



Welcome to our e-Newsletter!

We hope you enjoy SJMA's first newsletter created solely for educators - whether you teach in the classroom or outdoors, this newsletter is for you!

In each monthly issue, you will receive helpful information on natural and cultural resources found in the Four Corners area, as well as field and classroom activities to do with your students.

This newsletter is being sent to K-12 teachers throughout the area surrounded by San Juan Public Lands - Dolores, Dove Creek, Durango, Cortez, Ignacio, and Pagosa, as well as any other interested educators or networks. The San Juan Mountains Association is the educational nonprofit partner for San Juan National Forest and Bureau of Land Management.

As this is the 'maiden voyage' for our newsletter, we'll be tweaking it over time. If you have any suggestions, let us know! Email me at gabi@sjma.org or call [385-1256](tel:385-1256) to give us your feedback.

This issue's focus is on wetlands. Look for more interesting topics in upcoming newsletters.

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Wonderful Wetlands

Wetlands Are...

You've heard of them, you pretty much know one when you see it - but what is a wetland, anyway?

Well, it's all in the name - wet-land. Land that is wet. But that's not the whole story. A wetland can be wet for all, or even just part of the year. Water can come from rain, groundwater, surface water runoff or flood waters, but water is obviously an essential element. Two other necessary ingredients to have a wetland are soils and plants. Soil in a wetland can be any combination of sand, silt, clay or organic. However, all wetland soils must be *hydric* - saturated with water for at least part of the growing season. When this happens, little oxygen is left in the soil - called *anaerobic* (without oxygen). Hydric soils usually have a rotten egg smell to them, and look dark and slimy.

As you can probably guess, it takes some very special plants to be able to live in low-oxygen soils that are saturated with water. These plants are called *hydrophytes*. They have many special adaptations that allow them to live in this different environment - from extra air spaces on their roots and stems, to extending their roots above the water and soil, and having large air spaces on their leaves if their leaves float on the water.

So, for a one-sentence definition of a wetland, it is an ecosystem identified by the presence of water at some point during the year which creates a unique environment with hydric soils and specially adapted plants and animals. Although only 1.5% of Colorado is covered in wetlands, 60% of our wildlife species are dependent on them. Examples of wetlands in Colorado include: marshes, peatland, wet meadows, and riparian wetlands. Wet meadows are the most common wetland type in Colorado. They are characterized by having thick vegetation that sometimes can even hide the water below. They are important to a diverse group of wildlife including sandhill cranes, raptors, songbirds, moose, mule deer, elk, and red fox.

Wetland Functions

Wetlands are more than just a pretty face. These wet, smelly ecosystems actually provide important functions for everything living on the earth. Here's a quick summary of these functions:

- 1 Wetlands act as filters - they can filter out pollutants including toxic materials that humans contribute to the environment.
- 2 Wetlands provide habitat for plants and animals. Approximately 50% of endangered species depend on wetlands for survival.
- 3 Wetlands are a nursery ground for animals from migrating birds to invertebrates like mosquitoes.
- 4 Wetlands act as sponges. They can soak up runoff and excess water from flooding.
- 5 Wetlands are beautiful places to visit for anything from recreation to artistic inspiration.

Classroom Activity: Wetland Who Are You?

Topic: This activity introduces the names and characteristics of animals you can find in a wetland.

Preparation: Find pictures of wetland animals on the web or in magazines. Laminate them if you wish to use them more than once.

Materials: pictures of wetland animals, clothespins or masking tape

Wetland Animals: Beaver; Long-tailed Weasel; River Otter; Moose; Muskrat; Bald Eagle; American Bittern; Red-winged Blackbird; Dragonfly; Water Boatman; Mayfly; Mosquito; Pond Snail; Northern Leopard Frog; Tiger Salamander; Western Chorus Frog; Garter Snake; Bluegill; Largemouth Bass; and Cutthroat Trout.

Procedure: After introducing the concept of a wetland, ask your students to think of the different animals that might live in a wetland. Write their ideas on the board. Next, describe and do the activity:

- 1 Each person will have a picture of a wetland animal taped on their back.
- 2 You need to guess the wetland animal that is on your back.
- 3 To do this, ask each person in your class 3 yes or no questions, such as, "Do I have slimy skin?"
- 4 Once you have enough clues that you think you know the animal that you are, go to the teacher and give him/her your guess.

5 If you can't figure out what animal you are, at the end the whole class will give you clues.

You can extend this activity by talking about the adaptations these animals have to live in a wetland environment. You can also have students write a short paper, or do a drawing of the animal that they were.

Field Activity: Swimmers, Crawlers, and Wigglers

Topic: Macroinvertebrates are fun and easy to find in wetlands!

Preparation: Gather materials

Materials: aquarium nets or sieves, containers to put invertebrates into, pictures of macroinvertebrates (for examples, visit this website: http://www.epa.gov/superfund/students/clas_act/spring/critter.htm#Biotic%20Index)

Procedure: There are many different options to focus on when looking for and examining macroinvertebrates. First of all, macroinvertebrates are those invertebrates found in wetlands that can be seen with the naked eye – without the help of a microscope. Many of these invertebrates are the larval stage of insects that are more well-known to you in their adult stage, such as mosquitoes, dragonflies and damselflies. So, in this search for macroinvertebrates one subject you can emphasize is metamorphosis, or life cycles of the invertebrates (complete: egg, larva, pupa, adult; incomplete: egg, nymph, adult). Invertebrates going through complete metamorphosis include mosquitoes and beetles. Those going through incomplete metamorphosis include damselflies, dragonflies and mayflies.

An alternative emphasis could be that some invertebrates can be found in polluted water, such as bloodworms and leeches, while others can only be found in unpolluted water, such as stonefly nymphs. More information on this can be found on the website above.

Even without getting too technical, simply the discovery of finding these amazing critters in wetlands is a great learning experience for students. To find the invertebrates, use your nets to sweep in the vegetation and even the muck in the bottom of the wetlands. Put some water from the wetland into your container, and place the invertebrates in the water. Start investigating!

Extensions: You could extend this activity by teaching about dichotomous keys. Use www.dnr.state.wi.us/org/caer/ce/eeek/critter/watercritter/wacky.htm

Extend the Experience

To enhance your and your students appreciation for wetlands, you can visit some. They may be as close as your own backyard - look for local ponds and lakes in your town. Here's a short list of some local wetlands you can visit in our area:

Scout Lake, north of Durango Mountain Resort off of Hwy 550

Sanbrito Wetlands near Navajo State Park, on the border of New Mexico & Colorado

Dolores River, through Dolores and at Lone Dome State Park

Denny Lake, just east of Cortez

San Juan River, downtown Pagosa Springs

Other curricula and websites to check out for more information and activities:

Project WET: www.projectwet.org

Project WILD Aquatic: www.projectwild.org

WOW! The Wonders of Wetlands: www.wetland.org/wowteacher.html

EPA: www.epa.gov/watertrain/wetlands

USGS: water.usgs.gov/nwsum/WSP2425/functions.html

Sierra Club: www.sierraclub.org/wetlands/factsheets

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San Juan Mountains Association has been around since 1988. For 15 years, SJMA has been establishing a legacy of caring for the land. Side by side with our agency partners, members and volunteers, we are helping to ensure the survival of Southwest Colorado's natural glories for generations to come. SJMA also offers classroom visits, naturalist walks and talks, teacher for-credit workshops, and field trips to public lands. For more information, visit our website at www.sjma.org or call [970-385-1256](tel:970-385-1256).