

Inventory/Field Study

Lesson Abstract

Summary:	This is a hands-on investigation of the characteristics and attributes of a riparian corridor and stream bank.
Grade Level:	6-8
MO GLE:	SC5.3.A.6; 4.1.D.6
Subject Areas:	Science
Show-Me Standards:	Goals – 1.3, 1.6 Strands – SC 3,4,5,7,8
Skills:	Observing, recording, measuring, classifying
Duration:	2 to 3 hours
Setting:	Outdoor, with classroom preparations and follow-up
Key Vocabulary:	Riparian corridor, stream bank, biodiversity, erosion

Rationale:

- The riparian corridor is essential for the health of a stream.
- The health of the riparian corridor will affect recreation, agricultural practices, wildlife habitat, aesthetics, and flood management.
- Healthy stream banks are essential for a healthy stream.
- Healthy stream banks help prevent erosion and damage from floods.
- Students will probably become landowners someday and make land use decisions that can affect water quality and biodiversity in their watershed.

Student relevance:

- Maintenance of a healthy riparian corridor is essential to a healthy watershed.
- Human activities and attitudes influence the health of stream banks and riparian corridors.
- Healthy riparian corridors are important for recreational and other uses.
- The study of riparian corridors offers students life-relevant learning situations.

Learning Objectives:

Upon completion, students will be able to . . .

- Identify typical components of healthy and unhealthy riparian corridors (see riparian corridor introduction).
- Identify characteristics of healthy and unhealthy stream banks (see riparian corridor introduction).
- Describe the importance of healthy stream banks and riparian corridors for flood control, erosion prevention, and biodiversity.
- Describe beneficial and destructive human impact upon riparian corridors and stream banks.
- Describe the role of riparian corridors in providing wildlife habitat.
- Identify positive and negative uses of riparian corridors and stream banks.

Students Need to Know:

- Recreational uses of streams
- Their own experiences with streams and rivers and how they use and enjoy the outdoors.
- The functions of the water cycle.
- Typical plants and animals of local riparian corridors (*Biogeography of Missouri*).
- The concept of erosion.
- The conditions of healthy and poor riparian corridors.
- The land use practices which enhance the development of healthy and poor riparian corridors.

Teachers Need to Know:

- Riparian corridor plant and animal life.
- How to identify erosion.
- How to use tree and animal tracks identification handbooks.
- How to read a topographic map (optional).

Resources:

The following materials are available at no charge from the Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102-0180, (573)751-4115.

Understanding Streams (brochure)

Managing the Stream Side Forest

Restoring Stream Banks with Willows, 1991

Trees Along Streams, 1994

Tree Revetments for Stream Bank Stabilization

How to Build a Stream Revetment (video for free loan from MDC Media Library)

Conservation Education Series for Junior and Senior High Order on line at:

<http://www.mdc.mo.gov/teacher/materials/>

Aquatic Field and Classroom Activities

Missouri's Rare and Endangered Species

Wildlife Management in Missouri

Biogeography of Missouri

Topographic Maps

Available from the Missouri Department of Natural Resources, Division of Geology and Land Survey, P.O. Box 250, Rolla, MO 65402, (573)368-2125

Website for DNR publications:

<http://www.dnr.mo.gov/geology/adm/publications/pubscatalog.pdf>

Materials Needed for Lesson:

Riparian Corridor Inventory Checklist (provided with lesson)

Nature guides, tree and animal tracks identification handbooks

Topographic maps (optional)

Notebooks

Plastic shopping bags

Procedure:

- Use topographic maps (optional) to identify an appropriate area for a field trip.
- Divide students into groups of 5 or 6 for the field trip.
- Pass out copies of *Riparian Corridor Inventory Checklist* and instruct students to be observant and complete the handout based on their observations.
- Ask students to identify trees and other significant vegetation within a reasonable area (approximately 10' x 10'). Use identification handbooks and prior knowledge.
- Have students collect leaf samples from trees for pressing and mounting.
- Have students record all signs of animal life (tracks, droppings, rubbing).
- Have students observe and record any evidence of human activity.
- Have students observe and record signs of flooding and the effects of the riparian corridor on the flood waters.
- Have students make judgments as to the aesthetic qualities of their area.
- Have students observe the litter and soil, and take samples if appropriate. (Soil and litter should reflect the sediment trapping properties and flood control abilities.)
- Have students observe how the riparian corridor trees affect the stream itself. (Shade from these trees helps cool the water, thus increasing the water's ability to hold oxygen.)
- From their classroom activities and field experiences, ask students to draw conclusions about the characteristics of a healthy riparian corridor and stream bank.
- Ask students to make recommendations for planning and maintaining such healthy riparian corridors for their stream.

Evaluation Strategies:

- The riparian corridor inventory can be a performance assessment.

- Students can summarize their learning in a story, poem, concept map or crossword puzzle that they create.

Extension Activities:

- Create a bulletin board or wall mural using large art paper to create the plants and animals that would be found in a typical Missouri riparian corridor.
- Have students write stories for the local newspaper about their experiences and findings.
- Involve the local radio or television station in coverage of activities.
- Visit other streams in different physiographic regions of Missouri.
- Adopt a stream through the Missouri STREAM TEAM Program.
- Conduct litter pick-ups in a riparian corridor.
- Talk with local, state, and federal leaders about riparian corridors and stream banks.
- Simulate healthy and unhealthy stream banks using a stream table or the River Cutters Program.
- Plant trees in riparian corridors.
- Plant willow stakes on bare stream banks.
- Examine the different strata in soil profile trenches along the stream.
- Build a stream table. (Contact the Missouri Department of Conservation for the booklet *How to Build a Stream Table*.)

Suggested Scoring Guide:

Inventory/Field Study

Teacher Name: _____

Student Name: _____

CATEGORY	4	3	2	1
Contributions	Routinely provides useful ideas when participating in the group discussion. A definite leader who contributes a lot of effort.	Usually provides useful ideas when participating in the group discussion. A strong group member who tries hard!	Sometimes provides useful ideas when participating in the group discussion. A satisfactory group member who does what is required.	Rarely provides useful ideas when participating in the group discussion. May refuse to participate.
Focus on the task	Consistently stays focused on the task and what needs to be done. Very self-directed.	Focuses on the task and what needs to be done most of the time. Other group members can count on this person.	Focuses on the task and what needs to be done some of the time. Other group members must sometimes nag, prod, and remind to keep this person on-task.	Rarely focuses on the task and what needs to be done. Lets others do the work.
Monitors Group Effectiveness	Routinely monitors the effectiveness of the group, and makes suggestions to make it more effective.	Routinely monitors the effectiveness of the group and works to make the group more effective.	Occasionally monitors the effectiveness of the group and works to make the group more effective.	Rarely monitors the effectiveness of the group and does not work to make it more effective.
Working with Others	Almost always listens to, shares with, and supports the efforts of others. Tries to keep people working well together.	Usually listens to, shares with, and supports the efforts of others. Does not cause "waves" in the group.	Often listens to, shares with, and supports the efforts of others, but sometimes is not a good team member.	Rarely listens to, shares with, and supports the efforts of others. Often is not a good team player.

Rubric Made Using: **RubiStar** (<http://rubistar.4teachers.org>)

Riparian Corridor Inventory Checklist

Directions: Observe your designated area carefully and describe what you see directly and indirectly for each item listed below. Be as specific as possible.

Large trees

Erosion

Root wads

Exposed roots

Overhanging trees

Humus

Understory vegetation

Wildflowers

Insect signs

Bird signs

Snakes

Beaver

Flooding Signs

Debris in trees

Water marks on trees

Sand deposits

Gravel or sand bars

Human impact (roads, fences, picnic tables, trash, logging, gravel or sand mining, buildings, livestock overuse, farming up to the stream bank)

Evidence of animal habitat in and around the riparian corridor and stream bank (look for tracks, droppings, rubbing, vegetation consumption, etc.)