Wetland Safari

In a Nutshell

Students will use binoculars and insect nets to discover plants and animals that make wetlands their home. During their investigations, students will uncover unique characteristics that make wetlands important to wildlife and people.

Grades 3-5
Seasons Fall, Spring, Summer
Location Bass Ponds Trailhead, Long Meadow Lake Unit

Literature Connections

What is a Life Cycle? by Bobbie Kalman (820L)
¿Qué es el ciclo de vida? by Bobie Kalman (820L)
What are Food Chains and Webs? by Bobbie Kalman (880L)
¿Qué son las redes y cadenas alimentarias? by Bobbie Kalman (880L)
Squish! A Wetland Walk by Nancy Luenn
Leapfrogging through Wetlands by Margaret Anderson
Song of the Water Boatman by Joyce Sidman
One Small Square: Pond by Donald Silver
Around the Pond: Who's Been Here? by Lindsay George (180L)
Who Eats What? by Patricia Lauber
Life in a Jar by Mary Hoff, MN Conservation Volunteer Magazine

Pre-Activities

Project WILD Aquatic, *Wetland Metaphors (5-8)*
Students learn the many benefits wetlands provide for wildlife and people. Creating a wetland mural students think about the plants and animals that live in refuge wetlands.

Project WET, *Capture, Store, & Release* (upper elementary)
Students discover how to use a household sponge to simulate a wetlands natural process to capture, store, and release water.

Check-out either of these great tools from the refuge's resource library.

Wetland Discovery Trunk: The trunk includes lessons, props, videos, pamphlets, publications, and posters to use in your classroom to prepare students for exploring and learning about wetland habitats during their fieldtrip.

Enviroscape Wetland Kit: The kit includes an interactive model with instructions on how to demonstrate the basic functions and benefits of wetlands. Positive and negative effects on wetlands related to a variety of activities can also be explored with the model. Just add water!

On-site Activities

Students will observe a wetland ecosystem using binoculars and pond nets and learn firsthand about the complexity of the wetland food web. They will learn how wildlife managers manipulate water levels for the benefit of migrating waterfowl, shorebirds and songbirds. Students will practice respect for living things as they carefully return all plants and animals collected during their visit back to the wetland.

Classroom Connection

Project WET activity *Life in the Fast Lane* (upper elementary) Students learn during the scavenger hunt and investigation of temporary wetlands in their neighborhood, about the benefits and challenges organisms living in temporary (also termed ephemeral) wetlands.

If the story Song of the Water Boatman was incorporated as a class pre-activity, ask students to write poem based on their fieldtrip experience. When complete, assemble the writings into A Wetland Safari collection of Poems.

Ask each student to draw an illustration, based on an observation they made at the refuge. Add the drawing to the wetland mural from the pre activity. Encourage students to use references as they draw. Remind students to "connect" their illustrations to other members of the wetland community.

Teacher Resources

Discover Nature in Water & Wetlands by Elizabeth Lawlor
Nature Scope Wading Into Wetlands by the National Wildlife Federation
Golden Guide to Pond Life by George Reid
Life in a Jar by Mary Hoff, MN Conservation Volunteer Magazine, Teacher's Guide
http://www.dnr.state.mn.us/young_naturalists/teachersguides

Wetland Safari
Pre-Activity

Materials

- Assortment of wetland plant and animal pictures, at least one from each category (plants, wetland birds, mammals, fish, reptiles/amphibians, & macro invertebrates)
- Large piece of white butcher paper - write *WETLAND COMMUNITY* as the heading
- Colored markers
- Glue
- Wetland Metaphors kit (includes paper coffee filter, sponge, small box of cereal, baby bottle, beater, bar of soap, strainer, antacid)

Wetland Mural

Participating in the Project WILD Aquatic *Wetland Metaphors* lesson, and the Wetland Metaphors Kit, students will be introduced to the values and importance of wetlands.

Lead with a discussion of what wetland characteristic. Begin with what wetlands ARE. Start a chart on the classroom board or flipchart.

- Wetlands are places that are wet, at least some part of the year. Ask students to help create a list of types of wetlands. The list should include ponds, lakes, stream, rivers, prairie potholes, bogs, wet meadows, swamps, freshwater and saltwater marshes.

- Wetlands are home to many types of wildlife. In fact, wetlands are often referred to as "nurseries". Ask students to help name some wildlife they know live, at least part of their life in wetlands. Some possible answers are: frogs, toads, salamanders, ducks, geese, swans, herons, fish, crayfish, snails, insects, muskrat, beaver, deer, raccoons, etc.

Ask students to define the word community (a community is a group of living things that depend on each other). The plants and animals in water habitats are part of a community.

Pass out the pictures of plants and animals that live in the wetland community. Ask one student at a time to add their picture to the mural. With class help, write the animal name under the picture.

Ask students to make connections about the plants and animals. Which members of the wetland community depend on each other? Who eats who? Who eats plants? Who uses plants for nests? Use a color marker to draw connections between the members of the wetland community. Display this mural in the classroom.

Wetland Metaphors

Tell the students that to complete the remainder of the wetlands characteristics list they will have to interpret the meaning behind an object found in the Wetland Metaphors box. These items focus on what wetlands do.

- Divide the class into teams so that each team will get one object to discuss. Each team must try to figure out how the object they are given could represent what a wetland does.

- Designate one student from each team to select from the box. Allow students time to discuss their ideas in their teams before presenting their theory in front of the entire class.

- Help the class build on each team's interpretation using the chart below. Add the additional characteristics, one at a time, to the chart students already started.

Object	Metaphoric Function
sponge	Absorbs runoff, holds moisture even after standing water has evaporated.
mixer	Mixes nutrients and 02 into water.
strainer	Strains silt and debris from water.
filter	Filters even smaller impurities from water.
cereal	Provides nutrient rich foods.
soap	Helps to "cleanse" the environment

	in the ways mentioned above.
bottle	Provides a nursery that shelter, feeds and protects young wildlife.
antacid	Neutralizes toxic substances.

Explain to students that during the fieldtrip they will explore life around and in the wetland. Afterward, students should add more pictures, or their own illustrations to the mural.

Wetland Safari
On-Site Activity

Materials

- One pair of binoculars per student
- Backpack including:
  - Assortment of laminated wetland wildlife pictures for a close-up view of wetland birds as students see them (such as muskrat, beaver, great blue heron, green frog, etc.)
- One Pond Sampling Kit per student team of 4-6: 2-3 short-handled skim nets, 4 specimen collection containers, plastic spoons, one magnifying glass per student, laminated *Pond Life* identification sheet.

At the conclusion of the lesson: Return live specimens to the wetland areas where they were collected (if there is time, it is best to have students participate at the conclusion of their session). Thoroughly rinse equipment and leave out to dry in the visitor center classroom. Please inventory and note any low quantities of supplies or broken equipment.

Activity 1: Exploring the Wetland

Before the group arrives, several wildlife drawings will be placed alongside the trail leading to the wetlands. The pond sampling kits will be set-up at the water's edge.

To begin the activity, pass out a pair of binoculars to each student and ask them to place the strap around their neck. Explain that this is the proper way to wear binoculars and will prevent any binoculars from being dropped or dragged during the hike. Demonstrate to the students how to adjust the eyepieces (pivot in the center) to match the distance between their eyes. Demonstrate how to focus. Point out the pictures hanging along the trail. Ask students to find the pictures, one at a time, using their eyes first. Instruct students to slowly bring the binoculars up to their eyes. This technique will make it easier for students to locate and focus in on birds and other wildlife. Explain to students how to adjust the focus until the image is clear. Ask students to identify what they see in the picture. Continue to walk a small distance down the trail and try the same thing again with the next pictures placed along the trail.

As students approach the wetland, encourage them to listen and watch for birds. Give students plenty of time to get close and observe what animals are around the water's edge. Ask students to scan the cattails with their binoculars to spot wildlife that may be well camouflaged. Use the laminated pictures as you share specific information about wetland wildlife students may (or may not) encounter.

Activity 2: Exploring the Wetland

When the group has reached the Pond Sampling Kits, ask students to put the binoculars in the backpack. Divide the class into teams of four to six. Assign each team to one collection tub. Teams should take turns investigating the wetland in the following way. First, two people from each team should use the skim nets to take one scoop of pond life from the surface of the water, including plants. Demonstrate how to empty their scoop into the collection tub. The remaining team members will use the spoons and small containers to attempt catching what they see. Then switch allowing the other two team members to take one scoop in the pond while the other members look for life in the tub. Allow for enough time at the end for the teams to pass around their containers between the other teams to compare what each team found.

Sampling Tips for Teachers, Students and Chaperones

- It is OK that some plant material is picked up in the skim nets. Many aquatic organisms live among the plants.

- Many pond creatures are very small and well camouflaged. Students should assume with every swipe through the water something will be caught in the net. With this assumption, students should take their net back to their teams' clear plastic tub and swish it through the water before determining that it is empty. Until pond insects are back in water and swimming, it is possible for students to not realize they have caught something.

- The nets being used in this activity are skim nets which are meant to be used on the top, or just under, the water's surface. Students should not scoop mud from the bottom of the pond.

- If students are working from a dock, allow only one student from each team on the dock per skim net. Suggest to each student to either kneel down or lay on their stomach when using the net. This will help reduce the chance of someone accidentally falling into the water.

- The students waiting for their turn on the dock can use their time to transfer specimens from the large team tub into the smaller collecting containers.

Wrap-Up Management Connection

Water Control Structures

What plants and animals did the teams find during their fieldtrip that need to live in the water, visit the water or water's edge, live among the wetland vegetation?

When visiting the wetland, point out the water control structures as you pass by. Explain to students how the Refuge staff raise and lower water levels in marshes, ponds and lakes for the benefit of wildlife. Use the following bath tub analogy *.

**A bath tub has a drain stop that allows you to hold as much water as you need while bathing, then drain the water when you are finished.* The water control structure (like a tub drain stop) can be opened to let water drain out or plugged to hold water in a marsh.

**If you drop a bath toy into the tub and it sinks to the bottom, will it be easier to reach your toy if the tub is full, or almost empty? (less water will make it easier to reach the toy).* Some birds, like shore birds, are built to walk on mud flats in search of the food they find in small wetland puddles and mud. Other wetland birds, like ducks, are built to swim and dive underwater to find food plants that grow in wetland ponds. Letting water out when shorebirds migrate through, and raising water when ducks arrive, allows biologists to manage a wetland for both types of birds.

Biologists must also think about the needs of wetland plants, a major food source for many migrating waterfowl. If you toss a handful of seeds into a large glass of water will the seeds grow in the water alone? No, of course

not, they also need soil and sunlight. The same is necessary for wetland plants. In order to grow, water level must be low or completely gone for before seeds sprout. As plants grow, this shallow, dry habitat is a great place for other wildlife to build nests, raise young, find shelter, and feed. When the plants are fully grown and have produced seed a new source of food will be ready for the next migration season when the wetland is flooded again.