



# Wyoming's Wetland Wildlife Teaching Package



Modified from the original package written by Jeanie Draper  
and funded by the Wyoming Game & Fish Department.

## Introduction

Your teaching package consists of a variety of lessons and activities to lead you and your students through the incredible world of wetlands. We designed it to help you motivate your students to learn more about these vital habitats.

The background information section gives you an overview of what wetlands are. The activity section is divided into "priority" and "supplemental" section. Priority activities introduce important basic concepts and the supplemental activities provide further resources to expand your curriculum. Further background information is provided within each activity description.

## Background Information

### *What is a wetland, anyway?*

Wetlands are natural areas that hold water. They are characterized by the presence of water and saturated or "hydric" soil. Plants that grow here are adapted to wet soil conditions (hydrophytic vegetation). Some wetlands may be dry during part of the year.

There are different types of wetlands throughout the U.S. and Wyoming. They are classified depending on location and vegetation.

We find four general groups of wetlands in Wyoming:

1. **Deep Marshes** may have water up to four feet (1.2m) deep during wet periods. They are usually flooded each year except during extreme droughts. Deep marshes can be found near the edges of lakes, ponds, and rivers. Most are fed by rainfall, storm runoff, and melting snow. Common deep marsh plants include: potamogeton (pondweed), water lilies, cattails, and bulrushes.

2. **Shallow Marshes** are often found near deep marshes. The water level is usually only six inches (15 cm) to a foot (30 cm) deep. You will find grasses and sedges here, as well as cattail, duckweed, and elodea (water weed).
3. **Wet Meadows** flood annually. The soil may be saturated with water year round, but the water is never deep. Wet meadows form in poorly drained, low-lying areas, along streams or lakes, and even in the basins of Wyoming's high mountains. Many water-loving marsh plants such as sedges, grasses, and rushes grow here. Wetland wildflowers such as elephant head, marsh marigold, and purple iris are common. Wild licorice is another common plant found in moist, sandy meadows of Wyoming. (Common licorice, used to flavor candy, is a different species).
4. **Riparian Areas** are sections of land along creeks, streams, rivers, lakes, springs, ponds, and wetlands where vegetation utilized the moisture from a high water table in addition to normal precipitation. Grasses, willows, cottonwoods, aspens, and shrubs such as mountain alder grow here.

### *Why are people so concerned about saving wetlands?*

Wetlands comprise less than 2% of Wyoming's land area, yet they are important to each of us and to the welfare of over 90% of our wildlife species because they:

#### **Ensure clean water supplies:**

Wetlands are great water filters because of their location between land and water. They intercept runoff (rain and melting snow) from land before it reaches streams and rivers. Wetland plants and soils filter out sediments and pollutants. This important function keeps our town's water supplies fit for drinking. Wetlands also reduce the amount of nutrients (especially nitrogen & phosphorus) in flooding waters, helping to prevent over-enrichment (eutrophication) of water in lakes and reservoirs.

Wetlands ensure water availability for towns, ranches, livestock, and wildlife by absorbing and storing it during wet seasons. Some wetlands recharge groundwater supplies by trapping water and slowly releasing it to underground aquifers.

#### **Support rich wildlife diversity:**

More than one third of the United States' endangered and threatened wildlife species and several endangered plant species are dependent upon wetland habitats. Millions of birds depend on wetlands along their migration routes for resting, feeding, and nesting areas.

Wyoming is the 6th largest producer of ducks and geese in the United States. The endangered species that depend on wetland in our state include the whooping crane, Wyoming toad, and Kendall Warm Springs dace (a small fish).

### Provide protection from flooding:

Wetlands lessen the impact of floods by spreading water out over a large area -- this slows down the runoff water and allows time for some of it to soak in. The wetlands release flood waters slowly, and protect our farm fields and towns downstream from more serious flooding. Wetlands also minimize flood damage by trapping eroded soil (silt) carried by flood waters. Removal of sediments is valuable because sediments often carry absorbed nutrients, pesticides, heavy metals, and other toxins that pollute water.

### Are barriers to erosion:

Landowners benefit from wetland plants which help anchor the soil and prevent erosion. Upland plants prevent soils from washing downhill into streams after heavy rains or during snowmelt. Riparian and wetland plants such as willow and cattail have a mass of roots which hold the soil and prevent floods from cutting the channel deeper and wider. Because they are often located between water bodies and high ground, wetlands buffer shorelines against erosion.

### Support recreation:

Many of us visit wetlands every year to fish, hunt, boat, hike, and observe wildlife. They are important places for people to relax and enjoy nature. Funds generated by this recreation are often used to protect habitat.

### How many wetlands are there?

Of the total land area in the lower 48 states, only 5% are covered by wetlands. Nearly 94% of these wetlands are freshwater inland areas. The remaining are considered saltwater coastal wetlands. When European settlers first arrived in North America, there were approximately 215 million acres (86 million hectares) of wetlands in the lower 48 states. Less than half remain today-- 99 million acres. Most of this loss came after World War II. The present rate of wetland loss is half a million acres per year (183,000 hectares).

In Wyoming, we have 280,591 wetlands totaling 371,758 surface hectares. The majority (67%) of wetlands are classified as temporary.

### If wetlands are so important, why are we losing them?

Wetlands were converted to dry land for food production and development to meet the needs of our spreading civilization. Although we require places to live, highways on which

to drive, and food to eat, we may be able to preserve some remaining wetlands if their benefits as wetlands outweigh their value after conversion.

Natural causes of wetland depletion include: erosion, droughts, and overgrazing by wildlife or domestic livestock. Human impacts include: drainage, dredging and stream channelization, filling, diking and damming, discharge of pollutants, and mining.

**Are they regulated by some agency?**

Wetlands were given protection with the passage of the Clean Water Act by Congress in 1972. Section 301 of the act makes it illegal to discharge material into wetlands or use wetlands to discharge wastes. An exception to this section includes section 404 which provides a permit program for the discharge of dredged and fill material. The U.S. Army Corps of Engineers and Environmental Protection Agency jointly administer this permit program with expertise from the U.S. Fish & Wildlife Service and Soil Conservation Service. The Wyoming Department of Environmental Quality has regulatory authority over water quality in the state of Wyoming. It regulates the discharge of pollutants into wetlands and assists with the 404 permit process.

**Where can we find a wetland to explore?**

Check out the list at the end of this packet, or visit our website at [www.wgfd.wyo.gov/wyomingwetlands](http://www.wgfd.wyo.gov/wyomingwetlands) to find one near you!

## Wildlife Identification

Grade Levels: 4-6

Subjects: Art, Language Arts, Reading, Science

Learning Objectives: The students will be able to: 1) compare and contrast the differences between species; 2) describe how an animal adapts to its habitat and 3) recognize common wetland wildlife.

Materials: Flashcard wildlife sheet (at the end of this lesson plan), colored pencils/markers/crayons, scissors, field guides

### Method:

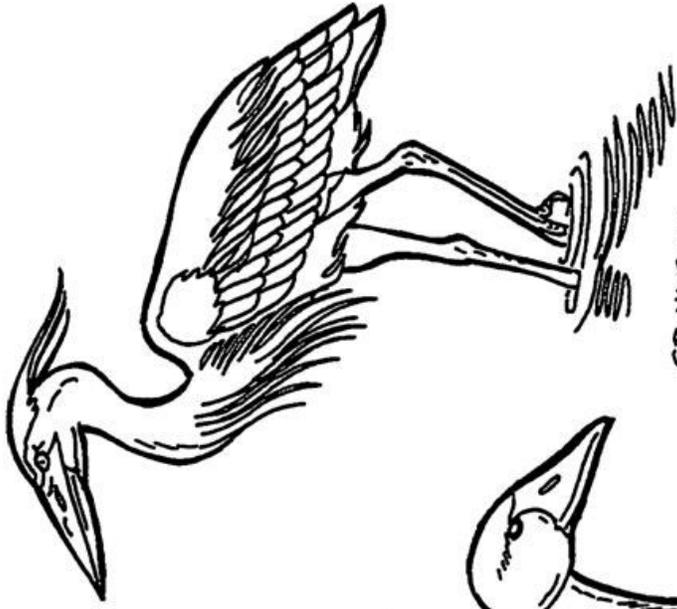
1. Put photos of the following animals into a powerpoint presentation. Divide the class into teams of two or three to compete in identifying the species as you show them on a projector screen.

To challenge them further, ask: Where does this animal live? What does it eat? Why does it prefer wetland habitats? Is it a mammal, reptile, or amphibian?

- |                         |                    |                           |
|-------------------------|--------------------|---------------------------|
| ● Red-winged black bird | ● Trumpeter swan   | ● Elk                     |
| ● Leopard frog          | ● Tiger salamander | ● Dragonfly nymph         |
| ● Muskrat               | ● Great blue heron | ● Lake trout              |
| ● Moose                 | ● River otter      | ● Wyoming toad            |
| ● Mallard               | ● Bald eagle       | ● Kildeer                 |
| ● Canada goose          | ● Blue-winged Teal | ● Sandhill crane          |
| ● White pelican         | ● Beaver           | ● Yellow-headed blackbird |
| ● Avocet                | ● American coot    |                           |

2. Break students into groups and provide each group with a copy of the "Flashcard Wildlife" sheet found following this lesson plan.

- Have students cut out the individual flashcards, color the animals appropriately, and research/write a short life history for that species on the back of the card.
- Have them compare and contrast the species' size, coloration, food habits, and mating habits.
- Encourage the groups to predict how the species acts given its physical adaptations.



GB. HERON



AVOCET



T. SWAN



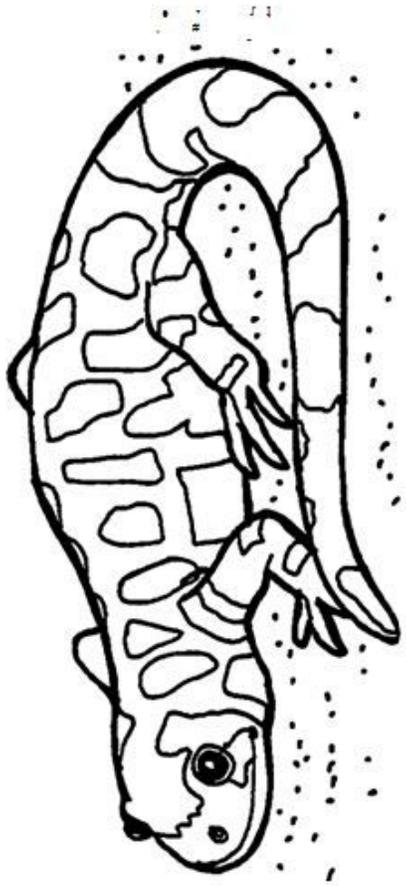
BEAVER



MUSKRAT



MINK



TIGER SALAMANDER



WYOMING TOAD

## Birds in Flight

Grade Levels: 3-6

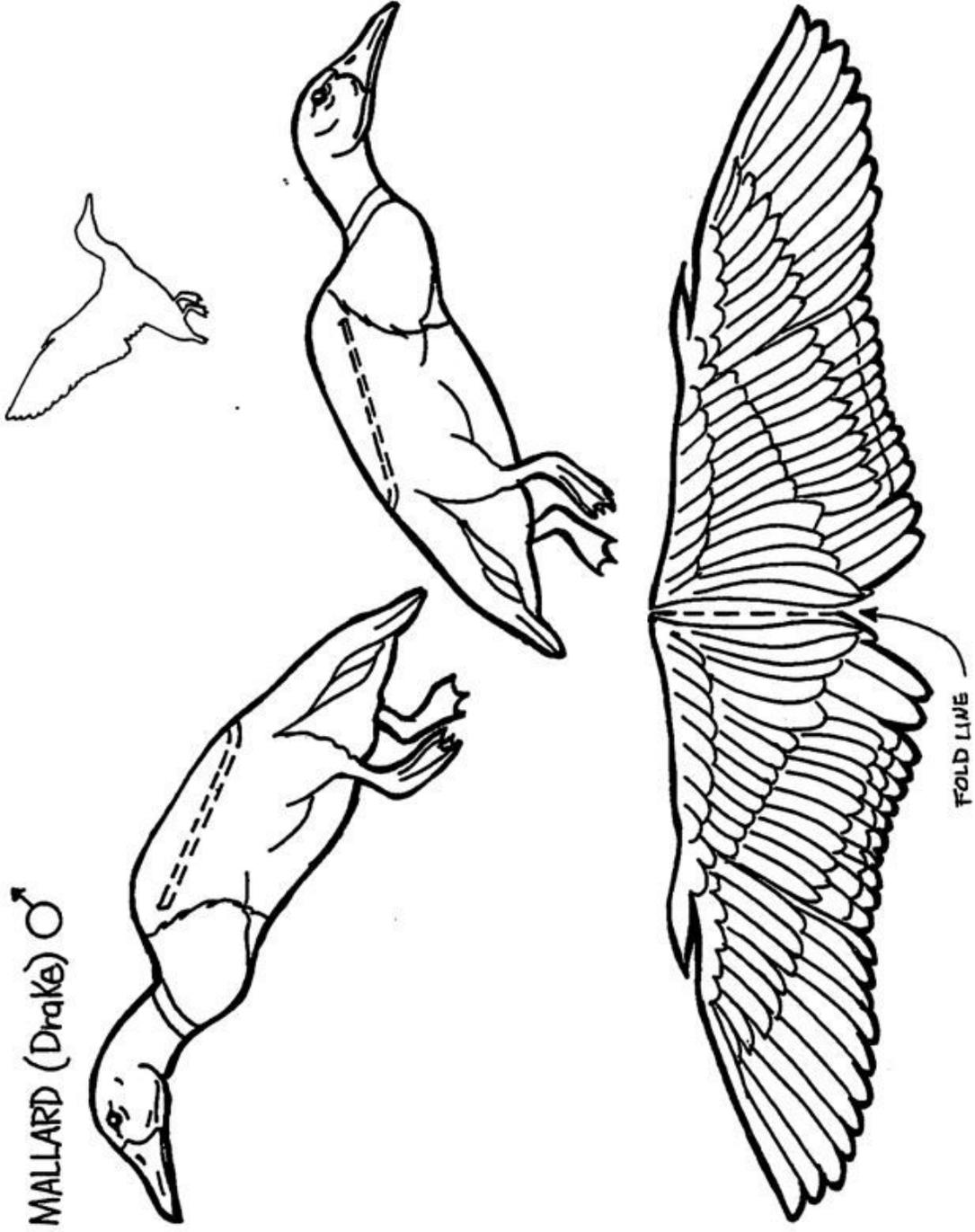
Subjects: Art, Reading, Science

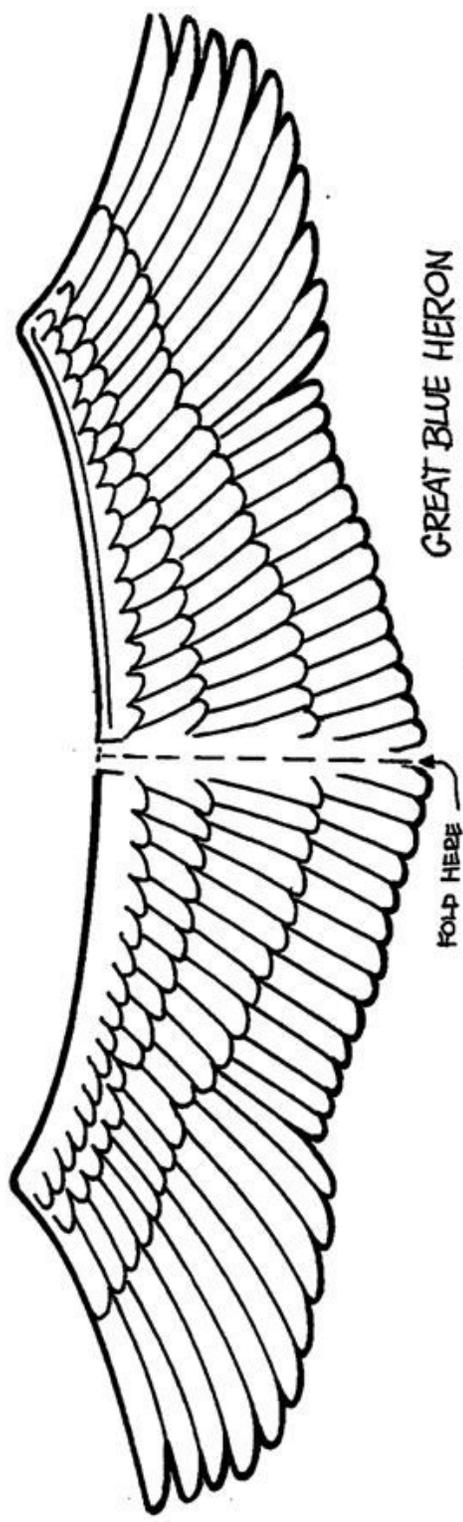
Learning Objective: the students will be able to predict how a bird's physiology, coloring, and habits have adapted it to living in a wetland.

Materials: "Birds in Flight" mobile outline (following this lesson plan), an overhead projector, butcher paper, large cardboard boxes or foam board, heavy scissors, paint, string, field guides.

Method:

1. Divide the students into groups.
2. Duplicate the "Birds in Flight" sheet onto a transparency, or, if using a digital projector, project onto a wall or whiteboard.
3. Tape a large piece of butcher paper onto the wall. By positioning the projector and focusing the lens, expand the image of the great blue heron until its wingspan is 6 ft (1.8m) from wing tip to wing tip. Expand the image of the mallard until its wingspan is 25 inches (64 cm). Trace wing and trunk images onto the paper.
4. Cut the tracings out, track onto cardboard, and cut the cardboard. Make slits in both the cardboard and paper where they are marked on the original.
5. Color the birds using a field guide for reference, and insert the wing section into the trunk section. Attach string and hang the mobile.
6. Use field guides to draw silhouettes of other wetland birds and use the same method outlined above to create a whole community of wetland birds.
7. Each group can design a life history information sheet on their mobile species. Some may choose to create a short story, skit, poem, or artwork to teach the other groups. Compile these into a class reference guide.





GREAT BLUE HERON

FOLD HERE

## Countin' Critters

(Provided by Patty Stevens of Afflerbach Elementary and Tom Farrell of Pioneer Park School, Laramie County School District 1)

Grade Levels: 4-7

Subjects: Science, Math

Learning Objectives: Students will be able to name general types of plants and animals such as grasses, shrubs, vines, beetles, dragonflies, etc. Students will also be able to list and group these organism types into habitat according to their distribution, and record signs of human activity and categorize these as having positive, negative, or neutral effects on a study site.

Background: Field ecologists obtain quantitative information about the structure and composition of communities (the plants and animals of a given area) in different ways. Their techniques can be adapted to study all major types of plant and animal communities. Ecologists call this activity a "transect study using the line intercept method." This one-dimensional survey consists of making observation along a line or lines laid out randomly or deliberately over a study area.

Materials:

1. Countin' Critters transect data record (found following this lesson plan)
2. Clipboards or 9x12" sheets of cardboard with rubber bands to hold paper in place
3. Pencils
4. Sketch paper
5. Magnifying glass
6. Measuring tape
7. Twine
8. 5 stakes, each 2 feet long
9. Insect nets

Method:

1. Divide the students into groups of 3-4 per group
2. Lay out a 50' or 100' line transect using stakes and twine near a wetland or in a riparian area, and another in an upland area.
3. Each transect line can be divided into sections to give each group a section to study.
4. Only those plants, insects, or other objects that are touched by the transect line or found lying under or over it may be counted.
5. Besides totaling the number of different types of plants and animal along the lines, you may extend the activity by having students consider the following: total number

of individuals for a given species, relative frequency of occurrence for each species, and grand total of all individual organisms.

6. Have students make general observations along the transect.
7. Have students record data at regular intervals along the transect.
8. Have students sketch and identify the plants and animals along the transect.
9. Have students compare and contrast the results of the upland site with the results of the wetland or riparian site.

**Discussion:**

Facilitate a discussion afterwards asking the students these questions:

1. Which of the two areas (wetland vs. upland) was the richest habitat in terms of total number of species?
2. Did the habitat share any species in common?
3. What species could be found in only one of the sampled habitat?
4. Where were the most living animals found?
5. Where were the most plants found?
6. Why do you think there are more plants and/or animals in some areas than others?
7. What could attract insects and other small animals to an area? Plant composition, plant color, food supply, shelter, temperature, moisture, light, or a combination of those perhaps?

# Countin' Critters Transect Data Record

Student Names: \_\_\_\_\_

Study site location: \_\_\_\_\_

Study site description: \_\_\_\_\_

## ANIMALS

Intervals	Ants	Grass-hoppers	Flies	Bees	Butter-flies	Spiders	Vertebrates (frogs, snakes, birds, etc.)
1							
2							
3							
4							
5							

## PLANTS

Intervals	Grasses	Flowers	Bushes	Vines	Saplings	Trees	Other
1							
2							
3							
4							
5							

## Wetlands on the Map

Grade Levels: 3-7

Subjects: Social Studies, Math

Method:

1. Visit the Wyoming Wetlands Story Map on our website ([www.wgfd.wyo.gov/wyomingwetlands](http://www.wgfd.wyo.gov/wyomingwetlands)) on an overhead projector in front of the class. Have the students help locate a wetland near your school on the map.
2. Ask students:
  - a. Where does the water in this wetland come from?
  - b. Where does water in this wetland go?
  - c. Are there other wetlands in this area, or is it alone in an arid (dry) region?
  - d. How are nearby houses and towns benefiting from this wetland?
  - e. Where does your town get its water? Do you depend on a wetland to filter out pollutants from your drinking water?
3. Broaden the conversation to the entire state.
  - a. Which area has the most wetlands? The least? Why do you think so?

Extension:

How much water do you use each day? How much does your family use?

- Have students design a study to find out how much water their family uses in one day.
- Then, have students average class data and multiply by city or town population to figure out how much water the town/city uses in one day, one month, and one year.
- Have students come up with a creative way to represent these results, as well as some ideas of ways they can conserve water in their everyday lives.

## Beaver Dam Biology

Grade Levels: 4 - 6

Subjects: Science, Art, Language Arts

Learning objectives:

Students will be able to: 1) define the word "succession" 2) identify the differences between several stages of succession; and 3) predict what the next stage of succession will be.

Background:

Beaver ponds provide a perfect opportunity to learn about the concept of succession--the gradual and continuous replacement of one kind of plant or animal by another. As plant succession occurs, there is a parallel succession of animal life that depend on the plants.

Beaver ponds are actually wetlands that store water, filter stream sediments, and provide habitat for many other species. Beavers gnaw branches from nearby aspen or willows and place them in a dam with the leaves facing downstream.

More branches are stacked on top and secured with mud. During large-scale dam building, beavers fell entire trees for building material.

When the supply of woody vegetation dwindles, the beaver moves to a new home.

*Ecological succession* is the process of change in the species structure of an ecological community over time. The time scale can be years to decades (for example, after a wildfire), or even millions of years after a mass extinction.

Various stages of succession can be seen in different beaver ponds in your area:

- When the dam is first built, organic matter from plants and animals begins to accumulate in the pond and plants line the shore.
- Soon, small fishes, snails, and insect larvae find sufficient food to live in the beaver pond. Some arrive as eggs carried on the feet of birds or other visitors such as insects, frogs, turtles, and mice.
- Eventually, pondweeds become abundant on the bottom and shore plants grow farther out into the pond. As the plant population changes, so do the kinds of fish, insects, and other animals.
- Plants and animals contribute more and more organic matter to the pond bottom as they die and decay.
- Finally, emergent vegetation extends all the way across the pond. Land plants close in around the shore. This filling continues until what was once a beaver pond becomes a grassy prairie or forest.

- **Beaver build lodges by packing stacks of branches together with mud, then gnaw an entrance tunnel and two chambers. The first chamber is just above water level where the beaver can dry off and groom itself. The next chamber is slightly higher and is used as a sleeping area. This sleeping chamber is covered with shredded bark.**

**Method:**

**Visit several beaver ponds in your area to document their state of succession. Make careful observation the primary focus of your trip by asking leading questions such as:**

- **How long has the beaver been here and how can you tell? How long has the beaver been gone and why did it leave? How many signs of beaver can you find nearby?**
- **Can you find the beaver "slide" where they enter the water?**
- **How does a beaver fell a tree?**
- **How does a beaver get a tree to the pond?**
- **What signs of other wildlife can you find here? Are there tracks of other species around the shore? Do you recognize plants or trees here?**
- **Why do other animals live or visit here?**

**Extensions:**

**Some students may want to take photographs of the areas for a "pictorial essay" of beaver pond succession to display in your classroom. Others may want to illustrate succession through drawings, miniature dioramas, poetry, or a short story.**

## Key Terms Defined:

**aquifer:** an underground geological formation containing water.

**biological surplus:** a unit of habitat has limitations on how much wildlife it can support given its food, water, cover, and area. These limitations determine the capacity of the habitat. Any "surplus" numbers over this limit face increasing threats to survival.

**breeding territory:** an area defended by an animal against others of the same species. The concept of ownership or dominance over a piece of habitat.

**dissolved oxygen:** the oxygen mixed in water and used by fish and other aquatic animals; put into water by wind, currents, plants, and microorganisms.

**ecosystem:** the interacting system of a biological community (plants, animals) and its non-living environment (soil, water, air).

**endangered species:** a species in immediate-danger of becoming extinct.

**energy flow:** the transfer of food energy from the source in plants through a series of animals. A simple food chain would consist of a green plant eaten by a leaf-eating insect that is in turn eaten by a bird.

**erosion:** a process by which the surface of the earth is constantly worn away by the action of wind, water, and glaciers.

**eutrophication:** an increase in concentration of nutrients in rivers, estuaries, and other bodies of water. This increase may be due to natural causes, human influence, or a combination of both.

**floodplain:** an area adjacent to a lake or stream which lies outside the ordinary banks of the water body and is periodically covered by flood water.

**food chain:** also called the food web or energy cycle; the chain of organisms in a community that produce food and consume it; the pathway that food takes through a group of organisms.

**freshwater:** water that contains little or no salt.

**groundwater:** water that penetrates the earth's surface from precipitation and infiltration by streams, ponds, and lakes.

**headwater:** small creeks at the uppermost end of a stream system, (often found in the mountains), that contribute to larger creeks and rivers.

**hydric soil:** soil that is saturated, flooded, or covered with ponds long enough during the growing season that anaerobic (oxygen-depleted) conditions develop near its surface.

**hydrophyte:** any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; a plant typically found in wetlands and other aquatic habitats.

**interrelatedness:** the ecological concept that "everything is tied to everything else." Abiotic and biotic systems depend on each other.

**nutrient:** substances such as fertilizer, phosphorous, and nitrogen compounds which enhance the growth of plants and animals.

**pH:** the hydrogen ion content, or the acidity or alkalinity of a substance. In water, most fish find neutral pH most comfortable. On a scale of 0 to 14, neutral is 7. A low pH indicates acidic water, high pH is alkaline.

**photosynthesis:** a chemical process inside plant cells; light energy is used to make carbohydrates from carbon dioxide and water. oxygen is one waste product.

**substrate:** the material that makes up the bottom layer of streams, such as gravel, sand, or bedrock.

**threatened species:** a species whose numbers are low or declining. Is not in immediate danger of extinction, but is likely to become endangered without protection.

**turbidity:** the cloudy condition of a body of water that contains suspended material such as clay or silt particles, dead organisms, or small living plants or animals.

**waterfowl:** waterbirds, usually ducks and geese, but includes shore and wading birds.

**watershed:** the region drained by, or contributing water to, a stream, lake, or other body of water. Collects water and guides it through tributaries to a river or stream system.

## Teaching tips for outdoor activities

(Adapted by Jeanie Draper from: Nature with Children of All Ages by Edith Sisson)

- Use Socrates "discovery" method of leading questions. It works well to let the children discover the answers to their questions themselves. This is effective in the outdoor classroom where there are often many "clues" to lead them.
- Explore together. Don't panic if you don't know an answer; consider this an opportunity for productive teaching and to foster curiosity. Admit you don't know and suggest that you and the child look it up together. Generate further incentive to learn by suggesting they find the answer and tell you what was discovered.
- Look, feel, listen, smell. Magnify the learning experience by becoming truly involved. "Seeing is believing," and so is feeling, listening, and smelling.
- Unlike an indoor classroom where the conditions are predictable, the outdoors can provide surprises. Accept these as challenges rather than aggravations, and take advantage of them.
- When you address students in an open area, position yourself so that you are looking toward the sun while you speak. Only one person will be squinting, not the whole group.
- When leading students down a trail, walk until half of the members have gone by an object you wish to point out; stop and step back to the middle so you can discuss the object where both ends of the group can see it and hear you. (It also might help to put the slower students in the front of the line)
- If your students have broken into small groups for activities, give them a feeling of support by paying frequent visits to each one.

## Potential Field Trip Sites

### ALBANY COUNTY:

- Bamforth National Wildlife Refuge (near Laramie)
- Hutton Lake National Wildlife Refuge (near Laramie)
- Laramie Plains Civic Center - Wyoming Children's Museum and Nature Center
- Monolith Project - Laramie River, southwest of Laramie, Stream and riparian habitat rehabilitation project.
- Sybille Wildlife Research and Education center - (28 miles west of Wheatland on Highway #34) Call to schedule an interpretive tour for group.

### BIGHORN COUNTY:

- Renner Wildlife Management Unit (near Greybull)
- Yellowtail Management Area outdoor Classroom (8 miles east of Lovell)- Natural and human-created riparian, wetland and agricultural habitats.

### CARBON COUNTY:

- Pathfinder National Wildlife Refuge (between Rawlins & Casper)
- Wick Wildlife Management Unit (west of Arlington)

### CROOK COUNTY:

- Ranch A Fish Hatchery and Wildlife Visitor Center (7 miles southwest of Beulah on sand Creek road) Call to schedule tours.
- Sundance Nature Area (Sundance Creek in town of Sundance) Self-guided nature trail with signs and improved wetland pond.

### FREMONT COUNTY:

- ocean Lake wildlife management unit (near Riverton)
- Sand Mesa Management Area (10 miles west of Shoshoni)

### GOSHEN COUNTY:

- Rawhide wildlife Habitat Trail (3 miles southeast of Lingle) Developed trail and interpretive signs.

- Springer Wildlife Habitat Management Area (near Torrington) Wetland and upland agricultural habitat. Interpretive signs and kiosk.
- Table Mountain Wildlife Habitat Management Area (near Yoder) Wetland habitat and dense nesting cover development. Interpretive signs.

#### **LARAMIE COUNTY:**

- Cheyenne Backyard Wildlife Habitat and Wildlife Visitor Center- Call to schedule tours and programs or for more information.
- F.E. Warren Air Force Base - Crow Creek Nature Area (in Cheyenne) Includes developed trail and signs, and interpretive tours.

#### **NATRONA COUNTY:**

- Edness-Kimball Wilkins State Park (8 miles east of Casper) Developed nature trail, interpretive signs in natural riparian habitat and created wetlands.

#### **PLATTE COUNTY:**

- Gehringer Wetland and Outdoor Classroom (6 miles northeast of Wheatland) Wetlands and irrigation ponds to explore. Contact the Platte County Resource District for a guided tour.
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#### **SHERIDAN COUNTY:**

- Sheridan District office and Wildlife Visitor center Interpretive exhibits on wildlife and habitat of northeast Wyoming. Call to schedule an interpretive tour.

#### **SUBLETTE COUNTY:**

- Soda Lake wildlife Management Unit (near Pinedale)

#### **TETON COUNTY:**

- National Elk Refuge (near Jackson)
- South Park wildlife Management unit (near Jackson)
- Seedskaadee National Wildlife Refuge (near Green River)

## Books About Wetlands

- **At the Edge of the Pond** by Jennifer Dewey (Little, Brown, & co. 1987) Grades K-3
- **Audubon society Nature Guides: Wetlands** by W. Neiring (Alfred A. Knopf 1985) Grades 10-12
- **A Walk Through the Marsh** by C. William Harrison (Reilly & Lee 1972) Grades 3-5
- **A Walk by the Pond** by C. William Harrison (Reilly & Lee 1971) Grades 3-6
- **Between Cattails** by Terry T. Williams (Scribners 1985) Grades 2-5
- **Birth of a Pond** by John Hamberger (Coward, Mccann & Geoghegan, Inc. 1975) Grades 3-5
- **Eyewitness Books: Pond and Rivers** by S. Parker (Knopf 1988) Grades 6 and up
- **Exploring a Brook** by Winifred Lubell (1975)
- **Food Chains and Ecosystems- Ecology for Young Experimenters** by George and Bernice Schwartz (Doubleday & co., Inc. 1974) Grades 6 and up
- **Golden Guide to Pond Life** by George Reid (Westem Publishing Company, Inc. 1967) Grades 5 and up
- **Marshes and Swamps** by Lynn Stone (Children's Press 1983)
- **No Bones** by Elizabeth Shepherd (Macmillan 1988) - an easy key to aquatic bugs
- **Our Wild Wetlands** by Sheila Cowing (Messner 1980) Grades 4-7
- **Pond Life** by Lynn Stone (Childrens Press 1983)
- **Pond Life: Watching Animals Find Food** by Herbert Wong and Matthew Vessel (Addison-Wesley 1970)
- **Signs Along the River** by Kayo Robertson (Robert Rinehart, Inc. 1986)
- **The First Book of Swamps and Marshes** by Frances C. Smith (Franklin watts 1969) Grades 3-5
- **The River** by David Bellamy (Clarkson N. Potter, Inc. 1988) Grades 1-3
- **Water Insects** by S. Johnson (Lemer 1989)
- **Walking the Wetlands; A Hiker's Guide to Common Plants & Animals of Marshes, Bogs, and Swamps** by Janet Lyons & Sandra Jordan (John Wiley & sons, Inc. 1989)
- **Wetlands** by Lynn Stone (Rourke 1990)
- **Year on Muskrat Marsh** by Berniece Freschet (Scribners 1974) Grades K-3



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