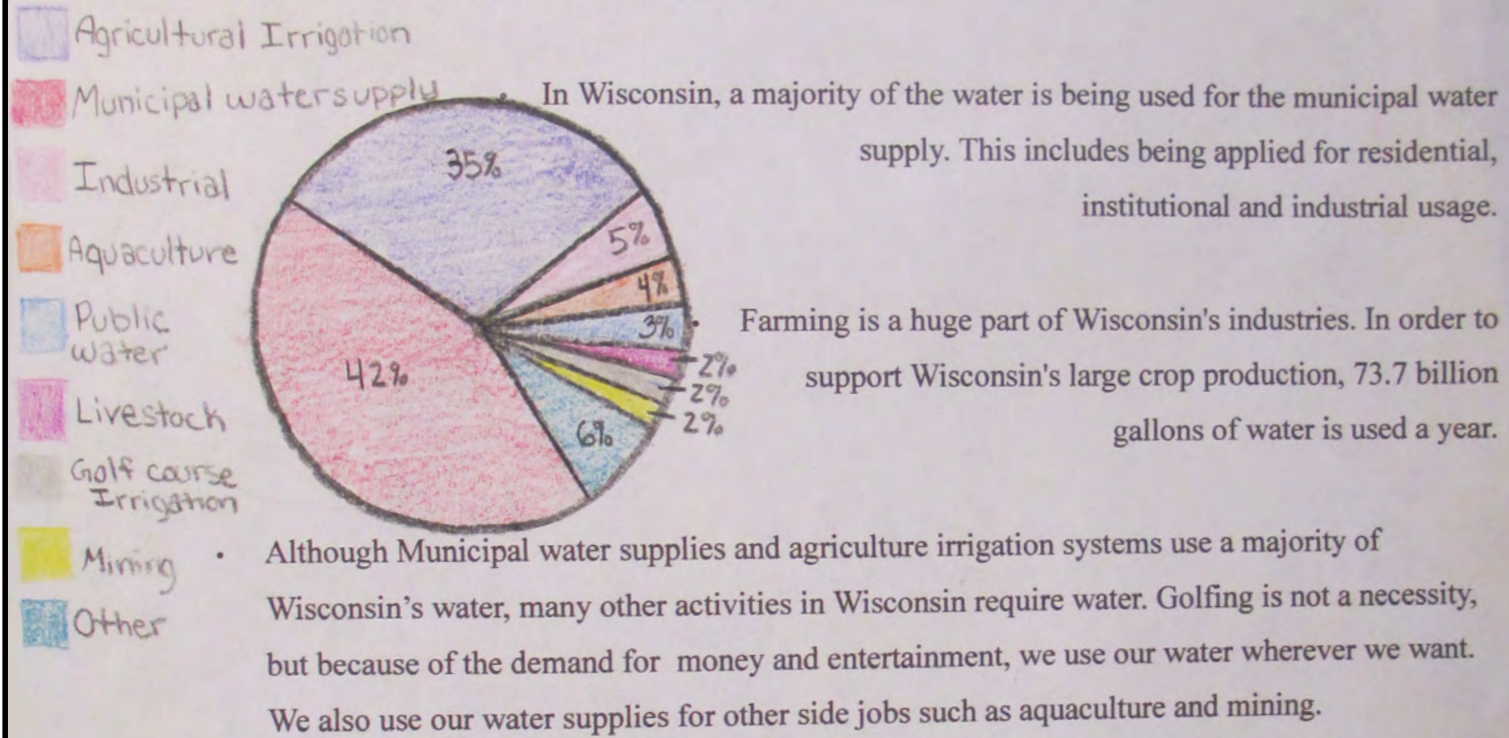


# Water Worries

Water is a renewable resource, which means it is a resource that will naturally replenish itself. Although renewable resources will replenish themselves, it will happen over a period of time. Are humans using their water sources up too quickly?



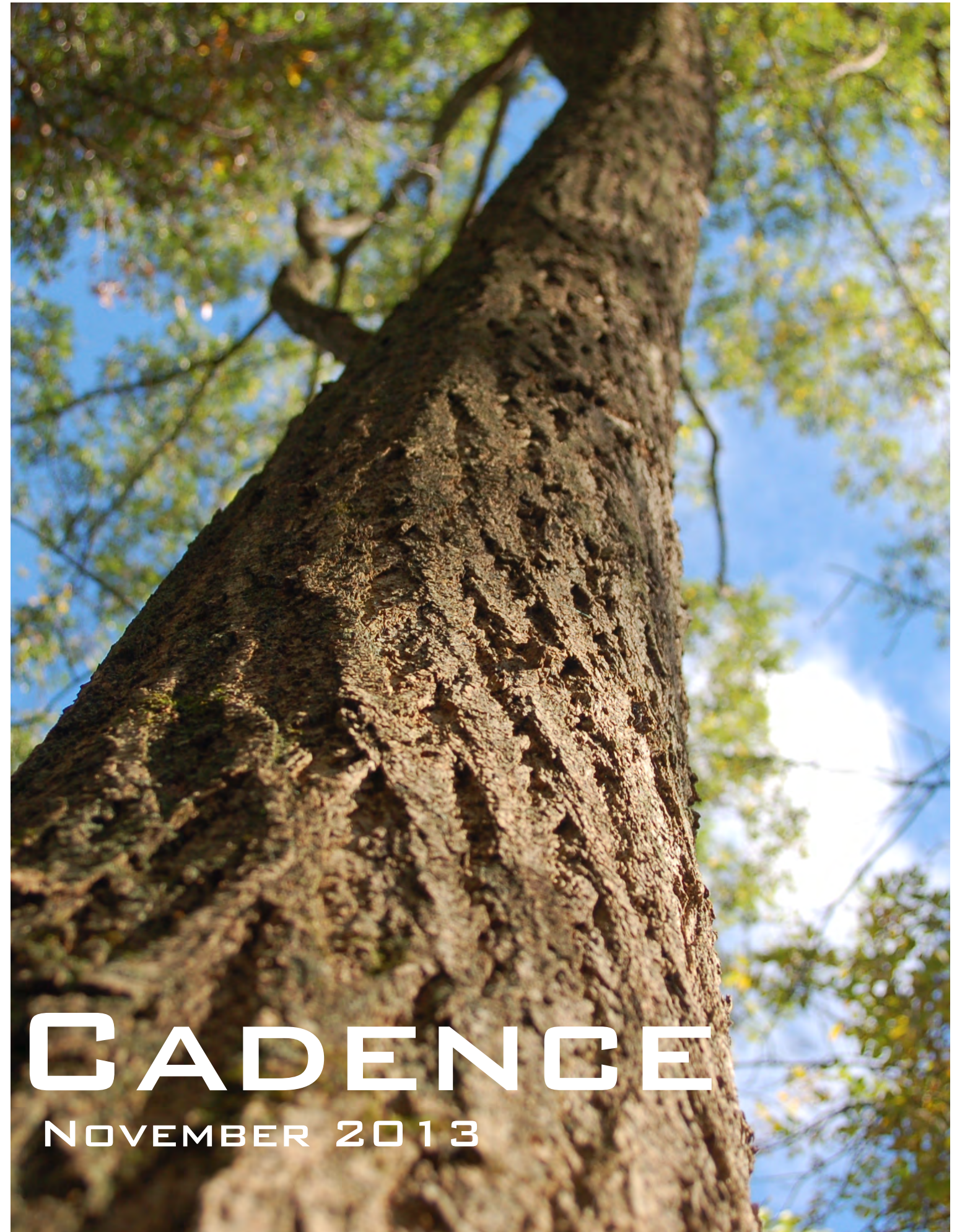
## What can you do to conserve water?

Easy things such as turning off the water when you brush your teeth and taking shorter showers can help reserve water, but what else can you do? You can also replace older toilets with newer models that are water efficient. Other than this, you can water your grass in the early morning to decrease the amount of water evaporated by the sun. Easy changes in our daily life styles will allow us to conserve water and still be proficient with our lives.

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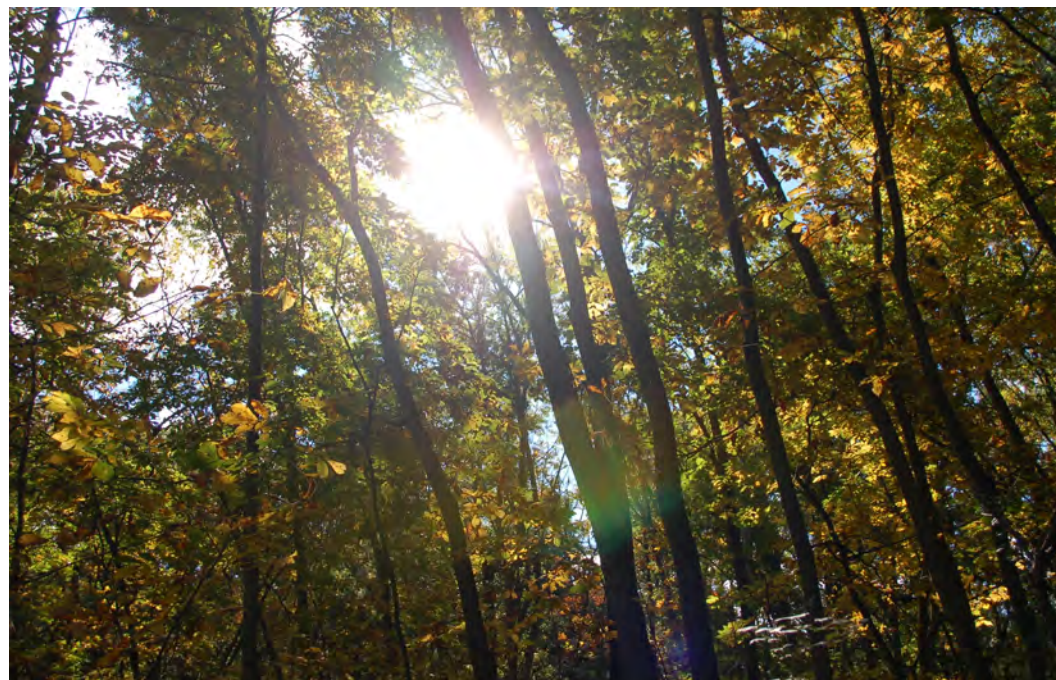


# CADENCE

NOVEMBER 2013



**Tremendous Trees** In the woodland's canopy sunlight slowly seeps through the trees and eventually to the forest floor. When sunlight hits the trees leaves, the tree can perform an operation known as photosynthesis. This is a process that allows the tree to be self efficient by making its own food. Photosynthesis also creates the oxygen all living things breathe "(Royal Forestry Society)." Photo by Brittani Burkholder



# Wisconsin Ecosystems

There are three different types of ecosystems that are existent in Southeast Wisconsin. A network of interactions of a group of different species in an environment is classified as an ecosystem. Prairie, Woodland, and Wetland are the three ecosystems that are located in Southeast Wisconsin. Prairie covered 3.1 million acres of Southeast Wisconsin, but there is only 0.5 percent still in existence. Two thirds of Southeast Wisconsin was once covered by woodlands. Wisconsin now has 16 million acres of land restored from past deforestation. The third native ecosystem of Wisconsin, wetlands, now covers 50 percent of the state.

Southeast Wisconsin has a distinct climate that depends on the differentiating locations within the state. Temperature changes depending on the ecosystem, but averaging an extreme cold temperature of -26°F, and an extreme hot temperature of 105°F. Southeast Wisconsin has an average between 10-12mph, but there has been record winds up to 75mph. Rainfall in Wisconsin per year averages 37 inches, while snowfall per year is 47 inches. Because different locations are covered by a different amount of trees, the percent of sunlight varies on tree foliage and what time of the year it is.

Out of the three ecosystems, the prairie stands out as being the most dry and humid. Because of the few number of trees, the prairie has no protection from the elements. The prairies have cold winters and hot summers that often lead to fires every five years. This fire helps the prairie by returning needed nutrients back into the soil. In the prairies, the biotic factors abundant are plants, and nutrients. Abiotic factors abundant in the prairies include sunlight, soil, temperatures, and wind. These factors are all based on how the prairies are located on the Earth, and how trees often don't grow to affect these factors such as the high winds.

Prairie inhabitants have adapted in order to survive such as the American Bison. Bisons have adapted to being able to run as fast as 40 mph to escape predators. The Black-Eyed Susan, a plant native to the prairies, has adapted bright colors in order to attract pollinators. Other animals such as the Jackrabbit have adaptations such as long ears to help regulate their body temperatures. Adaptations such as these, have helped plants and animals survive in the prairies. Different ecosystems allow different elemental factors in order for their inhabitants to adapt.

Another ecosystem native to Wisconsin are the woodlands. The woodlands have nutrient-rich soil, and are species rich. Humans have sought after these rich soils, which has led to a decrease of this ecosystem for agricultural use. The biotic factors that are abundant are trees, animals, and grass. Abiotic factors that are abundant are water, air, and soil. Although the woodlands have an abundance of sunlight, the majority of this sunlight is blocked by the canopy of the towering trees. Trees are an important resource for humans, this cause 50 percent of the trees creating the woodlands to be cut down and used for timber.



## Making a Come Back!

Species in the three ecosystems have populations that are constantly changing. These changes are often caused by humans, but can be caused by other sources.



## Prairie Dog

Their population of this species in the prairies went down from 100,000 to 3,000 in the early 1900s because of human extermination efforts. Since then, the Prairie Dog population has tripled.



## American Eagle

The Eagle was considered endangered in 1977 existing in the woodlands. In 2007 the species population went up enough to come off the list of endangered species.



## Piping Plover

The Piping Plover is a wetlands inhabiter that is critically endangered. Nests have been destroyed by human invasion of habitat, leading to a population decline. Humans have taken special measures in order to help this species multiply.



## Peaceful Prairies

The green grass sways as towering plants swallow me, feeling the dry dirt.

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# Picture Gallery



**Twisted Up** Knots in trees are caused when a tree gets injured, such as a branch falling off. Although knots can be caused by a branch dying, they can also be caused when a tree is infected with a disease. Many animals use these knots in trees as a refuge, or home "(SF Gate)." Photo by Brittani Burkholder



**Towering Trees** Vital nutrients for the tree travel up the trunk and throughout the tree. Trees in the woodlands develop thick bark to protect themselves during winter. The age of a tree can be determined by the age rings in its' bark "(Science Kids; Fun Science & Technology For Kids)." Photo by Brittani Burkholder



**Fantastic Fungi** Mushrooms contain seeds called spores. Since their spores are sprayed out, this allows the mushroom to continually grow their population. These low light species form to break down and consume dead organic matter "(Gmushrooms)." Photo by Brittani Burkholder



**Woody Woodlands** Trees act as a noise barrier to sound pollution. Out of all the living organisms on Earth trees have the longest life span. Trees are made up of cork, phloem, cambium and xylem "(Woodland Tree Service)." Photo by Brittani Burkholder

## Continued from page 1...

One of the many species of the woodlands, the White-Tailed Deer, has adaptations that allow it to jump up to 30 feet high to escape from predators. A plant of the woodlands, the Oak tree, has adaptations that have allowed it to be able to grow in low-light, shaded areas. Plants in the woodlands use the biomass rule of one-thirds two-thirds, which allows for the roots of the plants to get moisture and nutrients from the top layer of the soil. The woodlands are a very important ecosystem because trees are used for human resources and they allow us to breathe the oxygen we need.

The last of the three ecosystems in Wisconsin, the wetlands, are lands that are saturated and are filled with a large amount of vegetation. In the past, the importance of this ecosystem didn't have a good purpose so humans began to develop the lands. The wetlands help collect floodwater, filter the water and is the home to many species of animals. Because of its importance and its role to wild animals, protective laws against building on this land have been put in order to help rebuild the wetlands. Biotic factors that this ecosystem is abundant in includes flora and fauna. The abiotic factors that this ecosystem has is an abundance of sun and water. The amount of sun and water allow the aquatic plants to thrive and the animals to eat and create a home within the vegetation.

Animals such as the Mallard Duck have a home in the wetlands. This duck has adapted webbed feet to dive for food and swim more proficiently. Other animals such as the Beaver have adapted water proof coats to help them swim. Plants such as the Lily Pad inhabit the wetlands, and have adapted flexibility to move with the waters current. Another common sight in the wetlands are cattails. These plants have fluffy seeds that can be distributed by winds. Over time, plants gain adaptations that allow them to thrive the most proficiently in their environment.

Prairies are the home to many species of plants and animals. The soil is also very important because of the large amount of nutrients it contains. The woodlands provide a shaded home for many animals, and timber used for human resources. Along with this, trees also filter the air and produce the oxygen all living things need to breathe. Wetlands have a very important purpose as a filter. When it floods, the water flows to the wetlands. This water will then filter through the vegetation which cleans the water. Each ecosystem serves its purpose creating a beautiful home for wildlife in Wisconsin.

WHERE THE ANIMALS ARE

Although it may not seem like it, but the prairie, wetlands and woodlands are homes to a diversity of different animal species.



**American Grasshopper** One inhabiter of the prairie is the American grasshopper, or the *Schistocerca americana*. The grasshopper has many adaption such as it's coloring to camouflage itself and its' long legs to jump away from predators. Some of the grasshopper's predators include birds, lizards, mantids, spiders, and rodents. Photo by Brittani Burkholder.

**Bumble Bee** Also know as the Bombus, is the bumble bee. Bumble bees live in many different ecosystems and are attracted my flashy colored plants. They are pollinators, meaning they collect pollen to later make into honey. To communicate with other bees, they use a series of chemicals, visual actions, and wing vibrations. Photo by Brittani Burkholder.



**Water Spider** Water skidders, or *Gerris remigis*, is an inhabitant of the wetlands. Its size can range anywhere from 8-15mm and has a life span of 2 years. The water skidder preys on other insects and subdues them with their venomous jaws. Photo by Brittani Burkholder.



**Auburn Acorns** Acorns are the fruit of Oak trees that grow off the tree as it matures. Oak trees that are 70 to 80 years old can produce thousands of acorns. Animals such as squirrels, deers, and wood peckers depend on acorns as a food source "(eHow)." Photo by Brittani Burkholder





**Magestic Mushrooms** Mushrooms develop on decomposing matter in order to break it down and return nutrients to the soil. Spores are distributed by the mushrooms, which then grew in different locations around the organic matter. Mushrooms are now classified under their own animal kingdom "(Fun Facts About Fungi)." Photo By Brittani Burkholder



**Creeping Cattails** Cattails can grow up to 10 feet tall. They also grow in groups called a stand. The lush cattails release their fluffy seeds during May through July"(Cattails; Typha latifolia)." Photo By Brittani Burkholder



**Open Pod** During the fall, prairie plants finish their final stages of life before going into dormancy or dying off for the winter. Milkweed plants inhabit the sides of roads, fields and gardens. These common prairie plants are known to grow up to 6 feet tall "(Common Milkweed)." Photo By Brittani Burkholder

### Whispering Woodlands

Tremendous trees tower atop,  
with an abundance of animals attaining adaptations.  
Lowlight species lying lowly,  
sunlight seeping seemingly slow.

### Wonderous Wetlands

The cattails climb in clusters--  
animals hiding within the reeds,  
Hoping to be able to assess their needs.  
Turtles, toads, and tadpoles too,  
happily surviving without a predator's clue.

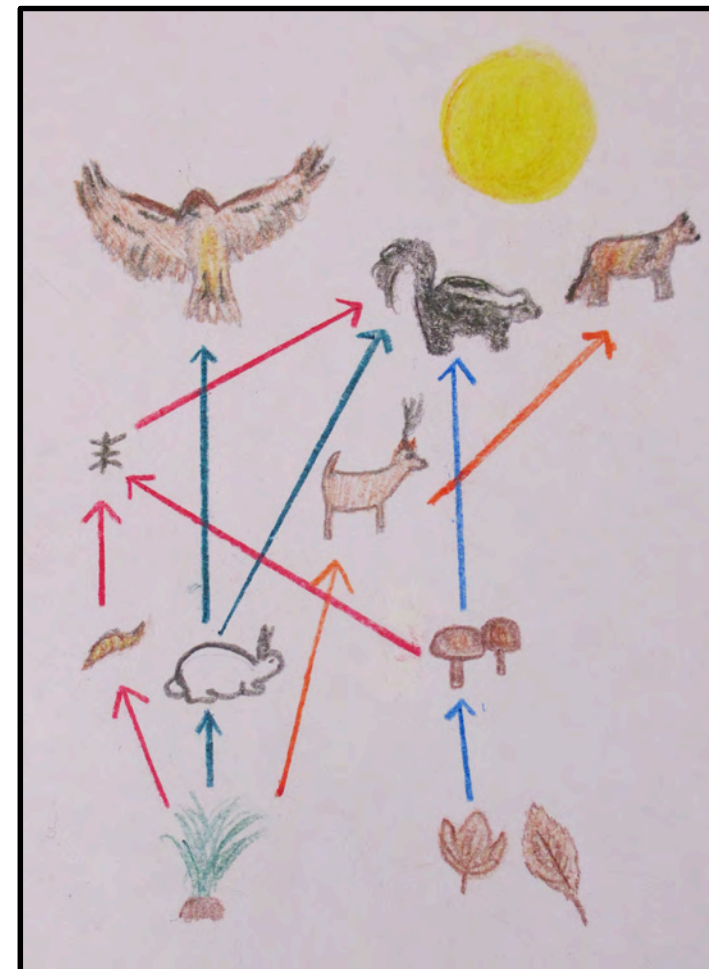
## There are Many Different Types of Wetlands

Wetlands are classified by four general categories, although Wisconsin only has three of these types. Even though wetlands are classified by different categories, they all have the common characteristics of being moist and humid.

**S**wamps are wetlands that are wet and spongy with a presence of a variety of vegetation.

**B**ogs are wetlands that are classified as spongy land with a population of peat moss and other dead plant matter.

**M**arshs are low lands that are often treeless and flooded surrounded by vegetation such as cattails,



# Factorial Food Web

**Factorial Food Web** Within every ecosystem is a feeding pattern existing between the animals. Arrows within the food web represent the energy transfer from organism to organism. At the base of all food webs are producers, which are organisms that can create their own food such as grass. Herbivores then eat the producers like white-tailed deer. After the deer consumes the grass, a predator or omnivore, like a coyote will eat it "(WWF Global)."

## Vocabulary

Producers: Organisms that can create their own food.

Herbivores: Animals that only eat plants.

Carnivores: Animals that only eat meat.

Omnivores: Animals that eat both plants and other animals. **4**