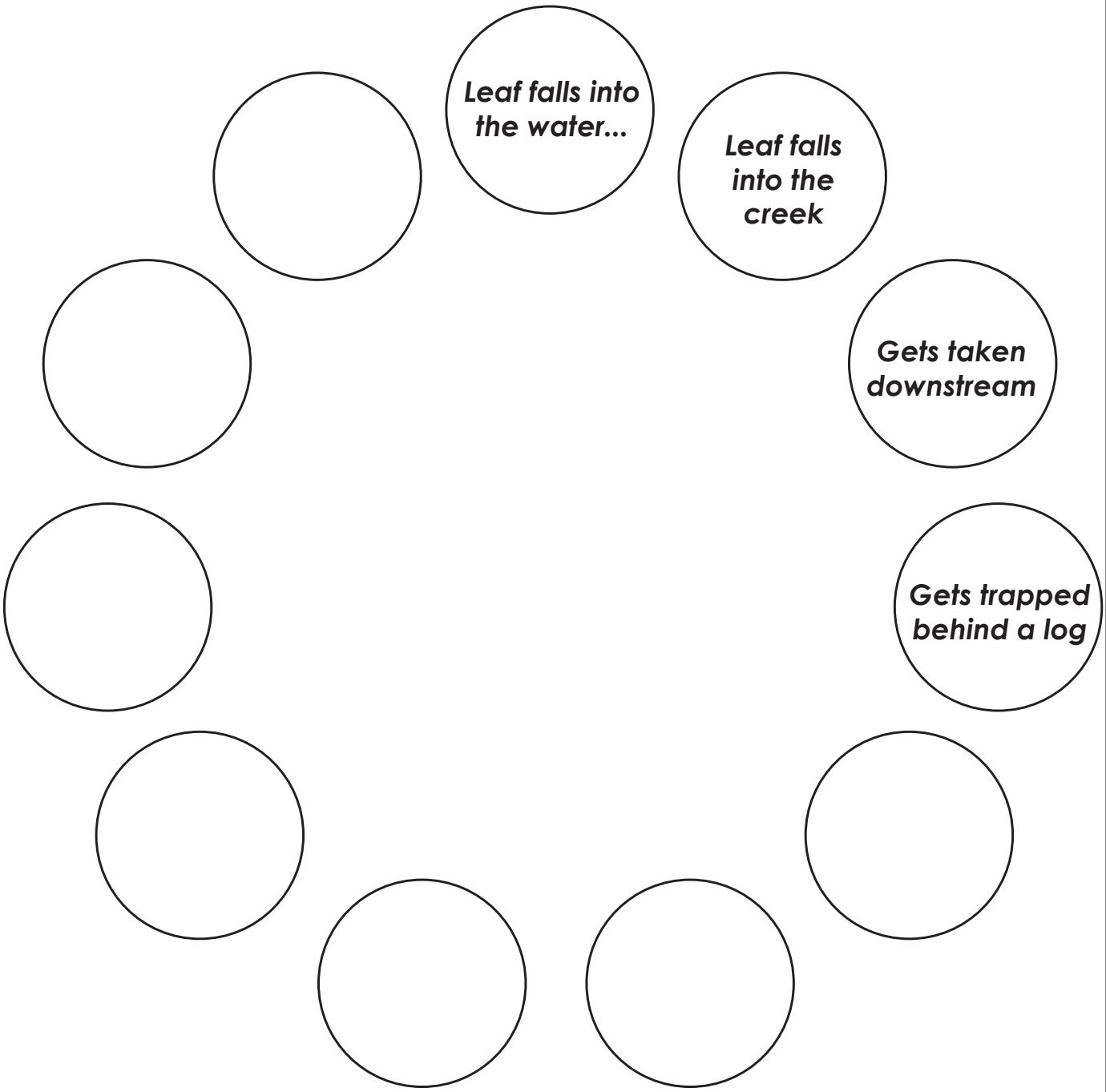
Considering all we have learned so far, why do we find higher biodiversity within the riparian zone? *Connection between land and water, lush vegetation due to presence of water, many areas for shelter for different organisms, abundance of food and water.*

The Fallen Leaf

A leaf falls from a tree in the riparian zone. What happens?

Fill in the circles with the next steps in the life cycle of the leaf and ecosystem. When you are done, illustrate the story in the centre of the circle.

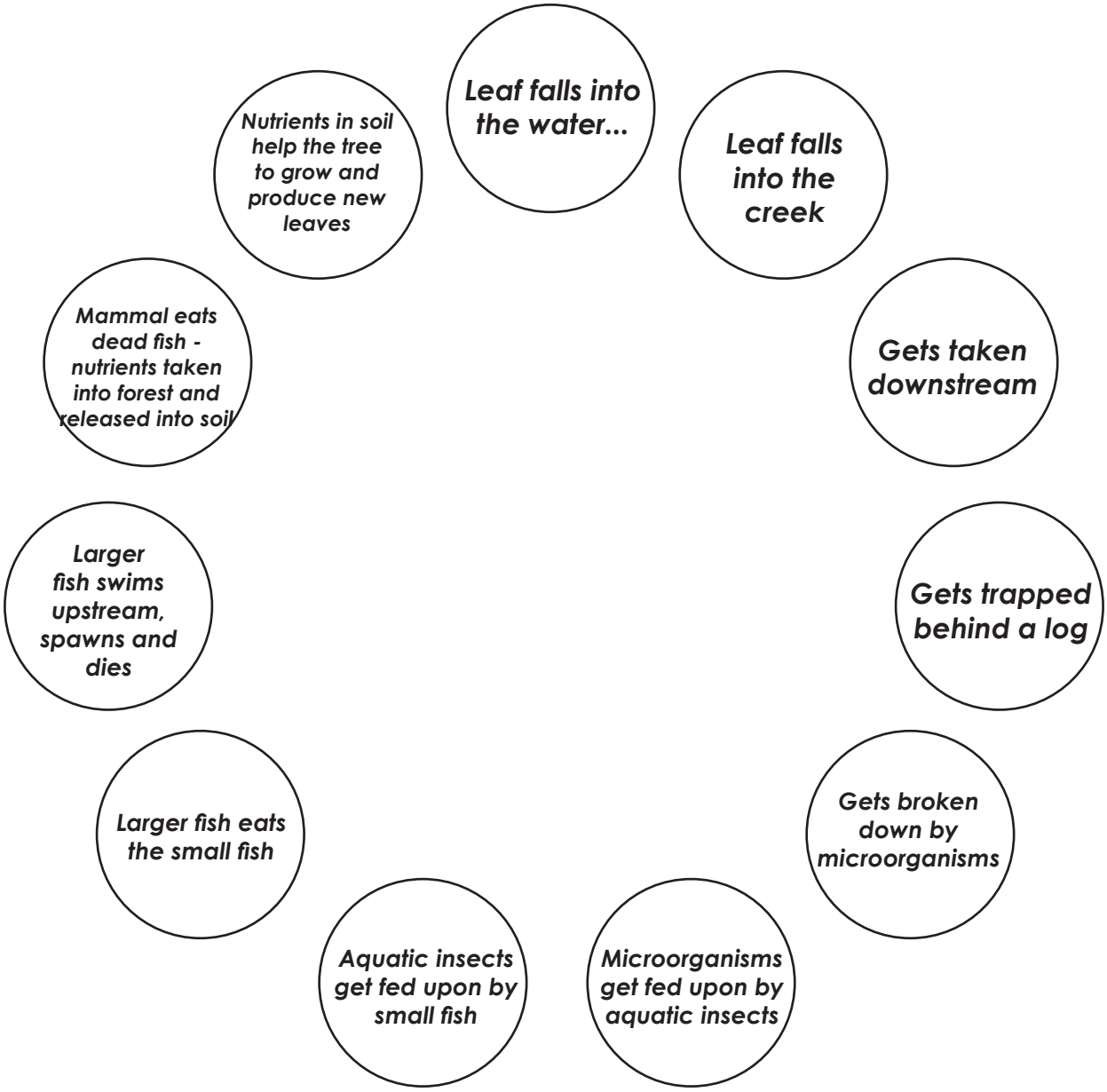
BONUS: Where would humans be put into this cycle? How do humans influence this cycle?



The Fallen Leaf - Answer Key

A leaf falls from a tree in the riparian zone. What happens?

Fill in the circles with the next steps in the life cycle of the leaf and ecosystem. When you are done, illustrate the story in the centre of the circle.



Ecosystem Cartoon

Create your own ecosystem cartoon, showing organisms interacting (in funny ways) in a cycle like the *Fallen Leaf*. Or pick a part of the cycle and have some fun illustrating what is happening. Your cartoon can be set in a healthy or unhealthy riparian zone - up to you.

Be creative and have fun!

GRADE: _____ TEACHER: _____

Feedback Form for Unit 2 - Lesson 2-3

Please fill in the information below. If you have additional comments, please make them directly in the lesson plan. Please feel free to email me any immediate concerns: michelle@mrconcepts.ca.

Background Information:

Was there enough information provided to conduct the lesson successfully?
Yes or No

If no, what additional information and/or resources would be useful for this lesson?

Activities:

Were the activities engaging to the students? Yes or No

Was the timeline of the activities a good estimate?
Too Long ____ Too Short ____ Just Right ____

Any comments?

Worksheets:

Were the worksheet(s) effective in teaching and/or reviewing the lesson material?
Yes or No

Was the answer key helpful? Yes or No

Additional Resources:

If used, were the resources suggested or provided for this lesson useful? Yes or No

What else would you suggest be needed for this lesson?