

Start Up: Wetland animal/bird mounts, wetland posters
Ask families to make nametags as they arrive.

Welcome/ Staff/Volunteer Names

Introduction: **Today's Topic-Protecting Our Water**

1 min. **Question: What can we do to help the our water be clean and healthy?**

Opener: **Wetland Metaphors** (*Project Wild*)- Why are wetlands important?

10 min. Hand out metaphor props, one per family. Keep giving items until all are out.

- ♣ Each family introduces its members, then guesses how their item represents a function of wetlands.
- ♣ Assist families in discovering the reasons wetlands are good in our environment. (absorb/hold water, bird resting place, adds oxygen/nutrients to water, nursery for fish/wildlife, strains out silt/debris, filters out impurities, neutralizes toxins, provides food, cleans water)
- ♣ This activity can also be done at the wetland

Background/ Water is important.

Exploration: **Water Cycle**—Show a water cycle poster, describe and explain.

15 min. **Water is life-giving**—Everything needs it, but it can be dangerous, like when it floods.

- Water is used by plants, animals, and people.
- Water affects the environment, e.g. erosion, types of plants that can grow in different areas.
- Does vegetation grow thick in a desert? How about a rain forest?

We will learn about water habitats, or wetlands, and creatures that live there.

What is a wetland?

An area that is wet at least part of the year, and has special soil and plants.

Wetlands include marshes, swamps, forests along streams or rivers, and bogs.

How does water get into a wetland?

The water comes from the earth's surface (rain/streams) and from the ground.

Food from wetlands (*Project Wild Aquatic*)-Ask families what foods from wetlands we eat. People eat fish, shellfish, rice, seaweed, cranberries...

Loss of Wetlands-Iowa has lost most of our wetlands to farming and construction, we need to save the rest!

Prepare to Restroom break.

go Outside: Apply: Sunscreen, Bug Repellant (if necessary)

10 min. Bring: Water bottles, hats, jackets (if necessary), clipboard/clip

Look at any water or wetland related exhibits before going outside.

Trail Rules (see The First Program).

What we will do/What to look for-Explore a wetland and discover its creatures.

Predictions-What animals, plants will we find? What will it be like?

OUTDOOR

Hike by a nearby stream to look for examples of erosion.

EXPLORATION:

Hike or drive to a wetland.

2 hours

Look over the area. Discuss effects of railroad, road, farming, etc. on a wetland over time.

Look and listen for wetland creatures at the pond and around the stream.

Look at a **FLOODPLAIN**. Explain. (flat, slows water, allows soil to settle)

Watershed -The area of land draining into a certain body of water.

Where is the watershed for this wetland?

Everything occurring anywhere on the land can eventually affect this water.

Define or review **Ecosystem**-A self-sustaining community of living creatures relating to each other and their environment. Examples are prairie, oak woodland, wetland.

Wetland-An area that's wet at least part of the year, which has special soil and plants.

Often a transition zone between dry land and a waterway.

Examples: marshes, swamps, bogs.

Activity:

Water Quality Testing-One way to find out if water is "healthy" is to do some tests on it.

- Ask various family members to take air and water temperatures. Compare.
- Use a Secchi Disc and/or tube to assess water clarity.
- Observe water color and scent (see HS-1: 6-8 *Water Under the Bridge*).
- Test the water's pH level. Compare to human pH (saliva-put pH tape briefly on tongue).
- Test for the level of dissolved Oxygen.
- Do nitrate and nitrite tests.
- Discuss temperature readings and water quality measurements. What do they mean?
- Explain normal ranges and optimum levels for pH and water temperature. (see below).

Wetland layers-

Wetlands have layers like the forest:

A bottom, a middle, and a top layer, with shallows around the edges.

Wetland plants grow in certain depths.

Different animals can be found in the different layers.

Which creatures do you think we'll find in each layer?

What animals live in and around wetlands? Near the water? IN the water?

Show pictures of wetland animals to students (beaver, otter, ducks, fish, frogs).

Talk about **adaptations**-How do animals live in or swim in the water?

(see HS-1: 3-5 *Watery Worlds*)

Wetland Animals-Ask the students what larger animals live here or use the wetland.

- Discuss available habitats-deep water, shallow water, edge vegetation, upland.
 - Explain species diversity.
 - Give examples of birds, reptiles, amphibians not seen (show pictures).
 - Look for tracks and animal signs along the wetland's edge.
-

Activity: **Frog Calls**-Demonstrate several calls (you can use a tape/CD or a *Birdsong IdentifierTM*).
10 min. **Help students** learn and practice some basic amphibian calls.

FISH- Briefly discuss features and life cycle (breathe with gills, have scales and fins).
Nest in shallows, eat, live in deeper waters as they grow, return to spawn.

Aquatic Invertebrates-There are many smaller water creatures, like insects and crustaceans, living in wetlands. We will find them in this stream or pond.

Show some pictures (or collections) of aquatic invertebrates.

Different **aquatic insect larvae** live in different ways.

There are groups of Collectors (caddis fly), Grazers (snail, larvae),

Predators (beetle, drfly), & Shredders (stonefly-detritus).

Some are adapted to live in slower flowing stream pools, others in the faster rocky **riffles**.

Activity: **Macro-Invertebrate Collection-**

- Give the families dip nets and yogurt cups and let them collect small aquatic creatures.
- Transfer some creatures to larger tubs of pond water for shared observation.
- Observe & discuss the adaptations and method of movement of the various macro-invertebrates.
- What would we need to survive under water? (air tanks, flippers, etc.-see table)
- Show a poster of aquatic insect life cycles and give examples for each (Wade).

Wetland Plants-

Describe or show emergent, submergent, and floating plants.

Discuss their habitat and adaptations.

Cattail exploration (*Experience Iowa Wetlands*)-Pull up a cattail for observation.

Show the roots, stem, and leaves (cut a cross-section).

Discuss this plant's adaptations.

Game: Play **Leap Frog** or **Skin the Snake** (Fluegelman)
10 min. or **Migration Headache** (*Project Wild Aquatic*)

How to help keep our water/wetlands clean (Save Our Streams)-

Collect pet waste, be careful with lawn/garden chemicals, collect grass clippings and yard waste to keep them out of storm sewers, use safe car washing and oil disposal practices)

Programs families can participate in to help our wetlands and their creatures (see references):
Iowater-Water monitoring program where trained volunteers are provided test equipment for gathering information used to protect Iowa water quality.

Frog & Toad Survey-Part of Iowa's Naturemapping program. Listen to frog calls throughout spring and early summer to gather data on their populations.

Adopt-A-Stream-National program for water quality monitoring.

Frogwatch USA-National Wildlife Federation's monitoring program. In structions on website.

Closing: Learning about wetlands and their creatures is a good first step in protecting our water quality.

Send Off: Goodbye! **Take Home:** Wetland references (see below)

Vocabulary

Wetland, water cycle, ecosystem, floodplain, watershed, crustacean, erosion, spawn, macro-invertebrate, pH, emergent, submergent, species diversity, Secchi Disc, adaptation, larva

Background and Activity References for Naturalists and Parents

<http://www.iowadnr.com> DNR site-information on practices that protect our water quality
<http://www.iowater.net/welcome.htm> Information on the Iowater program and training session dates
<http://www.iowadnr.com/wildlife/files/diwols.html> Iowa's Naturemapping programs -Frog & Toad Survey
www.streamkeeper.org/ Adopt-A-Stream information
<http://nwf.org/frogwatchUSA/> Frogwatch USA program, National Wildlife Federation

A Stream Watcher's Stream Guide. Save Our Streams. Isaak Walton League, Arlington, VA.
Tips on ways to keep water clean

An Iowa Supplement to Project Wild Aquatic. 1998. Iowa Department of Natural Resources, Des Moines. Pp. 1-7 background on Iowa Waterways and Wetlands; pp. 66-70 Are You Me? Iowa creatures; p. 90 Fashion A Fish

Birdsong Identiflyer™. For the Birds, LLC. www.identiflyer.com

Dewey, Jennifer Owings. 1987. *At the edge of the Pond*. Little, Brown, and Company, Boston.

Experience Iowa Wetlands: A Field Activity Guide. Iowa Conservation Education Council, Iowa State University, Ames. Pp. 11-16 Eco-Beaver; p. 71-74 Wetland Weirdos-cattail exploration

Fish Iowa! 2003. Iowa Department of Natural Resources, Des Moines.

Fluegelman, Andrew, ed. 1976. *The New Games Book*. The Headlands Press, Inc., San Francisco, CA. P. 119 Skin the Snake

Griffin, Steven A. and E. May Griffin. 1993. *Fishing For Kids: A Family Fishing Guide*. North Word Press, Inc., Minocqua, WI. Use beginning chapters as background to send home.

Home School EE Program Series: Year 1. 2005. Indian Creek Nature Center, Cedar Rapids, IA. K-2 Water Creatures, Tadpole Tales; 3-5 Watery Worlds; 6-8 Fish & Herp Ecology

Iowa's Biological Communities. 1993. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. *Biological Communities, Wetlands, Waterways* (IAN-201, 204, 205).

Iowa Wildlife. 1998. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. (IAN-601--606) *Iowa Fish* (IAN-605) <http://www.extension.iastate.edu/pubs/wi.htm>

Lang, Susan S. 1995. *Nature in Your Backyard: Simple Activities for Children*. The Millbrook Press, Brookfield, CN. P. 44 water scope-use during program or as a take home activity

Project Wild Aquatic: Education Activity Guide. 1992. Council for Environmental Education, Gaithersburg, MD. Pp. 16-19 "Are You Me?" pictures; p. 54 Wetland Metaphors; p. 120 Water We Eating?; p. 90 Fashion a Fish; p. 94 Migration Headache; pp. 154-159 Dragonfly Pond

Ranger Rick's Naturescope: Wading Into Wetlands. 1992. National Wildlife Federation, Washington, D.C. Pp. 3-4, 33-35 Background; pp. 38 Marsh activity (take home); p. 59 Cattail craft; pp. 7 Hands on Herps

The Water Cycle: Nature's Recycling System. 1993. Soil Conservation Service, USDA. Water Cycle Poster
Wade, Suzanne. 2001. *Wonderful, Wacky, Water Critters*. University of Wisconsin Extension, Madison. Aquatic critter key, life cycle diagrams

Water Cycle Poster (Overhead Master), National Audubon Society.

What Fish is This? Illinois Department of Conservation, State of Illinois. #30M-4-85
Good fish outlines for coloring.

Extensions/Alternate Activities/Rainy Day

Eco-Beaver (*Experience Iowa Wetlands*)-Dress a student up like a beaver using familiar props to illustrate adaptations for life in a wetland.

Dragonfly Pond (*Project Wild Aquatic*)-Indoor activity about water quality.

Discuss the adaptations of aquatic creatures. What would humans need to live in the water? Have students make guesses, then tell them about some interesting adaptations of wetland creatures (see table in *HS-1: 3-5 Watery Worlds*).

Herpetology-The study of reptiles and amphibians, or HERPS.

Herps are indicators of environmental health, especially amphibians with their moist absorbent skin.

Reptiles are slow to respond to negative changes.

Herps have been in decline due to loss of habitat and pollution.

What is a frog? What is a toad?

Help the students compare and contrast frog and toad characteristics.

Look at similarities/differences in collected tadpoles, frogs, & toads (or use pictures).

Toads- Have bumpy, rougher skin, live farther from water, shed their skin, secrete a poison from their skin to defend themselves.

Frogs-Live near or in the water, skin is smooth.

Life cycles of amphibians, reptiles-Use a poster/display to illustrate the differences.

Frog/toad

- Eggs laid in water
- hatch into tadpole with gills
- vegetarian/herbivore
- metamorphosis to turn into an adult with legs and lungs
- adults are carnivores/predators

(An inside-out tadpole to frog puppet and a ping-pong ball are great props for this)

Amphibians have smooth, moist skin and don't have clawed toes.

Turtle

- eggs laid on land
- hatch into small turtles
- go to water, eat and grow into a bigger adult turtle
- young and adults are carnivores/predators

Reptiles have dry, scaly skin and clawed toes.

Hand on Herps (*Ranger Rick*)-Set up stations for families to visit to learn about reptile and amphibian differences (see *HS-1: K-2 Tadpole Tales*).

Fish- Learn the parts of a fish, including the different fins (show a picture-*Fish Iowa!*).

(body, scales, dorsal fin, caudal/tail fin, pectoral fins, anal fins, may have barbels)

Show and discuss pictures showing fish adaptations for different habitats and lifestyles.

Fashion a Fish (*Iowa Supplement to Project Wild Aquatic*)-Design a fish for a certain habitat/lifestyle.

Ask the families to construct a wetland food web.

Food from Wetlands-Show families packages from food that is harvested from wetlands/oceans.

Supplies:	Wetland posters, pictures	Turtle shell
	Pictures of wetland animals	Snake skin
	Water creature pictures	Cattail
	Water Cycle Poster	Frog Call Chart
	Mounts of wetland animals	
		Aquatic invertebrate key
	Magnifying glasses/cubes	Dip nets
	pH paper	Clean yogurt cups
	Thermometers (2)	Dish tubs
	Secchi disc	Critter keepers
	Wind gauge	<i>Birdsong Identiflyer™</i> w/Frog Card
	Oxygen test	Pocket knife to cut cattail
	Nitrogen test	

Wetland Metaphors props: sponge, small pillow and/or bed, whisk or egg beater, doll cradle, strainer, coffee filter, antacid tablets, cereal (or picture of food), trial size soap

Advance Preparation: **Wetland Metaphors**-Gather props and store in a bag.
A small pillow and sleeping bag can easily be made by sewing felt pieces together with yarn.

Copy wetland references to send home w/families.

Wetland Related Programs and Books

- <http://www.iowadnr.com> DNR site-information on practices that protect our water quality
<http://www.iowater.net/welcome.htm> Information on the Iowater program and training session dates
<http://www.iowadnr.com/wildlife/files/diwols.html> Iowa's Naturemapping programs -Frog & Toad Survey
www.streamkeeper.org/ Adopt-A-Stream information
<http://nwf.org/frogwatchUSA/> Frogwatch USA program, National Wildlife Federation
- Dewey, Jennifer Owings. 1987. *At the edge of the Pond*. Little, Brown, and Company, Boston..
Griffin, Steven A. and E. May Griffin. 1993. *Fishing For Kids: A Family Fishing Guide*. North Word Press, Inc., Minocqua, WI.
Hickman, Pamela. 1993. *Wetlands*. Kids Can Press, Tonawanda, NY.
Iowa's Biological Communities. 1993. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. *Biological Communities, Wetlands, Waterways* (IAN-201, 204, 205).
Iowa Wildlife. 1998. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. (IAN-601--606)
Iowa Fish (IAN-605) <http://www.extension.iastate.edu/pubs/wi.htm>

Wetland Related Programs and Books

- <http://www.iowadnr.com> DNR site-information on practices that protect our water quality
<http://www.iowater.net/welcome.htm> Information on the Iowater program and training session dates
<http://www.iowadnr.com/wildlife/files/diwols.html> Iowa's Naturemapping programs -Frog & Toad Survey
www.streamkeeper.org/ Adopt-A-Stream information
<http://nwf.org/frogwatchUSA/> Frogwatch USA program, National Wildlife Federation
- Dewey, Jennifer Owings. 1987. *At the edge of the Pond*. Little, Brown, and Company, Boston..
Griffin, Steven A. and E. May Griffin. 1993. *Fishing For Kids: A Family Fishing Guide*. North Word Press, Inc., Minocqua, WI.
Hickman, Pamela. 1993. *Wetlands*. Kids Can Press, Tonawanda, NY.
Iowa's Biological Communities. 1993. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. *Biological Communities, Wetlands, Waterways* (IAN-201, 204, 205).
Iowa Wildlife. 1998. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. (IAN-601--606)
Iowa Fish (IAN-605) <http://www.extension.iastate.edu/pubs/wi.htm>

Wetland Related Programs and Books

- <http://www.iowadnr.com> DNR site-information on practices that protect our water quality
<http://www.iowater.net/welcome.htm> Information on the Iowater program and training session dates
<http://www.iowadnr.com/wildlife/files/diwols.html> Iowa's Naturemapping programs -Frog & Toad Survey
www.streamkeeper.org/ Adopt-A-Stream information
<http://nwf.org/frogwatchUSA/> Frogwatch USA program, National Wildlife Federation
- Dewey, Jennifer Owings. 1987. *At the edge of the Pond*. Little, Brown, and Company, Boston..
Griffin, Steven A. and E. May Griffin. 1993. *Fishing For Kids: A Family Fishing Guide*. North Word Press, Inc., Minocqua, WI.
Hickman, Pamela. 1993. *Wetlands*. Kids Can Press, Tonawanda, NY.
Iowa's Biological Communities. 1993. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. *Biological Communities, Wetlands, Waterways* (IAN-201, 204, 205).
Iowa Wildlife. 1998. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. (IAN-601--606)
Iowa Fish (IAN-605) <http://www.extension.iastate.edu/pubs/wi.htm>
-