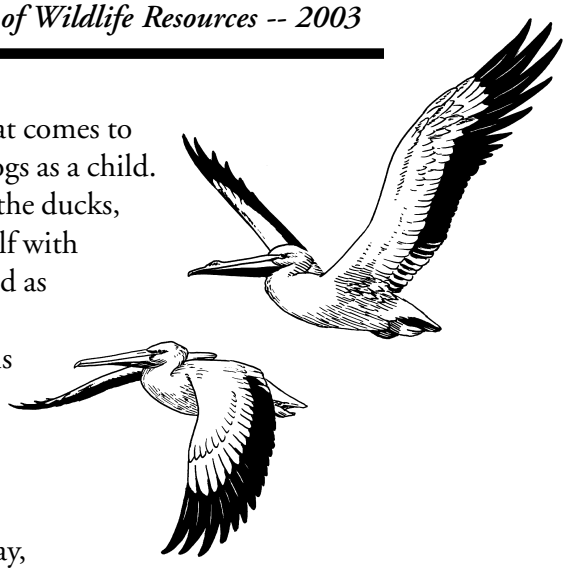
What are Wetlands?

A wetlands activity guide for educators and kids from the Utah Division of Wildlife Resources -- 2003



May is Wetlands Month! When you hear the word 'wetland', what comes to mind? Maybe you imagine a pond where you caught slimy frogs as a child. Or maybe you picture the great expanse of Great Salt Lake and the ducks, geese and shorebirds associated with its edges. Perhaps you think of yourself with a child, fishing from the edge of a river. All of these places are wetlands, and as such, are incredibly valuable to Utah.

So, what is a wetland anyway? Taking the word apart - 'land' that is 'wet' tells us a little to start with. But, nature is not as simple as that. To be classified as a wetland, an area must have the correct combination of soils, plants, and presence of water.

Hydric - saturated with water

First, let's talk about ***soils***. Not all soils are created equally. The four main types of soil are clay, sand, silt, and organic. Organic soil forms where plant decomposition is slowed down. The soil in a wetland can include any combination of these soils, but it must be ***hydric***, or saturated with water, for at least part of the growing season – saturated long enough that there is little oxygen left in the soil. When this happens, the soil is ***anaerobic*** (without oxygen). Soil that is hydric usually smells like rotten eggs from the anaerobic bacteria which thrive in it, creating hydrogen sulfide. It will also often look dark and slimy. Little oxygen left in the soil and water greatly affects the things living in a wetland – especially the….

Anaerobic - no oxygen

Plants! It takes a very special plant to be able to make it in a wetland. We all know that plants need water, but have you ever over-watered a house plant? If you have, you know that different plants require different amounts of water. Plants found in wetlands are called ***hydrophytic*** (hydro = water, phytic = plant). They have special adaptations that allow them to live in a water-saturated environment where oxygen is hard to obtain. Some of these adaptations include having long tubes that transport oxygen, as in reeds or grasses; floating on top of the water, like duckweed; or having buttressed trunks that are thicker where under water, such as with cypress trees.

Wetlands =

Hydric soils
+
Hydrophytic plants
+
Water!

But, of course we wouldn't have a wetland without ***water***! Water in a wetland can come from many places including rain, groundwater, surface water runoff or flood waters. The interesting thing is that water in a wetland does not need to be above the surface of the ground all the time. It just needs to be there part of the year. Usually though, there is water just below the ground so that when it rains the ground gets saturated quickly. The kind of wetland that develops depends upon when water is present and the length of time it is present.

There are many different kinds of wetlands in the world, and scientists have numerous different names for wetlands. Many types of wetlands can be found in Utah. On the third page of this packet you will find a key that can be used to identify these different kinds of wetlands. Wetlands are especially important in Utah because Utah is essentially a desert - and deserts, of course, are dry. Water is essential for life so wherever you find water in a desert, it is very valuable for all living things!

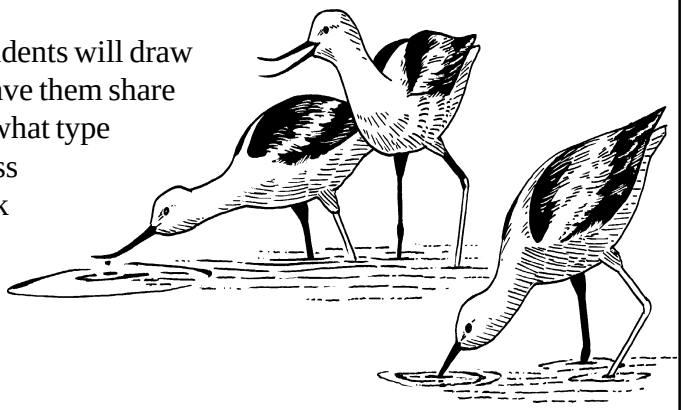
This wetlands packet contains activities for educators and students. Try some of these wetland activities and then get out and experience a wetland too!

Guided activities for educators & kids

The best way to learn about a wetland is to get out and experience it. The first group of activities can be done with kids indoors or outdoors. The second group of activities are to be done outside in a wetland.

Starting out - What is a Wetland?

Ask your kids to draw a picture of a place outdoors. Often students will draw a picture of a place like a forest, but not usually a wetland. Have them share their picture with the rest of the class. Discuss with the class what type of place they drew. Did many draw a forest-like place? Discuss other habitats in Utah, such as deserts and wetlands. Then ask them to draw a wetland habitat. What did they put in their pictures this time? How are these pictures different from the last? This is a good activity to stimulate kids thinking about what a wetland is.



Experiential Activities - Sensing a Wetland: There's Nothing Like the Real Thing

There's nothing like having kids experience a wetland themselves. Let them experience the wetland, allowing their senses to be their guide. Start by explaining that usually, when people lose one sense, such as sight, their other senses become strengthened. Therefore, for most of the following activities they will not be able to see. After the activities, to help them remember their wetland encounters, have them keep a journal of what they learned and felt in the wetland.

Touch - Wetlands have many neat things to feel such as mud, leaves from plants, shells from snails, and other such items. Have the children pair up. Have one child close his/her eyes, while the other child places something from a wetland in his/her hand. The child holding the item then tries to describe what is being felt. Then have them switch and use a different item.

Smell - Have the children close their eyes and take a few deep breaths while at the wetland. Ask them to use adjectives to describe the smell. Then ask what they think a smell the opposite of this one would be. While they have their eyes closed, pick up a clump of mud and hold it in front of each child's nose while their eyes are still closed. Ask what it smells like.

Hear - Have the children close their eyes once more, and hold up one hand in a fist. Ask them to listen for sounds. Tell them to put up one finger for each different sound they hear. After listening for a period of time, have them share what sound at least one of their fingers represents.

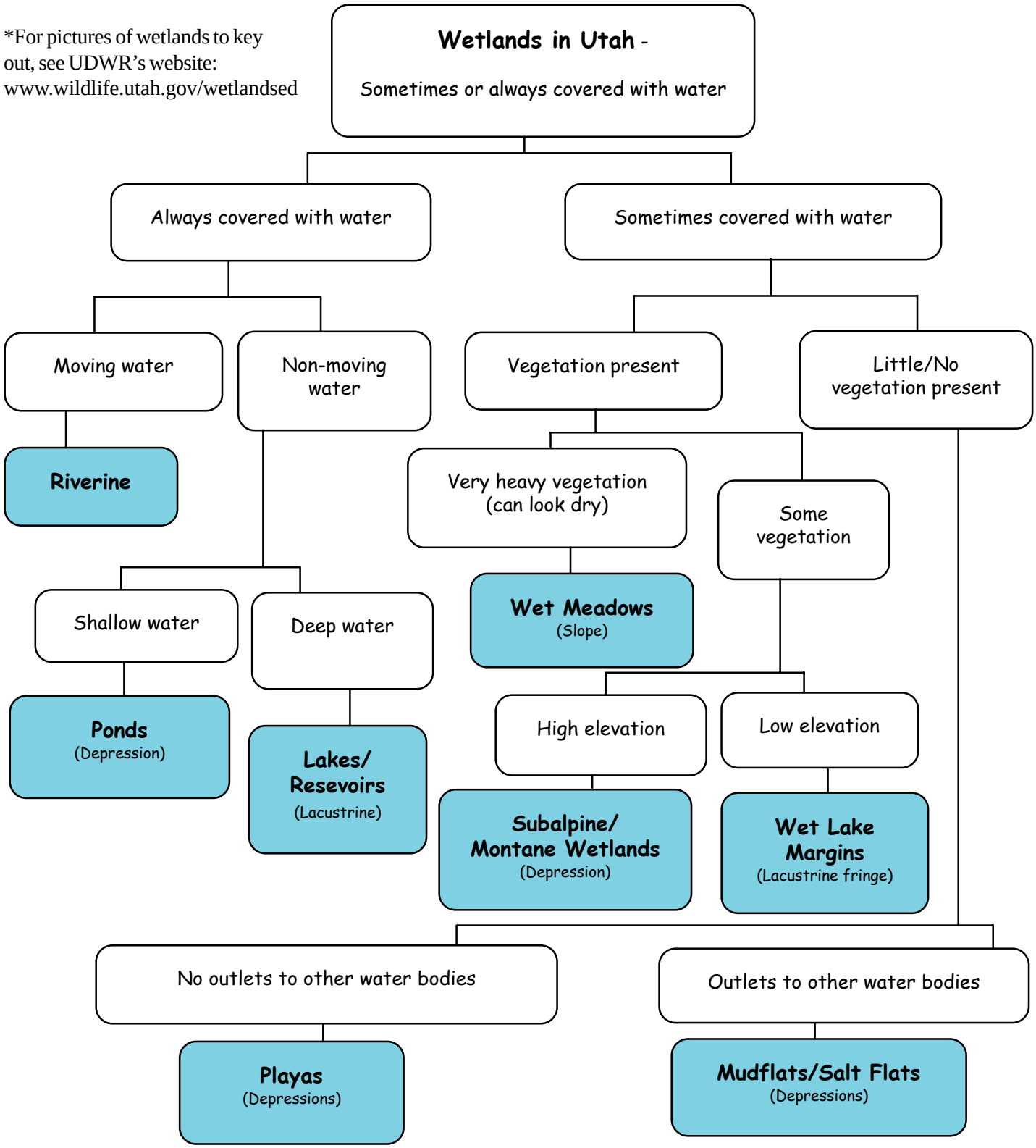
See - Play 'I Spy' with different items in the wetland. Have the children guess what it is that you are/were looking at. Have them lead their own 'I Spy' game using descriptive words for colors, textures and shapes.

Pulling it all together - Spread the children out in a small area of the wetland. Allow them to have a 'silent sit' to reflect on their experiences in the wetland. Have them each secretly choose one element of the wetland to describe in their own way in their journal. The element can be anything in the wetland - a plant, insect, or even something like the wind or sun. When they are finished, have them switch papers with a partner, and have them try to figure out what their partner's 'wetland element' was. Afterwards have them share their descriptions with the rest of the class.

Kinds of Wetlands in Utah

The dichotomous key below can be used to identify the different kinds of wetlands found in Utah. Scientists often use this kind of key for identification. You can make use of this key in two different ways. You can either visit a wetland, and use the key to figure out what kind of wetland it is. Or, you can find pictures of wetlands on the internet* or in magazines or books, and try to figure out which kinds of wetlands they are. To use this key, start at the top, and make choices about what your wetland looks like at each step. For example, is your wetland always or just sometimes covered with water? If it is always covered with water, then decide whether it has moving water or non-moving water. Continue selecting between each two choices, and work your way down to identify your wetland! (The names in parentheses are more general, scientific names.)

*For pictures of wetlands to key out, see UDWR's website: www.wildlife.utah.gov/wetlandsed



Kids Pages

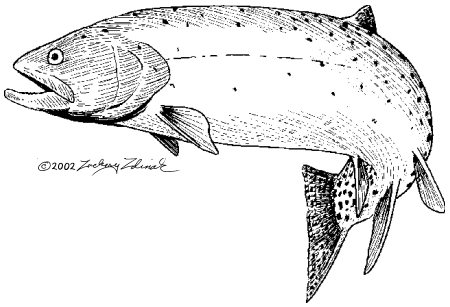
Wetlands =
Water + Soil + Plants

Water:

Where and how do you use water? Draw a map or picture of you and your family showing where and how you use water. Try to think of every way you use water - at your house, school, garden, etc.

How do plants and animals in wetlands use water? Answer this question for the list of organisms below.

Example: A <u>muskrat</u> uses water for food (cattails), swimming, building their homes in (with cattails & mud), hiding in, and drinking



Beaver

Cutthroat Trout

Leopard Frog

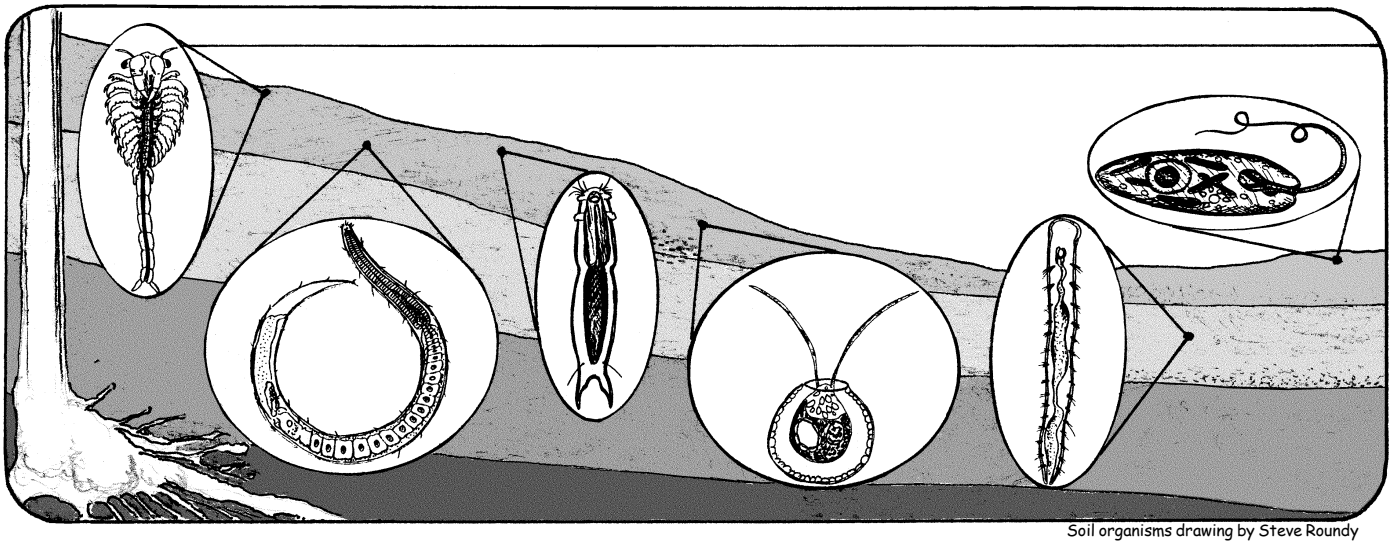
Cattail

Can you think of other wetland plants or animals and how they use water?

Did you know that water in wetlands comes from the same place as the water you use? How might your use of that same water affect living things in a wetland?

Soil: **Soil is more than dirt!**

Wetland soil includes minerals and organic material. Minerals are found in sand, silt, or clay soils. Organic material is made up of things that used to be alive, like plants and animals, that have been broken down. Plants need these minerals and organic materials to live. It can be hard for plants to live in wetlands because there is very little oxygen in wetland soil. Just like us, they need oxygen. They survive, though, because they have special adaptations to help them out. Other living things besides plants have adapted to help them live in wetland soil too. Try to match the organisms found in wetland soil below with their correct names.



Soil organisms drawing by Steve Roundy

A. ***Euglena*** - This is a one-celled organism (a kind of protist) that looks like it has a tail, which is really something called a flagellum. It uses it's flagellum to move in the water and mud.
B. ***Volvocidae*** - This protist is similar to the *Euglena*, but has two flagella (tails) that look like antennae.
C. **Nematode** - This is a roundworm that measures less then 1cm long. It moves by whipping its body back and forth in water and across vegetation.
D. **Gastrotrichs** - These are flat worms with a distinct head and tail. Insects love to eat them. There are 2 of them in the picture - can you find both?
E. **Fairy Shrimp** - This organism is found at the bottom of a pond, or on top of mud. What look like wings on this little animal are actually what it uses to swim and breathe.

The Colors of Wetland Soils

Wetland soils look different from other soils too! Color each of the following circles with the Crayola© crayon colors, to discover how beautiful soil can be! Each colored circle represents a different kind of soil... and you thought soil was just brown. See if you can find soil somewhere that matches one of these colors. You might have to dig a little to get to different soil layers. If a color matches the two top rows of colors, it's probably a wetland soil. If it more closely matches the last row of colors, it is probably a drier soil.

Gray + Asparagus

Black

Cadet Blue + Gray

Black + Brown

Apricot

Mac & Cheese

You can also go to a paint store and get color swatches to find more colors of wetland soils. Look for the following colors and brands:

Glidden: Mountain Shadow (looks like gray + asparagus)
Ralph Lauren: Polaris (looks like cadet blue + gray)
Lowe's Olympic: Black Magic (guess what it looks like!)
Behr: Peach Whip (looks like mac & cheese - not wetland soil)
Try to find other colors you think might match those of wetland soils - grays, gray-greens and almost black colors are a good bet.

Plants:

Plants in wetlands are specially adapted to live in a low oxygen environment - even plants need oxygen! They also need carbon dioxide for photosynthesis, as you have probably already learned. Most plants can get oxygen from the water through their roots, but wetland plants usually have some type of adaptation that allows them to get oxygen from the air instead. Plants found under the water are called *submergents*, those found on top of the water are called *floaters*, and those found above the water are called *emergents*. Emergents get their oxygen through a tube that goes above the water surface. Floaters can breathe through the parts of their leaves that are above the water. Submergents often have extra air pockets to store oxygen for when it is needed. Have you ever seen a wetland plant? You can find wetland plants in pet stores to put in your fishtanks (but don't ever put these in outside ponds! If they don't belong in your area, they can do a lot of damage).

Wetland plants help wetlands too. All plants create oxygen (as well as use it), and submergents actually release oxygen into the water. Plants in wetlands are also part of the wetland food web, being eaten by many wetland animals. Wetland plants also absorb and remove pollutants from the water - a very important duty!

Try to match the following pictures of wetland plants with their description - write the correct letter in the blank space. Then visit a wetland and try to find some of these plants!

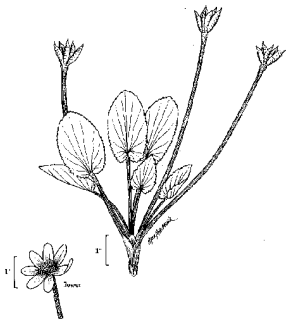
1. This plant has blue flowers, and leaves that are directly opposite each other on the stem. You can find it around wet meadows, and along the edges of other wetlands too. _____

2. This plant is found often around <u>salt</u> marshes, but also along roads at low elevations. It has long, narrow leaves. _____

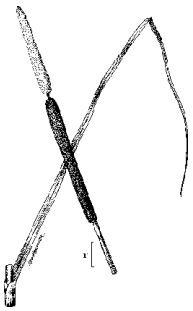
3. This might be the most commonly known wetland plant. You can find it on the edges of wetlands like wet lake margins. Sometimes it can spread quickly (sometimes too quickly) and take over an area. _____

4. The leaves of this plant are heart-shaped, and the flowers are white. It lives in subalpine/ montane wetlands and blooms early in the season. _____

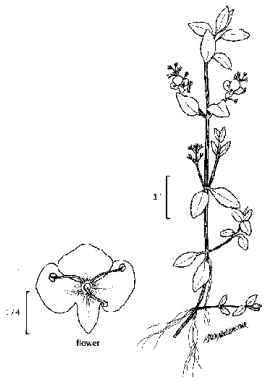
5. This 'edgy' plant (the stems of sedges have edges) is found in swamps, meadows, and around lakes and ponds. Waterfowl love to eat it. It is found in Utah, as well as Nebraska. _____



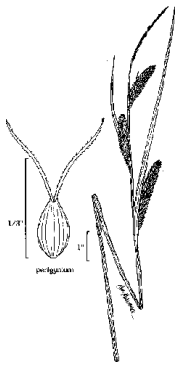
A. Marsh marigold



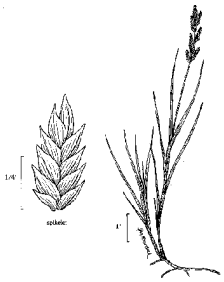
B. Narrowleaf cattail



C. American speedwell



D. Nebraska sedge



E. Inland saltgrass

Wetland plant drawings from 'Western Wetland Flora: Field Office Guide to Plant Species', USDA Soil Conservation Service, West National Technical Center, Portland, Oregon. Copied with permission from artist.

Answers: 1-C, 2-E, 3-B, 4-A, 5-D

Express Yourself!

Wetlands can be a source of artistic and poetic inspiration. Visit a wetland and then try to share your experience with someone in an expressive way. Try poetry! One fun and easy poetry form to do is called Cinquain. Just follow the simple instructions to create a totally original Cinquain wetland poem!

Cinquain instructions:

Line 1: a person, place,or thing (noun)
Line 2: two words that tell about the noun
Line 3: three *–ing* words that show action about the noun
Line 4: one four-word phrase or sentence about the noun
Line 5: the noun again (or a word that means the same thing)

Example:
Beaver
Large rodent
Gnawing, chewing, slapping
Creates his large lodge
Beaver

_____

_____ _____

_____ _____ _____

_____ _____ _____ _____

_____

Now, draw a picture of the subject of your cinquain poem somewhere in the wetland below. You can also add to the picture, creating an entire wetland ecosystem, with maybe cattails, fish, ducks, crayfish, etc. Have fun with it!

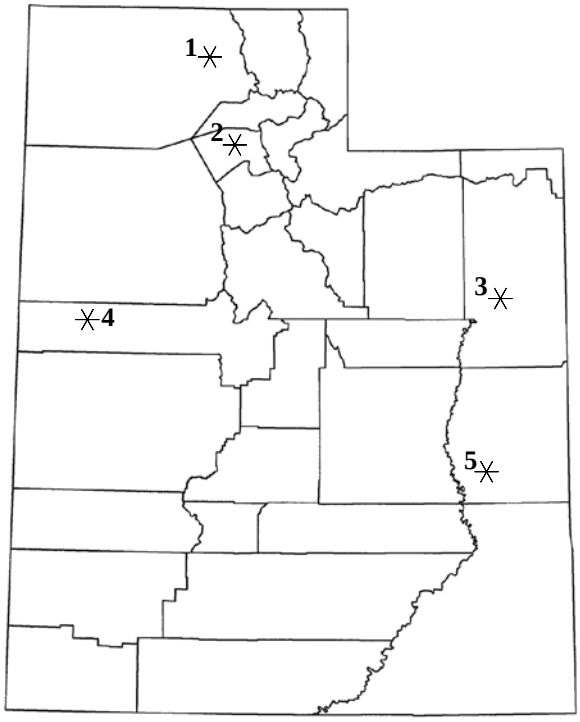
Wetland drawing by Steve Roundy

Wetland Resources for Educators

Where are wetlands in Utah you can visit? Here are just a few (see map):

1. Bear River Migratory Bird Refuge (435) 723-5887
2. Farmington Bay (801) 451-7386
3. Ouray National Wildlife Refuge (435) 545-2522
4. Fish Springs National Wildlife Refuge (435) 831-5353
5. Matheson Wetlands Preserve (435) 259-4629

For more wetland sites to visit, go to http://www.wildlife.utah.gov/calendar. Many of these sites will have events during May, Wetlands Month.



Wetland Education Resources

Project WILD Aquatic
Diana Vos, Utah Project WILD Coordinator,
(801) 538-4719 or http://www.wildlife.utah.gov/projectwild

Project WET
Andree' Walker, Utah Project WET Coordinator,
(435) 797-2580 or
http://extension.usu.edu/coop/natres/wq/projectwet

Shorebird Sister Schools Program (SSSP)
Hilary Chapman, SSSP US Coordinator, (304) 876-7783
or http://sssp.fws.gov

WOW! The Wonders of Wetlands
Environmental Concern, Inc., (410) 745-9620 or http://www.wetland.org

Web resources

Utah Division of Wildlife Resources: http://www.wildlife.utah.gov/wetlandsed
Federal Junior Duck Stamp Design Program: http://www.wildlife.utah.gov/projectwild
Ducks Unlimited: http://www.ducks.ca/edu/resource.html
Izaak Walton League of America: http://www.iwla.org/SOS/awm/resources
International Migratory Bird Day: http://birds.fws.gov/imbd/educators.html
Society of Wetland Scientists: http://www.sws.org/education

project WILD

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STATE OF UTAH
NATURAL RESOURCES
Division of Wildlife Resources

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Grade(s) taught _____