Focus on Forests

Lesson Plan Information

Estimated Duration: 45 minutes

Materials: Diagram of riparian area, diagrams or pictures of common native riparian trees, paper, flip charts, pencils, markers, tapes, nature guide books (if possible)

Setting: Indoors

Curriculum Links: See provincial curriculum links at www.focusonforests.ca

Key Vocabulary: Riparian area (lakeshore and stream bank), biodiversity, habitat.

Visit the Discussion Forums on www.focusonforests.ca to interact with other educators across the province.

PRIMARY/JUNIOR

Riparian Areas and Biodiversity

Teacher background

Riparian area is area of land between a water body and the drier upland area, such as river banks or shores. These areas are rich in vegetation as a result of abundant moisture and nutrients. Riparian areas are collections of trees, grasses, shrubs, plants, standing dead trees and water. There are several layers of vegetation, often a low ground cover, several different shrub layers and a tree canopy. This structural diversity leads to high biodiversity. Native vegetation in the riparian area can protect the banks or shores from being eroded due to their deep root systems.

Riparian areas are attractive places for wildlife. They provide the basic needs of food, water and shelter. Riparian areas also exhibit a high degree of biodiversity. Biodiversity is the variety of life on Earth. Higher biodiversity contributes to healthier and more resilient ecosystems. For example, a variety of tree species can help to provide shelter and food for many different organisms. Even when one component is damaged, there will be other similar components to replace them or perform similar functions for the whole system.

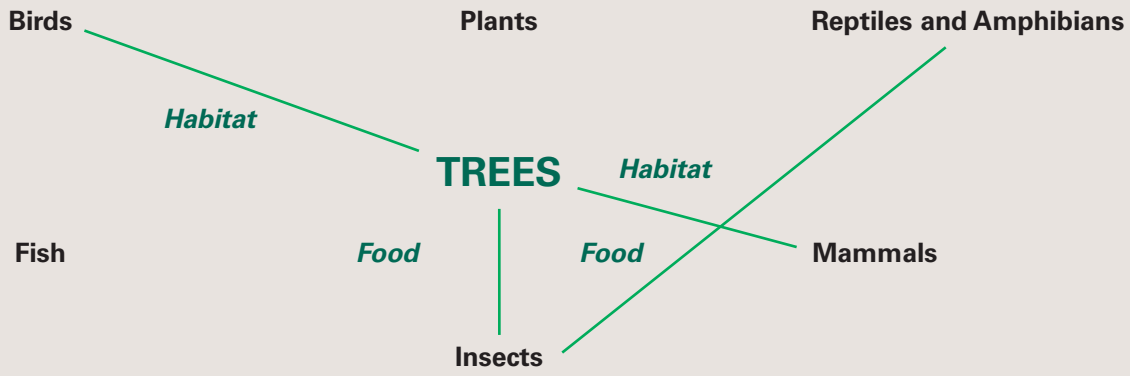
Riparian ecosystems are complex and highly interconnected. Trees are very important structural and biological components of the riparian areas and have great influences on all other living organisms. Not only do trees play an important role around waterways, but they also provide food and materials for organisms living in the water.

Riparian areas can have very high tree diversity. Common riparian tree species in eastern Canada include cedar, speckled alder, tamarack, hackberry, red and silver maple, and balsam poplar. In western Canada, riparian species include red alder, western red cedar, black cottonwood and bigleaf maple. In the Prairies, riparian species can include American elm, Manitoba maple, Bebb willow and trembling aspen. Shrubs, herbs, grasses, and ferns make up a structurally diverse understory (lower and ground layers). Plants and trees in riparian areas are home to animals and provide food for them. Many animals including deer, bear, reptiles and amphibians, a variety of bird species and insects such as dragonflies and butterflies, are highly dependent on riparian areas.

Human impacts from recreational activities and the building of facilities, such as campgrounds, often result in the reduction of the riparian vegetation and, therefore, its associated biodiversity. Planting trees in riparian areas can improve moisture retention and reduce soil erosion, promote understory biodiversity, and provide habitat for wildlife.

Procedure

1. Introduce the term "Biodiversity" to the class. Discuss what biodiversity means and ask students to give some examples of biodiversity.
2. Show students images of riparian areas or draw a diagram of a riparian area, and explain what riparian means. For images of riparian areas and common trees found in riparian areas, visit www.focusonforests.ca
3. Examine the diagram and images. Ask the class to identify the different layers of vegetation. Explain and discuss what characteristics may allow certain species to exist in the riparian areas (need for moisture, fast-growing, and deeper roots).
4. Break the class into six groups of organisms, as follows: plants, mammals, reptiles and amphibians, birds, fish, and insects. Using guide books or the web, have each group research an organism that depends on riparian areas.
5. While in the small groups, have students discuss and record why these particular organisms exist in, or depend upon, riparian areas, and what relationships they have (directly or indirectly) with trees in the riparian area (food, water, habitat, breeding ground).
6. Resume as a class group, have a student write down the names of the five groups in a circle on a large board. In the middle of the circle write "Trees". Use the example below for guidance.
7. Have one person from each group present to the class what they discussed in their smaller groups. Have them show how their group or organism is connected with other groups and the trees by connecting these organisms with a line. Write down some key words on the lines (e.g., food, habitat). As more groups present how they are connected, the diagram will look more like a spider web.
8. As a class, explore the finished diagram. Briefly explain the interconnectedness of the different groups and why it is important to keep high biodiversity in these areas. E.g., if one type of shrub is damaged, other types may still continue to provide food and shelter. Explain this by blocking out some parts of the web to indicate that it has been removed from the ecosystem. Discuss the impact of this on the riparian ecosystem. How does tree diversity impact riparian diversity?



Enrichment and Extension Activities

- Assign groups and give each group a case study of a riparian area that has had suffered from negative human impacts (e.g., a logged ravine, lakeside campgrounds, livestock near ponds, etc.). Have students discuss the impacts and what can be done and prepare a report to give to the class as a whole.
- If a ravine or nearby riparian area is accessible, take the class out for a field survey. Observe the riparian plant and animal species, and any signs of human impact.

Take Home Activity

The Trees by the Shore activity sheets is an in-class extension with take home activity. Simply download and/or photocopy the activity sheet for your students at www.focusonforests.ca

Our Focus on Forests education sponsor, Majesta, is offering parents an opportunity to win a $15,000 Green Makeover (landscaping and home improvement). Details are available on the Trees by the Shore activity sheet and at **www.MAJESTA.com**