

#8745

THE GREEN ZONE

Grade Levels: 7-13+

47 minutes

BULLFROG FILMS, INC. 1999

DESCRIPTION

Part 1 uses New Brunswick's Miramichi River to explore the life and health of a river and its riparian zone--that strip of vegetation along a riverbank that is important to water quality and diverse plant and animal life. Part 2 briefly looks at the historical importance of rivers and focuses on urban rivers, their problems, and some restoration projects.

INSTRUCTIONAL GOALS

1. To understand the locational advantage and disadvantages for different activities in a riparian area.
2. To present ways that watersheds and river systems connect regional systems.
3. To introduce the characteristics of the riparian ecosystem and the ability of riparian areas to withstand stress.
4. To depict reasons why dense areas of human settlement historically have tended to be in river areas.
5. To evaluate how human actions modify riparian environments.



VOCABULARY

- | | |
|---------------------|-------------------|
| 1. aquifer | 11. larva larvae |
| 2. fibrous | 12. logging |
| 3. flood plain | 13. naturalist |
| 4. foraging insects | 14. particle |
| 5. forestry | 15. porous |
| 6. glacial moraine | 16. riffles |
| 7. gravel | 17. riparian zone |
| 8. hydraulic | 18. sediment |
| 9. hydrologist | 19. soil |
| 10. insect cases | 20. watersheds |

BEFORE SHOWING

1. Locate the following places connected with riparian environments on a map of the world.
 - a. Canada

- 1) New Brunswick
 - 2) Miramichi River
 - 3) Alberta
 - 4) British Columbia
 - 5) Salmon River
 - 6) Toronto
 - 7) Vancouver
 - 8) Fraser River
- b. South America
 - c. Nile River, Africa
 - d. Asia
 - 1) Tigris River
 - 2) Euphrates River
2. Discuss the importance of rivers and watersheds by evaluating the following statements.
- a. Rivers and watersheds play a tremendous historical-cultural role.
 - b. Rivers and watersheds are essential for survival.
 - c. Water is the basic element of life.
 - d. Where water flows, it creates varied and complex habitats.



DURING SHOWING

Discussion Items and Questions

1. View the video more than once, with one showing uninterrupted. Begin discussion questions after viewing Part 1.
2. Discuss New Brunswick's Miramichi River.
 - a. How has the Miramichi River not been altered by development?
 - b. What is a salmon river?
 - c. How is the Miramichi one of the healthiest salmon rivers in the world?
 - d. Why is the Miramichi an important part of the community?
 - e. Why is each returning salmon worth \$1000 to the local economy?
 - f. How do farmers on the Miramichi depend on the flood plain?
 - g. What is the significance of extremes in the water fluctuation on the Miramichi?
 - h. Why is the decline in the number of Atlantic salmon returning to the river of grave concern?
 - i. Why are rivers like the Miramichi becoming increasingly rare?
3. Discuss the value of water habitats.
 - a. How does the river give transportation?
 - b. What is the value between river and mature forest?
 - c. How do river and watersheds give humans fertile soils?
 - d. How is water a basic element of life?
 - e. How does water create varied and complex habitats?
 - f. How is water a restless substance?

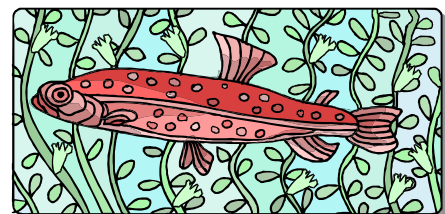
4. Discuss riparian areas.
 - a. What is a *riparian area*?
 - b. How does a riparian zone play a vital role in protecting the structure of the stream and maintaining water quality?
 - c. Why is a riparian area as vital as the stream itself?
 - d. How does a riparian area's importance far exceed its size?
 - e. How are these vital areas often damaged or destroyed?
 - f. What is the cost of the loss of these green zones?
 - g. What flora and fauna may be found in a riparian area?
 - h. Why are a stream and its riparian area really a single entity?
 - i. Why can a stream without riparian vegetation support very little life?
 - j. How does riparian vegetation regulate the meandering of a stream?
 - k. How does riparian vegetation act as a regulator of the movement of a river within its flood plain?
 - l. Why is a curving tree a sign of a healthy riparian area? What do straight trees falling into the river mean?
 - m. What is the value of riffles to a riparian area? What attracts many predators in riffles? Why are riffles called the lungs of the stream?
 - n. Why are riparian areas critical for migrating birds?
5. Discuss rivers.
 - a. Why are streams with clean fresh water essential for fish like Pacific salmon?
 - b. Why do fish attract a host of predators?
 - c. How is a stream like a living organism?
 - d. How can a river dramatically shift within its flood plain?
 - e. Why is a stable bank critical for a healthy stream?
 - f. Why are salmon such a vital indicator of a river's health?
 - g. How do healthy prairie creeks and rivers provide precious moisture to agricultural crops?




AFTER SHOWING

Discussion Items and Questions

1. Discuss salmon.
 - a. Why are many of the salmon runs extinct?
 - b. Why has the salmon's decline alarmed people from all walks of life?
 - c. Why are fish often seen as the bellwether of the health of streams and rivers?
 - d. Why are there virtually no salmon runs remaining in the Vancouver area?
2. Discuss the destruction of riparian habitats.



- a. Why is the ability of a river to support wildlife an indicator of the health of the watershed?
 - b. Why does the wide, shallow channel of the Salmon River indicate a river in trouble?
 - c. Why are so many urban streams endangered or threatened?
 - d. Why is riparian vegetation protective?
3. Discuss repairing the damage in riparian habitats.
- a. What roles have the following groups of people played in restoring riparian areas: hydrologists, biologists, teachers, volunteers, citizen's groups and naturalists?
 - b. How can a river's bank be stabilized? Why are whole trees buried in the bank as part of this process? Why is it a slow process?
 - c. Why are humans incapable of repairing a river?
 - d. What is the difference between repairing a river and enabling Mother Nature to do her own repairs?
 - e. How does trying to restore a lost element of the natural world lead to a realization of the complexity of nature?
 - f. What kind of remarkable results have people involved in restoration had in Canadian urban areas?
 - g. Why do urban streams need to be looked at differently? What are the recreational, cultural and natural values of urban streams?
4. Discuss rivers worldwide.
- a. Why did people who live along the Nile depend on the river?
 - b. How have the natural abundance of rivers and streams played an important role in human history?
 - c. What role did the Tigris and Euphrates play in early civilizations?
 - d. Why does much of the modern world's population live along waterways?
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5. Discuss the Don River in Toronto.
- a. How is the Don River an example of how humans affect rivers?
 - b. Why have parts of the lower Don been straightened?
 - c. How has the Don changed since European settlers arrived?
 - d. What was the drawback of the impervious surfaces of buildings and paved roads to the Don?
 - e. How did Hurricane Hazel dramatically change the way people in the area viewed the rivers and streams?
 - f. What was the original intent of the Metropolitan Toronto and Region Conservation Authority?
 - g. How did original efforts provide flood protection but also create serious, unforeseen problems?

- h. What was the effect of reduction of water-absorbing ground?
 - i. How did each rainfall create a toxic soup?
 - j. How was the capacity strained at even the most elaborate and expensive flood control installations?
 - k. What is *hydrology*? What is the difference in working with the water system as opposed to trying to work against it?
 - l. Why did the Authority ultimately try to return much of the creek and river valley lands to its natural state?
 - m. How has working with nature proved effective?
 - n. How has regeneration spawned an urban wildlife recovery?
 - o. What is the value of having urban wildlife?
6. Discuss Rivers Day.
- a. How does the British Columbia day of celebration compare with Earth Day?
 - b. Why was the release of an eagle part of a Rivers Day celebration on the Alouette?

Applications and Activities

1. Prepare a meal that includes salmon. Investigate the nutritional value of salmon and where the salmon was harvested and processed.
2. Research recent local and worldwide floods.
 - a. What role did damage of riparian areas play in the flooding?
 - b. What can be done in the flood damaged areas to avoid flooding in the future?
3. Visit a local river, stream or creek.
 - a. What flora and fauna thrive in the riparian area?
 - b. How may this area be endangered?
 - c. What can be done to restore or protect the area?
4. Survey the local community about the perceived importance of riparian areas and what can be done to restore these areas.
5. Plan a Rivers Day to highlight the endangered status of riparian areas and what can be done to restore or preserve them.
6. Write a description of a riparian area from at least two of the following perspectives: salmon, bear, tree, cattle rancher, farmer, child, migratory bird, politician, hydrologist, biologist or naturalist.

RELATED RESOURCES



Captioned Media Program

- Making a Difference: Restoring the Earth Around Us #3054
- The Wasting of a Wetland #3092

World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and “kid-safe” sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **KNOWLEDGE INTEGRATION ENVIRONMENT (KIE)**

<http://www.kie.berkeley.edu/KIE.html>

Designed to help middle and high school students develop an integrated understanding of science and a critical eye toward the complex resources found on the Web.

- **NATIONAL ENVIRONMENTAL EDUCATION HOMEPAGE**

<http://www.blm.gov/education/index.html>

This Bureau of Land Management site presents information about the life cycle of salmon, the diversity of native western wildflowers and the migratory patterns of neotropical birds.

- **ENVIRONMENTAL PROTECTION AGENCY SECTION FOR KIDS AND TEACHERS**

<http://www.epa.gov/epahome/students.htm>

With fact sheets, interactive games, and more, EPA’s Web site provides information about the environment with specific sections for teachers and students.

- **INTERACTIVE ENVIRONMENTAL DATABASE**

<http://www.soton.ac.uk/~engenvir/>

Includes links to numerous topics such as the: environment, engineering and case studies.