

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Game and Parks Commission  
Publications

Nebraska Game and Parks Commission

---

2022

## Wetlandology: A Kid's Book About Wetlands

Grace Gaard

Ted LaGrange

Follow this and additional works at: <https://digitalcommons.unl.edu/nebgamepubs>



Part of the [Biodiversity Commons](#), [Natural Resource Economics Commons](#), [Natural Resources Management and Policy Commons](#), [Population Biology Commons](#), [Terrestrial and Aquatic Ecology Commons](#), and the [Zoology Commons](#)

---

This Article is brought to you for free and open access by the Nebraska Game and Parks Commission at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Game and Parks Commission Publications by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# WETLANDOLOGY:

A Kid's Book About Wetlands

Fun  
Activities  
Inside!



**WETLANDS**  
of nebraska

# Exploring the Outdoors Leads to Dream Career

By Ted LaGrange

I have had a passion for nature and being outdoors for as long as I can remember. Although my parents helped to encourage this, it was further fueled by exploring my backyard, neighborhood, and a nearby small creek. As I got a little older, I ventured out further and explored areas along the river and a wildlife area just outside of town.

While in grade school, I decided that I wanted to be a veterinarian, because I loved animals. In junior high, I learned that there was a career called a fish and wildlife biologist, and

thought that would be the perfect fit for me. I further narrowed my focus to wanting to work with wetlands, because I loved being in such magical places, and I had also developed an interest in duck hunting.

This interest in wetlands and wildlife never waned, and I went to college and earned a degree in Fisheries and Wildlife Biology. I was able to do short-term wildlife work in a number of amazing locations, including Oregon, New York, Iowa, Wisconsin, North Dakota and Manitoba, Canada.

Here in Nebraska, I am the Wetland Program Manager

for the Nebraska Game and Parks Commission. I work across the entire state and get to help farmers, ranchers, and our other partners work on wetland conservation projects, help scientists learn more about wetlands, and help to share the stories of the importance of these valuable places. What I love about my job is that I get to work with a wide variety of people who care deeply about what they do, and together we work to accomplish projects that will conserve our wetlands for future generations. 🍷

Ted LaGrange at the Little South Fork Marsh Reserve.

Brooke Talbott

Writer/Coordinator – Grace Gaard and Ted LaGrange

Editor – Renae Blum

Illustrations/Design – Donna Schimonitz

Address correspondence to: Grace Gaard  
Nebraska Game and Parks Commission  
P.O. Box 30370, Lincoln, NE 68503-0370,  
or email [grace.gaard@nebraska.gov](mailto:grace.gaard@nebraska.gov).

Published by the Nebraska Game and Parks  
Commission, 2200 N. 33rd St., Lincoln, NE.

First Edition • Copyright 2022.

**Front Cover:** A great blue heron slowly wades into the still waters of a wetland. Photo by Dakota Altman.

**Back Cover:** Damselffy at sunset. Photo by Dakota Altman.

This was printed as a part of the Wetlands of Nebraska Outreach and Education project. Funding for this project was provided by the following: U.S. Environmental Protection Agency (grant CD# 97770101), Ducks Unlimited, the University of Nebraska-Lincoln, and the Nebraska Game and Parks Commission.

The Nebraska Game and Parks Commission does not discriminate based on race, color, ethnicity, national origin, sex, pregnancy, sexual orientation, gender identity, religion, disability, age, genetic information, veteran status, marital status, and/or political affiliation in its programs, activities, or employment. Any person who believes he or she has been discriminated against in any program, activity, facility, or service, should contact the Nebraska Game and Parks Commission, Lincoln, NE 402-471-0641, the Nebraska Equal Opportunity Commission, Lincoln, NE 402-471-2024, TTY/TDD 800-642-6112, Director, Office of Diversity, Inclusion and Civil Rights, U.S. Department of Interior, 1849 C Street, NW, Washington, D.C. 20240.

Although the information in this document has been funded wholly or in part by the U.S. EPA under assistance agreement CD9777010 to the Nebraska Game and Parks Commission, it has not been subjected to the Agency's publications review process and therefore, may not necessarily reflect the views of the Agency.

**ANSWERS:** P. 6 - A. Cell phone charger; B. Baby bottle; C. Sponge; D. Strainer; E. Groceries; F. Binoculars; G. Home; P. 12 - TIGER SALAMANDER, GREAT BLUE HERON, WATER STRIDER, BLANDINGS TURTLE, BEAVER, BLUEGILL; P. 13 - CATTAIL, SALTWORT, SWAMP MILKWEED, ALGAE, ARROWHEAD, COTTONWOOD.

NEBRASKA  
- GAME PARKS -

[OutdoorNebraska.org](http://OutdoorNebraska.org)

# What is a Wetland?



An endangered Salt Creek tiger beetle (*Cicindela nevadica lincolniana*) roams a saline wetland along Little Salt Creek in Lancaster County.

Image by Brooke Talbott

**Y**ou might think that any land that is wet would be a wetland, right? But if the occurrence of water was the only thing that made a wetland a wetland, then deeper parts of oceans and rivers would be considered wetlands. And we know that is not true! So, what actually makes a wetland a wetland?

**Wetlands are defined by three things:**



Drying wetland soil.

Ethan Freese



Saltwort

Ethan Freese

## Soil

If you really look at soil, you will see that not all soil is the same. Some soils, like those in central Nebraska, have a lot of silt. Other soils, like those in Nebraska's Sandhills, consist mostly of sand. Wetlands have hydric soils. This means that the soil in these areas was formed while going through a cycle of being very wet and dry. When the soil is very wet, it develops differently because of a lack of oxygen. This unique development creates soil that has lots of organic material (leaves, moss, etc.), is gray or even black in color, and can have a distinctive rotten egg smell.

## Plants

Just like cacti prefer hot, dry areas, wetland plants prefer wet conditions. And, although wetlands do not have to have water all year long, they do have water-loving plants growing in them. These plants are specially adapted to surviving while their roots are covered or inundated with water. The kinds of plants you will find in a wetland will depend on the type of wetland where you are. In Nebraska, wetlands near rivers will likely have cottonwood trees, while saline wetlands will have saltwort and salt-grass. Each wetland has a unique plant community!

## Hydrology

Walk through a wetland and you may or may not see water. To be declared a wetland, an area must have soil saturated or full of water for at least some time during the plant growing season (in Nebraska, this is April through September). The water does not need to be there for very long, sometimes only a week or two. Water does not even have to be there every year, because we do experience droughts in Nebraska.

And, don't forget the area also needs to have the right plants and soils to make it a wetland. ♠



A muskrat swimming to its wetland den.

Justin Haag

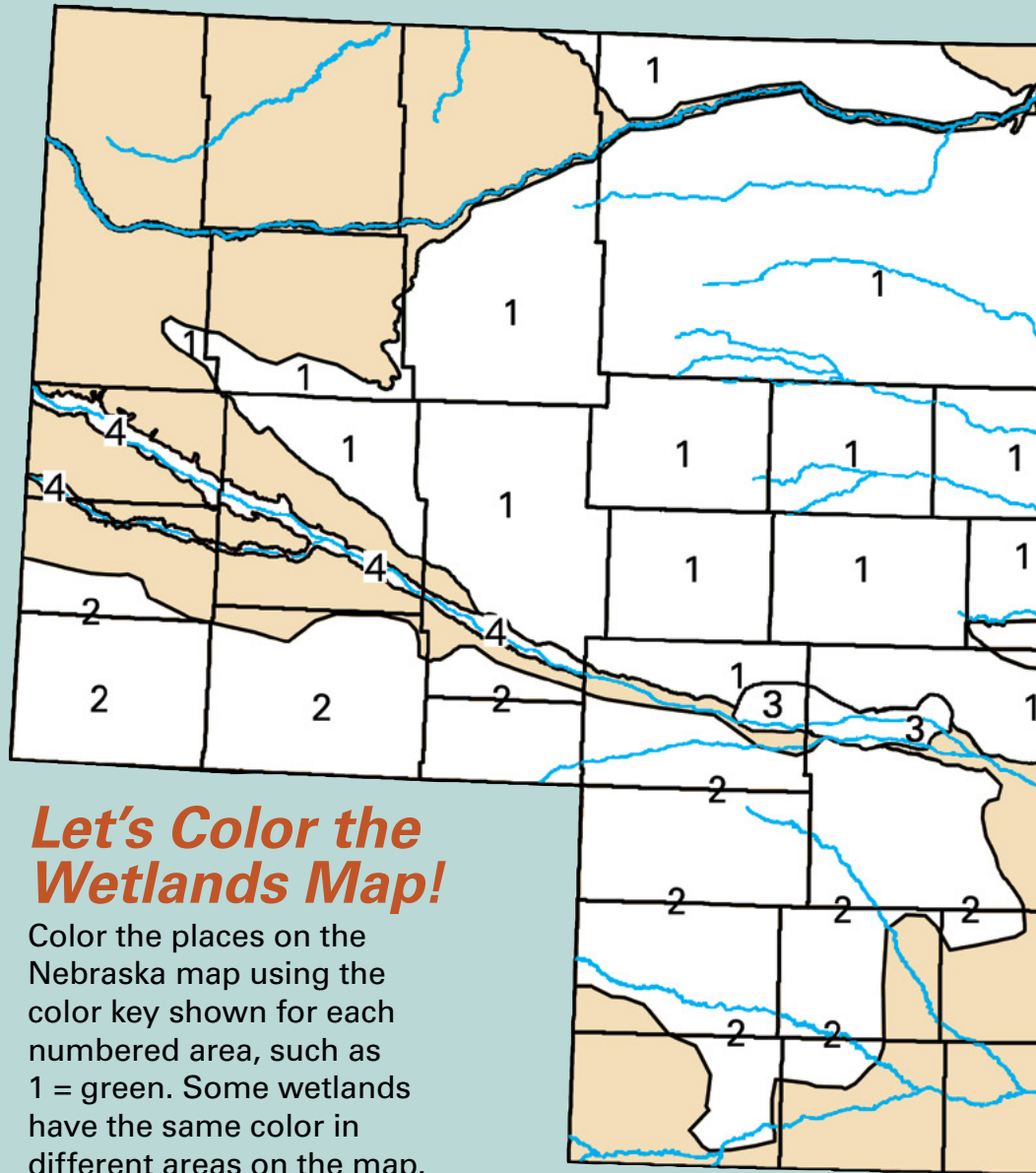
# NEBRASKA'S WET

**A** complex is considered an area with a grouping of wetlands that are similar in how they look and function.

Wetlands are spread throughout Nebraska, but it is useful to identify some of the larger wetland complexes in the state.

Wetlands can be found everywhere! All rivers and streams have wetlands. If you look at the map, many areas of Nebraska lie outside of a wetland complex, but that doesn't mean there aren't wetlands in those areas. From the busy cities of Omaha and Lincoln to the quiet rural towns, wetlands can be found.

Various other wetlands are indicated by the light tan color on the map. If you know of a wetland near where you live, color that in with the color of your choice. 💧



## Let's Color the Wetlands Map!

Color the places on the Nebraska map using the color key shown for each numbered area, such as 1 = green. Some wetlands have the same color in different areas on the map.

### Green



Sandhills



Justin Haag

Blanding's Turtle

### Yellow



Playa

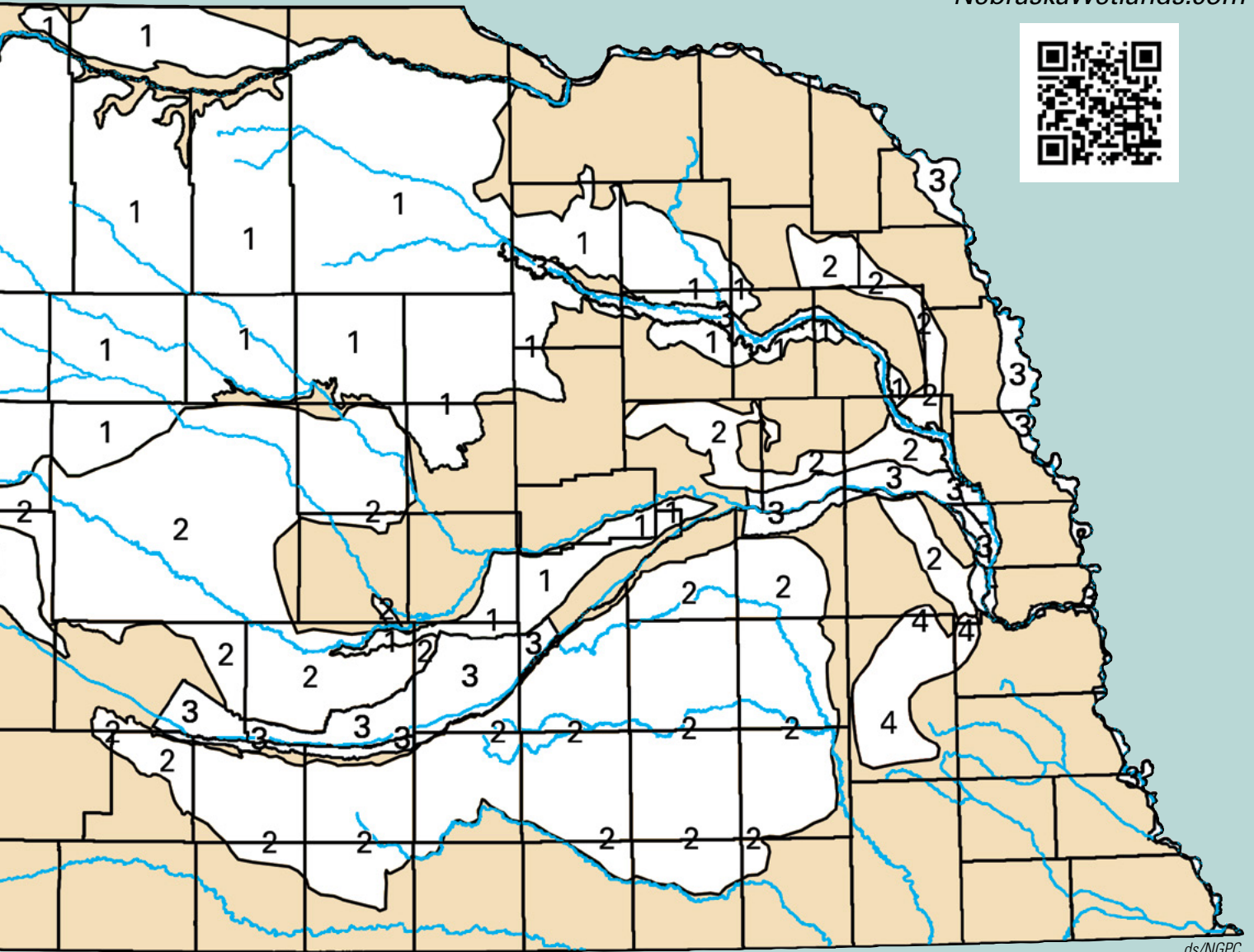


Justin Haag

Mallard (duck)

# WETLAND COMPLEXES

NebraskaWetlands.com



ds/NGPC

**Blue**

**3**

**Riverine**



Rocky Hoffmann

North American Beaver

**Red**

**4**

**Saline/  
Alkaline**



Jon Farrar

Salt Creek Tiger Beetle






# WETLAND DIVERSITY

Nebraska is FULL of diverse wetlands. *Check them out!*



Ethan Freese





## Sandhills Wetlands

-  Located in north-central Nebraska.
-  Most of their water comes from the Ogallala Aquifer. An aquifer is a large body of permeable rock, gravel and sand that contains or transmits groundwater.
-  Found between the rolling grass-covered sand dunes and along nearby creeks and springs.
-  Historically used by the Ponca, Pawnee and Omaha tribes, many humans, much like today's ranchers, continue to rely on these wetlands for their livestock and drinking water.
-  Very important habitat for animal species like river otters, salamanders, Blanding's turtles and migrating birds like the endangered whooping crane.



Ethan Freese

## Western Alkaline Wetlands




-  Located along the North Platte River and in the western Sandhills.
-  Has a pH above 7.0, making it an alkali solution (not acidic).
-  Groundwater is a main source of water for these wetlands. Because western Nebraska gets less rainfall, the wetlands are always evaporating, leaving behind high levels of sodium and calcium carbonate salts in the soil, resulting in wetlands that are yellow to green to brown in color, with dry areas being white.
-  These wetlands are perfect for migratory shorebirds!



Ethan Freese

## Eastern Saline Wetlands






*“Did you know? Many different tribes and their citizens harvested salt from these wetlands 200 years ago? The salt was used to make their food last longer and add to the flavor.”*

-  Located near the capital city of Lincoln, which was founded due to the potential for salt mining.
-  “Saline” means salty. Water that passes through an underground rock formation holds salts left behind by an ancient sea many years ago and makes its way into the wetland.
-  This unique wetland type supports the highly endangered Salt Creek tiger beetle and endangered plants like saltwort, along with many other animals and plants.

Ethan Freese








## Playa Wetlands

-  Located in several parts of the state with major concentrations in central and southwestern Nebraska.
-  A playa is a wind-formed depression in the soil with a layer of clay beneath it.
-  These wetlands rely heavily on precipitation to stay wet, so they are constantly moving through wet and dry cycles.
-  Many of these wetlands have been drained and converted to use for agriculture, and those that remain are surrounded by highly productive agricultural lands.
-  Migratory waterfowl like ducks and geese make this a great wetland type for recreational hunting.

Ethan Freese






## Riverine Wetlands

-  Located across the state of Nebraska throughout all of our diverse ecosystems.
-  Can be found along the edges of rivers, streams and creeks, and on their associated floodplains.
-  Although there are wetlands near all of our major rivers, some with the most wetlands include the Missouri, Platte, Niobrara, Loup and Elkhorn.
-  These wetlands and rivers provide habitat both in the water and out, as well as supply water for tribes, cities and agriculture.
-  Species like cottonwood trees and swamp milkweed thrive in these wetland habitats, as do ancient fish species like the pallid sturgeon and many other insect, amphibian, reptile, bird and mammal species.

Dakota Altman



## Urban Wetlands

-  Located in or near cities, towns or communities of people.
-  Some are natural while some are man-made.
-  Urban wetlands contribute to communities of people in BIG ways – they reduce flooding, filter out waste and harsh chemicals that run off when it rains, replenish water for drinking and provide natural habitats within cities. Plus, they are fun places to explore! They are very important for our future sustainability in communities!



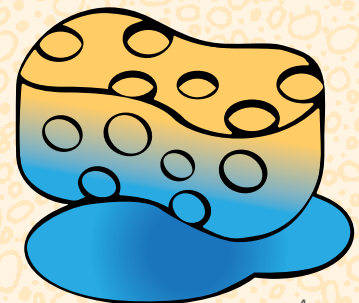
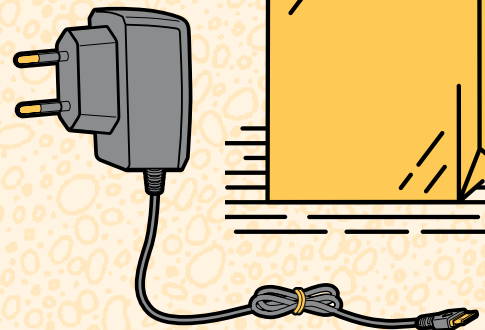
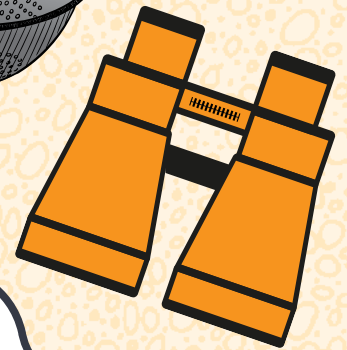
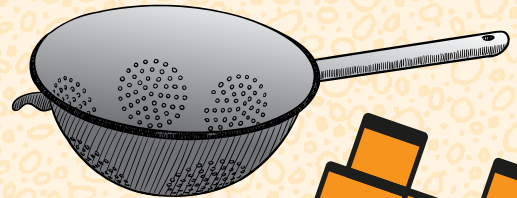
# Why are Wetlands Wonderful?

**W**etlands aren't just beautiful, but also beneficial! That means they can be helpful in many ways. Let's take a closer look at the benefits of wetlands below.



**Draw a line to match the correct description with the image that shows how a wetland functions!**

- a.** Wetlands can be recharged by groundwater. Wetland water supply can oftentimes decrease, but certain wetlands are connected to groundwater and this allows them to be recharged, or refilled with water.
- b.** Wetlands provide calm waters and food for many baby animals, including fish, insects, mammals, birds, amphibians and reptiles. Wetlands also provide plenty of protective cover from predators.
- c.** Wetlands store extra water or run-off. When heavy rains fall, the excess water is "soaked up" by the spongy soils of wetlands.
- d.** Wetlands clean dirty water. When water runs off the surface of the land, it often picks up pollution like car oil, fertilizer and pesticides. The soils and plants in wetlands help to filter out those toxic chemicals.
- e.** Wetlands are important for human and wildlife food production. In Nebraska, wetlands produce a lot of grasses that make for great food for animals like cows, while migrating birds enjoy high energy snacks on their journeys.
- f.** Wetlands provide numerous recreation opportunities for humans. Bird watching, fishing, hiking and hunting all take place in wetlands. Without wetlands, we would be missing out on tons of fun!
- g.** Wetlands provide a home to many different species, including several threatened and endangered species such as the Salt Creek tiger beetle, whooping cranes and western massasauga snakes.



Answers on page 2.

# Wetland Super Powers!

By Amber Schiltz

**W**etlands are important in nature, providing many benefits for wildlife. But did you know wetlands help humans too? By protecting us from heavy rainfalls and damaging floods, wetlands provide something called an **ecosystem service** that benefits humans right here in Nebraska.

Flooding is actually a natural process that is essential in certain ecosystems, but sometimes it can threaten human property and lives. When wetlands absorb water like a sponge, it's a natural process for the ecosystem that also benefits humans in a big way. But how exactly does a wetland's flood protection service work?

Wetlands are often found in low areas on the

landscape, and are dry time and again for much of the year. This leads to their sponge-like capabilities that capture water from heavy rains or overflowing riverbanks.

The hydric soils of wetlands can dry out and crack, almost looking like a dusty desert! But when the water comes, this spongy soil can soak up more water than other soils, and hold on to that water for longer.

Plants growing from this soggy soil have adapted too, often growing long, dense roots that help them hold on to the soil and filter nutrients from the water. In fact, one acre of wetland can store up to one million gallons of water! During heavy flooding events,

trees and plants living in wetlands act as barriers, slowing down the water's flow, and distributing it more evenly over a greater area.

The ability of wetlands to provide super storage of water during heavy rainfalls reduces the height and speed of floodwater. This can help prevent damage to people, crops and homes. This can often save cities millions of dollars in damage. Now that's definitely an **ecosystem service!**

Wetlands are an amazing and important piece of nature's puzzle, which is why their protection is vital. Next time you find yourself staying dry during a heavy rainstorm, you probably have a wetland to thank for that! ♦



*Marsh Wren Little Salt Creek/Wetland*

Michael Forsberg



*Marsh Wren Little Salt Creek/Wetland: Flooding*

Michael Forsberg

# Wetland Energy Flow

**W**etlands are special places with a huge variety of species. In fact, there is more life in a healthy wetland than in most other habitats. That's a lot of matter! (Matter is anything that takes up space.) So, with all these amazing creatures, who gets all the energy and where does it come from?

Well, just like the water cycle, the energy cycle starts with the sun. The sun provides energy to plants in the form of light. This light energy (also known as radiant energy) allows plants to complete a chemical reaction called photosynthesis. Through photosynthesis, plants produce glucose (a kind of sugar). So, our food web starts with the sun, but the first energy transfer is to the plants in the wetland. This includes tiny species like algae and duck weed and also larger plants like swamp milkweed, smartweed and cattails. Wetlands even have huge plants like cottonwood and sycamore trees.

So where does the energy from these wetland

plants go? Well, it depends. The tiny algae are eaten by equally small aquatic insects like mosquito larvae, mayfly larvae and even amphibians like tadpoles. Algae are also eaten by some fish species. Larger plants like swamp milkweed, smartweed and blue flag iris provide nectar for butterflies and bees. Grasses and smartweed provide seeds for birds. And then there are the larger plants like cottonwoods and sycamores which provide food for mammals like beavers and deer. Mulberry trees also provide berries for raccoons, deer and many birds.

Okay, now we know where the energy from plants goes, but does it end there? No! Other animals like fish and turtles feed on aquatic insects like mosquito or dragonfly larvae. Tadpoles are eaten by fish, wading birds like great blue herons and raccoons. Butterflies and bees are eaten by adult frogs, salamanders, birds and large insects such as dragonflies. Small seed eating birds and even snakes are often prey for

larger birds such as hawks and owls. Even larger still, predators like coyotes will eat deer. We are only scratching the surface here!

The energy has to end there, right? It's already traveled so far! But no! Remember there is a web of energy constantly flowing through ecosystems in a cycle and it doesn't end. Even when an animal or plant dies, the energy left inside of them will go to decomposers like fungi and bacteria. From there, new types of matter will be formed, releasing nutrients into the soil that cycles back to the plants.

And what about the other matter that isn't food, like air (gases), water and nutrients in the soil? How do they fit in? Are they even that important? The answer is yes. This matter is especially important to allow plants to photosynthesize (change the sun's energy into food). We also can't forget that plants are the foundation to the food webs in our ecosystems! Without them we could not trap the sunlight's energy here on earth. 💧



# WILD WETLAND ADAPTATIONS – ANIMALS

*Unscramble the letters to identify the animals described.*



## **GETIR MLANSDAREA**

This slimy friend walks on land as an adult, but spends its youth in the water using its gills to breathe!

I am a:



## **LADNBNGI('S) URLTET**

The webbed feet of this happy reptile help it to swim efficiently through the water.

I am a:



## **AGRET UBLE NORHE**

With tall slender legs, this bird is able to stalk its prey in and along the edges of wetlands.

I am a:



## **VEBARE**

The lips of this incredible mammal can close behind their incisors, allowing them to carry sticks without choking on water.

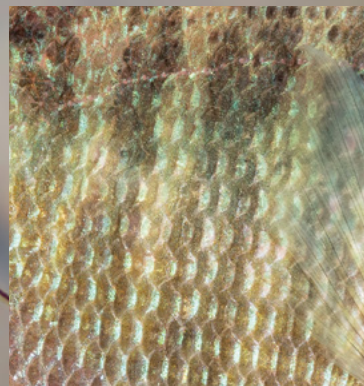
I am a:

## **RTAWE RERDIST**

This amazing insect "walks on water," hunting other insects while taking advantage of the surface tension found on top of the water.



I am a:



## **LBEULGIL**

This common wetland fish has ctenoid scales. These small, comb-like scales have fringes that help them swim faster.

I am a:

# WILD WETLAND ADAPTATIONS – PLANTS

*Unscramble the letters to identify the plants described.*



## LATICTA

This common wetland plant utilizes the wind to disperse, or spread out, its fluffy seeds, and its long skinny leaves allow heavy flows of water to pass by.

I am a:



## GLEAA

A plant with no true leaves or roots, these are adapted to survive in many different water habitats, even those with very poor water quality.

I am:



## TORWTALS

Adapted to grow specifically in saline wetlands, this plant has rubbery, succulent-like leaves that help it hold in water.

I am a:



## HARERAWDO

This plant's leaf is shaped just like its name, and aside from spreading by seed, it can also form clones of itself through its tuberous roots.

I am an:



## MAWPS DEMEWILK

The flowers of this cool plant are specifically designed for pollination, where a small slip of the visiting insect causes pollen to gather on its leg.

I am a:



## TOCTNODOWO

Shallow roots allow this large tree to receive oxygen even when standing in water. This is Nebraska's state tree.

I am a:

# Give Wetlands a Helping Hand!

**T**urning off the faucet when you brush your teeth, recycling your old papers, and shutting the lights off when you leave a room: these are just a few easy ways you can help to conserve our natural resources. So, what can you do (or not do) to help wetlands? Here are some great steps to take that aren't too complicated!

🐸 Participating in a wetland or neighborhood clean-up is a fun group activity. Grab some gloves and trash bags and get out there!

🐸 Research your local wetland conservation groups with a parent and check out events they may be hosting.

🐸 To keep your wetlands safe, never release unwanted pets like fish and turtles into the wild. They could harm the ecosystem and likely won't survive on their own.

🐸 Before planting flowers at home, check and see if they are native to Nebraska. Invasive species that don't belong could harm the ecosystem.

🐸 Remember that chemicals, extra paint and oil should always go to a hazardous waste site, not down the drain!

🐸 Respect your environment by making sure all trash goes into a trash can, not into the wild!

🐸 Learn more about wetlands and share what you know with your family and friends. 💧

**How will you help wetlands? Draw or write below.**

# Having FUN in a Wetland!

**W**etlands in Nebraska are such incredible places to go visit! There are countless things to do once you get there. With a little pre-planning, you are guaranteed to have fun in this unique ecosystem, and it might be closer than you think!



Visit [NebraskaWetlands.com](http://NebraskaWetlands.com) to learn how taking care of our wetlands is vital to the future of people, wildlife and the earth.

**USE A MAP!** – Finding where the wetlands are near you AND using maps to navigate while you are there is an important skill to have, and it can be tons of fun to use all the features.

**IMAGINE!** – Picture yourself living in a 1700s tipi or earth lodge near a wetland!

What are the smells?  
What are you seeing?  
Which living things are round you?



## CONTRIBUTE TO SCIENCE FOR YOUR COMMUNITY –

The app iNaturalist is great for identifying species and recording your observations. This app makes it fun and easy to contribute scientific data to your community.



**HUNTING** – This wetland activity does require an adult to be present, plus a special class to earn a hunting license. Hunting is a great way to maintain healthy animal populations and spend time with friends and family.



**GO FISHING!** – If you're younger than 16, you don't need a fishing license to fish. This activity is fun for the whole family. Some parks even have fishing poles you can borrow!



**KAYAKING** – Kayaks (and canoes) are an amazing way to explore wetlands! They let you get right up close to creatures in the water and offer a unique perspective of wetlands.

**GO BIRDING!** – Download the app eBird and you're ready to go. Record the birds you see in wetlands with your phone and begin to see how the birds that are present change over the seasons!

**PHOTOGRAPHY** – Whether you have a fancy camera or a phone, these great tools allow for really fantastic pictures of the amazing treasures found within our wetlands!



*Discover. Slow down, enjoy the sounds and scenery.*

*Draw and write what you observe.*

*Best of all,*

**HAVE FUN!**

## NATURE JOURNALING –

Take the time to slow down and observe, living fully in the moment as you draw and write in a journal or notebook while immersed in a wetland.



## WHEN VISITING A WETLAND,

it's always important to keep in mind "Leave No Trace" principles. Disposing of waste properly, leaving behind natural items, and respecting the wildlife and other people along the way are all important to keep in mind! Some wetlands could be a habitat for mosquitos, so be sure to pack the bug spray just in case. Now you are all set for an adventure in a wetland near you! 💧







Visit [NebraskaWetlands.com](http://NebraskaWetlands.com) to explore more about Nebraska's wetlands, including additional videos, personal stories and more!



U.S. Environmental  
Protection Agency



PLATTE BASIN  
TIMELAPSE



NEBRASKA  
- GAME PARKS -