PRAIRIE CONNECTIONS

Midewin National Tallgrass Prairie

Educational Unit for Grades 5-8

Introduction to Teachers

Welcome to the Prairie Connections program, an initiative of Openlands.

Openlands Project is an organization dedicated to preserving and enhancing public open space in northeastern Illinois. Most students know the challenges that endanger the tropical rainforest. Yet most Chicago students do not realize that there is an even more endangered environment in their own metropolitan area. Through this unit, Openlands provides an opportunity for your students to learn essential concepts of ecology and social studies and to discover a national environmental treasure just 40 miles southwest of the city of Chicago.

The unit focuses on the Midewin National Tallgrass Prairie, a unique site in the natural history of Illinois. Most of this 23,500 acre area, the largest piece of unprotected open space in northeastern Illinois, will be restored as a prairie, providing a natural environment for endangered species of plants and animals and an enduring educational legacy for generations.

The unit provides an opportunity to consider two related questions that are important to the study of any environment or society:
What makes a natural environment valuable?
What choices should people make about that environment?

Structure of the Unit

The unit is organized into five lessons that develop the theme: Prairie Connections.

	Science Connection	Social Studies Connection
Lesson 1: Living in the Prairie	The Prairie Home Reading 1: Prairie Facts	Native American Prairie Life Reading 2: The Potawatomi
Lesson 2: Prairie Year	Reading 3: Seasons in the Prairie	Reading 4: Settlement
Lesson 3 Connections	Reading 5: Prairie Ecology	Reading 6: Prairie Farmers
Lesson 4 Changes	Reading 7: The Prairie Pattern	Reading 8: Changing the Ecosystem
Lesson 5 Restoring Balance	Reading 9: Prairie Keepers	Reading 10: What's Important

Structure of the Lessons
Each lesson includes a science component and a social studies component. The lessons include readings that students can do independently, in groups, and as a class. The lesson is organized with a K-W-L format. Each lesson begins with focusing questions that can be expanded with student-generated questions.

Reading/Writing ISAT Connections
Each lesson contains a reading selection, questions based on the reading that require comprehension skills, an activity based on the reading, and a writing project. All are correlated with the state goals and ISAT tests.

Resources for Use throughout the Unit
Quilt-Maker, an arts project that students can work on at any point in the unit
Fact Bank, introduced in Lesson 1, expanded in subsequent lessons.
Vocabulary Builders, key terms in the unit and activities to build student vocabulary.
Midewin Time-Line, which can be used on an ongoing basis
The Atlas of Biodiversity, can be used to expand the Fact Bank, as the basis for student illustrations, and writing.

Each lesson includes additional activities for independent or group projects. We recommend that you include projects that use the following graphic organizers.

Sequence Events on Time-Line

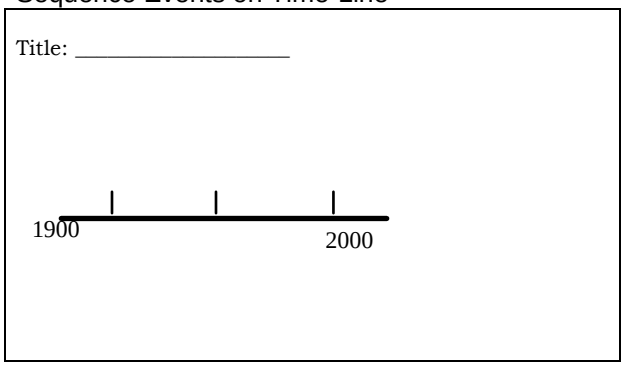
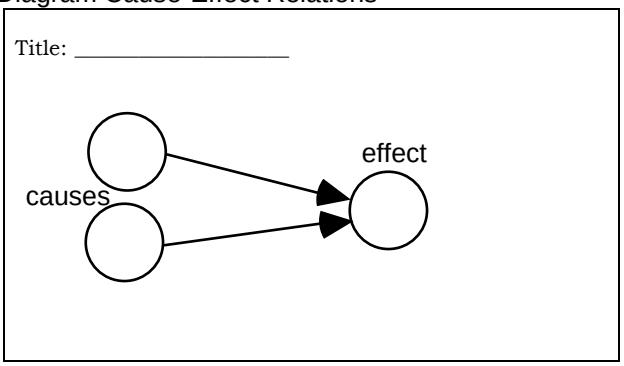
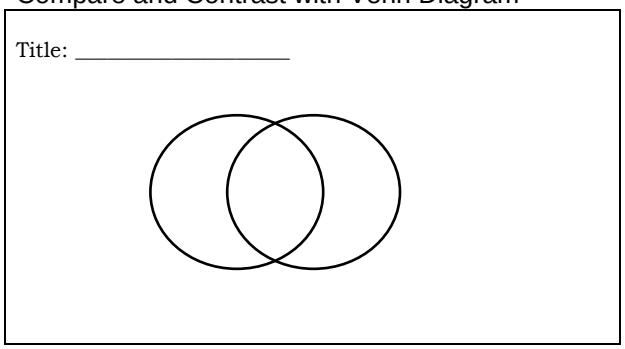


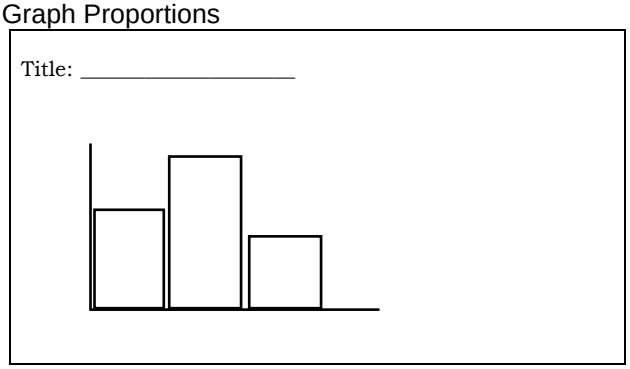
Diagram Cause-Effect Relations



Compare and Contrast with Venn Diagram



Graph Proportions



Correlation with Chicago Academic Framework

Language Arts Connections

The lessons incorporate substantial reading and writing correlated with the following state goals and Chicago Academic Standards and Framework.

Goal 1: Read with Understanding and Fluency

Chicago Academic Standard A. Apply strategic reading behaviors to examine, construct, and extend the meaning of a wide variety of texts to be informed, to perform a task, and for literary experience.
CAS C. Make and support inferences when reading nonfiction text, relating structure, organization, and content to the textual purpose
Goal 2: Understand explicit and implicit meaning in literature representing individual, community, national, world, and historical perspectives
CAS B: Compare and contrast themes, patterns, and relationships present in a variety of fiction and nonfiction reflective of different cultures, historical periods, and perspectives

Goal 3: Write to communicate for a variety of purposes

CAS B. Write in a manner that reflects focus, organization, and coherence, using a variety of supporting evidence and elaborative detail
CAS C: Use stages of the writing process to produce well-developed expository, narrative, persuasive, and technical texts that address audience, purpose, and context
State Goal 5: Use the language arts for inquiry and research to acquire, organize, analyze, evaluate, and communicate information
CAS A: Gather, organize, and integrate information from a variety of print and non-print sources to answer questions and solve problems related to investigation and research.

Science Connections

Goal 12--Have a working knowledge of the fundamental concepts and principles of life science.
Standard B: Compare and contrast organisms by their energy use, position in food webs, structures, and adaptations to different environments
Standard E Analyze natural cycles, interactions, and patterns in the earth's land, water, and atmospheric systems
Goal 13--Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.
Standard A Investigate and present ways in which science and technology have changed the tools, careers, resource use, and productivity of society over centuries
Standard B Demonstrate an understanding of the need for protecting, conserving, and efficiently utilizing renewable and nonrenewable natural resources

Social Studies Connections

Goal 16: Understand and analyze events, trends, individuals and movements shaping the history of Illinois, the United States, and other nations.
Standard C: Define and use key historical concepts and the tools of social science inquiry to explain and analyze events in state, national, and world history
Goal 17: Demonstrate a knowledge of geography and the effects of geography on society
Standard A: Use geographic concepts when describing the historic development of Chicago and Illinois
Goal 18: Understand, analyze, and compare social systems, with an emphasis on the United States
Standard B. Analyze ways in which culture affects daily living and personal choices

Lesson 1: Living in the Prairie

INTRODUCTION: Preview the unit with the following introduction.

Focusing Questions What makes the tallgrass prairie a special environment?
How did the Potawatomi live on this prairie?

Introductory Information to share with students:
This unit is about a prairie near Chicago, a place where the Potawatomi lived.
Midewin is an area of Tallgrass prairie located about one hour from downtown Chicago, in Will County.
Since 1990, the area where Midewin is located has become a site for the largest restoration in history.
Midewin is a Potawatomi word, pronounced mi-DAY-win.
Midewin means "healing" in the language of the Potawatomi.
The Potawatomi are a group of Native American people who lived in this area in the late 1700's and early 1800's.
They can figure out how people can heal that natural environment as they learn the history of this prairie.
Although Midewin no longer looks as it did during the time of the Potawatomi, it now can be restored as a major Tallgrass prairie because of the commitment of indivdiduals and organizations.

Activities

Ask students what they know about prairies. Start a K-W-L chart like the one below.

- List what students know in the K column, including facts from your introduction.
- Students classify the information as science or social studies facts.

Kind of Knowledge	Know	Want to Know	Learn
SCIENCE			
SOCIAL STUDIES			

> Students make a list of questions they have about prairies.
> Students expand knowledge and collect answers through these activities:
> Students read Prairie Fact Bank and classify facts for Learn column.
> Students read the Potawatomi and answer multiple choice questions.
> Students complete the writing project.

Conclusion
> Ask students to list what the Potawatomi would value about the prairie.
> Use a Venn diagram to compare and contrast values that were important in Potawatomi life and Chicago life today
> Complete the K-W-L chart.

Reading 1: **Tallgrass Prairie FACT BANK**

Why is grass so important? It is the basic food of people or of the animals that provide food to people.	*What are the features of a prairie?* You don't see trees, you see some bushes or shrubs, but the plants you see the most are grasses.	*What is the most endangered habitat in North America?* The prairie.
How long does it take to restore a prairie after it is destroyed? Several centuries.	*How big was the prairie?* Most of the native prairie grew in the Great Plains and covered much of the continent from the Rocky Mountains to Indiana.	*What else do we lose when we lose prairie?* The animals that live there. Between 1980 to 1989, endangered grassland bird species declined between 25% to 65%.
How much prairie land has Illinois lost? In the 1500s, there were about 8,900,000 hectares of prairie. Now there are about 930. So we have lost about 99.9% of Illinois prairie.	*What is prairie diversity?* It's the different kinds of plants and animals. In the past, more than 300 species of plants grew on the Illinois prairies.	*Why is fire important to the prairie?* Fire burns plants to their roots. Grasses and other prairie plants have deep root systems. After a fire, trees are gone; grasses survive.
Why is it important to have a large prairie area? If a prairie is in pieces, animals won't be able to have the amount of habitat they need.	*What is Midewin* It is the biggest Tallgrass Prairie east of Mississippi. It is being restored.	*What will happen if there is no more Tallgrass Prairie?* The world will lose an irreplaceable ecosystem.

Expand the Fact Bank. Collect more facts. Write them in question-answer format.

Test Prep Connection: Turn these questions into multiple-choice questions. Write three alternative answers that could be correct.

Reading 2: **Native American Life—Potawatomi Profile**

The name Potawatomi means People of the Place of the Fire or Keepers of the Fire. Long ago, they got this name because they were responsible for the fire for a group of tribes. They moved into this area a few hundred years ago. They lived here for many decades. As the seasons changed, the Potawatomi changed their ways of living. In summer they moved to one big village. In winter, they set up small camps. Imagine their homes as you read about their lives in the different seasons. The following paragraphs describe a year that might have been usual for a Potawatomi family in this area a couple hundred years ago.

Summer We're moving to the big village. We will set up a big house. We will use long poles to make it. It will have a big floor and bigger roof. The roof will hang over the cooking area. I will help my mother plant. First we will dig in the ground with a big shoulder bone from a deer. It's hard work to do that digging. But then we'll have a lot of food. It will be a great time for everyone when we get together with our friends and big family. My sister says summer is her favorite time because there are so many things to see and do. My mother likes it, too. She likes to be with our big family in summer. There is much work to do, but everyone helps.

Autumn. We have a lot of food. The squash and pumpkins are big. We have lots of corn, too. Every day, I pick more beans. We're drying the big pumpkins to save for the winter. My father got salt from a salt spring that we're using to save the meat. Soon we will be moving to our winter camp. I go to get nuts and berries. I eat some when I find them, but I bring most of them home.

Winter We have set up a wigwam in a place near the trees. We saw deer and raccoons and knew this would be a good place for hunting. We made the wigwam from branches of trees. We stuck one end in the ground. Then we tied them together in the middle. We left a hole for the smoke from the fire to get out. We covered the outside of the wigwam with bark.

It's a cold winter day, and it just snowed. My father says it's a good day to hunt the elk. He will be able to see the tracks in the snow. He will go soon to hunt. My mother says that means lots of food and work. If we don't have enough food in this place, we may move our camp. We will look for a place where we will find more animal tracks.

Spring We are getting my favorite food. We get it by making a hole in a tree. Out comes the sweet juice of the tree. My father is going fishing. He has a net he made from deer sinew. He throws it in the stream and then it sinks down. He tied shells to the bottom of the net. They fill with water and then go to the bottom of the stream. This summer, my brother will get to fish, too. He has a line and hook he will use to catch the fish in the lake. We sometimes get fish in winter, but that means we have to cut through the ice to get them. So fishing is a spring and summer job. My father likes the spring best. He says it is a time of hope. He hears the birds sing and sees the plants start to grow again. I like spring, too. Soon we will see the flowers.

Native American Life—Potawatomi Profile QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. In which season do the Potawatomi grow much of their food? a. winter b. spring c. summer d. autumn	2. Why did the Potawatomi leave this area? a. There was not enough fishing. b. Homesteaders settled their land. c. The winters were too harsh. d. There were no more buffalo.
3. Why might a Potawatomi child talk a lot about getting food? a. They hunted in every season. b. Sometimes it was difficult to get food. c. Everyone needs food. d. There was so much food in every season.	4. Which of the following is the best way to describe the lives of the Potawatomi? a. They live the same way in different seasons. b. They adapt to the seasons. c. They have many homes. d. They travel most of the time
5. What might a Potawatomi mother have said to her child in summer? a. We have to get ready for winter. b. This is a time to get the sap from the trees. c. We have a wonderful family. d. Bring the fish you catch back to the wigwam.	6. Why would the family move to a place where they would find more animal tracks? a. To get near more people. b. To have more chance of finding food. c. To be where there are more trees. d. To see animals.
7. Which of these is the best adjective to describe the life of the Potawatomi? a. unchanging b. colorful c. easy d. natural	8. Which member of the family is most likely to have said this: “We have had a long, difficult winter.” a. the mother b. the father c. the sister d. everyone

Write History

Tell the story of a day in a Potawatomi family. Choose one season and tell what they saw, what work they did, and how they felt about their environment.
Illustrate history. Add a drawing that shows what the prairie would have looked like on that day. Use details in your drawing to show the facts in your history.

Lesson 2: Prairie Year—Seasons in the Prairie

Introduction:

Explain the following points to students:

1800 Seasonality is a distinctive feature of this region. While in some places, particularly at the equator, there is little difference between the seasons of the year.

- On the prairie, the seasonal changes such as the high winds of winter have more impact because there is little protection from weather.
- Over centuries—and millenia—animals and plants had adapted to survive in the Midewin prairie's changing seasons.
- Animals adapt to an environment through their physical features, such as covering, and their behavior, such as hibernation.
- People adapt to an environment through the shelter and clothing they use and through the kinds of activities they do in different seasons.

Focus Questions How do Tallgrass prairie plants and animals adapt to the seasons? How did pioneers live in different seasons on the prairie?

Activities

> Use a K-W-L Chart to list what students know about the focusing questions.

> Ask students to use the time-line to infer what people would have seen in Chicago in the 1830's. Students may draw or list that information.

> Students read Seasons in the Prairie, answer questions; analyze their answers.

> Students make two lists based on that reading and prior knowledge:

Ways plants and animals adapt physically to the prairie seasons.

Ways animals adapt behaviorally to the prairie seasons.

> Students read Settlement, answer the questions; analyze their answers.

> Students complete a two-part chart: Students use the text and their own knowledge of pioneer life to respond.

Problems Settlers Faced	How They Solved Them

Conclusion

- Students update the K-W-L chart with information from the activities.
- Ask students to identify the most important idea they gained from the lesson. Ask them to select three facts that support that idea. Have them use the following diagram to make it clear that the idea is based on supporting information.

IDEA_____

Fact Fact Fact

Reading 3: Seasons on the Prairie

The prairie is a place where plants have lived for hundreds of years. If you see a natural prairie in different seasons, you see bright flowers and tall grasses. In early spring you see shooting stars and violets, and the spring grasses begin to grow. The prairie is very wet then since winter snows melt and leave ponds. There are two kinds of prairie grasses, one that grows a lot in spring, another that grows a lot in summer.

In summer the grasses are so tall you can't see low-growing flowers, but you do see the tall black-eyed Susan. Summer was the prairie's biggest season. In summer, there was so much tall grass that people called it a sea of grass that grew as tall as people. When pioneers were in the prairie, sometimes they got lost and would use a very tall plant called the compass plant to find their way. The compass plant's leaves turned during the day to follow the sunlight. Thousands of animals lived in this grassy area, including bison that grazed on the plants.

In autumn, more flowers bloom—the asters brighten the prairie. The leaves of many prairie plants turn gold in autumn as the grasses dry. In autumn, when the grasses are dry, natural fires take place. Those fires start by lightning. Acres and acres of prairie can burn in one natural fire. When the grasses burn, the native prairie plants do not die. In fact, the fires help the grasses keep the prairie for themselves. Most plants, especially trees, depend on their tips to grow. You'll see that trees have new buds in spring, and that is where they grow. If a tree loses its branches, it will not grow again. But grasses do not need their leave to grow back. They grow from their roots, and the fires do not burn those roots. So every year, the lightning fires are like gardeners weeding the prairie of plants that do not grow there. The prairie plants were like gardeners, too, because as their leaves died they fertilized the soil.

Some prairie animals migrate in winter to warmer places where they will find food. Some stay in the prairie through winter. And some hibernate. For example, some frogs dig holes under the ground and sleep through the cold prairie winter. Thousands of bison and hundreds of birds and other animals that used to live in this area are gone, but they did not migrate. They left because their habitat was destroyed. There is hope for the prairie, those animals will be able to live in this area again. People are restoring the prairie at Midewin National Tallgrass prairie. One day that area will look as it did when the bison lived there and the Potawatomi hunted here.

ISAT Connection

Make multiple-choice questions based on this reading.
Give your questions to another student.

Vocabulary Connection

Choose five words that are important in this reading and write what they mean.

Seasons on the Prairie QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. When do violets bloom in the prairie? a. winter b. spring c. summer d. autumn	2. Why did pioneers call one plant the compass plant? a. it had pointed leaves b. its leaves followed the sun c. its leaves pointed a direction d. it has four leaves
3. What would you see a frog doing at the end of winter? a. hibernating b. eating plants c. leaving its winter home d. returning from the south	4. How is a prairie like a rainforest? a. It is warm much of the time. b. There are many trees. c. Much of it has been destroyed. d. There are fires every year.
5. Why are there two kinds of grasses in prairies? a. One is short, one is tall. b. They grow more in different seasons. c. People planted new grass. d. The fires burn one kind.	6. What keeps trees from growing in the prairie? a. There is not enough rain. b. There is too much grass. c. There are too many fires. d. There is too much corn.
7. If you were looking for a bison, in which season would you see it in a prairie? a. winter b. spring c. summer d. never	8. Which of these is the most important part of the prairie? a. fires b. black-eyed Susans c. bison d. birds

Reading 4—Settlement

Settlers came to this area to build farms. While they found the land difficult to plant in because of the thick root system, trees were not in the way—the area was mostly an open grassland. When settlers came, they traded goods with the Potawatomi to get food and animal skins. After a time, the Potawatomi were forced to move when homesteaders took over the land. The Potawatomi asked that they could stay "on the land given to us by the great spirit," but they could not continue to live here. By 1831, they had to move.

Here is what one woman wrote about her trip to live in Illinois.
I have dragged one foot after the other so long and hope for the best. Friday Eve. We commence a fourteen mile prairie after we got to Paris, Illinois, hot though it was as the sun was setting it was very good some part of the way—Many bad slews. The Doctor got stuck, twice, the oxen drew him out. The prairies look fine. Many kinds of flowers grow on them—and prairie hens live on them, one of the company shot one. Eliza looks bad but says she feels like helping me get supper. Oh, dear, I think it's hard time. Saturday 15th. Today have been traveling through prairie and timber, both, and got lost in the bargain—we took the wrong road and wallowed around the prairie grass, sometimes as high as the horses' back. Night came we pitched our tent after mowing the grass down and made as comfortable as could be expected amongst the mosquitoes.

Here is what one woman's life was like after settling.
The woman told me that they spun and wove all the cotton and woolen garments of the family, and knit all the stockings; her husband, though not a shoe-maker by trade, made all the shoes. She made all the soap and candles they used, and prepared her sugar from the sugar-trees on their farm. All she wanted with money, she said, was to buy coffee and tea, and she could "get enough any day by sending a batch of butter and chicken to market." They used no wheat, nor sold any of their corn, which though it appeared a very large quantity, was not more than they required to make their bread and cakes of various kinds, and to feed all their live stock during the winter."

Here are the problems these settlers faced each season:
Fall—the threat of fire—the prairie grass became very dry and a spark could start a fire that would burn the prairie and their cabin
Winter—freezing cold, deep snow, people got lost in the drifts when the trails were covered
Spring—the prairie became swampy when the snow melted
Summer—some days were very hot and there was no shady forest to cool yourself; there were so many insects that sometimes horses died from being stung so much.

Settlement QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. Why did many settlers come to this area? a. to build homes b. to herd cattle c. to hunt animals d. to farm	2. Why did the Potawatomi have to leave this area? a. they sold their land b. they wanted to move west c. they fought with the settlers d. the settlers wanted their land
3. If you traveled to Illinois in 1840, which of these problems would you have faced? a. Potawatomi wars b. too many settlers c. not enough money d. poor roads	4. What did settlers fear most in 1850? a. fires b. wars c. insects d. hunger
5. What do you think a prairie slew is? a. something that flies b. a dangerous animal c. a wet place d. a lot of something	6. Which word best describes these prairie settlers? a. angry b. determined c. afraid d. lonely
7. Which animal was the biggest problem for the settlers? a. oxen b. horses c. insects d. bears	8. Why would a settler want to farm here? a. good transportation b. open land c. trading posts d. prairie plants

Writing Connections

Write a letter that a settler might have sent to a family member living in another part of this country. Describe the situation here. Deliver your letter to another student who takes the role of that other family member and writes a response.

Lesson 3: Connections

Introduction:

Explain the following points to students:

- Ecology is the study of connections, the way plants, animals, climate, and land fit together in an environment.
- The prairie environment survived thousands of years because natural fires caused by lightning prevented trees and other non-native plants from moving in.
- Every animal and plant has a role in its habitat, a role called a niche.

Focus Questions How do plants and animals fit together on prairies?
How do farmers use nature?

Activities

Ask students to list what they would see in a prairie town in 1840. Then ask them to list what they would see in that town in 1888. They can use the time-line to find information. They will infer the answer to the questions, however. They can expand their lists as they read the two selections in this lesson.

Students read Prairie Ecology, answer the questions, then update the K-W-L chart.

Students make picture glossary of the following ecology terms: niche—the role an animal or plant has in the environment habitat—the place an animals lives food-chain—a way to show how animals and plants depend on each other food web—the links among the plants and animals in an environment

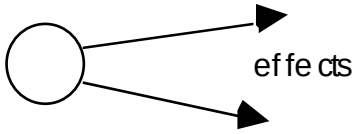
Ask students to look for changes in the ecosystem in the prairie time-line. Ask them to decide in which year being a farmer was one of the most important jobs in the Chicago area. (There are several possible answers.)

Students read Prairie Farmers, make up and take multiple choice questions, update the K-W-L chart.

Conclusion

Students make a change diagram telling impact on Tallgrass plants and animals of one farm. Have students add as many arrows as they identify specific effects.

One Farm



Students write recommendations for maintaining balance in a prairie ecosystem.

Reading 5 Prairie Ecology

The prairie is a natural ecosystem. Eco means house. An environment is a home. System is a word that comes from another word meaning place together. A ecosystem is a place where plants and animals fit together. The Tallgrass prairie is a special kind of ecosystem. Read about ways three animals live in the Tallgrass Prairie. Then you will understand more about how things fit together there.

Above the prairie, you will see the skipper butterfly. It depends on the plants here throughout its life. Butterflies begin life as an egg. The female butterfly lays eggs on a plant. She lays them inside a shell to protect them. The larva of a butterfly eats through that shell. What is a larva? It looks like a hairy worm. Its outside is flexible but tough. Scientists also call this stage of the butterfly's life a grub. It has no wings. It also is called a caterpillar. The larva eat the plant leaves. As it eats, the larva grows quickly. The larva molts. That means it sheds its outer layer of skin. It does that because it needs to grow. The old skin is too tight. After some time, the larva makes a pupa. A pupa is a kind of shell. Inside that shell, it does something really surprising and wonderful. It turns into a butterfly with wings. That takes about two weeks.

The butterfly starts out with damp wings. They have been crumpled inside the pupa. So the first thing it does is spread its wings. They are damp from being inside the pupa. So it takes the butterfly about twenty minutes to spread its wings and dry them. Then about two hours later, the butterfly is ready to fly. Then the skipper flies to find food, food it finds growing in the Tallgrass prairie.

On the ground and below it, you will find the ground squirrel. This animal is about one foot long and lives in big families. It has a brown coat to camouflage it when it moves along the ground. Animals use camouflage, color, to blend with their habitat. It is a kind of protection. The ground squirrel is an herbivore. That means it eats plants. It eats grass, so there is much food in the prairie. Sometimes it eats insects, too. It hibernates in winter.

On the ground in the past you would have seen the bison. This big herbivore grazed on the plants. The bison was a kind of gardener for the prairie. It ate weeds. A weed is a plant that is not native to an environment. So when weeds would start to grow in the prairie, the bison would get rid of them. Without the bison, the weeds might take over the land that the prairie plants needed. So the bison helped the prairie to maintain balance. A balanced environment is a place where plants and animals have what they need to survive.

Design a Prairie Plant

All three of those animals depend on prairie plants. Design a plant that would grow on the prairie. Your flowering plant must resist high wind, have seeds that can float on the air, have strong roots so anchor it on the prairie. Its job is to provide food for animals. After your draw your plant, explain how it has adapted to meet these needs and fit that niche.

Prairie Ecology QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. Which of these would a herbivore eat? a. skipper butterfly b. grass c. mosquito d. squirrel	2. How do butterflies depend on plants? a. for food b. for homes c. for larva d. for color
3. Why is the bison called a prairie gardener? a. the bison kept weeds out of the prairie b. the bison is a symbol of the prairie c. the bison eats prairie plants d. the bison lives in the prairie	4. How has a ground squirrel adapted to the prairie? a. it eats insects b. it eats grass c. it is an herbivore d. it hibernates
5. In which season does the skipper butterfly depend on the prairie? a. winter b. spring c. summer d. all seasons	6. How does the bison help balance the prairie? a. it eats grass b. it hibernates c. it eats weeds d. it eats many plants
7. How is the prairie like a house? a. it provides a home for many animals b. it has many parts c. it is very big d. it has different levels	8. What would happen to a plant in the prairie if it did not have deep roots? a. it would not survive b. it would spread to other places c. it would die in winter d. it would grow most in spring

Writing Connections

Write a page about a butterfly in your own words.
Start by making a list of the facts about the butterfly in Prairie Ecology.
Add more facts that you know about butterflies.
You can use other material to add to your fact list.
Then write your own butterfly page.

You can make the page more meaningful by adding illustrations.

Reading 6 **Prairie Farmers**

Read this prairie journal and figure out how farmers changed this environment.

June 10th

Today, we put up a fence. It will keep our cows out of our cornfield. The cows and horses have lots of grass to eat in the prairie. It makes a great pasture. Father says it's a good place for them. We just have a small farm because it's hard to plow the ground. But at least we don't have to cut down trees.

July 4th

It's independence day. The corn is very high. The prairie grasses are even higher. I saw so many butterflies today. It was so hot that we went to the creek for the day.

August 21st

It has not rained for three weeks. I got so tired carrying buckets of water to the squash plants. I wonder how the prairie plants stay green without the rain.

September 30th

The prairie is very dry. We cleared a path between the prairie and our garden. Mother says that the lightning will catch the dry grass on fire and we need to protect our home.

October 15th

Mother was right about the fire. The lightning came. The fire burned the whole prairie. All I can see there is burned land. It's a wonder that the plants can grow back again.

December 20th

Our fire went out today. We had to go to the Johnsons' to get a coal to restart the fire. I'll be more careful to watch the fire so it does not go out again.

January 20th

Another snowy day. We are almost out of firewood. I went with Tom to look for wood. We looked near the creek. Last week we found some branches there. I guess they had floated downstream from some woods. We didn't find any. We saw some animal tracks on the snow. They were small feet, close together

February 28th

It rained today. Most of the snow has melted. We went to visit the Johnsons. It took two hours to get there because the trail was so muddy. We almost turned back. Mr. Johnson asked us if we had seen any onions along the way. He told us that Chicago is named after onions. He said that the Potawatomi called it Checagou, which means wild onions. He said that's because when winter ends the wild onions start to grow and you can eat them. He said it's a sign spring is here. We looked for wild onion plants along the way back, but we didn't see any.

March 15th

Mr. Johnson stopped to see us on his way from Chicago. He had a steel plow. He showed it to us. He told us he had gone all the way to Chicago to get it. He says it's going to make it easier to cut through the grass so he can plant. He said if we help him with his planting, he will let us use the plow on our farm.

April 20th

We've borrowed Mr. Johnson's plow. We have cleared the prairie plants from our land. Now we can grow corn on all this land. Father says we'll sell the corn and be able to buy more animals. This will be a busy summer.

Prairie Farmers QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. Why did the family decide to farm in this place? a. There are many bison. b. There is grass for their cows. c. They don't have to cut down trees. d. There is lots of rain.	2. What did the mother predict would happen in autumn? a. lightning would burn the home b. there would be fires c. the harvest would be big d. they would move
3. Why might the Potawatomi called this area Checago? a. because they liked onions b. because it had a long winter c. because spring plants were welcome d. because it snowed a lot	4. Which of the following is the most important part of the story? a. they get coal from the neighbor b. the snow melts c. they build a fence d. they get a steel plow
5. Which of the following is most likely on the farm? a. the farm will get bigger b. there will be more and more fires c. there will be more bison d. there will be more snow	6. Why did the family look for onions? a. Mr. Johnson told them to b. they wanted to know it was spring c. the Potawatomi liked them d. they had planted them
7. What is the main idea of the diary? a. farming is important b. farming is fun c. farming is difficult d. farming is progress	8. What might Mr. Johnson have said about his neighbors? a. they learned a lot from me b. I learned a lot from them c. they have a lot of problems d. they will leave soon

Picture Connections

Choose one of the diary entries.
Draw a picture that shows what the diary reports.
Give your picture to another student.
Ask that student to figure out which part of the diary your picture shows.

Lesson 4: Changes

Introduction:

Explain the following points to students:

◊ Change is part of nature.

◊ When people change nature, they interrupt that pattern of change.

◊ The rate and scope of loss of the prairie in North America actually is greater than the loss of the rainforest environment in the world.

◊ Ask students to predict outcomes of changes in a Tallgrass Prairie habitat. Here are the changes:

- lightning causes a fire that burns trees that had started to grow on the prairie
- bushes that are not native to the prairie start to grow here
- a farmer buys a steel plow
- people build a road through the prairie

Focus Questions Why is it important that there be large areas of prairie?

Which is more important to people: a farm or a prairie?

Activities

> Students begin K-W-L chart for this lesson.

> Ask students to predict which change will have the greatest impact on the survival of the prairie. *(The steel plow will because it will enable farming to expand.)*

> Students read the Prairie Pattern. Ask them to summarize it in their own words.

> Students read Changing the Ecosystem. Ask them to infer why the meadowlark went away. *(There was not enough acreage of prairie left for the bird to nest.)*

> Students expand the Prairie Fact Bank with information from both readings.

Conclusion

> Students expand answers to the introductory questions.

> Students write a persuasive paragraph or draw a poster that persuades people how important it is to preserve and expand the prairie.

Reading 7: The Prairie Pattern

There is a pattern in nature called succession. Success comes from a Latin word *succedeaneus*, filling the place of another. In many environments, changes, called succession, take place over time. One kind of plant succeeds another. Weeds start to grow. Then woody plants come. The woody plants take over. The environment becomes a forest. But trees do not survive fires. The lightning and the bison protected the prairie from those changes. So millions of acres stayed prairie.

The animals that live in the prairie needed all that prairie to live. You can understand that when you look at one bird. The meadowlark is bird that nests in the prairie. It gets its food there, too. In summer, it eats insects. In winter, it eats seeds. To stay alive, the meadowlark needs at least 20 acres of prairie land. If 100 meadowlarks live in one prairie, they need a 2,000 acre prairie.

That's just one bird. The Henslow sparrow needs 80 acres to live. Some small farms are 80 acres. They produce a lot of food for the farm family. The family sells food to people in other places. What if the family buys another 80 acres of prairie to expand its farm. They will grow more food. At least one sparrow and four meadowlarks will lose their habitat.

After the invention of the steel plow, farmers turned more prairie into cornfields. People built more homes and roads. Over time, what was left of the natural prairies were small and widely scattered pieces of prairie. Birds could not nest there. The seeds that the wind blew from the prairie plants fell on highways, in backyards, and in cornfields. The prairie land that was left lost the bison, and weeds began to move in.

What was left of the prairie was in small patches, called remnants. People use the word remnant to talk about leftover pieces of cloth. When people make clothing, some cloth is left. People may use that cloth to patch clothing. Pioneers used remnant cloth to make quilts. But if a prairie remnant is only about ten acres, it has a limited future.

What would the rest of the century bring for prairies? Each year, there were fewer and fewer acres, and in time only remnants of prairie remained in Illinois, the prairie state. Today, less than 1% of the original Illinois prairie is left.

ISAT Prep

Make up math problems based on the information on this page.

Here are two examples.

There is a prairie remnant that is 240 acres. How many Henslow sparrows can live there? a. 2 b. 3 c. 12 d. none

The prairie remnant is turned into a farm. The farmer combines the 240 acres with 300 acres of original farm. The farmer keeps 60 acres as a prairie. How many Henslow sparrows can live here? a. 1 b. 9 c. 10 d. none

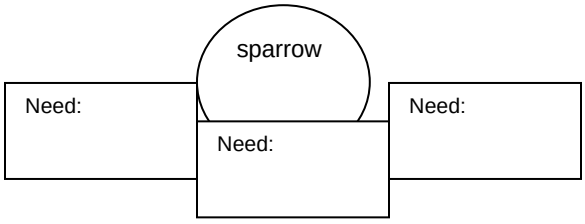
Prairie Pattern QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. Which of the following is the best definition of natural succession? a. What happens next. b. When someone succeeds. c. What changes naturally over time d. Which plant grows the most	2. What is a prairie remnant? a. Small area of the original environment b. Piece of a quilt made by pioneer c. What is left over in nature d. How much is in Illinois
3. How much of the original prairie has Illinois lost? a. 1% b. more than 99% c. 10% d. 99%	4. Why didn't trees move into the prairie environment? a. bison ate them b. birds nested in them c. people cut them down d. fires burned them
5. What does the meadowlark need most? a. insects b. seeds c. 20 acres of prairie d. prairie remnant	6. Why did the steel plow change the Henslow sparrow's life? a. People farmed more prairie. b. Farmers planted more plants. c. Plows dug up sparrow nests. d. Birds need 80 acres to live.
7. Which of the follow are you most likely to see in a prairie? a. a bison b. a meadowlark c. a sparrow d. an insect	8. Why is this reading called Prairie Pattern? a. It tells about cloth patterns. b. It explains how prairies stay the same. c. It is about changes. d. It is about farming systems.

Diagram Connections

Use the following diagram to show what a meadowlark needs to stay alive in a prairie. Use words or pictures to complete it. Then write a caption for your diagram.



Reading 8: Changing the Ecosystem

A food chain is a link between plants and animals. It starts with a plant. The next part of the link is a plant eater. When the prairie plants were uprooted, the animals that depended on them lost their food source. So while the farmers produced more food for people, they broke the animals' food chain.

A food chain is part of a bigger system called a food web. That web links the living things in an ecosystem. The herbivores in that system depend on the plants. If the plants are removed, the herbivores cannot survive. Then the carnivores, the animals that eat other animals, lose their food, too. Remove just one kind of plant from an environment and you disrupt the food web. Plow up the land and you destroy the whole system.

Read the following time-line and figure out the rate of population growth. To do that, divide the bigger number by the smaller number. You can estimate the answer. For example, one million is two times 500 thousand. For between 1880 and 1890 the population more than doubled.

1880	Population of the city is 503,185; farms continue to expand
1890	Population of the city is 1,099,850
1900	Population is 1,698,676
1910	Factories expand in the city; population is 2,185,283
1920	City population has grown to 2,701,705
1929	A farmer near Chicago reports plowing up several frogs as he got his field ready for planting this spring.
1930	City population is 3,376,438

We do not have population information on the butterflies, but we do know about the bison. By 1880, only a few hundred bison still live in this country. By 1900, Illinois and other Midwestern states were becoming known as the nation's breadbasket. Millions of acres of land had been turned from prairie into farms. Read this letter from a farmer to understand what this change meant for the animals.

Dear Martha,

Today, I was plowing the new field, and I saw a meadowlark. I really like that kind of bird. I love its song. It's a good neighbor, too. It eats the insects, and you know we have too many of them. That bird kept flying back and forth. It seemed to be looking for something. Maybe it was looking for its nest from last year. There's about ten acres of prairie that I've left near the road. So I thought the bird would go there. But it flew away. I'm not sure where it went.

I got the whole field plowed today. Tomorrow we'll put in the seed. This is going to be a great year. I hope you can come to visit this spring. Of course, we'll have some work for you to do, but it will be good to be together again.

Changing the Ecosystem QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. What is the first part of a food chain? a. a flower b. a plant c. a prairie d. an animal	2. What do herbivores do? a. They help plants grow. b. They eat plants. c. They protect plants. d. They eat herbs.
3. At which time did Chicago's population grow at the greatest rate? a. 1880-1890 b. 1890-1900 c. 1900-1910 d. 1920-1930	4. What were the frogs doing before the farmer plowed them in 1929? a. eating b. hibernating c. resting d. hiding
5. Why did the farmer think the meadowlark would nest in the prairie? a. He didn't know it needed 20 acres. b. It was near the road. c. Meadowlarks never lived there before. d. Birds eat insects.	6. Why did the meadowlark leave the farm's field? a. There was too much noise. b. It didn't like corn. c. It needed at least 20 acres of prairie. d. It was too close to the road.
7. Which of the following is the best summary of this reading? a. One farmer changed the prairie a lot. b. More farming led to less prairie. c. Meadowlarks are moving. d. Prairies have changed for 50 years.	8. Population means a. How many animals there are in a place. b. How many plants there are in a place. c. How many people there are in a place. d. All of the above.

Time-Line Connections

The time-line in the reading tells some changes that took place. Choose one, add one more change that you think probably also took place at that time. For example, if farms expanded in 1880, then prairies got smaller.

Year What happened Another change that probably happened.

____ _____ _____

Then summarize the time-line. Write a one-paragraph explanation of what it means to prairie history. Use information from the time-line, information you added, and what you know about prairies from the other lessons.

Lesson 5: Restoring Balance

Introduction:

Explain the following points to students:
A munitions factory is a place where explosives are made.
The United States army needed a lot of explosives to fight in World War II.
Midewin Tallgrass Prairie is located near Chicago, at a place where three rivers meet: Illinois, Des Plaines, and Kankakee.
We have near us the one place where the nation will be able to keep its prairie alive because the amount of land in at Midewin is so great that the Meadowlark and other animals that require a large prairie will be able to live here.

Focus Question Why is keeping a prairie important?

Why does restoring a prairie take a long time?

Activities

> Students read Prairie Keepers and answer questions about that section.

> Make a K-W-L chart for all the lessons.
The "K" column will be too large if students record all the information they have learned. So ask students to list what they think are the three most important things they learned about the science of the prairie from each lesson. Then ask them to list the three most important things they learned about social studies in each lesson.

> Students write "What's Important". The K-W-L chart is a resource for their writing. On it they will find ideas and information they can include in their writing. If each student writes that section independently and exchanges it with another student, both students will develop reading as well as writing skills.

Conclusion

Students complete the Quilt project for the prairie.

Reading 9: Prairie Keepers

Midewin means healing. Openlands and other organizations are healing this land. Whose land is it? First, the Native Americans lived here. They did not believe in ownership of land. Then in 1850 settlers came, homesteaders who set up farms. A Native American wrote the following statement about the changes that followed.

Once, only Indians lived in this land. Then came strangers from across the Great Water. No land had they; we gave them of our land. No food had they; we gave them of our corn. The strangers are become many and they fill all the country. They dig gold—from my mountains; they build houses—of the trees of my forest; they rear cities—of my stones and rocks; they make fine garments—from the hides and wood of animals that eat my grass. None of the things that make their riches did they bring with them from beyond the Great Water; all comes from my land; the land the Great Mystery gave unto the Indian.

In 1939, just when the rest of this prairie might have been turned into farmland, the army came and protected this land. The army did not mean to save the prairie. The army used about 25,000 acres of prairie land to protect the nation, not the prairie. The army built a plant to make explosives for use in World War II. They built railroad tracks to carry the explosives away from the plant. They built thick-walled buildings called bunkers to store the explosives. They needed many acres of land around the explosives to protect the people who lived in the area.

Because of the army, the land was safe from a lot of settlement and farming. Long after the war ended, the area was kept by the army. Then in 1982, naturalists pointed out that this prairie could be restored. It had not been broken up as other prairies had. It could be turned back into the natural environment. By 1992, a plan was made for that change. Then, in 1993, the plan began to happen. The government declared the land "excess." That means extra. It really wasn't extra. Every acre was important to re-making the prairie.

In 1997, the army turned 15,000 acres over to the Department of Agriculture for use in the prairie restoration. By 1998, 19,000 acres had been set aside for native prairie. The restoration of the prairie had begun. Today, United State Department of Agriculture is working with volunteers from Openlands and other organizations to restore the prairie.

The restoration includes education. Each year, students visit Midewin to see what was and imagine what will be. If you have 20-20 vision you can see what Midewin will look like in the future. By the year 2020, it will look a lot like the Tallgrass prairie that the bison roamed. In fact, bison will live here again, too. That will just be the beginning, though. We will need more decades to bring back this natural system.

Prairie Keepers QUESTIONS

Read the questions. Re-read the text. Then think through the answers.
Choose the **best** answer for each item. After you answer the questions, check with another student to learn and why they chose their answers.

1. Which of these words is closest to the original meaning of Midewin? a. medicine b. recovering c. Midway d. Middle	2. What does this mean: Then came strangers. a. Trees moved into the prairie. b. Farmers set up homesteads. c. Foreigners moved into the area. d. Natives lost their land.
3. Why did the army save Midewin? a. To protect the plants? b. To protect the people? c. To protect the animals. d. To protect the prairie.	4. Which year was most important to saving the prairie? a. 1939 b. 1982 c. 1997 d. 1998
5. How long will it take to restore Midewin? a. 20 years b. a millennium c. much more than 20 years d. 2020	6. Why did the army have so much land set aside at Midewin? a. because birds need acres to nest b. because explosives are dangerous c. because they built railroads d. because the prairie is so large
7. What is the most important thing people can learn at Midewin? a. About farming with nature b. About the army's protection c. About a natural environment d. About plants and animals	8. Which of these will you see at Midewin in spring of 2020? a. a fully restored prairie b. animals that used to live here c. corn fields d. farmers plowing and planting seeds

Word Pictures

Poems are like pictures. A poet uses words to draw a kind of picture.
Write a prairie poem.
In your poem, tell why Midewin is so special.

Reading 10: **What's Important?**
This is your page. Write what you think is most important to know about the prairie. Start by choosing one main idea for your writing. Then make an outline for your writing.

MAIN IDEA: _____
Introduction: What kinds of things will you say to make sure your reader knows why it's important to read what you wrote?

1. Related Idea 1

Supporting Information
A.

B.

C.

2. Related Idea 2

Supporting Information
A.

B.

C.

3. Related Idea 3

Supporting Information
A.

B.

C.

Conclusion: How will you make sure your reader knows what's important?

Quilt-Maker

Unit Project Resource

Pioneer women used to make quilts using remnants of cloth. Each section of the quilt showed something important to them. As you learn about the prairie, design a paper quilt. Use this grid to design your quilt. In each square write a word or words that tell one important part of live in the prairie. Then draw pictures or paste colored paper in patterns that show what that word means. We did one square for you.

 Lightning keeps the prairie clear.		

Vocabulary Builders

Unit Project Resource

Each of the following words is important to understanding the prairie.

- adaptation
- balance
- behavior
- biodiversity
- cause and effect
- camouflage
- change
- characteristics
- classification
- conservation
- cycle
- diversity
- ecosystem
- endangered
- environment
- food chain
- food web
- function
- fragmentation
- habitat
- interdependence
- native species
- niche
- photosynthesis
- population
- range
- region
- relationships
- responsibility
- restoration
- seasonality
- species
- structure
- succession
- tallgrass prairie
- threatened species

As you complete each lesson, check the words you have used in that lesson. Then make your own glossary. Write an explanation of each word in your own words. Include a prairie example of what the word means. Use this format.

Word: Explanation: Prairie Example:

More Vocabulary Expansion Projects

Use the following activities to expand your knowledge of these words.

Vocabulary Multiple Choice

Make up a multiple-choice question about the words you choose to explain for each lesson. For each word, use one of the following kinds of questions.

ask students to identify the word's root
ask students to choose the word that is its synonym
ask students to choose the word that is its antonym
ask students to choose the word's definition

Prairie Crosswords

Make up a multiple choice crossword puzzle with these words.

Picture Important Vocabulary

On small pieces of paper draw pictures that show what the important words mean. On other pieces, write the words. You can turn this into a game or study guide.