

#9704

RIVER BIOMES: ESSENTIAL AND ENDANGERED

RAINBOW EDUCATIONAL MEDIA, 2001

Grade Levels: 4-8
28 minutes

DESCRIPTION

Describes the characteristics of river biomes and their diverse plant and animal life. Notes effects of their passage through varied geography and climates. Human impact on rivers remains both beneficial and harmful.

ACADEMIC STANDARDS

Subject Area: Science – Life Sciences

- ★ Standard: Understands relationships among organisms and their physical environment
 - Benchmark: Knows that all individuals of a species that exist together at a given place and time make up a population, and all populations living together and the physical factors with which they interact compose an ecosystem (See Instructional Goal #1.)
 - Benchmark: Knows ways in which humans can alter the equilibrium of ecosystems, causing potentially irreversible effects (e.g., human population growth, technology, and consumption, human destruction of habitats through direct harvesting, pollution, and atmospheric changes) (See Instructional Goal #4.)
 - Benchmark: Knows how energy is transferred through food webs in an ecosystem (e.g., energy enters ecosystems as sunlight, and green plants transfer this energy into chemical energy through photosynthesis; this chemical energy is passed from organism to organism: animals get energy from oxidizing their food, releasing some of this energy as heat) (See Instructional Goal #3.)

INSTRUCTIONAL GOALS

1. To define the characteristics of river biomes.
2. To describe how rivers affect and shape the landscapes through which they flow.
3. To give examples of animal and plant life in river biomes and how they adapt to their environments.
4. To describe the human impact on river biomes, particularly the effects of industry and development.

VOCABULARY

- | | |
|-------------|------------|
| 1. algae | 5. ecotone |
| 2. biome | 6. erosion |
| 3. delta | 7. estuary |
| 4. detritus | 8. flyway |

- | | |
|---------------------------------------|-----------------|
| 9. groundwater | 16. sediment |
| 10. nutrients | 17. sloop |
| 11. polychlorinated biphenyls (PCB's) | 18. source |
| 12. photosynthesis | 19. tidal marsh |
| 13. phragmites | 20. tributary |
| 14. phytoplankton | 21. watershed |
| 15. riparian habitat | |

BEFORE SHOWING

1. Display a map of the United States that shows some of the major rivers and identify them.
2. In order to learn about rivers, scientific data must be collected. Discuss methods that could be used for:
 - a. testing to see how acidic the water is.
 - b. measuring the concentration of chemicals such as nitrates and phosphates.
 - c. determining the rate at which the water flows.
 - d. determining what kind of plants and animals live in that biome.

DURING SHOWING

1. View the video more than once, with one showing uninterrupted.
2. As the video follows the path of the Hudson River from its source in the Adirondack Mountains to the Atlantic Ocean, point out the different kinds of environments along the way.
3. Pause at the sections showing the following and write descriptions of each: delta, watershed, estuary, and tidal marsh.

AFTER SHOWING

► Discussion Items and Questions

1. What is a biome?
2. In what ways is a river different from other biomes?
3. Where is a river's source?
4. What force causes rivers to flow downhill towards the sea?
5. What comprises the watershed of the Hudson River? What comprises the watershed of the Mississippi River?
6. How do rivers shape the land through which they flow? How was the landscape of South Dakota's Badlands formed?
7. What is a delta?
8. Why can't most plants survive in fast-flowing water? What plant can adhere to rocks in fast-flowing water?
9. What is an example of an ecotone?
10. What is an estuary?
11. Discuss tidal marshes.
 - a. What kind of plant life is found in a tidal marsh?
 - b. What kinds of changes do plants in a tidal marsh need to adapt to?



- c. What happens to the plant life in a tidal marsh in autumn?
- d. Why is detritus important to the tidal marsh environment?
- 12. In what ways are rivers important habitats for birds?
- 13. What were sloops used for on the Hudson River in the early days?
- 14. What are phytoplankton and why are they important parts of many food chains?
- 15. Why have man, industries, towns, and cities developed along rivers?
- 16. Why has fishing in the Hudson River been banned or restricted since 1976?
- 17. What factors have contributed to the decline of riverfront industries?
- 18. In what ways are people preserving the environment and beauty of rivers?

► **Applications and Activities**

1. Draw a large map of the Hudson River from its source to the waters of the Atlantic Ocean. Based on the descriptions in the video, use illustrations to describe the environment as the river moves downward.
2. Draw a timeline that shows how transportation developed on the river throughout history.
3. Make a chart and compare animal and plant life of a river biome to other biomes such as a rain forest, grassland, or desert.
4. Research and report on a river animal or plant and describe how it has adapted to its environment.
5. Draw a river food chain to show how energy flows from the sun to plants and from plants to animals.
6. Research and report on different threats to rivers (habitat destruction and pollution) and what can be done to alleviate these threats.
7. Plan various activities that will help reduce threats to river biomes.
 - a. Participate in river cleanups.
 - b. Reduce the amount of toxic chemicals by disposing of old paint, motor oils, pesticides, and other chemicals properly.
 - c. Write letters to local, state, and national government officials urging them to take steps and enact legislation that help protect river ecosystems.
8. List books that have been written about life on the river. Write a brief summary of each book.

RELATED RESOURCES

- [Grassland Biomes: Essential and Endangered #9703](#)
- [The Green Zone #8745](#)
- [Habitats #8747](#)
- [Wetland Biomes: Essential and Endangered #9706](#)



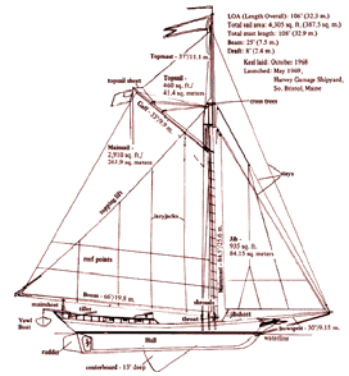
World Wide Web

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.

- **CLEARWATER**

<http://www.clearwater.org/>

Contains information about the *Clearwater*, the sloop mentioned in the video.



Hudson River Sloop Clearwater

- **SCENIC HUDSON**

<http://www.scenichudson.org>

Serves as a Hudson River environmental education web site. Includes information about land protection, parks and preserves, PCB cleanup, and riverfronts and communities.



- **LOWER CAPE FEAR RIVER PROGRAM**

<http://www.uncwil.edu/cmsr/aquaticceology/lcfrp/>

The Lower Cape Fear River Program is a large-scale water quality and environmental assessment program covering the Cape Fear River Estuary and a large portion of the lower Cape Fear River watershed.

