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## Section 9: Appendices

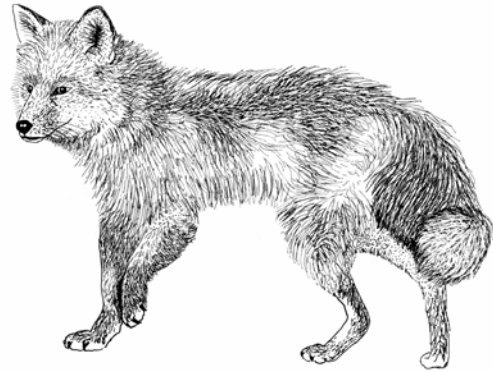
This section contains a list of alternative activities, vocabulary used in the guide, and lists of educator and student resources.

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## Alternatives to Written Reports

### *RESPONDING TO OUR ENVIRONMENT*

1. Make large or finger puppets based on animals and plants in the environment. Act out their interactions and interrelationships.
2. Draw a map based on the wetland or ecological niche studied.
3. Arrange a book fair based on books on local wildlife and ecosystems. Work with a local bookstore to do this.
4. Construct a mobile of local animals and plants.
5. Build a model of favorite wetland ecosystem.
6. Invent word finds using key words of the wetland ecosystem.
7. Make a poster about an animal or plant in the wetland.
8. Write a poem about a new discovery made while learning about your wetland using plants and animals that live there.
9. Talk to someone in the local community about their relationship to the wetland.
10. Compose a list of 10 questions you have about the wetland. Swap the lists with other students and discover how many questions can be answered.
11. Write a letter to groups concerned with the wetland, asking them for information.
12. Send a letter to a friend to spread the word about the importance of the wetlands.
13. Create a pantomime of animal interactions.
14. Make a book about local wetland plants and their use by Native Americans.
15. Prepare a page of nature writing for oral reading and tape recording.
16. Make transparencies about food chains or food webs to use with the overhead projector. Share with other students.
17. Write and draw a wetland comic strip in which the main characters are animals of the local wetland.



18. Write and perform a radio play about local wetlands and human interrelationship with them.
19. Design a button representing a wetland animal, plant, or ecosystem.
20. Write a song describing a wetland animal, plant, or ecosystem.
21. Make individual or group charts on efforts for improving wetland conditions in your area.
22. Make a 'sandwich board' poster to describe a wetland.
23. Write a wetland 'rap' song for the whole group to learn.
24. Illustrate a book about wetlands using a variety of art techniques.
25. Make a mosaic or collage using pictures of wetland plants and animals from drawings or photographs.
26. Make an illustrated year timeline of events occurring in the life of plants and animals of the wetlands.
27. Construct a tabletop model of a wetland.
28. Compose a fable using animals that live in a wetland.
29. Develop a crossword puzzle based on names of plants and animals in a wetland.
30. Make a stained glass window depicting a wetland scene using tissue paper and cellophane.
31. Create a diorama of a wetland.
32. Research and make a list of quotations about wetlands or nature.
33. Pretend you are one of the animals living in a wetland and write a letter to the class.
34. Dress up in costumes as animals and hold a parade.
35. Write and solve word problems using the numbers of migrating birds.
36. Compare and contrast predators and prey.
37. Make plants and animals from felt for a felt board.
38. Write a group play based on an event in the wetland and perform it for another group.
39. Carve wetland animals from bars of soap.

40. Model wetland animals from clay.
41. Paint a poster of a wetland.
42. Write a wetland newsletter.
43. Compile an imaginary diary that might be kept by a migratory bird.
44. Make placemats of your drawing of wetland plants and animals by laminating them.
45. Videotape real wetland animals and plants or of students acting out animal interactions in a wetland.
46. Write an imaginary letter between two animals in a wetland.
47. Play wetland animal charades.
48. Plan and make a board game, using a map of a wetland and events.
49. Make a series of fill-in-the-blank sentences about a wetland for a friend to solve.
50. Make a wetland “web of life” depicting the importance of each member.
51. Make a bulletin board of events occurring in a wetland (e.g., seasonal changes, metamorphosis).
52. Make up a story bag where key items representing functions of a wetland are kept. Show the items as the students tell the story about what wetland function each of the items represent.
53. Make a mask of an animal from the wetlands.
54. Choreograph your own dance using movements that represent events in the wetlands.





## Glossary

**Abiotic** – Non-living factor in an environment; e.g., light, water, air, temperature.

**Adapt** – To change or adjust to fit the environment.

**Adaptation** – Traits that help a plant or animal live and survive in a particular environment.

**Algae** – Simple plants that lives in water, with no true roots, stems or leaves, but with chlorophyll.

**Amphibian** – Cold-blooded, vertebrate animals that include frogs, and salamanders. Characterized by eggs laid in water that hatch into gill-breathing larvae and metamorphose into lung-breathing adults.

**Anaerobic** – Soil conditions with low or no oxygen

**Angiosperms** – Flowering plants that produce seeds in fruit.

**Annual** – Living and growing for only one year or season.

**Antenna** – A jointed appendage, usually occurring in pairs on arthropods, used as a sensory receptor.

**Anther** – The upper portion of the stamen containing pollen grains.

**Arthropods** – Invertebrate organisms of the phylum *Arthropoda*, with segmented external skeletons and jointed legs; including insects, spiders, centipedes and millipedes.

**Aquatic** – Pertaining to water.

**Bacteria** – Single-celled organisms that aid in the breaking down or decomposition of material.

**Beak** – The hard, projecting mouth part of a bird.

**Biodegradable** – Materials able to be broken down through natural processes including the action of microorganisms and to reenter the environment without harming it.

**Biodiversity** – The number of different kinds of living things in an area. The higher the diversity, the more variety among different kinds of living things.

**Breeding Ground** – A geographic area occupied by migratory birds during the nesting season.

**Bird Banding** – Attachment of identification tags to individual birds to help scientists study bird population dynamics and migration routes.

**Camouflage** – The color, pattern or markings on an organism which aid in protecting it by hiding it from its predators.

**Carnivore** – An animal that eats primarily other animals; meat eater. A consumer that eats other consumers.

**Carrion** – A dead or decaying animal.

**Caterpillar** – A wormlike insect larva, usually the larva of a butterfly or moth.

**Chlorophyll** – The green pigment found in plants that is necessary for the process of photosynthesis.

**Chrysalis** – The pupa form of an insect between larval and adult stage, in a case or cocoon.

**Cocoon** – A protective case that an insect forms as it enters the pupal stage.

**Community** – A neighborhood; a place where a person, animal or plant is able to find all it needs for survival: food, water, shelter, and space. Plants and animals living together in the same area that are connected by food chains or other interrelationships.

**Competition** – The relationship between species that attempt to use the same limited resource.

**Composite** – Flowering plants that produce many small flowers closely grouped into compact heads, such as dandelions.

**Conservation** – The protection, maintenance, and care of natural resources in a way that assures their continuing availability. Also the effort to reduce the amount of resources we use.

**Consumer, primary** – A living thing that cannot make their own food and gets energy (food) by eating plants.

**Consumer, secondary** – An animal that gets energy (food) by eating other animals or dead things.

**Creek** – A small stream of water, especially a shallow or intermittent tributary to a river.

**Debris** – Rubbish; broken, scattered remains of living or non-living things (e.g., inorganic materials, trash, litter).

**Deciduous** – Plants that lose their leaves at the end of the growing season, usually in autumn.

**Decompose** – To break down into more basic elements (decay).

**Decomposer** – An organism (e.g., bacteria or fungi) that breaks down dead plants or animals into their basic elements, releasing nutrients.

**Detritivore** – Decomposer. An organism that feeds on dead plant and/or animal material.

**Detritus** – Dead plant or animal material that has decomposed into small bits. It is an important food source for some. It is a vital component of the food web.

**Diurnal** – An organism that is active or occurring in the daytime.

**Diversity** – The variety in an ecosystem. The more variety, the more diversity.

**Dormant** – Asleep or inactive.

**Ecology** – The study of interactions and interrelations of organisms with their environment.

**Ecosystem** – A system made up of a community of living things and the physical environment with which they interact.

**Edge Effect** – The tendency of wildlife to use the areas where two vegetative types come together, forming an edge. Animals use these areas because of the diversity of food, shelter, and other habitat components provided by the edge.

**Elevation** – The height of an area relative to sea level; for example, the elevation on top of a mountain might be 10,000 feet above sea level.

**Emergent** – Soft stemmed plants that are rooted in soil under water, but have stems, leaves and flowers above the surface, such as grasses, sedges, rushes, and cattails.

**Endangered** – An “endangered” species is an animal or plant that is threatened with extinction throughout all or a significant portion of its range.

**Environment** – The surroundings, influences, and circumstances affecting the existence of an organism.

**Erosion** – A process in which land is worn away by external forces, such as wind, water, or human activity.

**Evaporate** – To draw moisture from, leaving only the solid portion.

**Evergreen** – A plant that has green leaves year round.

**Exoskeleton** – An outer skeleton or shell.

**Extinct** – A plant or animal that no longer exists.

**Food** – Energy and minerals in a form living things can use.

**Food Chain** – The transfer of food energy from the source in plants through a series of animals, with repeated eating and being eaten.

**Food Pyramid** – A food chain that demonstrates the passage and loss of energy, starting with producers then consumers of different levels feeding on each other.

**Food Web** – A scheme showing complex feeding relationships among organisms in a community. Interconnected food chains in an ecosystem.

**Fungi** – A group of plants including mushrooms, molds, and mildew that lack chlorophyll and subsist upon dead or living organic matter.

**Germination** – In a plant seed; to sprout growth.

**Gleyed soil** – Mineral wetland soil that is or was always wet; this results in soil colors of gray, greenish gray, or bluish gray.

**Grazer** – An organism that consumes primarily grasses.

**Ground Water** – Water found in pores or cracks in sand, gravel, and rock beneath the land surface. Ground water supplies springs, streams and eventually rivers.

**Gymnosperms** – Plants that produce seeds in cones.

**Habitat** – The place where an animal lives that provides food, water, shelter and space in that proper arrangement.

**Herbaceous** – Soft stem plants whose above surface parts die back during the winter.

**Herbivore** – An animal that eats only plant material. First level consumers.

**Hibernation** – A prolonged state of sleep by which some animals escape stresses of winter.

**Hydric Soil** – Soil that is wet long enough for anoxic (oxygenless) conditions to develop. This is wetland soil.

**Hydrophyte** – A plant or animal that can, and often must, live in water.

**Hydrology** – The study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

**Hypothesis** – A statement that implies there is insufficient evidence to provide more than a tentative explanation. An educated guess that is testable.

**Incisors** – The front teeth, adapted for cutting.

**Insectivore** – Animals that feed on insects, such as moles and shrews.

**Interdependence** – The interrelationships of wildlife with one another and with the various elements of their environment. Each dependent on the other.

**Introduced** – A plant or animal brought to a locality, but not native to the locality.

**Invasive** – Non-native species that invade, spread and out-compete natural plants or animals.

**Invertebrate** – an animal without a spinal cord (backbone), including insects.

**Larva (plural larvae)** – The immature stage that many insects pass through after hatching from an egg and before becoming a pupa. They often look very different from the adult form.

**Leaves** – The food processing part of a plant where photosynthesis usually takes place.

**Lichen** – Algae and fungus growing together in a symbiotic relationship.

**Macro invertebrates** – Tiny animals without backbones large enough to identify with the unaided eye; often aquatic insects.

**Management** – The application of scientific knowledge and technical skills to protect, preserve, conserve, limit, enhance, or extend the value of wildlife and habitat.

**Marsh** – A low wetland that is periodically wet with grasses, sedges, rushes and other herbaceous (non-woody) plants.

**Metamorphosis** – The changes in form and structure that an animal undergoes during its life.

**Metamorphosis Complete** – The four-stage development of insects that includes egg, larva, pupa, and adult.

**Metamorphosis Incomplete** – The three-stage development of insects that includes egg, nymph, and adult.

**Microscopic** – Visible only with a microscope.

**Migration** – The movement, usually seasonal, by animals from one place to another for breeding or feeding purposes. Bird migration varies among species in terms of destinations, time, and duration.

**Molars** – In mammals, the back, permanent teeth that have surfaces adapted for grinding.

**Native** – A plant or animal belonging to a locality, not introduced.

**Nectar** – A sweet liquid, that is mostly sugar, that plants secrete. Eaten by insects and some birds.

**Niche** – The unique function or role of an organism within an ecosystem, for example predator or decomposer.

**Nocturnal** – Active during the night.

**Nutrients** – Any substances that provide energy for growth, such as vitamins or minerals. When materials decompose, their nutrients are released.

**Nymph** – The immature stage of an insect that undergoes incomplete metamorphosis.

**Omnivore** - An animal (consumer) that eats both plant and animal.

**Organic Material** – Anything that is living or was living; in soil it is usually made up of leaves, twigs, roots, etc.

**Organism** – A living thing.

**Owl Pellet** – The undigested remains of what an owl ate; it includes the fur, feathers, and bones of the animals that the owl preyed upon.

**Perennial** – Plants having a lifespan of more than two years.

**Photosynthesis** – The process in which green plants use the sun's energy to produce sugars (food) and oxygen.

**Plankton** – Small, usually microscopic plants and animals that move randomly in water. Phytoplankton are the plant plankton and zooplankton are the animal plankton.

**Pollen** – Tiny grain-like spores that fertilize the eggs of a plant.

**Pollutants** – Waste materials that contaminate air, soil, or water.

**Pollution** – Harmful substances that damage the water, the air, and/or the soil.

**Population** – The number of a particular species in a particular habitat.

**Precipitation** – Rain, sleet, hail, or snow.

**Predator** – An animal that hunts, catches, and eats other living organisms (prey).

**Prediction** – To guess what is going to happen before it happens; a hypothesis.

**Prey** – An animal killed and eaten by another animal (predator).

**Proboscis** – A long flexible nose or snout.

**Producer** – An organism with chlorophyll that uses sunlight energy and nutrients to make its own food; the first level in food chains. Green plants are producers.

**Pupa (plural pupae)** – The insect stage in metamorphosis when it changes from larva to adults.

**Range** – The area upon which animals live.

**Regurgitate** – To spit up.

**Reptile** – Cold-blooded vertebrate animals including snakes, turtles, and lizards. Characterized by dry, scaly skin and eggs laid on land.

**Rhizome** – An underground, horizontal part of the stem of a plant that produces roots and sends up shoots, new plants.

**Ridgelines** – the highest elevation of a land form. Water falling on each side drains into different watersheds. Also called mountain divides.

**Riparian Area** – The vegetated area along the banks of a stream or river that is influenced by its water.

**River** – a large natural stream of water emptying into a large body of water, such as a lake, and usually is fed along its course by converging tributaries or streams.

**Rodents** – Any of a group of mammals with sharp gnawing teeth, such as mice and vole.

**Runoff** – An overflow of water that cannot be absorbed by soil or vegetation. It often picks up soil particles along the way. It drains into channels such as creeks, streams, or rivers.

**Runoff Pollution** – Pollution, such as pesticides and fertilizers that gets washed away by runoff water. Runoff water can carry pollution far away from its source and deposit it in waterways and lakes where it can be harmful to wildlife.

**Sampling** – Observing and counting a particular population to determine estimated total population size.

**Saturation** – The condition in which soil has as much water in it as it can hold.

**Scavenger** – An organism that feeds on dead organisms.

**Sediment** – Fine materials, such as small pieces of rock, that settle to the bottom of water.

**Silt** – Small grains of mineral soil. When silt settles out, it tends to clog water systems because it is so fine.

**Shorebird** – Wading birds that frequent mud flats and shores of creeks, streams, rivers, marshes and oceans.

**Shrub** – a plant smaller than a tree with several woody stems from the base.

**Stamen** – The part of a flower that produces pollen.

**Storm Drain System** – A system of drains that start at street level and head to creeks, then to rivers and lakes and to the ocean. Water flowing in this system is not treated.

**Submergent** – An aquatic plant that is rooted in a pond or stream bottom with completely submerged stems and leaves.

**Substrate** – The surface on which a plant or animal lives including soil, mud, silt, sand, rocks and clay.

**Succession** – The orderly, gradual, and continuous replacement of one plant or animal by another over time in a community.

**Surface Runoff** – The water that flows over the surface to the lowest point on the landscape after precipitation.

**Symbiosis** – A close relationship between two different organisms in which both species benefit.

**Threatened** – A “threatened” species is one that is likely to become endangered because of a decline in its numbers.

**Top soil** – The top layer of soil. It is full of organic material and good for plant growth.

**Toxin** – A chemical substance causing illness or death when absorbed in even small quantities.

**Turbidity** – A condition in water caused by the presence of suspended matter, resulting in the scattering and absorption of light. The measure of how cloudy or clear water is.

**Upland** – A higher and drier area of land that does not collect water.

**Vegetation** – The mass of plants that covers a given area.

**Vernal Pool** – Low depressions in wet prairie wetlands forming seasonal pools of water.

**Vertebrate** – An animal having a segmented backbone or vertebral column including amphibians, reptiles, birds, and mammals.

**Water Cycle** – The continuous circulation of water in systems throughout the planet.

**Watershed** – All the water from precipitation (i.e., snow, rain, etc.) that drains into a particular body of water (e.g., creek, river, ocean, or other body of water).

**Watershed Address** – The body of water into which surface water from your home or school flows after it rains.

**Wetland** – Any land area regularly wet or flooded during part of the year, and has plants adapted to prefer wet hydric soil.

**Wet Prairie** – Low, relatively flat, wetland covered mostly with grasses and forbs. Wet prairie wetlands are usually dry by late spring or early summer.

**Wildlife** – All plants and animals that live in nature.

**Wintering Grounds** – Geographic area occupied by birds in the winter. Wintering grounds are usually the most southerly range at which North American migratory birds spend the winter.



## Educator Resources

***Adopt-A-Stream: A Northwest Handbook:*** University of Washington Press, P.O. Box 50096 Seattle WA, (206) 543-8870.

***Adopt-A-Stream, Stream Keeper's Field Guide:*** Watershed Inventory and Stream Monitoring Methods. Department of Ecology, US EPA, P.O. Box 55096 Seattle, WA 98145, (206) 543-8870.

***Adopt-A-Watershed Program:*** P.O. Box 70 Hayfork, California 96041, (916) 628-5294 or (916) 628-4608.

***Aquatic Project WILD and Project WILD aquatic- Education Activity Guide;*** Western Regional Environmental Education Council, Inc/ Project WILD, 5555 Morningside Drive, Suite 212, Houston, Texas 77005; [www.projectwild.org/](http://www.projectwild.org/). Workshops available through Oregon 4H Education Center, 5390 4H Road NW, Salem, Oregon 97304, (503) 371-7920.

***Discover Wetlands: A Curriculum Guide,*** Washington State Department of Ecology, [www.ecy.wa.gov/programs/sea/pubs/88-16](http://www.ecy.wa.gov/programs/sea/pubs/88-16). K-12.

***Earth Education: A New Beginning and Sunship Earth:*** Steve Van Matre, 1990, The Institute for Earth Education, Box 288 Warrenville, IL 60555.

***Eco-Columns:*** 1990 Bottle Biology Resources Network, A project of the Center for Biology Education. University of Wisconsin, Madison, WI.

***Federal Jr. Duck Stamp Conservation Program:*** United States Department of Interior, U.S. Fish and Wildlife Service, 1849 C Street, NW, Room 2058, Washington, DC 20240. (202) 208-4354. (Free)

***Field Manual for Water Quality Monitoring:*** An Environmental Education Program for Schools. Mark Mitchell and William B. Stapp. Available through: William Stapp, 2050 Delaware Avenue, Ann Arbor, MI 48103.

***Hands-On Nature: Information and Activities for Exploring the Environment with Children*** edited by Jenepher Linglebach.

***Hanging On to the Wetlands:*** Irwin Slesnick and David Newton, Western Washington University (and the Environmental Protection Agency), Bellingham, WA 98225.

***Keepers of the Animals:*** Native American Stories and Wildlife Activities for Children. Michael J. Caduto and Joseph Bruchac, Fulcrum Publishing, Golden, CO.

***Keepers of the Earth:*** Native Stories and Environmental Activities for Children. Michael J. Caduto and Joseph Bruchac, Fifth House Publishers, Saskatoon, Saskatchewan.

***Living Lightly On the Planet, Living Lightly in the City:*** Maura O’Connor, Schlitz Audubon Center, 1111 East Brown Deer Rd. Milwaukee, WI 53217.

***NatureScope: Wading into Wetlands:*** National Wildlife Federation 1400 16<sup>th</sup> St., N.W., Washington, D.C. 20036-2266.

***OBIS (Outdoor Biology Instructional Strategies):*** available from Delta Education, call 1-800-442-5444.

***Meadows to Manure to Milkshakes:*** Eric Jorgenson, et al. Hidden Villa, P.G.E. Press.

***Project WET:*** (Water Education for Teachers) Curriculum and Activity Guide for grades K-12. For information call (541) 382-4754 or [sue@highdesert.org](mailto:sue@highdesert.org).

***Sharing Nature With Children:*** Joseph Cornell, Ananda Publications.

***SPLASH! Stormwater Pollution: Learn and Share:*** City of Eugene Stormwater Management Program.

***Water Sourcebook- Classroom Activities for Grades K-12;*** Legacy, Inc., (800) 240-5115, [www.legacyenvd.org/materials/materials\\_k12](http://www.legacyenvd.org/materials/materials_k12).

***WOW! The Wonders of Wetlands: An Educators’ Guide*** by Britt Eckhardt Slattery. Environmental Concern, Inc, and the Watercourse.

## **Children’s Books**

***The Clean Brook:*** Margaret Farrington Bartlett. Illustrations by Aldren A. Watson (This book explains for very young children how a brook cleans itself in nature, without the polluting influence of humans.)

***The Great Fish:*** Written and Illustrated by Peter Parnall. (In words and pictures of great beauty and dignity, the author has created a fable that serves as a warning to us all—a warning to respect the Earth and all it has given us before it is too late. All ages.)

***The Four Elements: Water:*** By Carme Sole Vendrell and J.M. Parramon. (This colorful book illustrates for the very young child all of the reasons humans should be grateful for water’s presence on the Earth. Ages 3-6.)

### ***The Magic School Bus at the Waterworks***

***The River:*** by David Bellamy. (This timely book relates how plants and water creatures co-exist in a river and their struggle to survive a human-made catastrophe: the dumping of waste into their habitat.)

***The Stream:*** Naomi Russell. (An engaging presentation of one of nature’s most vital processes: the water cycle. Ages 3-6.)

***The Water’s Journey:*** Eleonore Schmid

***The Wet and Sandy Day:*** Joanne Ryder

***Raindrop Stones:*** Preston R. Bassett

***Wetlands:*** Pamela Hickman, Illustrated by Judie Shore, Federation of Ontario Naturalists

***Between Cattails:*** Terry Tempest Williams

***The First Book of Swamps and Marshes:*** Frances Smith

***Of Men and Marshes:*** Albert Hochbaum

***Year on Muskrat Marsh:*** Bernice Freschet

***Eyewitness Books, Pond and River:*** *Discover in close-up the ecology of the plants and animals that make freshwater habitats their home; Eyewitness Books.*

## **Coloring Books**

***My Wetlands Coloring Book:*** U.S. Environmental Protection Agency, Region 6, 1445 Ross Ave., Dallas, TX. 75202-2733.

***Stretch Saves the Inland Bays:*** (“Stretch” is a great blue heron), Jerry “Crabmeat” Thompson, Delaware Dept. of Natural Resources and Environmental Control, P.O. Box 1401, Dover, DE 19903.

***Wetlands Coloring Book:*** Art by Jack Elrod (of “Mark Trail”), U.S. Fish and Wildlife Service, Government Printing Office, Washington. D.C. 20402-9325.

## **Visual Aids**

***Conserving America: Wetlands:*** The National Wildlife Federation, 1400 16<sup>th</sup> St. N.W., Washington, D.C. 20036-2266.

***Fabulous Wetlands:*** Starring Bill Nye, The Science Guy (all ages); 7 minutes. Available at the Eugene Public Library.

***Speaking for Wetlands:*** 15 minutes; available from the City of Eugene Stormwater Management Program, 682-2739.

***Wetland Types Slide Show:*** Available from the City of Eugene Stormwater Management Program, 682-2739.

***Why Wetlands:*** Federation of Ontario Naturalists, 355 Lesmill Rd., Don Mills, Ontario M3B 2W8.

## **Posters**

***Welcome to the Wetlands:*** Coloring/information poster, U.S. Environmental Protection Agency, Region 5, 230 S. Dearborn St. Chicago, IL 60604.

***Wetlands:*** Doodle (coloring) poster, Federation of Ontario Naturalists, 355 Lesmill Rd., Don Mills, Ontario M3B 2W8.

***Wetlands:*** Washington State Dept. Of Ecology, Wetlands Section, Mailstop PV-11, Olympia, WA 98504.

***Water, Wildlife, Plants, and People:*** Water education posters, 1-888-ASK-USGS.

## Website Sources

**Animal Diversity Web:** <http://animaldiversity.ummz.umich.edu>

**Educating Young People About Water:** <http://www.uwex.edu/erc/ywc/>

**Environmental Education Link:** [www.eelink.net](http://www.eelink.net)

**National Wildlife Refuges:** <http://www.refuges.fws.gov> and <http://www.refugenet.com>

**National Wildlife Refuge System;** provides information on the history of the National Wildlife Refuge System, as well as a listing and description of threatened and endangered species.  
<http://bluegoose.arw.rd.fws.gov/>.

**National Research Council-Water Science and Technology Board:** [www.w2.nas.edu/wstb](http://www.w2.nas.edu/wstb)

**National Science Teachers Association:** <http://www.nsta.org>

**Shorebird Sister Schools Program** allows students to track shorebirds to the Arctic as they migrate northward to their nesting grounds in Alaska:  
<http://www.fws.gov/~r7enved/sssp.html>

**United States Army Corps of Engineers:** [www.usace.army.mil](http://www.usace.army.mil)

**United States Environmental Protection Agency—Office of Water:** [www.epa.gov/ow](http://www.epa.gov/ow)

**United States Fish and Wildlife Service:** [www.fws.gov](http://www.fws.gov)

**United States Geological Survey:** [www.usgs.gov](http://www.usgs.gov)

**United States Geological Survey Water Science for Schools.** Tons of information, questionnaires, maps and pictures about water use information in your home, city and nation: <http://ga.water.usgs.gov/edu/index.html>

**Watch List for Kids.** Identifies at-risk North American bird species before they become endangered and gives suggestions on what you can do to help:  
[www.audubon.org/bird/watch/kids/](http://www.audubon.org/bird/watch/kids/).

**Water Environment Federation:** <http://www.wef.org/>

**Western Wetland Flora:**

<http://www.npwrc.usgs.gov/resource/othrdata/westflor/SPECIES.HTM>

## **Computer Software**

***Odell Lake: A Simulation Game:*** An Apple computer activity designed to determine the predator/prey relationships among a group of twelve organisms in a specific aquatic biological community. Grades 4-6.

## **Science Equipment**

***Delta Education:*** 1-800-442-544

***Carolina Biological Supply:*** 1-800-344-5551

***LaMotte Chemical Products:*** cp., P.O. Box 329, Chestertown, MD 21620.

***Ben Meadows Co., Inc:*** (a source for soil probe and Munsell soil color book, forestry supplies, etc.) P.O. Box 80549, Chamblee, GA, 1-800-628-2068.

***ENVIRO-ED./Discovery Scopes:*** 9730 Manitou Place NE, Bainbridge Island, Washington 98110, (206) 842-2229.

## **Maps, Etc.**

***Topographical Maps:*** National Cartographic Information Center, U.S. Geological Survey, 507 National Center, Reston, VA 22092.

***National Wetland Inventory (NWI) Maps:*** Same address as above, direct mail to USGS/ESIC; for ordering information, call 1-800-872-6277.

## Other Resources

***A Citizen's Guide to Wetland Restoration:*** Approaches to Restoring Vegetation Communities and Wildlife Habitat Structure in Freshwater Wetland Systems. United States Environmental Protection Agency, Region 10, 1200 Sixth Avenue, Seattle WA 98101.

***A Comprehensive Review of Wetland Assessment Procedures:*** Bartoldus, Candy; Environmental Concern Inc.

***A Field Guide to Animal Tracks:*** Olaus J. Murie, Houghton Mifflin Co., Boston, MA.

***Amphibians of Oregon, Washington and British Columbia:*** by Corkran and Thoms, published by Lone Pine.

***Animal Tracks of Washington and Oregon:*** by Ian Sheldon, published by Lone Pine.

***Aquatic Insects of North America*** by Merrit and Cummins.

***Bird: Eyewitness Books*** by David Burnie. Alfred A. Knopf. New York. 1988.

***Birder's Handbook: A Field Guide to the Natural History of North American Birds:*** by Ehrlich, Dobkin, and Wheye, publisher by Simon and Schuster.

***Birds! From the Inside Out:*** by Dan Gleason, published by CraneDance Communications.

***Causes and Consequences of the Disappearance of Species:*** by Paul and Anne Ehrlich, published by Random House, Inc.

***Ecology Field Guide:*** Wolfree Science Education in the Outdoors,  
<http://www.beoutside.org/stream.htm>

***Elements of Ecology.*** Smith, Addison, Wesley, Longman, Inc. 1998.

***Eyewitness Science: Ecology*** by Steve Pollock. A Dorling Kindersley Book. New York. 1993.

***Environmental Science, 3<sup>rd</sup> Edition*** by DuBay, Lapinski, Schoch, and Tweed. Addison Wesley Longman, Inc. 1999.

***Field Study Manual for Outdoor Learning:*** Milliken, Margaret; Harner, Austin F.; and McDonald, Ernest C.

***Freshwater Wetlands: (plants)*** Dennis W. Magee, U. of Massachusetts Press, Amherst, MA, 1981.

***Guide To Observing Insect Lives:*** by Donald Stokes, Little, Brown and Company.

***Guide to Pacific Northwest Aquatic Invertebrates:*** by Rick Hafele and Steve Hinton, published by Oregon Trout.

***Insects*** by Rick Imes. A Fireside Book. Simon and Schuster, Inc. New York. 1992.

***Insects:*** (a pocket Golden Guide) Herbert Zim, Golden Press; NY and Western Publishing Co., Inc., Racine WI, 1956. (Note: Use also for aquatic insects.)

***LaMotte Soil Handbook,*** LaMotte Co., Chestertown, MD.

***Plants of the Pacific Northwest Coast:*** by Jim Pojar and Andy MacKinnon, published by Lone Pine.

***Pond Life:*** (a pocket Golden Guide) George Reid, Golden Press, NY and Western Publishing Co., Inc., Racine. (includes; fish, insects, reptiles, amphibians, etc.)

***Practical Entomologist: An Introductory Guide to Observing and Understanding the World of Wetlands:*** Wm. J. Mitsch and J.G. Gosselink, van Nostrand Reinhold NY, 1986.

***Science and Technology for Children: Organisms, Soils, Plant Growth and Development, Land and Water, Ecosystems:*** Teacher guides and student activity books. Available through Carolina Biological Supply Company, <http://www.carolina.com/STC/STC>, 1-800-334-5551.

***Stream Team Guidebook:*** How residential and business volunteers can protect and enhance our water quality, fish, and wildlife. City of Bellevue, Storm and Surface Water Utility, P.O. Box 90012, Bellevue, WA 98009-9012, (206) 451-4476.

***Streamwalk Manual:*** A Stream Monitoring Tool for Citizens. United States Environmental Protection Agency, Water Division, Region 10, 1200 Sixth Avenue, Seattle WA 98101.

***The Stream Scene:*** Watersheds, Wildlife, and People. Oregon Department of Fish and Wildlife, P.O. Box 59, Portland, OR, 97207, (503) 229-5400 Ext. 432.

***Tom Brown's Field Guide to Nature Observation and Tracking:*** by Tom Brown, Jr. with Mrandt Morgan. A Berkley Book. New York. 1983.

***Topsoil Tour:*** by the LaMotte Company. LaMotte Company, 1993.

***Water Water Everywhere- Now You See it... Now You Don't:*** Oregon State University and Oregon Department of Education Sea Grant Program.

***Wetland Plants of Oregon and Washington:*** by Jennifer Guard, Lone Pine Publishing.

***Wetlands:*** (Audubon Society Nature Guide), Wm. A. Niering, Alfred A Knopf, NY, 1985. (Includes photos of plants, animals, and wetland types.)