

Prairies, Wetlands and Croplands

Keys to the Future Lie in the Past

*Supplemental Information for Teachers
and Enhanced Student Learning Activities*



A Farm of the Future

This landscape integrates livestock, crops, prairies, wetlands, stream buffers and alternative sources of energy including solar and wind. These features work together to nurture a healthy landscape, productive soils and clean waters for us all.

Prairies, Wetlands and Croplands

Keys to the Future Lie in the Past

Iowa's current landscape is predominately cropland. Fields of corn and soybeans blanket our plains and rolling hills. This is vastly different, however, from what Iowa looked like prior to western expansion in America, when settlers began making their homes here. The predominate landscape in Iowa 150 years ago was tall grass prairie dotted with many wetlands. Trees tended to grow only near bodies of water such as streams, rivers, and lakes. This landscape is responsible for the rich, organic soils that cover the state, making it favorable for farming still today. These enhanced learning activities focus on teaching students more about the landscapes of the past and why it is important to incorporate prairies and wetlands back into Iowa's current and future landscape.



Iowa Learning Farms, initiated in 2005, is a unique partnership of farmers, state and federal agencies, conservation groups, the research community and the general public. Iowa Learning Farms is building a Culture of Conservation, taking a grassroots approach to develop innovative ways in which all Iowans have an active role in keeping our natural resources healthy.

For more information about the Iowa Learning Farms, visit our website: www.extension.iastate.edu/ilf

Enhancement activities compiled by Karla Stevens and Dawn Harms.

Prairies

Iowa's natural prairie consists of native grasses and wildflowers. The grasses and flowers generally have stiff, upright stems, unlike pasture grasses that currently exist in Iowa's landscape for livestock grazing. Current pastures contain different grass species, non-native to Iowa, brought here by European settlers. A thick, dense, underground root system is where 75-80 percent of prairie plant material resides. The roots can be thickly matted and many run very deep into the soil.

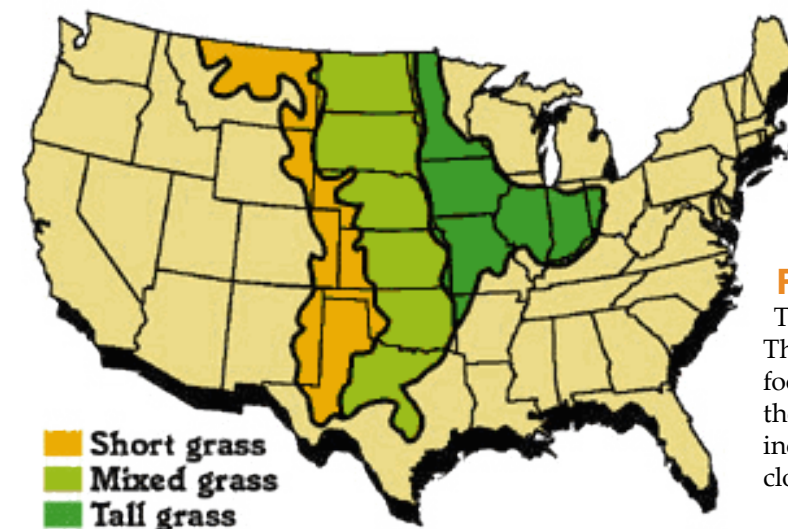
Prairie used to be the largest ecosystem in North America (170 million acres), extending from the Rocky Mountains to the Mississippi River, and from Canada to southern Texas. Additionally, a prairie peninsula extended the prairie further east of the Mississippi River through the states of Illinois, Indiana, and part of Ohio.

There are three basic classifications of prairie based on the types of grasses that made up the ecosystem. Tall grass

prairies consisted of three grass layers: ground hugging, intermediate, and upper. The upper layer contained grass species which grew 6-12 feet tall. These prairies were dominant in the eastern sections of the North American prairie where there tended to be more precipitation. Only one percent of the tall grass prairie remains, making it an extremely endangered world ecosystem, second only to the rainforest.

The western section of prairie was classified as short grass consisting only of one shorter grass layer. The western prairie was much drier than the east. About 40 percent of short grass prairie still remains and is used primarily for grazing livestock. In between the two prairie systems were prairies containing a mixture of grasses from both systems.

Prairies are a very diverse, complicated ecosystem, ranked second behind rainforests in terms of biodiversity, which refers to the variety of living species in a particular habitat or ecosystem. Many species of grasses, flowers, birds, animals, insects and microorganisms find home on the prairie.



Grasses

There are between 40-60 species of grasses alone. These warm season grasses grow later in the season than the cool season, non-native grasses that Iowans are most familiar with. Grass species native to Iowa include big bluestem, Indian grass, and switch grass.

Flowers

There are over 300 species of prairie forbs and flowers. These are tolerant of exposure to lots of hot sun and provide food for many of the insects and animals that also inhabit the prairies. Examples of wildflowers found on Iowa prairies include black-eyed Susan, prairie coneflower, purple prairie clover and butterfly milkweed.

Animals

Many animals made their home on the prairie. Some of these have been more successful than others at adapting to the loss of their native habitat. These animals range from large mammals such as bison, elk, and antelope, to small critters such as the 13-lined ground squirrel and American toad. Other prairie animals include red fox, coyote, pocket gophers, badgers and hognose snake.

Birds

The reduction of the prairie ecosystem has contributed to reduced bird populations and created conservation concerns for several species of songbirds. Prairie elimination has also led to the reduction of the predator species flying above. Birds commonly inhabiting Iowa's tall grass prairies of the past included meadowlarks, bobolinks, dickcissels, bluebirds, red-tailed hawks, and northern harriers.

Insects

The grasslands provided habitat for many species of insects, such as beetles, grasshoppers, ants, bees and butterflies. The reduction of this habitat has endangered some species of butterflies.

Below Ground

Countless microorganisms reside down in soil and the immense root system of prairie plants. This rich soil was created through years of the repetitive prairie lifecycle. An abundance of plant material was produced each growing season. In the fall, as the foliage on the plants died and the prairie became dry, the landscape became very susceptible to fires. For the prairie, however, these fires proved beneficial and necessary to the ecosystem's continued existence. Fire helped to decompose the thick, dead foliage, returning nutrients to the soil and clearing the way for new plant growth to emerge in the spring. The fires also continued to keep trees located only near bodies of water. Unlike prairie plants, whose deep, well-established root system allowed the plant to survive and thrive after burns, small seedling trees were eliminated. Reduction of tree growth was important to the continuance of the prairie ecosystem's need for many hours of direct sunlight.

Prairie Resources

ILF music video "Litany of the Prairie"

- A great follow-up to the Build-A-Prairie game

ILF video "Land Formations in Iowa"

www.bellmuseum.umn.edu

- Site includes a prairie field guide of plants, birds, herps, insects and mammals and lists a description, desired habitat and eating habits. Site also contains a video showing prairies through the various seasons, found in the "For Schools" section, "Online Activities."

Prairie Activities

Build-A-Prairie online game

Objective: Students increase their knowledge about native tall grass prairie grasses, insects, wildflowers and animals.

Procedure:

- 1) Assign students computer access either individually or in small groups.
- 2) Give each student a worksheet with instructions and questions to answer (instructions and worksheet on pages 12-13).
- 3) Students will use the website www.bellmuseum.umn.edu, select "For Schools," select "Online Activities," select "On the Prairie," select "Build-A-Prairie."
- 3) Students create a tall grass prairie and select grasses, insects, wildflowers and animals that should be found in their ecosystem.
- 4) The game includes quick links for students to read information about their choices, helping them to determine which are native to prairie ecosystems.

Additional prairie-related activities found after Wetlands section.

Soil Comparisons

Objective: Students compare rich, organic soil created by prairies to other less healthy soil to learn about soil's ability to grow crops.

Materials: Samples of soil in zip-lock bags for students to investigate (look, touch, smell). One bag contains organic, healthy soil and other examples will be of less healthy soil types: clay, sand, very little topsoil matter.

Procedure: Allow students to compare the soil samples with their senses. Questions to ask: What differences do you notice in these soils? Which one do you think would be the most successful at growing plant life such as farm crops? Which would be the least successful? Based on what we learned about prairies, what soil do you think was created underneath a prairie?

www.extension.iastate.edu/Publications/IAN203.pdf

- Publication on Iowa prairies

<http://www.auxsablecreekwatershed.org/schooleducational-resources.html>

- Several links for watershed and water-related activities

<http://ethemes.missouri.edu/themes/596>

- Listing of links to sites on the topic of prairies and grasslands

www.ksagclassroom.org/classroom/lesson/prairies.html

- Contains some lesson plans with student worksheets on prairies. Includes a lesson on food chains which would work well as a pre-activity to the Food Web activity suggested in the Wetlands section.



Wetlands

Wetlands are areas where plants and animals live in water or saturated soil. It may be landscape that includes shallow standing water such as a marsh, prairie pothole, or a slough; it may be a place where the mucky, smelly soil is always wet or typically has water near the surface such as a wet meadow; or it may be a combination of both watery landscapes.

Wetlands were common across Iowa 150 years ago. A majority of them were located in central and northern Iowa, within a section of land called the Des Moines Lobe. Created by the last glacier to cover the state 10,000-15,000 years ago, this area was left flattened with thousands of indents when the ice receded. Deep indents became lakes, while most of the more shallow recesses became prairie potholes. In some places within the Des Moines Lobe, as many as 200 potholes could be found within one square mile section of prairie.

With development of land for railroads, communities and

farms over the years, the majority of Iowa wetlands were drained and dried. Today a mere five percent of original Iowa wetland acres remain and only one percent of the prairie potholes can be found.

Reduced Iowa wetlands has meant lost habitat for thousands of plants, animals and invertebrates. In fact, most of Iowa's endangered species live in or are associated with wetlands. This is no surprise, as healthy Iowa wetlands sustain a dynamic ecosystem where a large variety of plants, animals and invertebrates can thrive.

Water-Tolerant Plants

Different types of wetlands support different kinds of plants. Deeper standing water can house submerged plants, such as sago pondweed and coontail, as well as floating plants, such as water lily and duckweed (the world's smallest flowering plant). Shallow waters are home to emergent plants such as cattail and horsetail. Soggy wetland soils support sedges, grasses and flowers, such as smartweed and jewelweed.

While prairie plants gather oxygen through their roots in the soil to distribute throughout the plant, water plants gather the oxygen they need via their leaves. This allows them to thrive in wet conditions that would otherwise choke off typical plants.

Mammals

Wetlands support many different mammals. Muskrats and beavers eat and make homes using emergent reeds and grasses. Brown bats feast on wetland insects, while mink and raccoon dine on bird eggs and shellfish.



Birds

Wetlands provide food and cover for nesting birds and waterfowl. Red-winged blackbirds can be found sitting atop a cattail not far from their nesting mates. Native mallards and wood ducks swim in the waters and nest on wetland shores. Wetlands are also crucial for the successful travel of hundreds of migratory birds.

Herps

Wetlands provide perfect habitat for the life cycle of bull and leopard frogs, American toads, painted turtles and tiger salamanders, to name a few.

Fish

A few species of fish can survive in low-oxygen waters including bullhead and carp, depending on the depth of the water. Crawfish and clams can also be found.

Insects

Mayflies and dragonflies are common flying wetland insects. Water striders, whirligig beetles and backswimmers also make wetlands their home, along with thousands of others.



Wetland Resources

<http://projectwet.org/water-resources-education/wetland-education/>

WOW! *The Wonders of Wetlands, An Educator's Guide*
– Curriculum Guide

<http://idahoptv.org/dialogue4kids/season6/wetlands/why-care.cfm>

– Wetland facts

http://water.epa.gov/type/wetlands/outreach/education_index.cfm#activities

– Wetland curriculum, book list, fact sheets, activities

<http://library.thinkquest.org/J003192F/>

– Facts, activities, games

<http://www.greenwing.org/dueducator/ducanadapdf/teachersguide.pdf>

– Teacher's guide to wetland activities

<http://eelink.net/pages/EE+Activities+-+Wetlands>

– Information and activities



Benefits of Prairies and Wetlands

Different ecosystems with their unique characteristics often offer special benefits that can be lost if the ecosystem is altered. Prairies and wetlands provide numerous ecosystem benefits to the surrounding environment.

Flood Control

The spongy soil of wetlands and surrounding water plants are efficient at absorbing the influx of water during a rain-storm or spring melt. The healthy, organic soil and thick root system lying underneath the prairie also absorb excess water more effectively than cropland or non-native grass pastures. Iowa has experienced many heavy rainfall events in recent years with considerable crops being lost to flooding. Strategically placed wetlands and prairies could help to reduce losses in the future.

Erosion Prevention

The dense root system of prairie plants holds the underlying soils in place, preventing them from being washed away even in a pounding rain or on a steep slope. Helping to slow the flow of water during a rain event also helps reduce the erosion of stream and river banks by preventing rushing waters from wearing away soils in the process.

Pollution Control

Iowa's waters are experiencing high rates of nitrogen, phosphorous and silt pollution. Runoff waters carry these pollutants into Iowa's waterways, where they damage water habitats and decrease clean water resources. Strategically placed wetlands, ponds and prairies can greatly reduce the amount of pollutants entering our waters. After wetlands and prairies absorb cropland runoff waters, they more slowly release the water into the groundwater system. This allows these

systems to use some of the chemicals and filter soil particles out, thus cleaning the water. Additionally, prairie plants planted as a buffer between cropland and waterways catch soil particles in runoff water, keeping the silt and chemicals attached to those particles out of our water systems.

Habitat

Prairies and wetlands offer unique habitat for a variety of creatures. Numerous species of plants, animals, insects and microorganisms are reliant on these specific habitats for survival. The presence of these systems offers increased biodiversity and assists in reducing conservation concerns for species that have not adapted well to the massive reduction of their native habitat. Farmers may also enjoy benefits from prairie insect populations, as some are natural enemies to crop pests.

Recreation

Prairies and wetlands offer a host of outdoor activities for Iowans to enjoy. Examples include hiking, bird watching, fishing and catching butterflies, insects, tadpoles and frogs.

Education

Prairies and wetlands are fun places for classrooms to study and enjoy our natural resources and learn about conservation needs. They are a connection to our past and a very important aspect of Iowa's ecology today and in the future.

Wetlands Activities

Field Trip to Prairie and/or Wetland

Objective: Students will experience and describe living and nonliving components of local prairies and/or wetlands.

Procedure: Take field trip to local prairie and/or wetland. Assign students to work in pairs or small groups and provide a field guide for each group. Ask them to observe different plants and animals (or signs of animals) and record findings on sheets provided (see Appendix). Small nets and containers may be helpful to catch and observe wildlife. Once back at school, share findings and discuss the experience.

Follow-up questions for students: Did you find more or less specimens than expected? Was it difficult to find animals or signs of animals? How many different specimens of plants and animals were identified? Do any observations still need to be identified? What signs of vibrancy were present in the ecosystem? Were any signs of pollution present?

Additional suggestions:

- (a) create field guides as class project to be used on the trip
- (b) assign a short paper asking students to explain the experience from their perspective, review components of prairies and/or wetlands, and discuss the importance of the ecosystem.

Who am I? Similar to the game “20 Questions”

Objective: Students will gain knowledge about prairie and wetlands species.

Unique materials: Photos of various tall grass prairie and wetland plants, insects and animals – need one for each student in the class, yellow and blue construction paper, safety pins.

Procedure:

- 1) Glue photos of prairie wildlife to yellow construction paper, glue wetland wildlife photos to blue construction paper.
- 2) Without showing student, safety pin one picture to the back of each of your students.
- 3) Instruct students that they will need to deduce what prairie or wetland organism they are by asking their classmates only yes/no questions.
- 4) As students identify who they are they must determine if they are found on a prairie or wetland. After all students have identified their pictures they should collect into the two ecosystem groups and the pictures should be removed from their backs and held in front of them.
- 5) Ask students the following questions: What similarities between species do you see within each ecosystem? What characteristics do you notice about any species that makes them especially adapted to their native habitat? Do you notice any characteristics about any of the species that make it obvious what ecosystem they belong to? Do you notice connections between species within the ecosystem, for instance food chains?

Wetland/Prairie Mural

Objective: Students work together to recreate wetland and prairie scenes and will identify different aspects and objects within each ecosystem.

Procedure: Provide bulletin board or wall with large amount of mounted butcher paper for students to draw/paint prairie and wetland mural. Students should each add and label one or two plants/animals/resources to the mural.

Additional ideas:

- (a) ask students to research and write a report or give a short presentation on their items;
- (b) attach mural in hallway to share with others at school;
- (c) display may be created in 3D form within classroom.

Wetlands/Prairie Food Web

Objective: Students will gain knowledge in ecosystem interconnections and better understand the process of a food web.

Unique Materials: Index cards and ball of string

Procedure:

- 1) Make a list of plants and animals (birds, mammals, reptiles, amphibians, fish, insects and invertebrates) that live in and use wetlands and prairies. Assign species on list to students and have them research food habits and predators.
- 2) Have students assign each species to following categories: producer, consumer, herbivore, carnivore, omnivore, insectivore, predator, prey, and/or decomposer.
- 3) Write each species on index card for each student to tape to shirt.
- 4) Stand students in circle. Hand ball of string to a “plant” and have them wrap string once around their hand before passing ball to an “organism” that would eat them. Continue this pattern, with students passing to others assigned who would either consume them or be consumed by them.
- 5) When food web is complete, pull the string tight by having students step back a bit. Then, ask one organism to slip out of the web and discuss the significance of lost habitats, species, etc.

Suggestions:

- 1) Complete activity twice: once without people on the list and again with people. Discuss the impact of people in ecosystems and related responsibility.
- 2) Prior to completing this activity complete the prairie food chain lesson plan found at <http://www.ksagclassroom.org/classroom/lesson/prairies.html>

Benefits Activities

Plant Filters

Objective: Students gain better understanding of wetland plants’ ability to filter pollutants out of water.

Unique materials: Celery stalks with leaves, beakers or jars, food coloring

Procedure:

- 1) Add coloring to beaker of water, and explain it represents pollutants (review different types of pollutants at this time).
- 2) Ask students to imagine the water is flowing through a wetland and the celery represents different wetland plants (review different types).
- 3) Cut off bottom half-inch of celery stalks and place in beakers. Over time (next few days) the colored water will travel up the capillaries, showing how the plants “drink up” the pollutants.
- 4) Discuss the process and ask students the following questions: How do wetland plants help purify water? Why is the water remaining still “polluted?” Where does the water go after uptake into the plant? What happens to the pollutants? Why not just dump our waste into wetlands? How does this experiment relate to croplands with wetlands?

Soil Filters

Objective: Students gain perspective of how prairies and wetlands filter and purify water through their soil.

Unique materials: One gallon plastic container with small holes poked in bottom and section cut out on top opposite of handle, pan or basin, large beaker, soil samples (gravel, sand, clay, loam, humus), and a coffee filter.

Procedure:

- 1) Discuss importance of clean water. “How is tap water cleaned?” Use coffee filter as visual aid to represent filtration processes. “What is nature’s way to clean water?” Mention plants and previous activity if completed. Dis-

Benefits resources

<http://www.nrem.iastate.edu/research/STRIPs/research/index.php>

– Discusses research project currently being conducted on incorporating prairies into watersheds. Findings of project so far are discussed in the research section.

<http://www.leopold.iastate.edu/sites/default/files/pubs-and-papers/2011-02-incorporating-prairies-multifunctional-landscapes.pdf>

– Publication detailing benefits of prairie being incorporated back into croplands.

cuss different layers of soils in our ground and how water is filtered as it seeps through those layers to make its way to groundwater sources.

- 2) Create a natural filter by layering soils in jug, so that each is at least one inch thick.
- 3) Create a slurry with water and soil in clear beaker. Have students make observations on its appearance. Pour small amount into smaller beaker and set aside.
- 4) Hold jug above basin and pour remaining dirty water into jug via cutout. Watch the water work its way through the layers of soil and drip out the bottom holes.
- 5) Pour collected basin water into clear beaker. Observe its appearance. Compare with reserved slurry water.
- 6) Review filtering benefits of prairies and wetlands.

Water Race

Objective: Students gain better understanding of prairie and wetland abilities to slow flow of water and prevent/reduce erosion, pollution and flooding in croplands. A connection can also be made between seepage, filtering and groundwater recharging with different water flow speeds.

Unique materials: Three rectangles (6” x 12”) made from sturdy cardboard or ply board: one with cloth material attached (tilled cropland), one with sponge covering it (wetland), and one with artificial turf attached (prairie); three basins at least seven inches wide; three large beakers/jars of water.

Procedures:

- 1) Discuss what happens to water during a hard rain (consider urban and rural settings). Discuss differences in soil characteristics between tilled cropland, wetlands, and prairies. Ask students to form hypotheses for the experiment.
- 2) Prop or hold different landscape rectangles so that they stand at about a 60 degree angle with each bottom edge inside a basin.
- 3) Pour equal amount of water onto the top edge of each rectangle over three seconds (one at a time) and ask students to observe differences in water flow.
- 4) Ask following questions: Which “landscape” controlled water flow most? Which one experienced fastest flow? Do results match hypotheses? How could results relate to farming practices?

Suggestion: You may want to incorporate a fourth comparison with a board covered in wax paper representing paved roads, parking lots, sidewalks. Discuss how city planning may incorporate different landscapes.



Croplands

Prairies and wetlands are not the only landscapes that offer benefits to Iowa, both now and in the future. It is hard to ignore the importance of croplands to the economic viability of the state.

Based on 2007 statistics, Iowa's production agriculture and ag related industries accounted for \$72.1 billion and over 330,000 jobs. This meant one out of every six Iowans was employed by agriculture [Iowa Corn Growers Association].

The largest percentage of Iowa croplands is planted in corn and soybeans. These crops have uses in a variety of products used for human consumption, livestock feed and energy sources. Some examples are:

Corn products: corn sweeteners (over 50 percent of U.S. nutritive sweetener market is corn-based), starch (90 percent of U.S. starch comes from corn), corn oil, antibiotics, vitamins, biodegradable plastics, livestock feed and ethanol.

Soybean products: salad dressing, soap/shampoos, pharmaceuticals, bakery products, livestock feed and biodiesel.

Agriculture is not just important to Iowans, as Iowa's corn and soybeans are shipped around the USA and world. The average American farmer can feed 129-143 people. As the world population grows, so does the demand for agriculture products. Maintaining our soil and water resources is an important part of being able to meet this need in the future.

Cropland resources

www.iowacorn.org/en/corn_use_education/fun_for_kids/

– Provides information on the Iowa corn industry and offers educational activities for kids to learn more about corn and its uses.

<http://www.iasoybeans.com/soyedmaterials/soyedmaterials.html>

– Educational materials provided by the Iowa Soybean Association include activity sheets per grade level including science, health and social studies connections.

Incorporating Prairies and Wetlands into Cropland

All three systems discussed offer many benefits to Iowa, both now and in the future. One ecosystem should not be eliminated in favor of another, but rather we should look at ways to incorporate prairies and wetlands back into Iowa's landscape without sacrificing excessive amounts of croplands. Many Iowa lives are dependent on the agriculture business; however the soil that creates the ability to abundantly support this business was enriched through the prairies and wetlands ecosystems of the past. These ecosystem benefits are not restricted to the past and they still offer benefits to Iowans today and in the future.

Adding strips of prairie along streams and rivers can help reduce water pollution. Helping to reduce added pollution provides cleaner water for our future.

Prairie strips can reduce erosion when planted on the edges of fields and as contour strips along hillsides. Keeping soils in place maintains our rich, organic soil levels for the future.

Planting prairie in areas of high erosion or poor soil health reduces the erosion and enhances the health of the soil underneath it as the prairie cycle repeats. This can create better soil areas for the future.

Larger prairie areas can be utilized by farmers for occasional livestock grazing, allowing time for their other pasturelands to experience re-growth. These larger plots, however, may also be beneficial by allowing for habitat and ecosystem recreation to enhance biodiversity in the future of Iowa.

Adding wetlands to low level areas of farm fields that are often flooded with spring rains offers flood control and reduces pollution. Natural places for excess water to collect would benefit both the water and soil resources for the future. Strategic placement of prairies and wetlands within cropland systems will lead to a healthier landscape, more productive soils and cleaner water now and in the future.

Incorporating resources

<http://www.ars.usda.gov/sp2UserFiles/Place/36221500/cswq-0400-hezel.pdf>

– Article detailing the experiences on a fruit and vegetable farm that has incorporated prairies throughout their farmstead.

<http://www.leopold.iastate.edu/sites/default/files/pubs-and-papers/2011-02-incorporating-prairies-multifunctional-landscapes.pdf>

– Publication detailing benefits of prairie being incorporated back into farms.

Taking care of Iowa's natural resources can increase our long-term sustainability. Prolonging the health of our waters, soil and wildlife helps ensure they continue to be useful, providing us benefits and enjoyment in years to come.



The list below contains just a few Iowa prairies and wetlands—there are many more all over the state to be explored. Please contact your local County Conservation Board for locations near you.

Iowa Public Prairies & Wetlands

Allamakee & Clayton Counties

Effigy Mounds National Monument, Marquette

Buena Vista County

Browns' Prairie, north of Storm Lake

Blackhawk County

Cedar Hills Sand Prairie State Preserve

Bremer County

Sweet Marsh Wildlife Area

Buchanan County

Patton Prairie
Rowley Fen

Butler County

Wolter's Prairie Preserve, Clarksville

Cedar County

Rochester Cemetery, Rochester

Cerro Gordo County

Hoffman Prairie and Ventura Marsh, Clear Lake

Dickinson County

Cayler Prairie State Preserve
Freda Haffner Kettlehole State Preserve
Yager Slough

Dubuque County

Kauffman Prairie, Dubuque
Upper Mississippi River National Wildlife & Fish Refuge

Emmet County

Anderson Prairie State Preserve
Four Mile Lake Wetland Complex

Fayette County

Becky's Fen
Gray-Hart Preserve

Floyd County

Fossil and Prairie State Preserve, Rockford
Restoration Marsh

Franklin County

Blackmun Prairie, Ackley

Howard County

Crossman Prairie
Hayden Prairie State Preserve

Jasper County

Neal Smith National Wildlife Refuge

Johnson County

Finkbine Prairie at University of Iowa
Finkbine Golf Course
Williams Prairie

Kossuth County

Union Slough National Wildlife Refuge

Linn County

Behrens Ponds and Woodland State Preserve

Louisa County

Port Louisa National Wildlife Refuge

Marshall County

Marietta Sand Prairie State Preserve

Mills County

Folsom Point Preserve

Muscatine County

Greiner Family Nature Preserve

Palo Alto County

Lost Island Lake Prairie Wetland Nature Center

Pocahontas County

Kalsow Prairie

Plymouth County

Five Ridge Prairie
Knapp Prairie
Loess Hills-Broken Kettle Grasslands

Story County

Ames High School Prairie
Doolittle Prairie
Hendrickson Marsh

Warren County

Medora Prairie
Rolling Thunder Prairie

Webster County

Root Cellar Prairie, Brushy Creek State Recreation Area

Woodbury County

Sioux City Prairie, Sioux City

Glossary

Black Soil Prairie: Typically mesic-wet prairie growing on deep, well-developed soils. This would have been the dominant type of prairie in Iowa at the time of settlement, but is currently the rarest since these same soils are the ones best suited for crops.

Bog: Wetlands that are composed of peat accumulation usually dominated by moss; receives only direct precipitation; characterized by acid water and low nutrients.

Fen: Fens are unique wetlands characterized by saturated organic soils fed by groundwater. They are similar to bogs except that fens consist of well-decomposed peat, are permeated by non-acidic water, and are vegetated predominantly with herbaceous plants.

Forb: A herbaceous flowering plant that is not a grass or sedge, such as the milkweed.

Glacial Kettlehole: Depressions formed during the last Ice Age when parts of glaciers were left behind and covered in soil. The ice would then melt, leaving a deep depression in the land.

Herbaceous plant: A plant that has leaves and stems that die down at the end of the growing season to the soil level. They have no persistent woody stem above ground. They may be annuals, biennials or perennials.

Herp: A common term for reptiles and amphibians.

Limestone Prairie: Generally associated with thin soils over limestone bedrock. Many of northeast Iowa's hill prairies might also classify as limestone prairie.

Loess Hills: Loess consists of tiny windblown silt particles. Iowa's Loess Hills were literally blown into existence as the glaciers from the last Ice Age retreated. Most of the Midwest is covered in loess. But the extent and depth of the loess deposits along Iowa's western border are matched only in China.

Marsh: A wetland that usually includes some open water, and is dominated by species such as cattails and rushes.

Mesic Prairie: Prairie communities growing under intermediate moisture conditions. They are typically dominated by tall grass species such as big bluestem, Indian grass and switchgrass, but are beginning to show an increase in intermediate grasses such as little bluestem.

Prairie Reconstruction: A planted prairie. Usually a planting of grasses and forbs onto land that had the native vegetation removed (i.e. agricultural land). Reconstructions usually will not have the plant diversity of a remnant or restoration. Insects and other organisms may gradually increase over time.

Prairie Remnant: A pre-settlement native plant community (i.e. prairie or forest). A plant community that has survived on a site to the present day.

Prairie Restoration: A native ecosystem that has been taken over to some degree by another plant community. Management is being used to restore pre-settlement vegetation. Restorations are often supplemented with seeds from plants that may have grown on the site. Restorations usually involve removing a plant community that has taken over the remnant.

Slough: Widely used term for wetland environment in a channel or series of shallow lakes. Water is stagnant or may flow slowly on a seasonal basis.

Swamp: Characterized by forest, shrub or reed cover. Particularly a forested wetland in North America. Depends on nutrient-rich groundwater derived from mineral soils.

Tallgrass Prairie: Lush native grasslands found in the eastern Great Plains and Midwest in areas with high rainfall and rich soils. They are dominated by big bluestem and Indian grass.

Wetland: Areas of wet saturated soils or shallow open ponds of water; containing plants that tolerate wet soil and standing water.

Appendix

Build-A-Prairie Instructions and Worksheet

1. Go to the following website: www.bellmuseum.umn.edu/games/prairie/index

If the above direct address does not work, go to www.bellmuseum.umn.edu

In the left side menu box select "For Schools" then select "Online Activities." Choose "On the Prairie."

2. Choose "Build-A-Prairie." Read introduction and select "Tallgrass."

3. Answer the worksheet questions *while* completing your online activity.

Build-A-Prairie Worksheet

1. Why are mesic prairies among the most endangered prairies?

2. Which species of grasses did you plant?

3. Which four forbs did you plant?

1. _____ 2. _____

3. _____ 4. _____

4. Which flower did you find the most unique or beautiful?

5. Have you ever seen any of these flowers before? If so, which?

6. About how long do forbs and grasses need to mature?

7. Which four species of birds did you choose to inhabit your prairie?

1. _____ 2. _____

3. _____ 4. _____

8. Select one bird and explain why the tall grass prairie provides a good habitat.

9. Which four mammals will inhabit your tall grass prairie?

1. _____ 2. _____

3. _____ 4. _____

10. Did you initially want to choose a mammal that resided in short grass prairies instead?

If so, which? _____

11. Which four herps did you choose?

- 1. _____ 2. _____
- 3. _____ 4. _____

12. Choose two herps and list what they prefer to eat. _____

13. List your four chosen insects.

- 1. _____ 2. _____
- 3. _____ 4. _____

14. What was the solution to helping your prairie? _____

15. Why is this solution a successful one for prairies? _____

Field Trip Observation Sheet

Team Name: _____

Name: _____

Habitat: _____

Description: _____

Sketch

Sketch

Additional ILF Resources for Prairies, Wetlands and Croplands

Classroom Presentations

Prairies, wetlands and croplands in-class presentations by Iowa State University personnel are available by request. School visits/presentations are available free of charge.

Posters

A colorful and engaging poster set of prairies, wetlands and croplands will remind students of the many important benefits and the diversity of life found in these three ecosystems.

Creature Cache

Gather a group of friends and be the first to collect five creature cards in each featured habitat: prairies, wetlands and croplands. But be careful... floods, droughts, steals, and swaps may be just around the corner!

Videos

Land Formation in Iowa: A colorful computer simulation and narration guide students through a quick history of the land we call home. In a matter of minutes, fast forward from the last period of glaciation (10,000-15,000 years ago) through to today and even peer into the future of what Iowa's landscape could look like.

Litany of the Prairie: Explore the colorful beauty of Iowa's prairie landscape, home to countless numbers of living creatures. This music video highlights the many plants, animals, birds and insects inhabiting the tall grass prairie, the second most diverse ecosystem in the world.

Wetlands Have Real Important Jobs To Do: Featuring a catchy blues-style tune, this video highlights many of the important functions of wetlands on our landscape: a sponge to soak up the water, kidneys of the landscape and a highway rest stop for the birds!

View these videos and more at www.conservationpack.org

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