Appendix 5 Learning in Wetlands: An Educators' Guide

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Introduction

The activities and ideas in this guide are meant to stimulate teachers' and other educators' interest in teaching children about wetland ecosystems and the complex human connections surrounding them. These materials will be most successfully used as a supplement to a field trip or trips to a wetland area, but may also be used in other contexts. Ideally, several activities would take place in the classroom before a site visit and several would be used after. In addition, some of the activities have components designed to be used during the actual wetland visit.

Social studies, science, and other subject areas overlap in this manual, as in the field of environmental education itself. The human dimension, both in a historical and current event perspective, plays a major role in this activity guide. Please see the Appendix for information on contacting the publishers of the materials referred to in this guide.

The Learning Cycle

The learning cycle can be used both within a particular activity and to tie together the many activities that make-up a learning unit. The first step in any type of learning is to **engage** learners, that is, to get the students interested in learning about the particular topic. Learning does not occur without some degree of interest. This can be done through a game or other activity that students naturally find stimulating, or by drawing on something relevant to the learners' lives. Age and developmental level, as always, must be considered when planning activities.

Once students' interest has been excited, the process of **exploration** may begin. Students should be encouraged to make discoveries on their own, through guided experimentation and hands-on experience. A wetlands site visit would most likely occur during this stage of the learning cycle. Learners may also relate what they are learning to their own personal experiences during exploration.

After time has been allowed for exploration, the **explanation** phase may begin. In this stage, students may read about the issues they are studying, attend to audiovisual aids, or discuss the subject with the teacher and amongst themselves. **Extension** normally occurs at the end of an educational unit. Students should be provided with opportunities to continue

learning about a set of concepts or ideas after the formal period of education is over. At all phases of the learning cycle, feedback, or **evaluation** is important in gauging how students are learning and attending to their educational needs.

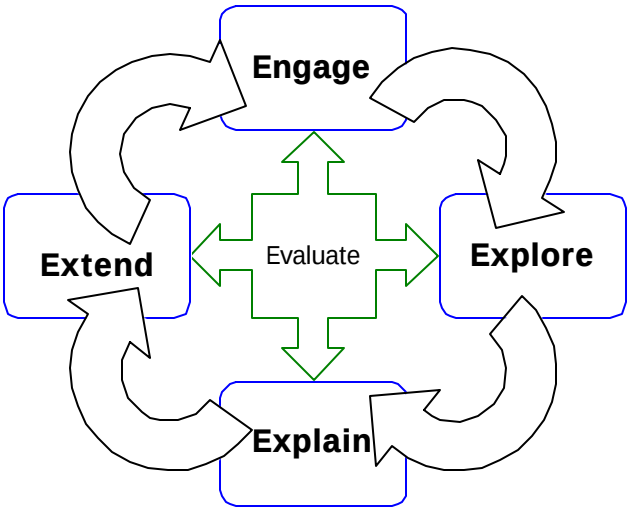


Figure 1 The Learning Cycle

Learning in Wetlands

"Wetlands are powerful places in which to learn. They are environments of intense, dynamic activity, humming with life" (Slattery et al. 1995, p.xix). Wetlands are a crucial part of many watersheds. Wetlands have many ecological and economic functions and benefits, both direct and indirect. This includes the potential for a unique learning atmosphere.

Wetlands can provide food and other resources to people and may serve be improve water quality and decrease the negative consequences of flooding. Wetlands ecosystems contain a wide variety of physical and biotic features and serve as refuges for many types of plants and animals.

Even if classroom activities are well designed and implemented, contact with an actual natural area can be more important to the development of an environmental ethic than any classroom learning could ever be. It is through hands-on, personal experience that children (and adults) learn to empathize with and care deeply about the natural world. **Environmental Sensitivity** forms a base for all other environmental learning and action. When combined with appropriate ecological knowledge, skills, and self-efficacy, this factor

can lead to positive behaviors toward the environment. It is only if we can learn to care that today's environmental problems may be truly addressed.

By learning about wetlands, students are also learning valuable ecological and social concepts, communication skills, and critical thinking skills necessary to succeed in today's academic atmosphere. The human relationship with wetlands is addressed in several activities in this guide. Wetlands are, simultaneously, places of bounty and of challenge. Students could benefit from talking to their elders and reflecting carefully on their own ideas about wetlands and floodplains. What challenges do they see in living in or near such an environment? What are the benefits? Ways for students to get involved in local restoration projects are also included in this guide.

Planning a Wetland Visit

If possible, plan several wetland visits. The first will provide an introductory experience, while subsequent trips will expand and reinforce concepts (Slattery et al. 1995). Trips may be interspersed with classroom activities throughout the learning cycle. Students are much more likely to respond positively to repeated, in-depth, exposure than they are to a single visit. The actives in this guide are likely to provide enough material for several wetland visits.

Before taking a trip to a wetland, make sure that the area is accessible and that a student visit is allowed in the location you choose. Making sure students are dressed appropriately can also make a big difference in the outcome of a trip. While visiting a wetland, it is important that all the adults present act as positive role models concerning behavior in a natural area.

Table 1 Recommended activities by grade level for pre and post field trip

	Grades K-2	**Grades 3-5**	**Grades 6-8**	**Grades 9-12**
Before Fieldtrip	*Are you me?* *Springo!*	*Riparian Retreat* *The Wetland Gourmet* *Springo!*	*Watch on Wetlands (also during trip)*	*The Edge of Home*
After Fieldtrip	*Water Plant Art*	*Hear Ye, Hear Ye!*	*Watch on Wetlands (also during trip)* *Watered Down History* *Helping Wetlands*	*Living Research* *Wetland Tradeoffs*

Kindergarten – Grade 2 Activities

Are You Me? *(Adapted from Aquatic Project WILD, p.14)*

Objectives
This activity helps learners to understand and recognize different forms of aquatic animals, especially focusing on those that undergo metamorphosis. This activity provides a good way to get young children to start observing the wetland world that surrounds them and is likely to foster a sense of appreciation for the miracles of nature.

Subjects
Science

Skills
Teamwork and Classification

Materials
Index cards, pictures of juvenile and adult wetland animals, glue, drawing materials (optional)

Time Needed
This activity normally takes three-quarters of an hour, including discussion time.

Things to Know
Metamorphosis means change that takes place as a part of an organism's growth. Many (but not all) aquatic insects undergo **complete metamorphosis.** An insect that has a metamorphic lifecycle begins life as an egg, hatches into a larva, changes into a pupa (often in a protective cover), and finally emerges as an adult. Amphibians also experience metamorphosis, in this case, **simple metamorphosis**, a type of change that involves three life stages (egg, larva or tadpole, and adult) Many animals do not go through metamorphosis (e.g., birds and mammals), but as juveniles still look quite different from their adult forms.

What to do
1. Have students cut out (and color, if desired) pictures of paired juvenile and adult animals and glue them to one side of an index card (one picture per card). These cards can be made ahead of time and/or can be reused. Some example pictures are on the next page. Magazines or student drawings also work well!

2. Collect completed cards and give one card to each child at random.

3. Have the group work together, by asking about and showing each other their cards, and to find their appropriate partner(s). For example, if child A has a picture of a tadpole and child B has a picture of a frog, the two will be partners.

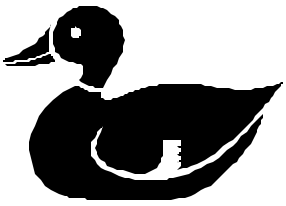
4. When children have found their partners they may sit down together.

5. When all group members have found partners, discuss who is with whom and why. Talk about the types of metamorphosis and the animals that go through it and about other ways of growing and changing.

Tadpole

Frog

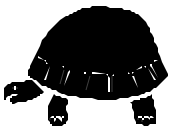
Ducklings



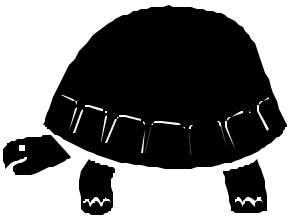
Duck

Caterpillar

Butterfly



Baby Turtle



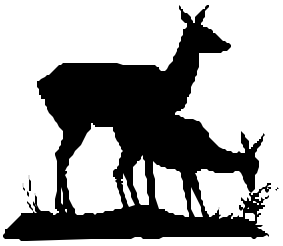
Turtle

Baby Raccoon

Raccoon

Eggs

Hawk

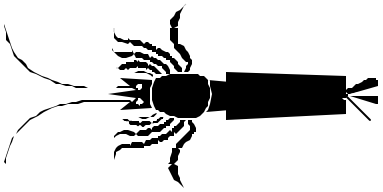


Fawn

Deer (Buck)

Eft

Salamander



Nymph

Dragonfly

***Springo** (Adapted from Wonders of Wetlands, p.77)*

Objectives
This activity is like a cross between a scavenger hunt and bingo. It will help improve students' observational skills while on a wetland trip or in the schoolyard. Springo is a fun yet educational activity that gets students' minds thinking about the diverse life forms that surround them. This activity gets children outside!

Subjects
Science

Skills
Observation Skills

Materials
Springo Sheets (may be photocopies), writing implement

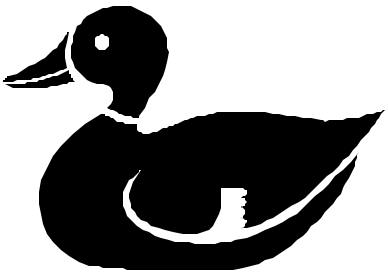
Time Needed
About half- hour, can be longer depending on depth of discussion and number of repetitions

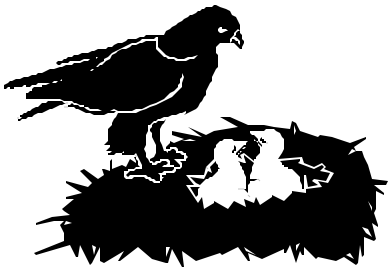
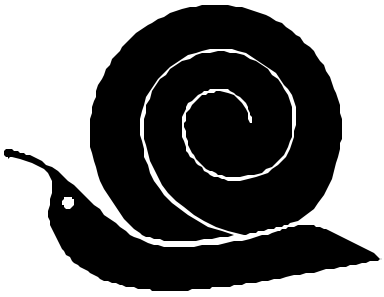
What to Do
1. Make Springo Sheets ahead of time. These can be photocopies of the following page. Sheets can also be made that are specific to the area in which they will be used. For example, a Springo Sheet to use in the schoolyard may contain twelve squares with names of common yard animals (Robin, Dandelion, slug, ant, blue jay, etc.), while a card to use at the wetland may look like the one here. Children may work individually or in teams.

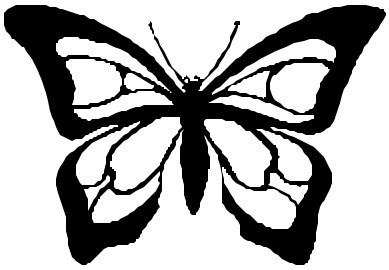
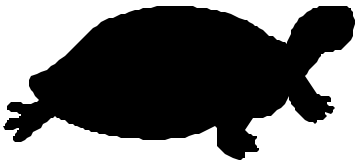
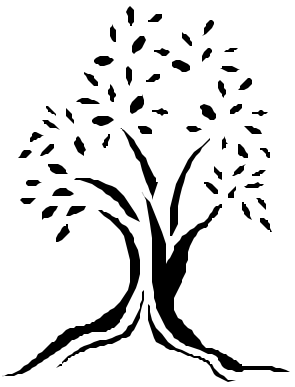
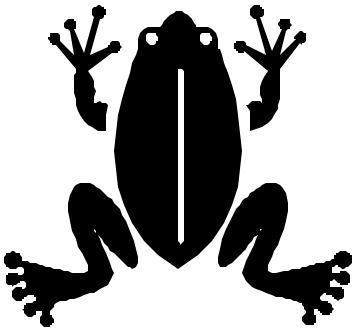
2. Have students look for the things they see on the card. When they see the object or creature, they may put an "X" over the picture of that object on their sheet. The first child, or team, to finish may help others. Because it is undesirable to damage the wetland or schoolyard habitat, make sure children know not to pick plants or move the other things that they see. A discussion of the "take only memories, leave only footprints" ethic may be helpful.

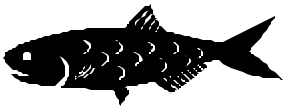
3. Discuss the group's findings. Where did they find the things? Did they see things not on the sheet?

Springo





Water Plant Art *(Adapted from Aquatic Project WILD, p.12)*

Objectives
This activity is a creative way for young students to get to know aquatic plants and the environment in which they live.

Subjects
Art and Science

Materials
Plants (aquatic or not), durable white paper, wax paper, newspapers or newsprint, plant press or several heavy books.

Time Needed
One hour for initial activity, several days to dry

What to do
1. Collect suitable (not rare!!!) plants on trip to wetland area. Use a field guide to help identify species that may be used. In general, try to pick common species like cattail, duckweed, water milfoil, elodea, and reed canary grass. These may be transported in a plastic bag. Student may be responsible for the collection of their own plant(s) if this is appropriate for the group. Also discuss the educational purposes of plant collection and why is it not appropriate to pick plants without a legitimate reason.

2. In the classroom, give each student a sheet of durable white paper, a sheet of wax paper, and part of a plant.

3. Have students arrange plant on white paper and cover with wax paper.

4. Press in plant press or between heavy books. Old Encyclopedias are perfect!

5. Let dry for several days, until completely dry.

6. Carefully peel off wax paper.

7. Students may further decorate their work or use the pressed plants as an identification key. These look great hung up in the classroom or hall!

8. Discuss the special characteristics of the plants used. What are the plants good for? What makes them special?

    - Note: This also works well with flowers!

Grades 3-5 Activities

Riparian Retreat *(Adapted from Aquatic Project WILD, p.34)*

Objectives
This activity provides an overview of riparian zone characteristics, inhabitants, and cultural importance, past and present. The activity allows for creativity and imagination in writing and the visual arts. This is a good activity to use before a site visit.

Subjects
Science, Art, and English

Skills
Imagination Skills, Ecology

Materials
General art supplies, paper and pencil

Time Needed
Forty-five minutes to one hour

Things to Know
Riparian areas are vital to wildlife and play a major role in shaping human activity. These areas can be thought of as "ribbons" of green life surrounding the banks of a river or stream (Aquatic Project WILD 1992). Riparian zones have many and diverse forms of plant life, which provide food, shelter, and corridors for travel for many types of animals, from voles to deer. Such areas have been important to humans in the past and continue to provide agricultural, recreational, and aesthetic benefits.

What to do
1. Discuss experiences students have had in stream or riverbank areas. What did they see there? What was the area like?

2. Talk about the concept of a **riparian zone**, a riverine type of environment that is important for many species of plants and animals as well as people. Think about how people use riparian areas.

3. Have students close their eyes and imagine they are in a riparian area. This may take from two to five minutes.

4. Ask students to describe what they "saw" for the class.

5. Have students either (1) write a short description or story about what they imagined or (2) to draw a picture of the area they imagined. Students may work individually or in small groups.

6. Use the students' work as a way to talk about some of the characteristics of riparian zones. Discuss what kinds of plants, animals, and other features students imagined. Make sure to talk about why these areas are so important to nature and to humans.

The Wetland Gourmet *(Adapted from Wonders of Wetlands, p.112)*

Objectives
This activity discusses the rich sources of food within a wetland ecosystem and would be complementary to a trip to an ethnobiological trail. This activity can also include a fun, hands-on cooking and eating demonstration! It should be stressed that while wetlands can and have provided rich sources of food, many wetland areas are now protected and taking resources from them is not allowed.

Subjects
Social Studies, History

Skills
Application of Knowledge

Materials
Wetland related food items- chose a few from the following list: persimmons, wild rice, blueberries (frozen is okay), cranberries, cattail roots, and watercress. Duck or turtle may also be used if you're ambitious. Tape of wetland sounds (optional).

Time Needed
About one and a half hours

What to Do
1. This activity can be set up as a "wetland celebration" in the classroom or schoolyard and might work well the afternoon before a field trip when energy level is high.

2. Discuss how Native Americans and Settlers in wetlands areas used many foods from wetlands, including many types of plants and animals. What plants might have been used? What animals?
   - **Note:** Wetland areas often provided some the richest resources around!

3. Let students try the wetland related foods. What do they think? How many have they ever had before?

4. Discuss why we don't just go in to a wetland and take plants and animals today. Share ideas about wetland conservation. You may also wish to tie this activity in with study of the area's Native Peoples and what their day-to-day lives might have been like.

Hear Ye! Hear Ye *(Adapted from Wonders of Wetlands, p.253)*

Objectives
Students will participate in a mock debate over current wetland issues. They will learn to think about any environmental issue as having multiple sides and aspects and begin to understand that things can always be seen from another point of view. A group decision will be made about a hypothetical situation.

Subjects
English, Social Studies

Skills
Communication Skills, Decision Making

Materials
Diagram of a (hypothetical) proposed development in a wetland habitat. Classroom may be set up as a town meeting; costumes are optional.

Time Needed
On two consecutive days: a half-hour the first day and one hour the second day.

What to Do

Day one

1. Tell students what goes on in a real public hearing.

2. Set the scene. Describe the imaginary situation of a land developer that wants to build a subdivision or other type of development in a natural wetland area that is habitat for many plants and animals. Explain that there has been some controversy over the project.

3. Assign roles to students. These may be by choice or drawn out of a hat at random. Roles should include:
   - The developers (two students)
   - Environmental Protection Officials (two students)
   - A farmer (one student)
   - Mayor of a nearby town (one student)
   - A scientist studying the animals in the wetland (one student)
   - Town's people

4. Have students think about their role and what their character might think and say about the situation for "homework." For example, how would a developer feel about turning the wetland into a subdivision? How would an ecologist feel?

Day Two

1. Set up and introduce the mock debate, including an overview of the situation and the characters. The teacher should function in a mediator role and ensure that students all get a chance to voice their opinions.

2. Ask for volunteered comments and responses. If no students volunteer, go around the room and have everyone briefly state what they think should be done about the situation.

3. Have characters come up with several options that could solve the issue.

4. Let students (still in character) vote on an option.

5. Tally votes. Which option won? Why?

6. Allow students to step out of character and reflect on what happened. How did they feel being a character other than themselves? What do they think about the decision that was reached?

Grades 6-8 Activities

Watch on Wetlands *(Adapted from Project Learning Tree, p.258)*

Objectives
This activity provides a good overview of wetland ecology and prepares students to get the most out of a fieldtrip experience. This activity can be used prior to, during, and after a wetland visit!

Subject
Science, Social Studies, English

Skills
Teamwork and Observation Skills

Materials
1 camera with film, 5 clipboards, writing materials, appropriate field guides.

Time Needed
Before trip: about a half-hour. During trip: About a half-hour. After trip: About forty-five minutes

Things to Know
Much controversy surrounds the legal and scientific definitions of "wetland." For practical purposes, however, we can think of a wetland as any land that has, is least some of the time, wet or waterlogged. There may or may not be standing water. Many types of wetlands exist, including, bogs, marshes, swamps, and wet prairies. The following information comes from Eggers and Reed (1997).

A **marsh** has emergent aquatic plants that grow in permanent or seasonal shallow water. Marshes also occur at the edges of open water ecosystems and seasonally flooded basins.

Bogs are found on waterlogged peat soils that are low in nutrients. They often represent a stage in the succession from open water to forest.

A **swamp** is a type of wetland dominated by woody vegetation (trees). Several types of swamp exits and include shrub swamps, hardwood swaps, coniferous swamps and others.

Wet prairies and meadows are dominated by herbaceous (grass-like) plants and appear fairly open. There are many types of wet prairies and meadows that range from slightly to very wet.

What to Do

Before Wetland Visit

1. Discuss the characteristics of wetlands and their different types. Whatmakes a wetland a wetland? Are students familiar with any wetlands in their area? How about famous wetlands, such as the Everglades?
2. Divide the class into study teams that they will participate in during the actual wetland visit. Let students, in their groups, come up with an acceptable study plan related to their team. Groups can include some or all of the following:
   - Photographic Survey Team (Should take pictures and take notes on what they photographed, etc.).
   - Plant Observation Team (Should record, using field guides, various types of plants observed at the wetland).
   - Animal Observation Team (Should record animals and evidence of animals observed at wetland; a net may be used to carefully observe aquatic animals).
   - Pollution Sleuth Team (Should look for pollution and potential sources of pollution in the wetland, including litter observed and estimated water quality).
   - Human Impacts Team (Should look for non-pollution human impacts, evidence of human use, and reasons why people might be using the wetland).

During Wetland Visit

1. Students should work in their groups for about a half-hour to gather their teams' data.

After Wetland Visit

1. Give students a little while to prepare an informal briefing about their observations for the rest of the class. Once they are ready, have teams (or team representatives) tell the class about their observations.

2. Discuss what was observed about the overall health of the wetland. Are their any current threats to the ecosystem's viability? If so, why?

Watered Down History *(Adapted from Aquatic Project WILD, p.116)*

Objectives
This activity helps students to understand human, plant, and animal life from ancient times to the present in a particular location and to use prediction skills to predict future situation relevant to that place. Cause and effect relationships can be analyzed in this manner and students may think about how to avoid negative consequences of current actions. This activity would be excellent as a follow-up to a site visit, and can be transformed into a research project or a class mural.

Subjects
Social Studies, English

Skills
Research Skills, Cause and Effect Analysis, Communication Skills,

Materials
Maps of the area to be studied, general art supplies, research resources

Time Needed
Variable depending on depth of research and exploration

What to Do
1. Discuss the fact that humans have shared wetland ecosystems with plants and animals for thousands of years, and continue to do so today. Have them compare and contrast past and present situations.

2. Decide on a scale of focus ranging from a specific local wetland to an entire watershed.

3. Have students pick topics to research and present to the class. These may be assigned, chosen by students, or picked at random. Some possible topics include:
   - Wetland Plants
   - Wetland Animals
   - Native People and the Wetland
   - Early European Settlement
   - Agriculture
   - Archaeology in the Wetland
   - Floods and Flood History
   - Natural Foods from Wetlands
   - Recreation
   - Anything else you can think of!

4. Discuss where students might find information on their topic; if possible schedule time in the library or media center. Using the library, encyclopedias, and the Internet are good places to start.

5. Have students write a short paper (in class or as homework) about their findings. Students may write more than one draft.

6. Students can report their findings to the class and create a visual representation of their main point. This can be attached to a poster to create a mural about the many aspects of the wetland region studied.

7. Discuss changes that have taken place through the wetland's history. What changes might take place in the future?

Helping Wetlands, Helping the World

Objectives
By participating in this activity, students will start to understand the importance of taking action regarding the things they learn. Students will learn that they really can make a difference.

Subjects
Social Studies

Skills
Community Action Skills

Materials
Role Model, may vary depending on student intentions

Time Needed
About 2 hours

What to Do
1. Introduce the idea of doing something about something that one envisions as a problem. If at all possible, invite a role model to come talk about the importance of community service and how young people can take action. Students should understand that they are not powerless to change a negative situation.

2. Talk about and decide on a small-scale, school specific problem that students feel could be changed. Come to a consensus or take a vote to decide which problem will be addressed. Discuss ways that this problem could be solved or made better. If possible, go out and do it! For example, if students think the schoolyard is accumulating too much litter, have a clean-up session.

3. After students have completed step 2, discuss problems that face wetland ecosystems in their area. What could be done to solve this problem? What steps might be taken to get closer to a solution?

4. Students may wish to take action after they have thought about the possibilities, but they should never be forced to. If some students decide to take action, be there to offer guidance in organizing, writing, or other appropriate actions.

5. Discuss the many levels and scales that students could take action at inthe future. Talk about the fact that many people have made a difference in a cause they believe in.

Grades 9-12 Activities

Wetland Tradeoffs *(Adapted from Wonders of Wetlands, p.285)*

Objectives
In this classroom-based activity, students learn to compare social, economic, and environmental realities in conservation or development decisions. Community history and current happenings in a specific place can be taken into account and better understood, helping students to develop a sense of pride and personal responsibility for their community.

Subjects
Social Studies, Economics

Skills
Critical Thinking Skills

Materials
Recent magazines or newspapers that exhibit various viewpoints about a wetlands issue.

Time Needed
One hour

What to Do
1. Discuss the various ways of valuing a wetlands. Wetlands make money for communities in many ways:
   - Fishing and Hunting for recreation
   - Economic based "harvesting" of animals, including fish
   - Presence of endangered species as a recreational draw
   - Water sources
   - Filtration of polluted waters
   - Flood-water storage

   In addition, wetlands may be valued for **aesthetic** reasons, or, in other words, just for existing. Do all people value wetlands in the same way? Is any one way the best?

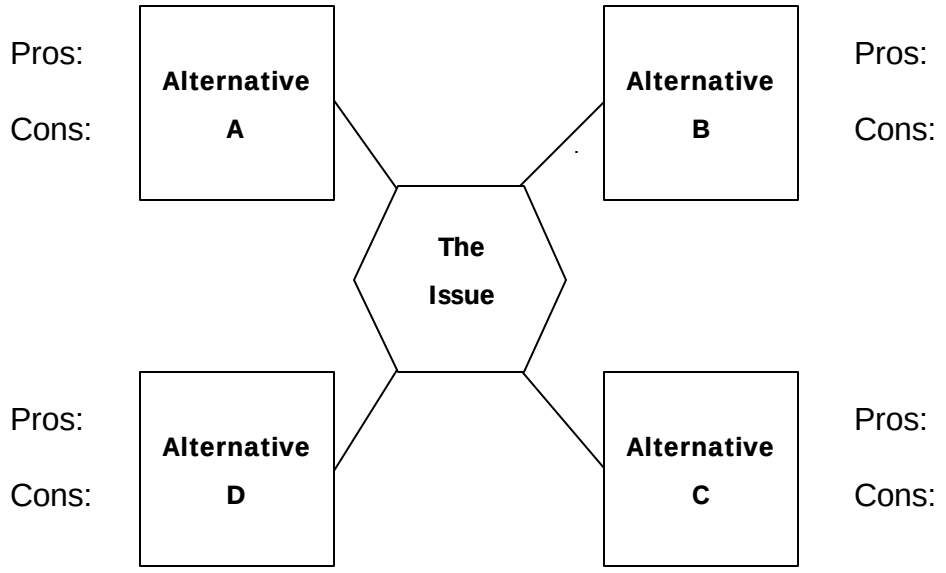
2. Have students write about a half page reflection on how they feel about wetlands and what they see as wetlands' primary value. This can be a short (five minute) and informal exercise. They may also reflect on the following questions: Why would people want to build near or in a wetland? What would prevent people from doing so?

3. Divide students into groups of four or five. Pass out the related magazine and newspaper articles to groups of students. Encourage them to think in terms

of solving a problem rather than creating divisions based on feeling about the issues. Each group should do several things:

- Describe the particular issue or controversy
- Identify major players and their positions
- Think of possible alternative solutions to the problem
- Evaluate each possible alternative, listing pros, cons, and consequences of each
- Choose their preferred solution and be able to explain why it was chosen.

Students should write down the results of their discussion and may use the following format:



4. Have students put their chart up on the board.

5. Discuss why each group selected the alternative they did. Do the solutions they chose reflect personal values? Was compromise necessary to reach a solution? Talk about how the values people hold shape the ways in which they behave regarding environmental (and other) issues.

The Edge of Home *(Adapted from Aquatic Project WILD, p.68)*

Objectives
This activity deals with the concept of **ecotones** (where habitats overlap). Since wetlands are composed of a series of ecotones, understanding this type of ecology is vital for a basic scientific knowledge of the floodplain environment. This activity could be used in a science or a math class, as it uses concepts in ecology and Venn Diagrams, which are typically introduced as a mathematical concept.

Subjects
Science, Math

Skills
Observation Skills

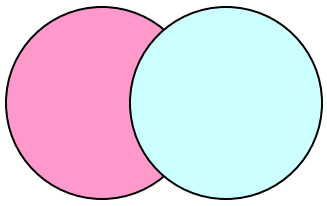
Materials
Yellow and blue crayons or colored pencils, pencils, paper, clipboards

Time Needed
About one hour

What to Do

In the Classroom

1. Distribute a piece of paper and an implement of each color to each student. Have them draw two large overlapping circles and note what happens where the two colors overlap. This may be accompanied by a discussion of Venn Diagrams.

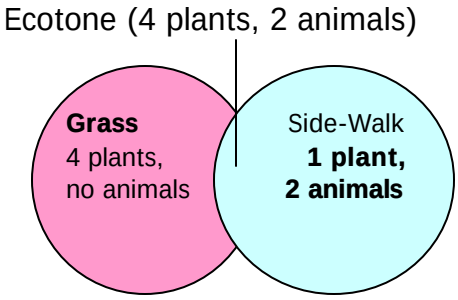


2. Explain that there are places in the natural world where ecosystems overlap in a manner similar to these diagrams. These pictures can be thought of as a "metaphor" for ecotones!

In the Schoolyard

3. Look outside the school for places where edges can be observed, such as the point where sidewalk and grass meet. Using clipboards, paper, and pencils,

have students draw similar diagrams of the edge effects they observe outside. Tally the number of plants or animals (or evidence of them) both in ecotones and in the non-ecotone areas. The following format may be used:



4. Upon retuning to the classroom, discuss the idea that populations of plants and animals tend to be more diverse in ecotones areas than in separate ecosystems.

5. These observation skills can be applied while on a visit to a wetland area.

Living Research (Adapted from Aquatic Project WILD, p.160)

Objectives
This activity deals with environmental role models. Having someone to look up to, either in personal life or in the academic or celebrity realm, is a major factor in learners' motivation to work for positive environmental change. This activity allows students to identify, research, and talk to people who have made positive contributions to local ecology or preservation. The activity has a local twist and improves research, interview, and general communication arts skills. Most importantly, however, the activity helps in the development of critical thinking about issues and why people act to conserve the natural world.

Subjects
English, Social Studies

Skills
Communication and Writing Skills, Critical Thinking Skills

Materials
Envelopes, writing materials, stamps, telephone

Time Needed
One hour, more if role model can speak to class.

- **Note:** Because it is so important for young people to have positive role models, getting in touch with someone who has actually worked on local a conservation issue will be highly beneficial. If possible, have the person speak to the class briefly about what they do and why they do it.

What to Do

1. Explain to students that they will be conducting research in their own community. Many local people have worked hard for conservation (and other noble causes, which may also be included in this activity); they are local heroes.

2. As a class, think of possible sources of information for getting in touch with people who have contributed to the communities conservation efforts.

3. Divide students into groups of three or four. Each group will focus on one "local hero."

4. Have each team develop a research plan, including interviews they may wish to conduct (either with the person or with people who have known them), and other ways of obtaining information about the "hero's" life. If students are to interview people, they should send a letter asking permission to be interviewed over the telephone or in person.

5. Once a team is sure that a person is willing to be interviewed, they need to draw up a list of questions. Some ideas include:
   - How did you become involved in working for the environment?
   - Why did you feel that action needed to be taken?
   - What kinds of hardships did you face along the way and how did you overcome them?
   - What are your personal dreams for you field? Where would you like to see your contribution leading in the long run?
   - Do you have any advice for young people and citizens interested in taking positive action in this field?

   Be sure students take notes and are very polite during interviews!

6. After interviews have taken place, each group should create a biographical written or oral report, or an alternative presentation form that shows what they have learned.

7. Thank all participants through written letters.

8. Discuss what learning about local heroes has meant to students? Do they feel like more like they can make their own personal difference?

Resources

Environmental Contacts

Environmental Concern, Inc. (*Wonders of Wetlands*)
PO Box P
St. Michaels, MD 21663
Slattery, Britt Eckhardt; Kesselheim, Alan S.; Higgins, Susan H.; Schilling, Mark R.1995. *WOW: The Wonders of Wetlands, an Educator's Guide*. St. Michaels, MD and Bozeman, MT: Environmental Concern, Inc. and The Watercourse.

Western Regional Environmental education Council (*Aquatic Project WILD*)
Po Box 18060
Boulder, CO 80308
Phone (303) 444-2390 Fax (303) 444-2391
Western Regional Environmental Education Council. 1992. *Aquatic Project WILD.* Boulder, CO: Project WILD.

American Forest Foundation. (*Project Learning Tree*)
1111 19th St. NW Suite 780
Washington, DC 20036
Phone (202) 463-2462
http://www.plt.org
American Forest Foundation. 1997. *Project Learning tree: Environmental Education Activity Guide.* Washington, DC: American Forest Foundation.Council for Environmental Education. 1992. Project WILD: K-12 Activity Guide. Bethesda, MD: Council for Environmental Education.

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Engleson and Yockers. 1994. *A Guide to Curriculum Planning in Environmental Education.* Madison, WI: Wisconsin Department of Pubic Instruction.

Hungerford, Harold R. and Volk, Trudi L. 1990. *Changing Learner Behavior Through Environmental Education*. Journal of Environmental Education 21(3): 8-21.

North American Association for Environmental Education. No Date. *Environmental Education Materials: Guidelines for Excellence.* Troy, OH. NAAEE.

Simmons, Bora. 1999. *Environmental Education in the Standards-Based Curriculum.*Clearing 104:20-23.

Sobel, David. 1995. *Beyond Ecophobia: Reclaiming the Heart in Nature.* Education. Orion 14(4):11-17.

Stapp, William B. 1969. *The Concept of Environmental Education*. The Journal of Environmental Education 1(1): 30-31.